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Ser 1146/HP/DOHS

16 SEP 1988

Mr. Dwight Hannig
Department of Health Services
State of California
State Substances Control Division
North Coast Station
1701 Serrano Way, Annex 7
Berkeley, CA 94704

Subj: SUMMARY OF RESPONSES TO DEPARTMENT OF HEALTH SERVICES COMMENTS ON
REMEDIATION INVESTIGATION/FEASIBILITY STUDY WORK PLANS FOR NAVAL STATION,
TREASURE ISLAND, HUNTERS POINT ANNEX

1. Enclosures (1) through (4) are our responses to comments from the Department of Health Services (DOHS) on the Remedial Investigation/Feasibility Study (RI/FS) Work Plans (i.e., the Quality Assurance Project Plan and the Group I, III, and IV Sampling Plans). The enclosures are provided in lieu of the draft final documents as discussed during a phone conversation between Mr. William Owens of your staff and Mr. Gregory Brown of this office on September 7, 1988. Upon satisfactory review of our responses, we will revise the draft Work Plans and provide them in their final versions.

2. We request a three week extension to the September 16, 1988 response date for the Public Health and Environmental Evaluation Plan (PHEE). We are revising the PHEE to respond to comments from the National Oceanic and Atmospheric Administration, as well as comments received from DOHS. We feel this extension is necessary in order to insure that all comments are addressed in a consistent, complete manner. Our verbal request of this extension was made on September 7, 1988 during the above referenced phone conversation.

3. Thank you for the active involvement provided by your agency. Should you have any questions regarding this matter, the point of contact is Commander, Western Division, Naval Facilities Engineering Command (Attn: Mr. Alex E. Dong, Code 1146, (415) 877-7505).

Sincerely,

C. J. GUILD
Commander, CEC, USN
Naval Facilities Management Department

Blind copy to:
PCT, ONSD, NSD, 114, 1146, 1146BB, 1146CL, Admin. Record
COMNAVSTA San Francisco, NAVSTA Treasure Island
OIC Treasure Island, Hunters Point Annex
Handing Lawson Associates (Attn: Lisa Teague)

WRITER: G. Brown/1146BB/7502
TYPIST: B. Palmer/13 Sept 88/Ser 3774h
FILE: HP/DOHS

Encl:

- (1) Navy Response to Department of Health Services Comments on Quality Assurance Project Plan
- (2) Navy Response to Department of Health Services Comments on Group I Sampling Plan
- (3) Navy Response to Department of Health Services Comments on Group III Sampling Plan
- (4) Navy Response to Department of Health Services Comments on Group IV Sampling Plan

Copy to:

Regional Water Quality Control Board (Attn: Steve Ritchie)
Bay Area Air Quality Management District (Attn: Scott Lutz)
U.S. Environmental Protection Agency (Attn: Jerry Clifford)
California Dept. of Fish & Game (Attn: Mike Rugg)
U.S. Fish & Wildlife Service (Attn: Don Palawski)
National Oceanic & Atmospheric Administration (Attn: Sharon Christopherson)
City and County of San Francisco (Attn: David Wells)
San Francisco District Attorney (Attn: Steve Castleman)

NAVY RESPONSE TO DEPARTMENT OF HEALTH SERVICES (DHS)
COMMENTS ON REVISED QAPP, HUNTERS POINT

I. SECTION 6.5.1

A. Page 6-6:

1. Comment:

The statement ". . . auger size will be a minimum 8-inch nominal O.D. [outside diameter]." should be revised to read ". . . auger size will be a minimum 8-inch nominal I.D. [inside diameter]." This is to ensure that adequate working space will exist inside the stem to properly install a 4-inch well.

Response:

The inside diameter (I.D.) of large diameter (10 to 12 inches) hollow-stem augers used by drilling companies in this region typically range from 6-1/4 to 6-5/8 inches. Only one company, All Terrain Drilling, appears to have augers with an 8-inch I.D. This equipment is limited and subject to availability.

Use of only 8-inch I.D. augers will therefore substantially limit the availability of drilling equipment and slow progress of the RI field work, with little gained in ease of well construction. The Navy's contractor has installed numerous 4-inch-diameter wells successfully using 6-inch I.D. hollow-stem augers. The 1-inch annular space has proven to be satisfactory for placement of filter pack, bentonite, and grout. This is particularly true in light of the fact that most of the wells installed by hollow-stem augers will only be 20 to 30 feet deep.

2. Comment:

Screening across the entire thickness of the shallow aquifer is not acceptable. Experience with other sites has shown that long-screen wells, even in unconfined aquifers, can cause flow within the well due to pressure differentials along the screened interval. This leads to either cross-contamination of the aquifer or contaminant dilution. Long-screen wells are a viable alternative only where hydraulic heads are equal across the entire screened interval (e.g., a constant-head boundary). Not only is this condition uncommon, it can only be detected by installing short-screen wells. Thus, short-screen wells are clearly the method of choice for ground-water monitoring.

Initial discussions with the Navy and its consultant indicated that the Navy intended to use maximum screen lengths of around 20 feet in the shallow aquifer. Screen lengths are site-specific based on hydrogeologic conditions, but ordinarily should not exceed 10 feet. For Hunters Point, deviations from this maximum screen length may be considered where the shallow aquifer is no more than 15 feet thick. In this case, the probability of cross-contamination or dilution is judged to be minimal, and a fully penetrating well is an acceptable alternative to installing a nest of wells.

Response:

Existing subsurface data indicate that the saturated thickness of the shallow aquifer (fill) may be 25 or 30 feet in some areas. As is typical of most engineered fills, some variability may occur over short distances. Based only on this information, extensive use of well clusters would be indicated, even though actual conditions may not warrant their use.

To evaluate the need for well clusters, the Navy proposes to install a limited number, perhaps 2 or 3 at each of at the Bay Fill (IR-2) and Landfill (IR-1) sites and one at each of the other IR sites, to evaluate aquifer hydraulics. This could be performed during the reconnaissance, or as the first steps in implementing the sampling plans.

Based on the findings from these well clusters, decisions as to the need for additional well clusters can be determined. The locations of the initial well cluster locations would be selected after the pilot borings are drilled.

It is the Navy's understanding that the Regional Water Quality Control Board favors fully penetrating wells in the shallow aquifer. Therefore, before the Navy commits to a change in the approach to ground-water monitoring, a consensus as to the preferred method needs to be reached by the regulatory agencies.

B. Page 6-7:

1. Comment:

The use of bentonite pellets above static water table for some wells may not assure a competent annular seal. Seals above water table should be constructed in one of two ways: a) use crushed bentonite and saturate with potable water; b) pump bentonite grout over a minimum 6-inch base of bentonite pellets, using a side-discharge tremie pipe (the pellet base and side-discharge pipe minimizes invasion of the grout into the filter pack). Of these two methods, b) is judged to be the most effective for sealing the annulus.

Response:

The Navy will use crushed bentonite for annular well seals extending above the water table.

C. Page 6-8:

1. Comment:

Marking of the well casing, while seemingly a minor point, provides important insurance against data foul-ups caused by lost or mixed-up casing caps, outside numbers obscured by weathering, etc. Therefore, the casing should be numbered within attainable site (a mirror can be used for well covers with limited access). The only acceptable alternative is to permanently mark the well cover or utility box, either by brazing the well number onto the metal standpipe (for above-grade completions) or stamping the number into the concrete utility box (for below-grade completions).

Response:

The well casing will be permanently marked with the identification number. The word "cap" was inadvertently left in the last sentence of Paragraph 2 on page 6-8. If "cap" is deleted, the QAPP will be consistent with DHS's comment.

II. SECTION 7.2

A. Page 7-2:

1. Comment:

The use of flight cuttings to supplement core logs from hollow-stem auger borings should be specifically spelled out in Bullet 1 on page 7-2.

Response:

Use of a soil sampler will be the primary method of both sample recovery and lithologic logging in hollow-stem auger borings.

However, flight cuttings from hollow-stem auger borings will be examined between driven samples to supplement the descriptions. Because the hollow-stem auger is not removed from the hole as the boring progresses, the location of lithologic changes based on cuttings becomes less accurate with increasing depth. These factors will be considered at the time.

III. SECTION 14.0

A. Page 14-1:

1. Comment:

Standard statistical analyses should be identified in this section (e.g., Student's T-test). Specific examples can be referenced to EPA's "Data Quality Objectives for Remedial Response Activities." Non-standard tests, if used, can be deferred to the respective Group Site reports.

Response:

Statistical methods may be employed for a variety of purposes, including evaluation of laboratory QC data, analysis of variability in chemical concentrations between sampling locations, modelling of contaminant plumes in ground water, hypothesis testing, decision modeling, and performing risk assessments.

Procedures for calculating percent Recovery and Relative Percent Difference for chemical data are described in Sections 18.1.2 and 18.1.3. Other methods, such as geostatistical approaches (i.e., Kriging) may be employed to evaluate distribution of contaminants in soil or ground water. Kriging may also be employed in modelling of ground water flow, depending on the final distribution of monitoring wells. Calculations of the mean, dispersion and variability may be used for analysis of affected populations during risk assessments.

Specific statistical methods to be employed will depend in part on the amount and quality of the data obtained; decisions as to the methods to be used will be made as the RI progresses and data are obtained. Statistical methodologies will be documented during data evaluation and reporting.

IV. SECTION 18.0

A. Page 18-2:

1. Comment:

A description of the qualifier codes and their specific applications for data annotation should be provided. This information may be given in tabular form for ease of presentation.

Response:

Data qualifier codes to be used are those commonly employed for EPA's Contract Lab Program (CLP). The qualifiers are used during the data validation process to indicate to what degree the sample data conforms to QC requirements. Two levels of data validation are currently planned. The first, to be performed on all sample analyses received, consists of a more conventional validation process, based on review of RPD, Percent Recovery, holding times, and other sample documentation. Based on this review, one of four qualifiers will be assigned. The qualifiers presently planned for the initial validation are as follows:

A - Acceptable (data meet all QC criteria)

J - Estimate, qualitatively correct but quantitatively suspect

R - Reject, data not suitable for any purpose

U - Not detected at a specified detection limit (i.e., "ND").

The second level of validation is a more intensive CLP process, which involves review of all laboratory documentation, analysis records (i.e., chromatograms, mass spectragraphs, etc.). This level of validation will be performed on about 10 percent of the analyses, as an overall QC check of laboratory performance and for critical decision making (i.e., cleanup levels, health risk, etc.). For these samples, the qualifier "V" will be added (i.e., AV, JV) to indicate the sample has undergone CLP-level validation.

Fully validated, Acceptable (AV) data can be used for all critical decision making processes. Samples qualified as Estimates (J) may be acceptable for defining limits of contaminants, such as the size of a plume, but not of a level adequate to define cleanup levels. Data qualifiers are described further in EPA's *Data Quality Objectives for Remedial Response Activities*, Volume 1, page B-15.

**RESPONSE TO DEPARTMENT OF HEALTH SERVICES (DHS)
COMMENTS ON HUNTERS POINT GROUP I SAMPLING PLAN**

I. GENERAL

A. Comments:

It is stated in the Work Plans that "The overall objective of the sampling program is to obtain sufficient data to characterize the soil and hydrogeologic conditions at each site . . ." However, the Work Plan does not propose any statistically valid sampling strategy. The Work Plan should describe statistically valid sampling strategies to 1) estimate the probability of detecting (or not detecting) contamination, 2) estimate the concentration and quantity of contaminants in specified blocks or volumes of soil, and 3) determine the proper sampling density. The services of a statistician with expertise in environmental sampling may be necessary to complete these tasks.

Response:

The statistically-based sampling strategies described in the DHS comment have two primary applications. One is to evaluate the probability of detecting a contaminated area of an assumed size and shape by a sample grid of a given spacing (i.e., "hot spot" detection). A second use is to analyze the variability in concentrations of a contaminant with respect to sample spacing, to evaluate whether the sample spacing is sufficient to adequately characterize the site. These applications have been addressed using modified sampling grids superimposed on the sites, both to evaluate the probability of detecting a hot spot, as well as to evaluate the variability in concentrations of chemicals within the identified contaminated areas. As investigation proceeds, the chemical data will be reviewed and statistically evaluated as needed, to assess whether the sampling spacing is adequate to characterize the sites. This approach will be added to the Objectives, Section 2.0.

B. Comments:

In order to conform to EPA guidelines, the Work Plan should include a conceptual site model. The model should discuss sources of known and suspected contamination, types of contamination and the affected media, known and potential routes of migration, and all known and potential receptors. The conceptual site model should be the basis for defining RI tasks in the Work Plan. These tasks, in turn, should be able to

generate data of enough quality for a future baseline risk assessment. Reference 3 in Section III of these comments discusses the conceptual site model in better detail.

Response:

A conceptual site model has been described in both the Scoping Document and the preliminary Public Health and Environmental Evaluation (preliminary PHEE) which is included as an attachment to Volume 6 of the Work Plan. The preliminary PHEE addresses sources of known or suspected contamination, potential routes of migration, potential receptors, as well as gaps in the existing data. The information developed for the preliminary PHEE, particularly with respect to data gaps, was used in preparation of the sampling plan. However, the preliminary PHEE is an extensive document and it was not deemed practical to incorporate it into each sampling plan.

C. Comments:

The QAPP is referenced throughout this document for required QA/QC procedures. However, additional methods are mentioned in this sampling plan that are not included in the QAPP. QA/QC procedures (detection limits, precision, accuracy, etc.) for these new methods should be described, either in this sampling plan or the QAPP.

Response:

The Navy is uncertain to which "additional methods" this comment refers to. However, the document will be checked again and, as needed, the corrections will be made to the final document to include any procedures not included in the QAPP.

D. Comments:

Throughout the Work Plan, all proposed borings are limited to specific depths. However, the accompanying rationale for these borings does not justify such limitations. We recognize the need for the Contractor to estimate drilling depths, in order to establish costs and proper field procedures, but we are concerned that field personnel may follow a rigid interpretation of the Work Plan, with a resulting loss of potentially significant data. We therefore stress that field personnel should use these boring depths as estimates only, and should drill deep enough to achieve the data objectives.

Response:

Boring depths presented in the sampling plans were estimated using certain assumptions (e.g. water levels, fill thicknesses) to meet the data objectives for the individual sites. In general, the shallow borings were intended to penetrate the full thickness of the fill materials. Deeper borings cannot be estimated with accuracy at this time; however, their depths, shown on the Sampling Approach tables, are generally based on the estimated depths of bedrock at each site. Drilling depths were not intended to be rigid guidelines; actual boring depths will depend on the thickness of specific geologic/soil units of interest.

The rationale for boring depths will be expanded in the "Approach" sections of the sampling plan to include discussion of the anticipated hydrogeologic/geologic conditions at each site.

E. Comments:

The wells and borings proposed in this work plan are insufficient to adequately characterize the hydrogeology at the Group I sites. It is clear that additional borings and wells will need to be installed to achieve this. However, the proposals in this work plan are acceptable, with the understanding that additional work will be planned based on the results of this first phase (see next comment).

Response:

The response to this comment is incorporated into the next response.

II. SPECIFIC COMMENTS

A. Section 2.0: Objectives

1. Comments:

The stated objective for this Work Plan is to "obtain sufficient data to characterize soil and hydrogeologic conditions at each site." No mention is given as to whether or not the proposals in this Work Plan are adequate to complete this objective. We are concerned that the Navy views this Work Plan as a final step toward site characterization. We therefore must assert the Department's position that every RI site should rely on a phased approach--each subsequent step of the investigation must be based on information gained from the previous phase. Although it may be possible to fully characterize a site in one step, it is quite clear that the vast majority of sites at Hunters Point will require several phases to complete the characterization. The Navy should clearly state how it plans to achieve its overall objectives in this section of the Work Plan.

Response:

The Sampling Plans were formulated in an attempt to collect enough data to characterize the sites, provide data for the PHEEs, and provide data to evaluate remedial action alternatives. However, the Navy recognizes that the complexities of some of the IR sites may require additional exploration/sampling to fully characterize them. Within the context of the Navy's schedule for completion of the RI/FSs, the sampling plans have been structured to allow a phased approach, from reconnaissance activities, through primary investigation, to contingency sampling. In addition, the data generated from the field activities and chemical analyses will be evaluated as an ongoing process and subsequent activities (e.g. contingency sampling) will be adjusted accordingly. The Navy feels that this approach should generate most, if not all, the data needed for the RI/FSs unless conditions are very different than expected. The Navy does not feel that sufficient data exist at this time to suggest that the majority of the sites cannot be characterized by this approach. For the Group III sites, the intent is to characterize the sites by the approach outlined in the sampling plan.

B. Section 4.0: Procedures

1. Comments:

As described on Bullet #4, Page 15, the method by which the Navy will collect representative background samples from the investigation of contaminated areas needs an explanation.

Response:

Locations for collection of background soil samples will be based on data to be collected during the RI. These data may include, but not be limited to, information on the extent of fill areas, field observations, and information on past use of specific areas at HPA. Currently, the Navy believes that proposed Housing Areas 1 and 2 could serve as locations for background samples; available data indicate that those two areas were used only for housing. Future information to be collected may indicate that other areas are also suitable for collection of background samples.

2. Comments:

For the references to the QAPP on Page 16, include the specific sections in the QAPP for each reference.

Response:

The appropriate citations will be added to the final document.

3. Comments:

Table 4.1 mis-references many sections in the revised QAPP, particularly Sections 8 through 18. This table should be corrected. In addition, each reference in this table (especially the Analytical and Drilling and Well Installation Procedures) should be double-checked to ensure that the references are adequately explained in the QAPP.

Response:

The corrections will be made to the final document.

4. **Comments:**

The entire suite of contaminants has not been identified for the Group I sites. Because of this, TOC and TOX analyses should also be run as a screening parameter for organic contaminants that are not detected by the listed GC methods.

Response:

The Navy feels that the proposed analytical program of VOCs (EPA 624/8240), SOCs (EPA 625/8270), TPH (EPA 8015), oil and grease (EPA 9070), and PCBs/Organochlorine Pesticides (EPA 8080) will cover the range of potential organic contaminants, especially because the CLP analytical methods also provide for tentative identification of the highest ten peaks. In addition, the proposed program will detect the chlorinated organics with greater precision than by TOX, and will yield quantitative data on specific compounds.

However, to provide a more comprehensive program, analysis for organochlorine pesticides (EPA 8080) has been added to the proposed analytical program for each Group I site.

5. **Comments:**

To analyze for all the compounds analyzed by the GC/MS method 8240 (VOCs), methods 8010, 8020, and even 8015 will all have to be used. Because these GC methods have lower detection limits than the GC/MS method, it is possible that some compounds will be detected in later sampling rounds that were not detected in the initial round. If this occurs, these new compounds should not be ignored simply because the GC/MS method did not detect them.

Response:

The Navy recognizes that some compounds may be detected using the GC methods as specified for subsequent ground-water sampling rounds. There is no intent to ignore compounds detected in these subsequent sampling rounds.

While GC methods provide lower detection limits, GC/MS methods provide a higher degree of confirmation that the specific compounds have been correctly identified and conform to the EPA's Contract Laboratory Program. Therefore, for critical decision making, all data, both from GC and GC/MS methods will be considered.

6. **Comments:**

To analyze for all the compounds analyzed by the GC/MS method 8270 (SOCs), various GC methods (e.g. 8040-Phenols, 8060-Phthalate Esters, 8080-Organochlorine Pesticides and PCBs, 8090-Nitroaromatics and Cyclic Ketones, 8100/8310-PAHs, 8120-Chlorinated Hydrocarbons) need to be used. Because these GC methods have lower detection limits than the GC/MS method, it is possible that some compounds will be detected in later sampling rounds that were not detected in the initial round. If this occurs, these new compounds should not be ignored because the GC/MS method did not detect them.

Response:

There is no intent by the Navy to ignore compounds detected by GC methods but not by GC/MS methods (because of higher detection limits). However, as discussed in the prior comment, a tradeoff exists between lower detection limits obtained by GC methods, versus the higher level of confirmation afforded by GC/MS. Positive confirmation of some compounds by GC may be particularly difficult if concentrations are above detection limits for the GC/MS method. Because as many as seven different GC methods are required to analyze the equivalent GC/MS method (8270), selection of specific tests will be made after review of the GC/MS data (for soil and first-round water sampling) and will depend on the results of these data and the potential action levels established for specific compounds. The "Analytical Program" sections and "Sampling Approach" tables will be revised to reflect this approach, although the method numbers for GC analyses of SOCs will not be listed.

7. **Comments:**

Because of the lower detection limits of GC methods, the detection of a new compound in water may indicate that further soil analysis is necessary. A compound, present in the soil at concentrations below the GC/MS detection limit, may be detectable with a GC method at concentrations exceeding permissible levels.

Response:

The Navy acknowledges that compounds may be detected with GC and not by GC/MS because of differences in method detection

limits. The resulting need for analysis of soil by the more sensitive GC methods will be evaluated by means of contingency samples on a case-by-case basis.

8. **Comments:**

On page 17, this section states tidal influence will be monitored for 24 hours. The QAPP states 24 hours is the minimum monitoring period. To ensure measurement repeatability, monitoring should be extended to 72 or 96 hours, if necessary.

Response:

The document will be revised to be consistent with the QAPP. The extension of the monitoring time period will be evaluated based on field conditions.

9. **Comments:**

Again referring to page 17, the Plan states that air quality monitoring will be addressed in a separate plan. However, the draft Air Sampling Plan previously by the Navy specifically excludes air sampling during the RI. This discrepancy needs to be corrected.

Response:

The Navy considers that the RI includes all activities beginning from the submittal of the work plans; that is, the preparation and scoping of the investigation are also an inherent part of the RI. The intent of the air quality monitoring program as described in the final Air Sampling Plan (dated July 22, 1988) is to monitor the ambient air quality. In order to accomplish this, it is necessary to avoid periods where RI field activities might impact air quality. As a result of discussions with DHS staff, the final Air Sampling Plan describes only an initial sampling round; subsequent sampling events may be necessary. It was not intended that the Air Sampling Plan describe a program to evaluate the effect of RI field tasks on air quality; such safety-related air monitoring will be performed as described in the Site Safety Plan.

C. **Sections 5.1.3, 5.2.3, 5.3.3: Evaluation of Existing Data**

1. **Comments:**

These sections do not evaluate existing data, they merely summarize the results of previous studies. The Navy should apply QA/QC methods to this previous data and attempt to ascertain its validity.

Response:

The title for the section will be changed to "Summary of Existing Data." Under the guidance provided by EPA, the previous data were validated to the extent necessary for scoping; this validation is described in the Scoping Document (Section 2.5.1). Further validation of the previous data may be performed as needed, depending upon the future uses of the data.

D. **Sections 5.1.4, 5.2.4, 5.3.4 (includes tables): Approach**

1. **Comments:**

No reason has been given as to why soil gas surveys have not been included in the sampling plan. Soil gas analysis is a proven cost-effective reconnaissance tool, and should be considered for Hunters Point. If not, then specific reasons for excluding soil gas should be given.

Response:

Subsequent to submittal of this sampling plan, this subject has been discussed in detail with DHS staff in Emeryville. Soil gas analysis will be performed at the Group I sites as part of the Reconnaissance Activities to be conducted prior to the RI. Detailed discussion of proposed soil gas techniques are described in an Addendum to the Reconnaissance Activities Summary to be submitted in mid September.

2. **Comments:**

The 20-foot sampling interval for the deep borings is too large. A 2.5-foot interval is warranted for the first 5 feet, followed by a 5-foot sampling interval at least down to 50 feet. A 10-foot sampling interval may be used for depths below 50 feet, when site conditions do not warrant closer sampling.

Response:

In general, soil samples will be collected every 5 feet for both lithological and chemical characterization to a depth of about 30 feet which corresponds to the expected fill depth at the Group I sites. Below 30 feet soil samples for lithologic characterization will be collected at about 5-foot intervals; samples at intervals of 10 to 20 feet will also be submitted for chemical analyses. However, where fill is present at depths greater than 30 feet, chemical analysis will be performed at intervals of 5 feet.

3. Comments:

For the shallow borings, soil samples should be collected every 2.5 feet down to a depth of 10 feet. Below 10 feet, samples should be collected every 5 feet.

Response:

As described on the previous response, assumptions and rationale will be expanded in the final document.

4. Comments:

In keeping with the QAPP and Reconnaissance Plans, every hole that is drilled using direct rotary methods should be geophysically logged.

Response:

Each borehole drilled with direct rotary methods will be geophysically logged.

5. Comments:

For the trenches, additional samples should be collected at 2.5 feet depth. The method by which the samples will be collected should be specified (i.e., will the samples be composited from several locations at the same depth in the trench, or will several samples from the same depth be submitted separately for analysis?).

Response:

The primary function of the trenches will be to locate the limits of the sandblast fill material and the landfill material. However, because surface disposal of waste oil/liquid by Triple A is alleged, limited sampling has been included in the Work Plan, in the event that visual evidence or field instruments indicate presence of chemicals. The sampling proposed would be to very shallow depths, about 1 to 3 feet, to test soils for evidence of surface disposal. Discrete soil samples of specific areas of the trench wall are proposed. The sampling plan will be revised to affect this approach (Table 5.1A).

6. Comments:

The pilot borings should not be limited to a depth of 100 feet. Since the bedrock configuration beneath the site has not been defined, every pilot boring for the Group I sites should be drilled to bedrock.

Response: The pilot borings are planned to reach bedrock at all locations; 100 feet was used as an estimate (i.e., the assumed depth to bedrock for the purposes of the Sampling Plan).

7. Comments:

The rationale for monitoring well placement is weak. These wells should be designed to permit observation of the following: 1) floating immiscible compounds on the water table; 2) dissolved contaminants in both the shallow and deep aquifers (above and below the bay mud, respectively); 3) dense immiscibles at the bottom of the bay fill, in the shallow aquifer; 4) elevations of the water table and potentiometric surface of the upper and lower aquifers, respectively. To accomplish this will require some forethought on the part of the Navy regarding well design. These preliminary design details should be included in the sampling plan, and should cover total depths of the wells, well diameters and screen lengths.

Response:

Well design criteria will be added to the sampling plan. Specifically, 4-inch-diameter (I.D.) PVC casing, with factory-milled screens is planned. Specific screen size will be determined by sieve analysis of soil samples obtained during the

reconnaissance (i.e., pilot borings). Criteria for screen length will also be added to the sampling plan. However, decisions as to specific screen lengths will need to be made in the field based on the conditions encountered. As described in the Navy's response to DHS's comments on the final QAPP, the Navy will initially install several well clusters at HPA to evaluate potential differences in chemical concentrations and water levels.

8. Comments:

The method by which ground-water samples will be obtained without the benefit of proper well construction is not explained. Since it is also not covered in the QAPP, this specific technique should be described in the sampling plan.

Response:

Upon recent discussions with the DHS, a soil gas survey will be performed at selected sites during the reconnaissance phase. If successful, this method may be used at the Group I sites in lieu of the bailed ground-water samples from the test borings. At this time, the Navy will remove the references to such samples; however, the collection of such samples from test borings was originally included in the sampling plan at the specific request of DHS staff early in the RI planning stages. The purpose of these samples is for screening purposes only, to aid subsequent placement of borings and/or wells.

Number of Borings	Location
2	within the triangle created by MW-44, MW-119 and boring #85
1	between MW-119 and MW-86
1	between MW-119 and boring #22
1	between MW-119 and boring #120

The sampling intervals should be the same as for the other borings.

9. Comments:

Within the Bay Fill Area, additional shallow borings should be drilled in the vicinity of proposed well #119. This is based on the recent discovery by the San Francisco County district attorney of near-surface VOC contamination in this area. At least 5 borings should drilled, as follows:

Response:

As previously stated, and at the request of DHS, a soil gas survey will be conducted at the Group I sites suspected of VOC contamination. Once the soil gas survey is complete, additional borings will be added as required to characterize VOC contamination. Location of additional borings will be identified after analysis of soil gas data.

**RESPONSE TO DEPARTMENT OF HEALTH SERVICES (DHS)
COMMENTS ON HUNTERS POINT GROUP III SAMPLING PLAN**

I. GENERAL

A. Comments:

It is stated in the Work Plans that "The overall objective of the sampling program is to obtain sufficient data to characterize the soil and hydrogeologic conditions at each site . . .". However, the Work Plan does not propose any statistically valid sampling strategy. The Work Plan should describe statistically valid sampling strategies to 1) estimate the probability of detecting (or not detecting) contamination, 2) estimate the concentration and quantity of contaminants in specified blocks or volumes of soil, and 3) determine the proper sampling density. The services of a statistician with expertise in environmental sampling may be necessary to complete these tasks.

Response:

The statistically-based sampling strategies described in the DHS comment have two primary applications. One is to evaluate the probability of detecting a contaminated area of an assumed size and shape by a sample grid of a given spacing (i.e., "hot spot" detection). A second use is to analyze the variability in concentrations of a contaminant with respect to sample spacing, to evaluate whether the sample spacing is sufficient to adequately characterize the site. These applications have been addressed using modified sampling grids superimposed on the sites, both to evaluate the probability of detecting a hot spot, as well as to evaluate the variability in concentrations of chemicals within the identified contaminated areas. As investigation proceeds, the chemical data will be reviewed and statistically evaluated as needed, to assess whether the sampling spacing is adequate to characterize the sites. This approach will be added to the Objectives, Section 2.0.

B. Comments:

In order to conform to EPA guidelines, the Work Plan should discuss a conceptual site model, either directly or by reference (e.g., the PHEE or the QAPP). If referenced, a brief summary of the model should be included. The model should discuss sources of known and suspected contamination, types of contamination and the affected media, known and potential routes of migration, and all known and potential receptors.

The conceptual site model should serve as the basis for defining RI tasks in the Work Plan. Reference 3 in Section III of these comments discusses the conceptual site model in better detail.

Response:

A conceptual site model has been described in both the Scoping Document and the preliminary Public Health and Environmental Evaluation (preliminary PHEE) which is included as an attachment to Volume 6 of the Work Plan. The preliminary PHEE addresses sources of known or suspected contamination, potential routes of migration, potential receptors, as well as gaps in the existing data. The information developed for the preliminary PHEE, particularly with respect to data gaps, was used in preparation of the sampling plan. However, the preliminary PHEE is an extensive document and it was not deemed practical to incorporate it into each sampling plan.

C. Comments:

Throughout the Work Plan, all proposed borings are limited to specific depths. However, the accompanying rationale for these borings does not justify such limitations. We recognize the need for the Contractor to estimate drilling depths, in order to establish costs and proper field procedures, but we are concerned that field personnel may follow a rigid interpretation of the Work Plan, with a resulting loss of potentially significant data. We therefore stress that field personnel should use these boring depths as estimates only, and should drill deep enough to achieve the data objectives.

Response:

Boring depths presented in the sampling plans were estimated using certain assumptions (e.g. water levels, fill thicknesses) to meet the data objectives for the individual sites. In general, the shallow borings were intended to penetrate the full thickness of the fill materials. Deeper borings cannot be estimated with accuracy at this time; however, their depths, shown on the Sampling Approach tables, are generally based on the estimated depths of bedrock at each site. Drilling depths were not intended to be rigid guidelines; actual boring depths will depend on the thickness of specific geologic/soil units of interest.

The rationale for boring depths will be expanded in the "Approach" sections of the sampling plan to include discussion of the anticipated hydrogeologic/geologic conditions at each site.

II. SPECIFIC COMMENTS

A. SECTION 2.0: OBJECTIVES

1. Comments:

The stated objective for this Work Plan is to "obtain sufficient data to characterize soil and hydrogeologic conditions at each site." We are concerned that the Navy views this Work Plan as a final step toward site characterization. For the Group III sites in particular, the sampling plan may be attempting to accomplish more than current information warrants. It is the Department's position that the RI sites should rely on a phased approach, where subsequent steps of the investigation are based on information gained from the previous phase. For example, on Plates 4 and 5, the number of borings and the proposed analytical scheme may be excessive. A phased approach to sampling may be more appropriate and reduce sampling costs. It may be prudent to scale back the number of borings, and decide if additional investigations are necessary based on the first round results.

Response:

The Sampling Plans were formulated in an attempt to collect enough data to characterize the site, provide data for the PHEEs, and provide data to evaluate remedial action alternatives. However, the Navy recognizes that the complexities of some of the IR sites may require additional exploration/sampling to fully characterize them. Within the context of the Navy's schedule for completion of the RI/FSSs, the sampling plans have been structured to allow a phased approach, from reconnaissance activities, through primary investigation, to contingency sampling. In addition, the data generated from the field activities and chemical analyses will be evaluated as an ongoing process and subsequent activities (e.g. contingency sampling) will be adjusted accordingly. The Navy feels that this approach should generate most, if not all, the data needed for the RI/FSSs unless conditions are very different than expected. The Navy does not feel that sufficient data exist at this time to suggest that the majority of the sites cannot be characterized by this approach. For the Group III sites, the intent is to characterize the sites by the approach outlined in the sampling plan.

The Group III sites consist of the scrap yard and the Old Transformer Storage Yard, as well as, portions of adjacent Triple A sites. The distribution and number of borings and wells is due to the possibility of random distribution of chemicals from past surface activities. Samples at depth are also being collected and analyzed to assess the potential vertical extent of chemicals in

the soils. Ground-water samples are being collected to evaluate the possible impact on ground water from such surface spills. An expanded discussion of the overall sampling objectives will be added to Section 2.0.

B. SECTION 4.0: PROCEDURES

1. Comments:

As described on Bullet #4, page 15, the method by which the Navy will collect representative background samples from the investigation of contaminated areas needs an explanation.

Response:

Locations for collection of background soil samples will be based on data to be collected during the RI. These data may include, but not be limited to, information on the extent of fill areas, field observations, and information on past use of specific areas at HPA. Currently, the Navy believes that proposed Housing Areas 1 and 2 could serve as locations for background samples; available data indicate that those two areas were used only for housing. Future information to be collected may indicate that other areas are suitable for collection of background samples.

2. Comments:

In reference to Bullet #6 on page 16, additional soil properties that are important to assessing the fate of contaminants should be analyzed as necessary. These tests should include permeability, porosity, bulk density, percent clay and silt, and percent organic matter.

Response:

The list of physical properties tests will be expanded to include these additional parameters. However, the data obtained from these tests will be used not only for contaminant fate evaluations, but to assess the feasibility of various remedial methods as well as for design of monitoring wells (i.e., sieve analyses). Therefore, not all tests will necessarily be performed on any given sample. Duplicate soil samples will be collected and archived on site; as the RI progresses and specific data needs are identified, physical tests will be performed.

3. **Comments:**

For Bullet #7 on page 16, "Group I" should be changed to "Group III"; also include the specific section in the QAPP as referenced.

Response:

The corrections will be made to the final document.

4. **Comments:**

Table 4.1 mis-references Sections 8, 10, 11, and 12, and Tables 2 and 3. These should be corrected. In addition, each reference in this table (especially the Analytical and Drilling and Well Installation Procedures) should be double-checked to ensure that the references are adequately explained in the QAPP.

Response:

The corrections will be made to the final document.

5. **Comments:**

To analyze for all the compounds analyzed by the GC/MS Method 8240 (VOCs), Methods 8010, 8020, and even 8015 will all have to be used. Because these GC methods have lower detection limits than the GC/MS method, it is possible that some compounds will be detected in later sampling rounds that were not detected in the initial round.

Response:

The Navy recognizes that some compounds may be detected using the GC methods as specified for subsequent ground-water sampling rounds. There is no intent to ignore compounds detected in these subsequent sampling rounds.

While GC methods provide lower detection limits, GC/MS methods provide a higher degree of confirmation that the specific compounds have been correctly identified and conforms to the EPA's Contract Laboratory Program. Therefore, for critical

decision making, all data, both from GC and GC/MS methods will be considered.

6. **Comments:**

To analyze for all the compounds analyzed by the GC/MS Method 8270 (SOCs), various GC methods (e.g., 8040-Phenols, 8060-Phthalate Esters, 8080-Organichlorine Pesticides and PCBs, 8090-Nitroaromatics and Cyclic Ketones, 8100/8310-PAHs, 8120-Chlorinated Hydrocarbons) need to be used. Because these GC methods have lower detection limits than the GC/MS method, it is possible that some compounds will be detected in later sampling rounds that were not detected in the initial round.

Response:

There is no intent by the Navy to ignore compounds detected by GC methods but not by GC/MS methods (because of higher detection limits). However, as discussed in the prior comment, a tradeoff exists between lower detection limits obtained by GC methods, versus the higher level of confirmation afforded by GC/MS. Positive confirmation of some compounds by GC may be particularly difficult if concentrations are above detection limits for the GC/MS method. Because as many as seven different GC methods are required to analyze the equivalent GC/MS method (8270), selection of specific tests will be made after review of the GC/MS data (for soil and first-round water sampling) and will depend on the results of these data and the potential action levels established for specific compounds. The "Analytical Program" sections and "Sampling Approach" tables will be revised to reflect this approach, although the method numbers for GC analyses of SOCs will not be listed.

7. **Comments:**

Because of the lower detection limits of GC methods, the detection of a new compound in water may indicate that further soil analysis is necessary. A compound, present in the soil at concentrations below the GC/MS detection limit, may be detectable with a GC method at concentrations exceeding permissible levels.

Response:

The Navy acknowledges that compounds may be detected with GC and not by GC/MS because of differences in method detection limits. The resulting need for analysis of soil samples by the more sensitive GC methods will be evaluated by means of contingency samples, on a case-by-case basis.

8. Comments:

Referring to page 17, the plan states that air quality monitoring will be addressed in a separate plan. However, the draft Air Sampling Plan previously by the Navy specifically excludes air sampling during the RI. This discrepancy needs to be corrected.

Response:

The Navy considers that the RI includes all activities beginning from the submittal of the work plans; that is, the preparation and scoping of the investigation are also an inherent part of the RI. The intent of the air quality monitoring program as described in the final Air Sampling Plan (dated July 22, 1988) is to monitor the ambient air quality. In order to accomplish this, it is necessary to avoid periods where RI field activities might impact air quality. As a result of discussions with DHS staff, the final Air Sampling Plan describes only an initial sampling round; subsequent sampling events may be necessary. It was not intended that the Air Sampling Plan describe a program to evaluate the effect of RI field tasks on air quality; such safety-related air monitoring will be performed as described in the Site Safety Plan.

9. Comments:

On page 17, this section states tidal influence will be monitored for 24 hours. The QAPP states 24 hours is the minimum monitoring period. To ensure measurement repeatability, monitoring should be extended to 72 or 96 hours, if necessary.

Response:

The document will be revised to be consistent with the QAPP. The extension of the monitoring time period will be evaluated based on field conditions.

C. SECTIONS 5.1.3, 5.2.3: EVALUATION OF EXISTING DATA

1. Comments:

These sections do not evaluate existing data, they merely summarize the results of previous studies. The Navy should apply QA/QC methods to this previous data and attempt to ascertain its validity.

Response:

The title for the section will be changed to "Summary of Existing Data." Under the guidance provided by EPA, the previous data were validated to the extent necessary for scoping; this validation is described in the Scoping Document (Section 2.5.1). Further validation of the previous data may be performed as needed, depending upon the future uses of the data.

D. SECTIONS 5.1.4, 5.2.4, (includes tables): APPROACH

1. Comments:

Referring to page 21, paragraph 4, any modification/addition to the sampling approach should be submitted in writing to DHS along with an explanation of the rationale for the change.

Response:

The Navy will notify the DHS and other applicable agencies of significant major changes. The Navy reserves the right to determine which changes are considered major. For example, decisions regarding the elimination of a number of borings and/or wells would be discussed with the agencies. However, the relocation of a boring due to access problems or subsurface observations is not anticipated to require written notification. The Navy feels that field decisions will need to be made on a real-time basis and flexibility in such situations is necessary.

2. Comments:

No reason has been given as to why soil gas surveys have not been included in the sampling plan. Soil gas analysis is a proven cost-effective reconnaissance tool, and should be considered for Hunters Point. If not, then specific reasons for excluding soil gas should be given.

Response:

The expected contaminants at the Group III sites are metals and PCBs. Although there is no direct evidence of disposal by tenants, the Navy is also testing the shallow soils for a wide variety of contaminants to confirm this possibility. Soil gas surveys are cost-effective reconnaissance tools in certain situations. However, in this case the Navy is making an attempt to look for unknown compounds, including those not amenable to soil gas analysis. As a result of recent discussions with the DHS, elsewhere at HPA the Navy will be conducting a soil gas program as part of the reconnaissance field work. The applicability of this technique to specific locations at HPA have been discussed with the DHS staff.

3. Comments:

The first paragraph on page 26 should clarify that TPH and O&G will be analyzed for in all samples above the water table, regardless of depth (water table may be below 10 feet).

Response:

The clarification will be included in the final document.

4. Comments:

For the shallow borings, soil samples should be collected every 2.5 feet down to a depth of 10 feet. Below 10 feet, samples should be collected every 5 feet.

Response:

The current approach calls for more intensive sampling in the uppermost 5 feet (i.e., at 0.5, 2.5 and 5.0 feet) to evaluate possible past surface disposal of waste liquids/oil by Triple A Machine Shop. While this more intensive sampling approach could be extended to a depth of 10 feet (as proposed by DHS), the Navy does not see a clear objective for the additional sampling at this time. Conceivably, if specific contaminants are detected during primary sampling and better vertical definition in the soil profile is needed to develop remedial options, additional sampling could be performed in the contingency sampling. However, the Navy feels that it would be more cost-effective to identify the target compounds of interest before this additional sampling is performed.

Below 5 feet, soil samples will be collected every 5 feet for both lithological and chemical characterization to a depth of about 30 feet. Below 30 feet soil samples for lithologic characterization will be collected at about 5-foot intervals; samples at intervals of 10 to 20 feet will also be submitted for chemical analyses. However, where fill is present at depths greater than 30 feet, chemical analysis will be performed at intervals of 5 feet.

At the Group III sites, it is anticipated that fill consists of material derived from the surrounding serpentine bedrock hills and that this fill is relatively thin. These assumptions and rationale will be expanded in the final document.

5. Comments:

The method by which ground-water samples will be obtained without the benefit of proper well construction is not explained. Specifically, without a description of the technique, it is impossible to judge if VOC analyses from these samples will yield valid results. Since it is also not covered in the QAPP, this specific technique should be described in the sampling plan.

Response:

Upon recent discussions with the DHS, a soil gas survey will be performed at selected sites during the reconnaissance phase. If successful, this method may be used at the Group III sites in lieu of the bailed ground-water samples from the test borings. At this time, the Navy will remove the references to such samples; however, the collection of such samples from test borings was originally included in the sampling plan at the specific request of DHS staff early in the RI planning stages.

6. Comments:

A depression is indicated on Plate 4 just south of proposed Boring #19. Since this area may collect runoff, shallow soil sampling in this area for metals and PCBs should be performed.

Response:

The Navy agrees and proposes to add three shallow soil samples within the apparent boundaries of the depression. The document will be revised to incorporate the addition.

7. **Comments:**

Referring to page 25, paragraph 2, and Table 5.1A, soil pH should be included in the analyses, since it would have a considerable influence on solubility and migration potential of metals.

Response:

The addition of soil pH to the analytical program will be incorporated in the final document.

8. **Comments:**

No rationale has been given for not sampling Triple A Site 3 south of Spear Avenue. Although available records suggest a lesser degree of contamination than north of Spear Avenue, waste oils, metals, and possible additional chemicals were illegally disposed of in this area. Therefore, the sampling plan should also include this area. At a minimum, shallow soil sampling should be proposed for this area.

Response:

Investigation of Triple A Site 3 is proceeding under the Preliminary Assessment protocol and the site will be included in the RI investigation if warranted (depending upon the data from the preliminary samples).

9. **Comments:**

Page 23, paragraph 3: Ground stains have been observed and it is possible that a storm sewer was used for disposal purposes, yet this plan does not address the specific investigation of either of these areas. Please explain this discrepancy. Identification of wastes investigated by the District Attorney could help characterize possible contaminants disposed of in the Scrap Yard by Triple A, and narrow down the analytical requirements for samples.

Response:

Although ground stains had been reported in one of the previous studies, no information regarding the location of such stains was available. In addition, no stains were observed during the site visits performed during the planning stages of the RI. The Navy is in the process of conducting removals of surface materials at HPA and it is anticipated that much of the debris at the Scrap Yard and surrounding area will be removed. During the initial stages of the field investigation, the ground surface will be examined for evidence of staining. The storm sewer line is, for the most part, located in the roadway along the south side of the Scrap Yard. The borings and wells on this side of the site are roughly positioned along the length of the storm drain system. The site map for the Scrap Yard will be modified to indicate the approximate location of the line. In addition, the Navy is developing a program to assess potential migration pathways, including storm sewers, to address comments from DHS and the National Oceanic and Atmospheric Administration.

10. **Comments:**

Referring to Plate 5, the area between boreholes TH and TE lacks adequate coverage to delineate contamination in areas of positive PCB results. Two shallow borings should be moved to this area, but it is not necessary to increase the number of borings to achieve this.

Response:

The Navy agrees and two borings (63, 64 see Plate 5) will be relocated to this area.

**RESPONSE TO DEPARTMENT OF HEALTH SERVICES (DHS)
COMMENTS ON HUNTERS POINT GROUP IV SAMPLING PLAN**

I. GENERAL

- A. **Comment:** It is stated in the Work Plans that "The overall objective of the sampling program is to obtain sufficient data to characterize the soil and hydrogeologic conditions at each site . . ." However, the Work Plan does not propose any statistically valid sampling strategy. The Work Plan should describe statistically valid sampling strategies to 1) estimate the probability of detecting (or not detecting) contamination, 2) estimate the concentration and quantity of contaminants in specified blocks or volumes of soil, and 3) determine the proper sampling density. The services of a statistician with expertise in environmental sampling may be necessary to complete these tasks.

Response: The statistically-based sampling strategies described in the DHS comment have two primary applications. One is to evaluate the probability of detecting a contaminated area of an assumed size and shape by a sample grid of a given spacing (i.e., "hot spot" detection). A second use is to analyze the variability in concentrations of a contaminant with respect to sample spacing and, to evaluate whether the sample spacing is sufficient to adequately characterize the site. The first application, for hot spot location, is not planned for the Group IV site, because the source area is already known. Further, site history indicates that paint scrapings associated with sandblast waste disposal and surface disposal of waste oils were widespread. However, no buried tanks or drums, which would be sources of hotspots, are suspected to be present at this site. For the Group IV site, a modified hexagonal sampling grid has been superimposed, both to evaluate the limits of migration of chemicals from the sources, as well as to evaluate the variability in concentrations of chemicals within the identified contaminated area. As investigation proceeds, the chemical data will be reviewed and statistically evaluated as needed, to assess whether the sampling spacing is adequate to characterize the site. This approach will be added to the Objectives, Section 2.0.

- B. **Comment:** In order to conform to EPA guidelines, the Work Plan should discuss a conceptual site model, either directly or by reference (e.g. the PHEE or the QAPP). If referenced, a brief summary of the model should be included. The model should discuss sources of known and suspected contamination, types of contamination and the affected media, known and potential routes of migration, and all known and potential receptors. The conceptual site model should serve as the basis for defining RI tasks in the Work Plan. Reference 3 in Section III of these comments discusses the conceptual site model in better detail.

Response: A conceptual site model has been described in the Scoping Document and the Public Health and Environmental Evaluation (PHEE) Plan, which is Volume 6 of the Work Plan. The Navy feels that the descriptions presented in those documents fulfill the DHS request. Inclusion of a brief summary of this site model into each of the sampling plans is not considered feasible because of the number of sites at the facility, and the number of potential contaminants. In addition, because of the limited data available, all potential routes of migration and receptors will need to be evaluated. The Navy feels that the descriptive information presented in the individual sampling plans provides the information needed to define the RI tasks.

- C. **Comment:** Throughout the Work Plan, all proposed borings are limited to specific depths. However, the accompanying rationale for these borings does not justify such limitations. We recognize the need for the Contractor to estimate drilling depths, in order to establish costs and proper field procedures, but we are concerned that field personnel may follow a rigid interpretation of the Work Plan, with a resulting loss of potentially significant data. We therefore stress that field personnel should use these boring depths as estimates only, and should drill deep enough to achieve the data objectives.

Response: Boring depths presented in the sampling plans were estimated using certain assumptions (e.g. water levels, fill thicknesses), to meet the data objectives for the individual sites. In general, the shallow borings were intended to penetrate the full thickness of the fill materials. Deeper borings cannot be estimated with accuracy at this time; however, their depths, shown on the Sampling Approach tables, are generally based on the estimated depths of bedrock at each site. Drilling depths were not intended to be rigid guidelines; actual boring depths will depend on the thickness of specific geologic/soil units of interest.

The rationale for boring depths will be expanded in the "Approach" sections of the sampling plan to include discussion of the anticipated hydrogeologic/geologic conditions at each site.

II. SPECIFIC COMMENTS

A. Section 2.0: Objectives

1. **Comment:** The stated objective for this Work Plan is to "obtain sufficient data to characterize soil and hydrogeologic conditions at each site." We are concerned that the Navy views this Work Plan as a final step toward site characterization. It is the Department's position that the RI sites should rely on a phased approach, where subsequent steps of the investigation are based on information gained from the previous phase. Although it may

be possible to fully characterize a site in one step, it is clear that most of the sites at Hunters Point will require several phases to complete the characterization.

Response: The Sampling Plans were formulated in an attempt to collect enough data to characterize the site, provide data for the PHEE, and provide data to evaluate remedial action alternatives. However, the Navy recognizes that the complexities of some of the IR sites may require additional exploration/sampling to fully characterize them. Within the context of the Navy's schedule for completion of the RI/FSSs, the sampling plans have been structured to allow a phased approach, from reconnaissance activities, through primary investigation, to contingency sampling. The data generated from the field activities and chemical analyses will be evaluated as an ongoing process and subsequent activities (e.g. contingency sampling) will be adjusted accordingly. The Navy feels that this approach should generate most, if not all, the data needed for the RI/FSSs unless conditions are very different than expected. The Navy does not feel that sufficient data exist at this time to suggest that the majority of the sites cannot be characterized by this approach. The Navy's intent is to characterize the sites by the approach outlined in this sampling plan; however, the Navy recognizes that field conditions may necessitate changes to the outlined approach.

B. Section 4.0: Procedures

1. **Comment:** As described on Bullet #4, Page 15, the method by which the Navy will collect representative background samples from the investigation of contaminated areas needs clarification.

Response: Locations for collection of background soil samples will be based on data to be collected during the RI. These data may include, but not be limited to, information on the extent of fill areas, field observations, and information on past use of specific areas at HPA. Currently, the Navy believes that proposed Housing Areas 1 and 2 could serve as locations for background samples; available data indicate that these two areas were used only for housing.

2. **Comment:** In reference to Bullet #6, Page 16, physical testing of soil samples should include additional parameters that can influence the fate of contaminants. These include permeability, porosity, bulk density, soil pH, percent clay and silt, and percent organic matter.

Response: The list of physical properties tests will be expanded to include these additional parameters. However, the data obtained from these tests will be used not only for contaminant fate

evaluations, but to assess the feasibility of various remedial methods as well as for design of monitoring wells (i.e., sieve analyses). Therefore, not all tests will necessarily be performed on any given sample. Duplicate soil samples will be collected and archived on site; as the RI progresses and specific data needs are identified, physical tests will be performed. The exception is pH, which may change over time, and so will be analyzed as part of the proposed chemical analysis program.

3. **Comment:** For Bullet #7 on Page 16, "Group I" should be changed to "Group IV"; also include the specific section in the QAPP as referenced.

Response: The corrections will be made to the final document.

4. **Comment:** Table 4.1 mis-references Sections 8, 11, and 12. These should be corrected.

Response: The corrections will be made to the final document.

5. **Comment:** To analyze for all the compounds analyzed by the GC/MS Method 8240 (VOCs), Methods 8010, 8020, and even 8015 will all have to be used. To analyze for all the compounds analyzed by the GC/MS Method 8270 (SOCs), various GC methods (e.g., 8040-Phenols, 8060-Phthalate Esters, 8080-Organochlorine Pesticides and PCBs, 8090-Nitroaromatics and Cyclic Ketones, 8100/8310-PAHs, 8120-Chlorinated Hydrocarbons) need to be used.

Previous analyses at the Group IV sites found no VOCs, SOC, gasoline or diesel in ground water. If the detection of these contaminants is of primary concern, then the GC methods listed above should be used.

Response: While GC methods provide lower detection limits, GC/MS methods provide a higher degree of confirmation that the specific compounds have been correctly identified and conforms to the EPA's Contract Laboratory Program. Therefore, for critical decision making, all data, both from GC and GC/MS methods will be considered.

The overall approach to ground-water sampling and analysis for the RI, including the Group IV site, is to perform GC/MS analysis for the first round of sampling, following EPA Contract Laboratory Program (CLP) protocols. While GC/MS methods were performed for VOC and SOC analysis of the prior wells (P1, P2, S1 through S4), the data do not meet CLP documentation requirements, and so were not planned for use in RI/FS decision-making.

Therefore, GC/MS analysis of VOCs and SOCs is proposed, both for the existing wells and the six planned wells during first round sampling, following CLP protocols. Subsequent sample rounds will be analyzed by GC methods to obtain lower detection limits.

6. **Comment:** Because of the lower detection limits of GC methods, the detection of a new compound in water may indicate that further soil analysis is necessary. A compound, present in the soil at concentrations below the GC/MS detection limit, may be detectable with a GC method at concentrations exceeding permissible levels.

Response: The Navy acknowledges that compounds may be detected with GC and not by GC/MS because of differences in method detection limits. The resulting need for analysis of soil by the more sensitive GC methods will be evaluated by means of contingency samples on a case-by-case basis.

7. **Comment:** Referring to Page 17, the plan states that air quality monitoring will be addressed in a separate plan. However, the draft Air Sampling Plan previously by the Navy specifically excludes air sampling during the RI. This discrepancy needs to be corrected.

Response: The Navy considers the RI to include all activities beginning from the submittal of the Work Plans; that is, the preparation and scoping of the investigation are also an inherent part of the RI. The intent of the air quality monitoring as described in the draft Air Sampling Plan (dated July 22, 1988) is to monitor the ambient air quality. In order to accomplish this, it is necessary to avoid periods where RI field activities might affect the air quality. As a result of discussions with DHS staff, the final Air Sampling Plan describes only an initial sampling round; subsequent sampling events may be necessary. It was not intended that the Air Sampling Plan describe a program to evaluate the effect of RI field tasks on air quality; such safety-related air monitoring will be performed as described in the Site Safety Plan.

8. **Comment:** On Page 17, this section states tidal influence will be monitored for 24 hours. The QAPP states 24 hours is the minimum monitoring period. To ensure measurement repeatability, monitoring should be extended to 72 or 96 hours, if necessary.

Response: The document will be revised to be consistent with the QAPP. The extension of the monitoring time period will be evaluated based on field conditions.

C. **Section 5.1.3: Evaluation of Existing Data**

1. **Comment:** This section does not evaluate existing data, it merely summarizes the results of previous studies. This information does not appear to have been efficiently incorporated into the new work plan, resulting in an apparent overemphasis on chemical analyses. The Navy should ascertain the validity of the previous data and use it in designing this next work phase.

Response: The title for this section will be changed to "Summary of Existing Data." Under the guidance provided by EPA, the previous data were validated to the extent necessary for scoping; this validation is described in the Scoping Document (Section 2.5.1). Further validation of the previous data may be performed as needed, depending upon the future uses/needs for the data.

D. **Sections 5.1.4, (including Table 5.1A): Approach**

1. **Comment:** For the shallow borings, soil samples should be collected every 2.5 feet down to a depth of 10 feet. Below 10 feet, samples should be collected every 5 feet.

Response: The current approach calls for more intensive sampling in the uppermost 5 feet (i.e., at 0.5, 2.5 and 5.0 feet) to evaluate possible past surface disposal of waste liquids/oil by Triple A Machine Shop. While this more intensive sampling approach could be extended to a depth of 10 feet (as proposed by DHS), the Navy does not see a clear objective for the additional sampling at this time. Conceivably, if specific contaminants are detected during primary sampling and better vertical definition in the soil profile is needed to develop remedial options, additional sampling could be performed in the contingency sampling. However, the Navy feels that it would be more cost-effective to identify the target compounds of interest before this additional sampling is performed.

Below 5 feet, soil samples will be collected every 5 feet for both lithological and chemical characterization to a depth of about 30 feet. Below 30 feet soil samples for lithologic characterization will be collected at about 5-foot intervals; samples at intervals of 10 to 20 feet will also be submitted for chemical analyses. However, where fill is present at depths greater than 30 feet, chemical analysis will be performed at intervals of 5 feet.

2. **Comment:** For the trenches, additional samples should be collected at 7.5 feet depth. The method by which the samples will be collected should be specified (i.e., will the samples be composited from several locations at the same depth in the trench, or will several samples from the same depth be submitted separately for analysis?).

Response: The primary function of the trenches will be to locate the limits of the sandblast fill material. However, because surface disposal of waste oil/liquid by Triple A is alleged, limited sampling has been included in the Work Plan, in the event that visual evidence or field instruments indicate presence of chemicals. The sampling proposed would be to very shallow depths, say 1 to 3 feet, to test soils for evidence of surface disposal. Discrete soil samples of specific areas of the trench wall are proposed. The sampling plan will be revised to affect this approach (Table 5.1A).

3. **Comment:** The method by which ground-water samples will be obtained without the benefit of proper well construction is not explained. Specifically, without a description of the technique, it is impossible to judge if VOC analyses from these samples will yield valid results. Since it is also not covered in the QAPP, this specific technique should be described in the sampling plan.

Response: The approach of bailing water samples from test borings was added, at DHS request, to the Group I and Group III Sampling Plans. However, all ground-water sampling proposed in the Group IV Sampling Plan will be from properly constructed and developed wells. Because these well sampling procedures are described in the QAPP, no revision of the sampling plan is needed.

4. **Comment:** The use of soil borings to sample the full thickness of the fill unit is acceptable. However, monitoring wells constructed from these borings should adhere to the screen length guidelines specified in our comments on the revised QAPP (see also the following comment).

Response: As discussed in response to the DHS comments for the QAPP, the Navy proposes to install well clusters in the uppermost aquifer (fill unit) at one or two locations in Group IV. If head differences are detected, then additional well clusters may be warranted. However, it is the Navy's understanding that the Regional Water Quality Control Board favors fully penetrating wells. Therefore, before the Navy can commit to a program of well clusters, consensus between the agencies needs to be developed regarding this issue.

5. **Comment:** To achieve the ground-water data objectives requires some forethought on the part of the Navy regarding well design. These preliminary design details should be included in the sampling plan, and should cover total depths of the wells, well diameters and screen lengths. Particular attention should be paid to Wells 19 and 20. Since nearby wells are screened at the water table, it may be appropriate to screen these wells deeper.

Response: Well design criteria will be added to the sampling plan. Specifically, 4-inch-diameter (I.D.) PVC casing, with factory-milled screens is planned. Specific screen size will be determined by sieve analysis of soil samples obtained during the reconnaissance (i.e., pilot borings). Criteria for screen length will also be added to the sampling plan. However, decisions as to specific screen lengths will need to be made in the field based on the conditions encountered.

Wells 19 and 20 are planned to provide additional evaluation of the shallow aquifer. Existing Wells P1 and P2, installed during the Verification Step of the Confirmation Study, do not appear to fully penetrate the shallow aquifer (fill materials). Proposed Wells 19 and 20 will screen the entire depth of the shallow aquifer. Whether this can be accomplished by single well screens or well clusters will depend on the thickness of the saturated zone, as well as the consensus of the DHS and RWQCB.