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Dear Mr. Flippo and Mr. Malinowski:

Enclosed please find the responses to comments on the Reconnaissance Activities Report for Naval Station, Treasure Island, Hunters Point Annex (HPA).

Should you have any questions regarding this matter, the point of contact is Commander, Western Division, Naval Facilities Engineering Command (Attn: Louise T. Lew, Code 1811, (415) 244-2551.)

By copy of this letter, the document is also being provided to other concerned regulatory agencies.

Sincerely,

Original signed by:  
MICHAEL A. MIGUEL  
Head, Environmental Restoration Branch

Encl:

(1) Response to Agency Comments on the Reconnaissance Activities Report

Copy to:

Regional Water Quality Control Board (Attn: Steve Ritchie)  
Bay Area Air Quality Management District (Attn: Scott Lutz)  
California Dept. of Fish & Game (Attn: Mike Rugg)  
U.S. Fish & Wildlife Service (Attn: Steve Schwarzback)  
National Oceanic & Atmospheric Administration (Attn: Chip Demarest)  
Hunters Point Technical Review Committee Public Member (Attn: Rev. Arelious Walker)  
City and County of San Francisco (Attn: David Wells)  
San Francisco District Attorney (Attn: Steve Castleman)

18 JAN 1991

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Writer: R. Powell, Code 1811RP, x2555  
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## NAVY RESPONSE TO EPA COMMENTS

The following presents the Navy's responses to general and specific EPA comments dated November 23, 1990, regarding the draft *Reconnaissance Activities Report, Remedial Investigation/Feasibility Studies, Naval Station, Treasure Island, Hunters Point Annex, San Francisco, California*, dated August 9, 1990.

In the EPA letter of November 23, 1990, a general comment in the cover letter and several specific comments in Attachment 1 indicate that the *Reconnaissance Activities Report* does not specify how the findings of the reconnaissance phase activities (Phase I) have been used to guide the subsequent primary (Phase II) and contingency (Phase III) phase field work. This observation has been noted; however, the primary purpose of the *Reconnaissance Activities Report* was to document the findings of the reconnaissance phase rather than to provide detailed recommendations on how the primary and contingency phases would be modified to address apparent data gaps. In general, the boring/monitoring well locations and sampling strategies were not changed significantly as a result of the reconnaissance activities. The primary phases as described in the group sampling plans and the subsequent contingency phases, as required, should adequately address site conditions. Data obtained from the reconnaissance activities have been used during the primary phase to select screen intervals for wells, to assess the need for cluster wells, to make minor adjustments to boring/well locations, and to prepare site-specific site safety plans. For example, a radiation survey was conducted at several sites to evaluate whether surface radiation was present and therefore might require additional safety precautions. Subsequent to the evaluation of reconnaissance and primary phase findings, contingency phase field work may be implemented to address any remaining data gaps.

### Specific

**Comment 1:** Page 1: It is stated that results of the Reconnaissance Activities will be used to identify data needs for the ongoing Phases II and III; however, in subsequent portions of the executive summary no suggestions are made for activities to address data needs identified.

**Response:** This comment has been noted and our response is presented above.

### Specific

**Comment 2:** Page 2: It was noted that portions of the northern Industrial Landfill boundary appear to extend beyond the property boundary. No recommendations are provided for Phase II or III activities to fill this data need.

**Response:** No offsite activities have been planned to date to delineate the Industrial Landfill boundaries. The Navy plans first to develop a better understanding of the type and extent of contaminants onsite prior to initiating an offsite investigation (if required). On the basis of the findings from ongoing Phase II activities at the Industrial landfill, the Navy may propose offsite field work in Phase III, the contingency phase.

**Specific**

**Comment 3:** Page 2: Soil gas readings described as "likely indicative of the presence of methane" in the Industrial Landfill are not addressed in terms of potential health and safety impacts.

**Response:** The data obtained during the reconnaissance activities, including data indicating the presence of high concentrations of methane within Industrial Landfill soil/refuse, were incorporated in the site-specific site safety plans for ongoing field activities. Field equipment, including explosivity meters and organic vapor analyzers (e.g., CGI, HNu, OVA), are being used to monitor the airspace adjacent to boreholes and trenches during field activities.

**Specific**

**Comment 4:** Page 3: The absence of bay mud in the northwestern portion of the Industrial Landfill indicates possible direct communication and potential contaminant migration between fill materials and groundwater. No indication is made as to whether this finding requires additional investigation beyond what is already planned for Phase II and III activities.

**Response:** The Navy is aware that, there is the potential for hydraulic communication between fill materials and the underlying undifferentiated deposits. At this time no additional activities have been planned beyond those already planned for Phase II activities. Groundwater quality within the shallow fill materials will be evaluated by sampling groundwater from shallow monitoring wells installed during Phase II. On the basis of these findings, deeper monitoring wells, if required, screened within the undifferentiated deposits may be installed as part of either Phase II or Phase III activities. The number and locations of these deeper monitoring wells will be based on a review of water-level and groundwater quality data from shallow monitoring wells.

**Specific**

**Comment 5:** Page 4: The alleged refuse disposal site in the Bay Fill Area which was not found during this Reconnaissance Activity, but subsequent observations indicated it might be located just outside the area surveyed. Specific additional activities such as test pits in the indicated area should be suggested.

**Response:** Trenching has been planned for Phase IIB at the Bay Fill Area to find and delineate the alleged refuse disposal site.

**Specific**

**Comment 6:** Page 4: Health and safety aspects related to radiation and methane for Phase II and III activities are not addressed for the Bay Fill Area.

**Response:** Site health and safety concerns regarding the potential presence of radioactive materials and methane at the Bay Fill Area (IR-2) have been addressed in the site-specific site safety plan. As stated in this plan, the airspace adjacent to and within boreholes and trenches is to be monitored for potential hazards using radiation meters, explosivity meters, and air quality meters (e.g., CGI, OVA, HNu).

**Specific**

**Comment 7:** Page 6: The containment vault which houses the pickling tanks may permit direct communication between the vault and groundwater. The need for Phase II and III activities related to this finding are not addressed.

**Response:** One monitoring well (IR09PPY1) was installed previously approximately 10 feet to the west of the containment vault. Additional shallow monitoring wells, including Well IR09MW38 approximately 30 feet to the southeast of the containment vault (downgradient), have been installed in the vicinity of the pickling tanks during Phase IIA activities. If the groundwater in the vicinity of the containment vault has been impacted, additional monitoring wells in the vicinity of the vault will be installed in Phase III.

**Specific**

**Comment 8:** Page 7: A north-south trending trough in the bedrock surface at the Battery and Electroplating Shop site may provide a preferential pathway for groundwater flow, and therefore contaminant migration. The need for Phase II and III activities related to this finding are not addressed.

**Response:** The Phase II borings and monitoring wells that have been installed at the Battery and Electroplating Shop site have provided some information regarding the morphology of the trough and associated deposits and the characteristics of groundwater within the trough. These include the borings and wells proposed in the Group II Sampling Plan and one additional cluster well installed at well location 13 to screen within the lower aquifer in the trough area. The need for additional activities to better characterize the trough is currently being evaluated; such activities, if required, will be recommended for Phase III.

**Specific**

**Comment 9:** General: No reference is made to the Well Survey (Section 4.0).

**Response:** This comment has been noted. See the response to specific Comment 14 for a discussion of the purpose of well survey.

**Specific**

**Comment 10:** Page 36: No clarification is being provided as to whether the ravine deposits belong to one of the four major geologic units described as underlying HPA or whether these deposits represent a separate and minor unit.

**Response:** Bonilla (1971)\* has described and mapped the ravine deposits in three areas in HPA. These deposits appear to represent only a minor geologic unit within the IR sites as a whole. Ravine deposits have been tentatively identified in one boring (IR10B003) drilled during reconnaissance activities. These ravine deposits generally consist of a mixture of angular rock fragments in a matrix of sand, silt, and clay which move downslope through ravines primarily by such colluvial processes as creep, mud flow, and debris flow. They are not readily distinguished from overlying fill materials; however, tentative identification as such was primarily because 1) the borehole (IR10B003) is located along the axis of a ravine, 2) ravine deposits are mapped approximately 500 feet to the southwest of the borehole, 3) these deposits extended deeper than other fill material in nearby borings, and 4) there was a significant decrease in percentage of gravel in the material. The classification of these deposits as "ravine deposits" may change as more data are obtained and evaluated during Phase III or during drilling at additional sites.

**Specific**

**Comment 11:** Page 37: If the criteria for identifying bay mud based on visual examination and geophysical logging is provided in the Sampling Plan or QAPP, it should be stated. Otherwise, it could be assumed that identification was based on judgment and experience of the geologist who, in that case, should have appropriate credentials.

**Response:** The identification of bay mud is made by both an experienced field geologist and a California registered geologist who reviews all boring logs and geophysical logs, and who is familiar with the geology throughout HPA. The classification of a deposit as bay mud is based on the stratigraphic relationship to other deposits (fill material, undifferentiated deposits) as well as on physical properties. Bay muds at HPA are described as dark gray to green gray, soft saturated (wet) plastic silts and clays with interbedded, discontinuous lenses of sand and peat. Clay and silt within the fill and undifferentiated deposits vary in color and are typically stiffer and less plastic.

**Specific**

**Comment 12:** Page 48: A measurement of 1,100 ppb for total hydrocarbons excluding methane is noted. However, no reference is made to this measurement in the executive summary. As the nature of hydrocarbon(s) detected was not determined, there should be a recommendation for further investigation and for health and safety precautions in the Industrial Landfill area where this measurement was recorded.

**Response:** Total hydrocarbons other than methane were detected in four locations in the Industrial Landfill area as stated in the executive summary. The specific data were discussed in more detail in Section 3.4.5, Soil Gas Survey, of the report. In Phase II, soil sampling and groundwater monitoring wells are planned to further investigate this area. The site-specific site safety plan for Phase II field activities has been modified accordingly to address the presence of total hydrocarbons in the soil gas.

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\* Bonilla, M.G., 1971. *Preliminary Geologic Map of the San Francisco South Quadrangle and Part of the Hunters Point Quadrangle, California, United States Geologic Survey Miscellaneous Field Studies Map MF-311, 1:24,000.*

**Specific**

**Comment 13:** Page 53: Asphalt-covered areas such as the Suspected Burn Area should be noted for future investigation if not already planned in the Phase II and III activities.

**Response:** Soil borings and monitoring wells will be drilled and installed in the asphalt-covered areas of the Bay Fill Area, including the Suspected Burn Area, as part of Phase II activities.

**Specific**

**Comment 14:** Section 4.0, Well Survey: The identification of locations of 191 offsite wells for which no other information is available (Table 16) seems to have little value. If the purpose of this survey was to determine groundwater use in the vicinity of the site, this should be stated and a conclusion could be drawn (e.g., groundwater had been used more extensively in the past as indicated by the number of lost or abandoned wells compared to the number still in use).

**Response:** The purpose of the well survey was to initiate a database of both on- and offsite wells. Although the data for offsite wells are not useful in the primary phase of the investigation, future phases will likely require the evaluation of offsite groundwater quality and usage. Since this type of data search can a lengthy process, this task was initiated as part of the reconnaissance activities. As the remedial investigation proceeds and as needs arise for additional information regarding the status of offsite wells, a more detailed well survey, including the inspection of existing wells, may be performed.

**Specific**

**Comment 15:** Page 63: Typo - reference to Table 15 is next to last sentence should be Table 16.

**Response:** This typo has been noted.

**Specific**

**Comment 16:** Section 5.0, Conclusions and Summary of Results: This section could be improved by providing specific information how the Reconnaissance Activity findings should be applied to Phase II and III activities.

**Response:** This comment has been previously addressed in our response to the initial general comment presented in the cover letter.

## Comments on the Geophysical Survey

**Comment:** Purpose of the Geophysical Survey: Though it is not explicitly stated in the report, we assume that the purpose of the full-scale survey was also to delineate waste boundaries and/or characterize subsurface stratigraphy. The results of the test program resulted in the decision to use only EM and GPR for full-scale surveys of the areas Industrial Landfill (IR-1 [here referred to as "IL"]), Bay Fill Areas (IR-2 ["BFA"], GPR only), and Sub-Base Area (IR-7 ["SBA"], GPR only). MAG and VES were not used as it was thought that EM and GPR, in conjunction with test pits and borings, could obtain necessary information. It is clear from the full-scale survey results that the EM method was effective in delineating waste boundaries in the IL area. Neither EM nor GPR methods, however, can characterize subsurface topography. VES can. Albeit, VES is more time-consuming to run, it does result in a depth structure representation, not possible with EM. GPR often has too shallow penetration, particularly in the presence of clay, as in the Bay Mud. Either there was an implicit change in the purpose of the full-scale survey from that of the test survey, or the results of the full-scale survey only met half of its purpose (waste boundary delineation) - and for only one area at that. The only notable results appear to be from the full-scale geophysical survey and is that of delineation of the waste boundaries in IL, primarily from EM with a little contribution from GPR, as presented in Plate 22.

**Response:** Surface geophysical techniques were tested and subsequently used at HPA primarily to delineate boundaries between emplaced fill such as industrial or sandblast waste and "naturally occurring material" which may in some cases include other fill materials. Electromagnetic (EM) and to a lesser extent, ground penetrating radar (GPR) methods were shown to be the most useful techniques in delineating landfill boundaries.

Other techniques, including vertical electrical soundings (VES) were also tested to evaluate their effectiveness in characterizing subsurface stratigraphy. As is described in Table 8 of the *Reconnaissance Activities Report*, VES appears to be an effective technique for delineating subsurface stratigraphy in the Bay Fill Area and we can assume it may possibly be effective in other areas of HPA. If more detailed characterization of the stratigraphy is needed, the use of VES will be reevaluated for implementation during Phase III activities. However, numerous borings and wells were planned to facilitate collection of soil and groundwater samples for chemical analysis; stratigraphic information would therefore be provided by these borings and wells.

**Comment:** Presentation of the Results: There is some inconsistency between the tenor of Table 8 and the text of the report. Specifically in a couple places, Table 8 reads to the effect that the geophysical survey results were more effective in attaining their objectives than they were according to the text. Where the table uses words like "may represent" and "suggests", the text gives more negative impression using "not clear" and "limited use".

The report (p. 20) notes that there was interest in whether hydrocarbon wastes floating above the groundwater table could be detected. In Table 8, it is noted that EM and VES surveys (during the test survey) may be indicating subsurface hydrocarbons in the Oil Reclamation Ponds (IR-3 ["ORP"]). Though the table implies the hydrocarbon detection was a possibility, the text (p. 40) indicates that EM for this purpose in ORP was of limited use. In the text there is no discussion of the effectiveness of VES for hydrocarbon detection.

**Response:** The inconsistencies between Table 8 and the text with regard to the usefulness of EM and VES surveys in indicating subsurface hydrocarbons (in the Oil Reclamation Ponds) has been noted. Although the EM and VES data showed zones of increased resistivity that could be indicative of floating hydrocarbons on the groundwater, neither data set was correlated with areas of known hydrocarbon waste.

**Comment:** In Table 8 GPR in the ORP gave a sharp change in reflection character and signal penetration at suspected transition zone between serpentinite fill and sandblast debris piles. The text (p. 52) notes that at this location GPR recorded a sloping reflection suggesting some type of subsurface boundary, the character of which could not be determined.

**Response:** Table 8 summarizes the overall results for the geophysical surveys at the Bay Fill Area and Oil Reclamation Ponds. The text comment refers specifically to GPR profile IR02GP18 which showed a sloping reflector assumed to be associated with the sandblast debris. However, Test Pit IR02T011 along this line did not encounter sandblast debris. Plates G3-1, G3-2 and G3-3 show the change in GPR signal character at the suspected transition zone.

**Comment:** The data in Appendix G, Table 9, and the text show some inconsistencies:

In Table 9 GPR records suggest a change in the subsurface in IL for records IR01GP02 and IR01GP03, but not IR01GP01. In the Appendix records IR01GP01 (Plate G1-3) and IR01GP02 (Plate G1-4) do not appear that different and neither has any annotation by the geophysical contractor. The only annotation among the three records is of IR01GP03 (Plate G1-6) that indicates a possible landfill anomaly. The text (p. 45-46) notes that IR01GP02 reflects a subsurface change (consistent with Table 9, but not annotated in data), however, IR01GP03 did not show a definitive change that might indicate a landfill boundary. Is the text misrepresenting the data?

**Response:** The text (p. 45-46) and Table 9 do not appear to accurately reflect the GPR records. A review of Plates G1-3, G1-4 and G1-6 indicates that Lines IR01GP01 and IR01GP02 are similar and show little change in the subsurface. Line IR01GP03 shows a possible change in subsurface conditions at 60 feet along the line as noted on Plate G1-6.

**Comment:** Table 9 and annotation of the GPR data for SBA indicate record changes suggesting subsurface changes only for record IR07GP01, and not IR07GP02, IR07GP03, and IR07GP04. The text (p. 57), however, notes that all four GPR profiles showed indications or subsurface lithology changes that might suggest boundaries of sandblast wastes.

**Response:** A review of the data indicates that only GPR line IR078GP01 shows evidence of an area of possible sandblast wastes as stated in Table 9. The text is incorrect.

**Comment:** The most effective presentation of the geophysical survey is for the EM survey. This may be appropriate since the most information was obtained from this method. Plate 22 is a very useful presentation of the results. It would have also been helpful to have had the actual data presented as a separate contour plot, as is usually done, to allow for additional assessment of the interpretations. For example, with a contour plot the definition of the 3 EM Type ranges may be more readily apparent. EM data was also obtained during the test survey for the BF and ORP areas. It would be helpful to have this data as clearly presented in the main report as was the EM data for IL. It may help in clarifying why EM was not used outside of the IL area.

**Response:** The values for both the soil conductivity and the in-phase responses show a high degree of variability within landfill areas. Often, high amplitude localized responses result from surface conditions (such as metal fences, poles, surface debris). A contour map of these data would become very complex within these areas and would not effectively represent the subsurface conditions at the site. It appeared appropriate to present the profiles and to summarize the interpreted results as shown on Plate 22. The EM data can be used to prepare contour maps, if required, for future reports.

Because only a few EM profiles were performed during the test program in the Bay Fill and Oil Reclamation Pond areas, it was not possible to provide a meaningful results map for these areas. Profiles of all EM data were presented in Appendix G.

## Comparison to Sampling Plan

**Comment:** **Group I Sites: Industrial Landfill, Bay Fill Area, and Oil Reclamation Ponds: Two subjects identified in the Sampling Plan, but not clearly addressed by the Reconnaissance Activities Report are that 1) the survey data was to be used to identify subsurface obstructions and structures and, 2) the information was to be used too in designing safety protocols during primary investigations.**

**Response:** All soil boring and monitoring well locations for Phase II were surveyed using geophysical techniques prior to drilling to clear drilling locations for subsurface obstructions and structures. If potential obstructions were detected, the drilling locations were moved to an adjacent "cleared" location. These activities were not conducted as part of the reconnaissance activities; therefore, they were not included in the *Reconnaissance Activities Report*. Information obtained from the Phase I (Reconnaissance) activities was used in the development of site-specific safety plans for Phase II activities at the Group I sites.

**Comment:** **An additional objective was to assist in delineating the Triple A sites. It is not clear from the Reconnaissance Activities Report whether the Triple A sites were delineated or not.**

**Response:** One objective of the remedial investigation, inclusive of Phases I, II, and III, is to delineate the Triple A sites at HPA. This was not an objective for Phase I activities exclusively. The Phase I activities have provided preliminary data regarding the site hydrogeology and landfill boundaries which will be evaluated in conjunction with soil and groundwater data obtained during the Phase II activities and, if required, the Phase III (contingency) activities to delineate possible Triple A site boundaries.

**Comment:** **Group II sites: Tank Farm, Building 503, Pickling and Plate Yard, Battery and Electroplating Shop, and Building 521.**

**In the Sampling Plan for the Tank Farm, it was stated that survey data would be used to locate buried piping as well as utility lines and other subsurface obstructions [prior] to drilling; however, this was not addressed by the Reconnaissance Activities Report.**

**Response:** As stated previously, clearance prior to drilling was not performed as part of the recommended activities.