

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

21 March 2006

Mr. Darren Newton
BRAC Environmental Coordinator
Base Realignment and Closure
Marine Corps Air Station El Toro
7040 Trabuco Road
Irvine, CA 92618

RE: Draft Remedial Investigation / Feasibility Study (RI/FS) Report, Operable Unit 2C --
Anomaly Area 3, Former Marine Corps Air Station (MCAS) El Toro, California

Dear Mr. Newton:

The U.S. Environmental Protection Agency (EPA) has completed its review of the subject document. EPA has for the most part found the document to be well-prepared and the information for Anomaly Area 3 (AA-3) to be well-presented. We provide our detailed comments in the attachment.

As in our review of the Draft RI Report for Site 1, EPA has identified major issues in this review for both the human and ecological screening risk assessments. For Site 1 EPA participated in a conference call with the DON to discuss risk assessment issues on 19 December 2005 and followed that up with a letter on our position regarding human health issues dated January 9th of this year. DTSC submitted separate letters to you that same month regarding their issues on the human and ecological risk assessments for Site 1. In order to advance both Site 1 and AA-3 past the RI process, these outstanding risk assessment issues will need to be resolved. EPA recommends that a meeting be scheduled to discuss and resolve these risk assessment issues.

If you should have any questions, please feel free to call me at 415-972-3349.

Sincerely,



Rich Muza
Remedial Project Manager
Federal Facility and Site Cleanup Branch

received
3/28/06

cc. Content Arnold, NFECSW SDIEGO
James Callian, NFECSW SDIEGO
Frank Cheng, DTSC
John Broderick, RWQCB
Bob Woodings, RAB Co-Chair
Marcia Rudolph, RAB Subcommittee Chair
Sonce Devries, EPA
Gerald Hiatt, EPA

**COMMENTS ON THE DRAFT RI / FS REPORT, OPERABLE UNIT 2C –
ANOMALY AREA 3**

1. Figure 3-1 – The actual locations of the ground-water monitoring wells (ie., MW01, MW02, MW03, and MW04) and vadose zone monitoring wells (ie., PZ1, PZ2, and PZ3) are not shown on the figure. It is recommended that this omission be corrected in the Draft Final RI/FS Report.
2. Section 3.7.2.2, Page 3-17 – Under the “Risk” bullet, there are some incorrect notations. The NCP defined risk range is 10^{-4} to 10^{-6} , not 10^{-6} to 10^{-6} as presented, and the radionuclide of concern is Ra-226, not Ra-266 as noted. It is recommended that these notations be corrected.
3. Section 4.4.1.1, Page 4-9 – The boreholes AA 3-BH02 and AA 3-BH-03 are not located on Figure 4-1 as cited in the text. It is recommended that the citation of the figure be presented only for the boreholes that were actually completed in the 2005 efforts.
4. Section 5.2, Page 5-2 – “A southwestern topographic low was located along cross section AA 3-2-2’, between cross sections AA 3-12-12’ and AA 3-13-13’.” What is meant by the cross sections referred to in this statement as well as the following statement here in the text? It is recommended that this issue be clarified and that Figure 5-7 be cited here in the text.
5. Figure 5-14 – It is recommended that "obscured" in the Mule fat scrub area be defined here.
6. Section 5.5.6.2, Page 5-62 -- The second sentence mentions "disturbed wetlands". It is recommended that the meaning of "disturbed" as used here be defined and that the agency and the regulations which describe mule fat scrub as "sensitive" related to its position in a drainage be cited.
7. Section 6.3.4, Page 6-46 – “Additionally, to address the potential for methane migration, the Navy reached an agreement with the FFA signatories (including CIWMB) regarding engineering and institutional controls pertaining to the landfill gas at AA-3.” It is recommended that a citation within this report or reference to another document be provided here that includes the agreement on this issue (ie., CIWMB agreement letter in Appendix L).
8. Section 7.1.1.2, Page 7-2 – “A local geologic map (see Figure 5-1) was created using the U.S. Geological Survey digital geologic map database of the Santa Ana 30-foot by 60-foot quadrangle...” The proper citation is “30° by 60° quadrangle”. It is recommended that this error be corrected.
9. Section 7.1.1.2, Page 7-3 – “It is just beyond Well MW02 that the Wash joins the IMZ with the increase in hydraulic gradient probably associated with rapid increase in gradient associated with entry into that groundwater environment as also observed at Site 2.” What is meant by this statement? It is recommended that this issue be clarified in the Draft Final RI Report.
10. Section 7.1.2.4, Page 7-5 – There are numerous references as to contaminants of concern (COCs) exceeding their respective maximum contaminant levels (MCLs). However, some of the

COCs cited do not have promulgated MCLs and the levels being used for assessment are some other standard or reference number. It is recommended that this issue be clarified.

11. Section 8.4.3.1, Page 8-36 -- The potential for indoor inhalation exposures to future on-site residents via vapor intrusion requires a more detailed assessment than is currently incorporated in the draft document. As demonstrated by the data in both the integrated air sampling results table (Table 6-4) and the perimeter soil gas sampling results table (Table F-2), volatile organic compounds (VOCs) are being released from the landfill, both laterally in soil vapor and upward to ambient air. Some of these VOC concentrations exceed risk-based screening levels addressing the potential for vapor intrusion into any future homes or buildings on or immediately adjacent to the site (eg., benzene concentrations ranging up to 43 ppb were detected in the integrated surface air sampling conducted a few inches above the soil surface and benzene concentrations ranging up to 0.007 ug/l (7 ug/m³) were detected in the perimeter soil gas samples). The potential for vapor intrusion requires a more detailed assessment than is accomplished by the statement "Inhalation of VOCs in indoor air ... is considered insignificant". However, the data set most appropriate for a more detailed assessment of this vapor intrusion potential, the on-site shallow soil gas survey results (Table E-2), is not informative because the analytical method employed was not sensitive enough to rule out the presence of VOC concentrations of potential concern regarding vapor intrusion (ie., limits of detection were 1,000 to 5,000 ug/m³ for most of the VOCs). It is recommended that the DON provide further assessment of the potential for indoor air inhalation exposures via vapor intrusion in a revised risk assessment.

12. Section 8.5.1.1, Page 8-55 -- The draft document states "any chemical for which the Region IX PRG was predicated on a provisional toxicity value will be listed in the uncertainty section ... and the effect on risk estimates will be discussed in terms of bias high or bias low". (Please provide a copy of the email "policy" statement cited as Department of the Navy 2004: Policy on Using Provisional Toxicity Factors.) This approach effectively eliminates those contaminants from inclusion in the calculations of excess cancer risks, or hazard indices for non-cancer toxicities. This approach conflicts with EPA Superfund and Cal/EPA risk assessment policies (for EPA policy on the use of toxicity values see OSWER Directive 9285.7-53, Human Health Toxicity Values in Superfund Risk Assessments, which clearly supports the use of appropriate toxicity values other than those available on the Integrated Risk Information System (IRIS)). This approach also ignores a substantial body of scientific evidence on toxicity and human health risks of many contaminants at Superfund sites. The draft document also misinterprets the concept of "provisional" toxicity values (page 8-108). As noted in the OSWER Directive, provisional toxicity values refer to toxicity values developed by the EPA Office of Research and Development's National Center for Environmental Assessment. Provisional values are developed by NCEA's Superfund Health Risk Technical Support Center when requested by the Superfund program for chemicals lacking an appropriate IRIS value. The Tier 3 toxicity values referred to in the OSWER Directive (eg., Cal/EPA and ATSDR toxicity values) are not "provisional", rather they are toxicity values developed by well-established, rigorous scientific processes and then peer-reviewed before adoption by respected public health agencies. Therefore, it is not appropriate to eliminate from quantitative assessment contaminants which lack an IRIS toxicity value but for which a Tier 3 value exists (eg., toxicity values developed by Cal/EPA or ATSDR); before these contaminants are eliminated from the risk calculations, their quantitative contribution to risk should be addressed using these Tier III values. It is recommended that this

approach be incorporated into the screening and site-specific risk assessments for AA-3. (Note: It is EPA's understanding that the TEQ approach has been used by the DON for a number of other sites and we suggest that the risk assessor contact Patricia Underwood for details.)

13. Section 8.5.1.2.1, Page 8-58 -- Although they were not used in the calculations of risk, the draft document does contain calculations of "B(a)P equivalents" to estimate potential exposures to the full range of PAHs under various different exposure scenarios at the site. B(a)P equivalent concentrations are calculated using relative potency values from the second column of Table 8 (ie., "Estimated Order of Potential Potencies of Selected PAH Based on Mouse Skin Carcinogenesis") in the Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (page 17: EPA/600/R-93/089); this approach is not consistent with the guidance in the cited document. The Provisional Guidance actually directs risk assessors to use the 'order of magnitude' relative potency values presented in the third column of Table 8 (Conclusions, page 8: EPA/600/R-93/089). The text, "Deriving Toxicity Equivalence for B(a)P", implies that use of the RPFs from the second column (ie., non-'order of magnitude' RPFs) may have been at the request of DTSC. It is recommended that this issue be clarified.

14. Table 8-12 -- It is recommended that references be provided for the CT exposure assumptions presented in this table.

15. Section 8.5.6, Dioxin Assessment -- EPA's comment regarding the DON's approach of incorporating only 2,3,7,8-tetrachlorodibenzo-dioxin (2,3,7,8-TCDD) into the risk calculations, thus ignoring without reasonable scientific justification the toxicity of all other dioxin/furan congeners, is essentially the same as we provided for the draft risk assessment for Site 1 (24 August 2005). Dioxins and furans are a series of highly toxic chlorinated organic compounds formed during combustion. For risk assessment purposes, dioxins and furans are not single analytes but rather a suite of closely related congeners, many of which share a common mechanism of toxicity and carcinogenicity, albeit with varying potencies. The current draft risk assessment inherently makes the assumption that only one of the dioxin/furan congeners found at the site -- 2,3,7,8-TCDD -- contributes to cancer risk. This assumption is present in the risk assessment by virtue of the fact that only the 2,3,7,8-TCDD concentrations are included in the risk calculations. This assumption is scientifically unreasonable and directly conflicts with risk assessment guidance and the standard-of-practice of both EPA and California EPA. This approach also conflicts with the policy of the World Health Organization (WHO) and the consensus of the global scientific community. Since the risk assessment notes that this approach "results in the underestimation of cancer risk" (page 8-109), it appears that this is an attempt to downplay actual risks posed by contamination at the site. Regarding assessment of risks from the full spectrum of dioxin-like compounds, EPA guidance and the standard-of-practice for Superfund risk assessment are to calculate a 2,3,7,8-TCDD-equivalent concentration using the WHO Toxicity Equivalence Factors and use this 'TEQ concentration' when assessing risks or making comparisons to the dioxin PRG. It is recommended that this approach be incorporated into the screening and site-specific risk assessments for AA-3. (Note: It is EPA's understanding that the TEQ approach has been used by the DON for a number of other sites and we suggest that the risk assessor contact Patricia Underwood for details.)

16. Section 8.5.6, Lead Assessment -- In accordance with the Region 9 policy on Cal/EPA toxicity values (see Comment 22 below) the screening assessment for lead at AA-3 1 should be based on the Cal-modified PRG value of 150 mg/kg for residential exposures instead of the EPA value of 400 mg/kg. It is recommended that this issue be addressed in a revised risk assessment.

17. Section 8.5.6, Polycyclic Aromatic Hydrocarbons -- The situation for polycyclic aromatic hydrocarbons (PAHs) is exactly analogous to that for the dioxins/furans, namely the risk calculations are based on only a single PAH -- benzo(a)pyrene (B(a)P) -- and thus ignore without reasonable scientific justification the toxicity of all PAHs except for B(a)P. PAHs are a series of toxic polycyclic organic compounds formed during combustion. Many of the PAHs share a common mechanism of toxicity and carcinogenicity with varying potencies. The current draft risk assessment inherently makes the assumption that only one of the PAHs found at the site -- B(a)P -- contributes to cancer risk. This assumption is present in the risk assessment by virtue of the fact that only the B(a)P concentrations are included in the risk calculations. This assumption is scientifically unreasonable and directly conflicts with specific risk assessment guidance and the standard-of-practice of both EPA, California EPA, and the consensus of the global scientific community. Since the risk assessment notes that this approach "results in the underestimation of cancer risk" (page 8-109), it again appears that this is an attempt to downplay actual risks posed by contamination at the site. It is recommended that PAHs be addressed in the risk assessment as per current practice.

18. Section 8.5.6.1, Page 8-62 -- The estimated excess lifetime cancer risk arising from exposure to surface soils (0'-1' bgs) for the future residential exposure scenario are due primarily to arsenic and B(a)P; risk estimates for subsurface soil exposure are similar. Arsenic, which is present at concentrations comparable to background, account for about 1/3 of these risks and B(a)P equivalents account for about 2/3 of the soil risks. Is there any information available on the local or areal background concentration of B(a)P equivalents that could be used to put these PAH soil levels and associated risk estimates into context? It is recommended that this issue be addressed in a revised risk assessment.

19. Section 8.5.6.3, Pages 8-74 & 8-75 -- Arsenic concentrations in ground water should be discussed in the context of the newly revised MCL for arsenic of 10 ug/l. In this regard, arsenic concentrations at a number of monitoring wells exceed the MCL. It may also be appropriate to discuss the ground-water arsenic levels in the context of naturally-occurring background levels. It is recommended that these issues be addressed in the draft final risk assessment.

20. Tables 8-13, 8-14, 8-15, & 8-16) -- The manner in which the risk calculations for soil exposure are presented in Tables 8-13, 8-14, 8-15, and 8-16 has the potential to mislead the casual or unsophisticated reader as to the true magnitude of the risk posed by the underlying scenarios. Each table contains an individual row presenting risks summed across all PAHs -- labelled "Benzo(a)pyrene Equivalent" -- and another summed across all dioxin/furan congeners -- labelled "Total 2,3,7,8-TCDD". The inclusion of these rows implies to the reader that these risks will be included in the total risk estimate summed across all contaminants in the tables. However, the totals presented for "Incremental Lifetime Cancer Risk Including/Excluding Background" do not include risk contributions from the summed PAHs and dioxin/furan congeners. For example, in Table 8-13, the RME "Incremental Lifetime Cancer Risk Including

Background" is stated to be 2E-5. If one were to include the risks as presented in the table for all of those PAHs and dioxin/furan congeners for which there is international scientific consensus regarding toxicity values, the risk estimate doubles to 4E-5. It is recommended that these issues be addressed in the draft final risk assessment.

21. Tables 8-15 & 8-16 -- It appears that the Region 9 PRG for residential soils (6.2E-2 mg/kg) has been used for calculating the B(a)P risk for the Industrial Receptor. It is recommended that this issue be addressed in a revised risk assessment.

22. Section 8.6, Cal/EPA Toxicity Values -- EPA's comment regarding the DON's approach to Cal/EPA toxicity values is the same as we provided for the draft risk assessment for Site 1 (24 August 2005). In cases where both agencies have developed toxicity values and there is a significant difference (usually interpreted to mean more than 4-fold) between those values, there is a long-standing agreement between Region 9 and Cal/EPA to use the more conservative (ie., more "health-protective") toxicity value in Superfund risk assessment. In recognition of this policy, this agreement is noted in Section 2.4 of the Background Technical Document for the current Region 9 PRG Table and the table itself contains "Cal-Modified" PRG values for the relevant chemicals. Contaminants for which use of Cal/EPA toxicity values is most appropriate include:

- arsenic,
- lead,
- naphthalene,
- benzo(k)fluoranthene,
- chrysene,
- trichloroethylene

It is also noted that the issue of primacy of state values was settled by the EPA Administrator as a result of a Dispute Resolution between Region 9 and DOD regarding Castle Air Force Base. The Administrator determined that the State had the right to compel the use of more stringent values and environmental standards for facilities within their boundary. Furthermore, it is the Region's opinion that the use of the Cal/EPA toxicity values is in DOD's long-term interest in many cases. Since newer Cal/EPA toxicity values often represent more recent, qualitatively better science, it is likely that EPA will similarly revise its toxicity values for the same chemicals in the future. When this happens, the revised EPA toxicity values will be incorporated into the 5-year review process and, if sufficiently more conservative, may prompt a corresponding revision of cleanup levels. Also note that OSWER Directive 9285.7-53, Human Health Toxicity Values in Superfund Risk Assessments identifies Cal/EPA toxicity values as Tier III toxicity values, not "provisional" values. It is recommended that these issues be addressed in the Draft Final Report.

23. Section 8.6.2, Page 8-81 -- EPA's comment regarding the DON's approach to construction/utility workers is the same as we provided for the draft risk assessment for Site 1 (24 August 2005). This site-specific risk evaluation makes the assumption that a construction/utility worker's exposure duration is 3 years for the RME scenario and 1 year for the CT scenario. By using these exposure duration values, the risk assessment inherently assumes that MCAS El Toro is the only contaminated property that a construction/utility worker receptor will ever work on; this assumption is unrealistic. The fact that there are a number of

contaminated sites on the MCAS El Toro property where construction is anticipated in the future adds extra weight to the importance of this issue (ie., the same construction workers may be exposed at Site1, AA-3, etc., resulting cumulative exposure durations much longer than are assumed in each site's individual risk assessment). Given the general paucity of previously undeveloped land in Southern California and the recent emphasis by municipalities and government agencies to redevelop 'brownsfield'-type properties, it would be more reasonable to assume that Southern California construction/utility workers routinely encounter contaminated properties. Therefore, in order to generate a soil PRG which achieves a given target risk level over a construction/utility worker's career it would be more appropriate to assume that 50% (RME) to 25% (CT) of that career involves work at contaminated properties. Over a 25 year working career, the corresponding exposure durations would be 12.5 years (RME) and 6.25 years (CT). It is recommended that this issue be addressed in a revised risk assessment.

24. Section 8.7.3, Page 8-108 – See Comment 22 above.

25. Section 9, General -- As noted by the California Department of Fish and Game (CADFG) (February 5, 2004), it is important to indicate on all tables whether the soil analytical data is on a wet or dry weight basis. All soil data should be provided on a dry weight basis. Also, an indication of whether the surface-water data provided are on a dissolved or total basis for inorganic analytes is needed. It is recommended that these issues be clarified in the Draft Final Report.

26. Section 9, General -- The ecological risk assessment describes the streams on- and off-site as "intermittent", yet, the nature of the surface water on site is not discussed in the Physical Characteristics part of the document. It is recommended that a verification that these streams are intermittent be provided and a description of the average time water occurs in these streams on an annual basis be added.

27. Section 9.2.2.1, Page 9-11 -- The surface water maximum reporting limits should be compared to the California Toxics Rule Criteria (U.S. EPA, 2000) not the NRWQC values. It is recommended that this correction be made and that a determination of whether the change in these values changes the results of the screening be provided in the Draft Final Report.

28. Section 9.2.2.2, Page 9-13 -- The statement is made that no organics were found in sediment. Table 6-31 lists petroleum hydrocarbons in one sample. It is recommended that this discrepancy be addressed.

29. Section 9.2.3.1, Page 9-15 -- EPA Region XI is cited instead of Region IX. It is recommended that this correction be made.

30. Table 9-6 -- The Navy response to comments of October 2003 included in the November 2003 draft of this document (ie., Specific Comment #6) states that the soil ingestion rate for the ornate shrew will be revised to 6%. This revision is not reflected in this table. It is recommended that this value be changed while doing the calculations for this receptor and that the appropriate changes be made in this table for the Draft Final Report.

31. Table 9-6 -- The Navy response to comments of October 2003 included in the November 2003 draft of the previous draft of this document (ie., Specific Comment #8) states that the soil ingestion rate for the woodcock is not representative of ground-feeding birds because of its probing behavior. As noted in the comments prepared by the CADFG (February 5, 2004), "...a non-probing ground-feeding bird, the wild turkey, was reported to have a soil ingestion rate of 9.3% (Beyer et al., 1994). Beyer et al. (1994) note that earthworms and other soil invertebrates contain a significant amount of soil and contribute to the estimated soil ingestion of soil invertebrate feeding animals, such as the woodcock. Earthworm bioaccumulation models (Sample et al., 1999) are based on depurated worms and do not account for soil exposure. Therefore, it is recommended that soil ingestion rates for soil invertebrate feeding birds be based on the proportion of their diet that is composed of soil invertebrates (eg., 10% for 100% soil invertebrate feeder; 7.5% for 75% soil invertebrates in diet). The recent Eco-SSL (2003) effort used wild turkey ingestion rates to model the mourning dove ingestion rate, indicating the proposed 2% soil ingestion rate is an underestimation." It is recommended that the Navy respond to this comment by increasing the amount of soil in the diet for Western meadowlark and spotted towhee to an appropriate amount as noted above.

32. Section 9.2.6.3, Page 9-26 -- It is noted on the list of species found on site that the Pacific tree frog exists here. Therefore, it must be assumed that the frog is living and breeding on the site. This assumption would require screening against the Cal Toxics Criteria and the appropriate literature parameters for this frog. It is recommended that this issue be addressed in the Draft Final Report.

33. Section 9.2.6.4, Page 9-26 -- If the Pacific tree frog is found on site that means that there is enough water on the site through the breeding season (November through July) to support reproduction. This would seem to imply that there is ground-water baseflow to the creek and that there is exposure to ground water. It is recommended that either data to support that ground-water baseflow to the creek does not occur during these months be provided or that screening against ground-water parameters be completed and presented in the Draft Final Report.

34. Section 9.2.10.1, Page 9-33 – In regard to Hazard Quotients and Table 9-10, as noted previously, the California Toxics Criteria should be used to screen for contaminants in California. It is recommended that this issue be addressed.

35. Section 9.3.3.3, Page 9-46 – In the first bullet it is recommended that the site being discussed and the acreage involved be corrected.

36. Section 11.3.1, Page 11-4 – The tables cited at the end of this section are provided in Appendix H but are labeled as "A-#". It is recommended that this discrepancy be corrected.

37. Section 11.3.2, Page 11-4 – The tables cited at the end of this section are provided in Appendix H but are labeled as "A-#". It is recommended that this discrepancy be corrected.

38. Section 11.3.3, Page 11-4 – "All of these regulations contain overlapping requirements; therefore, a table comparing the requirements at 40 CFR S258 and CCR Titles 22 and 27 has been added to Appendix A..." The table cited here is Table A-7 in Appendix H of this report. It

is recommended that the citation here be clarified.

39. Section 11.3.3, Page 11-5 – The tables cited at the end of this section are provided in Appendix H but are labeled as “A-#”. It is recommended that this discrepancy be corrected.

40. Section 11.6.2, General – This section identifies and screens technology types and process options. The text describing many technologies (eg., native soil or single-layer covers, single-barrier cover system, surface soil sealing, grading, etc.) suggests that these are potentially applicable at the site and will be retained for further consideration. For other technologies (eg., asphalt or concrete pavement, composite pavement and liner barriers, revegetation, clean closure, etc.) the discussion does not indicate whether these will be retained for further consideration. Finally, for some technologies (ie., those under the waste consolidation, ICs/access restrictions, and monitoring headings) the discussion is presented in a manner that it would seem to suggest that these technologies will be required to be applied at the site. It is recommended that the text of this section be revised to clarify the issues raised above.

41. Section 12.2.2, Pages 12-2 & 12-3 – There is some discrepancy between what would occur with the existing monitoring wells at AA-3 under Alternative 2. It is stated that “five monitoring wells (four inside and one outside the debris limits) would be abandoned”. Later in the section it mentions that “the results from the new monitoring well that was installed within the waste placement area and screened below the waste will verify if the waste is impacting ground water”. Is this monitoring well an existing well? What monitoring wells would be abandoned under this alternative? It is recommended that these issues be clarified.

42. Section 12.2.3.3, Page 12-6 – “The vegetative cover layer would be composed of the top two feet of existing soil cover, which would be removed and stockpiled prior to compaction of the foundation layer and placement of the GCL.” In Alternative 3b, the existing soil cover was to be part of the foundation layer and the vegetative cover layer was to be derived from the proposed borrow source. As these two alternatives are very equivalent in regard to the proposed components, why would the existing soil cover be removed and stockpiled for use as the vegetative cover layer in Alternative 3c and not in Alternative 3b? It is recommended that this issue be clarified.

43. Section 12.2.3.4, Page 12-11 – “The vegetative cover layer is composed of the top one to two feet of existing soil cover, which would be removed and stockpiled prior to compaction of the foundation layer and placement of the FML.” In Alternative 3b, the existing soil cover was to be part of the foundation layer and the vegetative cover layer was to be derived from the proposed borrow source. As these two alternatives are relatively equivalent in regard to the proposed components, why would the existing soil cover be removed and stockpiled for use as the vegetative cover layer in Alternative 3d and not in Alternative 3b? It is recommended that this issue be clarified.

44. Table 13-7 – Under the criteria “Overall Protection of Human Health and the Environment”, Alternatives 3c and 3d are rated the same as Alternative 4 – ie., “high”. While Alternatives 3c and 3d should rate higher for this criteria than the other capping options due to the use of a geosynthetic clay liner and a flexible membrane liner, respectively, to enhance the Title 27

prescriptive cap, Alternative 4 is clean closure of the site. One would expect that clean closure would have the highest rating of all alternatives for the "Overall Protection of Human Health and the Environment" criteria. It is recommended that the assigned ratings for these three alternatives be reconsidered.

45. Table 13-7 – Under the criteria "Long-Term Effectiveness and Permanence", Alternative 2 is rated as "moderate" while Alternative 3b, with relatively the same infiltration potential plus the potential for desiccation and cracking of the clay barrier from settlement is rated as "moderate-high". In reviewing the various alternatives for this criteria, it would seem that Alternatives 2 and 3b have been assigned ratings that tend to be higher than expected for "Long-Term Effectiveness and Permanence". It is recommended that the assigned ratings for these two alternatives be reconsidered.

46. Table 13-7 – For Alternative 2 there are conflicting statements made under the criteria "Long-Term Effectiveness and Permanence" and "Reduction of Toxicity, Mobility, or Volume through Treatment" with regard to infiltration potential. It is recommended that this issue be clarified.

47. Table 13-7 – Under the criteria "Reduction of Toxicity, Mobility, or Volume through Treatment", Alternative 2 is rated "low" which is the same rating as that for the "no action" alternative. However, Alternative 2 would include the installation of landfill gas controls. It is recommended that the assigned rating for Alternative 2 be reconsidered.

48. Table 13-7 – Under the criteria "Reduction of Toxicity, Mobility, or Volume through Treatment", the supporting information provided for Alternatives 3b, 3c, and 3d are the same. However, Alternative 3b is rated lower than Alternatives 3c and 3d for this criteria. It is recommended that this discrepancy be clarified.

49. Table 13-7 -- Under the criteria "Reduction of Toxicity, Mobility, or Volume through Treatment", the supporting information provided for Alternative 4 is confusing. This alternative provides for clean closure of the site and would transfer these concerns to another location. The supporting text does not portray these facts. It is recommended that this issue be clarified.

50. Table 13-7 – The ratings provided under the "cost" criteria are inverse to those provided in other MCAS El Toro FS evaluations (eg., Final FS Addendum, OU 3A, IRP Site 8). In other FS documents the least expensive alternative is rated as "low" and the most expensive as "high". It is recommended that this discrepancy be clarified.

51. Section 13.3.1, Page 13-31 – Some of the text in this section is poorly presented. For example, a statement in the opening paragraph implies that the ICs and access restrictions under Alternative 2 will "assure that there will be (a) pathway for exposure to ground water". An edit of the text of this section is recommended.

52. Table 13-10 – Why would landfill gas monitoring be included under Alternative 4, clean closure? It is recommended that this issue be clarified.

Section 8 References:

U.S. EPA, 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/600/R-93/089.

U.S. EPA, 2003. Human Health Toxicity Values in Superfund Risk Assessments. OSWER Directive 9285.7-53.

Section 9 References:

Beyer, W.N., E.E. Connor, S. Gerould, 1994. Estimates of soil ingestion by wildlife. *J. Wildl. Management* 58(2):375-382.

Sample, B.E., G. W. Suter, J.J. Beauchamp and R.A. Efrumson, 1999. Literature-derived bioaccumulation models for earthworms: Development and validation. *Env. Toxicol. and Chem.* 18(9):2110-2120.

U.S. EPA, 2000. Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California. *Federal Register*, May 18, 2000 (Volume 65, Number 97).

U.S. EPA, 2003. Ecological Soil Screening Level Guidance (Draft). Office of Emergency and Remedial Response.