



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

April 22, 1993

Mr. Stephen Chao
Naval Facilities Engineering Command
Western Division
900 Commodore Way, Bldg. 101
San Bruno, CA. 94066

Re: Horizontal Conduit Study Final Field Work Plan,
dated March 23, 1993

Dear Mr. Chao,

The U.S. Environmental Protection Agency (EPA) has reviewed the subject document. General and specific comments follow. EPA is concerned that strategies to determine sampling media and locations for the Phase II portion of this study have not been presented in this work plan. Please call me if you have any questions at 415-744-2383.

Sincerely,

A handwritten signature in cursive script that reads "Michael D. Gill".

Michael D. Gill
Remedial Project Manager
Federal and Technical Programs Branch

cc: Elizabeth Adams (RWQCB)
Josh Marvil (PRC) (Fax)
Fred Molloy (SAIC)
Cyrus Shabahari (DTSC)

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GENERAL COMMENTS

1. A logical approach of how the objectives, as presented in Section 2.0, will be accomplished has not been described in this work plan.

EPA realizes that the work plan itself is an approach. However, additional sampling to be conducted during Phase II is dependent upon the results of the Phase I investigation, yet the strategies to be employed to determine the media and locations for additional sampling are not presented.

For example, in order to map the storm drain and sewer systems, the Navy states that pipeline inverts will be surveyed and wire tracing will be used to resolve connectivity and location uncertainties for pipes not shown on the existing maps. Pipeline elevations will be interpolated between measured manhole locations. What is not described in the work plan is whether cross-sections of pipelines will be prepared and compared to known water table elevations. This type of strategy would determine where pipelines lie below the water table and assist in Phase II sampling decisions that ultimately will determine the extent of horizontal conduits.

EPA recommends that a section be added to the work plan that presents an overview of the strategies that will be used to accomplish the objectives. In particular, please describe what interpretive methods will be used to determine where the storm drain system and sanitary sewer lines intersect the water table. This would be a necessary first step in addressing the third objective of the study to assess the potential effects of these man-made horizontal conduits on groundwater flow patterns and potential influence on solute transport.

2. Phase II sampling should be justified. To assist in a cost effective Phase II sampling effort, please describe what interpretive methods will be employed to determine whether the storm drain system or sanitary sewer lines preferentially transport groundwater contamination. Phase II sampling media and locations, determined by an analysis of the Phase I investigation and a logical strategy, will preferably be targeted and cost effective. Please provide justification for Phase II sampling media and locations prior to proceeding with this phase of the study.
3. Please summarize what strategies will be employed during the investigation to determine interferences and/or impacts by the pipelines on the following geologic or manmade features:
 - interferences with sand channels;
 - interferences with pumping stations; and
 - interferences with roads and buildings due to compaction.

Please state whether an analysis of the effect of these features in the potential flow of contaminants through horizontal conduits will be presented as part of the study.

infiltration into or exfiltration out of pipelines. Please describe other techniques that will be employed to determine locations of infiltration into or exfiltration out of the pipelines.

5. **Section 5.2.1, Page 21**

This section qualifies which laboratory methods will be used to analyze soil and sediment samples. EPA Method 8020 for benzene, toluene, ethylbenzene, and xylenes (BTEX) is listed. Since samples will already be analyzed by an EPA CLP Method for volatile organic compounds (VOCs), EPA method 8020 would be redundant. Method 624 measures benzene, toluene, and ethylbenzene and Method 8240 measures benzene, toluene, ethylbenzene, and total xylenes.

- Is there a reason to retain Method 8020 from the list of soil and sediment analytical methods? Will both Methods 624 and 8240 be used to analyze VOCs?

6. **Section 7.1, Page 30**

Elevation and pipeline connection data will be compiled and then organized by a geographic information system (GIS). As an extension to this approach, EPA suggests utilizing GIS analytical techniques to calculate where the pipelines pierce the groundwater table. This could be accomplished by creating a data set representing the elevations of the pipeline segments and comparing it to an elevation model representing the groundwater table.

7. **Section 10.0, Page 37, 38**

The text mentions that Phase I field activities are expected to take place in Feb/March 93, yet the chart on page 38 shows these on a separate schedule. Please explain. The work plans should precede the field work.

4. The work plan states in Section 5.1.5 that information from previous investigations will be incorporated into this study including information from the work base study. EPA requires clarification as to whether an analysis of horizontal conduits potentially directing contaminants into the wetlands will be conducted. TCE and 1,2-DCE have been detected in groundwater samples in these sensitive areas.
5. Although the cover page says this document is "Final", it is being reviewed as a draft, since no versions have been delivered before.

SPECIFIC COMMENTS

1. Section 2.0, Page 3, 1st Paragraph

This section lists the underground infrastructure at NAS Moffett Field that could act as horizontal conduits. Additional underground structures that may or may not be present at the facility are drainage tiles. Clay tiles are often used to drain land overlying seasonal high water tables. Such conditions occur at NAS Moffett Field. Please respond as to whether the possibility of drainage tile lines being installed at the facility has been investigated.

2. Section 5.1, Page 6

The final sentence of the second paragraph requires further clarification. Limited sampling will be conducted to assess the potential value of future water and sediment sampling within the storm drain and sanitary sewer systems. A response to general comments 1 and 2 may help to clarify what strategy will be used to determine Phase II sampling locations.

3. Section 5.1.2, Pages 18 and 19

During Phase I, 10 water samples will be collected from the storm drain system and 7 water samples will be collected from the sanitary sewer system. The Navy states that these system water characteristics will be compared to groundwater characteristics. The Navy does not explain the purpose for comparing the system water characteristics to groundwater characteristics, nor is a rationale for the choice of system sampling locations presented.

- Please discuss the strategy for preliminary water sampling and present the rationale for the choice of sampling locations. Were sample locations chosen in pipelines that are potentially in contact with groundwater (i.e., pipelines that are located below the seasonal high water table)?

4. Section 5.2, Page 20

The Navy states "factors such as pipeline condition, potential for infiltration or exfiltration...will be evaluated during Phase II of the horizontal conduit study." Video surveying will be performed during the investigation which will assist in documenting