



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

N00217.003735
HUNTERS POINT
SSIC NO. 5090.3

April 30, 1998

Mr. Richard Powell
Engineering Field Activities West
900 Commodore Drive
San Bruno, CA 94066-2402

SUBJECT: PARCEL E FEASIBILITY STUDY DRAFT REPORT, HUNTERS POINT NAVAL SHIPYARD

Dear Mr. Powell:

The Environmental Protection Agency (EPA) has completed review of the subject document. Comments are included in the Attachment. Based on the number of comments we are providing, we request a meeting with the Navy to discuss comment resolution. Further, we anticipate that additional comments may be necessary once the validation study results are presented to EPA. This will most likely occur as part of the review process for the draft final FS document. If you have any questions regarding these comments, please call me at (415) 744-2387.

Sincerely,

Sheryl Lath
Remedial Project Manager

cc: Ms. Valerie Heusinkveld, DTSC
Mr. David Leland, RWQCB
Mr. Jim Sickles, PRC
Ms. Luann Tetirick, Navy
Ms. Karla Braesemle, Weston
Mr. Dan Stralka, EPA
Ms. Karen Goldberg, EPA ORC
Ms. Cynthia Wetmore, EPA

General Comments

1. EPA would like to see an evaluation of the removal of the radium dials from the landfill, site 1/21 and Site 02 with off-site disposal as a remedial alternative. This was done as part of a memorandum that the Navy produced in April of 1996.
2. Please explain how the areas designated in the City of SF's reuse plan as mixed use are being addressed in accordance with this plan. These areas are currently being evaluated for industrial use only. In general, the Navy has indicated that they are planning to cleanup to meet the City's reuse plan, however it is unclear from the document how that will occur.
3. We expect that an evaluation of the feasibility of wetland creation should be included in the document as the reuse plan includes wetland creation on Parcel E.
4. Has the Navy considered the long term cost associated with Operation and maintenance of some of the remedial alternatives. These costs may effect the Navy's selection of an alternative. For example, the long term maintenance requirements for capping IR-1/21 should be considered against the removal alternatives.
5. Please explain how the FUDs will be investigated as was agreed to previously by the Navy.
6. It is misleading to imply that the capping of Parcel E will meet residential or industrial cleanup standards. Although we agree that the pathway for exposure will no longer exist, residential and/or industrial reuse will be prohibited based on institutional controls that will be required to maintain the cap. This should be clarified in the document.
7. Throughout the document there are references to 10-5 residential evaluation as well as 10-6. Please clarify what level of risk was evaluated and correct any discrepancies.
8. The ARARs should be consistent with the Parcel B ROD which has undergone extensive review and comment. Please update to include agreements reached on the final ROD.
9. The Navy indicates that the groundwater will be disposed of through the POTW. The Navy should discuss the viability of this with the City. Several community members have voiced concerns about the capacity of the POTW and whether they can handle the additional volume.
10. The summary of risk in Section 2 is difficult to follow. Please provide a risk table that presents the calculated risk rather than "47 of the 53 exposure areas exceed 1×10^{-6} ". This is of particular concern in that the Navy presents cleanup criteria for 10-5 and 10-6 industrial risk. The FS must present the risk for each site to show a comparison of the cleanup goal scenarios.
11. Has skimming the LNAPL been tried at HPA in the past? It is EPA's recollection that this has not worked during previous attempts. If this is correct, what has changed?
12. There is uncertainty over the extent to which leaching to groundwater from source areas will be controlled in some alternatives, due, for example, to the uncertainty of LNAPL recovery and/or to problems with removing contamination below the groundwater table and/or the effectiveness of "encapsulation" of source areas relative to groundwater. The issue of source area contamination that will be left in place must be addressed for all areas where natural attenuation is proposed.
13. The very broad use of natural attenuation as a kind of default assumption in all alternatives is not in

accordance with EPA policy and is technically unsound at present; more data is necessary to prove that natural attenuation is effective in Parcel E and for the specific contaminants of concern (COCs). What data has the Navy collected to support that NA (i.e. physical and chemical data)? Are conditions at HPA suitable for this to occur?

In order to rely on natural attenuation to achieve compliance at the POC or compliance with discharge standards, source control is required; source areas above and below the water table must be eliminated. The groundwater monitoring program must include parameters to demonstrate that natural attenuation is occurring; these analyses were not included in the text or costs. Natural attenuation should not be considered for contaminants for which this technology is not yet considered proven or for contaminants that do not degrade, like PCBs and other recalcitrant organics and metals. Also, natural attenuation is not acceptable for wells at the POC where criteria have already been exceeded.

14. The effect of Land Disposal Restrictions (LDRs) must be discussed in the Feasibility Study (FS). LDRs would be triggered by many of the proposed alternatives because placement would occur when wastes are consolidated from different Areas of Concern (AOCs) into a single AOC (e.g., the IR-01/21 debris area or the IR-03 waste oil ponds); this soil would be subject to the requirement for determining whether it exhibits characteristics of a RCRA or California Hazardous Waste and must meet all applicable LDR standards. Some applicable documents include Superfund LDR Guide #1 (OSWER 9374.3-01FS), Superfund LDR Guide #5 (OSWER 9347.3-05FS), and RCRA ARARs Focus on Closure (OSWER 9234.2-04FS). In addition, the March 8, 1990 Preamble to the NCP includes information on RCRA and AOCs on pages 8688-8689, 8692, 8760, and 8788. See comments regarding CAMU requirements.
15. In some cases, the presence of other (i.e., non-Parcel E) sources is considered a rationale for not taking certain actions at Parcel E. It is inappropriate to use this "other source" argument since those other sources are from within Hunters Point Shipyard (HPS) boundaries and the division of HPS into parcels was primarily done for administrative convenience and to facilitate transfer. The presence of these other sources may be grounds for a coordinated HPS-wide evaluation.
16. It is not clear how a choice will be made among the three differing cleanup (risk) scenarios. This should be explained.
17. The total volume of soil to be excavated and consolidated under a landfill cap should be calculated and compared to the volume of soil needed as foundation material. The discussion should include an assessment of whether the soil volume is too small, too great, or sufficient and the costs of the alternatives should be adjusted as necessary so that excess soil is sent for offsite disposal or additional clean fill is costed as necessary.

Also discuss if this soil is suitable as foundation material for the cap (i.e., discuss whether it meets geotechnical and other requirements).

18. Please indicate how the data gaps identified during the RI are being addressed.

EXECUTIVE SUMMARY

1. Page ES-1, paragraph 2. The correct date for CERCLA is 1980 not 1988. Please revise.
2. Page ES-3, paragraph 1. Table ES-1 lists the types of contaminants at each IR site in Parcel E but does not provide estimated soil volumes as indicated in the text. Please resolve this discrepancy.
3. Page ES-6, paragraph 1. The text indicates that a groundwater RAO was not developed for Area 068084

groundwater because vinyl chloride is below the action level. Even if the groundwater is deemed not to be the *source* of the measured vinyl chloride in the building, a risk may exist based upon modeled concentrations. Please discuss actions that will be taken to control exposure due to inhalation. Also, under cleanup Scenario 3, the inhalation risk at this site needs to be addressed.

4. **Identification of Areas Requiring Remediation, p. ES-7, paragraph 1.** The text indicates that soils exceeding soil cleanup goal criteria are grouped into remediation areas, de minimis areas and areas that do not require remediation. Please clarify how the decision was made that some areas do not require remediation because by definition all of the areas exceed soil cleanup goal criteria ("soils exceeding cleanup goal criteria").
5. **Alternative 2, p. ES-8, last paragraph.** For this and other alternatives that include capping portions of the site, please discuss whether the final elevations have been evaluated relative to future use scenarios and the esthetics considered in the detailed analyses. Also discuss whether deed restrictions "to restrict construction at any capped area" would be compatible with the City's reuse plan. From Figure 2-2, it appears that some areas to be capped with a single layer cap will be used for industry or research and development; construction will likely be required for these uses.
6. **Alternative 2, p. ES-9, paragraph 2.** Please indicate if driven sheetpile is considered to be sufficiently "tight" at joints to provide the required degree of containment. Please discuss whether any site contaminants are incompatible with a slurry wall matrix.
7. **Alternative 3, Figure ES-3.** In addition to the sheetpile walls around IR-03 and along the shoreline, this figure shows a single layer cap and sheetpile wall around AOC 17 that does not appear to be mentioned in the text. Please discuss this area.
8. **Alternative 3, p. ES-10, paragraph 2.** The text indicates that the final capped area at IR-03 under this alternative would be approximately 6 acres; however the capped area at IR-03 under Alternative 2 would be about 10 acres (page ES-8). The respective figures (ES-2 and ES-3) show the same general area for both. Please explain the difference in the size of the areas to be capped, and also explain why the same area is shown on both figures.
9. **Alternative 3, p. ES-10, paragraph 2.** The text refers to a soil cleanup goal of 200 ppm for TPH; this value is not included in Table ES-3. Please clarify.
10. **Alternative 3, p. ES-11 paragraph 1.** The text indicates that four AOCs would be encapsulated but Figure ES-3 appears to show five (AOCs 11/14/15, 13, 14, 16, and 17); one of these, AOC 17, is not discussed. Please discuss AOC 17. Please identify all encapsulated areas. Discuss if it is possible to remove these source areas (i.e., for consolidation under the cap) rather than maintain them.
11. **Alternative 3, Table ES-4.** For Parcel E groundwater, an interceptor trench and groundwater discharge is indicated; please clarify whether groundwater treatment is a component of this scenario. Also discuss whether source control (particularly for the LNAPL zones) will be conducted as required to support natural attenuation. Discuss what is meant by "encapsulation" of groundwater AOC's.

Under this alternative, contaminated Parcel E Miscellaneous Soils would be excavated and "used as foundation material" for the cap at IR-01/21 and IR-02 Northwest Debris Zones. Please clarify whether this alternative in fact means consolidation and redispersion of contaminated soils from various parts of the parcel under the cap of IR-01/21 and IR-02. This appears to be acknowledged in the text on page ES-10 that refers to potential CAMU requirements. Also, please clarify if it is known that this material is actually soil and not landfill material (i.e., trash and debris) and is therefore suitable as foundation material.

12. **Alternative 3, p. ES-11, paragraph 1 and Alternative 4, pp. ES-11 and ES-12.** Please explain why, if groundwater behind the sheetpile wall will naturally attenuate before reaching the trench, it is necessary to contain groundwater and why groundwater could not be allowed to discharge to the bay. It seems that the pumping system would be used only to pump the water over the installed sheet pile or slurry wall to the bay, where groundwater would naturally flow. Please clarify if this was proposed simply to provide a point of compliance and if that is the case, explain why monitoring wells could not serve this purpose as well. Please discuss under what specific conditions a constructed wetland would be needed and explain where it would be located.
13. **Alternatives 4 and 5, Table ES-4.** Under these alternatives, contaminated soil would be excavated and "used as foundation material" for the cap at IR-01/21 and IR-02 Northwest Debris Zones. Please discuss that this alternative would require consolidation and redispisal of contaminated soils from various parts of the parcel under the cap at IR-01/21 and IR-02.
14. **Alternative 4, p. ES-12, paragraph 3 and Table ES-4.** Please discuss whether skimming and offsite recycling of LNAPLs differs from the DPE and offsite recycling proposed under Alternative 3. Based on the text on page ES-12, it appears that "skimming" refers to a limited duration removal of LNAPLs from the groundwater in open excavations (i.e., during construction). If this is the case, please discuss the fate of the longer term residual LNAPLs. Alternatively, please clarify if it is anticipated that all LNAPL will be removed during the soil excavation.
15. **Alternative 7, Figure ES-7.** This figure appears to show some areas of saturated soil that are either not shown or are identified differently under previous alternatives (e.g., the southern portion of AOC 12, all of AOC 1, AOC 6, AOC 7, AOC 8, and AOC 9; what is now labeled AOC 11 appears to encompass the area on previous figures that was shown as AOC 17, and AOC 10 appears to have been shown on Figure ES-6 as AOC 16). AOCs should be numbered consistently. Please indicate why all alternatives do not address the same contaminated areas. Also, please explain how the AOC 12 area differs from the trapezoidal dark area at IR-02 Southeast since, according to the legend, both will be excavated and placed under the cap. Please clarify if this was done simply to distinguish as between saturated and unsaturated soils. Also, please renumber the AOCs so that the numbers are consistent between figures.
16. **Alternative 7, p. ES-16, paragraph 3, and Alternative 8, p. ES-17, paragraph 3.** When saturated soil is to be excavated for consolidation under a cap or for offsite disposal, please discuss how the soil will be dewatered to meet redispisal criteria. Also, discuss how the resulting water will be managed.
17. **Alternatives 7 and 8, Table ES-4.** Please clarify what is meant by "encapsulation" of groundwater. Also, clarify if "dewatering" of groundwater AOCs is expected to be a limited duration event as the phrase "dewatering" implies (i.e., dewatering during excavation and construction) or whether this is this a long-term pump/pretreat/discharge approach. Please explain why both offsite disposal and use as fill material were included for soil in Alternative 7. Please clarify the respective discussions in the text.
18. **Evaluation of Alternatives Based on Nine EPA Criteria, p. ES-17.** EPA guidance should be cited when introducing the nine evaluation criteria for the first time.
19. **Page ES-18, paragraph 4.** It is difficult to fully evaluate the tradeoff between skimming and DPE without contour maps showing the extent of LNAPL, but it would seem that the former is better only if it is certain that all of the LNAPL zone is exposed by the excavation. Please discuss whether this will occur.
20. **Overall Protection and Long Term Effectiveness, pp. ES-18 and 19.** EPA disagrees with the statement that treatment is only slightly more protective because the statutory preference for treatment is based upon the presumed destruction of toxic substances, while containment could always, in principle, fail.

21. **Page ES-18, last paragraph and ES-19, paragraph 1.** In order for groundwater discharge to the bay to be more protective than discharge to the POTW, it would seem that treatment before discharge to the bay would be required (unless groundwater already meets standards by natural attenuation in which case discharge to either the bay or the POTW is equally protective), but this is not provided in Alternative 3. Assuming that the POTW also treats the groundwater prior to discharge to the same bay, either would appear to be equally protective.
22. **Long-Term Effectiveness, p. ES-19, paragraph 2.** The statement that consolidation under a cap and offsite disposal are equally protective conflicts with the statement on page ES-18 under Overall Protection that offsite disposal is more protective than consolidation under the cap. Please resolve this discrepancy.
23. **Long-Term Effectiveness, pp. ES-19 and 20.** There are internal contradictions in the arguments for long-term effectiveness and permanence as shown by the conflict between text at the bottom of page ES-19 where it is stated that removal of saturated soil is better than containment, collection and treatment (and concludes that Alternatives 7 and 8 are better than the other alternatives) and the last paragraph in this section on page ES-20 (paragraph 4) which indicates that containment is better because this component has parcel wide impact rather than addressing only a portion of the parcel (concluding that Alternatives 2 through 6 are better than 7 and 8). Please resolve these contradictory arguments.
24. **Page ES-21, paragraphs 3 and 4.** If the volume of LNAPLs is reduced by offsite recycling, logically the total mass will be reduced as well at least from the onsite perspective. Please discuss.
25. **Page ES-23, last paragraph.** Please explain why solvents would not be necessary to implement skimming. If the LNAPL is viscous, it would seem that solvents would be useful both for skimming and for DPE.
26. **Page ES-24, paragraph 2.** This paragraph argues that discharge to the bay is easier than treatment and discharge to a POTW because discharge to the bay requires treatment. In addition to being internally inconsistent (i.e., discharge to POTW also requires "treatment"), this sentence is logically incorrect because the degree of treatment for bay discharge is higher than for POTW discharges and therefore treatment for bay discharge is harder, not easier. Furthermore, as previously noted, if the groundwater is clean enough to discharge to the bay under Alternatives 3 and 4 (another inconsistency in this paragraph) then it is most likely clean enough to discharge to the POTW (or, for that matter, to not require containment at all). Please revise for consistency and clarity.
27. **Page ES-24, paragraph 4.** Please discuss any administrative issues regarding construction of the sheetpile was such as wetlands or floodplain issues.
28. **Table ES-5, page 1.** The totals shown for Alternative 2/Scenario 1, Alternative 4/Scenario 3, and Alternative 7/Scenario 1, do not match the totals provided in Appendix G.

SECTION 2.0, SITE CHARACTERIZATION

General Comments

1. Most of the metals are evaluated relative to the respective "Hunters Point Ambient Levels" (HPALs). Please provide a brief statement or summary of how HPALs were determined.
2. For most of the sites the ERA includes as a final statement a sentence such as "IR-XX is a Category 2 site". Please explain if this intended to be an overall classification of the site based upon the predominance of evidence for the various individual risks. Also explain if this assessment is quantitative

or qualitative, and whether the potential additive effects of multiple toxicants were considered in the ranking. For example, site IR-03 lists 22 individual ecological COCs, but appears to conclude that they pose an "uncertain, but no significant, immediate risk." Please explain how the "significance" of the risk was evaluated and why only the "immediate risk" of concern was evaluated. This comment applies to all of the various sites. A brief summary of the various categories and the method for assigning categories would be useful in the beginning of this section. Even though this information was included in the RI, it should be summarized in the FS. (This may not be an issue now that the Navy is conducting the validation study)

3. It is not clear how "extended ecological site boundaries" are different from the extended site boundaries. Please define.
4. For sites such as IR-38 and IR-39, which border on other parcels that are being addressed under other FS efforts, please note if actions at those other parcels are likely to affect Parcel E sites and/or if some combined action may make sense, i.e., if capping scenarios should logically cross parcel boundaries to provide best containment.
5. In summarizing HHRA results for the various IRs it would be helpful to indicate the major components that determined the risk, where applicable (for example, if carcinogenic criteria were exceeded, what compound or groups account for the predominance of risk).

Specific Comments

1. Section 2.2.5, p. 2-6, paragraph 1, bullet 7. Please provide a brief summary of the function of the saltwater utility system.
2. Section 2.3, p. 2-24, paragraph 3 and p. 2-25, paragraph 2. The text indicates that petroleum hydrocarbon standards are being developed under the Corrective Action Plan which will not be completed until mid-1998. Please discuss how the analyses in this FS will be affected by those standards which cannot at present be considered. Also, explain how the "proposed cleanup values" presented in the table on page 2-25 were developed.
3. Section 2.3.1.1, p. 2-30, paragraph 3. Please discuss the nature of the technical difficulty in installing the groundwater extraction system at IR-01/21, and discuss any pertinent lessons learned that may affect evaluation of groundwater extraction under alternatives proposed in this FS.
4. Section 2.3.2.1, p. 2-37, paragraph 2 and Section 2.3.6.1, p. 2-61, paragraph 4. For sites IR-02, IR-04 and others which have a potential history for disposal of pipe lagging and similar materials, please discuss if the potential presence of friable asbestos has been evaluated and whether there is potential for asbestos removal. Most older Navy ships used asbestos lagging.
5. Section 2.3.5.3, p. 2-58, bullet 4. PCBs were found in groundwater in some of the wells where floating product was encountered at site IR-03. Please specify if the free product itself has been characterized with respect to its composition (type of oil), contamination (i.e., PCBs or halogenated compounds) or physical properties such as viscosity that may affect the ability to recover the product.
6. Section 2.3.8.1, p. 2-70, paragraph 3. Please describe the term "chemical canisters" more fully and include any available information on what these canisters contained, how big they were, and whether they were used for dry or liquid chemicals.
7. Section 2.3.8.1, p. 2-70, paragraph 4. The text notes the observance of a leaking drum northwest of

Building 521. For completeness please verify that such materials have been addressed in previous removal actions since as noted on page 2-71, no future removal actions are planned.

8. **Section 2.3.8.2, p. 2-71, bullet 4.** Please indicate what the "residual product" is (i.e., petroleum, solvent, etc.) and how it was characterized. Please specify if this residual represents product-saturated soils, and if there is evidence of product at the groundwater table (see bullet 2, page 2-72).
9. **Section 2.3.9.1, p. 2-76, paragraphs 2 and 3 and p. 2-77, paragraph 2.** The text describes various wastes observed on site including drums, paint cans, leaking metal tins, etc. as well as "landfill debris and residual product" at IR-12. Please describe/document the removal actions which presumably have addressed these items since as noted on page 2-77, no further removal is planned.
10. **Section 2.3.9.2, p. 2-77, bullet 1.** Text appears to be missing at the end of this bullet because the last sentence is incomplete. Please revise.
11. **Section 2.3.11.1, p. 2-85 and Section 2.3.12.1, p. 2-89.** For sites IR-38 and IR-39, please discuss if the presence of biological hazards has been ruled out and how the animals and biological materials were disposed during the active life of these facilities.
12. **Section 2.3.12.1, p. 2-90, paragraph 1.** Please confirm that the drums, the oven and the tar tanks have been removed.
13. **Section 2.3.12.1, p. 2-90, paragraph 4.** The text indicates that the current tenants continue to have "open underground tanks" containing various fuels products at the site. Please explain what is meant by "open," if these tanks are underground and indicate how these operations are being, or will be addressed. For example, please clarify if these tanks would be addressed under RCRA Subtitle I requirements. Also discuss whose responsibility they are (the tenant or the Navy), and if they are to be addressed in this FS.
14. **Section 2.3.12.1, p. 2-91 paragraph 1.** A remedial action is planned for the concrete pad adjacent to Building 707. Several other areas of this site have debris, paint cans, etc. from past operations. Please indicate whether the planned removal action includes any of these materials and if not, whether debris removal will be included in alternatives under this FS.
15. **Section 2.3.13, p. 2-94, paragraph 1.** Please discuss if the agreements reached at the meeting in 1993 regarding concrete stained areas were documented in the administrative record and if so, please provide a citation.
16. **Section 2.3.13, p. 2-94, paragraph 3.** The presence of an oil stain noted in paragraph 1 may contradict the statement that there is no apparent release at the site, particularly if the spilled material was transformer oil as surmised. It appears that the real reason an investigation is not planned is the cited 1993 meeting agreement. Please clarify.
17. **Section 2.3.14.1, pp. 2-94 and 2-95.** Please indicate the materials used in construction of the box culverts and the method of sealing the joints between them. Also please present any information on the type of waste oil that may have contaminated the steam in the lines and explain why the lines in Parcel D were sampled but those in Parcel E were not. Finally, to close out the issue of the steam lines and utilidors, please indicate whether the removal of the steam lines will include removal of the box culverts and/or sampling of subsurface soil for TPH, PCBs, and other appropriate parameters.
18. **Section 2.3.15.1, p. 2-97, paragraph 1.** Please indicate whether the removal of the fuel lines will include sampling, and if necessary, removal of subsurface soil contaminated with TPH and/or PCBs.

19. **Section 2.3.16.1, p. 2-98, paragraph 2.** Please discuss whether the storm sewers drain material from the industrial landfill (i.e., leachate) or whether they only collect runoff from non-waste contact areas.
20. **Section 2.3.16.1, p. 2-98 and Section 2.3.17.1, p. 2-100.** Please clarify if any portions of the existing storm and sanitary systems will be used under the city's redevelopment plans. Please discuss whether these systems will be rehabilitated to reduce the potential influence on groundwater flow by exfiltration.
21. **Section 2.3.19.1, p. 2-102, paragraphs 3 and 4.** Please confirm that the materials observed at site IR-52 have been removed since no further action is planned. Please discuss whether any current activities at Building 809 are relevant to potential release and/or spread of contamination.
22. **Section 2.3.22.1, p. 2-111, paragraph 2.** Please specify the use of Building 810 before it was used to store investigation derived waste. Also clarify whether the solvents, fuels, and acid noted in the first bullet were used during the investigation or whether these materials were the remnants from previous activities. Subsequent bullets suggest that Building 810 and its yard were used for storage of batteries, waste oils, fuels, and solvents.
23. **Section 2.3.22.1, p. 2-111, bullet 7.** Please clarify if the liquids identified "near" the landfill area were stored there in tanks or containers, or if they were disposed or spilled there.
24. **Section 2.3.22.1, p. 1-112, paragraph 1.** As in the case of previous IR sites for which no further removal actions are planned, please confirm that waste sources such as the transformers, liquid wastes and scrap metals in this area have been appropriately dealt with.
25. **Section 2.3.22.2, p. 2-112, bullet 1.** The text indicates that metals in soil exceed HPALs beneath the building. Please clarify that the remedial alternatives presented in the FS include addressing this contamination.
26. **Section 2.3.22.3, p. 2-113, bullet 1.** TCE was detected in groundwater but was not reported or at least noted in soil at IR-72. Please confirm that TCE in IR-72 is coming from adjacent parcels or from previously removed sources like the solvent storage area in Building 810.
27. **Section 2.3.24, p. 2-119, paragraph 2.** Please discuss the extent of soil gas survey in the vicinity of the former UST, given that the building now lies over its assumed location. Also, please explain why contamination can be ruled out based on the assertion that any contaminated soil was "probably" removed. Even though the tank was in place only a short time, it may have been in contact with saline water from the bay (depending on the relative location of the shoreline at that time) which would have accelerated deterioration.
28. **Section 2.3.25.1, p. 2-119, last paragraph.** Please specify if the UST at IR-75 is being addressed under the correction action program.
29. **Section 2.3.25.1, p. 2-120, paragraph 4.** The text indicates that additional investigations "will likely be conducted" at IR-75; please discuss when and how will this decision be made.
30. **Section 2.3.26.1, p. 2-123, paragraph 2.** Please clarify whether the liquids discussed in this area were stored there in tanks or containers, or whether the liquids were disposed or spilled there.
31. **Section 2.4, p. 2-127, paragraph 3.** The text states that there are 62 0.5 acre subsites and 121 2,500 square foot exposure areas at IR-36 sites. Please discuss whether these were evaluated separately based on individual characterization data or evaluated as a group for a single set of COCs.

32. **Section 2.4, p. 2-129, paragraph 1.** Please indicate why an ERA was not conducted for these sites and what will be used in its place.
33. **Section 2.4.1.1, p. 2-130, paragraph 1.** Please indicate the type of containers in which PCB oil was stored and the types of material (solids, liquids, etc.) currently stored in Building 400 by EFA West. Please clarify whether the compost materials stored in Building 405 are the actual compost ingredients/products or whether these materials are machinery and maintenance materials. Please confirm that composting is conducted on the HPS property.
34. **Section 2.4.1.4, p. 2-133, paragraph 3.** The text indicates that only one B-aquifer exposure area had groundwater data but text on page 1-132 (industrial use scenario) says two exposure areas had groundwater data. Please clarify.
35. **Section 2.4.2.1, p. 2-134, paragraph 4.** The text again indicates that additional investigations "will likely be conducted." Please discuss when and how this decision will be made.
36. **Section 2.4.3.1, p. 2-138, paragraphs 2 and 3.** Please clearly identify the current tenant "Wagner."
37. **Section 2.4.3.1, p. 2-138, paragraph 5.** Please clarify if the surface water sheen was confirmed to be petroleum by analysis or if this sheen was presumed to be petroleum. Please clarify the phrase "open underground storage tanks." Indicate if these are open top tanks set into the ground far enough as to qualify as USTs (i.e., greater than 10% below ground) and discuss why is it necessary or appropriate that they be open, if they are storing petroleum based products. In addition, the text states that the containers and tanks "are stored in this yard" but then states that their removal is not documented; obviously if these tanks are still present their removal would not be documented. Please clarify. Also, if the tanks are still present, indicate if these tanks are being addressed under Subtitle I requirements regarding upgrade or replacement.
38. **Section 2.4.3.4, p. 2-141, paragraph 1.** Although it is recognized that IR 36 was evaluated originally under Parcel D, please explain why Parcel D "concentration of concern" values for lead continue to be used instead of Parcel E values.
39. **Section 2.5, p. 2-142, paragraph 1.** Please clarify if there is a substantive difference between the phrase "base-wide" and "facility-wide" with respect to remedial programs and if both refer to the HPS as a whole rather than individual parcels. Also, discuss if the various USTs indicated in previous sections as still remaining on HPS are slated for evaluation and/or action under the facility wide UST program.
40. **Section 2.5.1, p. 2-143, paragraph 2.** Please clarify the intent of sifting the sandblast waste and explain whether separated fractions were dealt with separately.
41. **Section 2.5.2, p. 2-143, paragraph 3.** Please indicate if the contaminated soil at former tank S-505 contains PCBs.
42. **Section 2.5.2, p. 2-143, paragraph 2.** Please provide a complete summary of all UST actions including those USTs identified in previous sections as being still in place. This information could be provided in a table.
43. **Section 2.5.5, p. 2-145.** Please clarify if the sediment removal in Basin I and Basin VII refers to base areas served by two storm drain systems or if these are actually basins (i.e., storm retention ponds); this may not be clear to the average reader from the general public.

44. Section 2.5.6, p. 2-145. Please clarify if it has been determined that no more free product recovery at IR-03 is achievable.
45. Section 2.5.7, p. 2-146, paragraph 1. Please indicate the nature of the technical difficulties experienced with the sheetpile wall in case the findings here are relevant to evaluation of remedial alternatives.
46. Section 2.5.8, p. 2-146, paragraph 1. Please indicate in accordance with Section 3.3.2.2 that additional free product recovery at IR-03 Waste Oil Ponds is considered in this FS.
47. Section 2.6.3, p. 2-148, paragraph 1. Please indicate whether risks to aquatic receptors in the bay adjacent to Parcel E, from groundwater discharges and/or surface water runoff have been evaluated and whether the results of any such assessment have been used to evaluate remedial alternatives for Parcel E.
48. Section 2.7, p. 2-149, paragraph 2. The approach to Parcel E DNAPL is deferred to the draft final Parcel E FS. Therefore, comments on this component will be made upon review of the draft final Parcel E FS report. However, please indicate why this data gap, which may involve a significant source term for groundwater contamination is "anticipated to have little impact" on the FS.
49. Section 2.7, p. 2-149, paragraph 4. Please specify the nature of the data gap related to ecological risk for the benefit of the public.
50. Section 2.7.1, p. 2-151, paragraph 2. Some words are missing in the next to last line that appear to relate to determination of sections to be studied. Please clarify.
51. Section 2.7.2, p. 2-151, paragraph 1. The text states the planned removal action will include soil near the steam line. For clarity, please include soil removal in the previous discussion on storm drain lines as well.
52. Section 2.7.2, p. 2-151, paragraph 2. Please clarify whether the vaults will be cleaned and/or removed along with the steam lines. If they are not removed, please discuss how potential contamination of the underlying soil will be detected. If the vaults are not proposed to be removed, please address the potential for their serving to channel infiltration of storm water into the subsurface. Please address whether pipe lagging will be handled and disposed as asbestos containing material (ACM).
53. Section 2.7.4, p. 2-153, paragraph 2. If the radium containing devices/soils are really of limited extent and found only in shallow soil, please consider that it may be simpler to remove them even if capping is selected. Please discuss this possibility.

SECTION 3, DEVELOPMENT AND SCREENING OF REMEDIAL ACTION ALTERNATIVES

General Comments

1. The presentation of various treatment technologies should, where appropriate, briefly restate the particular classes of contaminants which are being considered. For example, when physical or chemical treatment of organics are discussed, (see for example IR-03) most of the references are to petroleum contaminants. Please clearly indicate whether these are the only contaminants at IR-03 (or the other IR sites) that require treatment. It would be inappropriate to draw conclusions about technologies based only upon TPH if other organic COCs which would affect the viability of those technologies are present.
2. Since onsite placement at landfills is retained for several other IR sites, please verify that the total volume

of soils to be excavated is consistent with the estimated volume of fill needed at IR-01/21 and IR-02 Northwest; this should be included in the text.

3. At least one in-situ treatment for contaminated groundwater should be retained. Natural attenuation relies on the feasibility of in-situ bioremediation, so it is difficult to reject enhanced in-situ bioremediation without discussing the issues raised by this technology.

Specific Comments

1. **Section 3.1.1.1, p. 3-4, paragraph 3.** Please discuss briefly whether the individual target cleanup levels (TCLs) for contaminants have been developed to achieve a total risk within acceptable ranges from concurrent exposure to all contributors to that risk, for example under an additive risk assumption.
2. **Tables 3-2a, 3-2b, and 3-2c.** Most of the cleanup criteria exceed the Region IX PRGs, for example 34,000 mg/kg of MEK exceeds the PRG of 27,000 mg/kg. Some criteria exceed the respective PRGs by 1 to 2 orders of magnitude. Please explain.
3. **Section 3.1.1.2, p. 3-5 paragraph 2.** The text argues that any soil areas which are shown by future data to pose an ecological risk are expected to be small in volume compared to other areas with soil contamination, and that they would not require the development of different remedial processes than those considered in this FS. Please indicate that if such soil areas are identified by the future ecological evaluation, these areas will automatically be included in the pertinent category of site soils for remediation, (i.e. they will be removed, capped, etc.).
4. **Section 3.1.2.2, p. 3-7, last paragraph.** The text appears to refute the significance of the indoor air risk at IR-36; if this is true, the data summary in Section 2 should be updated to minimize confusion. Also, if the results of the additional soil gas survey do indicate risk, please discuss how and where the commitment to additional remedial action will be made, e.g., in the ROD or in the Remedial Design.
5. **Section 3.1.2.3, p. 3-10, paragraphs 1 and 2.** It appears that the primary argument against evaluating fish ingestion risks is the difficulty of assessing the contribution from HPS and the primary protective measure is the restriction on fishing. The "institutional controls" of banning fishing, while necessary and somewhat effective in controlling current risk, are not in the spirit of water pollution control laws which seek to promote "fishable and swimmable" end uses in waters of the state. The prohibition of fishing, like an institutional control on groundwater use should be adopted only if remediation is determined to be unfeasible rather than as a rationale for deciding that remediation isn't necessary.
6. **Section 3.1.2.4, p. 3-10.** This section includes RAOs for ecological receptors. Please clarify why these risks are not discussed in Section 2.
7. **Section 3.1.2.4, p. 3-11, paragraph 1.** The text cites the EPA and RWQCB positions regarding the POC for ecological receptors. For completeness, please provide a reference for this position (i.e., cite a document or correspondence to this effect).
9. **Section 3.3.2.4, p. 3-91, paragraph 5.** Please provide a clear rationale why permeable treatment beds will be rejected; it may not be sufficient to reject them only because they are innovative.
10. **Section 3.3.2.4, p. 3-91, last paragraph.** EPA policy, as provided in OSWER Directive 9200.4-17 requires source control as a component of any natural attenuation remedy. This policy should be discussed in this section and the extent to which source control can be achieved should be included in the evaluation of any Natural Attenuation alternative. It should also be noted that this OSWER directive does not mention

PCBs as candidates for natural attenuation.

11. Table 3-8, page 2. EPA recommends that at least one in-situ treatment for contaminated groundwater be retained; in-situ treatment for petroleum based organics is not an unreasonable concept. Given that natural attenuation (which has been retained) relies largely upon the feasibility of intrinsic bioremediation of organics, it is difficult to reject the possibility of enhanced in-situ bioremediation without discussion of the potential issues; however, it is also noted that in-situ bioremediation has not been discussed in Section 3. Please explain why an in-situ treatment technology was not retained; if one in-situ technology is not retained for the draft final FS, explain why.

SECTION 4, DEVELOPMENT AND DESCRIPTION OF REMEDIAL ALTERNATIVES

General Comments

1. A number of alternatives consider use of soils from various IRs as "fill" for IR-01/21 and IR-02 or as fill in the ponds at IR-03. For all of these alternatives the following issues should be addressed:
 - On a parcel-wide or site-wide HPS basis for reduction of risk, consolidation of wastes into a few restricted areas makes sense. A parcel-wide discussion of the total volume of "other soils" that could be consolidated and the total number of other sites that could be closed out using this option would be useful. Issues like whether the volume of available soil is sufficient to satisfy fill requirements, or whether the volume is too small or too large should also be discussed.
 - Please discuss whether EPA Guidance regarding non-contiguous sites applies to these options.
 - Please discuss how overall site- or parcel-wide costs are being optimized by using "solid waste" from some IR sites as "fill material" for the landfills.
 - Given that the text acknowledges that soil excavated from IR-03 may have RCRA Hazardous Waste Characteristics, please discuss how this soil can be redispersed in the lagoon without invoking RCRA Subtitle C requirements. Please specify if this soil will be treated to be non-hazardous. If the soil is treated, please discuss if this soil is subject to Integrated Waste Management Board requirements for redispersion at IR-03, given that the soil is from non-contiguous areas (i.e., from separate AOCs).
2. In general, the issues raised in comments on Section 3 concerning ongoing cleanup actions, which are restated in Sections 4.1 and 4.2, are also relevant to these sections and are not repeated here.
3. All alternatives should include a discussion under the Effectiveness criterion of whether Target Cleanup Levels (TCLs) would be met.
4. All alternatives involving equipment decontamination or other generation of wastewater should include a discussion of the disposition of wastewater. This should also be included in the cost estimates.
5. Natural attenuation should not be the sole technology applied to the groundwater alternatives. At least one treatment technology should be retained to address the potential that natural attenuation may not be sufficient or effective (note that at least 36 wells at the POC have contamination above criteria); in this case it would be necessary to implement a more active form of groundwater remediation. Inclusion of a groundwater treatment alternative that goes through evaluation under the nine criteria would avoid the necessity of reopening or revising the FS at some future date, and would hence, reduce the time required

to implement active groundwater remediation, should it be necessary to do so.

Specific Comments

1. **Section 4.1.3, p. 4-3, paragraph 2.** For completeness, please indicate where IR-51 will be addressed in the overall HPS feasibility study program.
2. **Section 4.1.8, p. 4-5, paragraph 2.** Please discuss if the sheetpile wall at the ponds will also require a groundwater extraction system like the one proposed for the landfill and if similar technical difficulties are expected.
3. **Section 4.2, p. 4-6, paragraph 1.** Please delete the word "apparently" from the first sentence because the use of this word implies that there is doubt that the data gap exists.
4. **Section 4.2.2, p. 4-7.** The text implies that the asbestos insulation has been removed from the steam pipes. Please clarify whether this is true and if not, indicate how the asbestos will be handled and disposed.
5. **Section 4.3.1, p. 4-10, paragraph 1.** Please indicate in the text whether EPA's presumptive remedy guidance provides for "regional" or in this case parcel-wide groundwater containment rather than source (landfill-specific) groundwater containment.
6. **Section 4.3.1, p. 4-10 and Table 4-2.** Please clarify why only No Action and containment alternatives are considered.
7. **Section 4.3.1.2, p. 4-11, paragraph 1.** The text states that the cap will render the exposure pathways incomplete. Please discuss how this applies to groundwater flowing through waste laterally.
8. **Section 4.3.1.2, p. 4-11, paragraph 1.** For completeness, this description of the cap layers should include a gas collection layer which is alluded to on page 4-13, paragraph 4. Please add a brief discussion of this feature.
9. **Section 4.3.1.2, p. 4-13, paragraph 2.** This section discusses shaping the cap for drainage. Please indicate if the changes in elevation and overall profile of the cap have been evaluated relative to visual impact or other community issues. Also, it should be noted here that materials imported from other areas of Parcel E as "fill materials" are, actually contaminated media being consolidated under the cap.
10. **Section 4.3.1.2, p. 4-14, paragraph 3.** For completeness, please include the projected O&M period when presenting present-worth costs for the various alternatives.
11. **Section 4.3.1.2, p. 4-14 and Section 4.3.1.3, p. 4-16, COST.** Please indicate whether the cost estimates have assumed that the necessary "fill" will be provided from other Parcel E soil or from imported fill and the potential difference in remedial cost between the two options. This raises the larger question of how the site-wide (parcel-wide) costs are affected by choices made for one set of sites; for example, the costs for those alternatives which consist of excavation of miscellaneous soils would be affected by the decision regarding the source of fill for IR-01/21 and IR-02. Please discuss how the interrelated alternatives will be handled.
12. **Figure 4-3.** Please consider adding to this and similar figures the locations of subsurface barriers that may be constructed for groundwater control. Although not formally part of this alternative, these barriers would give a good overall picture of the extent of protection. If it is considered inappropriate to add these

barriers to the soil alternatives, "supplemental" figures showing combined alternatives would be useful, or references could be made to the Section 5 figures.

13. **Section 4.3.1.3, p. 4-15, paragraph 1.** Please discuss to what extent the difference between Alternatives 2 and 3 is an artifact of having initially divided the HPS site into parcels and IR subsites, i.e. this entire area could be perceived as one "operable" unit.
14. **Section 4.3.2.1, p. 4-17, paragraph 3.** Please clarify why the no action alternative is considered to be protective in the short term. Also, please indicate how the contaminants would continue to "solubilize" into the groundwater (i.e., clarify if this statement refers to contamination below the water table) and migrate around the wall since the cap should prevent infiltration. Please revise the O&M costs to include the maintenance costs of the cap/sheetpile already in place.
15. **Section 4.3.2.2, p. 4-17, first bullet.** The description on page 4-26 for Alternative 4 indicates that soil excavated in IR-03 may be Characteristic Hazardous Waste under RCRA or California regulations, and the description on page 4-27 acknowledges the applicability of both LDRs and, by inference, the requirement for properly designed and constructed landfills for disposal. Please clarify why the potential for these soils to be classified as RCRA Hazardous Waste does not need to be discussed in Alternatives 2 and 3. Please explain if these soils can be redispersed in the lagoon under Alternatives 2 and 3 without invoking RCRA Subtitle C requirements or if they will be treated to non-hazardous levels prior to redispersion.
16. **Section 4.3.2.2, p. 4-18, last paragraph.** Please specify if the abandoned monitoring wells will be replaced to ensure adequate long-term groundwater monitoring for these disposal areas would be required.
17. **Section 4.3.2.2, p. 4-19, paragraphs 1 and 2.** Please explain why there is an the order of magnitude range in potential soil volumes. Please state where the debris sorting operation mentioned in the previous paragraph would be conducted.
18. **Section 4.3.2.2, p. 4-19, paragraph 3.** The text indicates that contaminated soil below the groundwater table would not be excavated. Please discuss how risk from contamination that remains in place will be minimized and discuss how this contamination will be monitored.
19. **Section 4.3.2.2, p. 4-20, paragraph 2.** Please indicate if the changes in elevation and overall profile of the cap have been evaluated relative to visual impact or other community issues. Also, note in the text that materials imported from outside the ponds as "fill materials" are actually contaminated media being consolidated under the cap.
20. **Section 4.3.2.2, p. 4-20, paragraph 3.** Please clarify if the costs for necessary pilot tests have been included in the cost estimates for the various alternatives.
21. **Section 4.3.2.2, p. 4-21, paragraph 2.** Bioslurping implies that there are vadose zone contaminants requiring treatment. Since this is the case, please indicate how the other alternatives, which do not include bioventing, address these vadose zone soils.
22. **Section 4.3.2.2, p. 4-21, paragraph 3.** Please indicate the types of surfactants and cosolvents that would be considered and discuss whether their use could increase the miscibility or mixture of product into the aqueous phase and reduce LNAPL recovery. Discuss the fate of PCBs if solvents are used; many solvents will mobilize PCBs, however, since PCBs are not volatile, they can only be recovered by pumping groundwater or recovering product by skimming or DPE.
23. **Section 4.3.2.3, p. 4-23, paragraph 4, p. 4-24, paragraph 4, and p. 4-25, paragraph 2.** Please discuss the mechanism for managing LNAPL in Alternative 3. If sheetpile is intended to be the method for

- LNAPL control, note that it is stated in the discussion under Alternative 1 that eventually the effectiveness of sheetpile will diminish as contaminants continue to dissolve. In addition, the wall itself may deteriorate over time. Please address how the sheetpile will continue to be effective for LNAPL containment and how long-term effectiveness will be maintained as the LNAPL continues to be a source of dissolved contamination in groundwater.
24. **Section 4.3.2.4, p. 4-26, paragraph 3.** Please discuss whether the presence of PCBs in IR-03 soil would trigger TSCA and how the presence of PCBs will affect the landfill class for soil disposal.
 25. **Section 4.3.2.4, p. 4-28, last paragraph.** The text states that the LNAPL is emulsified in the groundwater. Please discuss whether this is a two, three, or more phase emulsion (i.e., discuss whether the emulsion is LNAPL-water, air-LNAPL-water, air-LNAPL-water-soil, etc.). Please clarify how the removal equipment will effectively deal with emulsified product that is not a true separate phase.
 26. **Section 4.3.2.4, p. 4-29, last paragraph, sentence 2.** Placing excavated soil in a licensed landfill under Alternative 4 will reduce the mobility, but will not reduce the toxicity or volume. Please revise this sentence.
 27. **Sentence 4.3.2.4, p. 4-30, paragraph 1.** Please discuss how the costs for fill materials under the IR-01/21 and IR-02 cap are calculated. Specify if these costs assume the use of IR-03 material or if the costs assume offsite clean borrow soils.
 28. **Section 4.3.2.5, p. 4-30, first bullet and p. 4-31, paragraph 1.** Please discuss the rationale for landfilling the "visible" waste rather than placing it within the CAMU.
 29. **Section 4.3.2.5, p. 4-30, second bullet.** Please clarify why this alternative discusses the need for a CAMU since previous alternatives, which also involved redisposal of soil under the landfill area caps, did not.
 30. **Section 4.3.2.5, p. 4-31, last paragraph.** The text states that although the wastes are expected to be non-hazardous, they may exhibit hazardous characteristics; if so, wastes are *not* non-hazardous as stated. Please explain and revise for clarity.
 31. **Section 4.3.2.5, p. 4-32, paragraph 1.** The text discusses the criteria for designation of a CAMU. Please discuss the California CAMU rules in light of the uncertainty regarding the federal CAMU rule. For example, if the federal CAMU rule, which has been challenged, is not upheld, address how the state CAMU rule can apply, given that it will then be, arguably, less stringent than federal requirements for the corrective action program.
 32. **Tables 4-5 and 4-8.** Please discuss why these tables present only capital costs. Alternatives should be compared using a present worth basis including capital and present worth O&M over the maintenance period. Also indicate the assumed maintenance period for the various alternatives. If there is no maintenance period because the alternative involves only short-term construction such as excavation/offsite disposal, this should be indicated and the capital cost would be the present worth cost. However, alternatives that involve capping and barrier walls will involve some long-term maintenance to ensure the integrity of the containment system; this must be included in the costs.
 33. **Section 4.3.2.6, p. 4-36, paragraphs 2 and 3.** The text discusses various site specific parameters that may affect the suitability and cost of thermal desorption (TD) (e.g., presorting, moisture, LNAPL, etc.). Please discuss the assumptions that were made for purposes of the cost estimate for this technology and/or where these assumptions are noted. Please indicate what waste streams (i.e., baghouse fines, etc.) would

be generated during soil drying if needed and discuss assumptions that were made with respect to disposal of condensed oils.

34. **Section 4.3.2.6, p. 4-36 and Figure 4-7.** The actual temperature for TD may depend in part upon the particular organics to be treated. Based upon the contaminants at IR-03, please discuss the particular processing requirements.
35. **Section 4.3.2.6, p. 4-37, paragraph 1, p. 4-38, paragraph 2, and p. 4-39, paragraphs 2 and 3.** Please clarify metals at site IR-03 for which soil solidification and stabilization (S/S) would be required. The performance of S/S may vary significantly with the particular metal and treatment of multiple metals can be significantly more difficult than treatment of a single metal since the optimal treatment process and conditions may differ widely. On page 2-56, the text indicates that 17 metals were COCs at IR-03, including several that are amphoteric. Please discuss the applicability of the costed S/S variant (which appears to be cement/pozzolanic) for all of the metals of concern both singularly and in combination.
36. **Section 4.3.2.6, p. 4-37, paragraph 2.** Please indicate that a curing step may be needed following the mixing step, if the treated materials are not immediately ready for placement.
37. **Section 4.3.2.6, p. 4-37, paragraph 3 and Figure 4-8.** Figure 4-8 does not show all of the process components mentioned in this description. Please revise the figure to include the additive feed, water feed and possibly the soil curing components. Also, in some cases the soil will not be ready for placement immediately upon exit from the mixer. Please indicate the particular combined TD and S/S process discussed in the third paragraph of page 4-37 on the figure.
38. **Section 4.3.2.6, p. 4-37, paragraph 5 and Section 4.3.3.4, p. 4-57, paragraph 2.** As noted in previous comments, please clarify if placement of treated but contaminated material (reduced from RCRA hazardous to non-hazardous solid waste) at the landfill areas invokes Subtitle D equivalent requirements. Also please clarify if the only applicable "placement criteria" are the RCRA and California hazardous waste characteristics or whether the risk-based cleanup criteria still apply and if regulations allow these wastes to be redispersed on site (i.e., at another AOC) if they are under the future cap.
39. **Section 4.3.2.7, p. 4-40, paragraph 3.** Even though treatability testing will be required, please indicate whether the concentrations of COCs at IR-03 are within the range of contaminant levels at other sites where the solvent extraction process has proven effective. This provides an indication of whether site soil can be treated to the risk-based cleanup criteria and replaced as suggested.

Also, please specify the type of wastewater treatment system to which water from debris water would be directed.

40. **Section 4.3.2.7, p. 4-40, paragraph 4.** Please discuss whether any of these solvents (or a combination) would be effective for all of the organic COCs (including PCBs) that have been detected in IR-03 soil. If all of the COCs cannot be dissolved in one or a limited number of these solvents (applied in sequence), this should be stated as an additional reason to reject this alternative. A chemist should evaluate the feasibility of this process before the Draft Final FS is issued.
41. **Section 4.3.2.7, p. 4-41, last paragraph.** This section cites the COCs as SVOCs and TPH, whereas the previous alternative for TD did not mention the COCs. Please clarify why PCBs are not included in the COC list and be consistent in noting the types of contaminants and, where appropriate, the specific contaminants addressed by the various technologies.
42. **Section 4.3.2.8, p. 4-43, paragraph 1.** Please explain what would be necessary to make rail transport

feasible and discuss whether offsite intermodal transfer of waste would be required.

43. **Section 4.3.3.2, p. 4-46, paragraph 2.** Please indicate in this section why only single layer caps are being considered and why multi-layer caps are not considered necessary.
44. **Section 4.3.3.2, p. 4-47, paragraph 3.** This appears to be the first alternative that clearly mentions the ability to meet TCLs under the Effectiveness criterion. As with the COCs noted in previous comments, please be consistent in noting whether each alternative is expected to meet site-specific cleanup criteria.
45. **Table 4-7.** Footnotes to this table provide assumptions regarding split between hazardous and non-hazardous alternative. This information should be incorporated in the text to address previous comments.
46. **Section 4.3.3.2, p. 4-47, paragraph 4.** Please discuss if the ease of implementation is reduced somewhat by the fact that this involves a number of small caps, rather than a larger single cap. Also, discuss how the horizontal extent of each cap will be determined (e.g., pre-design sampling).
47. **Section 4.3.3.3, p. 4-48, paragraph 3.** Earlier comments regarding the applicability of the CAMU, possible waste redispersion restrictions and similar regulatory requirements also apply to this alternative.
48. **Figures 4-9 and 4-10.** Please revise the legend to indicate that the remediation areas may be outlined or completely shaded (in either blue or red) as appropriate.
49. **Figure 4-11.** Please add a footnote, as appropriate, if the sheetpile barriers require any lateral bracing or anchors for stability.
50. **Section 4.3.3.3, p. 4-49, paragraph 2.** It may be necessary to analyze soil samples for several indicator compounds, since, for example, the extent of soil containing lead may not be the same as the extent of soil contaminated with PCBs. The potential need for several analyses should be mentioned and included in the costs.
51. **Section 4.3.3.3, p. 4-50, paragraph 1.** This appears to be the first alternative that specifically addressed the disposal of wastewater. All alternatives that will generate wastewater should address this concern.
52. **Section 4.3.3.3, p. 4-50, paragraph 2.** The text discusses the criteria for designation of a CAMU. Please discuss the status of the California CAMU rule in light of the uncertainty regarding the federal CAMU rule. For example, if the federal CAMU rule, which has been challenged, is not upheld, address how the state CAMU rule can apply, given that it may be less stringent than federal requirements for the corrective action program.
53. **Section 4.3.3.3, p. 4-52, paragraph 1 and page 4-53, paragraph 3.** The text states that placement under the cap will reduce mobility of contaminants and prevent leaching to groundwater, which is accurate relative to groundwater currently in contact with Parcel E Miscellaneous Soils. However, please discuss if the lack of a subsurface barrier will allow groundwater to flow through waste laterally in the landfill area.
54. **Section 4.3.3.4, p. 4-55, paragraph 2.** The text discusses various site specific parameters that may affect the suitability and cost of TD (e.g., presorting, moisture, LNAPL, etc.). Please discuss the assumptions that were made for purposes of the cost estimate for this technology and/or where these assumptions are noted. Please indicate what waste streams (i.e., baghouse fines, etc.) would be generated during soil drying if needed and discuss assumptions that were made with respect to disposal of condensed oils. Finally, please discuss which COCs will be treated by TD at this site.

55. Section 4.3.3.4, p. 4-56, paragraph 3. The text indicates that Parcel E Miscellaneous Soils would be combined with IR-03 soil. Although, as noted in previous comments, this may appear to be a good idea, it has not been discussed for other IR sites. Please indicate whether economy of scale has been assumed in the cost estimate consistently for all sites. Also clarify the extent that economy of scale by combining site actions has been considered in the technical evaluation and cost, and also whether the comparison of alternatives depends on the ability to do so. Note that soil must be tested to determine if it is a RCRA hazardous waste before mixing occurs and that the mixing of soil cannot be used to reduce contaminant levels; if soil is hazardous before mixing, it must also be considered hazardous after mixing.
56. Section 4.3.3.4, p. 4-56, paragraph 3. Please discuss the metals in miscellaneous soils for which S/S would be required. The performance of S/S may vary significantly with the particular metal and treatment of multiple metals can be significantly more difficult than treatment of a single metal since the optimal treatment process and conditions may differ widely. Please indicate if the S/S variant (which appears to be cement/pozzolanic) has been shown to be applicable for all of the individual metals and also for the particular combinations of metals of concern.
57. Section 4.3.3.4, p. 4-56, paragraph 4 and Figure 4-8. Figure 4-8 does not show all of the process components mentioned in the description. Also see Comment 37.
58. Section 4.3.3.5, p. 4-59, paragraph 4. Please discuss assumptions that were made regarding the relative split between hazardous and non-hazardous disposal and in-state versus out of state landfills for costing purposes.
59. Section 4.3.3.5, p. 4-61, paragraph 5. The text indicates long-term effects for the removal activity. Assuming that there is, as indicated, a large volume of soil; please confirm that the projected construction period for this alternative is long enough to qualify as a long-term (rather than short-term) concern. Also, please discuss what the likely soil volumes are and the period of time the construction phase is expected to require.
60. Section 4.3.4, p. 4-62 and Table 4-9. It does not seem to be appropriate to use natural attenuation for *all* of the groundwater alternatives. At least one treatment technology should be retained for inclusion in an alternative. Discuss the possibility that in the absence of natural attenuation none of the alternatives will meet groundwater cleanup criteria (since for those that would, further attenuation is good, but not needed to address CERCLA criteria). It is not appropriate to rely upon natural attenuation for all alternatives, because if natural attenuation does not reduce contamination sufficiently, it will likely be necessary to implement a more active form of groundwater remediation. If this happens, and the alternative was evaluated in the FS, it will be much easier to implement active remediation.
61. Section 4.3.4, p. 4-63, paragraph 1. Please clarify why only two alternatives are considered for AOCs 1 through 12.
62. Section 4.3.4.2, p. 4-63, paragraph 4, p. 4-65, paragraph 3, and p. 4-71, paragraph 3; Section 4.3.4.4, p. 4-76, paragraph 3, and p. 4-78, paragraph 1; and Section 4.3.4.5, p. 4-79, paragraph 4 and p. 4-81, paragraph 2. For all alternatives that rely upon natural attenuation of groundwater, please clearly indicate the COCs for which natural attenuation is required and cite appropriate technical literature which supports the feasibility of natural attenuation for those specific COCs. Also please cite and discuss compliance with EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, (OSWER Directive Number 9200.4-17)* and any comparable state regulations and guidelines. It will not be acceptable to have groundwater contamination exceedances in 36 wells at the POC (46% of the 79 wells with contamination above HGAL adjusted screening criteria). Please discuss the percentage of "attenuation" that is due solely to dilution and existing data for degradation

or other true natural remediation mechanisms.

63. **Section 4.3.4.2, p. 4-64, bullets.** For technical accuracy, please revise the order so that source removal (bullet 3) precedes natural attenuation (bullet 2).
64. **Section 4.3.4.2, p. 4-66, paragraph 1.** The text states that "...COC concentrations in groundwater should comply with the HGAL-adjusted screening criteria without considering natural attenuation." This appears to contradict the statement on page 4-65 that groundwater from 36 wells will exceed criteria at the POC; please explain. Also please indicate the source for the K_d values used in the calculation of C_{soil} .
65. **Section 4.3.4.2, p. 4-66, paragraph 2.** Figure 3-2 presents the locations of the groundwater areas of concern, it does not present "the proposed excavation limits at each AOC" as stated in the text. Please revise.
66. **Section 4.3.4.2, p. 4-66, paragraph 3.** Please explain whether metals, pesticides and PCBs are among the COCs that exceed HGAL-adjusted screening criteria, and if so, discuss why natural attenuation is expected to remediate these COCs.
67. **Section 4.3.4.2, p. 4-66, paragraph 4.** Please explain the intent of sentence 3; it is unclear whether for soils as deep as 48 feet, the sheetpile will be used to prevent collapse or whether it will primarily be used for groundwater exclusion. Please discuss the required size of the surface disturbance to allow excavation to 48 feet, and whether it is possible to excavate to 48 feet through water.
68. **Section 4.3.4.2, p. 4-67, paragraph 2.** The text indicates that a sheetpile wall would be constructed around the capped area of the IR-01/21 and IR-02 NW debris zones; to avoid confusion it may be useful to mention this in the discussion of alternatives for IR-01/21 and IR-02 (in Sections 4.3.1 and 4.3.2 and also in relevant subsections) as well since this would provide some containment of the source areas in the debris zones. The text in this section (on page 4-70), refers back to the debris zone descriptions; it would aid the reader if installation of sheetpile is described or at least referenced.
69. **Section 4.3.4.2, p. 4-67, paragraph 3.** The text states that groundwater samples would be used "to verify that groundwater containing COCs at concentrations exceeding the HGAL-adjusted screening criteria have been removed..." This component does not involve groundwater extraction; please clarify whether this sentence was intended to refer to saturated soil removal. Also clarify that this statement does not indicate that groundwater exceeding HGALs will not be allowed to remain for natural attenuation but rather that soil will be removed until groundwater is below HGALs.
70. **Section 4.3.4.2, p. 4-67, paragraph 4.** Please discuss whether the large potential volume of soils (which may exceed the space under the cap) has been considered in combination with soil alternatives for miscellaneous soils relative to the effect on the economy of scale. As noted in comments on page 4-56, it is not clear whether economy of scale by combining soil for treatment has been assumed in the cost estimate consistently for all sites.
71. **Section 4.3.4.2, p. 4-68, paragraph 4.** Please clarify whether underground piping is really needed for this relatively short-term action. Discuss whether there are accessible points on the sewer system that would not require underground piping and if containerization and trucking is a viable option.
72. **Table 4-14.** This table provides POTW criteria and shows that essentially no treatment is required. See previous comments on the relative ease of discharge to the city versus direct discharge to the bay meeting NPDES criteria. Please consider adding the maximum observed concentrations in groundwater to this table so that the reader may assess the potential that some treatment may be required.

73. **Section 4.3.4.2, p. 4-69, paragraph 3.** Please clarify if the cap would be tied into the subsurface barrier. If not, or if there are areas where the subsurface barrier cannot be tied into the cap, such as the sheetpile which may be installed off-shore, explain what would happen to precipitation inside the barrier.
74. **Section 4.3.4.2, p. 4-71, paragraph 1.** Please discuss whether the groundwater monitoring specified in this section includes natural attenuation demonstration parameters and whether it complies with EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites, (OSWER Directive Number 9200.4-17)* and any comparable state regulations and guidelines.
75. **Section 4.3.4.2, p. 4-72, paragraph 2.** Please explain why groundwater disposal was considered to be an O&M cost if disposal of the groundwater removed from excavations during construction is the only requirement.
76. **Section 4.3.4.3, p. 4-72, paragraph 4.** Please explain how this alternative, which relies in part upon natural attenuation, addresses source control as specified in EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites, (OSWER Directive Number 9200.4-17)* and any comparable state regulations and guidelines.
77. **Section 4.3.4.3, p. 4-74, paragraph 3.** Unlike Alternative 3, in this case permanent underground connections for groundwater discharge seem reasonable due to the long term pumping and disposal requirement.
78. **Section 4.3.4.3, p. 4-74, paragraph 4, Section 4.3.4.4, p. 4-77, paragraph 5, and Section 4.3.4.5, p. 4-80, paragraph 4.** Please discuss whether the groundwater monitoring specified in these sections includes natural attenuation demonstration parameters and complies with EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites, (OSWER Directive Number 9200.4-17)* and any comparable state regulations and guidelines.
79. **Section 4.3.4.4, p. 4-78, final paragraph.** The final statement should be that the additional protection *does not justify* the additional cost, rather than the opposite as currently written.
80. **Section 4.3.4.5, p. 4-79, paragraph 1.** Alternative 5 appears to differ from Alternative 4 in that groundwater is discharged to the bay rather than to the POTW. Please discuss the relative treatment standards for these two alternatives and confirm that the reduction in discharge piping cost more than offsets the potential additional treatment costs to provide direct discharge over the 30 year period.
81. **Section 4.3.4.5, p. 4-80, paragraph 3.** Please discuss whether there are any conditions under which an NPDES permit *would not* be required.

SECTION 5.0, DETAILED ANALYSIS OF ALTERNATIVES

General Comments

1. To the extent that Section 5 combines technologies and alternatives from previous sections, many of the specific comment on those sections will be relevant here, and are not repeated in detail, in the interest of brevity. Changes made to Section 4 in responding to comments should be reflected in Section 5.

Specific Comments

1. **Figure 5-1.** Please include roads and match points on the inset so that the reader can easily see how IR-52

intersects Parcel E.

2. **Section 5.1.2, p. 5-6, paragraph 1 and p. 5-7, paragraph 1.** Please explain how the total area requiring single or multi-layer capping (163 acres) can exceed the total size of Parcel E (135 acres, Section 2.0, p. 2-1, paragraph 1, sentence 5). The language on p. 5-10, (paragraph 3, last sentence) further implies that there is more land that will not be capped. It is unclear whether the area of IR-36 is included in either estimate and whether this could account for the discrepancy. Please resolve these discrepancies and revise the cost of this (and other) alternative(s) as necessary.
3. **Section 5.1.2, p. 5-6, paragraph 3, and Figure 5-1.** Please indicate where the wetland would be located, if selected. Discuss whether construction of a wetland would impact the City's planned reuse of Parcel E. Also, please discuss whether the capped areas would be available for future. If not, clarify if these capped areas will be fenced or otherwise secured from entry by persons using other areas of Parcel E.
4. **Section 5.1.2, p. 5-6, paragraph 4.** For a clay cap, please indicate the type of surface that will be applied to prevent damage during recreational activities (e.g., topsoil and vegetation).
5. **Section 5.1.2, p. 5-6, paragraph 4.** Please discuss the demolition of remaining structures and removal of existing surfaces (i.e., asphalt, concrete, etc.) required for construction of this cap. Clarify whether this demolition was included in the cost estimate.
6. **Section 5.1.2, p. 5-7, paragraph 2.** Please specify how the junction between slurry wall sections and sheetpile sections will be sealed. Please address any concerns over the ability to seal between slurry wall sections by the DSM technique.
7. **Section 5.1.2, p. 5-7, paragraph 2.** Please discuss the control of incidental rainfall and percolation into Parcel E. Although the areas are well contained, it seems possible that over a 113-acre area some rain may get through on a localized basis as implicitly acknowledged on page 5-8, paragraph 3 and page 5-10, paragraph 1. If so, please discuss the need for possible long-term dewatering, with potential discharge to the POTW.
8. **Section 5.1.2, p. 5-7, paragraph 3.** In areas where the wall has to be installed a short distance off shore, the area behind the wall will be backfilled. Please discuss permitting (or equivalent) requirements for filling along the shore.
9. **Section 5.1.2, p. 5.8, paragraph 1.** Please clarify the statement that groundwater monitoring is not feasible. While this is true in the classical sense of monitoring groundwater "downgradient" from containment units, please indicate if wells will be retained within the capped areas to monitor groundwater conditions. Note that on page 5-9 it is stated in the text that IR-03 would be capped instead of clean closed, with post-closure care. This language formally raises the typical post-closure requirement for groundwater monitoring.
10. **Section 5.1.2.2, p. 5-10, paragraph 3, and Figure 5-1, also Section 5.1.3.2, p. 5-30, paragraph 3 and Figure 5-2.** Please indicate the locations of the two wetland areas that need to be filled on these figures. Also discuss the status of these wetlands, including whether they are officially recognized as wetlands or if they simply have hydrophilic vegetation.
11. **Section 5.1.2.2, p. 5-10, paragraph 3.** The text indicates that groundwater contaminant concentrations will attenuate over time; please indicate the mechanisms for attenuation once containment is in place. In addition, please discuss the applicability of natural attenuation under EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, (OSWER*

Directive Number 9200.4-17) given that the source term LNAPL will not be removed under this alternative.

12. **Section 5.1.2.5, p. 5-15, paragraph 2.** It would be difficult to construct a wetland in areas where remediation has occurred without disturbing the constructed caps. Please describe how wetlands would be constructed given that the elevation of the ground surface in capped areas will increase and that groundwater flow will be contained. Also, please cite applicable ARARs regarding mitigation here or on page 5-9.
13. **Section 5.1.2.8, p. 5-18.** The statement regarding capping as a presumptive remedy only applies to landfills, it does not apply to capping areas with soil contamination. Please revise this statement.
14. **Section 5.1.3, p. 5-19, paragraph 1.** Several Section 4 comments apply to this alternative including: (1) regulations for consolidating solid waste in one area for redisposal (e.g., Section 4, General Comment 1); (2) EPA policy regarding the use of natural attenuation (e.g., Section 4, Specific Comments 62, 74, and 76). The response to these comments should be incorporated into this alternative as appropriate.
15. **Section 5.1.3, p. 5-20, paragraph 2.** Please clarify why there is an order of magnitude range in potential soil volumes. Please specify if abandoned wells would be replaced.
16. **Section 5.1.3, p. 5-20, paragraph 3.** Please clarify why the capped area at IR-03 is different from that in Alternative 2 (6 acres versus 10). On the figures both areas appear to be similar.
17. **Section 5.1.3, p. 5-21, paragraph 3.** Please discuss any available data that shows whether the contaminated soils are suitable (structurally) as foundation material for the cap. If these data are not available, indicate when the data would be collected and discuss alternatives if the material is found to be unsuitable.
18. **Section 5.1.3, p. 5-22, paragraph 1.** Refer to previous comments regarding the application of the CAMU to these wastes. Please clarify why a CAMU designation is not required at IR-03.
19. **Section 5.1.3, p. 5-23, paragraph 1.** The text refers to compliance with rules for landfill operations. ARARs for landfill caps are noted on page 5-41, paragraph 4. Please address whether placement of even non-hazardous waste in a "landfill" operation can be conducted without triggering Subtitle D or Integrated Waste Management Board design/construction requirements.
20. **Section 5.1.3, p. 5-23, paragraph 2.** Please clarify if groundwater monitoring is required for IR-03, whether or not it is considered a CAMU.
21. **Section 5.1.3, p. 5-24, paragraph 3, Section 5.1.3, p. 5-26, paragraph 3, Section 5.1.3.1, p. 5-29, paragraph 4, and Section 5.1.3.4, p. 5-36, paragraph 3.** The text states that contaminant concentrations in groundwater will attenuate over time; please discuss the mechanisms that will drive attenuation once the containment is in place. In addition, please discuss the applicability of natural attenuation under EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, (OSWER Directive Number 9200.4-17)* and whether the groundwater monitoring program will comply with the demonstration requirements in that guidance. Also, please cite literature on the applicability of natural attenuation for the specific COCs at these sites.

Explain why treatment is not required for groundwater in the vicinity of the seven wells where contaminant concentrations exceed or will exceed the HGAL adjusted criteria.

22. **Section 5.1.3, p. 5-26, paragraph 4.** Please discuss how incidental rainfall and percolation into Parcel

E AOCs will be controlled. As recognized on page 5-28, infiltration may be minimized but not totally eliminated.

23. **Section 5.1.3.9, p. 5-42, paragraph 1.** The statement regarding the use of the presumptive remedy only applies to the landfills, it does not apply to Parcel E as a whole. Please revise.
24. **Section 5.1.3.9, p. 5-42, paragraph 1.** Please explain the basis and nature of the community concern about locating a CAMU at HPS.
25. **Section 5.1.4, p. 5-42, paragraph 5.** Please refer to previous comments regarding:
 - Regulations for consolidating solid waste in one area for redisposal.
 - EPA policy regarding the use of natural attenuation.
 - Management of infiltration within encapsulated areas.
 - ARARs for Alternative 3.
 - For descriptions and evaluation criteria which reference Alternative 3, comments on those components of Alternative 3 apply to this alternative.
26. **Section 5.1.4, p. 5-44, paragraph 1.** If saturated soils are excavated below the water table, please discuss the method to be used to dewater them for disposal. Also, discuss disposition of the water generated by dewatering.
27. **Section 5.1.4, pp. 5-44 and 5-45.** The text states that groundwater contaminant concentrations will attenuate over time; please specify the mechanisms for attenuation once the containment is in place. In addition, please discuss the applicability of natural attenuation under EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, (OSWER Directive Number 9200.4-17)* and whether the groundwater monitoring program will comply with the demonstration requirements in that guidance. Also, please cite literature on the applicability of natural attenuation for the specific COCs at these sites.
28. **Section 5.1.4, p. 5-44, paragraph 2.** Please discuss the types of surfactants and cosolvents which might be considered, previous experience with their use and their possible effect on increasing the miscibility of product in the aqueous phase and hindering recovery.
29. **Section 5.1.4.2, p. 5-46, paragraph 2.** Please address how the excavation of IR-03, as described on pages 5-43 to 5-44, would comply with clean closure regulations. Removal of only visibly contaminated soils will not meet clean closure requirements; confirmation sampling is required. Please specify if confirmation sampling will be conducted at the base and side walls of the excavation. It seems likely that if product is observed at the water table, excavation below that point may not remove all waste and waste constituents as required for clean closure. This seems to be acknowledged on page 5-48, paragraph 1. If clean closure is not achieved, post closure care similar to that noted for Alternative 3 may be required.
30. **Section 5.1.4.3, p. 5-48, paragraph 2.** Please discuss whether anchors or tiebacks are needed for the sheetpile walls and if seismic requirements affect the design of the sheetpile wall.
31. **Section 5.1.4.6, p. 5-51, paragraph 6.** Please discuss the assumptions that were made for the cost estimate regarding offsite disposal of visibly contaminated soil and soil that may fail LDRs. If these soils are contaminated primarily with TPH, please consider soil recycling as an option.
32. **Section 5.1.5, p. 5-53, paragraph 3.** Please refer to previous comments regarding:

- Regulations for consolidating solid waste in one area for redisposal.
 - EPA policy regarding the use of natural attenuation.
 - Management of infiltration within encapsulated areas.
 - ARARs for Alternatives 3 and 4.
 - Comments on descriptions and evaluation criteria which reference Alternative 3, also apply to Alternative 5.
33. Section 5.1.5, p. 5-54, paragraph 2. Please explain whether the range in miscellaneous soil volumes reflects the three different cleanup scenarios, or discuss the reason for the range.
34. Section 5.1.5., p. 5-54, last paragraph. Please indicate the temperature range that is considered appropriate for destruction the Parcel E COCs. It is possible that some TD configurations or particular systems may not provide the capability for higher temperature operation. Therefore, if TD is selected the design would have to specify a temperature range or require a performance test.
35. Section 5.1.5, p. 5-55, paragraph 1 and Figure 5-4. It would be useful to show the general location of the various treatment system components, e.g., soil staging, sorting, TD, S/S, post-treatment/staging on Figure 5-4.
36. Section 5.1.5, p. 5-55, paragraphs 1 and 4. If water is used to quench soils, please discuss how any water generated during this process will be managed and how the soils will be dewatered for redisposal, since it is unclear if evaporation from the hot soils would remove sufficient moisture.
- The moisture removed from feed materials will likely be contaminated, so it should not be used as quench water for treated soil unless the water is also treated to remove contamination; this will ensure that soil is not recontaminated.
37. Section 5.1.5, p. 5-56, paragraph 1. If other solid waste streams such as cyclone and baghouse fines are generated, please discuss the source of these materials and contaminants that may be present. Also address the resulting volume increase for redisposal and regulations that may apply to importing solid waste for use in this operation (and therefore redispersing the imported wastes onsite).
38. Section 5.1.5, p. 5-56, paragraph 5, and p. 5-57, paragraph 1. Please specify which metals are suitable for treatment by S/S technologies. As noted in previous comments, S/S performance may vary significantly with the particular metal and treatment of multiple metals can be significantly more difficult than treatment of a single metal because the optimal treatment process and conditions may differ widely.
39. Section 5.1.5, p. 5-57, last paragraph and page 5-58, paragraph 2. The text indicates that groundwater contaminant concentrations will attenuate over time; please discuss the mechanisms for attenuation. In addition please discuss on the applicability of natural attenuation under EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*, (OSWER Directive Number 9200.4-17) and whether the groundwater monitoring program will comply with the demonstration requirements in that guidance. Also please cite literature on the applicability of natural attenuation for the specific COCs at these sites.
40. Section 5.1.5, p. 5-57, paragraph 2. The requirement for a curing period should be noted; the "pasty mixture" will not typically be placed in that state. Also, the treatment process in this case should be specified so that a finished product that is soil-like or at least workable (i.e., not cement like or monolithic) to enable its placement and grading is the end result of the treatment process. In actuality "solidification" is not the process goal, but "stabilization" is the treatment goal.

41. **Section 5.1.5, p. 5-57, paragraph 3.** If the treated soil is used as foundation material, the placement process is likely to occur over an extended period of time. Please discuss the type of temporary controls that will be needed to control runoff, erosion, etc. of the placed foundation material prior to commencement of the capping process.
42. **Section 5.1.5, p. 5-57, paragraph 5 and p. 5-58, paragraph 3.** The text indicates that groundwater collected from the interceptor trench will be pretreated and discharged to the POTW. Table 4-14 provides POTW criteria, and shows that essentially no treatment is required (as noted previously, it would be useful to add the maximum observed values to this table to assess the potential that some treatment may be required). It may be more cost effective to pay periodic surcharges to the POTW for parameters like TSS rather than to provide treatment onsite. Please discuss the assumptions that were made in the cost estimate regarding pretreatment and disposal costs. It is possible that groundwater collected from the interceptor trench will not contain high levels of solids; if the trench includes a gravel bed and the PVC pipe is wrapped in geotextile fabric, the actual solids in the collected water should be low.
43. **Section 5.1.5, p. 5-58, paragraph 5 and p. 5-59, paragraph 2.** Please discuss the projected volume of water that will be collected from the trench and how the equalization capacity has been determined. Also, please include the location of Pump Station A on Figure 5-4.
44. **Section 5.1.5, p. 5-59, paragraph 3.** In the second sentence, something appears to be missing; it says "because..." and then the rest of the sentence does not make sense.
45. **Section 5.1.5.2, p. 5-60, paragraph 4.** The last sentence, "...to determine the type of solid waste would be used " is confusing. Please clarify.
46. **Section 5.1.5.2, p. 5-61, paragraph 1.** Please address whether the RCRA rules for Temporary Treatment Units (TTUs) (or California equivalents) are ARARs for this alternative. Storage of untreated soil must also comply with state regulations regarding eliminating possible runoff and discharge into the bay.
47. **Section 5.1.5.3, p. 5-62, paragraph 3.** Please indicate if the S/S studies cited provide data on mixtures of metals similar to those to be stabilized in Parcel E soils.
48. **Section 5.1.5.3, p. 5-63, paragraph 3.** Please discuss if anchors or tiebacks are needed for the sheetpile walls and if seismic requirements affect the design of the sheetpile wall.
49. **Section 5.1.5.4, p. 5-64, paragraph 2.** The text states that TD condensate as well as LNAPLs would be destroyed by offsite incineration. Please also include the potential for recycling at least some of these materials since this is being considered as a option in previous alternatives.
50. **Section 5.1.5.5, p. 5-69, paragraph 4.** Please clarify why the groundwater discharge period for this alternative is to be indefinitely rather than the 30 years assumed in other alternatives. The period is actually indefinite for all of the alternatives that involve collection of groundwater, so all alternatives should be compared on an equal basis, i.e., the standard 30-year period.
51. **Section 5.1.5.6, p. 5-70, paragraph 3.** The list of metals cited here for S/S is different than those noted on page 5-64. Please explain that some of these metals are amphoteric and consider that a single pH value, as cited generically on page 5-64, may not be appropriate. As previously noted, S/S performance may vary significantly with the specific metals present and the discussion should address those metals of concern at for this alternative.
52. **Section 5.1.5.6, p. 5-70, paragraph 4.** Please clarify the basis and justification for the 90% or greater

- reduction in mobility efficiency requirement. Discuss actual requirement for reduction in mobility.
53. **Section 5.1.5.6, p. 5-71, paragraph 4, and Section 5.1.5.9, p. 5-73, paragraph 2.** These paragraphs are inconsistent; page 5-73 indicates possible public concern over S/S emissions while page 5-71 states that there will be no such emissions. Please resolve this discrepancy.
54. **Section 5.1.6, p. 5-73, and remainder of Alternative 6.** Please refer to previous comments regarding:
- EPA policy regarding the use of natural attenuation.
 - Comments on descriptions and evaluation criteria which reference previous alternatives may apply to Alternative 6 as well.
 - Discharge of groundwater to the POTW.
55. **Section 5.1.6, p. 5-74, paragraph 3.** Please indicate if this excavation of IR-03 would be the same as in previous alternatives, i.e., only limited excavation into the groundwater table regardless of the depth of contamination. If this is true, contamination will remain in place, and clean closure or excavation to cleanup criteria may not be achieved. Please address post-closure monitoring for this potential outcome.
56. **Section 5.1.6, p. 5-75, paragraph 1.** Please discuss the assumptions that were made in the cost estimate regarding the quantities of soil disposed by each method and also discuss assumptions relative to in-state/out-of-state disposal.
57. **Section 5.1.6.3, p. 5-78, paragraph 1.** Please discuss if anchors or tiebacks are needed for the sheetpile walls and if seismic requirements affect the design of sheetpile wall as well.
58. **Figure 5-5.** Please locate Pump Station A on this figure.
59. **Section 5.1.7, p. 5-83.** Please refer to previous comments regarding:
- Regulations for consolidating solid waste in one area for redisposal.
 - EPA policy regarding the use of natural attenuation.
 - Management of infiltration within encapsulated areas.
 - Comments on descriptions and evaluation criteria which reference previous alternatives may apply to Alternative 7 as well.
 - Discharge of groundwater to the POTW.
60. **Section 5.1.7, p. 5-83, paragraph 5.** Please discuss the rationale for landfilling the "visibly" contaminated soil rather than placing it beneath the debris zone cap.
61. **Section 5.1.7, p. 5-85, paragraph 2.** The text indicates that groundwater contaminant concentrations will attenuate over time; please discuss the contaminant-specific mechanisms for attenuation. In addition, please discuss the applicability of natural attenuation under EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, (OSWER Directive Number 9200.4-17)* and whether the groundwater monitoring program will comply with the demonstration requirements in that guidance. Also please cite literature on the applicability of natural attenuation for the specific COCs at these sites.
62. **Section 5.1.7, p. 5-85, paragraph 3.** Please discuss how incidental rainfall and percolation into encapsulated Parcel E AOCs will be controlled. As recognized on page 5-8, infiltration may be minimized but not totally eliminated. Since groundwater contaminant concentrations in these areas may remain above criteria, particularly if excavation cannot remove all sources, long term collection, treatment and discharge

would be needed.

63. **Section 5.1.7, p. 5-85, paragraph 4.** Since groundwater extraction and pretreatment is not conducted under this alternative, protection of the bay relies upon natural attenuation after source (soil and LNAPL) removal is complete. Please confirm that the groundwater monitoring program will comply with the demonstration requirements under EPA *Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, (OSWER Directive Number 9200.4-17)*.
64. **Section 5.1.7, p. 5-87, paragraph 3.** Until the natural attenuation process is documented through long-term monitoring, it cannot be stated with certainty that this alternative is protective of groundwater receptors, including aquatic life in the Bay, unless it can be definitively stated that following removal actions *all remaining groundwater contamination* will be below standards (in which case, logically, groundwater monitoring would not be necessary). Please revise.
65. **Section 5.1.7.4, p. 5-88.** This section does not address whether Alternative 7 will result in any reduction of mobility, toxicity, or volume. Please revise.
66. **Section 5.1.8, p. 5-93.** Please refer to previous comments regarding:
 - EPA policy regarding the use of natural attenuation.
 - Management of infiltration within encapsulated areas.
 - Comments on descriptions and evaluation criteria which reference previous alternatives may apply to Alternative 8 as well.
 - Discharge of groundwater to the POTW.
67. **Section 5.1.8.4, p. 5-97, paragraph 1.** Under the heading Destruction of Toxic Hazardous Substances, the text states that natural attenuation will reduce groundwater contamination concentrations. Please state clearly which of the COCs will be attenuated by *destruction*, to support including this statement in this section.
68. **Section 5.2.1, p. 5-101, paragraph 2.** EPA disagrees with the statement that treatment is only slightly more protective because the statutory preference for treatment is based on the presumed destruction of toxic substances while containment could always, in principal, fail.
69. **Section 5.2.1, p. 5-101, paragraph 3.** In addition to increasing the rate of cleanup, achieving the cleanup goal in a shorter period of time, source (LNAPL) removal will be required for alternatives which rely upon natural attenuation to meet cleanup criteria.
70. **Section 5.2.3, p. 5-103, paragraph 1.** The statement that consolidation under a cap and offsite disposal are equally protective conflicts with the statement on page 5-101 (paragraph 2 in Section 5.2.1) that offsite disposal is more protective than consolidation under the cap. Please resolve this discrepancy.
71. **Section 5.2.3, p. 5-103, paragraph 3.** There are internal contradictions in the arguments for long-term effectiveness and permanence as shown by the conflict between text in paragraph 3 on page 5-103 where it is stated that removal of saturated soil is better than containment, collection and treatment (and concludes that Alternatives 7 and 8 are better than the other alternatives) and the last paragraph in this section on page 5-104 (paragraph 3) which indicates that containment is better because this component has parcel wide impact rather than addressing only a portion of the parcel (concluding that Alternatives 2 through 6 are better than 7 and 8). Please resolve these contradictory arguments.

In order for groundwater discharge to the bay to be more protective than discharge to the POTW, it would

seem that treatment before discharge to the bay would be required (unless groundwater already meets standards by natural attenuation in which case discharge to either the bay or the POTW is equally protective), but this is not provided in Alternative 3. Assuming that the POTW also treats the groundwater prior to discharge to the same bay, either would appear to be equally protective. Please resolve.

72. **Section 5.2.4, p. 5-105, paragraph 7.** Because LNAPLs will be recovered by skimming and then either recycled or destroyed, the mass of hazardous substances in LNAPLs and hence in groundwater will be reduced in Alternatives 3 through 8. Revise the text.
73. **Section 5.2.6, p. 5-108, last paragraph.** The text states that onsite disposal will have a lower impact than offsite disposal; however, offsite disposal requires only loading trucks while onsite redisposal requires controlled placement, compaction and grading at a minimum. Therefore, onsite redisposal actually involves greater impact to HPS from remediation and construction-related activity.
74. **Section 5.2.6, p. 5-109, paragraph 3.** To state that engineering controls for excavation in the tidal zone would be "extreme" is an overstatement. Excavation in shallow tidal areas is a relatively routine operation. Please revise.
75. **Section 5.2.6, p. 5-109, last paragraph.** This paragraph argues that discharge to the bay is easier than treatment and discharge to a POTW because discharge to the bay requires treatment. In addition to being internally inconsistent (i.e., discharge to POTW also requires "treatment"), this sentence is logically incorrect because the degree of treatment for bay discharge is higher than for POTW discharges and therefore treatment for bay discharge is harder, not easier. Furthermore, as previously noted, if the groundwater is clean enough to discharge to the bay under Alternatives 3 and 4 (another inconsistency in this paragraph) then it is most likely clean enough to discharge to the POTW (or, for that matter, to not require containment at all). Please revise for consistency and clarity.
76. **Section 5.2.** It is unclear why a table summarizing the comparative ranking of the alternatives was not included in the FS. Please explain how the Navy intends to select an alternative without understanding how the alternatives would be ranked in comparison with each other. Cost cannot be the sole determining factor.
77. **Table 5-3.** The totals shown for Alternative 2/Scenario 1, Alternative 4/Scenario 3, and Alternative 7/Scenario 1, do not match the totals provided in Appendix G.

APPENDIX D

1. **Section 2.0, P. D-2, paragraph 1.** The text indicates an in-place volume of 385,000 cy. Please explain why it was considered necessary or appropriate to calculate the excavated volume (i.e., discuss whether this was done for disposal calculations).
2. **Section 2.0, p. D-2, paragraph 2.** Based on the site history, it appears that asbestos should be included in the list of COCs.
3. **Section 2.0, p. D-2, paragraph 3.** It is unclear whether the residential and industrial use scenarios include the assumption that these sites would be backfilled to existing (rather than original pre-landfill) grade for redevelopment. Please also discuss the extent to which excavation (without backfill) would result in the current boundary zones of these sites being submerged with the creation of a new shoreline and whether it would be necessary to backfill these sites if this occurred.

4. **Section 3.0, p. D-4, paragraph 2.** Because these sites are on the shoreline the RAOs should include preventing migration of contaminants to the bay. This RAO can apply to soil as well as to groundwater, so containment as well as excavation may be applicable.
5. **Section 4.1, p. D-5, last paragraph.** It is unclear whether a debris sorting step (beyond the obvious segregation of radium) is a potential component of this operation. Please discuss the extent of backfill operations, particularly for areas near the bay.
6. **Section 4.2, p. D-6, and Section 4.4, p. D-7.** The text states that this action would not address other remedial units. This is equally true for the discussions in Section 4 for all of the remedial units, but this statement was not made for the other units in Section 4. Please explain why this was noted specifically for this alternative.
7. **Section 5.0, p. D-7, paragraph 3.** It is insufficient to conclude that because this technology is not "easily" implemented it should be rejected. Many technologies which are not "easy" are still feasible. Please provide additional justification for rejecting this technology.

APPENDIX E

1. DAFs are not being used for the Parcel B remedial action monitoring plan. Please explain why the DAF model should be applied to Parcel E groundwater.
2. **Section 2.0, p. E-2, paragraph 2.** The HGALs were discussed in the RI, but a brief summary of how they were developed should be included in the FS.
3. **Section 2.0, p. E-5, paragraph 2.** The text states that DAFs are chemical and location-specific. However, many chemical (and hydrogeologic) parameters were derived from the literature (Section 2.2.3, p. E-1-7, paragraph 1, sentence 2 and Table E-1-2). This seems to contradict the site-specific nature of the DAF calculations.

The potential fate of chemicals in the environment is discussed on page E-1-8. However, the discussion does not include additional chemical interactions such as cosolvency for organics, chelation and speciation of inorganics that may alter the distribution and sorption properties of chemicals in groundwater. Please explain whether these possibilities are considered in the DAF calculations. These additional interactions may be significant because the sensitivity analysis indicated that K_d as well as source parameters had the greatest significance on model results.

4. **Section 2.2.1, p. E-1-6, paragraph 2.** The text notes that the DAF calculation assumes that the release continues 1 year after source removal. Please discuss how DAFs would be applicable for scenarios where the source is not removed, for example, in areas where excavation does not continue below the water table but contamination extends to below the water table. It appears that DAFs should only used for those alternatives that involve complete source removal.
5. **Section 2.2.3, p. E-1-9, paragraph 3 and Section 2.3, p. E-1-10.** The text states that the model prediction in the source well was compared to the actual measured concentration ("for simplicity assumed to be 100 $\mu\text{g/L}$ ") [emphasis added]. This does not make sense. It appears that assumed values instead of actual values were used to compare model results. Without comparison of model predictions to actual values, it is unclear how the model can be validated. Please explain.
6. **Section 3.0, p. E-1-10.** The text concludes that the DAFs are generally conservative by not considering chemical and biological degradation. However, a number of the COCs, including the metals and

recalcitrant organics are, at best, minimally degraded by these processes. Therefore the DAFs for these analytes would not necessarily be conservative. Please revise the conclusion.

7. **Table E-4.** Please provide the units for the DAF adjusted screening criteria.

APPENDIX F

General Comments

1. **Section 3.0, p. F-3.** This section states that the figures for the former Parcel D sites, IR 36 North, IR 36 South, and IR 36 West, are included as Attachment F-2. However, the figures that were provided only apply to Scenario 3 and are not appropriate for evaluation of soil volumes for Scenarios 1 and 2. Please provide the figures for Scenarios 1 and 2.
2. **Figures F-2-1, F-2-2, and F-2-3.** These figures do not correspond to the tables for IR sites 36 North (Tables F-2L and F-3L), 36 South (Tables F-2M and F-3M), and 36 West (Tables F-2N and F-3N) respectively, and cannot be used to evaluate the areas and soil volumes proposed for remediation under risk assessment Scenario's 1 and 2.

Specific Comments

1. **Tables F-2D, Remediation Area 02C-3.** This remediation area is proposed to be excavated to 2 feet, which is less than a minimum 1 foot below the deepest contaminated sample. If the excavation is limited by the depth to groundwater, please indicate this on the table, otherwise, revise the depth.
2. **Table F-2D, Remediation Area 02C-4.** The proposed depth of this remediation is less than 1 foot below the most contaminated sample. This excavation should be deeper.
3. **Table F-2I.** Boring IR14B008 (section BC-33) in Figure F-9 is shown with contamination due to arsenic and beryllium posing a risk greater than $1.0E-5$. Please explain why this area was not designated a de minimus cleanup area or included in an area requiring remedial action.
4. **Table F-2J, Remediation Area 12-1.** In the Risk Assessment Findings for Remediation Area 12-1, the maximum depth of contamination discussed is 6.25 feet. Please explain why the proposed excavation was projected to extend to 12 feet instead of to an 8 or 9 foot depth.
5. **Table F-2L, Remediation Area 36N-1.** Please provide the rationale for the proposed excavation in Remediation Area 36N-1 to 12 feet based on the risk due to the arsenic sample from 3.25 feet. The greatest depth of other contaminants (Figure F-2-1) is 6.25 feet.
6. **Table F-3D, Remediation Area 02C-3.** This remediation area is proposed to be excavated to 2 feet, which is less than a minimum 1 foot below the deepest contaminated sample. If the excavation is limited by the depth to groundwater, please indicate this on the table, otherwise, revise the depth.
7. **Table F-3H, De minimus area DA-2.** De minimus area DA-2 is listed with an ELCR of 9×10^{-7} , which is less than the 10^{-6} cleanup criteria. Please provide rationale for the proposed remediation of this area.
8. **Table F-3H, De Minimus Area DA-4.** The proposed excavation depth of de minimus area DA-4 is listed as 14 feet. The depth of contamination listed in the remedial action findings and also in Figure F-8 is 8.5 feet. Please verify proposed excavation depth and consider reducing the depth to 10.5 or 11 feet.

9. **Table F-3I, Remediation Area 11/14/15-5.** The proposed depth of excavation in this area is four feet and the risk assessment findings state that the maximum depth of contamination of 3.75 feet. Please provide the rationale for a proposed excavation to only 4 feet instead of to 6 feet.
10. **Table F-3J, De Minimus Area DA-3.** The Risk Assessment Findings for De Minimus Area DA-3, states that the excavation is based on surface contamination, yet the proposed depth is 4 feet instead of to 2 feet. Please justify the additional 2 feet of excavation.
11. **Table F-3K, Remediation Area 13-2.** In the Risk Assessment Findings for Remediation Area 13-2, the maximum depth of contamination discussed is 2.25 feet. Please provide the rationale for the proposed excavation to 8 feet as stated instead of to 4 feet.
12. **Table F-3L, Remediation Area 36N-1.** Please provide the rationale for the proposed excavation in Remediation Area 36N-1 to 12 feet based on the risk due to the arsenic sample from 3.25 feet. The greatest depth of other contaminants (Figure F-2-1) is 6.25 feet.
13. **Table F-4L, Remediation Area 36N-1.** Please provide the rationale for the proposed excavation in RA 36N-1 to 12 feet, instead of to 8 feet, based on the maximum depth of contamination to 6.25 feet.
14. **Table F-4L, De Minimus Area DA-6.** Please explain why the proposed excavation is limited to a 4 foot depth when the ELCR is $1.0E-4$ from contamination to 9.25 feet. If groundwater is expected to limit the depth of excavation, please indicate this on the table.
15. **Figure F-1 and Table F-3A.** De minimus area DA-1 is listed in section AH-28 in Table F-3A; this boring is not shown on the figure. There is, however, a DA-1 in section AH-27 (boring IR72B017) but Table F-3A does not list AH-27 as an area requiring cleanup. Please resolve this discrepancy.
16. **Figure F-2.** Boring IR01B004 (section AC-29) is shown as exceeding the 1×10^{-5} cleanup criteria but is not included as a remediation area, is not included as a de minimus area, is not included under the landfill cap, and is not discussed as not requiring remediation in Tables F-2B or F-3B. It appears that the landfill cap should be extended over the vicinity of this boring. Please clarify the status of the proposed remediation for this area.
17. **Figure F-3.** Please indicate in the legend the meaning of the dashed heavy, blue line. From previous the figure this line would appear to be the "Debris Zone Boundary."

APPENDIX G

General Comments

1. A synopsis of the cost estimates should be included to identify the factors that determine differences in costs between alternatives. For example, it appears that Alternative 5 is similar to Alternative 4 except that the soil is treated with a mobile unit in Alternative 5. The cost of Alternative 5 is therefore more than the cost of Alternative 4. Another example is that a comparison is needed between Alternatives 6 and 8, because the same amount of soil is handled in Alternative 8 as is handled in Alternative 6. It appears, however, that even though Alternative 8 does not include sheet piles, the cost is higher likely due to encapsulating IR-01/21 and IR-02 debris zones. The synopsis should also discuss similarities between alternatives; for example, whether the weight/volume of soil treated in Alternative 5 (WBS 33.14 and 33.15) is the same volume of soil that is disposed of in Alternative 6 (WBS 33.19). These types of relationships between costs should be summarized thoroughly.

2. The sensitivity of the costs within a single alternative relative to the various cleanup standard scenarios needs to be discussed. For example, the cost of Alternative 2 varies little from scenario to scenario. The cost of Alternative 6, however, more than doubles when comparing Scenario 1 to Scenario 3. The groundwater costs vary little from scenario to scenario within a single alternative, so presumably, the cost is more sensitive to the amount of soil being handled.
3. The overall design of the cap systems should be described briefly in the assumptions (single layer versus multi-layer). The separate components need to be tied together.
4. The requirement for accuracy is +50 percent to -30 percent. Some costs are in the \$100,000,000 range such as \$207,033,000 for Alternative 8, Scenario 3. The totals should probably be rounded to the nearest \$100,000 or maybe even \$1,000,000, depending on the number. The cost estimates are probably not accurate enough to be reported to the nearest \$1,000.

Specific Comments

1. **Page G-2, 33.03.02.** Replace "grabbing" with "grubbing." Also, add uniform units for easier comparisons (i.e., \$3,800 per acre is \$0.79/SY so that costs can be compared to 33.03.03.07 at \$0.67/SY).
2. **Page G-2, 33.07.04.04.** Please clarify whether "\$48 per acre" is a cost per day, or lump sum cost.
3. **Page G-2, 33.08.05.07 and 33.08.05.08.** Please clarify whether these are delivered and installed costs.
4. **Page G-4, bullets 3 and 8.** Please explain why costs for demolition and well abandonment were included in groundwater costs since these activities are necessary to implement soil alternatives (i.e., capping or excavation, respectively).
5. **Page G-5, bullet 2.** Please specify whether the volumes cited are in truck yards or bank yards.

Please clarify whether excavation and stockpiling assumptions were applied equally to both saturated and unsaturated soils. Since excavation in the saturated zone is more difficult, a lower productivity factor or similar changes should differentiate this type of excavation from excavation of unsaturated soils.
6. **Page G-5, bullet 4 and p. G-7, Section 33.02.** It is stated on page G-5 that the cost for sampling included labor, equipment, materials, and analytical costs. Page G-7 indicates that unit costs for sampling include labor, equipment, and materials; analytical costs are given a separate unit cost. Please explain why the cost basis is different and for clarity, revise so that unit cost basis is the same.
7. **Page G-6, bullet 1.** Please discuss the rationale for the 90% immobilization efficiency and provide the assumed reagent quantity/ratio in addition to the volume increase provided.
8. **Page G-6, bullet 2.** Please discuss the rationale for the 90% TD efficiency.
9. **Page G-6, bullets 3 and 4.** Please indicate the basis for these assumptions (e.g., field observation).
10. **Page G-6, bullet 3.** The text states assumptions regarding whether the soil "contains" a hazardous waste. Please clarify whether this was intended to mean "contains a listed hazardous waste" as in the RCRA "Contained-in rule" or whether this actually means that the soils do (or do not) exhibit RCRA Characteristics. The distinction is important in costing treatment and disposal of these soils.
11. **Page G-8, Section 33.07.** Dust control is provided on a per month basis. On page G-2, item 33.07

provides dust control costs on a per acre basis. Please explain why a different basis is used in these two sections. It would be better to use the same cost basis so that the reader can see whether costs are comparable.

12. **Page G-8, O&M costs, bullet 3 and p. G-3, O&M Cost, bullet 3.** The former provides inspection costs "per inspection" while the latter provides costs "per year" with the same unit cost for each. Please explain and consider using the same basis for both items.
13. **Page G-9, 2nd bullet.** Please specify whether the volumes are cited truck yards or bank yards.
14. **Page G-10, bullet 1.** Based upon the list of analytical parameters for groundwater monitoring, it does not appear that a natural attenuation demonstration is being considered, because only routine analyses for COCs are included. EPA guidance (*EPA Guidance on Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, (OSWER Directive Number 9200.4-17)*) should be consulted when proposing this remedial technology. As stated on page 18 of that guidance "Details of the proposed monitoring programs should be provided to EPA and the State implementing agency as part of any proposed monitored natural attenuation remedy." These monitoring programs must include analyses that demonstrate that natural attenuation is occurring.
15. **Page G-10, 3rd bullet.** "Costs for San Francisco Bay discharge"...Clarify that this is a sampling cost and not some other cost such as permitting fees (change to "Sampling costs for San Francisco Bay discharge", if appropriate).
16. **Page G-12, 2nd of two entries 33.03.03.X.** Please explain what "filling the Bay Area" means.
17. **Page G-12, 33.06.02.03.** Please use a conventional unit or label instead of "ft² age."

Office of Regional Counsel (ORC) Comments

General Comments

1. Throughout the document are references to the NCP and even quotes from the NCP without any direct citation to which part of the NCP the Navy is referring. When the Navy is citing to the NCP to support a point, they should state to where in the NCP they are referring.
2. Page 3-37 (Section 3.3.2.1): The use of a fence as an access restriction is not "institutional controls". Instead it is considered an engineering control. Engineering controls such as fences should be discussed with the other engineering controls which may be used as part of the various remedial activities. The deed restriction discussion of the institutional control language should remain.
3. Page 4-26 (Section 4.3.2.4) - The soil stockpiles must be retained within a defined area of contamination to avoid violating land disposal restrictions. In addition, for LDR analysis the soils need to be tested at the "point of generation", which means when and where they are dug up. By placing the soils in a stockpile, dilution may occur which is contra to the very purpose of LDRs.

Comments with Regard to ARARs

A. Section 3.1.3.1 et seq.

The ARARs discussion in the FS is problematic, and really needs to be redone. In section 3, the Navy does not look at each remedial alternative and discussing ARARs in the context of each alternative, and

instead the FS discusses ARARs by location (for example ARARs for the IR-01/21 and IR-02 area and ARARs for IR-03 area etc.). However, in Section 5 of the RI they discuss each remedial alternative, and then have an abbreviated discussion of ARARs under each alternative with some confusing references back to Section 3. It appears that these 2 sections somehow need to be consolidated so that there is a complete discussion of the applicable and relevant and appropriate requirements for each alternative, and not in some generic reference to location.

- B. Page 3-18 (Section 3.1.3.1): In its statement that there are no chemical specific ARARs for soil, the Navy should add to this statement that cleanup standards for soils will be determined based on risk.
- C. Page 5-8: Why is there not discussion of Alternative 1?
- D. Page 5-9 (Section 5.1.2.2): Last paragraph of page 5-9. The Navy states that "certain provisions" were determined by the Navy not to be relevant and appropriate. The Navy needs to state which provisions were not determined to be relevant and appropriate, and why this determination was made.
- E. Page 5-10 (Section 5.1.2.2): In discussing filling wetlands in the second full paragraph of this page, the Navy states that it will comply with COE NWP NO. 38. Please provide clarification of this ARAR and why it applies here.
- F. Page 5-10 (Section 5.1.2.2): Third full paragraph refers to the CZMA and the CCA. Are these ARARs, and if such which section applies and why does it apply?
- G. Page 5-10 (Section 5.1.2.2): Last sentence states that Resolution 92-49 is "potentially" an ARAR. It either is or is not an ARAR. State whether it is or is not, and which provisions of it are ARARs.
- H. Page 5-22(Section 5.1.3): The Navy should be discussing testing the soil to see whether or not it meets the land disposal restrictions of RCRA, as opposed to "exhibiting hazardous waste characteristics" and they should be complying with the State RCRA program as California is an authorized state. In addition the following discussion of the requirements for designation of a CAMU should be folded into the ARARs discussion as these are the legal requirements for designation of a CAMU unit, and identify the exact requirements which are considered ARARs. As it currently stands, there is just a reference back to this section in the ARARs analysis (See page 5-31). (See also page 5-57 where the same problem exists).
- I. Page 5-46 (Section 5.1.4.2): Please clarify how visibly contaminated soil can be a criteria for what soil is removed.
- J. Page 5-60 (Section 5.1.5.2) - The discussion that CAMU designation will not be necessary should not be that the soils no longer "exhibit a hazardous waste characteristic" but instead that the soils comply with the land disposal restrictions. Same comment to first sentence of page 5-61. The last sentence of the first paragraph of this Section 5.1.5.2 is unclear.

Comments from Dr. Dan Stralka, EPA risk assessor

General Comment

The remedial action objectives (RAOs) are not based on the most current data. Just as the evaluation of the extent of contamination changes with new data, the RAO should reflect the most current toxicity data. This will have the effect of raising the RAOs for several chemicals and lowering it for others but it will be based on current toxicity data that is reflective of the time in which the report is written. Also, the clean-up criteria for each parcel should be reflective of land-use, the same land-use should present the same RAO. This is not the case presented in the

report for lead between the former parcel D sites and the parcel E sites. The difference is attributed to lead in groundwater presented in appendix A. There should not be a difference between the sites presented in this document. The RAO needs to be changed to reflect current exposure and toxicity values presented in the latest PRG tables and the lead value should be 169 ppm for residential and 1000 ppm for industrial.

Specific comments

1. Table ES-3, Scenario # 3, residential should only have a single clean-up goal for lead.
2. Page ES-6 first paragraph. The determination of an action level of 55 ppm for vinyl chloride in groundwater is based only of current concentrations and not ingrowth due to breakdown of TCE. Controls will need to be in place at areas of chlorinated solvent releases. This needs to be expressed in the feasibility study.
3. Page 2-129, first paragraph. Why is the lead level different then the 169 ppm used elsewhere on the parcel?
4. Page 3-9 section 3.1.2.3 RAOs based on HHRA consumption of aquatic life pathway. This pathway could be assessed by some limited fish sampling data to evaluate the current potential hazards. San Francisco bay does have several fishing advisories but are they appropriate in the vicinity of Hunter's Point? Even though there is a "no fishing policy" currently at Hunter's Point, is there a need to require and reinforce this in the future?
5. Page 3-32 section 3.1.4. Where is the mixed-use property that is in this parcel?
6. Page F-4 fourth bullet, determination when action is not necessary. What is the rationale for using 2 times the child hazard index as the point of departure for noncancer cleanup action? Should there also be a volume determination for de minimis?

Comments from Cynthia Wetmore, EPA engineer

1. The RCRA-equivalent cap costs seem very high. The report cites a construction cost of \$20 million for a 40-acre site at IR-01/21 & IR-02. At Fresno Sanitary Landfill, the construction cost for a 145-acre multilayer cap is estimated after the final design at \$8 million.
2. Stormwater Management - A Parcel E sitewide stormwater management plan, including grading plan, needs to be developed for the final remedy so all water running off site is handled properly.
3. Gas Control - The gas control system for the multilayer cap was identified as a passive system. It is premature to eliminate an active gas control since the type of gas and gas generation rates are not known. Also, gas treatment may be needed. The type of gas control can be addressed in the design but the feasibility should acknowledge that gas control is required and gas treatment might be needed.
4. Sheetpile - Throughout Chapter 5, the sheetpile containment is touted as "a barrier", as "stopping flow", as "totally encapsulating contaminants". Sheetpiles can be used, in conjunction with groundwater control, to minimize flow into or out of an area. Sheetpiles as containment would require an comprehensive and extensive monitoring system and may require pumping of groundwater within the contained area. The Navy should provide analysis and justification that the sheetpile will retain its integrity and provide long-term protection. Also, why were slurry walls not considered in Chapter 4?
5. Deed Restrictions - Deed restrictions are repeatedly referred to as providing long-term assurance that exposure will be eliminated. Deed restrictions are very hard to police and it is inevitable that exposure will occur, especially under a single-layer cap. Therefore, deed restrictions cannot be considered completely reliable or very effective for the long-term.

6. Landfill Covers for Radioactive material - RCRA Subtitle C landfill covers are designed for hazardous materials, not including radioactive material. The Navy should provide analysis and verification that the cover it proposes will in fact be protective for radiation.

Chapter 4

2. Section 4.3.1 - Does the groundwater level ever rise into the trash prism? If so, this water would be considered leachate and more aggressive leachate control measures may be needed.
3. Section 4.3.1.2 Alternative 2 (IR-01/21 & IR-02)- What is the final use for the cap areas? Is it fenced open space? The multilayer cap described in this section is a typical Subtitle C hazardous waste landfill cover system. This system may need modification depending on final use of property.
4. Section 4.3.2.2 Alternative 2 (IR-03) - The use of dual-phase extraction or bioslurping to remove LNAPLs may remove a significant volume but there will be residual LNAPLs that will continue to be a source. Therefore, the use of source reduction will also require some source control component.
5. Section 4.3.2.2 Alternative 2 (IR-03) - What is the plan for the contaminated soils below the shallow ground water? Also, LNAPL skimming will leave some residual LNAPL that may recontaminate the clean backfill if the water table rises.
6. Section 4.3.2.2 Alternative 2 (IR-03) - The confirmation sampling details should be included in the SAP for the excavation including the statistical procedures used to determine the confirmation sampling frequency.
7. Section 4.3.2.3 Alternative 3 (IR-03) - The sheet piles and capping should limit water entering and leaving the enclosed area. However, a groundwater level monitoring plan should be implemented verifying that the groundwater is not leaving. Also, a contingency groundwater plan should be devised.
8. Section 4.3.2.5 Alternative 5 (IR-03) - Why is only visible contaminated soil being removed? Is there any verification that all contaminated soil will be removed?
9. Section 4.3.3.2 Alternative 2 (Miscellaneous Soils) - The long-term effectiveness of a single layer cap over such a large area is at best minimal. The future occupants will need to install utilities and perform other cap disturbing activities. It is difficult to ensure integrity of a single layer cap. The sentence on page 4-48 explaining why this alternative is retained should remove the word effective.
10. Section 4.3.3.3 Alternative 3 (Miscellaneous Soils) - The cost section states that there should be cost savings because borrow material may not have to be imported for the foundation layer at IR01/21. Would not there be a borrow material requirement for the miscellaneous area excavation equal to what is saved from the foundation layer?