

**CLEAN**

**Contract No. N62474-88-D5086**

**Contract Task Order 0235**

**Navy Engineer-In-Charge: Stephen Chao**

**PRC Project Manager: Michael N. Young**

**MOFFETT FEDERAL AIRFIELD  
MOFFETT FIELD, CALIFORNIA**

**RESPONSE TO COMMENTS  
SITE 14 SOUTH EVALUATION  
TECHNICAL MEMORANDUM**

**Prepared by**

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**December 21, 1994**



December 21, 1994

Mr. Stephen Chao/Mr. Hubert Chan  
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Engineering Field Activity West  
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CLEAN Contract Number N62474-88-D5086  
Contract Task Order 0235

**Subject: Response to Comments on Moffett Federal Airfield Site 14 South Evaluation  
Technical Memorandum**

Dear Messrs. Chao and Chan:

Enclosed are PRC Environmental Management, Inc.'s (PRC's) responses to regulatory agency comments on the Site 14 South evaluation technical memorandum. The comments have been incorporated into the draft final technical memorandum submitted December 19, 1994 under separate cover. For ease of reference, the enclosure provides each comment followed by PRC's response.

If you have any questions, please call us at (303) 295-1101.

Sincerely,

Deirdre O'Dwyer  
Project Engineer

for Michael N. Young  
Project Manager

DD/mkf

Enclosure

cc: Lt. Susanne Openshaw, MFA (letter only)  
Mr. Don Chuck, MFA  
Mr. Michael Gill, EPA  
Mr. Joseph Chou, DTSC  
Mr. Michael Bessette, RWQCB  
Ms. Sandy Olliges, NASA  
Mr. Kenneth Eichstaedt, URS

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**RESPONSE TO AGENCY COMMENTS ON MOFFETT FEDERAL AIRFIELD  
SITE 14 SOUTH EVALUATION TECHNICAL MEMORANDUM  
MAY 3, 1994**

This report presents responses to comments on the Site 14 South evaluation technical memorandum dated May 3, 1994 for Moffett Federal Airfield (Moffett Field). The comments were provided by the U.S. Environmental Protection Agency (EPA); the California EPA Department of Toxic Substances Control (DTSC); and the San Francisco Bay Regional Water Quality Control Board (RWQCB).

The response to comments is divided into two sections: Section 1.0 presents responses to EPA comments, and Section 2.0 presents responses to the State of California EPA comments. In each section, agency comments are restated, followed by responses.

**1.0 RESPONSES TO EPA COMMENTS**

**GENERAL COMMENTS**

Comment 1: This technical memorandum describes action to be taken to remediate Site 14 at Moffett Field. The site has an Action Memorandum dated September 10, 1990. There needs to be included in this tech memo a brief discussion of this Action Memo and any changes in scope of action, potential waiver requirements, any necessity for an Action Memo resubmittal, etc.

*Response: A brief discussion of the action memorandum is included in the introduction section. In addition, the draft final report states that the Navy believes the technical memorandum and the corrective action plan serve as the alternative evaluation documents for Site 14 South. Therefore, a new action memorandum is not necessary.*

Comment 2: The Navy assumes in this document that the groundwater at the Site 14 South area does not need to be remediated because it "does not exceed the anticipated groundwater petroleum cleanup levels." Without stating these anticipated cleanup levels, the regulatory agencies have nothing with which to compare the existing contamination levels. Are we talking about the "Scenario B" levels from the cleanup level analysis? As of this date, there has been no acceptance from the State on any

cleanup levels. If this assumption turns out to be incorrect and the petroleum levels in the groundwater are not below the accepted cleanup levels, then this document will be severely deficient. Only soil cleanup technologies are considered here. Even if this assumption turns out to be correct, groundwater monitoring should be included in the remedy.

*Response: The draft final report includes a discussion of the negotiated soil and groundwater cleanup levels. The technologies presented are intended for capillary zone soil and groundwater remediation. The Navy has committed to continued groundwater monitoring at Moffett Federal Airfield.*

Comment 3: Pilot studies for the three alternatives in this technical memo were discussed at the most recent RPM [remedial project managers] meeting (June 7, 1994). They are to be performed at various sites at Moffett Field - SVE [soil vapor extraction] at Site 9, bioventing at Site 5 and RIST [recirculation in situ treatment] at Site 14. It needs to be made clear that although this tech memo is recommending a "phased design" (pilot study) for Site 14, all of these pilot studies are actually underway at Moffett.

*Response: The draft final report states that pilot scale studies are being conducted at Sites 5, 9, and 14 South.*

Comment 4: It is our assumption that the lessons learned from the operational difficulties at Site 14 South will be applied to the other pump and treat systems being developed for use at Moffett Field.

*Response: The Navy continually integrates lessons learned into all remedial projects.*

## **SPECIFIC COMMENTS**

Comment 1: Section 2.1, page 4, para 3. Please explain how this contractual requirement between PRC and their analytical laboratories can be sufficient to completely characterize TPH.

**Response:** *The total petroleum hydrocarbon (TPH) analytical category represents a complex issue. The contractual agreement does not alter the analytical method; rather, the categories into which the TPH constituents are categorized is standardized across all laboratories through this agreement. The new contractual agreement is explained because the new contract caused some constituents to be characterized under the "other compounds" category, as opposed to the TPH as gasoline category. The Navy has evaluated the chromatograms for samples from the Site 14 South wells and concluded that the other compounds reported by the laboratory sufficiently match the gasoline standard to be classified as TPH purgeable as gasoline. (The deviation from the standard is most likely due to weathering of the product.) Historically, the TPH constituents detected in samples at Site 14 South have been TPH purgeable compounds. Soil and groundwater samples have been analyzed against other petroleum standards including diesel, JP-4, and motor oil and found to be below the detection limit. Therefore, for Site 14 South, all results reported as other compounds will be treated as TPH purgeable as gasoline until the chromatogram no longer matches the gasoline standard.*

**Comment 2:** Section 2.2, page 8. Please provide a simple diagram that shows the system components and the sample points, as described in the text.

**Response:** *A diagram of the source control system has been provided in the text.*

**Comment 3:** Section 2.2, page 8, para 3. Why wasn't the GAC [granular activated carbon] material sampled for TPH constituents? Are not these the primary constituents in the water?

**Response:** *Samples were analyzed for the primary TPH constituents, benzene, toluene, ethylbenzene, and xylene (BTEX). Chlorinated solvents are also a constituent of interest at Site 14 South: the publicly owned treatment works required data for chlorinated solvents. The gas chromatograph/mass spectrometry (GC/MS) volatile organic compound (VOC) method was used because data for both the BTEX and chlorinated solvent constituents would thereby be obtained.*

Comment 4: Section 3.0, page 15. If the Navy is going to make a decision based on anticipated petroleum cleanup levels, the text should reflect these levels. Even if these anticipated cleanup levels are to be used and the present levels of petroleum fall below these cleanup levels, the Navy still needs to include groundwater monitoring as part of its future actions.

*Response: A discussion of the negotiated cleanup levels is included in the draft final report, including requirements for groundwater monitoring.*

Comment 5: Section 3.0, 4.0. A weighted criteria comparison table would help to better illustrate the alternative comparison and the decision made (like a nine criteria comparison).

*Response: The text provides a clear comparison of the alternatives.*

Comment 6: Section 4.1, page 24, Costs and Appendix C. The alternative chosen here is understood to be for a pilot study (phased design), so operation and maintenance costs may not be applicable. But it would be appreciated if the line items in the Appendix could be provided to give the reader a reality check.

*Response: Operation and maintenance line items have been added to the cost estimate.*

## 2.0 RESPONSES TO STATE EPA COMMENTS

### GENERAL COMMENTS

Comment 1: The information presented in the technical memorandum is insufficient to evaluate further source control activities at the site. Detailed groundwater and soil data should be included and compared with the recently finalized petroleum sites soil/groundwater cleanup levels (June, 1994).

*Response: In an effort to reduce the redundant presentation of historical data in several reports, PRC thought it appropriate to reference other documents that contain the detailed historical groundwater and soil data. The draft final report contains soil and groundwater data tables. In addition, in the draft final report the data are compared to the recently negotiated petroleum cleanup levels.*

Comment 2: An update of Site 14 source control measure should be included in this tech memo to discuss any different scope of works from the Action Memorandum (September, 1990), future deliverables and schedules.

*Response: The evaluation report and Moffett Field corrective action plan serve as an action memorandum addendum. Future deliverables and schedules have been added to the draft final report.*

### **SPECIFIC COMMENTS**

Comment 1: Section 2.1, page 4, second paragraph. The distribution of TPH in soil is not accurately shown in Figure 3, since the depth of samples with ND [not detected] results is not indicated.

*Response: Soil borings were sampled at several depths. The draft final report shows the range of depths sampled for results below detection limits.*

Comment 2: Section 2.1, page 4, third paragraph. The discussion of TPH samples that do not match standards for TPH should be clarified. Is TPH purgeable assumed to be gasoline? If so, then the compounds that do not match standards may be either extremely weathered product, diesel, JP-4 or JP-5. This should be clarified and the protocol expanded to identify the actual compounds detected. If the compounds that do not match the standard within the 90% criteria are identified as diesel, JP-4 or JP-5 then future analyses should also include SVOCs [semivolatile organic compounds].

*Response: See the response to EPA specific comment 1.*

Comment 3: Section 2.2, page 8, third paragraph. Influent and effluent analysis may also need to be modified dependent upon the resolution of Comment No. 2.

*Response: See the response to EPA specific comment 1.*

Comment 4: Section 2.2, page 8, third paragraph. Please explain if there is any correlation between colony forming units (CFU) per gram and the concentration of VOCs?

*Response: The text has been expanded to explain the apparent correlation between CFU per gram and the concentration of organics: namely, the higher the concentration of organics, the more colonies present.*

Comment 5: Section 2.2, page 11, first incomplete paragraph. The correlation between water level and contaminant concentration is not obvious. If it is intended to imply that a rise in water level results in an increase in contaminant concentration, after a time lag to allow desorption, then this should be explained further.

*Response: The text has been expanded to explicitly state that there appears to be a correlation between water level and contaminant concentration with an associated lag time. This correlation may be a result of increased desorption of contaminants in zones where increased wetting occurs as result of increased water levels.*

Comment 6: Section 2.2, page 11, third complete paragraph. The discussion of the extraction well is incomplete without reference to or inclusion of boring logs and completion data for the two wells included in the discussion.

*Response: The borehole logs and well completion data have been added in an appendix.*

Comment 7: Section 2.2, page 11, fourth complete paragraph. These are common design problems with groundwater extraction systems in the Santa Clara basin. Improved filter pack design, well development, added filters, or some combination could address the suspended solids problem. The issue of biofouling is usually addressed through the use of additives before treatment, usually either an engineered polymer or an organic such as peroxide or acid.

*Response: The Navy concurs.*

Comment 8: Section 2.2, page 15, first complete paragraph. Further clarification is required or the discussion should be eliminated. This paragraph focuses on zinc concentrations in the influent and effluent streams. The instance of the increased concentration from influent to effluent of zinc in a single sample is discussed but the common occurrence of this phenomena for nickel is ignored. Additionally, the elevated levels of zinc in sample PIPE-1 is discussed, but the elevated levels of other inorganics is ignored.

*Response: The discussion focused on zinc because this is the only parameter that exceeded discharge requirements. The discussion was eliminated.*

Comment 9: Section 3.0, page 15, second complete paragraph. It is not clear that the statements in this paragraph are in fact true, since no proposed cleanup levels are included and the actual cleanup levels have not been finalized. Further, since data is only presented for two wells, and that in a graphical format, the actual levels of groundwater contamination are unclear. This tech memo should include a summary table of groundwater concentrations if a discussion of groundwater cleanup standards is going to be included.

*Response: The discussion has been revised to compare data with the newly negotiated cleanup goals.*

Comment 10: Section 3.1, page 17, second complete paragraph. A second GAC unit is not intended to address only system efficiency but also to provide system redundancy and to allow efficient change out of exhausted units without system shutdown. Therefore, it may be appropriate to include the cost of a second GAC unit for this alternative.

*Response: As stated in the evaluation report, the GAC unit is actually operating as a bioreactor; therefore, the Navy felt that the additional equipment redundancy is not necessary.*

Comment 11: Section 3.2, page 18 through 19. It appears that the Recirculating In Situ Treatment (RIST) is the preferred alternative and that the presentation has been skewed to favor this alternative. If this is an innovative technology it should be identified as such and appropriate references provided. It is clear that the infiltration rate of the treated water will be the limiting factor in the use of this technology. Therefore, it seems inconsistent to reject air sparging due to low soil permeability when that same factor may influence this alternative to an even greater degree since soil gas permeabilities are frequently an order of magnitude greater than fluid permeabilities for the same matrix. An estimate of the worst case scenario for vapor releases should be made in comparison to Bay Area Air Quality Management District [BAAQMD] requirements. If the requirements are exceeded, then the cost of vapor treatment system should be included in Alternative 2.

*Response: The technology presentation merely identifies complexities associated with implementing different remedial technologies at Moffett Field. There is no readily identifiable effective solution to the contamination problem at Moffett Field. Consequently, due to the heterogeneity of the subsurface and the abundance of low permeable zones, the Navy will pilot test a variety of different technologies at Moffett Field. The air sparging alternative will be pilot tested at Site 9. The effectiveness of the air sparging system is directly related to air permeability of the soil. The effectiveness of the RIST system is directly related to the infiltration (thru wetting and drying) of water through both unsaturated and saturated soil. However, there is no direct correlation between the effectiveness of the air sparging alternative and the RIST alternative. Therefore, separate pilot studies are required.*

*As stated in the technical memorandum, the RIST technology has been proven effective for treating sanitary wastes (highly organic wastes amenable to degradation). (A reference is provided in the draft final technical memorandum.) However, using this system for groundwater treatment is an innovative application of the technology.*

*Preliminary calculations indicate that vapor releases should be below BAAQMD requirements. However, to accommodate worse case scenarios, an in situ biofilter (composed of peat and sand) will be integrated into the system design to handle vapors that are generated.*