RESPONSE TO COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORTS,
SITES 2 AND 17
MCAS EL TORO, CALIFORNIA

Originator: Virginia Garelick Navy **To:** Andy Piszkin Navy **Date:** 24 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
GENERAL COMMENTS	***RESPONSES TO GENERAL COMMENTS***
a. The subject documents address Site 2 (Magazine Road Landfill) and Site 17 (Communication Station Landfill). The objective of an RI is to collect sufficient data to adequately characterize a site. The information generated from this activity will be used to develop and evaluate effective remedial alternatives. The reports were well written and substantially complete. The majority of my comments address the need for editorial revisions and/or clarification to enhance document quality. The reports complied with U.S. EPA guidelines for the preparation of RI/FS reports.	**RESPONSE a:** The MCAS El Toro RI team is pleased that the DON has approved and has provided their comments on the Sites 2 and 17 draft RI reports. Positive interaction among all the BCT members has facilitated the RI process. DON and other review comments have been incorporated into the "red-line strike-out" version of the draft RI.
b. Site 2: From the site maps that were provided, it appears that we may have not adequately characterized the entire landfill. The investigation of the off-site portion of the landfill involved the drilling of one monitoring well and one trench (and no soil samples were collected from the trench). Given the history of this site (e.g., an Emergency Scope Protection Action was conducted in 1993 in the vicinity of the currently planned emergency removal action) recommend that additional sampling be conducted to characterize this portion of the landfill and to determine DON's potential liability. The sampling results could be included as an addendum to this RI report. The feasibility study should address the entire landfill, including the off-site portion.	**RESPONSE b:** The RI was conducted in accordance with the Phase II RI/FS Work Plan and meetings were held weekly with the BCT to discuss the results. The intent was not to characterize the landfill wastes, but to determine the extent. This was completed by visual mapping, soil borings, aerial photographs, interviews, and trenching. The FS will evaluate removal and consolidation of the off-site landfill to the main area of the landfill, essentially conducting a "clean closure" of the off-site portion. Discussion with the California Integrated Waste Management Board on June 19 indicated that sampling following excavation is acceptable. The Navy does consider this an effective method of removal and expedited cleanup.
c. The boundary of Site 2 is not clearly defined in the RI report. Please verify the site boundary as it relates to the MCAS El Toro property boundary. Per Attachment A, recommend that the property boundaries, utility easements and the Alton Parkway extension be addressed in the IRP Site 2 Feasibility Study.	**RESPONSE c:** The Site 2 study area and/or Site 2 landfill boundaries, where applicable, will be expressed more prominently on figures. The MCAS El Toro property boundary and the approximate location of the Alton Parkway extension will not be added to the Site 2 figures because these features are more appropriate for the detailed Remedial Design. Currently the landfill overlaps the Alton Parkway project in its off-property portion which is proposed for removal. Since possible inaccuracies may exist on the maps,

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	utilities and utility easements have not been added to the Site 2 maps. In fact, it was noted by USA Alert, that a high pressure water line and gas line extends across Borrego Canyon Wash along the road parallel to the citrus grove. Unfortunately, these lines are not shown on the DON maps, and placement of these lines on the Site 2 maps without accurate surveyed coordinates may be misleading. Such details will be needed on the Remedial Design.
d. Regarding the data validation reports for both sites, I noted that hundreds of non-detected compounds have "R" data qualifiers. This means that the associated non-detected results are not useable for any purpose. The "R" qualifiers were assigned because acceptance criteria was often exceeded with respect to the following: (a) initial and continuing calibration factors; (b) surrogate percent recoveries; (c) matrix spike/duplicate recovery and RPD limits; (d) laboratory control sample analyses percent recoveries; and (e) internal standard areas and retention times. In some cases the retention times were grossly exceeded (e.g., by more than three weeks for semi-volatiles). This is unacceptable. Please see me for specific examples.	**RESPONSE d:** A discussion of R values has been added to the PARCC section. The percent completeness of the Site 2 data exceeds the 90% completeness criteria for this work.
e. Regarding the format of the reports, some of the appendices include information for all five landfills at MCAS El Toro, whereas other appendices provide site specific data. As a result, an enormous amount of non-relevant information is contained in the RI reports I reviewed. This is a waste of paper and renders the review of information difficult. Recommend tailoring the reports to include only site specific information. At a minimum, recommend highlighting the information that relates to the site, rendering the document more "user friendly." This can be accomplished by providing a dark band on the pages that contain site specific information.	**RESPONSE e:** Dark bands on relevant site-specific data will be considered.

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SPECIFIC COMMENTS **Although the majority of my comments focus on Site 17, please make similar revisions to the Site 2 RI report where applicable.**	***RESPONSES TO SPECIFIC COMMENTS***
SITE 2: MAGAZINE ROAD LANDFILL **a. Executive Summary** **(i) Background, Fourth Paragraph: Please cross-check this description with that provided in the draft Action Memo for the Emergency slope protection Action that was accomplished in 1993.**	**SITE 2: MAGAZINE ROAD LANDFILL** **RESPONSE a(i):** The description is similar to the draft Action Memorandum.
(ii) Page ES-2, Figure ES-1: Please provide a better figure. The southwestern boundary of the landfill is cut off.	**RESPONSE a(ii):** The extent of the aerial photograph is the actual extent available for this photograph.
(iii) Page ES-5, First Paragraph: Clarify that this report summarizes the results of Phase I and Phase II investigations. **Fourth paragraph: According to the Phase I RI report, mercury exceeded ecological criteria. Revise paragraph accordingly.** **Fifth Paragraph: State the maximum levels of COCs (where MCLs were exceeded). Additionally, please ensure that this paragraph is consistent with the information contained in Section 4.6.1.2 (page 4-162).** **Sixth paragraph: Clarify that "residential" PRGs were exceeded.** **Seventh paragraph: Clarify which constituents exceeded ecological criteria (see Phase I report).**	**RESPONSE a(iii):** The statement summarizing Phase I and II will be included. Reference to the ecological risk assessment is make on ES-7. The Phase I ecological risk assessment was a screening exercise, while the Phase II RI ecological risk assessment quantifies these risks which is presented in Section 7. To add maximum concentrations would require considerable effort. No PRGs were used to screen the RI results as this document needs to illustrate extent of contaminants associated with the landfill. Ecological risks are stated on ES-7.
(iv) Page ES-6, Third Paragraph: The leachability finding is not consistent with the information presented on page ES-10. Please correct.	**RESPONSE a (iv):** Leachability statements will be consistent.
b. Chapter 1 - Introduction **(i) Page 1-5, Third Paragraph: DTSC and RWQCB are both part of Cal EPA. Make this change throughout the document.**	**RESPONSE b(i):** Comment will be incorporated.

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c. Chapter 2 - Study Area Investigation	
(i) Figure 2-7: There is a discrepancy between the total number of samples collected during Phase II versus the number of samples analyzed. Please revise.	**RESPONSE c(i):** There is a difference between collected and analyzed. Many collected samples were field screened and field screened samples meeting certain criteria were analyzed as discussed on 2-29.
(ii) Page 2-59, Data Validation Qualifiers. Mention the significance of "J" qualifiers, too.	**RESPONSE c(ii):** This section will be revised to reflect the data validation process with a description of various qualifiers provided in Appendix Q.
d. Chapter 3 - Physical Characteristics	
(i) Page 3-9, Stream Bank Erosion: Mention the removal action that was accomplished in 1993.	**RESPONSE d(i):** Direction from Bernie Lindsey and Lynn Hornecker indicate that the Action Memorandum is not to be referenced due to its draft condition. Discussion of the repairs is presented.
(ii) Page 3-5, Table 3-5 (Geotechnical Soil Test Results): Were soil measurements such as plasticity index taken? If so, provide this information.	**RESPONSE d(ii):** No plasticity index was conducted and only those geotechnical tests reported were completed. No revision needed.
(iii) Page 3-40, Vegetation Communities: Was any sign of vegetative stress observed during the RI? If so, this should be stated here.	**RESPONSE d(iii):** No stress was observed and this will be incorporated in the text.
e. Chapter 4 - Nature and Extent of Contamination	
(i) Page 4-9, Trenching, Sixth Paragraph: What was the nature of the exposed waste? Provide description.	**RESPONSE e(i):** A column will be added to describe wastes on Table 4-2.
(ii) Figure 4-4: Provide the following title for the figure: "Groundwater Monitoring Well Locations".	**RESPONSE e(ii):** This is intended to illustrate the landfill extent, the monitoring wells will be removed
(iii) Page 4-55, Second Paragraph: Define "tentatively identified compounds".	**RESPONSE e(iii):** A short description of TICs will be included.
(iv) Table 4-17 "Compounds Detected in Subsurface Soil": Revise the table legend to indicate when analyses were not performed. (For consistency with the other tables, use "- -" to indicate this.)	**RESPONSE e(iv):** Agree.

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(v) Page 4-121, Third Paragraph: Confirm that monitoring wells installed during the Phase I RI have been sampled four separate times.	**RESPONSE e(v):** Phase I monitoring wells were sampled 4 times except for 02_UGMW25 which was sampled 3 times.
(vi) Page 4-161, Second Paragraph: Provide levels of contamination detected.	**RESPONSE e(vi):** Concentrations are presented on Table 4-22.
(vii) Page 4-183, Third Paragraph: The discussion regarding gross alpha and gross beta particle activity in groundwater is confusing. Describe the typical range of these constituents in areas where shales and siltstone are prevalent.	**RESPONSE e(vii):** Discussion of gross beta to potassium will be incorporated. Gross alpha concentrations will be discussed.
f. Chapter 8 - Conclusions and Recommendations **(i) Page 8-15: Add levels of contamination (high hits).**	**RESPONSE f(i):** Due to the number of detections, references will be made to tables in Section 4 which present results.
g. Chapter 9 - References **(i) Add the Draft Removal Action Memorandum that was prepared by Southwest Division Naval Facilities Engineering Command in 1993.**	**RESPONSE g(i):** This will be incorporated.
SITE 17 - COMMUNICATIONS STATION LANDFILL ***SPECIFIC COMMENTS*** **a. Executive Summary** **(i) Page ES-1, Third Paragraph: Mention that the landfill covers approximately 20 acres.**	**SITE 17 - COMMUNICATIONS STATION LANDFILL** ***RESPONSES TO SPECIFIC COMMENTS*** **RESPONSE a(i):** The change will be incorporated.
(ii) Page ES-6, Human Health Risk Assessment, Third Paragraph: Explain that very conservative technical assumptions were used to derive the risk calculations. Fourth paragraph: There appears to be a discrepancy between the level of risk discussed and the information presented in Chapter 4 (e.g., the maximum level of arsenic detected was below background level).	**RESPONSE a(ii):** The conservative assumption for risk assessment will be included.

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b. Chapter 1 - Introduction: **(i) Page 1-6, Figure 1-3 (IRP program process): Add a box entitled "Remedial Design".**	**RESPONSE b(i):** This will be added as well as operation and maintenance per OPNAVINST guidance.
(ii) Page 1-27: According to Phase I report, MCPA was a risk driver. Please include the analytical results for MCPA detected in shallow soil.	**RESPONSE b(ii):** MCPA in Phase I did not exceed the PRG, which was used to summarize Phase I results.
c. Chapter 2 - Study Area Investigation: **(i) Page 2-7, Figure 2-1 (Surface Geophysical Survey and Trench Locations): Revise the figure to indicate the areas where the geophysical survey was restricted.**	**RESPONSE c(i):** The figure illustrates where the geophysics were conducted. Areas outside of the shown geophysics lines were areas of restrictions or exposed wastes. These areas have been identified on the figure.
(ii) Page 2-12, Meteorological Monitoring: Qualify the first sentence. The meteorological monitoring was conducted at Site 2, not Site 17.	**RESPONSE c(ii):** The meteorological station was located at MCAS El Toro Environmental Restoration Facility (Site 3) and the data used for the RI at all four landfill sites. Meteorological monitoring was conducted at Site 2, not Site 17 and the text has been revised.
(iii) Page 2-31, Figure 2-7 (Quantity of Soil Samples Collected): The quantity of soil samples collected versus quantity of soil samples field screened and analyzed do not add up. Please correct.	**RESPONSE c(iii):** Some soil samples were not screened such as the surface soil samples collected for the ecological risk assessment.
d. Chapter 5 - Fate and Transport **(i) Page 5-9, Contaminant Persistence: Clarify that Table 5-1 only includes COCs that exceeded residential PRGs.**	**RESPONSE d(i):** The fate and transport section will evaluate metals exceeding background concentrations and detected organic compounds.
g. Chapter 6 - Human Health Risk Assessment:	
j. Appendix A (Field Change Notices): Add a sentence to the introduction to inform the reader that field change notices apply to both landfill sites in this report.	**RESPONSE j:** The sentence will be modified to indicate all FCNs for landfill investigations are included.
k. Appendix C (Geophysics Report): This appendix includes a description of electromagnetic surveys and maps for all of the	**RESPONSE k:** The pages relevant to this site will be highlighted.

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landfills at El Toro. Recommend eliminating all data that does not relate to Site 17.	
l. <u>Appendix E (Air Sampling Information)</u>: This appendix includes air sampling information for all of the landfills at El Toro. Recommend eliminating all data that does not relate to Site 17. **Additionally, it does not appear that Attachment C (Lab Results) included the volatile organics analysis data sheets for Site 17 samples. Please provide.**	**RESPONSE l:** See comment #k.
m. <u>Appendix F (Soil Gas Survey Report)</u>: Table B-1 (Halogenated and Aromatic Hydrocarbons Field Analytical Results for Soil Gas Samples) is incomplete. Please provide analytical results for sample 76Q2028. (Note that Table 12 Summary of Field Analyses) indicates hits of 1,1 DCE and 1.1.2 trichloro trifluoroethane at this sample location.)	**RESPONSE m:** This will be provided.
n. <u>Appendix G (Background and Reference Level Calculations</u>: This appendix was reviewed by Dennis Askvig. **(i) <u>Page G-2, Parametric Approach</u>: What is the level (.05, .10, .20)? Note: At this time, DTSC will not accept UTL level. Note: Our focus is on EPA approach/<u>requirements</u> due to NPL status.**	**RESPONSE n(i):** After consulting with John Christopher of DTSC, the 95 percentile will be used as a threshold value and the Wilcoxon Rank Sum and Quantile test will be used to assess contaminants.
(ii) <u>Page G-20, Nonparametric Approach</u>: Which nonparametric method was used? Revise last sentence in the first paragraph to read "One of the advantages of the nonparametric procedure is that it is often easier to deal with non-detects."	**RESPONSE n(ii):** This process will not be used under the revised background procedure.

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o. <u>Appendix M (Meteorology and climate)</u>: This appendix documents weather patterns, including windspeed, wind direction at Site 2. Are these conditions expected to be the same at Site 17? Please clarify.	**RESPONSE o:** The meteorological system was set up at Site 2 to collect meteorological data representative of both Sites 2 and 17. Sites 2 and 17 are less than 0.5 mile from one another and are located in similar terrain. Climatological patterns at Site 17 would be very similar to Site 2 due to the close proximity of these sites to one another.

RESPONSE TO COMMENTS
DRAFT PHASE II REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 2B, SITE 2 AND 17, MAGAZINE ROAD LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Bonnie Arthur Remedial Project Manager, U.S. EPA **To:** Joseph Joyce BRAC Environmental Coordinator **Date:** May 20, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**

ENCLOSURE A: Review Comments for OU2B Site 2 Draft Remedial Investigation Report

MAJOR COMMENTS	*RESPONSES TO MAJOR COMMENTS*
1. **Page 4-11, Figure 4-3; The text concludes that the boundary of the landfill has been determined by the investigation. However, in the southeast portion of the landfill, near trench locations 02TR6 and 02TR12, landfill materials were encountered and there are no further trench locations outside of the landfill to establish the boundary. Please clarify.**	**RESPONSE 1:** Waste encountered in trenches 02TR6 and 02TR12 was confined to the outer slope edge of Borrego Canyon Wash. The waste did not extend below 3.5 feet and did not extend to the southeast. The trenches did not extend beyond the fence on Musik Honor Farm property. Figure 4-3 was modified to indicate that these trenches defined the boundary. These trench locations, as well as 05TR2, were chosen to determine if surficial mounds of waste extended to depth. Additional trenching southeast of 02TR5 would have been inside the Musik Honor Farm, and surficial mounds of waste were not noted.
2. **Page 4-33, Figure 4-9; Please discuss with the BCT the possibility of expanding the boundary of the landfill to include soil gas location 2SG121.**	**RESPONSE 2:** The dashed line shown on this figure is the Phase II study area boundary. The landfill boundary is better illustrated in Figures 4-1 and 4-4; soil gas point 2SG121 is located within the boundary of the landfill.
3. **Page 4-35, Table 4-8; The key at the end of the table indicates that all shaded sample locations were reevaluated as part of Tier 2. If the criteria to conduct Tier 2 sampling is a total VOC concentration of 300 µg/L or greater, please clarify why the following additional sample locations were not evaluated as part of Tier 2; 2SG15S, 2SG42S, 2SG42W, 2SG53, 2SG54N?**	**RESPONSE 3:** During the 8 November 1995 meeting with the BCT, the seven Tier 2 soil gas sampling locations shown on Figure 4-9 were discussed and approved by the BCT. As noted on page 4-30, the BCT added sample location (02SG15). During the 22 November 1995 meeting with the BCT, the BCT agreed that additional sampling would not be necessary because the VOC results from the Tier 2 sampling was considered to be sporadic in nature and not principle threat wastes. The locations of 2SG15S, 2SG42S, 2SG42W, 2SG53, AND 2SG54N were comprised primarily of Freon 12, not a principal threat waste.
4. **Page 5-29; Elevated levels of both gross alpha and beta radioactivity were measured in surface water samples. The text discusses only a relationship of potassium and beta levels. Provide some discussion regarding possible factors contributing to elevated alpha levels.**	**RESPONSE 4:** Discussion will also include the effects of turbidity and TDS on gross alpha and beta activity.
5. **Page 6-19, first paragraph; Update the discussion of PAHs to include results**	**RESPONSE 5:** The PAH reference levels will be considered in the risk assessment. The risk from the PAHs identified as major contributors to the

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of recent basewide PAH reference study.	on-site risk, risk drivers, will be compared with risk at their reference level.
6. Page 7-8, Table 7-1; Clarify why VOCs found in soil are not included in the table as VOCs were detected in low levels. Is the discussion included elsewhere?	**RESPONSE 6:** VOCs are presented in Table 7-1 as COPECs and are discussed in Section 7.5.1.7. Dose calculations and comparison with toxicity criteria are presented in Table T-5.
7. Page 8-4, Table 8-1; page 8-35, section 8.2.2; Add "cleanup groundwater to maximum contaminant levels" to list of recommended remedial action objectives. Please discuss with BCT.	**RESPONSE 7:** On 22 May 1996 meeting with the BCT, the cleanup of groundwater at Site 2 was discussed. The U.S. EPA representative (Herb Levine) stated cleanup of groundwater at Site 2 was not needed because the concentration and extent were low. He stated that even though TCE and PCE exceeded MCLs, re-evaluation of the hydrogeologic model would indicate that no cleanup is necessary. Therefore, stating MCLs as a RAO is not applicable.
8. Throughout report and Appendix G; Please refer to any ubiquitous organics as anthropogenic, instead of background.	**RESPONSE 8:** References to "background" organic compounds have been deleted throughout the RI and appendices. Organic concentrations are now referred to as reference levels.
MINOR COMMENTS **1. Page ES-10; Typographical error in question.**	***RESPONSES TO MINOR COMMENTS*** **RESPONSE 1:** The repetition of the word "is" was removed from the text.
2. Page 2-29, 2nd paragraph; Clarify whether the "background levels" referred to are describing alpha/beta radioactivity or VOCs? Also, what is the reference for VOC background levels as referenced in the text?	**RESPONSE 2:** The text was modified to indicate that "background levels" applied to the Geiger-Mueller meter. All the field screening instruments were calibrated daily according to the manufacturer's specifications. For the GM meter, a daily background response check was performed. Samples with GM field screening results above background readings were selected for analysis for gross alpha and gross beta. Samples with PID or FID readings above zero were also selected for analysis at the mobile laboratory for VOCs and TPH.
3. Page 4-3; Which map includes Zones A-G?	**RESPONSE 3:** A reference to Figure 4-2 was added to the text.
4. Page 4-9; It would be helpful to also include a description in the text of Trench 02TR11 shown on Figure 4-3.	**RESPONSE 4:** A description of the trenching results from 02TR11 was added to the text.
5. Page 4-13; Please correct discrepancy between Figure 4-3 and Table 4-2 for	**RESPONSE 5:** Table 4-2 was modified to match Figure 4-3. Landfill

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trench locations 02TR07 and 02TR08. The text boxes for these trenches states that landfill wastes were encountered. However, Table 4-2 states that no landfill wastes were encountered within each of these trenches.	wastes were encountered within each of these trenches.
6. Page 4-66, Table 4-14; Typographical error for El Toro arsenic level.	**RESPONSE 6:** The typographical error for the MCAS El Toro arsenic level was corrected to the 95 percentile concentration.
7. Page 4-180, Section 4.6.3; Include a discussion of the metals, in addition to manganese, which have detection's above MCLs in groundwater.	**RESPONSE 7:** A more complete discussion of metals in groundwater was added to Section 5.3. Reference to MCLs has been removed.
8. Page 5-9, Section 5.2; Refer to the earlier text where "Chemicals of Potential Concern" are defined or repeat the description.	**RESPONSE 8:** A reference to the definition of a COPC and how they are determined was added to Section 5.2.
9. Page 5-18, Section 5.3; Include more detailed discussion regarding the El Toro "surface water." A good discussion is included on page 5-28.	**RESPONSE 9:** A more detailed discussion of the MCAS El Toro surface water was added to this section. The results of the February 20, 1996 surface water sampling results were incorporated into this discussion.
10. Page 5-28, first paragraph, last sentence; Typographical error. Magnesium instead of manganese.	**RESPONSE 10:** This typographical error was corrected.
11. Page 6-5, Section 6.1.2; Helpful to identify the exposure scenarios prior to discussing a "recreational child."	**RESPONSE 11:** The text will be modified to present the exposure scenarios prior to discussing the "recreational child". This discussion will be presented in section 6.2, The Exposure Assessment. The identification COPCs, appearing prior to the Exposure Assessment, will be performed without a receptor discussion.
12. Page 6-6, 6.1.2; Typographical error. Background analysis is included in Appendix G, not S.	**RESPONSE 12:** The text refers to Site 2 soil analysis, not background. Therefore the correct citation is Appendix S. However, references to all appendices in text and in the table of contents were checked, verified, and corrected where necessary.
13. Page 6-7; Clarify that Site 2 is part of the "1,700-acre area that has been set aside as a nature conservancy."	**RESPONSE 13:** The text will be clarified as appropriate.
14. Page 7-19, Section 7.5.1.1; Provide the reference for the "selected toxicity	**RESPONSE 14:** The toxicity benchmarks are referenced in Table T-13, COPEC Toxicity Criteria for Selected Receptors. A more detailed

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benchmark."	description of the derivation of the toxicity criteria will also be provided.
15. <u>Page 8-4, Table 8-1</u>; DQO #6 states as an answer to "risk assessment" that "risks are present at downgradient monitoring wells for off-site residents." Clarify that these are hypothetical scenarios.	**RESPONSE 15:** DQO # 6 will be modified to "risks under a hypothetical scenario are present at downgradient monitoring wells for off-site residents"
16. Appendix G; Please update with recalculated numbers. Also, it may be helpful to add a short discussion of results.	**RESPONSE 16:** Appendix G (reordered to Appendix N) was updated with the recalculated numbers for 95 percentile. This statistic and modification by trimming outliers for cadmium and nickel produced the metal background concentrations as discussed with John Christopher of DTSC.

RESPONSE TO COMMENTS
DRAFT PHASE II REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 2B, SITE 2 AND 17, MAGAZINE ROAD LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Herbert Levine, Hydrogeologist U.S. EPA **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** 17 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
ENCLOSURE G: ENCLOSURE C: Review Comments for OU2B Site 2 Draft Remedial Investigation Report	
SPECIFIC COMMENTS	***RESPONSES TO SPECIFIC COMMENTS***
1. Section 3.6.1: Site 2 Occurrence and Movement of Groundwater. The cross-section Figure 3-7 argues against the statement that there is a single shallow aquifer. There is no reason to assume that the water table in the alluvium has to correlate to the water level in bedrock. For the Section A-A'-A" there appears to be three saturated zones, saturated alluvium between A-A', saturated bedrock under A' and another saturated alluvium between A'-A". The same observation is appropriate for the B-B' section. It would be more appropriate to draw the static water level lines within each lithologic unit.	**RESPONSE 1:** There are 2 primary hydrogeologic regimes: bedrock and alluvial. Two subcategories are present for each primary including fine-grained bedrock, coarse-grained bedrock, alluvial stream valley, and the Tustin basin alluvial system. Longitudinal and lateral cross-sections will be redrawn to illustrate these conditions.
2. Section 3.6.2: Site 2 Aquifer Hydraulic Properties. The statement that well 02NEW2 is screened in bedrock is not verified by the as built construction log in Appendix J. The construction log clearly shows that this well is screened in the sand overlying the bedrock. Since there is some confusion it would be appropriate to add the screened intervals to the cross-sections. The hydrologic properties could then be added which would allow for visualization of hydrologic properties with associated lithologies. The data presented should be evaluated as the bedrock having at least an order of magnitude difference in hydraulic conductivity and transmissivity. This is an important with regards to interpreting groundwater flow.	**RESPONSE 2:** Screen sections will be added. Bedrock may not necessarily have significant differences with alluvial. Pumping tests at Site 2 will be used to illustrate site specific conditions along with measured porosities and permeabilities.
3. Section 4.6.1.2: Monitoring Well Groundwater Samples. The premise of well 02_DGMW60 being downgradient of the landfill as a correlation to TCE concentrations might not be valid. It appears, from Figure 3-7, that landfill occurs above this well. Since there is no measurable TCE elsewhere and given the conductivity contrast between the alluvium and bedrock it might be more appropriate to consider the fill material above this well as the source of TCE. Figure 4-23 is missing.	**RESPONSE 3:** The section on Figure 3-2 will be redrawn not to show penetration of landfill by well 02_DGMW60. Agreed that source of TCE is near this well. Figure 4-23 should have been included and will be included with the Draft Final.

Originator: Herbert Levine, Hydrogeologist U.S. EPA **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** 17 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
4. Section 5.3.2: Groundwater Transport. The calculation of flow velocity is inaccurate. The data set is far too limited to define groundwater flow in the vicinity of this landfill. There are not sufficient number of wells in the alluvium to determine how water moves within these units. It is incorrect to assume an average porosity for alluvium and bedrock and assume that groundwater will flow from alluvium to bedrock and continue to flow in bedrock at the same rate. The hydraulic gradient presented here probably does not reflect reality. It is far more realistic to evaluate flow in each hydrologic unit.	**RESPONSE 4:** Since the issuance of this draft document additional data on the wells and aquifer characteristics has been collected. The groundwater model has been deleted from the document, and an expanded discussion of the conceptual model has been included that incorporates the additional data.
5. Section 5.3.2.1: VOC in Groundwater. No basis is presented for the statement that the TCE plume is 600 by 1,000 feet. Figure 4-22 does not show the aerial extent of TCE in groundwater (assume the text is referring to Figure 4-20). The data presented (in Figure 4-20) show that TCE occurs in well 02_DGMW60 only. The extent of TCE should be shown (in Figure 4-20) as occurring adjacent to this well. Agree with the statement that the TCE found in this well (in the bedrock unit) is attributable to a release in the area of this well. An effective porosity of 0.30 for the bedrock is greater than expected for bedrock. The value calculated for effective porosity is representative of well graded sand. Agree with the interpretation that the bedrock is a low flow zone and contaminants which may enter the alluvium (from the bedrock) disperse and dilute below regulatory limits. This is sufficient for the purpose of this document. There is not sufficient data for a conceptual model for groundwater flow, therefore there is not sufficient data for a numerical model. The model domain does not incorporate hydraulic conductivity data presented in the text.	**RESPONSE 5:** Figure 4-20 has been revised. Since the issuance of this draft document additional data on the wells and aquifer characteristics has been collected. The groundwater model has been deleted from the document, and an expanded discussion of the conceptual model has been included that incorporates the additional data.
6. Appendix R, R.2: Conceptual Groundwater Model. Agree with the interpretation that preferential flow will occur in the alluvium and not the bedrock. This should be incorporate din the cross-section 3-7.	**RESPONSE 6:** Cross section has been revised.
7. Appendix R, R.3.4: Hydraulic Conductivity. Figure R-3 does not correctly incorporate hydraulic conductivities. Wells 02NEW1 and 02_DGMW60 are	**RESPONSE 7:** The groundwater model has been deleted from the document, and an expanded discussion of the conceptual model has been

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screened in bedrock and have conductivities less than 1 ft/day. Well 02NEW8A is screened in bedrock and should not be included in the same hydraulic conductivity field as the alluvial wells. Since the model domain does not accurately incorporate hydraulic conductivities the model should not be viewed as valid.	included that incorporates the additional data.
8. <u>Appendix R, R.3.8: Effective Porosity</u>: Agree that choosing an effective porosity of 0.2 is conservative, however, assigning the same value to bedrock and alluvium is not a realistic representation. The calculated value of 0.3 for siltstone is likely to be spurious.	**RESPONSE 8:** See response to comment 4 above.
9. <u>Appendix R, R.4: Model Calibration</u>: It is standard practice to compare simulated with calculated heads in an x-y plot. This permits rapid analysis for all data points. Figure R-5 shows that head values do not match throughout the model domain. The text states that hydraulic conductivities were adjusted to match simulated with observed heads. It is standard practice to report the model parameters.	**RESPONSE 9:** See response to comment 4 above.
10. <u>Appendix R, R.5: Transport Simulations</u>: Given the significance of the comments regarding the groundwater flow in both the conceptual model and the numeric model it is premature to evaluate numeric transport. The statements in the RI text that a small point source near well 02_DGMW60 is the likely source of contamination and that the contaminants leak from a low velocity flow field to a high velocity flow field and are subsequently reduced in concentration due to dispersion and dilution are appropriate and sufficient.	**RESPONSE 10:** See response to comment 4 above.
<u>RECOMMENDATIONS</u> **1. It is not necessary to collect more data to support the numeric model. There is sufficient field data to construct a conceptual model of flow and transport. I recommend that the Navy re-evaluate the field data and refine the conceptual model.**	***<u>RESPONSE TO RECOMMENDATIONS</u>*** **RESPONSE 1:** Agree.

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2. The numeric model is weak and does not aid this project. I recommend that it be dropped from the IR.	**RESPONSE 2:** The computer model will be eliminated from the RI.
3. The field data shows an area of TCE adjacent to the well 02-DGMW60. The FS should consider what benefit might be attained by pumping this well.	**RESPONSE 3:** Pumping test results will add to discussion of the TCE plume.

RESPONSE TO COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORT, SITE 2, OU-2B
MAGAZINE ROAD LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 17 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
GENERAL COMMENTS	***RESPONSE TO GENERAL COMMENTS***
Air Sampling: Twenty-nine (29) air samples were collected during Phase II RI. Eleven (11) instantaneous surface samples 2-3 inches from the surface. Six (6) ambient air samples and twelve (12) isolation flux samples were taken. According to the fate and transport model, the low-level volatile organic compounds (VOC) emissions from the landfill surface are not impacting ambient air quality offsite. **Soil Gas: During Phase II RI 342 shallow soil gas samples were collected at 278 locations from depth 15 feet below ground surface (bgs). Several areas of total VOC concentrations exceeded the hot spot threshold of 300 ppmv.** **Perimeter Gas Migration Sampling: Samples were collected at four sampling stations during the Air SWAT at depth of 6 feet bgs. Twenty (20) samples collected at six sampling stations during Phase II RI at 10, 25, and 40 feet bgs. Results from both the Air SWAT and the Phase II perimeter gas suggest that methane is not migrating beyond the landfill perimeter in excess of the federal standard of 5 percent (50,000 ppmv). Control of methane emissions in a limited area of the landfill would be necessary to bring the landfill into compliance with South Coast Air Quality Management District (SCAQMD) Rule 1150.2.** **Soil Sampling: During Phase I RI, 14 shallow soil samples from eight sampling locations (0-2 feet bgs) were taken. Fifteen (15) composite surface samples from 15 randomly selected locations (less than .5 feet bgs) were collected during Phase II RI. Low levels of VOCs, TPH, SVOCs, and Aroclor were detected in shallow soil. Metals detected were below background levels.**	The general comments summarizing the sampling are correct.

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GENERAL COMMENTS	***RESPONSE TO GENERAL COMMENTS***
Sixteen (16) subsurface samples (greater than 10 feet bgs) were collected during Phase I RI from a soil boring and four Phase I monitoring well soil borings. Forty-four subsurface samples were collected during Phase II RI from eight monitoring well soil borings. Low levels of VOCs, SVOCs, pesticides, herbicides, and metals were detected. Herbicides were detected at significant concentrations in one sample from a depth of 50 feet bgs. **Leachate: Based on groundwater contamination at Site 2, leachate from landfill has evidently impacted groundwater.** **Groundwater: Groundwater contamination was identified at Site 2 during Phase I RI based on four sampling events collected from four monitoring wells. During Phase II RI, eight additional monitoring wells were installed to evaluate the horizontal and vertical extent of contamination. HydroPunch groundwater samples were collected from Phase II monitoring well locations. A total of 28 groundwater samples have been collected at Site 2. TCE maximum concentration of 91 µ/l was detected. SVOCs and metals were detected above the MCLs. SVOCs appear to be limited to the vicinity of monitoring wells 02NEW2, and 02_DGMW59.** **Sediment: Fifteen (15) sediment samples were collected from six Phase I RI locations at depths of 0, 2, and 4 feet bgs. Three sediment samples were collected during Phase II RI. VOCs, SVOCs, pesticides, herbicides, and metals were detected at low concentrations. The highest TRPH concentration was 4,555 mg/kg at the stained area location 01_SA3.**	

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GENERAL COMMENTS	***RESPONSE TO GENERAL COMMENTS***
Surface Water Drainage: Two drainages bound at Site 2 landfill, the Borrego Canyon Wash to the east and the west fork of Borrego Canyon Wash on the west. Surface water samples runoff were collected during storm events in 1993 from Phase I four locations. For Phase II RI, surface water samples were collected from three locations in 1996. VOCs, TPH, metals, and gross alpha/beta were detected in surface water samples during Phase I RI. The evaluation of whether the detected concentrations are significant will occur when the 1996 results are available and will be incorporated into the Final RI Report. Surface Water Seep: During Phase II RI, samples were collected from two locations. VOCs, SVOCs, pesticides, and metals were detected. Potential for further erosion of landfill by surface storm runoff with associated transport of debris and waste materials exist under the current conditions of the site. Flora and Fauna: The Department reviewed the data in Appendix Q, Part III. Discounting duplicates and spikes: there were 15 plant samples collected for fixed based laboratory analysis of 70 organic, pesticide and herbicide chemicals along with 23 inorganic analytes; there were 11 mammalian samples collected for fixed based laboratory analysis of 53 organic, pesticide and herbicide chemicals along with 23 inorganic analytes. The reference site had 15 plant samples for fixed based laboratory analysis of 68 organic, pesticide and herbicide chemicals along with 23 inorganic analytes; and there were 5 mammalian samples collected for fixed based laboratory analysis of 53 organic, pesticide and herbicide chemicals along with 23 inorganic analytes.	

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SPECIFIC COMMENTS	***RESPONSES TO SPECIFIC COMMENTS***
1. Executive Summary, Remedial Action Objectives: Add the following remedial action objective: • **Containment monitoring and/or treatment for groundwater. This remedial action objective is listed under DQO #6 on Table 1-1.**	**RESPONSE 1:** This statement is listed as a potential response action in Table 1-1. The remedial objective is to control the migration of contaminated groundwater and not to have the plume migrate offsite. This objective can be achieved by determining if migration is occurring by performing groundwater monitoring and then treating the contaminated groundwater if it is migrating off site.
2. Executive Summary, Nature and Extent of Contamination, page ES-5: The Report concludes that gross alpha and beta activity in groundwater is a result of naturally occurring potassium in the area. Additionally, Section 4.6.4 - Gross Alpha and Gross Beta, reports gross alpha and gross beta values are a reflection of natural processes, providing no other explanation for MCL accedences. The text states, "The levels detected in groundwater samples collected up- and down gradient of Site 2 do not definitively indicate that the landfills have contributed to gross alpha and gross beta particle activity in groundwater." However, the distribution of reported gross alpha and gross beta particle activity does not necessarily indicate that the landfill is not a contributing factor. It is suggested to calculate a base-wide and/or site-specific background value for gross alpha and beta values before concluding elevated values in groundwater are resultant only from naturally occurring processes.	**RESPONSE 2:** Currently we compare concentrations of gross alpha/beta in the upgradient to down-gradient wells to establish whether landfill has impacted groundwater. No trend was recognized in the gross alpha and beta when this data was evaluated from upgradient to downgradient wells.
3. Executive Summary, Potential Fate and Transport Mechanisms, page ES-6: The Report concludes that TCE and PCE contamination in groundwater appears to be derived from point sources in the landfill. This conclusion needs clarification. Include a discussion in Section 4 - Nature and Extent of Contamination, how the analytical and physical data collected during the Phase I and Phase II remedial investigation identifies multi-point sources in the landfill. Later in	**RESPONSE 3:** The DQOs were not selected to identify point sources in the landfill, however, based on the limit extent defined by wells 02_DGMW60 and 02NEW13, a point source for TCE is likely. Consistencies in presentations will be assessed.

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the document, but not in the executive summary, it is noted that these sources are most likely no longer present. This point should be restated in the executive summary if it supportable.	
4. <u>Executive Summary, Human Health Risk Assessment, page ES-7, 4th paragraph</u>: The values represent individual risk calculated under the U.S. EPA and Cal-EPA methods respectively. Therefore, it is probably better to identify them as such and clarify that they do not represent a range.	**RESPONSE 4:** The text will be modified to present the values calculated under the U.S. EPA and Cal-EPA methods as individual risk results, not as a range.
5. <u>Section 1.1.1, Guidance and Agreement, Figure 1-3</u>: Revise Figure 1-3 to add the Remedial Design step before Remedial Action. Also, add Certification step after Operation and Maintenance.	**RESPONSE 5:** As per OPNAVINST 5090.1B (November 1994), three additional steps: Remedial Design, Long-Term Monitoring, and NPL Site Close-out, were added to Figure 1-3 illustrating the Installation Restoration Program Process. The DON does not recognize the Certification step.
Reference to Department of Health Services now being California Environmental Protection Agency (Cal/EPA) is not accurate. The correct reference is Department of Toxic Substances Control (DTSC). Both DTSC and California Regional Water Quality Control Board (RWQCB) are under the umbrella of CAL/EPA. **Rewrite the sentence regarding FAA signatory agencies as follows: "The BCT consists of representatives from SWDIV, U.S. EPA, and Cal/EPA (DTSC & RWQCB)."**	References to DTSC and RWQCB have been clarified throughout the text. The sentence regarding the FFA signatory agencies was rewritten.
6. <u>Section 1.1.2, Remedial Investigation Approach</u>: Reference to Cal/EPA should be changed to DTSC.	**RESPONSE 6:** Reference to Cal/EPA was changed to DTSC.
7. Section 1.2.2.2, Recent Station Operations: Revise the 1st sentence in the 2nd paragraph to read as follows: Currently, hazardous materials/wastes are managed under appropriate Federal, State, local, and DON requirements. **Also, reference to on-Station RCRA-Interim-Status Storage Facility is not accurate because the term Interim-Status refers to temporary**	**RESPONSE 7:** This sentence was revised to indicate that hazardous wastes/materials are managed under the appropriate requirements. Reference to MCAS El Toro as a RCRA-Interim-Status Storage Facility has been changed to Generator-status.

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authorization until a final permit is received from the regulatory agencies. Please note that MCAS El Toro was issued a RCRA Hazardous Waste Storage Permit in August 1993. DTSC terminated the permit on March 8, 1996 after we accepted the closure certification for Building 673-T3. MCAS El Toro is allowed to store hazardous waste at generator accumulation areas for periods less than ninety (90) days.	
8. <u>Section 2.7.4, Analytical Methods, page 2-29, Table 2-6</u>: The analyses biochemical oxygen demand and chemical oxygen demand were apparently not performed for the soil samples. This would be expected since these analyses are not used for solids such as dry soil. The total organic carbon measurement for soil should have been adequate. Confirm that these analyses were not performed or provide the data with interpretation.	**RESPONSE 8:** The references to BOD and COD analyses were deleted from Table 2-6, since these tests were not performed on soil samples collected from Site 2.
9. <u>Section 2.9.5, Groundwater Sampling, page 2-41</u>: The text reports that dissolved oxygen measurements were recorded and presented in Appendix J. However, these data are not reported in Appendix J or anywhere else in the RI Report.	**RESPONSE 9:** Dissolved oxygen measurements were not recorded during groundwater sampling activities. Dissolved oxygen measurements were performed on all wells at the landfills in June 1996. This information has been included in Section 3.
10. <u>Section 3.1.4, Surface Water, page 3-5, Figure 3-2</u>: Consider changing the descriptor from an active stream channel to an ephemeral stream channel.	**RESPONSE 10:** The descriptor for Borrego Canyon Wash on Figure 3-2 was changed to ephemeral stream channel.
11. <u>Section 3.3, Regional Geology, Figure 3-4</u>: Please show Site 2 on Figure 3-4.	**RESPONSE 11:** Site 2 has been added to Figure 3-4.
12. <u>Section 3.5.2, Regional Occurrence and Movement of Groundwater</u>: Please change "...approximately 45 to 60 feet bgs in the foothills..." to "approximately 30 to 60 feet bgs in the foothills...." Recent water level measurements indicate depth to water in 02_UGMW25 is about 30 feet below the top of the well casing. The discussion provides depth to groundwater below ground surface (bgs), however,	**RESPONSE 12:** The text has been changed as indicated. The text has been clarified to reference water levels in both feet below ground surface (bgs) and mean sea level (msl) to aid in interpretation.

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groundwater contours elevations on Figure 3-8 are shown from mean sea level (MSL). Please clarify the text by providing the elevations of ground surfaces above MSL when reporting the distances below ground surface.	
13. Section 3.7.1, Vegetation Communities, page 3-52, top line: "...(Section 6)..." should be . (Section 7).	**RESPONSE 13:** Reference to vegetation communities has been corrected to refer to Section 7 instead of Section 6.
14. Section 4, Nature and Extent of Contamination, page 4-1, 3rd paragraph, 2nd to last sentence: Consider adding clarification of the RI focus by including the following at the end of the sentence, "...[in the media surrounding the landfill] and defining the areal extent of the landfill."	**RESPONSE 14:** This sentence was added to further clarify the focus of the RI.
15. Section 4, Nature and Extent of Contamination: Please include a table in Section 4 listing the analytical methods employed for soil and groundwater samples.	**RESPONSE 15:** The laboratory methods utilized for soil and groundwater sample analysis were added to the Phase II data tables (Refer to Tables 4-13, 4-17, and 4-21) to aid in interpretation of the data.
16. Section 4.1.3, Trenching, page 4-9: It came to DTSC's attention that medical waste was exposed during trenching at Site 2. Please indicate in the final report if medical waste was exposed while trenching.	**RESPONSE 16:** Refer to page 4-9 and the trench logs in Appendix D for a description of 02TR3. Plastic syringes were encountered during trenching activities at 02TR3. The implication that this is medical waste is not necessarily correct. Plastic syringes can be used for different functions, such as lubricating engine parts.
17. Section 4.2.2, Integrated Surface Air Sampling, page 4-23, Table 4-4: The air flux data seem to conflict with other results and the text may benefit from a greater discussion of these trends. This comment uses methylene chloride as the example; however, the flux data for several other compounds also appear suspect. **The table indicates that methylene chloride was not detected during the Phase II work in the integrated surface air samples. However, the Phase II isolation flux chamber showed measurable levels of**	**RESPONSE 17:** Integrated and flux chamber sampling are considerably different methods. Integrated samples are collected above the surface and over a large area. Air flux samples were collected directly on the soil surface, and were not influenced by dilution effects of ambient air. VOC compounds potentially present at the soil surface would undergo some dilution during sample collection in both ambient air samples (6 feet above ground) and integrated surface samples (3 inches above ground). The reason is that the interior of the flux chamber is "isolated" from ambient air, while the dilution rate with chamber seep air is a known constant. Additionally, concentrations of methylene chloride in blanks taken prior to

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methylene chloride in three of the six locations examined. The ambient air samples and shallow soil gas for Phase II also showed that methylene chloride was not detected. It seems unusual that there would be a measurable flux of an analyte which was not found by any other technique, unless the sensitivity of the analyses were substantially different.	sampling were approximately 0.2 ppbv, while concentrations in the flux sample canisters were 30 ppbv (2FLX3) and 33 ppbv (2FLX5) for the two highest detects. These data indicate that the methylene chloride results for the flux samples are not false positives. Methylene chloride was detected in surface flux samples and not soil gas samples due to the differences in sensitivity of the analytical methods used to analyze these two sample types. Methylene chloride was indicated as all non detects for Phase II soil gas sampling. The detection limit for methylene chloride in soil gas was substantially higher (~280 ppbv) than the detection limit for surface flux samples (0.13 ppbv). The concentration of methylene chloride in 2FLX5 (33 ppbv) would have been a non-detect for a soil gas.
18. <u>Section 4.4.1, Shallow Soil, page 4-55</u>: The process for the selection of COPCs is inconsistent in the text and should be clarified. **The text states that "All organic compounds detected in shallow soil with concentrations that exceed U.S. EPA residential soil PRGs are considered COPCs." However, on page 4-1 and 4-2 and in Section 6 the text indicates that a very different process (yet consistent with U.S. EPA guidance) was used to identify COPCs.** **Later, on page 4-187, 5th paragraph, the text notes that the distribution of the COPCs defined by PRGs is provided on Figure 4-26 the presentation within this figure may be in conflict with the COPCs listed in the baseline human health risk assessment.**	**RESPONSE 18:** Revised criteria for presentation of contaminants on figures will be added. The use of "COPCs" in Section 4 will be deleted. All organics and metals exceeding the 95th percentile are shown on the Section 4 figures.
19. <u>Section 4.4.2, Subsurface Soil, page 4-57, Table 4-12:</u> This table and other similar tables (e.g., Tables 4-13 and 4-16) in the RI do not achieve consistency between the indicated and the apparent units of measure for some of the organic analytes. For example, in Table 4-12 TPH and metals are presented for each boring in units	**RESPONSE 19:** Data tables in Section 4 have been revised substantially and consistency between units for all the analytes has been reviewed. Tables in Section 4 have been modified to show consistency of units for chemical PRGs and the analytes that were detected. If the analyte exceeded

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[apparently] equivalent to mg/kg and SVOC data are [apparently] in units of microgram/kg; yet the indicated unit for all of these analytes is microgram/kg. Either the unit indicator or the numeric values must be corrected. Additionally, the complementary comparison PRG column in the table is in units of mg/kg and this makes comparisons between units cumbersome. Regulatory standards, such as PRGs, should always show exceedences by flagging the value (italics, bolding, highlighting, etc.).	PRGs, the analyte was flagged for the reader by bold type.
20. <u>Section 4.4.2, Subsurface Soil, page 4-117, Table 4-18, footer</u>: The note indicates that shaded rows contain analytes detected above the PRG but it is not clear if these analytes are COPCs as defined in the risk assessment or by some other means or if this table is in fact a screening mechanism to develop a list of COPCs. In addition, background levels are provided in the table, yet no comparisons are apparently made with these values. Please make the entries in this table consistent with the risk assessment.	**RESPONSE 20:** "COPCs" will be eliminated from Section 4. Criteria for illustration of extent of contaminants will be added. See response to comment #18.
21. <u>Section 4.6, Groundwater, page 4-125, Table 4-21</u>: Include the most recent analytical data from the Site 5 upgradient monitoring well, 05_UGMW27, in Table 4-21 since data from this well is used to evaluate the nature and extent of contamination for Site 2. **The analyte trichloroethylene as a target analyte appears twice in separate rows. This appears to be an error in presentation and should be in one row.**	**RESPONSE 21:** The most recent groundwater sampling results for 05_UGMW27 has been included in Table 4-21. The repetition of trichloroethylene as a target analyte has been noted and this table was changed to only include this analyte a single time.
22. <u>Section 4.6, Groundwater, page 4-139, Table 4-21</u>: Several general chemistry parameters are presented with MCLs in apparently incorrect units. Confirm and correct if necessary the units for chloride, fluoride, sulfate, and bicarbonate.	**RESPONSE 22:** The units for all the data have been checked for consistency. Tables in Section 4 have been revised and errors have been corrected.
23. <u>Section 4.6.1.2, Monitoring Well Groundwater Samples, page 4-168, Figure 4-18</u>: Here and elsewhere, consider listing the date of the	**RESPONSE 23:** The authors have included a sampling date and continue to refer to the sampling date for each of the groundwater monitoring wells.

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sampling event in addition to the non-specific marker - sampling event 1, 2, 3 or 4.	
24. Section 4.6.1.2, Monitoring Well Groundwater Samples, Figure 4-23: Figure 4-23 is a cross section showing the vertical distribution of TCE in groundwater at Site 2. It appears that Section B-B' printed on the cross section is a typographical error. Also, quantify the VOCs in the groundwater.	**RESPONSE 24:** The cross sections have been revised. Reference to cross section line B-B' has been removed from Figure 4-23. Quantification of VOCs in groundwater has been added to Section 4.
25. Section 4.6.3, Metals, page 4-180, 2nd paragraph: The text should be corrected to read Table 4-25 and the stated value of 36 percent of the manganese detections as above the MCL should be checked. The table does not support such a percentage and it indicates that the MCL is 0.5 mg/L and the maximum detected level was 0.367 mg/L.	**RESPONSE 25:** The frequency tables in Section 4 for all media have been revised. Calculation errors have been corrected for all the frequency tables, as necessary.
26. Section 4.6.4, Gross Alpha and Gross Beta, page 4-183: The discussion of gross alpha and gross beta activity seems to require further development. There is insufficient data presentation to assess the degree of counting error associated with the measurements and this fact combined with the limited overall data set for radionuclides makes it difficult to determine if a measurement of 6 pCi/L is significantly different from 26 pCi/L.	**RESPONSE 26:** Upgradient values are compared to downgradient values of gross alpha and beta to assess whether the landfill impacts groundwater. No trend of gross alpha and beta are observed from upgradient to downgradient wells. Therefore, the landfill does not appear to be a source of radionuclides.
27. Section 4.6.4, Gross Alpha and Gross Beta, page 4-184, Figure 4-25: The figure is apparently a description of gross alpha activity measurements and does not include gross beta and thus, the title should be changed.	**RESPONSE 27:** The title for Figure 4-25 has been deleted. A figure illustrating trends of gross alpha and beta across the site has been included.
28. Section 4.6.5, General Chemistry, page 4-183: Further explanation discussing the processes why TDS decreases down gradient should be included in Section 4.6.5 (reported TDS concentrations for the up gradient monitoring wells 02NEW11 is 1000 mg/l and 02_UGMW25 is 1380 mg/l, yet the reported concentration for the down gradient monitoring well, 02NEW1 is 428 mg/l).	**RESPONSE 28:** The comparison of the upgradient and downgradient concentrations of TDS in groundwater has been expanded in Section 3. 02NEW1 represents a deeper groundwater while 02NEW11 and 02_UGMW25 are screened in a shallow groundwater zone.

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29. Section 5.1.1.2, Geology/Hydrology, page 5-2, last sentence on the page: The persistence and extent of groundwater flow velocities identified in the document require enhanced discussion and clarification. **The text on page 5-2 identifies flow velocities between 15 to 280 ft/year in groundwater beneath the landfill. Later in the document on page 5-24 the text identifies a velocity of 142 ft/year in the southwest of the site and a velocity of 210 ft/year at the southwestern edge and west of the site. Later, the text notes that the velocity in the western and southwestern area was calculated at 12 ft/year. The extent of these vastly different flow velocity zones should be clarified. This point is significant because the flow and contaminant modeling work included in this report are dependent upon these values.**	**RESPONSE 29:** Additional groundwater data has been collected since the draft of this document was issued including pH, Eh, dissolved oxygen, and turbidity. A revised discussion of the local groundwater and groundwater contaminant issues is included in Section 5. Based on the comments from reviewers and an independent evaluation the analytical groundwater model the model discussion and appendix of the model results have been deleted from this document.
30. Section 5.1.2.4, Surface Water and Sediment: The 1st paragraph indicates that additional surface water samples will be collected when flow occurs in Site 2 drainage. Please provide approximate dates when the samples will be collected. Also, how will the data be reported to the agencies? Please note that Sections 4.8 and 4.9 indicate that Phase II surface water samples were collected.	**RESPONSE 30:** Surface water samples from Borrego Canyon Wash were collected in January 1996 after a significant storm event. Section 2 has been expanded to describe the methods and procedures utilized to collect these surface water samples. Section 3 will include discussion of general chemistry of the surface water samples. Section 4 has also been expanded to describe the analytical results of the surface water sampling activities at Site 2. Section 5 references have been corrected.
31. Section 5.2.1.1, Physicochemical Parameters, page 5-11: The text identifies an average on-site value for total organic carbon as 137 mg/kg; however, there are no data referenced to support this value and the depth and type of material (e.g., clay or silty sand) to which this value applies are not noted.	**RESPONSE 31:** Soil samples were analyzed by Inchcape Testing Services for TOC during the RI. The TOC results and soil type are presented in Section 3. To aid the reader, a reference to the Section 3 table will be added to the discussion of the average concentration of TOC presented in Section 5.
32. Section 5.2.1.3, VOCs, page 5-15, Table 5-3: The authors should consider the anaerobic biodegradation half-life research conducted by the CLEAN I OU-1 IAFS team. Their research apparently concluded that the VOC biodegradation half-life is about 10 years	**RESPONSE 32:** Table 5-3 has been revised to reflect rates determined under OU-1 investigation.

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 17 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
and thus, significantly greater than the values listed in this table.	
33. Section 5.2.1.3, VOCs, page 5-16, Figure 5-4: The order of preference for each degradation pathway should be identified as well as the relative rates (persistence). That is, is trans-1,2,DCE the preferential pathway and is the rate relatively fast until vinyl chloride is formed and then the rate of degradation of vinyl chloride is relatively slow?	**RESPONSE 33:** Table 5-3 has been revised to present the more recent reference materials that were used in OU-1. As shown on this table anaerobic biodegradation for chlorinated solvents is variable. This is due to a number of factors that effect the degradation rate such as: available oxygen, microbial abundance, available water etc. These conditions can change thus changing the rate and persistence of a given species of chlorinated solvent over time. Due to these conditions a discussion of presence of a given species and the relative rate of movement through the system is impractical.
34. Section 5.2.1.5, Metals, page 5-17: The statement regarding the altering of the "...chemical (valence) state..." of anthropogenic chemicals should be clarified. It is not clear what the meaning of this statement is. Neither is the intent of the statement that supersaturated metals may precipitate out of solution to form "...sediments..." It seems unlikely that the authors intended to use the word sediments.	**RESPONSE 34:** This discussion has been revised to clarify the intended meaning. In brief as Eh and pH conditions change in the subsurface due to changes in soil saturation conditions and available oxygen the solubility and concentration of a given metallic ion may change. For example hexavalent chromium is less soluble in basic (high pH) conditions and will either precipitate or change its valence state to trivalent chromium. If pH conditions change (possibly resulting from heavy rainfall and infiltration) in a landfill the abundance of hexavalent chromium may change.
35. Section 5.2.1.5, Metals, page 5-17: It appears that the authors believe that the landfill is under anaerobic or anoxic conditions and thus the reduction processes occurring are releasing free manganese and iron to solution. This seems to be supported by the groundwater data; however, the necessary interpretation and discussion is missing from the text. In addition, it appears that the authors did not intend to limit biodegradation to PAHs and the text should probably be changed to read "...organics..." in place of "...PAH compounds..." **These statements may be supported or refuted by the presentation of dissolved oxygen data from the wells screened near the landfill and within the main part of the VOC plume. Since these dissolved oxygen values are absent from the report, it is not possible to finalize**	**RESPONSE 35:** The discussion has been revised to clarify the relationship of the portion of the landfill that is under anaerobic conditions to the portion that is in the vadose zone. The discussion has also been modified to describe the release of free manganese and iron that is apparently resulting from these relationships.

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 17 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
the assessment at this time.	
36. Section 5.3, Contaminant Migration, page 5-18: The text notes that the significance of the impact from VOCs will decrease as the source mass decreases. The subsequent modeling for groundwater was conducted with no source term so the meaning of the statement is unclear. Do the authors mean that there are continuing VOC sources in the soil, in the groundwater pore paces, or elsewhere?	**RESPONSE 36:** Text has been revised. The groundwater model has been deleted from the text.
37. Section 5.3.2, Groundwater Transport, page 5-24: The authors may want to consider a semiquantitative assessment of the potential for the presence of DNAPL similar to that provided in the CLEAN I OU-1 RI Report and CLEAN II Site 24 RI Report. Such an evaluation would provide additional support for their position regarding the absence of a continuing source.	**RESPONSE 37:** The groundwater discussion has been revised.
38. Section 5.3.2, Groundwater Transport, page 5-24: The issue of concern here is that the mathematical modeling does not accurately reflect the site-specific conditions and may be conflict with the conceptual model presented within this section. **The text identifies a velocity of 142 ft/year in the southwest of the site and a velocity of 210 ft/year at the southwestern edge and west of the site. Later, seemingly in conflict with this statement the text then notes that the velocity in the western and southwestern area was calculated at 12 ft/year. Apparently this low velocity is for the bedrock zone where the highest TCE level was detected in 02_DGMW60. The order of magnitude difference in velocities is due to the fact that the other values are representative of the faster moving flow through the alluvium above the bedrock.** **On page 5-25 the authors note that their conceptual model is as follows: "Movement of the VOC contaminant plume**	**RESPONSE 38:** Conceptual model discussion has been revised. The mathematical model has been dropped. New aquifer information is available and has been incorporated in the discussion.

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 17 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
through this area [12 ft/yr] is slow. However, in areas adjacent to this low-velocity zone, flow rates are as high as 210 ft/yr. As contaminants enter the region of higher-flow velocities (and a higher flux), they are diluted and dispersed rapidly down gradient to concentrations below regulatory criteria." While the distance "...down gradient..." at which this dilution becomes most evident is not stated, it can be inferred that it is not far from the current detected high of TCE. This being the case, the conceptual model is not supported by the mathematical modeling predictions which follow directly within this section of the RI. Inspection of the modeling results clearly indicates that the dilution phenomenon theorized above is of lesser significance that suspected and the plume will move several thousand feet away from its current location at levels in excess of MCLs over the next 30 years. **It appears that the pivotal assumption of the conceptual model is based on a single step drawdown test result (Phase II at 02_DGMW60 and k=0.0636 ft/day); however, no other measured bedrock hydraulic conductivities were close to this value. Consider that 02NEW2 had a k=1.24 ft/day and Phase I measured k=0.38 ft/day in 02_DGMW60 and 0.52 ft/day in 02_DGMW61. The authors should consider a reexamination of this situation, decide which model is preferred, and then fully explain their rationale for their conclusion.**	
39. <u>Appendix R, page R-6</u>: The authors note that the model was calibrated to hydraulic conductivity values between 1 and 4 ft/day; whereas, the actual values ranged between 0.06 and 4.7 ft/day. The difference between 0.06 and 1 ft/day is large enough to require greater scrutiny. Additionally, the model was adjusted for three zones of hydraulic conductivity; 4 ft/day, 2 ft/day, and 1 ft/day	**RESPONSE 39:** The numerical model in Appendix R will be deleted based on the results of the pilot test study.

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 17 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
blocks. This approach does not compensate for the apparently very localized, yet significant area of low flow velocities near 02_DGMW60.	
40. <u>Section 5.2.2.4, VOCs in Groundwater, page 5-26 and 5-27, Figures 5-5 and 5-6</u>: As noted previously, the modeling predictions are not supportive of the conceptual model which hypothesizes that the concentrations away from the current plume center should be rapidly diluted to levels below MCLs. In addition, the figures include a curious smearing effect along the northern no-flow boundary. This may be an artifact of the modeling mathematics and should be explained since it seems to imply that something, whether it be a pumping well, a low flow condition or something else, is restricting the transport of the VOCs along this barrier. The concentration contour values are not readable on Figure 5-6 and the contours themselves are entirely absent from Figure 5-6b.	**RESPONSE 40:** This numerical model will be deleted as stated above.
41. <u>Appendix R, page R-6</u>: The text indicates that the simulated flow field is in good agreement with the observed data. However, the presentation of the observed heads with the predicted heads is not provided so it is not possible to assess the accuracy of the statement.	**RESPONSE 41:** This numerical model will be deleted as stated above.
42. <u>Section 5.4, Summary of Fate and Transport, page 5-30</u>: This summary reiterates the hydrogeologic conceptual model and neglects to account for the conflicting mathematical modeling results and thus the text should be reconsidered. Also, the issue of intermedia transfer should be addressed to a much greater degree within this and preceding subsection. The fact that groundwater is continually rising and falling and thus creating varying redox conditions within the landfill as well as possibly mobilizing readily soluble materials should receive more attention. The implications of these effects can be significant when considering final remedial actions needed for contaminant control.	**RESPONSE 42:** This section will be revised based on pilot test study results and a series of general groundwater parameters collected after the Draft RI.

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 17 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
43. Section 6, Human-Health Risk Assessment, page 6-1: Please make the selection of COPCs in both the Human-Health Risk Assessment and Ecological Risk Assessment consistent with Section 4, Nature and Extent of Contamination.	**RESPONSE 43:** It is not advisable to consolidate the selection of the human health and the ecological COPCs with the COPCs identified in Section 4. COPCs selected for the human health and the ecological risk assessments are solely based on current and projected exposures to the environmental media by human or ecological receptors. Section 4 addresses all media regardless of exposure. Therefore, the COPCs will vary between these three sections.
44. Section 6.1.2, COPCs in Soil and Sediment, page 6-6: The text notes that there are no background results for PAHs; however, CLEAN II under CTO-065 recently completed a PAH background study. If possible, these data should be considered as part of this assessment if they apply. See also Note C of Table 6-2 on page 6-17 and the second full sentence on page 6-19.	**RESPONSE 44:** The recently completed PAH background study for MCAS EL Toro will be incorporated into the risk assessment for Site 2. In addition, a background risk will be calculated for the PAHs identified as risk drivers.
45. Appendix G, Figure G-1: The text associated with this figure does not include an adequate discussion of the flow chart items which extend out past the "yes" following the "Proportion of Non-Detect Data 15%." Include an explanation why an adjustment to the mean and standard deviation would be required and how it would be done. In addition, explain why an adjustment is only required for data sets with percentage non-detects 15 percent but 50 percent. **Pages G-4 through G-19 are missing.**	**RESPONSE 45:** This appendix will be revised to reflect recent recalculations of background values.
46. Appendix T, Ecological Risk Assessment, page T-14, Table T-11: A 95 percent UCL is presented in the table for what is apparently (though not labeled as such) the surface concentrations; however, no complementary UCL is provided for the subsurface soil. Maximum and minimum and other basic statistics are provided; however, the data set (surface or subsurface) to which they apply is not indicated.	**RESPONSE 46:** Data tables will be updated to include recalculated UCL. Other parameters will also be included in these summary data sheets regarding site concentrations.

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 17 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
47. Appendix T, Ecological Risk Assessment, pages T-15 and T-16, Table T-11: The number of samples 'N' should be mentioned for each analyte.	**RESPONSE 47:** Tables will be changed to include the number of samples.
48. Section 7.2.2.4, Exposure Pathways of Concern, page 7-8, 4th sentence: Please check the meaning of the sentence. Instead of "devoid of vegetation" the sentence probably should say "presence of vegetation."	**RESPONSE 48:** Meaning of sentence will be revised.
49. Section 6 and Section 7, Human-Health Risk Assessment and Ecological Risk Assessment: For additional comments, please see attached Memorandum dated May 14, 1996 from DTSC staff Toxicologist, Dr. John Christopher.	**RESPONSE 49:** Responses to Dr. John Christopher's comments have been carefully reviewed and are addressed under separate cover.
50. Section 8.1.2, Nature and Extent of Contamination: One page 8-15 the 5th bullet item provides a general statement that sediment samples contained TRPH, TPH as gasoline, and MCPP, arsenic, and beryllium which exceed PRG's . . . etc. The statement may not be entirely true. Please rewrite that statement to specify which constituents were exceed.	**RESPONSE 50:** The conclusions will be rewritten to indicate what potential risk drivers are present in sediments.
51. Section 8.2.2, Recommended Remedial Action Objectives: See specific comment #1 regarding containment monitoring and/or treatment for groundwater.	**RESPONSE 51:** See response to comment #1.

RESPONSE TO COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORT, SITE 2
MAGAZINE ROAD LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Lynn M. Hornecker Navy **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 16 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
GENERAL COMMENTS	***RESPONSES TO GENERAL COMMENTS***
1. The figures of Volume I do not show the MCAS El Toro property boundaries, the locations of utility easements, or the location of the proposed Alton Parkway extension and associated surface water control structures in the vicinity of or within the perceived boundaries of Installation Restoration Program (IRP) Site 2. Please ensure that the Draft Final RI Report or the Draft Feasibility Study addresses the locations of these features and the potential impacts of these features on the various remedial alternatives.	**RESPONSE 1:** The MCAS El Toro property lines are added to the Figures in Volume I. Locations of utility easements, surface water control structures, and Alton Parkway Extension are not shown on these figures because of their inexact location with reference to features on the Site 2 maps. Several features identified by Underground Services Alert during utility clearance activities are not shown on the DON map (specifically, a high-pressure gas and water line that parallels the road along the orange grove at Site 2). The impacts of these features will be noted in the Feasibility Study, if applicable.
2. Please ensure that the rationale for the waste type boundaries, landfill waste boundaries, site boundaries, and study area boundaries is presented in the report. Please ensure that the boundaries are consistently depicted in each section of the report. Additionally, please consider revising Table 4-2 to indicate whether or not the vertical extent of the landfill debris was identified as a result of the trenching activities.	**RESPONSE 2:** Throughout the figures for the RI, boundary designations were modified to differentiate between the study area and landfill boundaries. The rationale for classification of wastes have been added to the text referencing Figure 4-1. Trenching activities were not performed to determine the vertical depth of the landfill in a particular area, but to investigate areas with geophysical anomalies or to determine if landfill material was surficial in extent. For this reason, a column indicating depth of landfill material investigated was not added to Table 4-2 .
a. The landfill waste boundaries of IRP Site 2 shown on Figure 4-1 do not coincide with the landfill waste boundaries of IRP Site 2 shown on the Figures of Section 8. Figure 4-1 indicates that Type 1 wastes (surficial) are present on the west side of Magazine Road beyond the landfill waste boundaries shown in Section 8. Figure 4-1 indicates that Type 1 landfill wastes are present north and northeast of the landfill waste boundaries presented in Section 8.	**RESPONSE a:** The text has been modified in Section 8 to indicate that the lateral extent of the main body of the landfill is the only boundary shown on Figures in this section. Some of the landfill material does not extent to depth and is only surficial piles.

Originator: Lynn M. Hornecker Navy **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 16 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
b. Figure 4-1 indicates that Type 1 wastes and Type 3 wastes are present approximately 400 feet downstream of the landfill waste boundary and downstream of the RI Phase II study area boundary. The data presented on Figure 8-8 of the report indicates that the herbicide, MCPA, was detected at a depth of 50 feet below ground surface at 225,000 micrograms/kilogram at a location approximately 200 feet east of the northern landfill waste boundary in a Type 1 waste zone characterized by surficial construction debris. Additionally, the data presented on Figure 4-3 of the report indicates that trenches excavated along Borrego Canyon Wash downstream of the MCAS El Toro property boundary in a Type 3 (surficial construction debris) waste zone beyond the estimated landfill waste boundary of IRP Site 2 contain landfill debris to depths between 5 and 9 feet below ground surface.	**RESPONSE b:** Using the waste classification system described in Section 4, the presence of Types I and III waste outside the landfill boundary is not erroneous and does not change the interpretation of the landfill boundary. These waste types are based on relative density (%) of waste within an area (100 square feet) and the composition of the landfill material encountered. Comparing Type III waste to Type I, there is approximately 10-100% greater density of landfill material in the 100 square-foot area. Type III waste typically consisted of construction debris. The presence of 225 mg/kg MCPA in soil at 50 ft bgs in 02_UGMW25, an up-gradient groundwater monitoring well, is inconsistent with other analytical data found across the site and other analytical data from soil samples collected from 02_UGMW25. The reliability of this data is suspect. Trenching activities in Borrego Canyon Wash did encounter wastes. The landfill boundary shown on Figure 4-4 is based on the surfical mapping, interviews, trenching, aerial photographs, and soil borings.

RESPONSE TO COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORT, SITE 17, OU-2B
COMMUNICATION STATION LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 16 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
GENERAL COMMENTS	***RESPONSE TO GENERAL COMMENTS***
The report presents the results of the Remedial Investigation (RI) conducted at Site 17, the Communication Station Landfill, to support decisions regarding the need for and scope for future remediation at the site. Data to support the landfill extent includes visual mapping, surface geophysics, trenching (Five trenches which ranged from 8 to 180 feet in length and from 1.5 to 12 feet in depth), soil borings, topographic and base maps, aerial photograph review, and interviews with MCAS El Toro personnel. The report contains data and results from the Phase II RI. In addition, the report presented previous investigations such as the Phase I RI and Air SWAT. To determine the nature and extent of contamination, the report described the sampling activities performed in air, soil gas, soil, groundwater, and flora and fauna as follows: **Air Sampling: Four types of air sampling were conducted: instantaneous surface sampling over the entire landfill; 25-minute integrated surface samples from the landfill surface; 24-hour ambient air samples at the landfill perimeter; and isolation flux chamber samples from the landfill surface. Fourteen (14) air samples were collected during the Phase II RI, including three (3) integrated, six (6) ambient air samples and five (5) isolation flux samples were taken. In addition, instantaneous surface samples 2-3 inches from the surface were collected over the entire landfill. Air sampling indicated that volatile organic compounds (VOCs) are being emitted from the surface of the landfill at concentrations near the detection limits of the analytical methods and below regulatory limits.** **Soil Gas: During a 1990 Air SWAT, seven soil gas samples were collected at a depth of approximately eight feet below ground surface (bgs). During Phase II RI, 23 shallow soil gas samples were collected at 20 locations from depths ranging between 3 and 15 feet bgs. Five of 21 soil gas samples detected 1,1,2-Trichlorotrifluoroethane (F-113) at between 1 and 2 µg/L.**	The general comments summarizing the sampling are correct.

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 16 May 1996	CLEAN II Program Contract No. N68-711-92-D-4670 CTO-0076 File Code: 0214
GENERAL COMMENTS	***RESPONSE TO GENERAL COMMENTS***
The F-113 concentration does not exceed the hotspot threshold of 300 parts per million by volume. Eight deep soil gas samples were obtained at depths ranging from 82 to 94.5 feet bgs. Freon-113 was detected in 1 of 8 gas samples (20 µg/L). Toluene was detected in 5 of 8 samples (1 to 3 µg/L). Perimeter Gas Migration Sampling: Eight (8) perimeter soil gas samples were collected from two sampling stations during Phase II RI. Only two of six proposed sample locations were placed due to access difficulties or dense bedrock that prevented probe placement. The northern sample location (17PG2) obtained gas samples at 10, 25, and 40 feet bgs, and the southern sample location (17PG1) collected samples only at 10 feet bgs. The analyses of the samples detected 1,1,2-Trichlorotrifluoroethane (F-113), 1,1-Dichloroethane (1,1-DCE), and Methane. Soil Sampling: Sixteen (16) samples were collected from 8 sampling stations during the Phase I RI. Fifteen (15) composite samples from 15 randomly selected locations (less than 1 foot bgs) were collected during Phase II RI. VOCs, TPH, SVOCs, Herbicides, Metals, and Aroclor were detected in shallow soil. The concentration of the VOCs did not exceed the U.S. EPA residential PRGs. Ten (10) subsurface samples (greater than 10 feet bgs) were collected from two locations during Phase I RI. Fourteen subsurface samples were collected during Phase II RI soil borings and installation of lysimeters and monitoring wells. Levels of VOCs, SVOCs, pesticides, herbicides, radionuclides, metals, dioxins, and petroleum hydrocarbons were detected. No VOCs were detected above the U.S. EPA residential PRGs. One sample detected SVOC, but at a concentration below the U.S. EPA residential PRG.	

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 16 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
GENERAL COMMENTS **Leachate: Three lysimeters were installed, however, due to technical difficulties, no moisture samples were collected.**	***RESPONSE TO GENERAL COMMENTS***
Groundwater: Groundwater samples were collected from three locations: one upgradient and two downgradient wells. VOCs, SVOCs, metals, petroleum hydrocarbons and gross alpha and beta activity have been detected in groundwater samples. VOCs, SVOCs, and petroleum hydrocarbons were detected at levels below U.S. EPA PRGs. Manganese, selenium, and thallium were detected above either the U.S. EPA or California DHS MCLs. **Ecological: From Appendix Q, there were 15 plant samples collected for fixed based laboratory analysis of 70 organic, pesticide and herbicide chemicals along with 23 inorganic analytes; there were 14 mammalian samples collected for fixed based laboratory analysis of 53 organic, pesticide and herbicide chemicals along with 23 inorganic analytes.** **For the reference site, there were 15 plant samples collected for fixed based laboratory analysis of 68 organic, pesticide and herbicide chemicals along with 23 inorganic analytes; there were 5 mammalian samples collected for fixed based laboratory analysis of 53 organic, pesticide and herbicide chemicals along with 23 inorganic analytes.**	

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 16 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
SPECIFIC COMMENTS	***RESPONSES TO SPECIFIC COMMENTS***
1. Executive Summary, Conclusions, page ES-9: The Data Quality Objectives decision "Are landfill gases migrating out of the landfill at ground surface or in the subsurface" should include a discussion of the perimeter soil gas sample analyses. Six of eight perimeter soil gas samples detected methane and one sample detected F-113 and 1,1-DCE. Two of the samples that detected methane are listed in Table 12 of Appendix F as ambient air samples. Is there a possibility that the perimeter soil gas samples are actually within the boundary of the landfill?	**RESPONSE 1:** Perimeter soil gas locations are outside of the landfill boundary. The ambient air samples on Table 12 of Appendix F are used for calibration of the instruments.
2. Section 1.1.1, Guidance and Agreement, Figure 1-3: Revise Figure 1-3 to add the Remedial Design step before Remedial Action. Also, add Certification step after Operation and Maintenance. **Reference to Department of Health Services now being California Environmental Protection Agency (Cal/EPA) is not accurate. The correct reference is Department of Toxic Substances Control (DTSC). Both DTSC and California Regional Water Quality Control Board (RWQCB) are under the umbrella of CAL/EPA.** **Rewrite the sentence regarding FAA signatory agencies as follows: "The BCT consists of representatives from SWDIV, U.S. EPA, and Cal/EPA (DTSC & RWQCB)."**	**RESPONSE 2:** As per OPNAVINST 5090.1b (November 1994), three additional steps: Remedial Design, Long-Term Monitoring, and NPL Site Close-out, were added to Figure 1-3 illustrating the Installation Restoration Program Process. The DON does not recognize the Certification step. References to DTSC and RWQCB were clarified throughout the text. The sentence regarding the FFA signatory agencies was rewritten.
3. Section 1.1.2, Remedial Investigation Approach: Reference to Cal/EPA should be changed to DTSC.	**RESPONSE 3:** Reference to Cal/EPA was changed to DTSC.
4. Section 1.2.1.1, Site Characteristics, page 1-13: Revise the term "OU-28" in the third sentence of the second paragraph to "OU-2B."	**RESPONSE 4:** The term OU-28 was revised to read OU-2B.

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 16 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
5. Section 1.2.2.2, Recent Station Operations, page 1-17: Revise the first sentence in the second paragraph to read as follows: Currently, hazardous materials/wastes are managed under appropriate Federal, State, local, and DON requirements. **Also, reference to on-Station RCRA-Interim-Status Storage Facility is not accurate because the term Interim-Status refers to temporary authorization until a final permit is received from the regulatory agencies. Please note that MCAS El Toro was issued a RCRA Hazardous Waste Storage Permit in August 1993. DTSC terminated the permit on March 8, 1996 after we accepted the closure certification for Building 673-T3. MCAS El Toro is allowed to store hazardous waste at generator accumulation areas for periods less than ninety (90) days.**	**RESPONSE 5:** This sentence was revised to indicate that the DON manages hazardous wastes/materials under the appropriate requirements. Reference to MCAS El Toro as a RCRA-Interim-Status Storage Facility has been changed to generator-only status.
6. Section 1.2.3.1, PHASE I REMEDIAL INVESTIGATION RESULTS, page 1-21: Please clarify whether the metal concentrations were compared to residential or industrial PRGs.	**RESPONSE 6:** Residential PRGs were used to screen data from the Phase I RI for presentation to target compounds in the Phase II RI.
7. Section 2.4, TRENCHING, page 2-6: The report contains several maps which indicate the boundary of the landfill based on the RI. Appendix D contains several cross-sections of trenches excavated as part of the RI. The cross-section of trench 17TR1 indicates landfill debris in the southwest portion of the trench. Section 4.1.3 contains the comment that the southwestern 40 feet of this trench exposed landfill. However, Figure 2-1 on page 2-7 shows the trench outside the boundary of the landfill. Please clarify the rationale for not including the debris discovered in the trench 17TR1 within the boundary of the landfill.	**RESPONSE 7:** The boundary shown on Figure 2-1 is the Phase II RI study area boundary. The figures in Section 2 illustrate the locations of investigations. Figure 4-6 illustrates the extent of landfill based on the results of trenching and other information.

Originator: Tayseer Mahmoud DTSC **To:** Joseph Joyce, BRAC Environmental Coordinator MCAS El Toro **Date:** 16 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
8. Section 2.7.1 Surface Soil Sampling, page 2-20: This section states that in addition to the 15 sampling stations located at Site 17, 15 stations were located at a reference site west of Site 17. If Figure 2-5 contains the correct station locations, the "reference area" appears to be located southeast of Site 17. This section should explain the rationale for sampling the reference area. Please clarify the difference between reference samples and background samples.	**RESPONSE 8:** Reference will be changed to southeast and an explanation of the reference area will be included.
9. Section 4.3.2, Perimeter Gas Migration Sampling, page 4-32: There are two discrepancies in the discussion of the Air SWAT. Please verify whether the first two sentences in the first paragraph are discussing site 2 or site 17. Also, the first paragraph and the fifth paragraph (on page 4-38) contain different number of samples collected and sampling stations.	**RESPONSE 9:** Text will be changed to read Site 17. The correct number of samples are four for soil gas (four ambient air samples were taken for calibration).
10. Section 4.4.2, Subsurface Soil, page 4-69: The bulleted items indicate that pesticides were detected, yet, on page 4-70, the text states that pesticides were not detected. Please clarify the discrepancy in this section.	**RESPONSE 10:** The bullet should read "herbicides" and not "pesticides and herbicides". The text has been modified to reflect this.
11. Section 4.5 LEACHATE, page 4-70: The third sentence in the first paragraph states that groundwater contamination is not present. This contradicts section 4.5 which states that VOCs, SVOCs, metals, petroleum hydrocarbons and gross alpha and beta activities have been detected in groundwater samples. Although many of the compounds are not at concentrations above their respective MCLs, their existence in the groundwater indicates the likelihood that leachate is migrating to groundwater.	**RESPONSE 11:** This section will be changed to indicate that low concentrations of contaminants are present in groundwater.
12. Section 4.6.1.2, MONITORING WELL GROUNDWATER SAMPLES, page 4-95: In the first paragraph, the text misidentified groundwater monitoring wells 17NEW1 and 17NEW2 as 12NEW1 and 12NEW2, respectively. The last sentence of the first paragraph	**RESPONSE 12:** The references to 17NEW1 and 17NEW2 were corrected in the text. Also, please note the explanation for TRG has been included in the footnotes for Table 4-21.

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contains two incorrect statements; that four sampling events were conducted during Phase I, and the reference to figures 4-18 and 4-19.	The references to four groundwater sampling events was corrected to read "two" groundwater sampling events.
13. <u>Table 4-21, Compounds Detected in Groundwater - Phase I and Phase II, pages 4-97 though 4-21</u>: The analysis for groundwater monitoring well 17NEW1 is missing from the Table. Also, please spell out the words for the initial TRG (See Notes, page 4-101).	**RESPONSE 13:** The analytical results for groundwater sample 17NEW1 was added to Table 4-21. TRG is target analyte and this has been abbreviation with explanation has been added to the footnotes.
14. <u>Section 5, Fate and Transport, page 5-1</u>: Please revise the first sentence of the fourth paragraph to state that the site conceptual model was developed for the Communication Station Landfill.	**RESPONSE 14:** This sentence was revised to state that the conceptual site model is for Site 17.
15. <u>Section 5.1.1.2, Geology/Hydrology, PAGE 5-2</u>: The third paragraph in this section states that groundwater at the southern end of site 17 "is encountered approximately 200 feet bgs in alluvial sediments where the flow turns to the west under the Tustin Plain." However, Figure 5-2 appears to indicate that the groundwater flow direction at the southern end of site 17 is to the north.	**RESPONSE 15:** The conceptual model will be changed to more correctly indicate groundwater flow direction.
16. <u>Section 5.1.2.3, Groundwater, page 5-4</u>: There appears to be a discrepancy in the statements made in the first and second paragraphs. The first paragraph states that "Concentrations for VOCs and SVOCs were detected in the downgradient wells, ...," yet, the second paragraph contains the statement "These results (for the metals, manganese, selenium, and thallium) are the only indication of a potential impact to the groundwater in the area of the landfill, ..." VOCs and SVOCs detected in the groundwater are indications that the groundwater has been impacted by the landfill.	**RESPONSE 16:** These discrepancies will be corrected.
17. <u>Section 5.3.2, Groundwater Transport, page 5-21</u>: The report is minimizing the potential that the groundwater is transporting contaminants. The low concentrations detected in the monitoring wells can be an indication that 1) the landfill does not contain a large quantity of contaminants, 2) the majority of the contaminants have	**RESPONSE 17:** Concentrations of detected analytes in monitoring well 17_DGMW82 from 1993, 1995, and 1996 are not conclusive as to whether any of the scenarios suggested are present. Continued monitoring is currently planned by the DON.

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already flowed out of the landfill, 3) the contaminants are leaching out at a low rate, or 4) the contaminants detected in the wells are indicating the front of a contamination plume. At least another round of groundwater samples should be collected to determine if the concentration fluctuates over time. This issue should be included for discussion at BRAC Team (BCT) meetings.	
18. <u>Section 5.4, Summary of Fate and Transport, page 5-21</u>: The fate and transport summary stated in this section is not consistent with the Executive Summary (page ES-5). The Executive Summary states that leaching and surface water transport are the most significant transport mechanisms. Section 5.4 states on page 5-22 that migration in groundwater is the most significant for transport of contaminants. Please clarify this discrepancy.	**RESPONSE 18:** Leaching and surface water transport are the most significant transport mechanisms at the site.
19. <u>Appendix S, Ecological Risk Assessment, Tables S-9 and S-10</u>: The number of samples, N, should be specified.	**RESPONSE 19:** Comment noted and tables will be changed to include the number of samples.
20. <u>Section 6 and Section 7, Human-Health Risk Assessment and Ecological Risk Assessment</u>: For additional comments, please see attached Memorandum dated May 14, 1996 from DTSC staff Toxicologist, Dr. John Christopher.	**RESPONSE 20:** Responses to Dr. John Christopher's comments have been carefully reviewed and are addressed under separate cover.
21. <u>Section 8.1.3, Fate and Transport, page 8-13</u>: The second paragraph should be revised to state that ".... the fate and transport of contaminants at site 17 are important ...."	**RESPONSE 21:** This sentence was corrected to read "Site 17".

RESPONSE TO COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORT FOR
OPERABLE UNIT 2B - SITES 2 AND 17
MCAS EL TORO, CALIFORNIA

Originator: Lawrence Vitale CRWQCB **To:** Tayseer Mahmoud DTSC **Date:** 15 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
GENERAL COMMENTS **A. SITE 2:** **1. Provide a Chapter 15 closure cap for the landfill (Section 2581, Division 3, Title 23, CCRs) to minimize water infiltration and to eliminate the discharge of waste to waters of the state. In accordance with Section 2581, a two-foot foundation layer, a one-foot 10-7 cm/s low permeability layer, and a two-foot vegetative layer are required for the cap. Closure and postclosure maintenance plans are required and need to be submitted for our approval. For closure requirements, please see Section 2580. A copy is attached for your information.**	***RESPONSES TO GENERAL COMMENTS*** **A. SITE 2:** **RESPONSE 1:** The Feasibility Study for Site 2 evaluates capping requirements pursuant to Chapter 15 closure requirements. The closure and postclosure monitoring plans will be submitted by DoN to RWQCB for review as part of the remedial design process.
2. Install a gas extraction and collection system to eliminate gas migration to the groundwater and gas emission to the atmosphere. Install gas monitoring probes to detect any gas migration to the atmosphere. For landfill gas related issues, the California Integrated Waste Board and the SCAQMD should be contacted. **Findings: Hot spots of soil gas are sporadic across the central portion of the landfill and consist primarily of Freon 12; volatilization of landfill gases will occur.**	**RESPONSE 2:** The FS will address whether a gas collection system is needed. Based on preliminary emission calculations, no collection system is needed with cap placement.
3. Submit a Report of Waste Discharge (ROWD) for an Evaluation Monitoring Program (EMP) for the site. The ROWD shall consist of Form 200 and shall include the information required under Section 2550.8(k)(5) for the proposed EMP. The purpose of the EMP is to assess the nature and extent of the release from the landfill in the groundwater. After the EMP is completed, the MCAS El Toro shall submit an engineering feasibility study, proposing groundwater remediation alternatives, and a work plan for Corrective Action Program (CAP).	**RESPONSE 3:** Disagree with findings; off-site groundwater contamination extent has been defined. A ROWD is not needed because this landfill is inactive and will not be used to receive additional solid wastes.

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Findings: The presence of TCE, PCE, other VOCs, metals, and general water quality parameters indicate that the landfill has leached to groundwater and these contaminants have been transported by groundwater to off-site locations. The extent of the landfill boundary was defined; however, the extent of contamination off the site has not been defined.	
4. Institute a surface water monitoring program. Monitor the surface water (Borrengo Canyon Wash) for metals, VOCs, and general minerals. Quarterly or semi-annual monitoring is recommended. **Findings: At Site 2, VOCs and high levels of metals were found in the surface water. At Site 17, large pieces of landfill debris were found in the drainage; no surface water sampling was conducted.**	**RESPONSE 4:** Application of a surface water sampling program at Site 2 on a strict schedule would not be feasible. Borrego Canyon Wash is an ephemeral stream where surface water flow does not occur in all portions of the wash at the same time. A significant storm event is required to induce continuous flow throughout the wash. In section 4, the results of a surface water sampling event on 20 February 1996 are discussed. During the winter of 1996, surface water did not flow in the drainages at Site 17, thus surface water sampling was not performed. Application of a surface water sampling program at Site 17 would not be feasible. In addition, a stormwater sampling program is in place at MCAS El Toro and should be amended to sample Site 2.
B. <u>SITE 17</u> **Recommendations for Site 17 are essentially the same as those for Site 2 except that a gas monitoring program should be instituted. A gas extraction and collection may not be needed because only soil gas with low concentrations of VOCs and methane below the regulatory thresholds were found. VOCs were found in the groundwater but below US EPA's MCLs.**	**B. <u>SITE 17</u>** **RESPONSE:** Landfill gas collection system is not needed nor recommended for Site 17.

RESPONSE TO COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORT,
OPERABLE UNIT 2B, SITE 2
MCAS EL TORO, CALIFORNIA

Originator: John P. Christopher, Toxicologist DTSC **To:** Tayseer Mahmoud DTSC **Date:** 14 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
GENERAL COMMENTS	***RESPONSES TO GENERAL COMMENTS***
1. **Overall Impression: The risk assessments of human and ecological health are quite thorough but not always clear. OSA disagrees with some of the methods used. Several clarifications are required. The document can be made acceptable with respect to risk assessment upon adequate responses to the comments below.**	**RESPONSE 1:** Clarifications and corrections have been incorporated into the reports as required . See response to the comments below.
2. **Ambient Concentrations of Metals: The Navy used the maximum value detected in the set of background values for metals in soil, which might have led to inappropriate elimination of cadmium as an inorganic constituents of concern. The Navy's analysis of their set of background values for soil is incomplete.**	**RESPONSE 2:** A technical memorandum was issued June 3, 1996 for comment by the BCT which provides more analysis of background metal concentrations, including distribution plots and geochemical correlations. Further discussions by the Navy were conducted on May 22-23 in San Francisco. The revised approach will consist of calculating a 95 percentile use once outliers for cadmium, copper, and nickel are deleted. The Wilcoxon Rank Sum and Quantile Tests will be used to assess COPCs.
3. **Human Health Risk Assessment: The assessment is quite thorough and well written, but we believe the Navy has overestimated risks for the site. Potential exposures to organic chemicals were estimated using the maximum value detected instead of the recommended 95% upper confidence on the mean. Dermal intakes might have been overestimated.**	**RESPONSE 3:** Either, the 95-percent UCL or the maximum concentration was used as the exposure-point concentration for COPCs in soil. The highest measured value for the soil media was used as the exposure point concentration for chemicals characterized by: (1) a low frequency of detection; (2) a 95-percent UCL exceeding its highest measured concentration; or (3) a non-parametric distribution. The authors, however, recognize that use of maximum concentrations for the non-parametrically distributed data is overly-conservative, thus a 95% UCL based on a nonparametric approach will be used in the final report. The exposure-point concentration for COPCs in groundwater downgradient from the site was the maximum concentration. Groundwater risk was based on a small data set (up to three samples). As a result of the limited sample size, the maximum detected value was used to quantify the downgradient groundwater risk since a 95% UCL of the mean would have been inappropriate.

Originator: John P. Christopher, Toxicologist DTSC **To:** Tayseer Mahmoud DTSC **Date:** 14 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
	Dermal absorption factors are incorrectly displayed in Table RII-1 as a result of a series of typographical errors. The table will be corrected to present the appropriate chemical specific criteria.
4. <u>Ecological Risk Assessment</u>: We cannot accept the Navy's conclusions regarding non-human receptors because of questions about the methods used. Exposure point concentrations did not match those used to assess human health. The derivation of the toxicity criteria was not clear.	**RESPONSE 4:** See discussion below regarding specific comments that address these concerns.
<u>SPECIFIC COMMENTS</u>	***<u>RESPONSES TO SPECIFIC COMMENTS</u>***
1. <u>Ambient Concentrations of Metals, Appendix G</u>: OSA does not approve of the use of upper tolerance limit (UTL) for estimating quantities of distributions of ambient concentrations of metals, as described on page G-2. The UTL, which is an upper bound on a quantile, can yield an inflated estimate when the sample size is small. For this reason, we recommend using a simple estimate of the quantile, provided the raw or transformed data can reliably be fitted to a normal distribution. If metals are selected as chemicals of potential concern with this procedure but these metals are actually present within the range of background, subsequent levels of decision in the process, i.e., risk assessment and risk management, can be used to correct inequities. **In fact, the method used for selection of inorganic constituents of concern was to compare the highest value detected (C_{MAX}) at the site to the highest detected value among 43 samples judgmentally determined not to have been impacted by site-related activities. OSA does not agree the use C_{MAX} for this purpose for two reasons. First, chemical analysis samples might reveal anthropogenic impacts where none were thought to occur. Second, simple statistical methods, such as plotting cumulative probability, are readily available to determine**	**RESPONSE 1:** Based on the June 1996 technical memorandum on background and follow up discussions with the Navy and DTSC, the background threshold level for metals will be the 95th percentile value based on the 43 samples taken randomly at MCAS El Toro. For cadmium, copper, and nickel, the outliers for these metals are trimmed before the 95th percentile is calculated.

Originator: John P. Christopher, Toxicologist DTSC **To:** Tayseer Mahmoud DTSC **Date:** 14 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
whether C_{MAX} is a reasonable estimator. These simple methods have been employed successfully at several other Navy bases in California. **Table G-4 presents the summary statistics for ambient metal concentrations. The column labeled "Calculated UTL Value" contains the value for C_{MAX} for 11 of 23 metals, which would seem to make "UTL" a misnomer. With the exception of cadmium, the values shown in this column are similar to values we have seen to represent the upper range of ambient conditions for other military bases in Orange County. The value for cadmium is extremely high; C_{MAX} for cadmium was perhaps one order of magnitude higher than we would have expected. We are accustomed to seeing the 95th quantile for cadmium between 1 and 2 mg/kg. The use of 11.4 mg/kg could have led to inappropriate exclusion of cadmium as a chemical of concern. The Navy should present a detailed analysis of ambient cadmium concentrations.**	
2. <u>Chemicals of Potential Concern (COPC) in Water, Secs. 6.1.3-6.1.4, Tables SI-2 and SI-3</u>: Values for selenium and chromium in the upgradient well are surprisingly high. Please explain this. It seems possible that these metals might have been inappropriately eliminated as COPC.	**RESPONSE 2:** Selenium and chromium concentrations in the upgradient wells are considered naturally occurring and are due to geologic conditions.
3. <u>Exposure Point Concentration (EPC), Sec. 6.2.3, p. G-11, p. S-1, Table SI-1</u>: A potential problem arises when C_{MAX} is used as the EPC. The rules described on page S-1 for selecting EPC seem reasonable, especially if high detection limits or very low frequencies of detection are encountered, because these conditions make estimates of the mean uncertain or artificially inflated. However, in Table SI-1 for Site 2, C_{MAX} is selected as the EPC for all 41 detected organic chemicals, even though detection limits are acceptably low for nearly every chemical. Surely, something is wrong with such a method. The Navy and the agencies should meet to arrive at a	**RESPONSE 3:** Groundwater risks were based on Phase II data collected from two downgradient wells at Site 2, 02NEW12 and 05_UGMW27. These wells were considered to conservatively represent the groundwater conditions downgradient from the landfill. As presented in the human health risk assessment Appendix, three Phase II samples from these two wells were available per analyte. As a result of the limited sample size, the maximum detected value was used to quantify the groundwater risk since a 95% UCL of the mean would have been inappropriate. However, as presented in response to comment 3, it should be noted that for the final report Phase II samples from two additional wells will be incorporated

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consensus on this subject.	to the downgradient groundwater sample set. These additional samples will enable the calculation and use of the 95-percent UCL as the exposure point concentration for groundwater downgradient from Site 2.
4. <u>Dermal Absorption Factor, Table SII-1</u>: Department guidance allows a default value of 10% (1E-01) for dermal absorption of organic chemicals. However, on the first two pages of this table, the exponent for the dermal absorption factor is shown as 1E-00. Does the Navy mean to imply that these organic chemicals are absorbed to the extent of 100% through the skin? For endosulfan I and endrin aldehyde, the value shown is 5E-00. Surely, this is an error. Please check to see which value was used in the risk assessment. It seems possible that dermal intakes might have been overestimated. In view of the rather striking contribution of the total hazard at this site estimated for the herbicide MCPP via the dermal route, we strongly urge the Navy to verify that reasonable values were used for estimation of dermal intakes.	**RESPONSE 4:** Dermal absorption factors are incorrectly displayed in Table RII-1 as a result of a series of typographical errors. The table will be corrected to present the appropriate chemical specific criteria. Dermal risks were quantified for the draft report by use of the absorption factors presented in the Cal-EPA PRG table (Sept. 1995). However, for the final report, values presented in the Preliminary Endangerment Assessment Guidance Manual (DTSC 1994) will be considered in addition to the absorption factors present in the Cal-EPA PRG Table. The more conservative value among these two reference documents will be used in the estimation of the dermal route risk.
5. <u>Risk Characterization, Sec. 6.4, pp. 6-16 ff.</u>: Figures 6-2 through 6-7 are particularly well done; contributions to risk and hazard by pathway and chemical are clearly and dramatically shown for each receptor group. In Section 6.4.2.1, please use scientific notation for numbers with many zeroes to the right of the decimal. **The factors enumerated in comments 3 and 4 suggest that the Navy has overestimated risk and hazard at Site 2. Therefore, we do not disagree with the Navy's conclusions regarding human health risk.**	**RESPONSE 5:** See responses to specific comments 3 and 4.
6. <u>Uncertainty in the Exposure Assessment, Sec. 6.5.2, p. 6-29</u>: Somewhere in this section, the Navy should present a discussion of how the use of C_{MAX} as the exposure point concentration might have overestimated risk or hazard.	**RESPONSE 6:** A discussion in the uncertainty section will included on the use of C_{MAX} as the exposure point concentration.

Originator: John P. Christopher, Toxicologist DTSC **To:** Tayseer Mahmoud DTSC **Date:** 14 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
7. <u>Chemicals of Potential Ecological Concern (COPEC), Sec. 7.2.2.3, p. 7-6, Table 7-1, Sec. T1.1, p. T-2</u>: We note that the following metals were selected as COPEC (Table 7-1) but were deselected as COPC for human health after comparison with background (Table SI-1); aluminum, arsenic, barium, cadmium, cobalt, selenium, thallium, vanadium, and zinc. Department guidance on ecological risk assessment, cited in the Navy's report, does present a discussion on why COPC do not necessarily have to match COPEC. However, comparison with background should yield identical lists of metals. Treatment of background concentrations of metals continues to be a problem; the Navy, the Department, and US EPA must resolve this confusion and controversy.	**RESPONSE 7:** Criteria for the selection of chemicals of concern will be the same for the human health and ecological risk assessment and will include a comparison against background levels for metals. At this point, the list for chemicals of concern will be identical for the human health and the ecological risk assessment, including the exposure point concentrations. Because there are no background values for organic compounds detected in soil, an additional step was added in the ecological risk assessment. The organic compounds were compared against a table of toxicity screening values to further reduce the number of chemicals of potential ecological concern. This additional step is more fully explained in a section of the appendix for the ecological risk assessment. In addition, this section will more fully describe the selection of the toxicity values that were used in this screen, and will include information regarding the test species, endpoint selected, NOAELs, and/or LOAELs, effects, and uncertainty factors. In accordance with the human health risk assessment and the use of background data in the ecological risk assessment, this rule will not be applied in the ecological risk assessment. If a chemical was detected, even only once and was not eliminated during the toxicity screen phase, that chemical of concern will be used in the ecological risk assessment.
8. <u>Intake Factors, Table 7-3</u>: This table would be easier to read if scientific notation were used.	**RESPONSE 8:** To make Table 7-3 more readable, uptake factors will be presented using scientific notation.
9. <u>Assessment Endpoints, Table 7-4</u>: For carnivores and raptors, the principal exposure is via prey items. Therefore, the information in the right-hand column should describe food chain modeling, bioconcentration, etc. Toxicity to the predator via direct contact is not likely to be relevant and toxicity to food items via direct contact should be covered in assessments of those trophic levels.	**RESPONSE 9:** Table 7-4 will be modified to reflect this change. Measurability and predictability for mammalian carnivores and raptors are more adequately assessed using food web modeling, bioconcentration, and estimated or measured uptake of metal and organic compounds in plant and animal tissues (i.e., prey food items).
10. <u>EPC, Sec. T.1.4, P. T-4, Table T-11</u>: The very useful discussion of the rules for determining EPC is much more detailed than that presented	**RESPONSE 10:** As stated in response to comment #7, chemicals of concerns for both the human health and ecological risk assessments will be identical

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in Section 6.2.3 for human health. Please state that EPCs used for Site 2 are shown in Table T-11. Many EPCs for soil shown in Table T-11 differ from entries Table SI-1 for the same chemical. This is extremely confusing. Why are EPCs for metals in surface soil used for ecological risk uniformly lower than those used for human health? Why aren't entries for EPC the same in the two tables for DDE and Aroclor 1260? Why do heptachlor epoxide and methoxychlor appear as detected chemicals in Table T-11 but not in Table SI-1? Under the heading "Distribution" in Table T-11, does "neither" mean the same as "nonparametric" in Table SI-1?	(prior to the toxicity screen for the ecological risk assessment) and exposure point concentration will be identical for both assessments. Exposure point concentrations for soil, plant, and animal tissues are presented in Table T-9 for Site 17 and exposure point concentrations for the reference site are presented in Table T-10. Values presented in Table T-11 are the toxicity criteria used in the assessment of hazard for Site 17. Nevertheless, exposure point concentrations for COPCs will be identical in the human health and ecological risk assessments.
11. <u>Toxicity Benchmark Values, Secs. T.1.4, T.4.4, Tables T-4, and T-17</u>: We are unable to decipher how the toxicity screening criteria and toxicity benchmark values were derived and how they are used. What is the column labeled "Dose" in Table T-4? Is this an administered dose from a laboratory study? If so, what is the literature reference for the study? Is a "Modifier" the same as an uncertainty factor? How does one link the values in Table T-4 to those in Table T-17? If an allometric extrapolation was performed, what values were used for body weights and where did they come from? The text in Section T.3.2, "Body Size Scaling", is not adequate to reproduce the derivation. Please present tables with complete derivations of these toxicity criteria. The same comment applies to Table T-9 and toxicity criteria for plants and invertebrates.	**RESPONSE 11:** The screening criteria were used to screen potential chemicals of concern using a very conservative approach, whereas the toxicity criteria (Table T-11) were used to determine the potential ecological hazard at Site 17 associated with the COPECs. We do concur that the information presented in the risk assessment may lead to some confusion in how these criteria were derived and how they were used in the ecological risk assessment. As requested, a more detailed description regarding the derivation of the screening and toxicity criteria will be provided for the ecological risk assessment, including references for the toxicity studies, explanation of the uncertainty factors used, and explanation of the allometric extrapolations used to derive toxicity criteria as described by Opresko et al (1995). Text that accompany the tables will also be modified to reflect these changes.
12. <u>Risk Characterization, 7.5, Table T-16</u>: The Navy claims that a comparison of hazard indices, chemical by chemical and species by species, for Site 2 versus the reference area yields no differences greater than an order of magnitude. The construction of Table T-16 made such comparisons very cumbersome. Please construct tables with data from the site and the reference area juxtaposed for each species, e.g., one table for each species or two species per table at most. Also, please present summed hazard indices for each indicator	**RESPONSE 12:** Summary tables presenting the comparison of hazards at Site 17 with the reference site will be provided. We believe that this approach is sound since it provide us with relevant information regarding exposures to indicator species that are not impacted by the landfill and yet are reasonably exposed to similar conditions (i.e., soil chemistry, climate), especially since we have site-specific information regarding deer mice and plants. Summed hazard indices can also be provided for each indicator species for all

Originator: John P. Christopher, Toxicologist DTSC **To:** Tayseer Mahmoud DTSC **Date:** 14 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
species. **The Navy seems interested in basing its interpretation of the ecological assessment on the number and magnitude of hazard quotients which exceed those seen for the reference area. If this is the case, it would be useful to create a summary table with all the hazard indices, by chemical and species, which exceed the reference area. This table should contain some representation of the degree to which the value in the reference area was exceeded.**	COPECs; however, this approach assumes that the COPECs are additive and have the same mode of action and/or have the same target organs in the indicator species. It is also more difficult to interpret the relevance of a hazard index that is greater than one. In fact, the term "hazard quotient" listed in Tables S-15 is misleading since it more accurately represent a chemical-specific hazard index (i.e., sum of exposures from incidental ingestion of soil/sediment, ingestion of invertebrates, ingestion of plants, ingestion of mice/quail). The risk characterization will discuss potential impacts to indicator species as they relate to exposures by indicator species at the reference site, in addition to a toxicological interpretation of the significance of the hazard index greater than one.
13. <u>Ecological Significance, Sec. 7.5.2, P. 7-21</u>: We cannot agree with the Navy's interpretation of the results of the ecological assessment, because we are unsure of the COPEC, the EPC, and the toxicity criteria.	**RESPONSE 13:** With additional information provided in other sections, discussion of ecological significance section will be broadened.
<u>CONCLUSIONS AND RECOMMENDATIONS</u>	
1. The Navy should complete its analysis of the 43 samples designated as background, especially for cadmium. Such analysis should include plots of cumulative probability. If additional data are required to resolve ambiguities for one or more metals, the data base may be expanded to include samples from other locations on the base. Such an expansion need not be limited to Site 2; it could include data from all the sites investigated in Operable Units 2 and 3.	**RESPONSE 1:** The analysis of background metals was completed in a technical memorandum issued June 3, 1996. Further discussion of the background concentrations have resolved these concentrations by trimming outliers from cadmium, copper, and nickel sample sets, calculating the 95th percentile, and using the Wilcoxon Rank Sum and Quantile Tests.
2. The Navy has probably overestimated risks to human health by choosing the maximum value detected to represent exposure. The Navy should propose a method more in keeping with the concept of the "reasonable maximum exposure". We are unsure whether dermal intakes have calculated correctly.	**RESPONSE 2:** The following approach is proposed for the calculation of exposure point concentrations: First, the data will be tested for normality and log-normality. Then, a 95-percent UCL on the mean will be calculated based on the parametric distribution of each analyte. For those analytes for which the normal and log-normal distribution failed (nonparametrically distributed), a 95-percent UCL based on a nonparametric approach will be used. However, if the 95 % UCL for an analyte is greater than the maximum detected value or if

Originator: John P. Christopher, Toxicologist DTSC **To:** Tayseer Mahmoud DTSC **Date:** 14 May 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
	the chemical is infrequently detected, the maximum concentration will be used in lieu of the 95- percent UCL. The use of maximum detected values as exposure point concentrations for those chemicals for which the normal and log-normal distribution failed (non-parametric) constitutes the major difference between the proposed methodology and the approach used in the Draft RI report. Dermal intakes have been correctly calculated. See response to comment 4
3. The ecological risk assessment can probably be made acceptable upon clarification of how exposure point concentrations were selected, how toxicity criteria for non-human receptors were derived, and by presenting the risk characterization in a more intelligible format.	**RESPONSE 3:** This information will be added to the ecological risk assessment.

RESPONSE TO COMMENTS
DRAFT PHASE II REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 2B, SITE 2 AND 17, MAGAZINE ROAD LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Jeffrey M. Paull Regional Toxicologist **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 14, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
ENCLOSURE F: Review Comments for OU2B Sites 2 and 17 Draft Remedial Investigation Reports	
SPECIFIC COMMENTS	***RESPONSES TO SPECIFIC COMMENTS***
Executive Summary, Human Health Risk Assessment, p. ES-5: For the Site 2 RI, the sentence which reads "Several metal concentrations exceeded the background concentrations for MCAS El Toro; however, only two metal concentrations exceeded residential PRGs, "should be followed by an explanatory sentence identifying which two metals these were.	**RESPONSE p. ES-5:** Agree, the metals will be added.
Executive Summary, Human Health Risk Assessment, p. EA-7: For the Site 2 RI, there is text missing from the sentence ending with the phrase (e.g., dermal) at the top of the page. Judging from the sentence which appears in the same location for the Site 17 RI, the missing text involves a description of the exposure pathways which were assessed for the receptors identified on the previous page.	**RESPONSE p. EA-7:** The missing text will be added.
COPCs in Soil and Sediment, § 6.12, p.6-5: It is stated in this section of the RIs that "Surface soil (0 to 2 feet bgs) is the soil of concern in the human-health risk assessment because a recreational child will come into contact with this media." Although it is true that surface soil is the primary media of concern for evaluating the direct soil contact exposure pathway, soil samples at depth are also important for evaluating health risks to on site-workers, and for evaluating potential contaminant migration to groundwater. **Since the groundwater beneath both Sites 2 and 17 show the presence of multiple contaminants, the lack of subsurface soil data is a shortcoming in the RIs that may hamper the effective evaluation of remedial alternatives. The uncertainty introduced in the risk assessment by this data gap, and the consequences for the evaluation of presumptive remedies involving the possible containment of groundwater migration should therefore be discussed in the RIs.**	**RESPONSE § 6.12, p.6-5:** Current MCAS El Toro land use can be categorized as industrial. Sites 2 and 17 are uninhabited and are part of a natural resources conservation area. Future development of the landfills into residential or commercial areas is considered unlikely because commercial (and residential) development on a landfill is not permitted in California. Consequently, the risk assessments for Sites 2 and 17 did not evaluate exposures to soils by a resident or an industrial worker. A recreational scenario was evaluated as the only feasible scenario. Soils at depth are inconsequential in the assessment of risks to a recreational receptor, thus, the lack of subsurface data does not introduce additional uncertainties into the risk assessment. Subsurface soil (>10 feet deep) and shallow soil (2 to 10 feet deep) are not used in Section 6. Please refer to Section 4 for discussion of contaminants in these deeper soils.

Originator: Jeffrey M. Paull Regional Toxicologist **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 14, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
COPCs in Soil and Sediment § 6.12, p.6-6: Many of the organic COPCs identified at Sites 2 and 17 are PAHs. It is stated in the Site 2 RI that, "These chemicals were not analyzed for in background samples because they are ubiquitous in an urban environment, and their presence at Site 2 may be unrelated to past practices." **This statement does not provide adequate justification for not identifying anthropogenic background concentrations of PAHs at Site 17.** **We agree that PAHs from anthropogenic sources are widely distributed in the e environment. However, this is precisely the reason that US EPA guidance recommends to past hazardous waste practices, and concentrations that are normally present in the environment.** **If it can be demonstrated that PAH soil concentrations at Sites 2 and 17 are no different than background soil concentrations of these substances in *uncontaminated locations* at MCAS El Toro, then they would be eliminated as COPCs in the risk assessment. Elimination of PAHs as COPCs would significantly reduce the estimate of human health risk, since three PAHs--benzo(a)pyrene, benzo(a)anthracene, and dibenzo(a,h) anthracene--were identified as risk drivers, accounting for greater than 70 percent of the soil risk at Site 2, and 50 percent of the soil risk at Site 17.** **It is our understanding that a study to determine PAH reference levels has been recently completed at MCAS El Toro. We are uncertain why this study was not cited or referenced in the RI documents, but we anticipate the incorporation of the results of this reference study in the Revised Final RIs. Additionally, please note the distinction between use of the term "PAH" and "PAHs' in both documents.**	**RESPONSE § 6.12, p.6-6:** Clean II, under CTO-065 recently completed a PAH background study for MCAS EL Toro. This PAH background study will be incorporated into the risk assessment of Sites 2 and 17. In addition, a background risk will be calculated for the PAHs identified as risk drivers. The term PAHs will be used in both reports.

Originator: **Jeffrey M. Paull** **Regional Toxicologist** **To:** **Bonnie Arthur** **Remedial Project Manager, U.S. EPA** **Date:** **May 14, 1996**	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
Receptor Analysis, <u>§ 6.2.1, p.6-7 to 6-8:</u> Although children playing on the site, and people building homes near the site may be considered more of a possibility than someone repairing underground utilities, the risks to this potential receptor should still be quantitatively, rather than qualitatively assessed.	**RESPONSE § 6.2.1, p.6-7 to 6-8:** Sites that do not pose a risk under restrictive exposure conditions will, in turn, not pose a risk under other less restrictive land use scenarios. The risk due to chronic exposures to children playing at the site was assessed as being greater than the risk to someone repairing underground utilities over a short time. Repair work would be infrequent and it would probably be completed within a few days. Furthermore, if repair work were performed at the landfills, workers would wear protective clothing, thus curtailing exposures to the surrounding media. In addition, equipment to monitor releases of hazardous gases from the subsurface would be used in repair of underground utilities at landfills. Based on this exposure scenario, there is reasonable confidence that risks to a maintenance/utility worker will be much lower, if at all, than risks to a child. Therefore, quantification of risk to a person conducting repair of underground utilities may not provide risk managers with additional information for use in decision making.
<u>Exposure Point Concentration, § 6.2.3, p. 6-8 to 6-11</u>: Under various conditions, listed in Appendices R and S, it is both reasonable, and appropriate to use the maximum concentration (C_{max}) instead of the 95-percent upper confidence limit (95% UCL) as the exposure point concentration (EPC). However, the use of the maximum concentration as the EPC for all the COPCs detected in groundwater for both Sites 2 and 17 does not appear to be adequately explained, or justified by these criteria. Where sample size is adequate, and detection limits are acceptable, the use of C_{max} rather than the 95% UCL will tend to over estimate risk. Additional justification is required for the use of C_{max} for all COPCs detected in groundwater.	**RESPONSE § 6.2.3, p. 6-8 to 6-11:** Groundwater risks were based on Phase II data collected from two downgradient wells at each site, 02NEW12 and 05UGMW27 at Site 2 and 02NEW1 and 17DGMW82 at Site 17. These wells were considered to conservatively represent the groundwater conditions <u>downgradient</u> from each landfill. As presented in the human health risk assessment appendices, the number of Phase II samples at these wells ranged from 2 to 3 samples per analyte. As a result of the limited sample size, the maximum detected value was used to quantify the groundwater risk since a 95% UCL of the mean would have been inappropriate. It is important to note that for the Final Site 2 report, Phase II samples from two additional downgradient wells will be added to the groundwater data set. Inclusion of these samples enables the calculation of the 95-percent UCL as the exposure point concentration.

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Toxicity Criteria for Dermal Exposure, § 6.3.4, p.6-14 to 6-15: It is stated in this section, that when RfDs and CSFs are adjusted for gastrointestinal absorption, "oral toxicity criteria causes the dermal risk to exceed the oral risk by a considerable margin." This statement is followed by the editorial remark, "Toxicologically, this is rarely possible, and suggests that the standard procedure for estimating dermal risk needs further refinement." **However, adjusting RfDs and CSFs for gastrointestinal absorption, does not always result in the dermal risk exceeding the oral risk "by a considerable margin." In a paper prepared by this commentator, and recently submitted to a scientific journal for publication, adjusting toxicity factors for gastrointestinal absorption caused dermal risks to exceed oral risks for only twelve of twenty substances, and for five of these twelve substances, the dermal risk was within a factor of two of the oral risk. Other exposure factors, such as skin surface area exposed, the duration of exposure, the skin absorption factor, and the ingestion rate, often determines which exposure route will predominate, and drive the risk.** **Although we are not specifically objecting to the practice of not adjusting toxicity factors for gastrointestinal absorption when evaluating dermal risk, we think that the rationale presented for not considering adjustment may overstate the case, and recommend that the editorial remark which includes the phrase, "Toxicologically, this is rarely possible" be omitted from the RI documents.**	**RESPONSE § 6.3.4, p.6-14 to 6-15:** As suggested, the phrase will be deleted from the text.
On-Site Recreational Use, § 6.4.1.1, p. 6-15 to 6-19: Justification should be provided for the selection of the elementary/high school age child as the potential receptor for the on-site recreational use scenario, the selection of two hours/day as the exposure frequency, and the elimination of the younger child as a potential receptor.	**RESPONSE § 6.4.1.1, p. 6-15 to 6-19:** Justification for the selection of the elementary/high school age child and the elimination of the younger child as a potential receptor will be provided. The selection of two hours/day is based on best professional judgment, in accordance with the risk assessment work plan, and as such it will be referenced .

Originator: Jeffrey M. Paull Regional Toxicologist **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 14, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
On-Site Recreational Use, § 6.4.1.1, p. 6-15 to 6-19: With respect to dermal contact pathway for exposure to PAHs, we request clarification of the statement, "a background cancer risk of 1.4 X 10^{-7} (for Site 2) and 1.7 X 10^{-6} (for Site 17) was estimated for the soil medium for the same type of exposures." This statement appears to contradict the statement made in § 6.1.2, and again in this section of the Site 2 RI, that, 'PAH(s) were not included in the analyses of background samples, and the background risks for these chemicals are unknown at this time."	**RESPONSE § 6.4.1.1, p. 6-15 to 6-19:** A background risk was calculated only for the pesticides and metals identified as on-site COPCs. Pesticides, such as DDT, DDE, and DDD, are found throughout the United States because of their widespread uses. Therefore, to compare the on-site risk to the background risk for these anthropogenic (man-made) chemicals and for the COPC metals, the background health risks for these chemicals were also calculated. Since a background risk was not calculated for all the COPCs, reference to the total background risk will be deleted. Instead, the text will be modified to present the risk for background by analyte, and focus will be given to those analytes which are risk drivers.
Off-Site Residents, § 6.4.1.2, p. 6-17 to 6-19: For Site 2, greater than 60 percent of the groundwater ingestion risk is due to heptachlor, identified in only two of three samples. For Site 17, arsenic, detected in only 2 of 2 samples, is the sole contributor to US EPA quantified risk. The risk assessments should discuss the uncertainties inherent in basing conclusions regarding the quantification of human health risk on such small sample sets. In addition to the obvious statistical limitations of the data, this uncertainty discussion should include when these groundwater samples were taken, and the uncertainties associated with the probability of migration of the groundwater plume, as well as with the possibility of natural attenuation over time, degradation rates and products (for organics such as heptachlor), and related factors.	**RESPONSE § 6.4.1.2, P. 6-17 TO 6-19:** The uncertainties section will be modified to address the reviewers comment.
On-Site Recreational Use, § 6.4.2.1, p. 6-23: For Site 2, on-site dermal contact with MCPP in the soil is responsible for greater than 90 percent of the hazard index estimated at 0.99 (essentially 1) for recreational use by children. Similar to the comment above, the uncertainty in this risk characterization should be discussed in light of the fact that the estimated half-life for MCPP ranges from 168 to 240 hours.	**RESPONSE § 6.4.2.1, p. 6-23:** The uncertainties section will include the following discussion associated with risk drivers characterized by short half-lives: "For the relatively short half-life risk drivers, such as MCPP, the assumption that chemical concentrations remains constant over time leads to an overestimation of the risk at the site. The contribution of these chemicals to the total risk are therefore overstated since actual risks are a factor of chemical persistence."

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On-Site Recreational Use, § 6.4.2.1, p. 6-23: For Site 2, the risk for lead exposure is considered negligible, based on a comparison of the US EPA Region IX PRG. The document states that, "the maximum concentration at Site 2 of 121 mg/kg is below the residential PRG for lead of 130 mg/kg." This statement incorrectly cites the Cal-EPA PRG rather than the US EPA PRG for lead, which is currently 400 mg/kg for residential soil. It is also unclear why a comparison with PRGs is used to assess lead risk at Site 2, rather than the Cal-EPA pharacokinetic model (Leadspread, Version 6), which is the more appropriate method, and which was employed at Site 17.	**RESPONSE § 6.4.2.1, P. 6-23:** The text will be modified to correctly cite the PRG. In addition, the text will be clarified to state the logic behind the comparison with PRGs. The assessment of the risk presented by lead consisted in first comparing the concentration of lead in soil and groundwater to the residential Cal-EPA PRG of 130 mg/kg and the U.S. EPA tap water PRG of 4.0 µg/L, respectively. For the soil medium, the comparison is based on the residential Cal-EPA PRG instead of the U.S. EPA PRG (400 mg/kg) because the Cal-EPA PRG is lower and more stringent, rendering the approach conservative. In the event that the PRG is exceeded, the Cal-EPA pharmokinetic model is utilized and the blood lead concentration is compared to the acceptable concentration of 10 micrograms per deciliter (µg/dL). The pharmokinetic model was not used at Site 2 because lead concentrations were below the Cal-EPA PRG. The pharmokinetic model was used at Site 17 because lead concentrations exceeded the Cal-EPA PRG.

Originator: Jeffrey M. Paull Regional Toxicologist **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 14, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
On-Site Residents, § 6.4.2.2, p. 6-24 to 6-26: In general, the explanation of the health effects for arsenic, chromium, fluoride, manganese, nickel, thallium, and vanadium, which appear in this section of the RIs are too brief, incomplete, and lacking in balance to be of much practical value. For instance, for Site 2, the document states, "it is important to note that the maximum concentration of fluoride measure(d) in the groundwater of 1.2 mg/L is less than half the drinking water standard of 4 mg/L. However, it could also be mentioned that cited cases of fluorosis have been associated with 2-5 ppm fluoride in water supplies. Although the document mentions manganese's low acute toxicity, it does not mention that it is also a chronic neurotoxin. With respect to nickel, the document emphasizes nickel itch, a type of skin sensitization not generally associated with exposure via drinking water, but fails to mention nickel's demonstrated carinogenicity. **Although Appendices R and S contain the IRIS files for the COPCs which are the risk drivers for the health risk assessments, a more complete and balanced description of their health effects should be summarized in the body of the RI documents as well.**	**RESPONSE § 6.4.2.2, p.6-24 to 6-26:** Since the IRIS files presented in the appendices display ample information, a succinct description of the health effects was intended for this section. In addition, since the section summarizes non-carcinogenic risks, focus was given to the noncarcinogenic effects. Additional health effect information will be incorporated to the text, however, this additional information will be brief in order to avoid recitation of information within the report.
Risk to Utility Maintenance Worker, § 6.4.3, p.6-24 to 6-26: The rationale presented in this section for not quantifying the utility maintenance worker's health risk is that the exposure time associated with typical repairs is usually short and infrequent, that with short exposure times acute systemic toxicity is more of a concern than chronic toxicity, and that chemical concentrations in the surface soil are not high enough to cause acute systemic toxicity. **All of these statements may in fact be correct, but they should nonetheless be demonstrated through a quantification of health risk for this particular receptor, employing appropriate exposure assumptions (e.g., a soil ingestion rate of 480 mg/day). In order to quantify health risk, however, surface soil concentrations may have to be used as surrogate data, since the contaminant concentrations in the subsurface soil are not known for either site.**	**RESPONSE § 6.4.3, p.6-24 to 6-26:** See response to comment § 6.2.1, p.6-7 to 6-8. Risks to a maintenance/utility worker exposed to surface soils, with a weight of 70 kg, an exposed skin surface area of 5000 cm^2, a soil ingestion rate of 480 mg/day, an exposure duration of 1 year and an exposure frequency of 10 days (2 workweeks) would be quantified approximately 46 times less than the risk to the playing child. A summary of the previous statement will be added to the text.

Originator: Jeffrey M. Paull Regional Toxicologist **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 14, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
Toxicity Assessment, § 6.5.3, p. 6-29 to 6-31: In this section, the following statements are made: "The rate and extent of chemical absorption via the stomach and intestines are higher than via the skin. Therefore, the dose and risk associated with ingested chemicals should be higher than those associated with contact of chemicals with the skin." The first of these statements is generally true. However, the second statement does not follow from the first, but rather, is dependent upon the relative degree of exposure via the two routes.	**RESPONSE § 6.5.3, p. 6-29 to 6-31:** The text will be modified to read as follows "...Depending upon the relative degree of exposure between the oral and the dermal route, the dose and risk associated with ingested chemicals should be higher than those associated with contact of chemicals with the skin..."
Conclusion and Recommendations: The human health risk assessments conducted as Part of the Remedial Investigations for OU-2B, Sites 2 and 17 are consistent with US EPA Region IX guidelines, and are generally comprehensive and thorough. However, several procedural deficiencies were identified in the RI documents which could affect the quantification of health risks. Due to the nature of these deficiencies, the potential risks to human risks to human health for Sites 2 and 17 are probably overestimated, rather than underestimated. The RIs can be made acceptable to US EPA Region IX, upon adequate response to the specific comments above.	**RESPONSE TO CONCLUSION AND RECOMMENDATIONS:** See responses provided above.

RESPONSE TO COMMENTS
DRAFT PHASE II REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 2B, SITE 2 AND 17, MAGAZINE ROAD LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Clarence A. Callahan, Ph.D. Biologist, Technical Support Section **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 13, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
ENCLOSURE E: Review Comments for OU2B Site 2 Draft Remedial Investigation Report	
1. Section 7.1.1, Chemicals of Potential Ecological Concern: When applying the second "rule" for elimination of chemicals, what was the consideration for those contaminants below the 5 recent level? For instance, even at less than 5 percent, a chemical could be at a concentration level that would be considered a "hot spot" and an ecological risk especially if the contaminant bioaccumulates. Please provide the page number and location in the document for the contaminants and concentrations for all locations where this rule was applied.	**RESPONSE 1:** We concur with the reviewer that a chemical that was screened out from the list of COPECs based on this rule might wrongly eliminate a chemical and/or a hot spot from further evaluation under the ecological risk assessment. The ecological risk assessment will not consider this rule in the selection of COPECs.
2. Same par, second bullet, what was 2-methyl-4-chlorophenoxyproprionic acid (MCPP) used for and in what process at the MCAS El Toro?	**RESPONSE 2:** MCPP (common trade name is Mecoprop) is a systemic hormone-type phenoxy herbicide. MCPP is used to control clovers, chickweed, knotweed, plantain, and dandelion.
3. Bottom of page T-2: With soil representing 100 percent of a rat or a mouse's diet, why was an estimate used for contact rate (CM) for chemicals when estimating the exposure dose? If the strategy is to be conservative as possible, then 100 percent contact rate should be used to predict the potential impact. Confirmation or validation samples can be performed to reduce the uncertainty in these predictions.	**RESPONSE 3:** This step in the ecological risk assessment was to determine the COPECs that would be further evaluated in the risk assessment. Its use was only intended to be a screening process for the selection of COPECs. To do this, a chemical-specific NOAEL obtained in the literature from rat or mouse studies was converted to a soil concentration using a standard rat or mouse body weight (i.e., 0.35 and 0.03 kg, respectively) and soil intake rates (i.e., 28000 mg/day for a rat and 5500 mg/day for a mouse). The resulting concentration of a chemical in soil is considered a safe level. If site data show that levels for any chemical are above these chemical-specific "safe levels", then it should be further evaluated using a predictive ecological risk assessment process. It should also be noted that confirmation sampling of plants and deer mice were done for Site 2, Site 17, and a reference site to address some of the uncertainties of risk estimates for these site. This will be discussed in more detail in the risk characterization.

Originator: Clarence A. Callahan, Ph.D. Biologist, Technical Support Section **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 13, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
4. PT-6, Receptor Exposure Intake Factors, second paragraph: The portion of the home range for the coyote not attributed to the site should be compared to the remaining area of the location of the base for the purpose of defining the forage area of this receptor outside of Site 2 to estimate the concentration of exposure for ingestion of incidental soil. The ingestion term for estimating the total dose must contain a concentration term for soil related to Site 2 concentrations and concentrations other than Site 2. The easiest choice for this concentration is to select the reference site concentration and to calculate the loading rate for the off-site portion of the total daily dose.	**RESPONSE 4:** Comment noted and this approach will be used to determine the potential total exposures for coyote and red-tailed hawk receptors off Site 2 and Site 17.
5. Table T-4: Screening Criteria for Soil COPECs. There is insufficient details provided to fully assess the adequacy of this step in the process. Table T-4 shows several column headings including the COPECs, the modifier, the test species, the toxicity endpoint, the screen criteria and the reference indicator. The citations as provided are inadequate because the critical data are not provided, for instance, "Jacobs Engineering" does not indicate the source of these data nor how they were derived; "Opresko et al, 1995" does not provide any page numbers to direct the reader to how these data were derived. The same is true for "Stevens and Sumner, 1991." HSDB, 1996;" Topping et al, 1994;" and ACGIH, 1991" all of which should be referenced by page numbers for each data entry. Please provide page numbers for each data entry from the citations as stated above.	**RESPONSE 5:** Comment noted. A more detailed description will be provided to more fully describe the selection of toxicological information for each chemical as it related to this ecological risk assessment.
6. P7-23, Uncertainty Analysis: There are a couple of statements made that need clarifying, for instance, 10. "However, in some cases the nature of the uncertainty is such that the impact of the assumptions made in the risk assessment cannot be determined." Where in this risk assessment does this statement apply? 2) "In particular, the amount of uncertainty in an ecological risk assessment cannot be easily quantified." Where in this risk assessment does this statement apply?	**RESPONSE 6:** With regard to these two sentence, based on the nature of some of the assumptions that were used in the calculation of a hazard quotient, there is a potential for either over or underestimation of hazard for receptors exposed to site chemicals. Table 7-6 provides numerous examples where this situation can apply.

Originator: Clarence A. Callahan, Ph.D. Biologist, Technical Support Section **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 13, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
7. <u>Tables T-11, 12, 13 and 14</u>: The formula shown for estimating the daily dose for each receptor should not use any "modifiers" in the calculations so that the estimate will be the most conservative. For instance, the deer mouse at the reference site does not have any modifiers whereas the potentially impacted site has modifiers for surface soil, subsurface soil and water portions of the diet. To get the most conservative estimate, the highest concentration in either the surface or subsurface soil should be used for these predictions. This should be done for all receptors and all chemicals. **Another issue with the dose estimates includes the contribution from on-site versus off-site i.e., reference site that is reflected in the dose estimation formula shown in Tables 14 and 15 (see no. 4 above). For instance, the incidental soil ingested for the coyote should have a component from the on-site contribution and the off-site contribution. This is also true for all other components of the ingestion pathway. The grand total is the addition of both the contribution from off-site and on-site which should then be compared to a critical toxicity level.**	**RESPONSE 7:** Although the intent was to have more realistic and ecologically relevant exposures for receptors at Site 2, modifiers will be removed from the hazard calculations to make the equations more parallel between the reference site and Site 2. In addition, recalculation of 95 percentiles for chemicals in soil will yield one chemical specific value that incorporates soil data 0 to 2 feet below ground surface. Exposure for the coyote and red-tailed hawk will include those off-site exposures as mentioned in response to comment #4.

Originator: Clarence A. Callahan, Ph.D. Biologist, Technical Support Section **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 13, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
8. Section 7, p7-19: Hazard Quotient discussions for various receptors. It appears that the hazard quotient for several contaminants at Site 2 for all of the receptors are above one indicating a potential problem. The fact that these estimates are above one strongly suggest that the input data needs to be validated and verified to reduce the uncertainty in order to obtain the best estimate of the impact to these receptors. **The strategy used i.e., comparing the estimated HQ for each receptor at Site 2 to an estimated HQ at the reference site to determine the potential "risk" for the selected receptors is not acceptable because it does not provide adequate logic and is not based on any strategy that EPA has seen in print or is aware of. Because the hazard quotient for several contaminants at the reference site for all of the receptors are above one indicate that the reference site is not really a valid reference site. A strategy that provides more logic is one where the contribution of contaminants from Site 2 if added to that contributed by the background to arrive at a "total" background makes more sense than the comparison presented.**	**RESPONSE 8:** A more detailed discussion regarding the sampling and analyses of soil, plant, and deer mice that occurred at Site 2 and the reference site will be provided to put the hazard estimates for Site 2 in perspective. In addition, a more thorough discussion regarding the toxicological implications to ecological receptors will also be provided. The strategy suggested in this specific comment (i.e., contribution of chemicals from Site 2 is added to background to obtain a total exposure) will also be used to address the magnitude of the hazard estimates in perspective to the ecological considerations at the site.
9. One area that is certainly missing and already mentioned by the Navy in other correspondence is the assessment of the potential risk to the California gnatcatcher. This important receptor should be addressed in the risk assessment.	**RESPONSE 9:** More discussion will be provided in the risk assessment regarding the California gnatcatcher. However, some consideration has already been provided for this receptor in the ecological risk assessment by using a surrogate receptor, such as the American robin.
10. I would request that the Navy provide a strategy for reducing the uncertainty at Site 2 for the estimate of ecological risk. This strategy should include techniques and methods for more direct estimates for impact assessment rather than relying on the hazard quotient.	**RESPONSE 10:** As mentioned in response to comment #8 regarding the sampling and analyses of soil, plant and deer mice at Site 2 and the reference site. The hazard estimates obtained for selected receptors at Site 2 will be put into context by a more detailed discussion of the results obtained from the sampling and analysis activities at Site 2.

RESPONSE TO COMMENTS
DRAFT PHASE II REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 2B, SITE 2 AND 17, MAGAZINE ROAD LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Bonnie Arthur Remedial Project Manager, U.S. EPA **To:** Joseph Joyce BRAC Environmental Coordinator **Date:** May 8, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
ENCLOSURE D: Review Comments for OU2B Site 17 Draft Remedial Investigation Report	
TECHNICAL COMMENTS	***RESPONSE TO TECHNICAL COMMENTS***
1. Page ES-6, 2nd paragraph: The text is inconsistent with respect to the issue of landfill leaching and the effect if any on groundwater quality. **The text states that "elevated metals concentrations and low concentrations of organic compounds in soil and groundwater incite that leaching of the landfill has occurred." However, in Section 5.1.3.2 the text states the "Samples taken from the monitoring wells surrounding the landfill have minimal reported "concentrations".**	**RESPONSE 1:** This inconsistency will be corrected. The presence of higher downgradient metals concentrations indicate that metals have mobilized from the site. Long-term groundwater monitoring will assess the impacts of the landfill on groundwater.
2. Page 1-21, Section 1.2.3.1: Clarify that the PRGs used represented residential exposure conditions. This is of considerable interest because the subsequent baseline risk assessment did not consider residential on-site exposures. Rather, residential exposures were to groundwater via ingestion and dermal contact and inhalation of vapors from groundwater.	**RESPONSE 2:** The text has been modified on page 1-21 to clarify that PRGs represent residential exposure conditions and residential PRGs represent a conservative screening process for planning for the Phase II RI.
3. Page 2-30, Table 2-6: The analyses biochemical oxygen demand and chemical oxygen demand were apparently not performed for the soil samples. This would be expected since these analyses are not used for solids such as dry soil. The total organic carbon measurement for soil should has been adequate. Confirm that these analyses were not performed or provide the data with interpretation.	**RESPONSE 3:** The references to BOD, TOC and TKN were deleted in Table 2-6. Soil and sediment samples were not analyzed for these constituents.

Originator: Bonnie Arthur Remedial Project Manager, U.S. EPA **To:** Joseph Joyce BRAC Environmental Coordinator **Date:** May 8, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
4. Page 4-43, Section 4.4.1: The discussion and presentation of data; specifically with respect to the term contaminants of potential concern, are inconsistent with the complementary discussions in the Human Health Assessment in Section 6. **The text that "All organic compounds detected in shallow soil with concentrations that exceed US EPA residential soil PRGs are considered COPCs." However, in Section 6 the text indicates that a very different process was used to identify COPCs, see page 6-2, all of section 6.1.1. A notable example of the inconsistency is that iron, calcium, and sodium are identified in Section 4 as a COPC and efforts have been expended to track these analytes in the text and figures; however, these same essential nutritional elements are excluded from the baseline human health risk assessment.** **Note that the text indicates that the distributions of COPCs in soil are presented on numerous figures in Section 4. These figures seem to perpetuate the inconsistency between the COPC listing in Section 6.**	**RESPONSE 4:** The use of the term "COPC" will only occur in the human health risk assessment. The tables in Section 4 summarize detected analytes (all Phase II results are in Appendix Q). The figures will be revised to illustrate location and concentration of risk drivers from Sections 6 and 7, metals above background, carcinogens, and other detected organics in soil.
5. Page 4-91, Figure 4-20: See previous comment. **The figure includes iron, sodium, calcium and magnesium which are essential nutritional elements. This leads the reader to believe that there is a justified level of concern with these elements when in fact there is not.**	**RESPONSE 5:** Nutritional elements will be eliminated from discussions.
6. Page 4-105, Section 4.6.4: There is negligible benefit if any to the assessment of nature and extent based on comparisons with Secondary MCLs. Secondary MCLs are regulations set by US EPA that estimate desirable levels for drinking water that may adversely affect the aesthetic value of drinking water. They are not enforceable by the federal government.	**RESPONSE 6:** All references to secondary MCLs has been removed from the draft RI.
7. Page 4-107, 3rd paragraph: See previous comment.	**RESPONSE 7:** References to secondary MCLs has been removed from the draft RI.

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8: Page 5-7, Figure 5-2: The indicted groundwater flow direction appears to be different than the apparent flow direction shown on Figure 3-8 or the RI.	**RESPONSE 8:** This groundwater direction will be revised.
9. Page 5-8, Figure 5-2: Based on the cross-sections in Figure 3-7 of the RI the waste (landfill) is not present to extent indicated on Figure 5-2. However, the trenching performed in this area seems to confirm some landfill in the area. Confirm and correct if necessary.	**RESPONSE 9:** This figure will be revised to more accurately reflect Figure 3-7.
10. Page 5-10, Table 5-1: As noted in preceding comments the COPCs listed in this table are not consistent with those presented in the Baseline Human Health Risk Assessment.	**RESPONSE 10:** There may be differences in the tables because the human risk assessment only considers soils 0 to 2 feet bgs and Section 5 considers deeper soils. A table will be added to Section 2 summarizing data uses.
11. Page 5-14, Section 5.2.1.3: The text states that there are no VOCs at concentrations of concern at Site 17. It is not clear what is the intent of the term "concentration of concern." Is this a conclusion based on a screening against PRGs and MCLs or is it based on the baseline risk assessment results. The issue is further confounded by the statement two sentences later, "While trace concentrations of COCs were detected in both media none were reported at levels that exceed the regulatory or established risk criteria for the Site."	**RESPONSE 11:** For soils, the metals above background and all detected organic compounds are assessed in Section 5.
12. Page 5-15, Section 5.2.1.5: Considering the numerous statements in this RI regarding the leaching of metals from the landfill to groundwater it seems that the discussion of the presence of apparently elevated levels of metals in groundwater is insufficient. The authors should expand upon the single sentence which provides a very cursory explanation for the presence of selected metals. Moreover, the statement on page 5-15 seems to conflict with the statements about the leaching of metals from the landfill to the groundwater.	**RESPONSE 12:** Additional discussions will be added on the conditions of metals and metals transport in groundwater.

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13. Page 5-15, Section 5.2.1.6: The text does not attempt to relate site-specific results for pesticides and herbicides to the generic fate and transport discussion provided. The authors should avoid making broad-based statements without providing site-specific analytical support. For example, they might indicate the types of pesticides and herbicides detected and the relative levels; and then indicate if they are found at the surface or a depth or in groundwater. Is the fate and transport analysis for these compounds intended to address agricultural application, or does it address the possibility that the materials were disposed of in the landfill as waste? If is possible that the mobility and fate may be different under these circumstances.	**RESPONSE 13:** Discussion considering vertical migration of contaminants has been added.
14. Page 5-21, Section 5.3.2: The text includes the sentences, "There are dissolved metals in groundwater in a downgradient monitoring well. No significant additional impact is expected in the future." This statement requires revision. First, there is nothing particularly unusual about the presence of dissolved metals in groundwater, it is a completely normal occurrence and certainly samples collected upgradient support this (see last sentence on page 5-5). Second, the implication is made that the presence of dissolved metals is considered to be an "impact," however, "No significant additional impact is expected in the future." The authors seem to be implying that (1) the landfill has caused a degradation of groundwater quality; and yet (2) the same impact could not continue in the future even though all current and past conditions would tend to remain the same. This is a conflicting argument which should be corrected.	**RESPONSE 14:** Additional discussions have been added concerning metals fate and transport as related to general chemistry of the groundwater.

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Section 6, General Issues Related to the Human Health Risk Assessment	
15.1 The text does not provide an adequate discussion of the relationship of the primary risk drivers to their occurrence and magnitude in the vicinity of Site 17. For example, the primary US EPA carcinogenic risk driver for groundwater is arsenic; however, the unfiltered value of 12.9 micrograms/liter is questionable as representative of groundwater conditions. This is evidenced by the maximum detected filtered concentration of 5 micrograms per liter which is barely above the detection limit and thus suspect itself. Of additional interest is the fact that the MCL is about four times greater than the highest measured arsenic concentration. It therefore appears that the risk managers would benefit from additional interpretation of the data presented in this RI. The authors should attempt to provide greater perspective on the relativism of the risk values presented. For organic compounds the primary risk drivers for groundwater were chloroform and bromodichloromethane; their detected levels were 0.9J and 0.4J microgram/L, respectively. Since these concentrations, as indicated by the "J" qualifier, are estimated and below the detection limit of 1 microgram/L; the final discussion should highlight this point as well as the fact that the MCLs for the compounds are one hundred times greater than the reported levels.	**RESPONSE 15.1:** Groundwater risks were based on data collected from wells considered to conservatively represent the groundwater conditions downgradient from the landfill. To place the risk estimates in proper perspective it is important to note the inherent uncertainties in the numerical results (e.g., high number of nondetects). Although the occurrence (frequency of detection) was identified for the primary contributors to the risk, the discussion will be expanded as suggested to include the magnitude of the measured values. In addition, for the risk drivers the text will relate the presence of qualifiers which indicate uncertainty in the reported values ("J" qualified) to resulting risks. Chemical concentrations which do not exceed the MCLs should not be categorized as suspect on the basis that these concentrations have an associated risk. Although the maximum unfiltered concentration of arsenic, 12.9 micrograms/liter, is below the MCL (50 micrograms/liter), this value is considerably over (250 times higher) the Region IX U.S. EPA risk-based tap water PRG of 0.045 micrograms/liter. Therefore, it is expected that at 12.9 micrograms/liter, arsenic will induce a cancer risk. Similarly, the MCLs for chloroform and for bromodichloromethane, 100 mg/L for both, are higher than their corresponding tap water PRGs of 0.16 and 0.18 micrograms/liter, respectively. Consequently, although the MCLs provide some useful information they do not provide additional perspective about the significance of the risk values presented..

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15.2 The text does not appear to adequately address the issue of incremental cancer risk; defined as the cancer risk presented by the difference between the total and the background/ambient levels of a carcinogenic analyte. When the difference is calculated, both concentrations must be the same statistic. Risk assessment guidelines recommend using the 95 percent UCL on the mean concentration to calculate risk under the RME scenario. This draft RI report uses the 95 percent UTL of the background/ambient data set to identify the reference concentration. An analyte is considered a contaminant when a measured concentration exceeds the 95 percent UTL and this approach is appropriate for screening risk assessments. However, for baseline risk assessments the UTL value should not be compared to the UCL for decision-making on background risk. For these purposes, the 95 percent UCL on the mean should be estimated for the background/ambient data set. This suggestion was explicitly made by CTO-080 at a meeting between CLEAN I, CLEAN II and SWDIV in early December at CH2M-Hill's office in Santa Ana. At that time it was agreed that CLEAN II would recalculate the background inorganic levels using the 95 percent UCL on the mean. However, the draft RI report does not indicate that the calculations were completed.	**RESPONSE 15.2:** The risk assessment utilized the 95 percentile of the background metal data for two purposes. First, the background 95 percentile were used for a comparison with the maximum on-site metal concentrations to identify those analytes which are site related. It should be noted that the 95 percentile of the background data generally corresponds to the maximum detected values. Second, the 95 percentile values were used as exposure point concentrations in the calculation of background risks; however, their use was dependent on the statistical distribution of the analyte. Prior to the calculation of exposure point concentrations, on-site and background data was tested for normality and log-normality. Next, a 95-percent UCL on the mean was calculated based the distribution of the analyte for both on-site and background data sets. However, a 95-percent UCL was not used for those chemicals for which the normal and lognormal distribution failed (nonparametric). Instead, the maximum concentration was used as the exposure point concentration for such analytes (for the background data set the maximum corresponds to the 95 percentile). Consequently, the same statistical approach was used in the derivation of exposure point concentrations for both on-site and background data sets. The author, however, recognizes that use of maximum concentrations for the non-parametric distributed data is overly-conservative, thus a 95% UCL based on a nonparametric approach, for both on-site and background data, will be used in the calculation of risk for the final report. In addition , it should be noted that the use the 95 percentile as a screening tool for purposes of identifying metal COPCs will be replaced in the final report. A statistical approach based on the 95-percentile of the background data used in conjunction with the Wilcoxon Rank Sum test and the Percentile test will serve to identify metals as COPCs for inclusion into the risk assessment.

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16. Page 6-8, Section 6.2.3: Include a table which lists the exposure point concentrations for each analyte under each exposure scenario.	**RESPONSE 16:** Tables listing on-site exposure point concentrations are presented in the risk assessment appendix. An additional table, showing the background exposure point concentrations will be added to the final RI report.
17. Page 6-17, 2nd paragraph: The text does not indicate if total or hexavalent chromium values were used to calculate risk. This is significant considering that, according to the text, "Chromium was the sole contributor to the risk (for inhalation)."	**RESPONSE 17:** The text will be modified to indicate that chromium was assessed as total chromium for the U.S. EPA risk evaluation and as hexavalent chromium for the Cal-EPA evaluation. In addition, the text will clarify that in the absence of an RfD for total chromium, the hexavalent chromium RfD was used in the estimation of the hazard index.
18. Page 6-17, Last sentence on the page: Similar to previous comment. Identify whether speciated chromium values were used. The sentence indicates that chromium contributed to over 70 percent of CAL-EPA risk from ingestion of drinking water.	**RESPONSE 18:** See response to comment 1.17. Chromium was evaluated as hexavalent chromium by the use of the hexavalent chromium Cal-EPA toxicity criteria.
19. Page 8-3, Table 8-1: The text presents conclusions about landfill leaching and the effect on groundwater quality which are unsupported by the discussions in the RI. **The text states the VOCs, metals, petroleum hydrocarbons, and general water quality parameters indicate that landfill contents have been leached to groundwater. There is limited (see comments regarding page ES-6) if any discussion of the basis for such a statement for these parameters.**	**RESPONSE 19:** See Response to Comment No. 1.
20. Page 8-14, Section 8.1.4: This subsection should include an enhanced discussion of relative risk, as described in the comments above. **For example, the text notes that the majority of the groundwater risk is due to arsenic but fails to mention that all arsenic values were well below the MCL.**	**RESPONSE 20:** The summary has been expanded to discuss risk interpretations.

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21. Page G-19, Figure 1: The text associated with this figure does not include an adequate discussion of the flow chart items which extend out past the "yes" following the "Proportion of Non-Detect Data_15%." Include an explanation as to why an adjustment to the mean and standard deviation would be required and how it would be performed. In addition, explain why an adjustment is only required for data sets with percentage non-detects 15 percent but _50 percent.	**RESPONSE 21:** This portion of the evaluation was not used and will be eliminated. If the data had a normal or log normal distribution, the 95 percentile will be calculated on the Draft Final.
22. Page S-9, Table S-15: There is no explanation for the use of identical values for all subsurface concentrations of PAHs. A 95 percent UCL is presented in the table for what is apparently (though not labeled as such) the surface concentrations; however, no complementary UCL is provided for the subsurface soil. Maximum and minimum and other basic statistics are provided; however, the data set (surface or subsurface) to which they apply is not indicated.	**RESPONSE 22:** The subsurface soil column will be deleted. It was not used in the ecological risk assessment.

RESPONSE TO COMMENTS
DRAFT PHASE II REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 2B, SITE 2 AND 17, MAGAZINE ROAD LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Lisa Hanusiak, Chemist EPA, Quality Assurance Management Section **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 8, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
ENCLOSURE C: Review Comments for OU2B Site 2 Draft Remedial Investigation Report	
CONCERNS	***RESPONSES TO CONCERNS***
1. **Section 2.16.3.1, Field Duplicates; Appendix O, Section 0.1, Field Quality Control Sampling Summary and Results: The RI report contains inconsistent information regarding the collection of field duplicate samples for the soil matrix. The text in Section 2.16.3.1 states that field duplicate samples for soil were not collected. However, the text in Section 0.1 of Appendix O states that field replicate samples were collected to check for soil homogeneity. The text in Sections 6.1.1 (Duplicates) and 6.2 (Field Quality Control Checks) of the Phase II RI/FS QAPP addresses the collection of field duplicate samples, but does not state whether soil field duplicate samples were planned for collection. This discrepancy should be addressed.**	**RESPONSE 1:** No soil field duplicates were collected as part of the Phase II RI. Section 0.1 of Appendix O has been corrected to reflect this fact. In addition, Section 6 has been modified to indicate that duplicate samples were collected for other media sampled.
2. **Section 4.2.2, integrated surface air sampling: The text in Section 4.2.2 of the RI report compares the levels of volatile organic compounds (VOCs) detected in the landfill to results of a 1990 California Air Resources Board (CARB) Study which lists the median and the maximum levels of VOCs measured at landfill sites in California. The significance of VOCs present at concentrations above the median level but below the maximum detected level in the CARB Study is unclear. It is recommended that the discussion concerning the application of the CARB study to the conclusions of the RI be expanded.**	**RESPONSE 2:** This discussion will be expanded to indicate levels are comparable to the CARB median, which suggest that the gaseous releases from Site 2 landfill are typical of municipal landfills. Levels greater than the median but less than maximum CARB levels, suggest that the Site 2 landfill may have received more VOC wastes than typical landfills but are not indicative of additional concern.
3A. **Table 4-31, Compounds Detected in Surface Water - Phase I: Identical results for total metals and dissolved metals are presented in Table 4-31 of the RI report. It is unlikely that results for total and dissolved metals actually would be identical. The information presented in this table should be reviewed and verified against the source data.**	**RESPONSE 3A:** Table 4-31 for surface water sampling results was modified to show only total metals analysis. Dissolved metals analysis was not conducted as part of the Phase I surface water sampling efforts. A new table will be added with surface water collected 20 February 1996 which includes total and dissolved metals.

Originator: Lisa Hanusiak, Chemist EPA, Quality Assurance Management Section **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 8, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
3B. It is recommended that the RI report be expanded to include a discussion concerning the results for total and dissolved metals. Although the analysis of total and dissolved metals is not addressed in the Phase II RI/FS QAPP, a comparison of that total and dissolved concentrations would be appropriate since both analyses were performed.	**RESPONSE 3B:** A discussion comparing the results of the total and dissolved metal analysis has been added to Section 5.
COMMENTS **1. Executive Summary: Some of the text that should be included between pages ES-6 and ES-7 of the RI report appears to be missing.**	***RESPONSES TO COMMENTS*** **RESPONSE 1:** This will be reviewed and amended as needed.
2. The text in Section 2.5, Air Sampling; Table 2-4, Laboratory Analysis of Air Samples: The text in Section 2.5 of the RI report states that Table 2-4 presents the target list of analytes and associated analytical detection limits; Table 2-5 does not include detection limits. This discrepancy should be addressed.	**RESPONSE 2:** The reference in the text to the associated analytical detection limits has been deleted. The actual detection limits are indicated in the Section 4 data summary tables. The targeted detection limits are presented in the Phase II RI QAPP and Work Plan.
3. Table 2-6, Laboratory Analysis of Surface Soil, Subsurface Soil, and Sediment Samples: Table 2-6 of the RI report includes information for a number of analyses, including total Kjeldahl nitrogen (TKN), biochemical oxygen demand (BOD), and chemical oxygen demand (COD), that are generally performed on water samples only. Table 2-6 should be revised to include an exclusive and complete list of analyses performed on soil samples.	**RESPONSE 3:** The reference to soil and sediment sample analyses for TKN, BOD, and COD was deleted in Table 2-6. These analyses were performed only on water samples during the Phase II RI.
4. Section 3.6.4, Site 2 General Water Quality Parameters: The units of concentration for water quality parameters discussed in Section 3.6.4 of the RI report should be revised from milligrams per kilogram (mg/kg) to milligrams per liter (mg/L).	**RESPONSE 4:** The units for water quality parameters have been corrected in Section 3.6.4.
5. Table 4-12, Compounds Detected in Shallow Soil - Phase I: Results for metals are presented in Table 4-12 of the RI report in concentrations units of micrograms per kilogram (µg/kg).l The units should be revised to mg/kg.	**RESPONSE 5:** The units for the metal analyses was corrected in Table 4-12.

Originator: Lisa Hanusiak, Chemist EPA, Quality Assurance Management Section **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** May 8, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
6. <u>Appendix O, Laboratory Analytical Data</u>: According to information provided in Appendix O, dissolved silica was to be determined. However, Section 4 of the RI/FS report does not include results for silica analyses. This inconsistency should be clarified.	**RESPONSE 6:** Dissolved silica analyses were not performed during the Phase II RI and thus the statement has been deleted in Appendix O.

RESPONSE TO COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORT FOR
OPERABLE UNIT 2B - SITE 17
MCAS EL TORO, CALIFORNIA

Originator: Peter M. Janicki Cal EPA **To:** Tayseer Mahmoud DTSC **Date:** 30 April 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
GENERAL COMMENTS	***RESPONSES TO GENERAL COMMENTS***
1. Section 4.3.2, Perimeter Gas Migration Sampling, states that "Four Gas migration samples were collected at four sampling stations at Site 2". It appears that this is a typographical error; if so, please correct it, otherwise please provide an explanation.	**RESPONSE 1:** This typographical error was corrected and Site 17 is correctly referenced.
2. It appears that the field explorations aimed at delineating both the vertical and lateral extent of the landfill were limited to certain portions of the site (based on difficult terrain conditions). Since the field investigation has shown that the site's negative environmental impacts are minimal and since the site will remain as non-irrigated open space, the extent of the field investigations is satisfactory. However, should this site be affected by closure activities at other sites on the base (clean closure and/or landfill consolidation) or other postclosure land use is proposed, further field explorations may be advisable.	**RESPONSE 2:** Consolidation or clean closure may be considered as part of the remedial action at Site 17. If this occurs, the remedial design will specify what additional actions will need to be completed to satisfy the ARARs.

RESPONSE TO COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORT FOR
OPERABLE UNIT 2B - SITE 2
MCAS EL TORO, CALIFORNIA

Originator: Peter M. Janicki Cal EPA **To:** Tayseer Mahmoud DTSC **Date:** 30 April 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
GENERAL COMMENTS	***RESPONSES TO GENERAL COMMENTS***
1. Site investigation and sampling programs appear to be adequate for the purpose of initial site assessment. However, a waste characterization study may be required later on, if necessitated by the findings of the feasibility study, specifically, if a clean closure and/or consolidation of the landfill are considered.	**RESPONSE 1:** Frequent meetings with the BCT has enhanced the RI process at MCAS El Toro and has enabled the team to supplement media sampling where necessary to complete a through investigation. After further discussion with the BCT and review of the feasibility study, a waste characterization study will be considered if one of these options is chosen.
2. Based on the information about negative impacts of the landfill on the environment (ground water contamination, gas migration, and soil contamination), an alternative addressing clean closure and/or waste consolidation should be considered for the purpose of the feasibility study: For your convenience, we have included a copy of Board's Local Enforcement Agency Advisory discussing the subject of clean closure which may be used as a guidance document in this matter.	**RESPONSE 2:** The landfill encompass over 44 acres and clean closure of the entire landfill is not considered economically feasible, however portions of the landfill will be consolidated to reduce the area of capping and eliminate areas of minor landfilling.
3. The Remedial Investigation report does not include a discussion of potential impacts of ground water fluctuation and the landfill seep on landfill gas generation potential. As indicated during the April 24, 1996, meeting, groundwater periodically rises into the waste fill and may, potentially, provide moisture necessary to generate landfill gas. Thus, the report should evaluate if such occurrence takes place at Site 2.	**RESPONSE 3:** Currently, seasonal fluctuations of groundwater may result in contact of groundwater with wastes. The FS will consider reduction of groundwater contact by eliminating ponding of the local seep.

RESPONSE TO COMMENTS
DRAFT PHASE II REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 2B, SITE 2 AND 17, MAGAZINE ROAD LANDFILL
MCAS EL TORO, CALIFORNIA

Originator: Rachel Simons, U.S. EPA **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** April 25, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
ENCLOSURE B: Review Comments for OU2B Site 17 Draft Remedial Investigation Report	
GENERAL COMMENTS **1. In general, the Navy has done a thorough job of investigating the landfill. The nature and extent of the landfill appears to be sufficiently characterized.**	***RESPONSE TO GENERAL COMMENTS*** **RESPONSE 1:** The teamwork displayed by the DON and BCT members have enabled the RI process to be a success. DQO's and presumptive remedies were used throughout the RI to sufficiently characterize Site 17.
SPECIFIC COMMENTS: **1. Section 1.2.2.3, History of Site 17 Landfill Operations, page 1-18: Aerial Photograph Review: In a 1980 aerial photograph, stained areas were observed on the northern portion of the site. Did any soil sampling target these previously stained areas?**	***RESPONSES TO SPECIFIC COMMENTS:*** **RESPONSE 1:** References to areas of the site from previous investigations were discussed without the BCT during development of the Phase II RI/FS Work Plan. Many of these "stained areas" were not sampled because current site conditions do not show these stains. For "stains" were within the boundary of the landfill, no sampling was conducted because the site will be capped.
2. Section 3.1.4, Surface Water, page 3-9: According to this section, surface water runoff from surrounding hill slopes can collect on flat and low depression areas resulting in localized ponding. If surface water runoff is potential pathway for contaminant migration, were the ponding areas targeted for surface soil sampling?	**RESPONSE 2:** The surface of the landfill is uneven because landfill debris is exposed over a large area. Ponding can be eliminated with an appropriate cap design.
3. Figure 3-4, Region Geology, page 3-13: Please show Site 17 on this figure.	**RESPONSE 3:** The study area boundary of Site 17 was added to Figure 3-4.
4. Section 4.3.1, Shallow Soil Gas, page 4-32: Please correct the typographical error for the US EPA, 1992b reference. It appears that 1991b is the correct reference.	**RESPONSE 4:** The reference to US EPA, 1991b was corrected in the text.
5. Section 4.4.1, Shallow Soil, page 4-44: Please change the reference to "background' pesticides to anthropogenic.	**RESPONSE 5:** References to "background" pesticides was changed to reference levels.

Originator: Rachel Simons, U.S. EPA **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** April 25, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
6. Section 4.4.2. Surface Soil, page 4-70: The fifth paragraph on this page states that radionuclides (gross alpha and beta) were detected at 5 sample locations. What is the source of this radioactivity? Is it naturally occurring? Can the results be compared to reference values (e.g. PRGs) or background values? Please expand this discussion as radionuclides were also detected in groundwater (see Section 4.6.5, pate 4-105).	**RESPONSE 6:** Section 4.4.2 was expanded to include a discussion of gross alpha and gross beta activity in surface soils. Gross alpha and beta appear to be naturally occurring.
7. Section 4.5, Leachate, page 4-70: Could the leachate results be affected by the time of the year the sampling was performed? The lysimeters were in the ground from Oct. 26 to Nov. 7. According to Section 3.2 Meteorology and Climatology, most of the rainfall occurs from November to April. Please discuss with the BCT.	**RESPONSE 7:** The lysimeters were installed in late October to early November and the lysimeters were purged of soil moisture through mid-January. Not enough sample could be collected for analysis. The low volume of soil moisture collected was unexpected since these purging events followed 2 years of above-average rainfall in the Orange County area. The relatively low soil moisture is probably typical.
8. Table 8-1, Site 17, Summary and Conclusions, page 8-3: DQO #5 - Determine if leachate is impacting soil or groundwater: For risk assessment, the conclusion states that risks are present at downgradient monitoring wells to off-site residents. Please clarify that no risks are currently present as the groundwater beneath MCAS El Toro is not currently utilized as drinking water.	**RESPONSE 8:** The conclusion will be modified to state that risks are determined under a residential use scenario though no reuse plan is currently available. Residential developments and use of groundwater immediately downgradient of the site is highly unlikely due to state laws restricting development to 1,000 feet from a landfill.
9. Table 8-1, Site 17 Summary and Conclusions, page 8-4. DQO #6 - Determine nature and extent of groundwater contamination. Potential response actions include restricting the extent of groundwater contamination. Does this mean an action to restrict groundwater migration will be implemented in addition to capping? Please clarify.	**RESPONSE 9:** This will be clarified by stating any future impacts to groundwater will be reduced by capping. If post-closure groundwater monitoring indicates a release, additional remedial actions will be considered.
10. Section 8.2, Conclusions, page 8-27. Conclusions #5 and 6: Both of these conclusions reference metals in the groundwater that could be leaching from the landfill. These conclusions can not be verified until the evaluation of background metals is complete. Please discuss with the BCT.	**RESPONSE 10:** When comparing upgradient and downgradient groundwater results and assessing redox potentials, metals appear to be mobilized at the site. However, long-term monitoring will assess the impact.

Originator: Rachel Simons, U.S. EPA **To:** Bonnie Arthur Remedial Project Manager, U.S. EPA **Date:** April 25, 1996	**CLEAN II Program** **Contract No. N68-711-92-D-4670** **CTO-0076** **File Code: 0214**
11. <u>Section 8.2, Conclusions, page 8-27: Conclusions #7 and 8</u>: Clarify why surface water runoff was not collected since this is a potential pathway for contamination migration.	**RESPONSE 11:** Surface water samples were not collected from Site 17 because no observed flow was noted from the ephemeral stream during recent storm events. Surface water flow can be characterized as rapid runoff that only occurs during periods of heavy rain, thus causing considerable erosion.

BECHTEL NATIONAL INC.

CLEAN II TRANSMITTAL/DELIVERABLE RECEIPT

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Naval Facilities Engineering Command
Southwest Division
Mr. Richard Selby, Code 0233.RS (O)
Building 128
1220 Pacific Highway
San Diego, CA. 92132-5187

DATE: September 9, 1996
CTO #: 0076
LOCATION: MCAS El Toro

FROM: _____
Program/Project Manager

DESCRIPTION: Response to Comments Draft Phase II Remedial Investigation Report, Operable Unit 2B - Sites 2 and 17, DTD May 1996

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