



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

32501.001
03.01.01.0005

FEB 07 1992

4WD-RCRA/FF

N00204.AR.000328

NAS PENSACOLA

5090.3a

REGISTERED MAIL - RETURN RECEIPT REQUESTED

Ms. Suzanne Sanborn
Remedial Activities Branch
Department of the Navy - Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 10068
Charleston, South Carolina 29411-0068

Re: Draft RI/FS Work Plans for operable Units 1-5 & 11-14;
NAS, Peneacola

Dear Ms. Sanborn:

The Environmental Protection Agency (EPA) has completed its review of the Draft RI/FS Work Plans for Operable Units 11, 12, 13 and 14 at NAS, Pensacola received in this office on September 24, 1991. Enclosed are our final comments (Attachment 1). Comments pertaining to ecological assessment of these sites were developed at a significantly later date, and are thus provided as an appendage to the original comment list. Also enclosed are the majority of our comments on the Draft RI/FS Work Plans for Operable Unit 1 through 5 (Attachment 2). The Agency is in the process of finalizing comments pertaining to ecological assessment of these sites. We anticipate providing these remaining comments to you no later than February 14, 1992.

As discussed and agreed to by the project managers, and in accordance with Section VIII.G.5 of the Federal Facilities Agreement, the Navy shall submit written response to all of the Agency's comments within 60 days of receipt of all comments for a given document. Your responses to comments on the Work Plans for Operable Units 11, 12, 13 and 14 are thus due 60 days from receipt of this letter. Responses to comments on the Work Plan for Operable Units 1 through 5 will be due 60 days from receipt of our forthcoming comments.

To date, EPA has completed reviews of 10 Interim Data Reports and RI/FS Work Plans for 10 different sites at NAS Pensacola. Extensive comments on the draft versions of each of these documents have been provided to the Navy via four separate pieces of correspondence (including the present letter and comments). Due to consistent inadequacies in the form and content of these documents, each of our reviews has reiterated a large percentage of the comments from preceding reviews. EPA is concerned at the Navy's lack of responsiveness in addressing the Agency's concerns and, specifically, in assuring that these concerns would be incorporated into subsequent submittals. In particular, EPA's objection to the four-phased approach outlined in all work plans submitted to date (excepting Operable Unit 10) has yet to be addressed, despite the fact that objections to this approach were raised at a project manager's meeting held July 30, 1991 and documented in our comments, submitted to the Navy on August 22, 1991, on 6 of the Interim Data Reports,

EPA anticipates that all revisions of the present documents, as well as all future submittals, will incorporate the extensive comments which have been provided to the Navy by this office to date.

If I may be of any further assistance to you regarding these matters, or should you have any further questions, please feel free to contact me at 404/347-3016.

Sincerely yours,



Allieon W. Drew, RPM
Department of Defense Remedial Unit
RCRA & Federal Facilities Branch

Enclosure

cc: Glenn Bradley, SOUTHDIV
James Malone, SOUTHDIV
Ron Joyner, NAS, Pensacola
Eric Nuzie, FDER

ATTACHMENT 1

TECHNICAL REVIEW AND COMMENTS
DRAFT WORK PLANS FOR GROUPS H, I, P AND Q
NAVAL AIR STATION (NAS), PENSACOLA
PENSACOLA, FLORIDA

GROUP H - SITE 8 (Rifle Range Disposal Area) and SITE 22 (Refueler Repair Shop)

1) Page 1-1:

The following comments pertain to the phased approach presented here and detailed in Section 14 of the work plan:

a) The field activities needed to accomplish the proposed goals of Phases I through IV must be performed in a single investigative effort, i.e. one which is not interrupted by lengthy periods of demobilization and report preparation.

b) The present document must be prepared under the assumption that it will be the only RI/FS Work Plan prepared for this Operable Unit. This document must therefore propose sampling locations which will satisfy the objectives of (i) field screening, (ii) characterization and (iii) extent delineation. Since the locations of all samples beyond the screening investigation are contingent on screening results, it is critical that the work plan include not only the proposed sampling locations but also (i) a rationale for selection of each of these tentative locations (i.e. satisfaction of an existing data gap), and (ii) the strategies and contingency plans which will be used to modify the location and number of these samples as needed. In short, plans for a complete investigation must be delineated up front to the maximum extent possible in order to streamline the field investigation and assure successful completion of the RI/FS in a timely manner. The specific number, types and locations of samples can be revised or refined as needed under this one work plan.

c) The purpose of the screening portion of the investigation is to "focus" later sampling events so that the time and expense required to adequately characterize the site is ultimately reduced. The benefits derived from screening will be either partially or fully negated unless this portion of the investigation is completed as rapidly as possible. Under the current schedule, it will take six months to complete the screening portion of the investigation and initiate collection of the data (i.e. DQO Level III and IV) needed to perform a BRA and select a Remedial Alternative. In short, the screening process must be significantly shortened if it is to remain useful. The following specific comments are offered:

1) more overlap of the field tasks listed in Figure 23-1 is needed, particularly of the various survey tasks.

2) the proposed investigative techniques must be re-evaluated to assure that the most rapid field screening methodologies and analytical

techniques are being utilized. At present, many of the sampling techniques employed for field screening appear to differ little from the techniques used to collect higher DQO Level data during the subsequent "characterization" and "extent delineation" portions of the investigation (e.g. well installation, sampling and hydrologic assessment takes 4 weeks for both the screening and characterization portions of the investigation). The goal at the screening stage must be to provide the information needed to select higher DQO sampling locations as rapidly as possible.

3) The screening data should be compiled for presentation (e.g. tables, graphs, figures, plots) as it becomes available. Full evaluation of the data and determination of any necessary modifications to the proposed characterization/extent delineation sampling plans must be completed within two weeks of receipt of the final piece of screening data. These results and recommendations should immediately be provided to all parties to the FFA for review and evaluation. EPA requests that a meeting be held to discuss these items no later than three weeks from the date of the parties' receipt. Following formal agreement by all parties regarding these recommendations, field work must immediately recommence.

d) At the conclusion of the Remedial Investigation, Operable Unit-specific draft RI/FS and Baseline Risk Assessment reports shall be submitted for review. Data collection efforts must therefore be directed towards definitive site characterization (i.e. lateral and vertical extent of contamination and hot spot identification) since this information is needed to provide the quantitative data base essential for preparation of the Baseline Risk Assessment and evaluation of Remedial Alternatives.

2) Page 1-2:

With regards to the efficient elimination of screening sites from the RI/FS process, screening level data (DQO Level I & 2) are acceptable to show that contamination exists and that an RI/FS study is warranted. However, due to the probability of false negative data, this level of data is not acceptable to show that no contamination exists, and therefore further site characterization will be required before the site can be eliminated. DQO Level III & IV data must be used to substantiate no further action decisions. The number and locations of the samples collected must also be adequate to verify the absence of contamination for all potential pathways (media). In order to attain this goal, background samples must also be collected.

A separate strategy should be developed for the investigation of screening sites so that the determination of whether these sites will require No Further Action or an RI/FS may be made as efficiently and cost-effectively as possible.

3) Page 2-1 through 14-1

Regarding organization of the material contained in Sections 2. through 7., the following comments are provided:

a) It would be advantageous to all parties concerned if the general/regional non-site specific information contained in the work plans (i.e. climatology, biological resources for the peninsula, general occurrence of surface water, regional hydrogeology, health and safety plan, quality assurance plan, etc. and any appendices that apply to every site) were removed and placed in a single separate generic work plan document. Thereafter, the documents for each site or group of sites should contain only site-specific or related descriptions and data. This should prove to be cost and time-effective for the Navy, and leas cumbersome for all parties involved in the review process.

b) As described on page B-1 of the USEPA document entitled Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, the RI/FS Work Plan must, at a minimum, consist of the following 5 elements:

- A. Introduction
- B. Background and Physical Setting
 - 1) Facility-wide Information (if this will prove more cost and time-effective than the approach recommended in "a")
 - 2) Site-specific Information .
- C. Initial Evaluation
- D. Work Plan Rationale
- E. RI/FS Tasks

The present work plan contains a reasonably complete Introduction (Section 1.) and Site Background/Physical Setting (Sections 2. through 7.). However, from this point, the work plan skips over tasks C. and D. and proceeds to describe the specific tasks to be conducted during the field investigation (Section 14.). Please refer to pages 2-1 through 2-12, 3-1 through 3-18, and Appendix B of the guidance for further information on completing these tasks. Both tasks must be included as separate sections within the work plan to precede Section 14.. Finally, please note that it is essential to include, in summary form, all previously collected data and information on the site in order to fully develop the conceptual model required by Task C. The conceptual model will provide the basis for Task D (identifying data gaps) and hence the determination of appropriate sampling methodologies and analytical parameters.

c) The potential Operable Unit-specific location, action and chemical-specific ARARs must also be presented as a part of this work plan (see p. 2-9 of the above-referenced guidance document).

Please note that, as per Section VIII.G.2 of the Federal Facilities Agreement, all primary documents are subject to review for "consistency with CERCLA, the NCP and any pertinent written U.S. EPA/State-issued guidance or policy".

4) Page 2-2:

The site descriptions include references to other "sites in the immediate vicinity" of these sites. An NAS Pensacola Supply well is also located proximate to one of the sites. These features should be located and identified on this figure.

5) Page 3-2:

In general, whenever soil borings (such as the 15 mentioned here), monitoring wells or samples of any kind have been collected at the PSC on a date which precedes the preparation of these work plans, a figure must be included which illustrates all sampling locations. This figure must include a key or legend which defines the media the sample was collected from. In the case of subsurface samples, it must also identify the hydrogeologic unit from which the sample was collected.

Tables should also be provided, as appropriate, to summarize any contamination detected in these previous sampling events.

6) Page 4-1:

This section should include a NOAA average monthly climatic data table summarizing the current temperature and rainfall data for the Pensacola area.

7) Page 5-1 through 5-9, Section 5.1:

Those sections discussing the distribution of wetlands at NAS Pensacola should be expanded and updated to include the results of National Wetland Inventories and the recent study performed by EPA under an Inter-Agency Agreement (IAG) with the Navy.

8) Page 5-9:

According to the site description, "the majority of...[Site 22] is covered by grasses or hard packed soils." (p. 2-4) This statement appears to contradict the present statement that: "Site 22 is covered by an asphalt parking area." Please correct the discrepancy.

9) Page 6-1:

A figure(s) should be added to this section illustrating the location of intermittent streams, drainage pathways and freshwater wetlands at NAS, Pensacola.

10) Page 6-2:

"Both sites are relatively flat, and have been cleared and/or paved to some degree". How much of these sites have received fill?

11) Pages 7-1 through 7-6:

Please refer to EPA's Specific Comment #22, 23a. and 24 on the Draft Group O Work Plan. Regarding comment 24, if adequate information does not exist to confirm the proposed aquifer classification, the necessary data must be collected during the RI/FS.

12) Page 11-1:

Assuming the work done on these sites will be performed in accordance with the 1991 generic work plan documents, all sections of the Operable Unit-specific work plan, including references, must be revised and updated accordingly.

Also, if the generic work plan documents are in conflict with Region IV's ESD SOP/QAM, the latter document will override the former.

13) Page 11-1:

"All samples will [be] collected, handled, packaged, preserved, and transported in accordance with the GQAPP and SQAP, and with U.S. Navy and EPA procedures". There is no reference to the 1991 ECB SOPQAM anywhere in this document. Also, the appendix containing the SQAP should be referenced here.

14) Page 14-1:

"However, the analysis of these samples will be subject to less rigorous Quality Assurance/Quality Control (QA/QC) requirements, which reflect the "focusing" objective--rather than a formal contaminant quantification objective--of this phase". This approach is not acceptable. If the desire is to collect screening level data in the initial stages of the investigation for the purpose of focusing later sampling events, then it would seem more time- and cost-effective to utilize mobile analytical instruments on site. The relatively rapid analytical turnaround times associated with these instruments would permit immediate utilization of screening results to determine subsequent sampling events at higher DQO levels.

15) Page 14-2:

Why will the preliminary survey not also include the methodologies described in Section 6.1.2 of the 1990 GQAPP: VOC sampling, whole air collection and solid absorbents; or Section 6.1.4: Semi-Volatiles sampling. The GQAPP does not clearly state when these methods will be used. Please clarify.

The Mini-Ram particulate monitor discussed in Section 6.1.1 should be used for health and safety determinations. It does not measure gases emanating from the site. Some of the constituents of concern are commonly measured in the nanograms per cubic meter range (ex - pesticides, PCBs). According to the GQAPP, the Mini-Ram to be used at this site will measure in milligrams per cubic meter and the area in question will only be monitored for 5 minutes. This is a very minimal amount of time for any type of air monitoring. The Mini-Ram has a high degree of uncertainty inherent in the instrument as evidenced by the high detection limits. VOCs are more commonly measured by the TO-14 method and PCBs/pesticides by the TO-4 method instead of the Mini-Ram. The OVA and HNu are also primarily for use in making health and safety determinations and are not appropriate for making the determination that further air monitoring is unnecessary.

16) Page 14-2:

According to Section 6.1.1 of the GQAPP, the OVA will be held 2-inches above the surface. This is not acceptable. The OVA should monitor the breathing zone of field personnel,

17) Page 14-2:

Section 6.1.3 of the GQAPP referenced here pertains to Hi-Vol samplers; how does this relate to the Mini-Ram sampling since they are two separate sampling methodologies?

18) Page 14-2:

Section 6.3.2 discusses using a Geiger Mueller (GM) detector and an alpha scintillation detector. The text here references using a micro-R-meter and a gamma scintillation detector. The safety plan (Appendix A) only references

using a micro-R-meter. Which of these instruments will actually be used for radiation monitoring?

19) Page 14-4:

"The depth to water is assumed to be 10 feet at Site 22". Page 3-2 of this document states that the water table at site 22 was encountered at 4.5 feet during the 1984 Geraghty & Hiller study. Please explain this apparent discrepancy.

20) Page 14-4:

The methodology given in Section 6.4 of the GQAPP and referenced here is not acceptable. A 16-ounce jar will not provide adequate head space for the OVA. Five minutes will not be long enough for the sample to reach equilibrium. The sample should be equilibrated to 25C, not 20C. Also, soil samples for headspace analysis should not be composited but collected as grab samples to prevent undue aeration of the sample.

21) Page 14-5:

Section 13.2 indicates that residual fuel was disposed of to the E-NE of Building 1681. Will the proposed sampling locations be adequate to detect this potential contamination? It may be useful to indicate the approximate location of the disposal area(s) in some figure.

22) Page 14-5:

The soil sampling methodology alluded to here (Section 6.6 of the GQAPP) has some deficiencies: 1) VOC soil samples must be collected as grab samples, not as composites (Section 6.6.1); 2) VOC samples should be collected into 2-oz, not 8-oz glass containers; 3) the homogenization process for the soil samples must be explained in more detail. Please correct these deficiencies.

23) Page 14-5:

As stated on page 6-2, surface water at Site 22 tends to pond on the area covered with crushed oyster shells during heavy rains. Additional soil samples should be collected in this area.

24) Pages 14-5 through 14-8:

A simple statement of the proposed sampling locations for each media is not adequate. A justification/rationale, describing how each of these proposed samples will fill existing data gaps must also be provided for each sample.

25) Pages 14-7 and 14-11:

The statement on page 7-5, that horizontal groundwater flow in the surficial zone is expected to be towards the north at Sites 8 and 22, is based on water levels measured at Sites 1 and 24, which are located to the North. The potentiometric surface of the surficial zone is a subdued replica of the topography, except where heavy pumping occurs. Based on the topographic map, sites 8 and 22 are located slightly south of a ground water divide. It is possible that the potential horizontal direction of ground water flow at these sites is toward the south, or at least in a radial direction. Care should be taken to ensure that the well installation plan will adequately define any contaminant plume which may exist.

Specifically, additional monitoring wells should be installed to the east and southeast of Building 1681 based on the location of suspected contaminants and the direction of ground water flow at the site.

Furthermore, the potential vertical ground-water flow direction between the Surficial Zone and the Major Producing Zone varies below NAS, Pensacola. At higher elevations, such as the center of the peninsula, the water levels in the Surficial Zone are greater than the water levels of the Major Producing Zone. In these areas, the potential vertical ground water flow direction is from the Surficial Zone to the Major Producing Zone. At lower elevations, the water levels of the Major Producing Zone are greater than the Surficial Zone water levels, and the potential vertical flow direction is the reverse. Sites 8 and 22 are located in areas where vertical ground water flow direction is the reverse. It is important that cluster wells penetrating the Surficial, Low Permeability and Major Producing Zones be installed at these sites so that vertical contaminant migration may be monitored.

26) Page 14-8:

PVC bailers may not be used for sampling the ground water monitoring wells. A more inert material such as Teflon should be used.

27) Page 14-8:

The decontamination procedures given in Section 6.10 of the GQAPP are correct. However, for field cleaning equipment, the procedure given on page 6-39 should be used. The procedure given on page 6-40 should be used with adequate ventilation (as in a lab) because of the nitric acid fumes.

28) Page 14-8:

All water level measurements for the Operable Unit must be collected within a reasonable period of time (i.e. a few hours) if they are to be considered valid,

29) Page 14-9:

What is the rationale for collecting soil samples at the intervals specified here?

30) Page 14-9:

The procedure indicated for the collection of soil samples is acceptable for lower DQO levels. However, shallow soil samples intended for ecological risk assessment purposes should be collected as 6-inch cores. The most significant ecological risk would most likely be posed by contamination in the top 6 inches (burrowing animals, translocation into plants via roots, exposure to terrestrial organisms and runoff). Surficial contamination may be lost from the sediment if the proposed bucket auger is used.

31) Pages 14-9 through 14-15:

Statements such as "[Phase II sampling locations] will be determined based on the Phase I results" are overly vague and general. The rationale for the number and locations of samples to be collected for all media during Phases II through IV must be more thoroughly strategized and communicated in the RI/FS Work Plan. Please refer to Comment #1.

32) Page 14-10:

Table 14-2 indicates that the ground water samples will not require field blanks or preservative blank. This is incorrect. Please correct the text.

Why will soil and groundwater samples be analyzed for different parameters?

The Analytical Suite Designation A should be reworded to clearly show that TAL metal analyses will be performed on the samples.

33) Page 14-11:

The proposed sample locations in Figure 14-2 do not differ substantially from those locations given in Figure 14-1. Why couldn't all the samples shown in these two figures be collected during one sampling episode?

34) Page 14-12:

Section 14.2.2 states that the proposed number of monitoring wells for the Phase II RI is four at Site 8 and two at Site 22. However, three wells are shown at each site in Figure 14-2. Please correct this discrepancy.

35) Page 14-12:

Why are PVC monitoring wells proposed for Phase II activities when stainless steel temporary wells were proposed for Phase I? The higher DQO Level of the analyses proposed for Phase II samples appears contradictory to this approach.

If materials other than Stainless steel are to be used in well construction, a thorough rationale for the selection of the alternate material must be submitted in accordance with Attachment A: "Information Requirements for Justification of Alternative Well Casing Materials for Groundwater Monitoring Well Construction".

36) Page 14-12:

The Guidelines for Groundwater Monitoring Well Installation, March 1989 alluded to in Section 6.7 of the GQAPP was not included in this submittal for review. If mud-rotary drilling is used, samples of the mud, etc. must be collected and analyzed to ensure that these materials are not a potential source of contamination. The well construction methods given in Section 6.7.3 are inadequate. Sand, bentonite, etc. should be tremied into the borehole, not allowed to free-fall. The screen slot size is given as 0.015-inch in the GQAPP. In the workplan, the screen slot size is given as 0.01-inch; which is correct? Hydration time for the bentonite is not given. Please provide this information.

37) Page 14-12:

Water supply wells located near a site should be sampled during the RI. These wells include water supply wells that influence the direction of ground-water flow beneath a site.

38) Page 14-13:

Define the phrase "limited aquifer testing" as it is used here. Exactly how will the specific capacity test be conducted? Conducting the specific capacity test in conjunction with well development is not acceptable. Aquifer

testing should be conducted on a well that has already been developed to obtain the most accurate results.

39) Page 14-14:

Regarding the proposed biota sampling, EPA concurs with FDNR's general comments pertaining to the scope and timing of this portion of the investigation, which were submitted in their review of the Phase II RI/FS Work Plan for Groups A through E.

40) Page 14-15:

EPA concurs with FDNR's general comment pertaining to the timing of the topographic survey, which was submitted in their review of the Phase II RI/FS Work Plans for Groups A through E.

Also, what benchmark will the elevations be surveyed relative to?

41) Page 14-16:

The Sample Custody procedures given in Section 7 of the GQAPP must conform with the ECB SOPQAM.

42) Page 14-16:

Containerizing the purge/development water for the temporary monitoring wells is acceptable; however, this water should not be poured down the well prior to abandonment until the analytical results have been reviewed to determine if the water contains any contaminants of concern.

43) Page 14-16 through 14-17:

How will the investigation-derived waste (water, cuttings protective clothing, etc.) ultimately be disposed of, and by whom?

44) Page 16-1:

In order to conduct the proposed ground water modeling, parameters such as transmissivity, storage values, and hydraulic conductivity will be utilized. However, only slug tests are proposed for these sites. Storage values cannot be determined from slug tests, and hydraulic properties determined from these tests are less representative of overall aquifer properties than would be the case if an aquifer test were performed.

If groundwater contamination requiring Remedial Action is detected, then further aquifer testing must be conducted prior to modeling. To accurately determine the hydraulic properties of the Surficial Zone, a 72-hour aquifer test should be conducted with multiple monitoring wells at varying distances from the well,

Finally, since contaminant movement is most likely 3-dimensional, use of a 3-dimensional contaminant transport model would provide more reliable information for the purposes of the risk assessment and feasibility study.

45) Pages 18-2 through 18-4:

Please refer to EPA's Specific Comments 60, 61 and 62 on the Draft Group O Work Plans.

Also, the reference to IRIS should be moved to Section 18.3 (Toxicity Assessment). IRIS should be utilized as the primary source of toxicity information.

46) Pages 19-1 through 19-3:

In general, the USEPA guidance document: Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA must be followed in preparing this portion of the work plan. Extensive revision and expansion of this section will be required in order to accomplish this objective. The following specific comments are provided:

a) Page 19-1,

Paragraph 1:

Description and details of the specific tasks to be performed as part of the FS must be included in the present RI/FS Work Plan.

Paragraph 2:

The text should be clarified to indicate that these FS scoping activities will be performed concurrently with the RI.

Paragraph 3:

What is meant by use of the term "applicable"? How will determination be made as to whether a given technology is applicable? The contractor's "engineering judgement" is not an appropriate selection criteria. Please refer to Chapter 4 of the guidance document for further clarification on the screening of remedial technologies.

General response actions must be developed prior to the identification of potential treatment technologies. This process must be more clearly identified and described. Please refer to the guidance.

b) Page 19-2:

Paragraph 1:

How do the screening and assessment of potential technologies differ? Are these really two separate steps? Please revise and expand this section in accordance with pertinent portions of the guidance document (e.g. Sections 4.1.2.1, 4.2.48 Figure 4-4). The selection criteria listed here are incomplete and incorrect.

Paragraph 2:

This section is out of place and should be deleted. Risk Assessment does not play a role in the technology or process option selection process. Some of the evaluation criteria used in the Detailed Analysis of Alternatives are risk-based (e.g. will the remedial action provide for overall protectiveness of human health and the environment). However, the Risk Assessment is not formally tied in to the process until after the RI/FS is completed (see Section 6.3 of the guidance).

Paragraph 3:

Please refer to the guidance for a complete listing and description of those steps in the FS process which follow the identification of potential

technologies and **revise/expand this** section accordingly. Also, please note that treatability studies are typically needed whenever treatment has been identified as an alternative. If treatability studies will **be** conducted, then the necessary information and plans, as **per** the guidance (Chapter 5), must also be included.

Paragraph 4:

The final task of the **FS** is to present a comparative analysis **of** alternatives against the evaluation criteria (see Section **6.2.2** of the guidance). **It is not** the task **of** the contractor to select the Remedial Action **for a site**. Please **refer** to Section **6.3** of the guidance document **for** further description **of** the selection process.

c) Page 19-3, Paragraph 2:

Greater detail on the organization and content of the **FS** Report **is** needed. Please refer to appropriate sections **of** the guidance document (e.g. Table **6-5**).

47) Page 20-1:

The concept **of** 90% and 100% draft reports may not be applicable for these **sites**. Why not just prepare one all-encompassing report **for** review?

48) Appendix A:

The site specific safety plans need to be updated. The plans given here for sites **8** and **22** were approved **6-10-89**. The decontamination procedure given on page **3** **is** not in conformance with the 1991 **ECB SOPQAM**. The plans also indicate that **OVA/ HNU**, micro-R-meter, and **O₂/explosimeter** monitoring equipment will **be** used in the field. This should also **be** noted in the work plan text.

49) Appendix B:

The following errors were noted on page **7**:

- A.** The method **shown** for mercury analysis **is** the one for solid and semi-solid waste only; the method for liquid waste **is 7470**.
- B.** **No** analyte and media are specified for **EPA** method **325.3**

GROUP I = SITE 17 (Transformer Storage Yard); SITE 18 (PCB Spill Area) and
SITE 28 (Transformer Accident Area)

1) General Comment:

The following comments, identified for the Group H Work Plan, are also applicable to this work plan and must be addressed in its revision:

1, 2, 3, 4, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 22, 24, 26, 27, 28, 29, 30, 31, 32, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 49.

2) Page 6-2:

Will the investigation for Site 2 include analyses for the constituents of concern for site 28, i.e. PCBs?

3) Page 14-3:

Why was no sample proposed for the northeastern corner of the gravel area?

4) Page 14-4:

Section 6.9.2 in the GQAPP merely references Section 6.5 (Soil Gas Survey) and Section 6.6 (Soil Sampling). This does not provide enough detail on exactly what techniques will be used for sediment sampling.

5) Page 14-4:

Given the length of time for which this site has been in existence, samples should also be collected from slightly deeper intervals if possible, i.e. 6 to 12 inches.

6) Page 14-6 and 14-10:

What geophysical investigation is being referred to here?

7) Page 14-78

Based on topography, the potential horizontal direction of ground-water flow in the surficial zone is toward the south at Site 17. Therefore, an additional monitoring well should be installed down-gradient south of the site, just north of Hovey Road.

Furthermore, the potential vertical ground-water flow direction between the Surficial Zone and the Major Producing Zone varies below NAS, Panacola. At higher elevation, such as the center of the peninsula, the water levels in the Surficial Zone are greater than the water levels of the Major Producing Zone. In these areas, the potential vertical ground water flow direction is from the Surficial Zone to the Major Producing Zone. At lower elevations, the water levels of the Major Producing Zone are greater than the Surficial Zone water levels, and the potential vertical flow direction is the reverse. Site 17 is located in an area where vertical ground water flow direction is the reverse. Cluster wells penetrating the Surficial, Low Permeability and Major Producing Zones must be installed at this site so that the vertical contaminant migration may be monitored.

8) Page 14-9:

The direction of horizontal ground-water flow at Site 28 is also toward the south in the surficial zone. An additional monitoring well should be installed south of the site, west of building 632.

9) Page 14-12:

Why will the samples listed in Table 14-2 be analyzed for gross alpha?

10) Page 14-14:

The proposed sample locations in Figures 14-4, 14-5 and 14-6 do not differ substantially from those locations given in Figures 14-1, 14-2 and 14-3. Why couldn't all the proposed samples be collected during one sampling event?

11) Page 14-17:

While it is acceptable to install shallow wells which bracket the water table, this plan does not appear to take into account the characteristics of the suspected contaminants on a Site-Specific basis. The proposed wells should prove adequate for the detecting contaminants which are less dense than water, but offers little assurance that denser contaminants, if present, will be detected. Ground-water investigative strategies must be more clearly tailored to reflect individual site characteristics. Please revise the work plan accordingly.

12) Appendix D:

The site specific safety plans need to be updated. The plans given here for sites 17, 18 and 28 were approved 6-10-89. The decontamination procedure given on page 3 is not in conformance with the ECB SOPQAM. The plans also indicate that OVA/ FNU, micro-R-meter, and O₂/explosimeter monitoring equipment will be used in the field. This should also be noted in the work plan text.

GROUP P - SITE 38 (Building 71)

1) General Comment:

The following comments, identified for the Group H Work Plans, are also applicable to this work plan and must be addressed in its revision:

1, 3, 4, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 18, 22, 24, 26, 27, 28, 29, 30, 31, 32, 35b, 36, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 49b.

Comment 7b., provided for the Group I Work Plane, should also be addressed for this work plan.

2) Page 3-3:

Since the actual procedures used by EnSafe in 1990 to remediate the contamination detected at this site were not included in this document, the methodologies cannot be reviewed. Please provide the necessary information.

3) Page 14-2:

Why not use both an HNU and OVA for health and safety monitoring?

4) Page 14-3:

Much of the information to be recorded by the sampling team during the Emissions Survey/Particulate Air Sampling appears identical to the information to be gathered during the Field Reconnaissance Survey. Please clarify.

5) Page 14-4:

Why will only the sediment samples be analyzed in the laboratory?

6) Page 14-4:

Section 6.9.2 in the GQAPP covers sediment sampling, but merely references Section 6.5 (Soil Gas Survey) and Section 6.6 (Soil Sampling). This does not provide enough detail on exactly what techniques will be used for sediment sampling. Please provide additional information.

7) Page 14-5:

Why will the samples be analyzed for gross alpha but not beta or gamma?

8) Page 14-6:

What is the rationale for only having two wells in the downgradient direction of the site (towards the bay)?

9) Page 14-7:

Many of the Phase I wells at other sites will be constructed of stainless steel; yet, for this site PVC is proposed. Considering that organics (including solvents) are the primary contaminants of concern, why is PVC proposed?

10) Page 14-8:

What studies will be performed to determine how tidal fluctuations may affect ground-water flow direction and gradient?

11) Page 14-10:

It appears from Table 14-2 that the Phase II samples will be analyzed for a greater number of constituents than samples collected during Phase I. Shouldn't this be reversed?

12) Appendix B:

The decontamination procedure given on page 3 does not conform with the ECB SOPQAM. The plan also indicates that OVA, micro-R-meter, O₂/explosimeter and Gillian pump (for asbestos) monitoring equipment will be used in the field. This information should also be included in the work plan text.

The Site Safety Plan mentions that there is a potential for airborne asbestos particles. This information is not discussed anywhere in the main text. Will asbestos sampling be conducted at this site to verify if this parameter is a problem?

GROUP O - SITE 39 (Oak Grove Campground)

1) General Comment:

The following comments, identified for the Group H Work Plans, are also applicable to this work plan and must be addressed in its revision:

1, 3, 4, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 49b.

Comment 7b., provided for the Group I Work Plans, should also be addressed for this work plan.

2) Page 6-2:

Figures that identify surface water location/runoff pathways, and the 100 year floodplain, if applicable, should be utilized in the description of the site-specific surface water hydrology to identify potential migration pathways.

3) Page 14-2:

Will samples from any of the identified "hot spots" be collected for analysis?

4) Page 14-3:

If there are areas of site 39 suspected to have asbestos contamination, why aren't samples to be collected early in the RI/FS to verify that this is a parameter of concern?

5) Page 14-6:

What is the rationale for compositing soil samples over 5-foot intervals? Will an interval this large permit adequate detection of any contamination present?

Several surface soil samples should be collected for grain size analysis to determine the extent to which, if any, dust/airborne particles act as a potential contaminant migration pathway.

6) Page 14-7:

Additional soil samples should be collected southwest of the site along Sherman Inlet. Two or three soil samples should also be collected between the inlet and the site.

7) Page 14-8:

What studies will be performed to determine how tidal fluctuations may affect ground-water flow direction and gradient?

8) Appendix B:

The decontamination procedure given on page 3 does not conform with the BCB SOPQAM. Section 6.3.2 discusses using a Geiger Mueller (GM) detector and an alpha scintillation detector. The text here references using a micro-R-meter and a gamma scintillation detector. The safety plan (Appendix B) only references using a Mini-Rad. Which of these instruments will actually be used for radiation monitoring?

ADDITIONAL COMMENTS PERTAINING TO ECOLOGICAL ASSESSMENT OF THE SITES INCLUDED IN GROUPS H, I, P AND Q

GENERAL COMMENTS

1. Section 14.1, Phase I - Field Screening:

In conjunction with the habitat/biota survey, a site diagram and a recent aerial photograph should be used to generate a map showing the locations of the different habitats located on the site and in nearby areas. For sites which primarily consist of building and paved surfaces, a map such as the site map for Site 38, Group P (Figure 2-2, showing buildings and concrete/asphalt/grass surfaces) would suffice.

2. Section 18., Baseline Risk Assessment:

For environmental concerns, the Baseline Risk Assessment should follow USEPA's Risk Assessment Guidance for Superfund, Volume 11: Environmental Evaluation Manual (1989).

3. Section 18.3, Toxicity Assessment:

While it is true that a toxicity assessment for human health concerns generally relies upon existing toxicity information, a toxicity assessment for the biota could involve toxicity testing (e.g. bioassays or chemical analyses of tissues) if the existing toxicity information is insufficient.

SPECIFIC COMMENTS

Groups I and P:

1. Section 14.1.2:

Indicate whether there is a suitable background or control sampling point for sediment. If one exists, a background sediment sample must be collected and the sampling location identified.

Groups H and Q:

1. Section 14.1.3.2:

For ecological concerns, the Phase I soil sampling should include samples at depths shallower than 5 feet.

Group Q:

1. Section 6.2, Page 6-2:

Check the distances to the nearby surface water bodies. According to Figure 2-1, Sherman Inlet appears to be located much closer than 700 feet west of Site 39. The distance is especially important with respect to the "marshy areas" associated with Sherman Inlet. Also, the closest distance to Pensacola Bay appears to be to the southeast rather than to the south.

ATTACHMENT A

Information Requirements for Justification of Alternative
Well Casing Materials for Groundwater Monitoring Well Construction

- I. EPA Region IV requires that groundwater monitoring wells be constructed of stainless steel (304 or 316 - first choice) or rigid PVC meeting NSF Standard 14 ("NSF WC" - second choice), which of these well casing materials to be used depends upon which would obtain the most representative groundwater sample. A justification must be submitted when monitoring wells constructed of PVC materials are proposed for use in collecting samples for organic analysis. Following are EPA's information requirements for justifying the use of PVC as the well casing material for groundwater monitoring wells.
1. The Data Quality Objectives (DQO) for the samples to be collected from wells with PVC casing per EPA/540/G-87/003, Data Quality Objectives for Remedial Response Activities.
 2. The anticipated compounds and their concentration ranges.
 3. The anticipated residence time of the sample in the well.
 4. The aquifer's productivity.
 5. The reasons for not using hybrid wells of PVC casings and stainless steel screens.
 6. Brief discussion of adsorption/desorption characteristics of the compounds and elements of interest for the type of PVC to be used.
 7. whether an anticipated increase in thickness of the monitor well wall would require a larger annular space.
 8. The type of PVC to be used and, if available, the manufacturer's specifications. Additionally, assurance that the PVC to be used does not leach, mask, react or otherwise interfere with the contaminants being monitored within the limits of the DQOs.
11. EPA acceptance of PVC well casing materials does not constitute approval of that casing material; therefore, if PVC is accepted for use, the following conditions shall apply:
1. The FACILITY accepts the risks that the use of alternate materials for groundwater monitoring may cause interferences or inaccuracies in the chemical analysis of samples from such wells. All compounds found in samples collected from the well will be considered to originate in the aquifer being monitored.

Alternative Well Casing Materials (Cont.)

2. Any such acceptance applies to the implementation of the specified RFI Work Plan **only**, and **any** other use of alternate materials for groundwater monitoring **must be granted by EPA separately**.
 3. **Any** major amendments or revisions to the referenced RFI Work Plan or the intended DQOs of the work plan may require reassessment of the acceptance for use of alternate materials by EPA.
 4. EPA reserves the right to refuse groundwater monitoring data from groundwater wells constructed of alternate materials from those specified in the Region IV SOP whenever such construction materials could cause the ground water monitoring data to fall to meet the necessary DQOs.
111. The information to justify the use of PVC well casing could be incorporated into the work plan and be inclusive for all sites where PVC casing will be used.
- IV. All field work and laboratory procedures must follow EPA Region IV Standard operating Procedure Quality Assurance Manuals (SOPQAM). The SOPQAM for field procedures is dated February 1991, and the SOPQAM for laboratory procedures is dated September 1990. Any deviation from EPA Region IV SOPQAM must be justified in writing and be approved by EPA.

August 2, 1991

ATTACHMENT 2

TECHNICAL REVIEW AND COMMENTS
DRAFT RI/FS WORK PLANS FOR GROUPS A THROUGH E
NAVAL AIR STATION (NAS), PENSACOLA
PENSAWLA, FLORIDA'

GROUP A (Operable Unit 1) :-
SITE 1 (Sanitary Landfill)

1) General Comment:

Notwithstanding the information in Section 14.2 of this document, which has been extensively revised, the RI/FS Work Plan for Group A contains few significant revisions over the July 1990 version. Given the very similar format of all RI/FS work plans submitted for NAS Pensacola to date, many of the comments submitted for the Group H, I, P, and Q Work Plans are expected to apply to the present work plan. For instance, references to the phased approach presented in Section 1. and throughout the text must be revised in accordance with Comment 1 for the Group H, I, P and Q Work Plane. In general, all comments on the H, I, P and Q work plane which are applicable to the Group A Work Plan must be addressed in revision of the latter document.

Of further note, the format of this revised document is somewhat confusing to the reviewer. The footnote which states "bold items enclosed in brackets denote changes to the last version of document" appears at the bottom of every page in Section 14.2. Yet none of this section has been bold-faced or placed in brackets. In order to determine that the section has been revised, the reviewer must read the first paragraph of the section which states that it "has been entirely revised". This leads the reader to wonder if similar statements have not been inserted in other sections of the document, and seems to defeat the purpose of using bold-faced text and brackets to indicate document revisions.

2) Page 3-4:

The author points out several inconsistencies in the groundwater data. Probable or possible reasons for these inconsistencies must be included in the text (e.g. any sampling difficulties, groundwater fluctuations, rainfall variations, etc.) .

3) Pages 14-12 through 14-13:

As stated on page 14-10, while surface water and sediment contamination was detected at Site 1 during Phase I, "it is not clear whether the nature, magnitude and distribution of the detected contamination are sufficient to constitute an environmental threat...". The work proposed in the RI/FS Work Plan must be clearly directed towards providing an answer to this question. The text later in this section indicates that only a habitat/biota survey will be performed. Wasn't the survey performed during Phase I? What assurance can be made that this survey will provide adequate information to answer the preceding question?

The work plan must clearly identify data gaps which must be filled in order to perform an ecological assessment. If, in the Navy's opinion, it is more appropriate to postpone the "filling" of some of these data gaps to the

Investigation of Operable Units 15 through 17, adequate justification for this approach **must be** provided. Regardless of how the **work is** divided between the current work plans (dealing with individual sites) and Operable Units 15-17 (dealing with larger ecosystems), all work must be proposed and performed in a manner which will permit accomplishment of the final goal (i.e. to complete an ecological assessment) as **effectively** and efficiently as possible.

4) Pages 14-13 through 14-14:

Text pertaining to the Baseline Risk Assessment (**BRA**) and **Feasibility Study (FS)** **must be** reworded to more clearly indicate the intent to complete the **RI/FS** and **BRA** during Phase **11**.

5) Pages 14-14 through 14-15:

Why wasn't the Contaminant Source Survey completed during Phase **I**? This activity should be completed at the beginning of an investigation **so** that a cost-effective sampling program can be planned.

6) Page 14-16:

Locations for all proposed background samples **must be** provided **so** that they can be evaluated. Will these samples be used **as** background for all sites?

7) Pages 14-18 through 14-19:

The logic behind the biased sampling plan must be presented. There are large areas of the landfill, some as big as 1000' x 500', with no sampling.

8) Page 14-18:

Additional surface water and soil samples **must be** collected from the intermittent creek west of the 1950 dump area, **southwest** of monitoring well TW021.

9) Page 14-19:

Because of the **degree of** contamination detected in the Phase **I** monitoring wells at site **I**, additional shallow wells penetrating the **the surficial** zone **must be** installed at the following locations to **determine** the horizontal extent of the contaminant plume. These locations include **one well west of** monitoring well TW001 near Bayou Grande, a well approximately 1,000 feet east of monitoring well TW013, and one well **approximately 1,000 feet east of** monitoring well TW011.

A well **cluster must be** installed approximately 400 feet south of monitoring well TW015. A shallow well is necessary here **to delineate** the extent of the lead plume that **is present** at well TW015. A well penetrating the major producing zone **is necessary** at this location because the potential horizontal **direction of ground-water** flow **is** toward the mouth **in** the major producing zone. The proposed locations of wells penetrating the **major** producing zone do not include **areas** downgradient of site **1**.

10) Page 14-28:

Surface water and **sediment** samples must be collected in **pairs** unless adequate **justification is** provided.

11) Page 14-30:

The number of soil samples proposed for analytical suite A analysis (177) seems somewhat excessive. Some type of field screening procedure should probably be used to limit the number of laboratory analyses required.

12) Page 14-33:

All monitoring well construction must be performed in accordance with **BSD's 1991 Standard Operating Procedures and Quality Assurance Manual**.

13) Page 14-35:

If groundwater modeling is to be performed for this site (as per Section 16.), **more** extensive aquifer testing must be performed during the (Phase 11) RI/FS. Please refer to pertinent **comments** for the Group H, I, P and Q Work Plans.

14) Page 14-38:

There is no EPA approval of these Interim Remedial Measures (IRMs). EPA must be notified and approval received before any IRMs are undertaken.

15) Page 14-40:

The topographic survey proposed here must be conducted simultaneously with the Engineering Survey discussed in Section 14.2.5.

16) Page 20-1:

Following completion of the Remedial Investigation, a single, Operable Unit-specific Draft RI/FS and Baseline Risk Assessment report shall be prepared and submitted for review. No other formal reports shall be prepared prior to transmittal of these documents. In the event that investigation beyond the proposed work (as modified in accordance with our comments) is needed to complete the RI, an addendum or supplement to the present work plan shall be submitted. The supplement shall include adequate explanation/justification for all proposed additional sampling (including presentation and interpretation of applicable data and any other pertinent information). It shall also provide clear assurance that the proposed sampling is intended to complete the investigation (i.e. provide adequate information to allow preparation of a Baseline Risk Assessment and selection of a Remedial Alternative).

17) Appendix A:

A map and directions to the nearest hospital should be included in the Site-Specific Safety Plan.

GROUP B (Operable Unit 2):

SITE 11 (North Chevalier Disposal Area)

SITE 12 (Scrap Bins)

SITE 26 (Supply Department Outside Storage)

1) The following comments on the Group A Work Plan are also applicable to this work plan:

1, 3, 4, 5, 6, 11, 12, 13, 14, 15, 16 and 17.

2) Page 1-1:

Based on Phase I investigative results, decision was made to proceed with a full-scale RI/FS for screening Site 12. This decision must be clearly stated somewhere in the present work plan.

3) Page 2-1:

Site 26 is located northwest of Chevalier Field.

4) Page 2-5:

The west side of the site is bounded by a paved road and the east side is bounded by a wooded area, according to Figure 14-4.

5) Page 3-2:

The location of well GM-27 and its construction details are not provided in this document. Please provide.

6) Page 14-22:

To fully delineate the extent of the contaminant plume in the surficial zone at site 11, additional monitoring wells must be installed along with those proposed for Phase 11. The locations, based on Phase I ground-water data, are as follows: one well approximately 400 feet southwest of building 3445; one well west of soil boring B009 on the west side of the abandoned road; one well west of monitoring well TW005 on the west side of the road; and one well east of soil boring B030.

7) Page 14-23:

At site 12 additional monitoring wells must be installed along with those proposed for Phase 11. The locations, based on Phase I ground-water data, are as follows: one well northwest of monitoring well TW002 on the northwest side of Asphalt Road; one well south of the chemical storage shed; one well north of building 1870; and one well west of boring B015 on the west side of the road.

8) Page 14-25:

A monitoring well must be installed at site 26 in addition to the monitoring wells proposed for Phase 11. The well should be located northeast of TW002 on the east side of the unpaved road. The proposed Phase II shallow monitoring wells 2 and 5 are located adjacent to monitoring wells TW002 and TW003. The rationale given for the locations of wells 2 and 5 is that contaminants were detected in TW002 and TW003. The depths that the wells will penetrate for Phase II are not discussed. However, it is assumed that wells TW002 and TW005

will be sampled during Phase II, and the new wells 2 and 5 will penetrate a deeper discrete interval so that the vertical extent of the contaminant plume in the surficial zone may be delineated.

9) Page 14-41:

Surface water samples must be collected directly into sampling containers whenever possible.

Surface water and sediment samples must be collected in pairs whenever possible.

10) Page 14-43:

What is the rationale for analyzing a significantly smaller percentage of the soil samples collected at Site 12 (36 of 74) for analytical suite A parameters?

11) Page 14-45:

Does existing information/data indicate that the potential for deeper groundwater contamination at Sites 12 and 26 can be conclusively eliminated? If not, why have no intermediate or deep wells been proposed for Phase 11 investigations at these sites?

GROUP C (Operable Unit 3):

SITE 2 (Waterfront Sediments)

SITE 13 (Magazine Point Rubble Disposal Area)

SITE 14 (Dredge Spoil Fill Area)

1) The following comments on the Group A Work Plan are also applicable to this work plan:

1, 3, 4, 5, 6, 12, 13, 14, 15, 16 and 17.

Comment 2 on the Group B Work Plan is also applicable to this work plan.

2) Page 1-1:

As stated in EPA's specific comment 1 on the Interim Data Report for Site 13, and as agreed to by the Navy in their response, future investigation of Site 13 must be performed in conjunction with the investigation of Operable Unit 10. EPA recommends that revision and finalization of a work plan for Site 13 proceed on an expedited schedule so that field work at these sites may proceed simultaneously and in accordance with the present investigative schedule for Operable Unit 10.

3) Pages 2-3 and 2-5:

Do the shaded areas in Figures 2-2 and 2-3 represent the believed boundaries of fill material at these sites? Said boundaries must be determined as accurately as possible and identified in these figures.

4) Page 2-3:

The information contained in Section 2.1, paragraph 3, must be shown on Figure 2-2.

5) Page 2-7:

The information contained in Section 2.3, paragraph 4, must be shown on Figure 2-4.

6) Page 7-5:

The sampling rate of 1.987 million gpm appears to be an error, based on the 46 gpm mentioned earlier.

7) Page 14-22:

An additional well must be installed at site 13 along with the proposed wells for Phase II. The source of contaminants at site 13 is from the industrial waste treatment plant toward the west. A monitoring well must be installed west of TW002 to delineate the westward extent of the contaminant plume.

Are the proposed monitoring wells believed to be adequate for the purposes of determining the full (i.e. lateral and vertical) extent of groundwater contamination at this site? If so, adequate justification must be provided.

8) Page 14-23:

New wells will be installed at Site 14 adjacent to Phase I wells TW015, TW002, TW012, and TW008. The depths of these Phase II wells must be provided. It is assumed that these wells will penetrate a deeper discrete interval in the

surficial zone than the Phase I wells, and ground water from all the wells installed during Phase I and Phase II will be sampled to determine the horizontal and vertical extent of the contaminant plume.

9) Page 14-38:

Surface water and sediment samples must be collected in pairs whenever possible, unless adequate justification is provided.

10) Page 14-39:

Why will triplicate samples be collected and analyzed for all shallow sediment samples?

Also, the total number of sediment samples proposed for Analytical Suite A analyses (103) seems rather large. Some type of field screening procedure should probably be used to limit the number of required laboratory analyses.

11) Page 14-42

Five shallow wells will be installed at site 14 during Phase 11: three to a depth of 30 feet, and two to a depth of 15 feet. The rationale for these depths must be provided, as well as clarification of which wells will penetrate which depths.

GROUP D (Operable Unit 4):

SITE 15 (Pesticide Residue Disposal Area)

SITE 24 (DDT Mixing Area)

1) The following comments on the Group A work Plan are also applicable to this work plan:

1, 3, 4, 5, 6, 12, 13, 14, 15, 16 and 17.

Comment 2 on the Group B Work Plan is also applicable to this work plan.

2) Page 14-18:

In addition to the proposed Phase II wells, the following wells must be installed at site 15 for the purpose of delineating the horizontal extent of contamination in the surficial zone: (i) one well northwest of well TW021, (ii) one well northeast of boring B015, and (iii) one well south of boring B010.

The potential vertical direction of ground-water flow at site 15 is from the surficial zone to the underlying major producing zone. Therefore cluster wells monitoring the surficial, intermediate, and major producing zones must be installed at site 15 to monitor and/or delineate the vertical extent of the contaminant plume. It is assumed that Phase II wells 1, 3, and 12 will penetrate discrete intervals deeper than adjacent wells TW021, TW019, and TW027 so that the vertical extent of the contaminant plume in the surficial zone may be determined. In addition, cluster wells must be installed at monitoring wells TW019, TW026, and TW024 in order to monitor for potential contamination in all three zones.

3) Page 14-19:

To delineate the horizontal extent of the contaminant plume at site 24 additional wells must be installed at the following locations: (i) one well between boring B003 and B006, (ii) one well 100 feet northeast of B001, and (iii) one well north of B012 on the north side of the road.

The potential vertical direction of ground-water flow at site 24 is from the surficial zone to the underlying major producing zone. Therefore cluster wells monitoring the surficial, the intermediate, and the major producing zones must be installed at wells TW015, TW016, and TW019.

GROUP E (Operable Unit 5):
SITE 30 (Buildings 649 & 755)

1) The following comments on the Group A Work Plan **are also** applicable to this work plan:

1, 3, 4, 5, 6, 12, 13, 14, 15, 16 and 17.

2) Page 3-2:

The reference to EPA toxicity is incorrect and must be replaced with EP toxicity.

3) Page 3-3:

The locations of these samples must be shown in some figure (possibly as an appendix). The text indicates that the samples were taken from a ditch east of the buildings, but this ditch is not indicated in any of the figures.

4) Page 14-16:

The potential vertical direction of ground-water flow at site 30 is from the surficial zone to the major producing zone of the Sand-and-Gravel aquifer. Therefore cluster wells penetrating these zones must be installed to monitor and/or delineate the extent of the vertical contaminant plume at site 30. Wells monitoring the major producing zone must be installed adjacent to proposed Phase II monitoring wells that will monitor the intermediate zones. These wells include 15, 22, 28, and 30.

4) Page 14-30:

In order to collect comprehensive data that ascertains the vertical and horizontal extent of the contaminant plume, ground-water samples must be collected from existing wells and from all wells installed during Phase I and Phase II.