EPA
COMMENTS TO REMOVAL ACTION PLAN
PHASE II TANK REMOVALS
NAVAL AIR STATION MOFFETT FIELD

GENERAL COMMENTS

1. **EE/CA Outline.**
The report does not follow the general outline that should be adhered to when writing EE/CA reports. In general all pertinent information contained in the guidance documents should be included in this report. The guidance documents are EPA's draft guidance dated June 1987 for Engineering Evaluation/Cost Analysis (EE/CA), and the updated EE/CA guidance memo (EPA) dated March 30, 1988.

Response:
The Phase II Removal Action Plan (RAP) followed the format used for the Phase I Removal Action Plan, which was reviewed by the agencies and finalized by IT in June 1990. As agreed to in our telephone conversation with the EPA on September 9, 1990, the format of the revised RAP will not be changed.

2. **Site Characterization.**
As mentioned above, Section 2.0 should include a section labeled "Site Characterization" with subsections "Site Description", "Site Background", "Analytical Data", and "Site Conditions that Justify a Removal Action". Important information is left out of the report such as the distance to and description of nearby sensitive environments, distance to and uses of surface waters and ground water, site topography, geology, hydrogeology (i.e. depth to water table), description of contaminants (i.e., extent, concentrations), potential or actual release of contaminants, and potential or actual impacts of the tanks and sumps to adjacent properties and populations. Why have the four abandoned USTs and two sumps been identified as potential sources of soil and ground-water contamination? These items should be included in the report.

Response:
Section 2.0 was revised to address additional information identified in Comment 2. Reference to the Phase I Characterization Report was made for regional characterization data. A brief narrative summary of activities, material uses, and soil and ground-water sampling results is provided in each subsection. A detailed description of sensitive environments, etc., does not appear warranted for this document because such information does not enter into the removal options assessment. Also, very little site-specific data is available for each tank and sump location. The information provided in each subsection summarizes the key items relevant to evaluating the removal action options.

3. **Removal Action Objectives.**
Section 3.0, "Identification of Removal Action Objectives", should include statutory limits of each removal action, and removal action scope which includes a description of the principal public health and environmental threats to be addressed by each removal. It is important to clearly define the scope because the removal action will not address the universe of threats posed by the tanks and sumps. Also include how the removal action contributes to the efficient performance of the remedial action. These items need to be added to the report.

Response:
A fourth objective was added in Section 3.0 identifying compliance with statutory requirements as a removal action objective. Section 3.3 describes how the removal action will support the RI/FS process at NAS Moffett Field.

4. **Initial Screening.**
The document needs a section labeled "Initial Screening of Removal Alternatives". The alternatives need to be screened using the following factors: the public health and environmental protection provided; the ability of the technologies to produce the desired results in the stipulated time frame; the feasibility of the technologies; and the acceptability of the technologies in light of institutional considerations. In order for a technology to be considered further it must ensure, at a minimum, short-term mitigation of site threats. The report should document how both alternatives presented in this report achieve short-term mitigation.

Response:
Table 4 of the RAP presents the above mentioned factors. As agreed to in our telephone conversation with the EPA on September 9, 1990, no format revisions were required.

5. **Analysis of Removal Alternatives.**
Section 6.0 "Analysis of Removal Alternatives" does not identify action specific ARARs for each alternative, nor does it include narrative sections discussing technical feasibility, reasonable cost, institutional considerations, and environmental impacts. This section should document the reasons for not attaining compliance with any particular ARAR or TBC. Include any environmental impacts associated with the alternatives (i.e., hydrology, air quality, land use, etc.). Although Section 6 mentions technical feasibility and reasonable cost, more detail is needed. The text should contain narrative details as described in the guidance documents.

Response:
ARARs are addressed in detail in Section 3.0. As agreed to with EPA, no revisions are required. Also, see responses to general comments 2 and 4.

6. **Soil and Ground-Water Investigations.**
The report should include an explanation on the processes to be carried out with regards to soil/ground-water investigations if any of the following situations occurred: (1) obvious tank system failure is encountered, (2) initial soil samples are greater than 100 ppm TPH or O&G, (3) initial soil samples detect petroleum hydrocarbons and the soil is highly permeable, (4) and/or petroleum hydrocarbons are detected in soil at or below the seasonal high ground-water level. Soil samples collected from excavations of tanks and sumps of unknown use should be analyzed for BNAs, VOCs, metals, TPH, and BTEX.

Response:
The Removal Action Plan is intended to evaluate removal options. A detailed work plan, which describes field activities, will address the items identified in the comments. In general, visually stained soils or floating product will be removed from the excavations. Also, confirmation sampling of remaining soils and ground water will be taken at each location. The waste oil tank and two sumps will analyzed for BNAs, VOCs, Metals, TPH, and BTEX.

SPECIFIC COMMENTS

1. **Page 4, Paragraph 1, Sentence 1.**
   Where (what site) are these "six other tanks" located?

Response:
Tanks 47 through 50 are located in Site 9 in the parking lot of Building 12. Tanks 51 and 52 are located in the Site 10 Chase Park Area. These areas are described in Section 2.0.

2. **Page 4, Paragraph 1, Sentence 2.**
   An explanation is needed regarding why these six underground tanks were removed from the Phase II RAP. The paragraph should be revised.

Response:
The paragraph was revised to clarify why the six tanks were removed from the RAP. Tanks 47 through 50 are located in the parking lot of Building 12. However, recent information has indicated that this area may contain 11 underground storage tanks. Because of the depths of the 11 tanks (approximately 12 feet), their close proximity to existing structures, and the site congestion in the area, more detailed studies are required prior to determining and designing an appropriate removal action for these tanks. Therefore, the area containing Tanks 47 through 50 will be addressed independently of this RAP.

Tanks 51 and 52 were removed from the RAP because the existence of these tanks within the Site 10 Chase Park Area is based only on verbal information from long-term employees at NAS Moffett Field. According to the verbal report, Tank 51 was used to store kerosene. The past contents of Tank 52 and the sizes of the tanks are unknown. A general survey consisting of a review of Public Works Command (PWC) records and a visual inspection of the Site 10 area performed by ERM West in Summer/Fall 1989 produced no evidence to support the existence of either tank. Further investigation by NAS Moffett personnel into PWC files (including maps, aerial photographs, and drawings) and survey data also failed to indicate the existence of Tanks 51 and 52. It is unlikely that the tanks will be located. An exhaustive search of available information has provided no evidence to indicate that Tanks 51 and 52 exist.

3. **Page 4, Paragraph 2.**
   This paragraph should describe the approximate depth below ground surface of each tank and sump. Also, present an evaluation of data from previous ground-water and soil investigations performed in the vicinity of the four tanks. In addition, the type of soil and ground-water flow found at Site 9 should also be described. Finally, specify which tanks are 10,000 gallon tanks and which one is a 500 gallon tank.

Response:
The depth below ground surface of each tank is approximately three to five feet, and the depth to the sumps is unknown. No previous field investigations have been performed at Sumps 60 and 61. Results from previous investigations at Tanks 56A-D are described in the Phase I Characterization Report by IT Corporation. The results are summarized in the RAP. Tank 56A is a 500 gallon waste oil tank, and Tanks 56B, 56C, and 56D are 10,000 gallon fuel tanks.

4. **Page 4, Paragraphs 3 and 4.**
   These two paragraphs discuss underground storage tanks at Site 10. They do not belong in Section 2.1 which describes Site 9. Paragraphs 3 and 4 should be located at the end of Section 2.0.

More information is needed on Site 10 before tanks Nos. 51 and 52 can be eliminated from the RAP. What part of Site 10 was visually inspected. Could any of the former employees, described in paragraph 3, be contacted to assist in determining the approximately location of the tanks. GPR surveys could also be used to substantiate verbal information. Paragraphs 3 and 4 should be revised.

Response:

These paragraphs were moved to Section 2.0

As stated in the RAP, the existence of Tanks 51 and 52 is based on verbal information from long-term employees at the base. Site 10, where the tanks reportedly exist, includes a runway, an area southeast of the runway, and the area north of the Bayshore Freeway. This area is too large to perform GPR surveys because there is no focused area where these tanks may be located.

5. **Page 6, Paragraph 1.**

An explanation is needed in this paragraph describing why sump 60 was selected for removal. Where is the evidence suggesting it is a source of contamination? For removal of the sump a visual inspection of the site should be performed prior to construction activities. The information from such an inspection should be presented in this paragraph.

Response:

The primary intent of the removal actions is to reduce the immediate threat of contaminant release into the environment from tanks and sumps at Moffett Field. The tanks and sumps addressed in this RAP were identified for removal action because they are inactive and concern exists that they may have contributed to site contamination. NAS Moffett Field is an RI/FS site with extensive contamination on site. Removal activities at the tank and sump sites will aid in identifying sources of site contamination. Site reconnaissance has been performed at each location to plan for the removals.

6. **Page 6, Paragraph 3, Section 2.3.**

A table showing concentrations of contaminants in soil and ground water found at Site 17 should be included in this section. If background soil concentrations for Site 17 are available they should be reported.

Response:

The existence of data showing contaminant concentrations at Site 17 were not found. No investigations appear to have been performed during previous RI activities.

7. **Page 10, Section 3.2.2.**

This section should state that sumps will be removed in accordance with appropriate underground tank removal and management guidelines.

Response:

Comment incorporated into report.

8. **Page 10, Paragraph 4, Bullets**

The second bullet should state that the initial soil samples are to be taken within the first two feet of native soil beneath the tank.

The third bullet should state that detection of petroleum hydrocarbons at or below the seasonal high ground-water level requires investigation.

Additionally, two bullets should be added which address the following: (1) detectable levels of any petroleum hydrocarbons are found in the soil sample(s) beneath the tank, within the first two feet of native soil, and the soil contains layers of sand, gravel, and/or other high permeability material" and (2) evidence of detectable levels of petroleum hydrocarbons are found in the water sample(s) from tank excavation.

Response:
Comments incorporated into RAP.

9. **Page 11, Paragraph 3.**
Specify the expected wastes to be packaged and labeled. Will all wastes be shipped to a hazardous waste disposal facility? A description of the characterization processes needs to be included in this section. Also, the initial generator of a restricted waste needs to notify the TSD that the waste is restricted in accordance with 40 CAR, Part 268. Analytical analysis, not site specific information, is the appropriate form.

Response:
The expected wastes include contaminated soil, tank and sump rinsate, tanks, sumps, piping, ballast pads, personnel protective equipment, and decontamination water. All wastes will be analyzed for constituents believed to have been contained in the tanks or found in samples from nearby investigations. Specific analyses are identified in Section 4.1.2.

10. **Page 11, Section 3.2.5.**
The justification for not excavating to zero contamination is inappropriate. Additional justification is required. The proximity of site 9, 16, and 17 to "other contaminated sources" should be shown on a figure. Also, the text should explain what the depth to ground water is at each site. In addition, the expected concentration of soil contamination that will remain after removal actions are complete should be described. How will the expected residual concentration be verified?

Response:
An RI/FS is currently ongoing at NAS Moffett Field. CRWQCB guidance encourages excavating to zero contamination in soils surrounding the tanks and sumps. Given that the entire NAS Moffett Field site is being investigated as part of the RI/FS process and the locations of the tanks and sumps are within the identified as RI/FS sites, the Navy does not believe that excavation to zero contamination is a preferred approach. All results generated from the removal activities will be incorporated into the RI/FS so that remediation at the tank and sump sites can be part of a large-scale remediation procedure, such as air stripping, soil venting, and bioremediation.

11. **Page 11, Paragraph 4, Last Sentence.**
If product exists in the tanks will it be sampled and analyzed? If not, then an explanation is required. An analytical determination of tank contents will assist in determining if a tank is the source of surrounding ground-water and soil contamination. This item should be addressed in the report.

Response:
Tank contents will be analyzed as stated in Section 4.0.

12. **Page 12, Paragraph 2.**
The concentration of contaminated soil left in place after completion of removal actions needs to be documented. Also, this paragraph should clearly state the expected minimum concentration (TPH or O & G) of contaminated soil that will be removed.

Response:

If, following tank removal and sampling of native soil beneath the tank or sump, any contamination is detected, the contaminated soil will be excavated to a maximum of 6 feet around the tank. The tank or sump pit will be resampled prior to backfilling.

13. **Page 12, Paragraph 3.**

This paragraph states that after removal further characterization of the removal sites will be performed if needed. This paragraph should state the criteria to be used to determine if additional investigations are required. Will the criteria be analytical results of soil and ground-water samples from excavations? This item should be addressed in Paragraph 3.

What evidence suggests that a release to the environment may have occurred from each tank and sump? This evidence should be presented in the report and should be provided in Sections 2.1, 2.2, and 2.3.

Response:

The four tanks and two sumps identified for removal are all within RI sites. Analytical data from the removal activities will be incorporated into the RI. Criteria for further remediation of these sites will be addressed as part of the FS process for each site.

As previously stated in the RAP, there is known contamination at numerous NAS Moffett Field sites. Previous investigations at RI sites have indicated soil and ground-water contamination. The tanks and sumps were identified for removal because they are inactive, abandoned, and may be sources of site contamination. Removal of these tanks and sumps will assist in identifying the sources of site contamination.

14. **Page 13, Paragraph 4, Sentence 2.**

A description of the substantive requirements of the SCCDPH for tanks and sumps is needed.

Response:

Typically, tanks and sumps abandoned in place must be cleaned and filled with a concrete slurry. Soil samples must be obtained from below the tank and a ground-water monitoring well must be installed downgradient of the tank location. These requirements are reflected in the abandonment approach in Section 4.1.

15. **Page 13, Paragraph 5.**

Since liquid and solid waste characterization may be performed, a description of the characterization process should be included in this paragraph. The specific analyses and analytical methods must be stated. All samples (i.e., soil, water, rinsate, floating product, sludge) from the two MOGAS USTs should be analyzed for TPH, BTEX, and lead. All samples form the remaining two USTs and two sumps, since their contents are unknown, should be analyzed for the full suite of analytes (BNA's, VOCs, metals, TPH, and BTEX).

Response:

All samples collected from Tank 56B-56D (the fuel tanks) will be analyzed for TPH extractables and TPH nonextractables (DHS Method 3580), BTXE (EPA Method 8020), and organic lead (EPA Method 7420). All samples from Tank 56A and the two sumps will be analyzed for the full suite of analyses including volatile organics (EPA Method 8240), semi-volatiles (EPA Method 8270), metals (EPA Method 7000), TPH extractables and TPH non-extractable (DHS Method 3550), and BTXE (EPA Method 8020).

16. **Page 13, Paragraph 6, Sentence 3.**
Will all sludge and liquid be transported to a permitted hazardous TSD facility? The sludge and liquids should be characterized to determine if it is hazardous waste. The analytical method should be described in the text.

Response:
As stated in the RAP, all sludge and liquid will be analyzed for constituents found in the tank. Otherwise, analytes will be the same as those selected for soil and ground-water samples as described in Section 4.1.5. Residual materials found in the tanks or sumps will be handled in the appropriate manner based on the sample analysis results.

17. **Page 14, Top Paragraph**
40 CFR, Section 262 is not a guidance, it is a regulation. Also Section 268, the Land Disposal Restrictions (LDRs), which include notification requirement for initial generators should be followed for any restricted waste generated.

Response:
Comment incorporated into text.

18. **Page 14, Paragraph 2**
More explanation is needed on the rinsate. Is the text referring to the rinsate in the tank or the rinsate in the pipes or both? Will characterization of the floating product be conducted to determine if it is should be disposed of as hazardous waste? The sample analysis done for the contents and rinsate of each tank and sump should be specified as given in specific comment 15.

Response:
Rinsate refers to liquid materials remaining in the tanks, sumps, and piping, which includes rinse water and residual materials. All rinsate will be analyzed before disposal. Refer to comment 15 (or Section 4.1.2) for analyses to be performed.

19. **Page 14, Paragraph 5**
Specify the sample analyses and methods to be performed for soil samples as given in specific comment 15. Explain how soil samples will be collected below the tanks and sumps.

Response:
Refer to specific comment 15 for sample analyses and methods. Soil samples from below the tanks and sumps will be collected from the backhoe bucket. Detailed field procedures are described in the field work plan.

20. **Page 15, Top Paragraph**
If ground water is encountered, will water samples be collected and analyzed? Explain "most downgradient location". More information is needed, especially on the determination of contamination in the soils around and below the tank. How much contaminated soil will be removed? Will soil/ground-water investigations be conducted if one or more of the conditions given on Page 10, 4th Paragraph, Section 3.2.2 exist?

Response:
Ground-water samples will be collected if ground water is encountered. The "most downgradient location" will be within 10 feet downgradient of the tank location. Samples will be analyzed for the constituents described in Section 4.1.2. As stated previously, data from the removal activities will be incorporated into the RI at Moffett Field. If soil or ground-water contamination exists, further investigations and permanent remedial activities for all sites will be implemented as part of the RI.

21. **Page 15, Paragraph 3, Sentence 3.**
Because the contents/use of two of the four tanks is not known (or not mentioned in this report), soil analyses for these two tanks must include the full suite of analytes as described in comment 15. A description of the disposal of the soil, depending on concentration levels, should be included in the report.

Response:
The past contents of the three 10,000 gallon tanks is known. All were used to store motor vehicle fuels. Samples from the waste oil tank pit will be analyzed for the full suite of likely compounds. See comment 15 response. The soil piles will be analyzed as described in Section 4.1.2. (Comment 15).

22. **Page 17, Paragraph 2, Sentence 2.**
See comment 14.

Response:
In summary, tank and sump removal requirements include cleaning and purging, removal and soil and ground-water sampling. These requirements are reflected in the removal approach described in Section 4.2.

23. **Page 17, Paragraph 3.**
Since waste characterization may need to be performed, a description of the analytical method should be included. The analytes to be investigated for each of the four tanks and two sumps should be clearly stated, along with the appropriate analytical methods for soil and water. See specific comments 15.

Response:
Rinsate will be analyzed as described in Section 4.1.2.

24. **Page 17, Paragraph 4.**
The report should include how the determination (i.e. an analytical methods, concentration limits) will be made on whether the sludge and flushing liquid are hazardous waste and will be disposed of at a hazardous waste facility. Paragraph 4 should be revised to describe this process.

Response:
The rinsate will be analyzed as described in Section 4.1.2 and disposed at an appropriate permitted TSD site.

25. **Page 17, Paragraph 7, Sentence 2.**
All tank contents should be evacuated prior to tank removal.

Response:
The tank contents will be pumped out before tank removal. However, a small amount of liquid or sludge may still remain in the tank after pumping.

26. **Page 17, Paragraph 7.**
Inspection of the removed tanks should be documented in a field log book. If tanks will be destroyed versus disposal, a certification of destruction should be obtained. The paragraph should be revised to reflect these items.

Response:

All observations will be documented in a log book. The disposal site will provide a certificate of destruction for the tank.

27. **Page 18, Paragraph 2.**

This paragraph needs to describe how "background levels" will be determined. Also explain the process for determining clean material versus contaminated material.

Response:

Background levels will not be determined. "Clean" material suitable for backfill will be determined through laboratory analysis of the excavated material.

28. **Page 19, Paragraph 2**

Specify that a maximum of two feet of native soil will be removed before sampling. The analyses to be performed on soil and water samples should be specified.

The report should state the field screening level used to determine soil contamination. Also, more information is needed which explains this process for identifying the level of contamination which will remain after a removal action is completed and how this will be verified.

Response:

Samples will be taken from the native soil/backfill interface no more than two feet below the tank. Samples will be analyzed and described in Section 4.2.2. Field screening will involve PID measurements, observation of soil staining, and the presence of floating product. Samples will be collected after tank or sump removal and after excavation of contaminated soil (as determined by laboratory analysis). A maximum of six feet of soil around the tank will be removed during soil excavation.

29. **Page 19, Paragraph 5.**

Specify the analytical methods to be performed on soil samples collected in the trench excavations. See specific comment 15.

Response:

Samples will be analyzed as described in Section 4.2.2.

30. **Page 20, Paragraph 2, Sentence 1.**

Water in an excavation should be sampled for constituents which were suspected of leaking from tanks or sumps. If contents are unknown then analysis should include TPH, BTEX, VOC, BNAs, and metals analysis.

Response:

Comment incorporated into text.

DEPARTMENT OF HEALTH SERVICES
COMMENTS TO REMOVAL ACTION PLAN
PHASE II TANK REMOVALS
NAVAL AIR STATION MOFFETT FIELD

1. **Page 4, section 2.1, paragraphs 2 and 3.**
   It is not clear why these two paragraphs are discussed in this section. Section 2.1 is a description of Site 9, while Tanks 51 and 52 are suspected to be within Site 10.

Response:
The two paragraphs discussing tanks 51 and 52 were moved to Section 2.0 following discussion of Tank Area 47-50.

2. **Page 6, Section 2.3.**
   Typo - change cyclophetane to cyclopentane?

Response:
Cyclophetane changed to cyclopentane.

3. **Page 10, Section 3.2.2, paragraph 2.**
   Please contact the San Francisco Regional Water Quality Control Board to obtain the updated version of "Regional Board Staff Recommendations for Initial Evaluations and Investigations of Underground Tanks."

Response:
The updated version was added to the text.

4. **Page 10, section 3.2.2, paragraph 3.**
   The 1000 ppm TPH value may serve as a preliminary tool in characterizing site contamination; however, regardless of whether the TPH concentration is above or below 10000 ppm, the waste should be evaluated against all applicable Title 22, CAC, Article 11 criteria, and further analytical work should be performed to properly classify the waste. In addition, the threshold value was not meant to be applied to diesel, but rather only to gasoline.

Response:
Comment noted.

5. **Page 13, section 4.1.**
   (a) A water sampling section should be added in the event that ground water is found in the excavated pit.
   (b) A section should be included that describes how sumps will be abandoned.

Response:
Ground-water samples will be collected when ground water is encountered during tank abandonment as described in Section 4.1.5 and 4.2.8. The sumps will be abandoned as described in Sections 4.1.5 and 4.1.6.

6. **Page 13, section 4.1.2, paragraph 1 and Page 17, section 4.2.2, paragraph 1.**
   Analyses should also include PCBs and any tank or sump suspected to have received paint should be tested for mercury.

Response:
CLP metals analysis includes mercury. No information was found indicating the potential for PCBs to be present at any of the sites. Therefore, PCB analysis is not proposed.

7. **Page 14, first complete paragraph.**
The rinsate should be analyzed for the same chemicals that were detected in the liquids contained in the tanks.

Response:
Rinsate will be analyzed for the same chemicals that were detected in the tank.

8. **Page 14, section 4.1.5.**
Soil sample locations should be determined based on the regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks.

Response:
Specific descriptions of sampling locations and rationale are provided in the field work plan. These locations comply with state and local requirements and recommendations.

9. **Page 15, section 4.1.7.**
Backfill should be analyzed for all chemicals detected in the tank, and not just for TPH and BTEX.

Response:
Backfill material for each tank and sump will be analyzed as described in Section 4.1.2.

10. **Page 18, section 4.2.6, paragraph 1, sentence 3.**
All excavated soil must be analyzed by a State Certified Laboratory for all chemicals suspected or known to have been contained in the tank before the soil may be considered to be suitable for fill material.

Response:
All excavated soil will be analyzed by a state-certified laboratory prior to a determination for use as backfill.

11. **Page 18, section 4.2.6, paragraph 1, sentence 4.**
Describe how background levels will be determined.

Response:
This statement was removed. Background levels will not be determined.

12. **Page 18, section 4.2.6, paragraph 2.**
A plastic liner or some other marker should be placed into the pit prior to backfilling so that the extent of excavation can be determined if the need should arise in the future.

Response:
It is not anticipated that a plastic liner will be necessary. Documentation of the size of the excavation pit will be provided in the final report.

13. **Page 19, paragraph 2, sentence 3.**
The ends of the brass tubes may not be sealed with electrical tape as cross-contamination may occur.

Response:
Electrical tape will not be used to seal the covers of the tubes. Each tube will be placed in a ziplock bag. However, the concern for cross-contamination is considered unrealistic considering the nature of samples being taken and the anticipated use of the data.

14. **Page 23, last paragraph.**
If ground-water monitoring associated with the RI/FS will not adequately characterize ground-water contamination, additional monitoring wells will have to be installed. The locations of existing wells and proposed wells for the RI/FS should be presented int his plan. in addition, the need for additional wells should be identified and factored into the final cost.

Response:
These issues relate to the overall RI/FS and are not within the scope of this tank removal action plan. The field work plan describes the intent of the additional wells and rationale for their proposed installation.