



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street  
San Francisco, Ca. 94105-3901

5 February 1992

Mr. Stephen Chao  
Naval Facilities Engineering Command  
Western Division, Code 18  
Office of Environmental Management  
900 Commodore Drive, Bldg 101  
P.O. Box 727  
San Bruno, CA 94066-0720

Dear Mr. Chao:

Enclosed are the comments of the Environmental Protection Agency to the following documents for Naval Air Station Moffett Field:

- Remedial Investigation/Feasibility Study, Draft Field Sampling Plan, by PRC Environmental Management, Inc., November 1, 1991
- Soil Piles Characterization Technical Memorandum, by PRC Environmental Management, Inc., November 1991.

If you have any questions please give me a call at (415) 744-2412.

Sincerely,

  
Lewis Mitani  
Remedial Project Manager

enclosure

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*Admin Record*

**TECHNICAL REVIEW  
NAVAL AIR STATION MOFFETT FIELD  
MOUNTAIN VIEW, CALIFORNIA  
REMEDIAL INVESTIGATION/FEASIBILITY STUDY  
DRAFT FIELD SAMPLING PLAN**

**GENERAL COMMENTS**

1. Appendix B Needs to be Expanded and Inserted into Standard Operating Procedures (SOP)

The aquifer pumping test data form, which includes the well ID, project ID, well information, pumping rate and time, observation well information, recovering date, water level data, measuring equipment, start/ending time, and discharge data, should be added into Appendix B. The daily drilling report sheet, which includes well information, driller, field geologist, daily activities (such as mobilization, decontamination, set-up, drilling, and E-logging [standby]), footage, sampling type, time, material used (such as bentonite, cement, or sand), and well construction information, should be added to Appendix B. The Appendix B data sheets should be placed inside the SOPs. For example, groundwater sampling logs should be included in SOP #3, groundwater sampling, instead of in Appendix B.

2. Incomplete Information from PRC SOPs

Methods such as air lift pumping applied in well development tend to strip volatiles from water; therefore, when VOC analysis of samples is required, the SOP of well development should address the fact that air should not be used in development. Field measurement of pH (SOP #6) referred to the Figure 1 temperature effect on pH measurement, but there is no Figure 1 in SOP #6. SOP #1 stated that prior to entry into any uncontrolled hazardous waste site, a site personnel protection and safety evaluation form (Form 6269) must be completed. SOP #1 did not provide Form 6269.

3. More SOPs Are Required for This Field Sampling Plan

Cone penetrometer/hydropunch sampling will be used for field sampling. The SOP of the Cone and Friction-Cone Penetration Test

(ASTM D3441-86) should be included. The SOP of hydropunch groundwater sampling is also needed. After the punch, the borehole will be sealed and abandoned. The SOP of borehole and monitoring well abandonment should be included. The report stated that bentonite slurry can be used to fill the borehole. This is not true in some Bay Area counties. For example, Santa Clara Valley Water District has some special requirements for

sealing the boreholes. These special requirements should be included in preparing the SOP for borehole sealing. SOPs of geophysical survey only cover ground penetration radar (GPR). The SOPs of electromagnetic induction (EM) and magnetometry (MAG) were not found in this report. The SOPs of downhole geophysical logging are also missing.

#### 4. QA/QC of SOPs Is Required

SOPs in Appendix A refer to other SOPs for the measuring process. But the referenced SOPs are not the same as the SOPs in the originally referenced measuring process. For example, the aquifer pumping test (SOP #20) referenced the data logging procedure as SOP #10. But, in Appendix A, SOP #10 is a drilling method. The correct SOP for the data logger is #25. This problem was created when compiling the SOPs for this report by changing the original SOP numbers to form a sequential numbering in Appendix A without changing the referenced SOP numbers inside the text. This problem occurred in SOPs 10, (SOP #12, borehole grouting, was referred to but was missing, and SOP #12 in Appendix A is the borehole sampling method, not the borehole grouting), 20 (referred to SOP #23, which is incorrect), 28 (referred to SOP #19, which is incorrect) and 29 (referred to SOPs 17 and 27, which are incorrect).

#### SPECIFIC COMMENTS

##### 1. Page 5, Figure 2

Figure 2, a NAS Moffett Field RI/FS site map appeared in many reports. Unfortunately, the map is incomplete: Site 17 and Site 15 (on Grant Avenue) are missing.

##### 2. Page 9, 1st Paragraph

The report stated that the Defense Property Disposal Office (DPDO) maintained a 5,000-gallon waste oil tank from the 1940s until 1989. Another statement reported that both the tank and the sump were removed in 1981. Which is the correct statement?

##### 3. Page 15, 3rd Paragraph

Information on the abandoned wells which screened multiple aquifers and were abandoned improperly (and can serve as potential conduits) should be included in the additional information.

##### 4. Page 17, 2nd Paragraph

Surface geophysical survey is PRC SOP 9, not SOP

5. Page 18, 1st Paragraph

Water level elevation measurement is PRC SOP 4, not SOP 3.

6. Page 18, 2nd Paragraph

Groundwater sampling is PRC SOP 3, not SOP 4.

7. Pages 6-19

The Navy should specify how many soil samplings, groundwater samplings, and sediment samplings will be performed. Where are the sampling locations? What type of analytical analysis will be required? How many monitoring wells will be drilled? What are the depths and screen intervals of these monitoring wells?

8. Page 21, Table 2, Sheet 2 of 2

The notes stated that completed test method references are presented in Section 6.0, Table 6-1. However, there is no Table 6-1. In note b container types, items A and C are identical. If item C contains an error, it needs to be fixed; if C is actually the same as A, it can be deleted.

9. Page 22, Table 3, Sheet 1 of 2

Holding time for BNA, TPH (extractables), and organochlorine (OC) pesticides should be 7 days, not 7 days/40 days.

10. Page 26, 1st Paragraph

What is the "Level D QC Program" for the low-level VOC analyses?

11. Page 53, 2nd Paragraph

The report states that cone penetrometer locations will be determined and discussed in other addenda. Does additional addenda mean the appendix of this field sampling plan? When will the additional addenda be prepared?

12. Page 62, 1st Paragraph

Monitoring well drilling is PRC SOP 10, not SOP 22.

13. Page 62, 3rd Paragraph

SOP 13 Unified Soil Classification System (USCS) for lithology logging did not state what kind of color chart will be used. What soil color chart will be used as the standard for color coding? What will the minimum requirement of lithology descriptions in this program be during the logging?

14. Page 67, 4th Paragraph

"Slug test" is commonly called a single-well aquifer test. However, in this report, a single-well aquifer test included single well pumping, bail test, and slug test. Therefore, a single-well aquifer test, commonly called a slug test in this report, is not necessarily correct.

15. Page 69, 1st Paragraph

A slug test is strictly applicable only to fully penetrating or fully screened wells in confined aquifers of rather low transmissivity. The Navy should address the limitation of slug test as used in the text.

16. Page 71, 1st Paragraph

Neuman and Thiem are not referenced in PRC SOP 20. PRC SOP 20 did not discuss the aquifer data analysis methods of Theis, Cooper and Jacob, Hantush, and Boulton. Also, the limitations and requirements of the above-mentioned analysis methods are not discussed in SOP 20.

17. Page 71, 1st Paragraph

A table which summarizes the aquifer pumping data analysis methods according to the aquifer conditions (such as confined, unconfined, or semiconfined), well screen (fully penetrated or partially penetrated), and pumping rate methods (steady state or nonsteady state) may be necessary. For example, in a confined aquifer, if nonsteady state pumping and full penetration are desired, the Theis and Jacob's methods can be applied for the analysis. In a confined aquifer with steady state pumping and full penetration, Thiem's method will be applied. Many mistakes could be eliminated by following this approach.

18. Page 75, Last Paragraph

Does sealable roll-off boxes mean sealable roll-off bins?

19. Page 77, References

Kruseman and de Ridder, 1976 is inconsistent with Kruseman and de Ridder, 1990 as shown on page 71, first paragraph, and references of SOP 20.

20. SOP 1, Section 2.1, Page 2 of 5

Form 6269 was referred to but was not found.

21. SOP 6, Section 3.0, Page 4 of 4

Figure 1 was addressed but was not found.

22. SOP 10

Pages 5 of 13 and 11 of 13 are redundant.

23. SOP 10

SOP 12 borehole grouting was not found.

24. SOP 17, Section 2.5, Page 6 of 8

Well development methods were discussed but the limitations of development methods were not addressed. Methods such as air pumping shall not be used when samples are to be collected for VOC analysis (see General Comment #4).

25. SOP 20

The aquifer pumping data sheet should be included in SOP 20.

26. SOP 20, Page 1 of 11

Slug testing is SOP 21, not SOP 23.

27. SOP 20, Page 4 of 11

What are XDs reading? Do XDs mean XD key of data logger? The PRC SOP 10 is the drilling method not the data logger.

28. SOP 21, Page 2 of 6

Figure 1 was referred to but was not found.

29. SOP 27

Table 1 is a duplication of Table 2 (page 21) in the report. See Specific Comment No. 8.

30. SOP 28, Page 10 of 24

Sample packaging and shipment were referred to as SOP 19. The correct number is SOP 29.

31. SOP 29, Section 2.1, Page 4 of 8

Sampling container was referred to as SOP 17. The correct number is SOP 28.

32. SOP 29, Section 1.3, Page 1 of 8

Sample container was incorrectly referred to as SOP 27. The correct number is SOP 28.

33. Appendix B

There are two kinds of field borelogs: one is developed by PRC and the other by J. M. Montgomery (JMM). There are also two totally different monitoring well installation records developed by PRC and JMM. Only one standard form can be used. The Navy should specify the correct form to be used for monitoring well installation.

**Review of  
Naval Air Station Moffett Field  
Soil Piles Characterization  
Technical Memorandum**

1. Page 7, 4th paragraph, Section 3.0 Field Activities.

"...a backhoe bucket of soil was collected and brought to the edge of the pile. Each discrete sample was then collected..."

The Field Work Plan for Soil Piles Characterization (FWP) states that "Approximately 3 inches of soil will be scraped from the soil surface, prior to collection of each discrete sample. Was this procedure in fact followed in performing the field work?"

2. Page 7, last paragraph, Section 3.0, Field Activities.

"All samples were analyzed for..."

Please indicate how many composited samples were analyzed for listed compounds.

3. Page 12, 2nd paragraph, Section 4.0, Sampling Results.

"BTEX compounds were determined by both EPA Method 8240 for VOCs and by EPA Method 8020 for BTEX. BTEX compounds were considered present in a sample if they were detected by either method."

It is not clear from Table 2 (Page 14) or Appendix A, Tables A-3 and A-4 that all four of the BTEX compounds were analyzed for. Please include a table or list which includes all of the analytes tested for by EPA Methods 8240 and 8020, regardless of whether or not the compound was detected.

4. Page 13, 4th paragraph, Section 4.0, Sampling Results.

"The analytical procedure used to determine TC levels is the toxicity characteristic leaching procedure (TCLP). This procedure involves extracting the original sample matrix,

then diluting the liquid extract by a factor of 20. The soil characterization sample protocol did not include TCLP analyses, but instead it included total analyses. However, dividing the total analysis concentration by a factor of 20 yields the maximum TCLP concentration that the diluted liquid extract could exhibit..."

This procedure as described is not the TCLP procedure, but rather a "fatal flaw" check to determine if the TCLP procedure should be run on the sample. This needs to be clearly stated in this paragraph.

5. Pages 15 through 21, Section 4.1, Soil Pile 56-1, Section 4.2 Soil Pile 56-2, Section 4.3 Soil Pile 56-3, Section 4.4 Soil Pile 61, Section 4.5 Soil Pile 61, and Section 4.6 Summary of Sampling Results.

Throughout these sections phrases such as "relatively high", "low levels", "relatively low", "high concentrations" and "low concentrations" are used. These are ambiguous terms without some sort of quantity to define them. Such phrases should be removed from these sections or used along with a number or range of concentration.

6. Page 19, 2nd paragraph, Section 4.3, Soil Pile 56-3.

"When the soil was removed from the excavation, it was saturated, and a berm was placed around the soil pile to keep it contained."

With what did the soil appear to be saturated? Water? Product? If it was not water, then Figure 5 should be amended to indicate that that portion of Pile 56-3 was saturated and not wet, as wet implies that it is saturated with water.

7. Appendix A, Table A-3: Analytical Results Summary Tables.

A list of all analytes tested for as VOCs and Semi-VOCs should be included so that the reader does not assume only those analytes detected were tested for.