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RESPONSE TO COMMENTS
DRAFT PHASE II FEASIBILITY STUDY REPORT
FOR OPERABLE UNIT 3A
MCAS EL TORO, CALIFORNIA

Originator: Glenn R. Kistner, Project Manager U.S. EPA **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** September 3, 1997	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0079** **File Code: 0222**
Note: *All comments are presented as they were received from the U.S. EPA. In several instances comment numbers were missing or duplicated.*	
GENERAL COMMENTS	***RESPONSES TO GENERAL COMMENTS***
1. This document was difficult for even an experienced technical reviewer to follow; a reader from the general public will likely have an even more difficult time. There are many points of confusion:	**RESPONSE 1:** The Draft Phase II Feasibility Study OU-3A Sites, MCAS El Toro, California (Draft FS) presents the results of the feasibility studies for three sites. The format for providing multiple sites in a single report was implemented previously for the Draft Final Phase II Remedial Investigation OU-3A Sites, MCAS El Toro, California (RI Report). The RI Report was very well received by the public. The Navy chose to present the feasibility study for three sites in the same format as the RI to provide more efficient report preparation, reproduction, and review, and to realize cost and schedule savings. The traditional method would have resulted in the preparation of three separate reports in which a significant amount of the same information would have been repeated in the three reports due to the similarity of site conditions (e.g. nature and extent of COPCs) at Sites 8, 11 (Units 1 and 2), and Site 12. The report presents information common to all three sites in the main sections; information it would otherwise have been necessary to repeat in each site-specific attachment. Each attachment presents the site-specific FS for that site. Although this format does require a reader to occasionally move from the site-specific attachments back to the main section, it does provide the least amount of repetition. To reduce confusion, the first paragraph in each section of the main report has been revised to clarify further exactly what information is presented in that section. In addition, the text of the report has been revised where appropriate to guide the reader through the report. Further, table and figure designations present in the attachments have been revised in the Draft Final FS to include the letter that identifies the attachment (e.g. Table 1-1 of Attachment A becomes Table A1-1). Appendices will now be identified by roman numerals (i.e. Appendix A becomes Appendix I, Appendix B becomes Appendix II, and Appendix C

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	becomes Appendix III) and the letters associated with Section numbers in the appendices have been dropped (e.g. Section C4 of Appendix C becomes Section 4 of Appendix III.
• **The presence of both Attachments A, B, and C and Appendices A, B, and C is confusing.** • **The logic behind the text is nonlinear. For example, the text in Section 2 of the main text refers to the attachments, but the attachments refer back to Section 2 of the main text. This is circular logic.** • **Some tables reference themselves. Another table references a non-existent table.** • **New material is presented in the Executive Summary.** • **It is unclear how the document should be read because the main text and attachments are not complete in and of themselves. Please explain whether the attachments should be read before the main text, or whether it was intended that the main text and all three attachments be read in parallel.** **Please either revise the text so that it flows linearly without circular references or provide the reader with a "road map" that explains how the document should be read.**	
<u>Executive Summary</u> 1. **The summary is too extensive and should not include new information; the new information includes the comparative analysis of alternatives which should be presented in Section 5 and referenced or summarized in the Executive Summary.**	**RESPONSE 1:** The Executive Summary has been revised to present only a summary of the comparative analysis of alternatives for each site. Section 5 of the Draft Final FS presents the results of the comparative analysis. As a result of these changes the Executive Summary has been reduced to half its original length.

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2. Figure ES-2. The identifier at each location (i.e., 08B201) should be included and defined in the legend. Currently, only the symbol is shown.	**RESPONSE 2:** The identifiers for each sample location serve only to distinguish individual sampling locations within a site and/or unit and have no other purpose. Identifying each location in the legend would not provide any additional information for the reader. The basis for the naming conventions for the sample locations are presented in the Phase I Technical Memorandum and Phase II RI Report.
3. Table ES-2, p. ES-13, Footnote "d". Please verify that the cancer risk for an adult is really "higher" than the cancer risk for a child.	**RESPONSE 3:** Comment verified.
4. Tables ES-3, ES-4, and ES-5 starting on p. ES-23. The relative terms of "high, moderate and low" need to be defined.	**RESPONSE 4:** For the Draft Final FS, Tables ES-3, 4, and 5, have been moved to Section 5 and renamed Tables 5-1, 5-2 and 5-3, respectively. The definitions for the relative terms of "high, moderate, and low" are provided in the footnotes of these tables. As the comment notes these terms are relative and relate to how the alternatives compare to each other for the specific criteria being addressed. Section 4 of the main report has been revised to include a brief discussion of how the nine criteria were evaluated and the significance of the each rating.
5. Table ES-5, p. ES-28. Please explain why the ratings for the long-term effectiveness are the reverse of those for that of short term-effectiveness (i.e., does the no action alternative really have a high short-term effectiveness?).	**RESPONSE 5:** Long-term effectiveness addresses the results of the remedial action and the residual risk remaining at the site after the response actions have been met. Short-term effectiveness addresses the effects of the alternative during construction and implementation of the alternative until the response actions have been met. The "no action" alternative was used as the baseline against which all other alternatives were evaluated. Alternative 1 (no action) involves no excavation or other remedial activity for the contaminated soil at the sites. Therefore the potential exposure at the sites under this alternative is not increased. Consequently, this alternative has the highest short-term effectiveness. Conversely, because implementation of Alternatives 2 through 5 will require grading and/or excavation of contaminated soil the sites these alternatives increase the exposure to workers during the construction activities and therefore are considered to have a lower

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	short-term effectiveness. The evaluation of short-term effectiveness for the "no action" alternative in the site specific attachments to the Draft Final FS have been expanded to include this discussion.
Section 1 Specific Comments 1. **Section 1,2,3,1, p. 1-20, paragraph 1, third sentence. Please include a reference citation for the "moderate permeability" of the soil.**	**RESPONSE 1:** The reference to "moderate permeability" was taken from the RI Report and the Draft Final FS has been revised to include this citation.
2. **Section 1,2,3,1, p. 1-20, paragraph 3, second sentence. The infiltration rate is given as 5 inches per year. Please clarify whether this is a yearly average. Please discuss whether the instantaneous infiltration rate and its implications need to be determined. Also, please include the depth to groundwater in this paragraph.**	**RESPONSE 2:** The infiltration rate is a yearly average. An instantaneous infiltration rate was not calculated as part of the RI, nor was it considered necessary. As presented in the RI report, the COPCs at the OU-3A sites are tightly bound to the soil and resistant to leaching. The depth to groundwater has been added to the paragraph in the Draft Final FS.
3. **Section 1,2,3,1, p. 1-23, paragraph 4, first sentence. Please specify the "other information" used to evaluate the need for further action.**	**RESPONSE 3:** The "other information" pertains to all non-risk assessment data presented in the RI report.
4. **Section 1,3, p. 1-24, bullet 3. Section 5 does not currently consist of "the condensed results of the comparative analysis of all of the alternatives..." as described in this bullet; this information was placed in the Executive Summary and referenced in Section 5. Section 5 should be revised to contain the information described in this bullet. (Also see Executive Summary Comment 1.)**	**RESPONSE 4:** See Response to Executive Summary Comment 1.
Section 2 General Comments 1. **A reader from the general public will have a great deal of trouble following the logic and flow of this document. The references to attachments and then from the attachments back to Section 2 is**	**RESPONSE 1:** See Response to General Comment 1 (page 1).

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confusing.	
2. **The list of treatment technologies can be extended beyond what is described in this FS. This should be done to show that a greater range of options were considered at the beginning of the selection process even if they were eventually screened out.**	**RESPONSE 2:** While the entire list of potential treatment technologies is extensive and not all were presented in Section 2, the Navy considers the range of technologies included in the FS to be those which are most applicable to the sites.
3. **Please clarify whether innovative technologies were considered, and whether the criterion of "commercial availability" excluded these innovative technologies.**	**RESPONSE 3:** Innovative technologies were considered by the Navy. However, innovative technologies that are not commercially available have significant uncertainties associated with the cost, effectiveness, and implementability which the Navy has considered undesirable for this FS.
4. **Please discuss whether the risk for wind blown dust from the soil to be used as cover at the onsite landfill has been evaluated. (Receptor: onsite worker at landfill. Pathway: Inhalation, skin adsorption.)**	**RESPONSE 4:** The risk to a worker (which included wind blown dust exposure) from the soil at the site was qualitatively evaluated in the RI. Results of this evaluation indicated that the risk to this type of worker (e.g. construction worker) was approximately 7 times less than the risk to a residential adult. This information was presented in each site specific FS as follows: Attachment A, Section A1.3.3; Attachment B, Section B1.3.3; and Attachment C, Section C1.3.3.
Specific Comments 1. **Section 2.4.1, p. 2-17 Institutional controls. Please clarify why the location and current use of the sites precludes the use of signs.**	**RESPONSE 1:** The Draft Final FS has been revised as follows: "Signs - Warning signs posted around a property that tell the public with what they could come into contact at the site. ~~Warning signs were screened out as a process option based on the location and current use of the sites~~." Warning signs were not screened out at this point of the FS.
2. **Section 2.4.1, p. 2-17 Containment. The cap descriptions should address surface controls such as grading and drainage to promote runoff and prevent run-on.**	**RESPONSE 2:** This section is intended only to present general descriptions of technology types, not specific capping design issues such as grading and drainage control. Design considerations specific to capping alternatives are provided in the Section 3 of the site-specific attachments where applicable.

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The nomenclature "vegetative cap" should reflect the fact that a soil layer will be included (i.e., Vegetative/soil Cap). **It should be mentioned that the materials for the "multilayered cap" can include soils or geosynthetics. The cost of this cap is highly dependent upon the materials used.**	The term "vegetative cap" has been revised in the Draft Final FS to "monolithic soil cap with vegetative cover" to better describe this process option. The "multilayered cap" description has been revised in the Draft Final FS to indicate that the layers can include soil and geosynthetics in various combinations. The cost discussion presented in Table 2-2 will be revised to clarify that cost varies with materials used but is more expensive than the other cap types identified.
3. <u>Section 2.4.1, p. 2-18 Treatment</u>. **Please discuss whether the following options were considered.** **In-situ:** • **Electrical separation.** • **Pneumatic fracturing with SVE** • **Hydrolysis** **Ex-situ:** • **UV photolysis**	**RESPONSE 3:** These four processes, along with other process options not presented in the Section 2, were considered. However, like many other process options that were not specifically identified in Section 2, these four options are not applicable the sites' contaminants and/or contaminated media. Consequently, their inclusion provides no added benefit to the feasibility studies. Also, see responses to Comments 2 and 3 under Section 2 - General Comments.
4. <u>Table 2-2, p. 2-19</u>. **In general, define the terms of "expensive, inexpensive and very expensive". Please clarify whether the terms are applicable relative to all the options when compared with one another across GRAs or within the categories defined by the technologies.** **Please discuss why the Screening Result of "potentially applicable" is necessary, since "not applicable" is the result that precludes a technology from further consideration.**	**RESPONSE 4:** These are relative terms for comparison of process options within GRA categories, per U.S. EPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA. Section 2.4.2 has been revised and footnotes have been expanded in Table 2-2 in the Draft Final FS to explain the significance of the ratings for effectiveness, implementability, and cost. For the scope of this FS, "potentially applicable" process options are those that are not considered "stand alone" technologies. However, they could be considered for use as part of a treatment train that utilizes several different process options to achieve the desired remedial goal.

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Containment: Capping. Please discuss whether vegetation can be sustained on the cap without irrigation. If not, this technology should be screened out because irrigation would contribute to infiltration into the subsurface.	Irrigation is an integral part of a monolithic soil cap with vegetative cover. Proper design of this type of cap could provide plant subsistence without infiltration. In addition, infiltration is not considered a significant factor due the nature of the COPCs at the sites (i.e. contaminants are tightly bound to the soil and resistant to leaching).
5. **Table 2-2, continued p. 2-21. Collection/Treatment, In-situ Treatment, Effectiveness. Describe the ineffective options and the goals that cannot be met.** **Collection/Treatment, Ex-situ Treatment, Effectiveness. Describe the ineffective options and the goals that cannot be met.** **Collection/Treatment, Ex-situ Treatment, Implementability. Describe the options that are impacted by site conditions. Describe the physical conditions that impact implementability.**	**RESPONSE 5:** The in-situ and ex-situ process options considered ineffective or which can not be implemented at any of the sites are identified in the Preliminary Screening section of Table 2-3. Initial screening results columns for in-situ and ex-situ process options in Table 2-2, have been revised in the Draft Final FS to indicate this information is contained in Table 2-3.
6. **Table 2-2, continued p. 2-23. Collection/Recycling, Cost. Please discuss whether cost is also dependent upon the amount of treatment required.**	**RESPONSE 6:** Implementation of this process option assumes that no treatment is required. Table 2-2 has been revised in the Draft Final FS to include this information.
7. **Section 2.4.1, p. 2-27, paragraph 1. SVE was already described as an in-situ technology and is not normally considered an ex-situ technology.**	**RESPONSE 7:** Comment noted.
8. **Table 2-3, p. 2-31. This table appears to be unfinished because it was not filled out. This is an important table, but it was not adequately discussed in the text.** **The Preliminary Screening Codes should be fully explained so the decision to screen a process is clearly given and documented.** **These options need to be screened according to Effectiveness, Implementability and Cost, but much of the screening listed is**	**RESPONSE 8:** The table referenced is titled Table 2-3 "Initial Screening of Process Options for OU-3A FS". The text on page 2-29 that addresses Table 2-3 has been expanded in the Draft Final FS to include a discussion of the screening process and how the process options were chosen for further site-specific evaluation. For preliminary screening, process options were selected based on the criteria listed on the Preliminary Screening section of Table 2-3. These criteria are directly related to effectiveness, implementability, and cost as follows: Site Contaminant Treatable - Effectiveness

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appropriate for screening of alternatives rather than the screening of technologies.	Technology Applicable to Site - Implementability Technology Commercially Available - Cost This explanation has been added to Section 2.4.2 of the Draft Final FS. Process options which can not treat OU-3A site contaminants, can not be implemented at the OU-3A sites, or are not commercially available were dropped from further consideration. The remaining columns in Table 2-3 are shown for illustrative purposes only. These additional factors are evaluated in each site-specific FS (Attachments A through C), to assist in determining which processes will be used to develop remedial alternatives for each area of potential concern.
<u>Section 5</u> 1. **The information found in the Executive Summary should be included in this section. It is inappropriate to include new information in the Executive Summary and reference it in Section 5.**	**RESPONSE 1:** See Response to Executive Summary Comment 1.
<u>Attachment A</u> <u>General Comments</u> 1. **The text and the corresponding tables need to be correlated. The text should explain and help the reader through the tables, but the text necessary lacks detail to support the tables. For example, the screening of technologies shown in the Table 2-4 needs to be strengthened and supported by the text.**	**RESPONSE 1:** Where appropriate efforts were made in the Draft Final FS to provide better correlation between tables and supporting text throughout the Attachment. Throughout the document emphasis was placed on the use of tables and figures in lieu of text to provide maximum information in a format that is concise, visually appealing, and understandable.
<u>Specific Comments</u> 1. <u>Section 1.3.2, p. A1-20, bullet 5</u>. **Please replace the word "evapotranspiration," which includes both evaporation and transpiration from plants, with "evaporation" because there is no significant plant cover at Site 8.**	**RESPONSE 1:** This change has been made in the Draft Final FS.

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2. **Table 2-3, p. A2-17. This table references itself, which is confusing. Please replace the phrase "See Table 2-3 in this section" with a more appropriate reference or the full information.**	**RESPONSE 2:** The correct citation is Table A2-4. This correction is present in the Draft Final FS.
3. **Table 2-4, p. A2-21. It should be made clear that these options were screened according to Effectiveness, Implementability and Cost. Alternatively, revise the title to "Comparison of Treatment Technology Process Options at Site 8" or something similar.** **Under the heading "Site Contaminant Treatable" it should be shown that the bioventing, soil washing and low temperature thermal desorption are effective for the treatment for PAHs. Indicate that soil washing, dehalogenation, high temperature thermal desorption and incineration are effective for PCBs.**	**RESPONSE 3:** These criteria are identified in Section A2.4.2 as the basis for the screening of process options in Table A2-3 and A2-4. Table A2-4 has been revised in the Draft Final FS to include the contaminants a technology is capable of treating.
4. **Section 2.4.2.3, p. A2-23. Please discuss whether there are known or unknown underground utilities. The removal process should include the clearance of utilities at depth before excavation.**	**RESPONSE 4:** Underground utilities are present beneath Site 8, however they are not expected to impact the implementability or cost of this process option. Section A2.4.2.3 of the Draft Final FS has been expanded to include this information.
5. **Section 2.4.2.4, p. A2-24, paragraph 1, 3rd sentence. Explain what the potential reuse limitations of the treated soil are, or refer to a section that discusses these limitations. Explain the factors controlling the cost range of $300 to $600, and clarify which cost will be assumed for the cost analysis.**	**RESPONSE 5:** The discussion of dehalogenation has been revised and reference to potential reuse limitations of treated soil has been removed from this discussion in the Draft Final FS. The costs listed for process options are for screening purposes only and represent a range obtained from one or more sources. The cost range reflects the magnitude of uncertainty associated with this process option. The Draft Final FS will indicate that the factors controlling the cost range can include: contaminant concentrations; treatment chemicals required; soil moisture content; clay content; particle size heterogeneity; secondary treatment of residuals; fuel, electricity, and water usage; and community acceptability.
6. **Section 2.4.2.5, p. A2-24, paragraph 2, 2nd sentence. Explain the factors controlling the cost range of $50 to $200, and clarify which cost will be**	**RESPONSE 6:** The Draft Final FS will indicate that the factors controlling this general cost range can include: contaminant concentrations; the distance

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assumed for the cost analysis.	from the site to the disposal facility utilized; cost of disposal; and community acceptability. The cost range reflects the magnitude of uncertainty associated with this type of process option. It is not intended to represent costs specific to Site 8. A cost analysis is not provided in Section A2. Cost analyses are provided as part of the detailed analysis of alternatives in Section A4.
7. **Section 3.2.1.1, p. A3-3, last sentence. Please discuss the extent to which natural biodegradation is occurring at this site, including the half-life of the risk drivers under conditions comparable to site conditions. Generally, natural degradation of PCBs is extremely slow, particularly under the aerobic conditions found in shallow soil. High molecular weight PAHs like benzo(a)pyrene do not degrade.**	**RESPONSE 7:** As presented in Tables A1-1 and A1-2 the primary COPCs (risk drivers) in soil at Site 8 Unit 1 through 4 are benzo(a)pyrene and PCB Aroclors 1248, 1254, and 1260. The half-lives of the these four compounds are 1.45, 5,500, 120,000 and 410,000 years, respectively (BNI 1997a). These half-life values are the most conservative values for microbially mediated degradation in soil. Text in the Draft Final FS has been revised to indicate that the rate of natural degradation of PCBs is negligible but that the rate for PAHs is considerably faster.
8. **Section 3.2.1.2, p. A3-3, paragraph 2, 2nd sentence. Please explain why soil conditions were described using the terms "stability" and "compacted nature." Clarify whether this is based on visual observation or whether geotechnical laboratory data are available to reference and describe soil stability at this site.**	**RESPONSE 8:** These descriptions are professional judgment by the field geologists, based on visual observations of site conditions and physical examination of soil samples collected during the RI. All fieldwork was supervised by a California Registered Geologist.
9. **Section 3.2.1.2, p. A3-3, paragraph 2, 3rd sentence. Since provisions for infiltration control in the cap design are not necessary (paragraph 2, 1st sentence), it is unclear why a gravel layer was included for drainage. Also, drainage will not occur unless grading is provided before the gravel is installed (refer to Figure 3-2, p. A3-4). It might be better to state that the gravel is a bedding layer rather than a drainage layer.**	**RESPONSE 9:** The Draft Final FS has been revised to indicate that the gravel is a bedding layer.
10. **Section 3.2.1.2, p. A3-3, paragraph 2, 4th sentence. Please specify the soil type described as "bare soil" (e.g., sand, silt, or clay).**	**RESPONSE 10:** This description is provided only to indicate that the areas of Units 1 and 4 are not presently covered by asphalt or concrete. The type of soil is not relevant to the discussion cited.

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11. Section 3,2,1,3, p. A3-5, paragraph 1, 2nd sentence. Please clarify how the 1:1 (45° angle) slope was determined. If a 2(H):1(V) slope is assumed, the soil volume will increase.	**RESPONSE 11:** This slope was determined based on depth of the excavation (OSHA requirement for shoring protection), lack of structures present near the area to be excavated, observed stability of soil at the Station, and to minimize the volume of additional soil requiring excavation.
12. Section 3,2,1,4, p. A3-6, paragraph 3, 2nd sentence. Please specify the metals that are anticipated to be concentrated in the ash.	**RESPONSE 12:** The metals concentrated in the ash can not be determined until a treatability study for the incinerator is conducted. The Draft Final FS has been expanded to indicate that the metals that could be concentrated in the incinerator ash will consist of a subset of those identified Site 8 during the RI and typically include: sodium, potassium, arsenic, barium, beryllium, lead, nickel, mercury, cadmium, zinc and chromium.
13. Section 3,2,2,1, p. A3-11, paragraph 1, last sentence. Please discuss the extent to which natural biodegradation is occurring at this site including the half-lives of the risk drivers under conditions comparable to site conditions. Natural degradation of PCBs is extremely slow, particularly under the aerobic conditions found in shallow soil. High molecular weight PAHs like benzo(b)fluoranthene and ideno(1,2,3-c,d)pyrene also do not degrade under site conditions.	**RESPONSE 13:** As presented Tables A1-3 the primary COPCs (risk drivers) in soil at Site 8 Unit 5 are benzo(a)pyrene, indeno(1,2,3-c,d)pyrene and PCB Aroclor 1260. The half-lives of the these three compounds are 1.45, 2.0, and 410,000 years, respectively (BNI 1997a). These half-life values are the most conservative values for microbially mediated degradation in soil. Text in the Draft Final FS has been revised to include the rate of natural degradation for PAHs. The PCB rate is not included in the discussion because PCBs are not a significant factor in terms of potential remedial action for Unit 5. The single PCB reported in soil represents only about 2% of the total risk for Unit 5, this risk is based on the maximum PCB concentration, and this risk assumes PCBs are present throughout Unit 5 rather than being confined to a single soil sample.
14. Section 3,2,2,2, p. A3-11, paragraph 2, 2nd sentence. Please explain why soil conditions were described using the phrases "stability" and "compacted nature." Clarify whether this is based on a visual observation or whether there is geotechnical laboratory data to reference to support soil stability at this site.	**RESPONSE 14:** These descriptions are professional judgment by the field geologists, based on visual observations of site conditions and physical examination of soil samples collected during the RI. All fieldwork was supervised by a California Registered Geologist.
15. Section 3,2,2,2, p. A3-11, paragraph 2, 3rd sentence. Since provisions for infiltration control in the cap design are not necessary (paragraph 2, 1st	**RESPONSE 15:** See Response to Attachment A Specific Comment 9.

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sentence), it is unclear why a gravel layer was included for drainage. Also, drainage will not occur unless grading is provided before the gravel is installed (refer to Figure 3-2, p. A3-4). It might be more appropriate to describe the gravel layer as a bedding layer rather than a drainage layer.	
16. Section 3.2.2.3, p. A3-11, paragraph 1, 3rd sentence. Please explain how the 1:1 (45° angle) slope was determined. If a 2(H):1(V) slope is assumed, the soil volume will increase.	**RESPONSE 16:** See Response to Attachment A Specific Comment 11.
17. Section 4, Short-term Effectiveness, All Alternatives. The evaluation of the alternatives for the criterion of "Short-term Effectiveness" lacks descriptive text for: Effectiveness and reliability of protective measures; effectiveness and reliability of mitigative measures during implementation; and time until the cleanup objectives are achieved (Section 4.1.5, p. 4-4, of the main body of the report). **The summary tables (e.g., Table ES-3, p. ES-23 should then show the ranking of the alternatives, according to short-term effectiveness, in the reverse order relative to each other, (i.e., Alternative 1 will be "Low" [or not applicable] and alternative 5 will be "High").**	**RESPONSE 17:** Disagree, this section addresses criteria presented in Section 4.1.5 of the main body of the report. Protective and mitigative measures presented in the short-term effectiveness sections have been designed to be reliable in controlling risk to workers at the site during the remedial action. These sections have been revised in the Draft Final FS to include this statement. See Response to Executive Comment 5.
18. Section 4, Short-term Effectiveness, All Alternatives Except "No Action." Please specify the source of the investigation-derived material wastes that are mentioned in the text. Please discuss whether monitoring of airborne particulate matter will be implemented during handling of contaminated soil.	**RESPONSE 18:** The sources of investigation-derived waste could include such materials as excess soil associated with confirmation sampling activities and liquid wastes generated during equipment decontamination. The text of these subsections for Alternatives 2 through 5 (which involve grading and/or excavation) has been revised in the Draft Final FS to indicate that monitoring for airborne particulates will be addressed in the site-specific health and safety plan for any Site 8 remedial action.
19. Section 4, Short-term Effectiveness, All Alternatives Except "No Action." Please clarify whether construction barriers will be used to control the site.	**RESPONSE 19:** The Draft Final has been revised to indicate that construction barriers will be used to control site access.

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20. **Section 4.2.2.7, p. A4-5, paragraph 2, 3rd sentence. This alternative should include the operation and maintenance cost for necessary inspections. Minor repair costs should be included to ensure the 30-year service life is achieved.**	**RESPONSE 20:** The costs for this alternative have been revised to include O&M costs covering annual inspections and incremental repaving to maintain the cap integrity for a period of 30 years following construction.
21. **Section 4.2.3.5, p. A4-9, paragraph 2 and Section 4.3.3.5, p. A4-29, paragraph 2. Because contaminated soil that is to be recycled as cover material at the landfill is contaminated, it appears that the risk for exposure should be determined and discussed for stock-piling of the soil until it is used in the cover; exposure due to moving, placing and grading the soil during construction; and soil vulnerable to movement by wind action until the soil placed in the landfill is capped by the final cover.**	**RESPONSE 21:** The exposure scenarios referenced in this comment were addressed as the construction worker scenario in the RI. The construction worker scenario includes exposure to contaminated soil from the site during excavation, moving, stockpiling, and grading of soil. Results of this evaluation indicated that the risk to a construction worker was approximately 7 times less than the risk to a residential adult, which ranged from 1.7×10^{-5} to 1.0×10^{-4} at Site 8 in the RI. This information is presented in Section A1.3.3. In addition, as presented in the short-term effectiveness analyses of Section A4, risks associated with exposure of site personnel to dust emissions and direct contact with impacted soil during excavation, loading, hauling, unloading, and grading of contaminated soil will be mitigated during the remedial action using dust suppressants and PPE.
22. **Section 4.2.3.7, p. A4-26, paragraph 1, 4th sentence. This alternative should include the annual operation and maintenance cost for necessary inspections. Minor repair costs should be included to ensure the 30-year service life is achieved.**	**RESPONSE 22:** The costs for this alternative have been revised to include O&M costs covering annual inspections and incremental repaving to maintain the cap integrity for a period of 30 years following construction.
23. **Section 5. The section makes better use of tables because the text is more relevant to the tables than in previous sections.**	**RESPONSE 23:** Comment noted.
24. **Section 5, Short-term Effectiveness, All Alternatives. The evaluation of the alternatives for the criterion of "Short-term Effectiveness" lacks descriptive text for effectiveness and reliability of protective measures; effectiveness and reliability of mitigative measures during implementation; and time until the cleanup objectives are achieved (Section 4.1.5, p. 4-4 of the main body of the report). The summary**	**RESPONSE 24:** See Response to Comment 17 Attachment A, Specific Comments.

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tables (e.g., Table 5-1, p. A5-2 should then show the ranking of the alternatives, according to short-term effectiveness, in the reverse order relative to each other, (i.e., Alternative 1 will be "Low" [or not applicable] and alternative 5 will be "High").	
25. **Tables 5-1 and 5-3. A rating method with more options than high, moderate, low should be used. This would allow differentiation between alternatives. For example, an alternative that resulted in a reduction of volume and toxicity could then be rated higher than an alternative that only reduced contaminant volume; currently both alternatives would be rated "high."**	**RESPONSE 25:** Disagree, the method used is appropriate for rating the alternatives within the relative level of accuracy of a feasibility study. The example cited in this comment suggests that an alternative that provided a reduction of volume and toxicity could be rated higher than an alternative that only reduced volume. However, the alternatives proposed in the FS (excluding "no action" and capping) either remove the contaminated soil from site (volume reduction) or treat contaminated soil and replace it back at the site (toxicity and volume reduction). The net result of both of these alternatives is the same at the site in terms of reducing risk and protecting human health.
26. **Section 5.2, p. A5-5, Table 5-2 and Section 5.3, p. A5-14, Table 5-4. This alternative should include the annual operation and maintenance cost for annual inspections. Minor repair costs should be included to ensure the 30-year service life is achieved.**	**RESPONSE 26:** Tables 5-2 and 5-4 now include costs for operation and maintenance of the asphalt for a period of thirty years.
27. **Sections 5.2.3 and 5.2.4, p. A5-6 and Sections 5.3.3 and 5.3.4, pp. A5-14 and A5-15. It is unlikely that much if any natural biodegradation is occurring (see Comment 7). Please revise or delete the statements about natural biodegradation.**	**RESPONSE 27:** See response to Attachment A Specific Comment 7. The discussion of natural biodegradation has been removed from the sections cited in this comment.
28. **Section 5.2.5, p. A5-7, paragraph 2. Please discuss the source of the investigation-derived wastes. Also discuss whether monitoring of airborne particulate matter would be implemented during handling of contaminated soil.**	**RESPONSE 28:** See response to Attachment A Specific Comment 18. This explanation is provided in Section A4 "Short-term Effectiveness" and is not repeated in Section A5 "Short-term Effectiveness".
30. **Section 5.2.5, p. A5-7, paragraph 2. Because the soil that is to be recycled as cover material at the landfill is contaminated, it appears that**	**RESPONSE 30:** This comment is addressed in Section A4 (see response to Comment 15 of Attachment A) and is not repeated in the comparative

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the risk of exposure should be determined and discussed for stock-piling of the soil until it is used in the cover; exposure due to moving, placing and grading the soil during construction; and soil vulnerable to movement by wind action until the soil placed in the landfill is capped by the final cover.	summary Section A5.
Attachment B **General Comment** **1. The text and the corresponding tables need to be correlated. The text should explain and help the reader through the tables, but lacks the necessary detail to support the tables.**	**RESPONSE 1:** Where appropriate efforts were made in the Draft Final FS to provide better correlation between tables and supporting text throughout the Attachment. Throughout the document emphasis was placed on the use of tables and figures in lieu of text to provide maximum information in a format that is concise, visually appealing, and understandable.
Specific Comments **1. Section 1.3.2, p. B1-8, bullet 3. Please replace the word "evapotranspiration," which includes both evaporation and transpiration from plants, with "evaporation" because there is no significant plant cover at Site 8.**	**RESPONSE 1:** This change has been made in the Draft Final FS.
2. Table 2-3, p. B2-15. This table refers to Table 2-4 which was not included in Section 2 of this attachment. To parallel other attachments, Table 2-4 should be used to justify screening processes to select the representative option for treatment. Other comments about similar tables in other attachments would also apply to this table.	**RESPONSE 2:** Table B2-4 has been added to the Draft Final FS.
3. Section 2.4.2.3, p. B2-12. Please discuss whether there are known or unknown underground utilities. The removal process should include the clearance of utilities at depth before excavation.	**RESPONSE 3:** Underground utilities are present adjacent to Site 11, however they are not expected to impact the implementability or cost of this process option. Section B2.4.2.3 of the Draft Final FS will be expanded to include this information.

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4. Section 2.4.2.4, p. B2-17, paragraph 1, 6th sentence. Explain what the potential reuse limitations of the treated soil are, or refer to a section that discusses these limitations. Explain the factors controlling the cost range of $200 to $600, and clarify which cost will be assumed for the cost analysis.	**RESPONSE 4:** The discussion of dehalogenation has been revised and reference to potential reuse limitations of treated soil has been removed from this discussion in the Draft Final FS. The costs listed for process options are for screening purposes only and represent a range obtained from one or more sources. The cost range reflects the magnitude of uncertainty associated with this process option. The Draft Final FS will indicate that the factors controlling the cost range can include: contaminant concentrations; treatment chemicals required; soil moisture content; clay content; particle size heterogeneity; secondary treatment of residuals; fuel, electricity, and water usage; and community acceptability.
5. Section 3.1, p. B3-1, last sentence. Please discuss the extent to which natural biodegradation is occurring. Generally, natural degradation of PCBs is extremely slow particularly under the aerobic conditions found in shallow soil.	**RESPONSE 5:** References to natural degradation in this section have been deleted.
6. Section 3.2, p. B3-1, paragraph 2, 2nd sentence. Please explain why soil conditions were described using the phrases "stability" and "compacted nature." Clarify whether this is based on a visual observation or whether geotechnical laboratory data are available to reference to describe soil stability at this site.	**RESPONSE 6:** These descriptions are professional judgment by the field geologists, based on visual observations of site conditions and physical examination of soil samples collected during the RI. All fieldwork was supervised by a California Registered Geologist.
7. Section 3.2, p. B3-1, paragraph 2, 3rd sentence. Since provisions for infiltration control in the cap design are not necessary (paragraph 2, 1st sentence), it is unclear why a gravel layer was included for drainage. Also, drainage will not occur unless grading is provided before the gravel is installed (refer to Figure 3-2, p. B3-3). It might be more appropriate to describe the gravel layer as a bedding layer rather than a drainage layer.	**RESPONSE 7:** The Draft Final FS has been revised to indicate that the gravel is a bedding layer.

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8. **Section 3.2, p. B3-1, paragraph 2, 4th sentence. Please include the specific soil type that was described as "bare soil" (e.g., sand, silt, or clay).**	**RESPONSE 8:** This description is provided only to indicate that part of the area of Unit 1 is not presently covered by asphalt or concrete.
9. **Section 3.3, p. B3-4, paragraph 2. A discussion of embankment slopes for an excavation depth of 6 ft should be included.**	**RESPONSE 9:** Embankment sloping is not proposed for this site. The proposed sidewall protection is shoring due to the proximity of Building 369.
10. **Section 3.4, p. B3-5, paragraph 3, 2nd sentence. Please specify the metals that are anticipated to be concentrated in the ash.**	**RESPONSE 10:** The metals concentrated in the ash can not be determined until a treatability study for the incinerator is conducted. The Draft Final FS has been expanded to indicate that the metals that could be concentrated in the incinerator ash typically include: sodium, potassium, arsenic, barium, beryllium, lead, nickel, mercury, cadmium, zinc and chromium.
11. **Section 4, Short-term Effectiveness, All Alternatives. The evaluation of the alternatives according to the criterion of "Short-term Effectiveness" lacks descriptive text for: Effectiveness and reliability of protective measures; effectiveness and reliability of mitigative measures during implementation; and time until the cleanup objectives are achieved (Section 4.1.5, p. 4-4, of the main body of the report).** **The summary tables (e.g., Table ES-3, p. ES-23 should then show the ranking of the alternatives, according to short-term effectiveness, in the reverse order relative to each other, (i.e., Alternative 1 will be "Low" [or not applicable] and alternative 5 will be "High").**	**RESPONSE 11:** Disagree, this section addresses criteria presented in Section 4.1.5 of the main body of the report. Protective and mitigative measures presented in the short-term effectiveness sections have been designed to be reliable in controlling risk to workers at the site during the remedial action. These sections have been revised in the Draft Final FS to include this statement. See Response to Executive Summary Comment 5.
12. **Section 4, Short-term Effectiveness, All Alternatives Except "No Action." Please specify the source of the investigation-derived material wastes that are mentioned in the text. Please discuss whether monitoring of airborne particulate matter will be implemented during handling of contaminated soil.**	**RESPONSE 12:** The sources of investigation-derived waste could include such materials as excess soil associated with confirmation sampling activities and liquid wastes generated during equipment decontamination. The text of these subsections for Alternatives 2 through 5 (which involve grading and/or excavation) has been revised in the Draft Final FS to indicate that monitoring for airborne particulates will be addressed in the site-specific health and safety plan for any Site 11 remedial action.

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13. **Section 4, Short-term Effectiveness, All Alternatives Except "No Action." Please clarify whether construction barriers will be used to control the site.**	**RESPONSE 13:** The Draft Final has been revised to indicate that construction barriers will be used to control site access.
14. **Section 4.3.7, p. B4-5, paragraph 2, 3rd sentence. This alternative should include the annual operation and maintenance cost for necessary inspections. Minor repair costs should be included to ensure the 30-year service life is achieved.**	**RESPONSE 14:** The costs for this alternative have been revised to include O&M costs covering annual inspections and incremental repaving to maintain the cap integrity for a period of 30 years following construction.
15. **Section 4.4.5, p. A4-8, paragraph 2. Because the soil that is to be recycled as cover material at the landfill is contaminated, it appears that the risk for exposure should be determined and discussed for stock-piling of the soil until it is used in the cover; exposure due to moving, placing and grading the soil during construction; and soil vulnerable to movement by wind action until the soil placed in the landfill is capped by the final cover.**	**RESPONSE 15:** The exposure scenarios referenced in this comment were addressed as the construction worker scenario in the RI. The construction worker scenario includes exposure to contaminated soil from the site during excavation, moving, stockpiling, and grading of soil. Results of this evaluation indicated that the risk to a construction worker was approximately 7 times less than the risk to a residential adult, which ranged from 5.9×10^{-6} to 9.1×10^{-5} at Site 11 in the RI. This information is presented in Section B1.3.3. In addition, as presented in the short-term effectiveness analyses of Section B4, risks associated with exposure of site personnel to dust emissions and direct contact with impacted soil during excavation, loading, hauling, unloading, and grading of contaminated soil will be mitigated during the remedial action using dust suppressants and PPE.
16. **Section 5. The section makes better use of the tables because the text is more relevant to the tables than in previous sections.**	**RESPONSE 16:** Comment noted.
17. **Section 5, Short-term Effectiveness, All Alternatives. The evaluation of the alternatives for the criterion of "Short-term Effectiveness" lacks descriptive text for effectiveness and reliability of protective measures; effectiveness and reliability of mitigative measures during implementation; and time until the cleanup objectives are achieved (Section 4.1.5, p. 4-4 of the main body of the report). The summary tables (e.g., Table 5-1, p. B5-2) should then show the ranking of the alternatives, according to short-term effectiveness, in the reverse order**	**RESPONSE 17:** See response to Specific Comment 11, Attachment B.

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relative to each other, (i.e., Alternative 1 will be "Low" [or not applicable] and alternative 5 will be "High").	
18. Table 5-1. A rating method with more options than high, moderate, low should be used. This would allow differentiation between alternatives. For example, an alternative that resulted in a reduction of volume and toxicity could then be rated higher than an alternative that only reduced contaminant volume; currently both alternatives would be rated "high."	**RESPONSE 18:** Disagree, the method used is appropriate for rating the alternatives. The example as cited in this comment suggests that an alternative that resulted in a reduction of volume and toxicity could be rated higher than an alternative that only reduced volume. However, the alternatives proposed in the FS (excluding "no action" and capping) either remove the contaminated soil from site (volume reduction) or treat contaminated soil and replace it back at the site (toxicity and volume reduction). The net result of both of these alternatives is the same at the site in terms of reducing risk and protecting human health).
19. Sections 5.4 and 5.5. It is unlikely that much, if any, natural biodegradation is occurring in soil at Site 11 (see Comment 5). Please revise or delete the statements about natural biodegradation.	**RESPONSE 19:** The discussion of natural biodegradation has been removed from the section cited in this comment.
20. Section 5, Table 5-2, p. B5-5. This alternative should include an annual operation and maintenance cost for annual inspections. Minor repair costs should be included to ensure the 30-year service life is achieved.	**RESPONSE 20:** The costs for this alternative have been revised to include O&M costs covering annual inspections and incremental repaving to maintain the cap integrity for a period of 30 years following construction.
21. Section 5.6, p. B5-7, paragraph 2. Please discuss the source of the investigation-derived wastes. Also discuss whether monitoring of airborne particulate matter would be implemented during handling of contaminated soil.	**RESPONSE 21:** The sources of investigation-derived waste could include such materials as excess soil associated with confirmation sampling activities and liquid wastes generated during equipment decontamination. The text of Alternatives 2 through 5 in Section B4 (per Attachment B Specific Comment 12) have been revised in the Draft Final FS to indicate that monitoring for airborne particulates will be addressed in the site-specific health and safety plan for any Site 11 remedial action. This information is not repeated in Section B5.
22. Section 5.6, p. B5-7, paragraph 2. Because the soil that is to be recycled as cover material at the landfill is contaminated, it appears that the risk of exposure should be determined and discussed for stock-piling of the	**RESPONSE 22:** This comment is addressed in Section B4 (see response to Comment 15 of Attachment B) and is not repeated in the comparative

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soil until it is used in the cover; exposure due to moving, placing and grading the soil during construction; and soil vulnerable to movement by wind action until the soil placed in the landfill is capped by the final cover.	
Attachment C **General Comments** **1. The text and the corresponding tables need to be correlated. The text should explain and help the reader through the tables, but the text lacks the necessary detail to support the tables. For example, the screening of technologies shown in Table 2-4 needs to be strengthened and supported by the text.**	**RESPONSE 1:** Where appropriate efforts were made in the Draft Final FS to provide better correlation between tables and supporting text throughout the Attachment. Throughout the document emphasis was placed on the use of tables and figures in lieu of text to provide maximum information in a format that is concise, visually appealing, and understandable.
Specific Comments **1. Section 1.3.2, p. C1-27, bullet 4. Please verify that this information is correct for Unit 3 at Site 12. It is likely that evaporation and infiltration along the drainage ditch are higher than at most of the other sites at El Toro.**	**RESPONSE 1:** Comment verified.
2. Table 2-3, p. C2-19. This table is confusing because some entries say "see Table 2-3," but this is Table 2-3. Please replace this statement with a more appropriate reference or include the full information.	**RESPONSE 2:** The correct citation is Table C2-4. This correction has been made in the Draft Final FS.
4. Table 2-4, p. C2-21. It should be made clear that these options were screened according to Effectiveness, Implementability and Cost. Alternatively, revise the title to "Comparison of Treatment Technology Process Options at Site 8 or something similar. **Under the heading "Site Contaminant Treatable" include footnotes to the effect that bioventing, soil washing and low temperature thermal desorption are effective for the treatment for PAHs. Indicate soil washing, dehalogenation, high temperature thermal desorption and**	**RESPONSE 4:** These criteria are identified in Section C2.4.2 as the basis for the screening of process options in Table C2-3 and C2-4. Table C2-4 has been revised in the Draft Final FS to include the contaminants a technology is capable of treating.

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incineration are effective for PCBs.	
4. **Section 2.4.2.3, p. C2-16. Please discuss whether there are known or unknown underground utilities. The removal process should include the clearance of utilities at depth before excavation.**	**RESPONSE 4:** Underground utilities are present beneath Site 12, however they are not expected to impact the implementability or cost of this process option. Section C2.4.2.3 of the Draft Final FS will be expanded to include this information.
5. **Section 2.4.2.4, p. C2-22, paragraph 1, 7th sentence. Explain what the potential reuse limitations of the treated soil are, or refer to a section that discusses these limitations. Explain the factors controlling the cost range of $300 to $600, and clarify which cost will be assumed for the cost analysis.**	**RESPONSE 5:** The discussion of dehalogenation has been revised and reference to potential reuse limitations of treated soil has been removed from this discussion in the Draft Final FS. The costs listed for process options are for screening purposes only and represent a range obtained from one or more sources. The cost range reflects the magnitude of uncertainty associated with this process option. The Draft Final FS will indicate that the factors controlling the cost range can include: contaminant concentrations; treatment chemicals required; soil moisture content; clay content; particle size heterogeneity; secondary treatment of residuals; fuel, electricity, and water usage; and community acceptability
6. **Section 2.4.2.5, p. C2-23, paragraph 2, 2nd sentence. Explain the factors controlling the cost range of $50 to $200, and clarify which cost will be assumed for the cost analysis.**	**RESPONSE 6:** The costs listed for process options are for screening purposes only and represent a range obtained from one or more sources. The cost range reflects the magnitude of uncertainty associated with this process option. The Draft Final FS will indicate that the factors controlling the cost range can include: contaminant concentrations; the distance from the site to the disposal facility utilized; cost of disposal; and community acceptability.
7. **Section 3.1, p. C3-1, last sentence. Please discuss the extent to which natural biodegradation is occurring, including the half-life for degradation under conditions comparable to those found at the site for each of the contaminant groups or for the individual contaminants found at this site. Generally, natural degradation of PCBs is extremely slow particularly under the aerobic conditions found in shallow soil. High molecular weight PAHs like benzo(a)pyrene, benzo(b)fluoranthene,**	**RESPONSE 7:** As presented in Table C1-1 the primary COPCs (risk drivers) in soil at Site 12 Unit 3 are 2-(2-methyl-4-chlorophenoxy)-propionic acid (MCPP), benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, PCB Aroclors 1254 and 1260, 4,4'-DDT, and dieldrin. The half-lives of the these compounds (excluding MCPP for which there is no value) are 1.45, 1.67, 2.58, 120,000 and 410,000, 15.6, and 3 years, respectively (BNI 1997a). These half-life values are most conservative values for microbially mediated

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dibenzo(a,h)anthracene, and fluoranthene also do not degrade. 4,4-DDT and Dieldrin degrade only with direct exposure to sunlight (photolysis) which effects only the top fraction of a millimeter.	degradation in soil. Text in the Draft Final FS has been revised that the rate of natural degradation of PCBs is negligible but that the rate for PAHs and pesticides is considerably faster.
8. **Section 3.2, p. C3-1, paragraph 1, 1st sentence. Please clarify whether irrigation is required to support the vegetation. If irrigation is necessary, infiltration may become more significant.**	**RESPONSE 8:** Irrigation may be required to support vegetation utilized for a monolithic soil cap with vegetative cover. However, infiltration is not considered a significant factor due the nature of the COPCs at the Site 12 Unit 3 (i.e. contaminants are tightly bound to the soil and resistant to leaching).
9. **Section 3.3, p. C3-5, paragraph 1, 1st sentence. Please explain how the 1:1 (45° angle) slope was determined. If a 2(H):1(V) slope is assumed, the soil volume will increase.**	**RESPONSE 9:** This slope was determined based on depth of the excavation (OSHA requirement for shoring protection), lack of structures present near the area to be excavated, observed stability of soil at the Station, and to minimize the volume of additional soil requiring excavation.
10. **Section 3.4, p. C3-6, paragraph 2, and Section 3.5, p. C3-8, paragraph 2, 1st sentence. A discussion of embankment slopes for the excavation should be included.**	**RESPONSE 10:** This discussion is presented in third sentence of the first paragraph of Section C3.3, and is referenced in the last sentence of the second paragraph of Sections C3.4 and C3.5
11. **Section 3.4, p. C3-8, paragraph 2, 2nd sentence. Please specify the metals that are anticipated to be concentrated in the ash.**	**RESPONSE 11:** The metals concentrated in the ash can not be determined until a treatability study for the incinerator is conducted. The Draft Final FS has been expanded to indicate that the metals that could be concentrated in the incinerator ash will consist of a subset of those identified Site 12 during the RI and typically include: sodium, potassium, arsenic, barium, beryllium, lead, nickel, mercury, cadmium, zinc and chromium.
12. **Section 4, Short-term Effectiveness, All Alternatives. The evaluation of the alternatives for the criterion of "Short-term Effectiveness" lacks descriptive text for: Effectiveness and reliability of protective measures; effectiveness and reliability of mitigative measures during implementation; and time until the cleanup objectives are achieved (Section 4.1.5, p. 4-4, of the main body of the report).** **The summary tables (e.g., Table ES-3, p. ES-23 should then show the ranking of the alternatives, according to short-term effectiveness, in the**	**RESPONSE 12:** Disagree, this section addresses criteria presented in Section 4.1.5 of the main body of the report. Protective and mitigative measures presented in the short-term effectiveness sections have been designed to be reliable in controlling risk to workers at the site during the remedial action. These sections have been revised in the Draft Final FS to include this statement. See Response to Executive Comment 5.

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reverse order relative to each other, (i.e., Alternative 1 will be "Low" [or not applicable] and alternative 5 will be "High").	
13. **Section 4, Short-term Effectiveness, All Alternatives Except "No Action." Please specify the source of the investigation-derived material wastes that are mentioned in the text. Please discuss whether monitoring of airborne particulate matter will be implemented during handling of contaminated soil.**	**RESPONSE 13:** The sources of investigation-derived waste could include such materials as excess soil associated with confirmation sampling activities and liquid wastes generated during equipment decontamination. The text of these subsections for Alternatives 2 through 5 (which involve grading and/or excavation) has been revised in the Draft Final FS to indicate that monitoring for airborne particulates will be addressed in the site-specific health and safety plan for any Site 12 remedial action.
14. **Section 4, Short-term Effectiveness, All Alternatives Except "No Action." Please clarify whether construction barriers will be used to control the site.**	**RESPONSE 14:** The Draft Final has been revised to indicate that construction barriers will be used to control site access.
16. **Section 4,4,5, p. C4-9, paragraph 2. Because the soil that is to be recycled as cover material at the landfill is contaminated, it appears that the risk for exposure should be determined and discussed for stock-piling of the soil until it is used in the cover; exposure due to moving, placing and grading the soil during construction; and soil vulnerable to movement by wind action until the soil placed in the landfill is capped by the final cover.**	**RESPONSE 16:** The exposure scenarios referenced in this comment were addressed as the construction worker scenario in the RI. The construction worker scenario includes exposure to contaminated soil from the site during excavation, moving, stockpiling, and grading of soil. Results of this evaluation indicated that the risk to a construction worker was approximately 7 times less than the risk to a residential adult, which is 5.1×10^{-5} at Unit 3 of Site 12 in the RI. This information is presented in Section C1.3.3. In addition, as presented in the short-term effectiveness analyses of Section C4, risks associated with exposure of site personnel to dust emissions and direct contact with impacted soil during excavation, loading, hauling, unloading, and grading of contaminated soil will be mitigated during the remedial action using dust suppressants and PPE.
17. **Section 5. The section makes better use of the tables because the text is more relevant to the tables than in previous sections.**	**RESPONSE 17:** Comment noted.

Originator: Glenn R. Kistner, Project Manager U.S. EPA **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** September 3, 1997	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0079** **File Code: 0222**
18. **Section 5, Short-term Effectiveness, All Alternatives. The evaluation of the alternatives for the criterion of "Short-term Effectiveness" lacks descriptive text for effectiveness and reliability of protective measures; effectiveness and reliability of mitigative measures during implementation; and time until the cleanup objectives are achieved (Section 4.1.5, p. 4-4 of the main body of the report).** **The summary tables (e.g., Table 5-1, p. C5-2) should then show the ranking of the alternatives, according to short-term effectiveness, in the reverse order relative to each other, (i.e., Alternative 1 will be "Low" [or not applicable] and alternative 5 will be "High").**	**RESPONSE 18:** See Response to Comment 12 Attachment C, Specific Comments. See Response to Executive Comment 5.
19. **Table 5-1. A rating method with more options than high, moderate, low should be used. This would allow differentiation between alternatives. For example, an alternative that resulted in a reduction of volume and toxicity could then be rated higher than an alternative that only reduced contaminant volume; currently both alternatives would be rated "high."**	**RESPONSE 19:** Disagree, the method used is appropriate for rating the alternatives. The example as cited in this comment suggests that an alternative that resulted in a reduction of volume and toxicity could be rated higher than an alternative that only reduced volume. However, the alternatives proposed in the FS (excluding "no action" and capping) either remove the contaminated soil from site (volume reduction) or treat contaminated soil and replace it back at the site (toxicity and volume reduction). The net result of both of these alternatives is the same at the site (e.g. in terms of protecting of human health).
20. **Sections 5.4 and 5.5, p. C5-6. It is unlikely that much, if any, natural biodegradation is occurring in Unit 3 soil (see Comment 7). Please revise or delete the statements about natural biodegradation.**	**RESPONSE 20:** See response to Attachment C Specific Comment 7. The discussion of natural biodegradation has been removed from the section cited in this comment.
21. **Section 5.6, p. C5-7, paragraph 2. Please discuss the source of the investigation-derived wastes. Also discuss whether monitoring of airborne particulate matter would be implemented during handling of contaminated soil.**	**RESPONSE 21:** The sources of investigation-derived waste could include such materials as excess soil associated with confirmation sampling activities and liquid wastes generated during equipment decontamination. The text of Alternatives 2 through 5 in Section C4 (per Attachment C Specific Comment 13) have been revised in the Draft Final FS to indicate that monitoring for airborne particulates will be addressed in the site-specific

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	health and safety plan for any Site 12 remedial action. This information is not repeated in Section C5.
22. Section 5.6, p. C5-7, paragraph 2. Because the soil that is to be recycled as cover material at the landfill is contaminated, the risk of exposure should be determined and discussed for stock-piling of the soil until it is used in the cover; exposure due to moving, placing and grading the soil during construction; and soil vulnerable to movement by wind action until the soil placed in the landfill is capped by the final cover.	**RESPONSE 22:** This comment is addressed in Section C4 (see response to Comment 15 of Attachment C) and is not repeated in the comparative summary Section C5.
Appendix C - Cost Estimates **General Comments** **1. A cost for maintenance of the asphalt cap needs to be estimated and included even if RACER will not provide it (Section C4, p. C4-1, Assumptions).**	**RESPONSE 1:** The third bullet of Section III4 of Appendix III has been revised in the Draft Final FS as follows "For Alternatives 2 through 5 at Site 12 Unit 3, O&M costs (mowing, fertilizing, and reseeding of the vegetative cover) will be incurred annually beginning at the end of the construction activities, and continuing for a period of thirty years." An additional bullet has been added to Section III4 indicating that for Alternative 2 at Site 8 Units 1 through 4, Site 8 Unit 5, and Site 11 Units 1 and 2, O&M costs will be incurred annually beginning at the end of the construction activities and continuing for a period of thirty years." For Alternative 2 at these areas of concern, O&M costs will cover annual inspection of the asphalt cap and incremental repaving equivalent over the 30-year maintenance period to a single complete replacement of the cap.
2. Unit costs should be shown in all tables.	**RESPONSE 2:** Units costs are not shown because the RACER cost values are not based on a simple fixed unit cost for each item shown in the tables. The cost presented for each item is based in part on many site specific factors including mobilization and demobilization, the volume of material involved in each activity, and the number and types of activities included in the alternative, adjusting the type and quantity of equipment used to conduct the

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	work with construction schedule considerations to achieve a reasonable and effective balance. In addition, costs presented in the tables have been rounded to the nearest $100 and with the exception of Site 11, the volumes presented in the tables have been rounded to the nearest 5 cubic yards.
3. The basis for the contractor's rates for the categories of "indirect, overhead and profit" should be given.	**RESPONSE 3:** The estimated contractor indirect cost (indirect, overhead, and profit) presented in each table is computed by an internal cost model in RACER. The primary input factors upon which this cost is based include project duration, the project safety level (OSHA levels A through D), the complexity of the alternative (number and types of construction activities to be conducted), and the location (costs based on labor rates, taxes, etc. included in RACER database for the El Toro area). A footnote indicating this cost basis will be added to the cost tables.
4. Please clarify whether the cost of professional labor was based on hours or a percentage of other costs.	**RESPONSE 4:** The estimated cost of professional labor is computed by an internal cost model in RACER. Like the contractor costs discussed in the previous comment, the project duration, safety level, complexity, and location all factor into an internal estimation of hours, drawings, etc., that are then translated to costs based on local labor rates in the RACER database. A footnote indicating this cost basis will be added to the cost tables.
5. Please specify the quantities for sampling and analysis.	**RESPONSE 5:** The number of samples has been added to the cost tables presented in the Draft Final FS.
6. Please clarify whether cost estimates are precise to the nearest $100 or whether they should be rounded to the nearest $1,000.	**RESPONSE 6:** Estimated costs are presented in the tables to the nearest $100. However, as the narrative in Section III3 of this appendix indicates, the cost estimates have a ± 30 percent accuracy.

RESPONSE TO COMMENTS
DRAFT PHASE II FEASIBILITY STUDY REPORT
FOR OPERABLE UNIT - 3A
MCAS EL TORO, CALIFORNIA

Originator: Tayseer Mahmoud, Remedial Project Manager DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 26 August 1997	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0079** **File Code: 0222**
GENERAL COMMENTS	***RESPONSES TO GENERAL COMMENTS***
1. **Quantification of Reduction of Risk: The Department of the Navy (DON) used the correct methods for calculating Preliminary Remediation Goals, as shown in Appendix B. Please express risk reduction quantitatively for each alternative. If an alternative renders the pathway(s) of exposure incomplete, DON may state that risk would be eliminated by this alternative. This information would be incorporated into the text of Attachments A, B, and C and into the summary tables at the end of each attachment.**	**RESPONSE 1:** The requested information has been added to the following sections and tables: Attachment A, Sections A4.2.2.1, A4.2.3.1, A4.2.4.1, A4.2.5.1, A4.3.1.1, A4.3.2.1, A4.3.3.1, A4.3.4.1, A4.3.5.1, Table A5-1, and Table A5-2. Attachment B, Sections B4.3.1, B4.4.1, B4.5.1, B4.6.1, and Table B5-1. Attachment C, Sections C4.3.1, C4.4.1, C4.5.1, C4.6.1, and Table C5-1. All alternatives (except Alternative 1) have been designed to achieve a residual risk for an on site resident less than 1×10^{-6} once the remedial action has been completed.
2. **Risk Management Range: DON correctly quoted the National Oil and Hazardous Waste Contingency Plan in stating that the acceptable range for cancer risk is 1x10-6 to 1x10-4. DTSC takes 1x10-6 to be the point of departure for acceptable cancer risk and refers to 1x10-6 to 1x10-4 the "risk management range". If a preferred alternative would leave a residual risk in this range, then DON should present some justification as to why such a residual risk can be managed acceptably under this alternative.**	**RESPONSE 2:** See response to the previous comment.
SPECIFIC COMMENTS	***RESPONSES TO SPECIFIC COMMENTS***
1. **Executive Summary, Background, Figure ES-1: Show the names of OU-3A sites covered in this Feasibility Study (FS) on Figure ES-1.**	**RESPONSE 1:** Figure ES-1 has been revised to identify the sites addressed in this report. In addition, the boundaries of the remaining OU-3A sites have been removed.
2. **Executive Summary, Site 11 Units 1 and 2, page ES-27: Reference to Units 1 through 4 in the text is a typographical error. The correct reference is Units 1 and 2.**	**RESPONSE 2:** This reference has been corrected to Site 11 Units 1 and 2.

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3. Attachment A, Site 8, Table 2-3, page A2-17: Provide the correct reference where information can be found to evaluate the effectiveness, implementability and cost of in situ treatment.	**RESPONSE 3:** This reference has been corrected to identify Tables A2-4, B2-4, and C2-4 in site-specific FS Attachments A and C respectively.
4. Attachment A, Site 8, Table 2-4, page A2-21: Revise the table to list the site specific chemicals under Site Contaminant Treatable that can be treated using each treatment technology. **The above comment also applies to Attachments B, Site 11 and Attachment C, Site 12.**	**RESPONSE 4:** Tables A2-4, B2-4, and C2-4 have been revised to identify the suites of chemicals (e.g. PCBs, PAHs) present at the three OU-3A Sites that can be treated by the each technology.
5. Attachment A, Site 8, Sections 3.2.1.2 and 3.2.2.2, Alternative 2, Capping Plus Restrictive Covenants, pages A3-3 and A3-11: This section should be more specific regarding the land use restrictions proposed for the site. Will Alternative 2 allow the future land owner to use the area for parking or for other similar uses? Please specify the anticipated types of compatible uses that will be allowed, or state whether access will be prohibited to "control potential damage or destruction of the cap." **I recommend that last sentence in this section be revised to:** **"The restrictive covenant(s) would ~~govern~~ specify the conditions under which the property could ~~continued to~~ not be used in the future, ~~particularly~~. For example, land use restrictions would prohibit activities that involved removal of the asphalt pavement and trenching or excavation of the contaminated soil beneath the cap."** **The above comments also apply to Attachments B, Site 11, Alternative 2, Section 3.2.**	**RESPONSE 5:** If this alternative were selected, the anticipated types of land uses compatible with Alternative 2 would be specified when the restrictive covenant is written. The text in Attachments A and B has been revised in the Draft Final FS as suggested for the first sentence of the comment. The second sentence in the comment is not used in the Draft Final FS because text as been expanded to provide more detail.

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6. **Attachment A, Site 8, Section 3.2.1.3 and 3.2.2.3, Alternative 3, page A3-5 and page A3-12: The text states that confirmation sampling analyte concentrations of the stockpiled soil should not exceed toxicity characteristic leaching procedure (TCLP), solubility threshold limit concentration (STLC), or total threshold limit concentration (TTLC). Please revise the text to state that concentrations should not exceed all three criteria TCLP, STLC, and TTLC.** **The FS should include revisions handling and disposing portions of the stockpiled soil if it exceeds the threshold concentrations. The cost estimates for transportation and off-Station disposal should be added in Section 4, Detailed Analysis of Alternatives.** **The above comments also apply to Attachments B, Site 11 and Attachment C, Site 12, Section 3.3.**	**RESPONSE 6:** The text has been revised in the Draft Final FS to indicate that none of the three criteria can be exceeded. Based on the RI analytical results for soil at the three FS sites, none of the contaminants are expected to exceed threshold concentrations. Therefore, provision for off-Station disposal is not included in the cost estimates for this alternative. Comment noted.
7. **Attachment A, Site 8, Alternatives 3, 4, and 5: These alternatives involve the excavation of contaminated soils to a planned depth and sampling the excavated area to confirm that all the contaminated soil exceeding risk-based concentrations (RBC's) has been removed. Table 2-1, page A2-8 presents the calculated contaminant-specific RBC's for both residential and industrial land use. The FS should state which cleanup level you plan to achieve. Also, please provide details of the restrictive covenants if you are proposing to clean the site using industrial RBCs.** **The above comments also apply to Attachments B, Site 11 and Attachment C, Site 12.**	**RESPONSE 7:** The text of these alternatives has been revised to indicate that excavation will remove contaminated soil exceeding "residential" RBCs.
8. **Attachment C, Site 12, Figure 2-1, page C2-11: Show the cross section locations A-A', B-B', C-C', etc., on this figure.**	**RESPONSE 8:** Figure C2-1 has been revised to include the cross section locations.

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9. Attachment C, Site 12, Sections 3.2, Alternative 2, Capping Plus Restrictive Covenants, page C3-1: I recommend that last sentence in this section be revised to: **"The restrictive covenant(s) would govern specify the conditions under which the property could continued to not be used in the future, particularly, For example, land use restrictions would prohibit activities that involved trenching or excavation of the cap or the contaminated soil beneath the cap."**	**RESPONSE 9:** The text in Attachment C has been revised in the Draft Final FS as suggested for the first sentence of the comment. The second sentence in the comment is not used in the Draft Final FS because text as been expanded to provide more detail.
10. Appendix A, Section A4, Action-Specific Applicable or Relevant and Appropriate Requirements: Please add guidance to be considered (TBC), the California Base Closure Environmental Committee document titled Treatment Technologies Application Matrix for Base Closure Activities, November 1994.	**RESPONSE 10:** The document "Treatment Technologies Application Matrix for Base Closure Activities" presents a matrix that can be used to identify suitable cleanup technologies for various types of contamination. This document is intended to provide a basis for identifying technologies and process options applicable to specific contaminants and media. As such, this document would be applicable to Section 2.4 (Identification and Screening of Technology Types and Process Options) of the Main Report and site specific attachments. It provides no regulatory guidance or statutory requirements for the technologies and process options identified in the document. Therefore, this document is not applicable to the ARARs appendix.