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MCAS EL TORO
SSIC # 5090.3

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Southwest Division
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DATE: April 15, 1996
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FROM: D. J. Tedaldi, CTO Leader

DESCRIPTION: Review Comments on Draft Final Work Plan for Air Sparging and Draft Remedial Investigation Report, Operable Unit 2A Site 24

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CLEAN II Program
Bechtel Job No. 22214
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April 15, 1996

Joseph Joyce BRAC Environmental Coordinator
Department of the Navy - Southwest Division
Naval Facilities Engineering Command
Environmental Division
1220 Pacific Highway, RM 18
San Diego, CA 92132-5181

Subject: Submittal of Review Comments on Draft Final Work Plan for Air Sparging and Draft Remedial Investigation Report, Operable Unit 2A Site 24; Environmental Management for MCAS El Toro, CTO-0080.

Dear Mr. Joyce:

I have attached comments on the two draft documents identified above. Each deliverable from CLEAN II is acceptable based on technical and implementation considerations. However, several comments were identified for each which should be considered by the authors for improvement of their documents. Please note that the footer of each attachment identifies the applicable draft document to which the comments apply.

If I can be of any further assistance please call me in Bechtel's San Diego office at (619) 687-8780 or E-mail at DJTEDALD@Bechtel.com.

Sincerely,

Dante J. Tedaldi, Ph.D., P.E.
Technical Quality Assurance MCAS El Toro

Attachment: Review Comments on Draft Final Work Plan for Air Sparging and Draft Remedial Investigation Report, Operable Unit 2A Site 24.

cc: Larry Vitale, RPM
Tayseer Mahmoud, RPM Base Closure Branch
Bonnie Arthur, RPM

1. Overall Impression

The document is acceptable and the quality appears to have benefited greatly from the collaborative efforts of SWDIV, CLEAN I, CLEAN II and the BRAC Cleanup Team. The authors should consider the comments noted below.

2. Specific Comments

2.1. Page 1-13, Figure 1-4.

Based on the correct orientation of the figure, building 297 is downgradient from building 296.

2.2. Page 2-3, Figure 2-1.

The correct total for soil locations is 173.

2.3. Page 3-3, Section 3.1.2.

The text does not indicate if pure solvents were used in the degreasing pits. If this information is available it should be included.

2.4. Page 3-3,. Section 3.1.2.1

The text mentions a nitrate strip tank. Provide more details of this if possible. Agricultural nitrates have been a groundwater concern and the distinction should be made here if warranted.

2.5. Page 3-15, Figure 3-5.

Some figures (e.g., Figure 2-7) indicate a building 655; however, other figures (Figure 3-5) indicate the building number as 855.

2.6. Page 3-39, Section 3.6.3.

The text indicates that magnesium shows a large disagreement between the shallow and deep samples on the Stiff figures. The actual disagreement is about 1 meq/L and is much less than that for calcium; however, the trend is evident.

2.7. Page 4-25, Figure 4-3.

Consider plotting all four vertical profiles on one graph with a maximum y-axis of 7,000 micrograms/L. This presentation would show that trend with depth was weaker than the current presentation suggests.

2.8. Page 4-56, Table 4-9.

Include the units for the Total Organic Carbon measurement.

2.9. Page 4-57, Table 4-10.

Indicate in footer that CAS was the on-site laboratory and the acronym is for Columbia Analytical Services.

2.10. Page 4-59, Figure 4-12.

The unit of analysis for TCE should be corrected to micrograms/kilogram.

2.11. Page 4-62, 2nd paragraph.

Trihalomethanes are organic chemicals formed during the chlorine disinfection process of drinking water. They are not "...water treatment chemicals..."

2.12. Page 4-63, Figure 4-13.

This map does not include a reference for the source of the data used for construction. Indicate if data are from CLEAN I and CLEAN II or CLEAN I alone or CLEAN I and Orange County Water District.

2.13. Page 4-78, Section 4.2.4.2.

The text notes that the predominant trend for the nested well 18_BGMW03 was upward between 9/92 and 8/94. However, in Section 5.1.4.5 the text indicates that the trend for nested well 03_DBMW03 was variable. Since the title of Section 4.2.4.2 is "Vertical Characterization" the section should provide a consistent statement.

2.14. Page 5-3, Figure 5-1.

Identify the difference between the solid and dashed lines.

2.15. Page 5-6, 2nd paragraph.

The text should probably note that for soils with low organic carbon content, water saturation will result in almost complete suppression of organic compound adsorption on soil minerals. This point is significant because if the mineral sorption and the organic partitioning are both negligible (as may be the case for subsurface soils at MCAS El Toro Site 24) then slow desorption and problems associated with irreversibility of sorption would be minimized; thereby facilitating insitu restoration efforts.

2.16. Page 5-9, Figure 5-4.

The dispersion illustration at T2 should not show backward diffusion. The mechanical dispersion should be vertical and horizontal but forward only.

2.17. Page 5-16, Table 5-4.

The equations presented in the header of the table should be defined.

2.18. Page 5-20, first bullet item.

Appendix N does not include the calculations as indicated by the existing text. These calculations should be added.

2.19. Page 5-21, Table 5-6.

The infiltration rate for the modeling was about 0.7 ft/yr for runs 2 and 3 and 1 ft/yr for run 1. The text (page 5-19) noted that the different values were used to test model sensitivity. To statisfy that objective the table should provided a listing of the results for all runs, i.e., runs 1, 2, and 3 at 1 ft/yr and runs 1, 2, and 3 at 0.7 ft/yr.

2.20. Page 5-21, Table 5-6.

The table includes a vadose zone gas correction factor of six; however, no explanation is provided until three pages later. Consider a cross referencing footnote to the table or move the applicable text on page 5-24 to page 5-20.

2.21. Page 5-25, Section 5.2.4.2.

Under the title "Limited TCE Sources" the text identifies simulations with "...soil gas at 10 feet with a concentration of 270 micrograms/L and soil moisture at concentrations of 87 and 750 micrograms/L, respectively" Please clarify what the soil moisture concentrations are with respect to. Furthermore, the results in the subsequent paragraph and figures and table do not seem to be directly linked to the soil moisture content.

2.22. Page 6-9.

The equation for Upper Confidence Limit on the mean of a lognormal distribution is correct; however, the definition of the constant "H" should be changed to "H = H-statistic (e.g., from Tables A-10 or A-12 of Gilbert, R. O. 1987. Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold, NY, NY.)"

1. Overall Impression

The document is acceptable. The authors should consider the comments noted below.

2. Specific Comments

2.1. Page 1-4, 3rd paragraph.

It should be noted that the test does not measure bubble surface area, a key consideration in air stripping effectiveness. Rather, the bubble flux is a measurement of the total air collected by the funnel over a fixed period of time. Preferential air flow pathways in which bubbles coalesce (thereby reducing the effectiveness of the technology) may be present and connect to the collection screen. Thus the flux could be high with VOC removal effectiveness low.

2.2. Page 1-4, Section 1.3.

The aquifer is permeable; however, it is also layered with relatively impermeable lenses which may adversely affect the operation of a sparging system.

2.3. Page 3-4, Section 3.2.4.

Consider noting that the carbon units are three in parallel followed in series by three more. The relative humidity prior to entrance to the carbon units should be below 50 percent for optimal performance with chlorinated VOCs. Consider monitoring and recording humidity daily and later correlating with incoming VOC mass per time and percent VOC on the carbon so that the pilot data can be used as part of the full-scale carbon system sizing. This would require greater control/measurement of the influent and effluent VOC concentrations.

2.4. Page 3-5, Section 3.3.1.

Contaminant breakthrough measurement probably is only needed after the first series of three carbon units.

2.5. Page 3-5, Section 3.3.1.

Oxygen and carbon dioxide measurements are of limited value to insitu VOC degradation evaluations since the biodegradation mechanism typically does not consume oxygen.

2.6. Page 3-8, Table 3-2.

Consider including a timeline for all activities through completion of the final report.

2.7. Page 5-1, Section 5.1.

The establishment of baseline conditions would appear to be a key activity for the VOC vapor extraction test. The text identifies the collection of a single sample for baseline conditions. Consider collection and analysis of several samples over several days to provide a more representative initial concentration value.

2.8. Page 5-2, Section 5.1.

Include units with the descriptions of each term in the equation. Also, the equilibrium concentration for TCE in the vapor phase should be 363 micrograms/L.

2.9. Page 5-3, Section 5.3.

Since the bulk of the groundwater surrounding the recently sparged area will be contaminated and will tend to establish equilibrium with the "clean sparged zone" it may be necessary to collect the completion groundwater sample close to the instant the sparging system is turned off.

2.10. Page 5-4, Section 5.4.

The text should provide a basis for decision making with regard to the bench-scale test. For example, what concentration levels or percentage differences in analyte levels should be used to indicate if mineral precipitation is a potential issue.