



DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY, WEST
NAVAL FACILITIES ENGINEERING COMMAND
900 COMMODORE DRIVE
SAN BRUNO, CALIFORNIA 94066-5006

N00217.003876
HUNTERS POINT
SSIC NO. 5090.3

IN REPLY REFER TO:

5090
Ser 6223/L9197-1
16 July 1999

From: Commanding Officer, Engineering Field Activity, West, Naval Facilities Engineering Command
To: U.S. Environmental Protection Agency (Attn: Ms. Sheryl Lauth/2 copies)
California Department of Toxic Substances Control (Attn: Mr. Chein Kao)
California Regional Water Quality Control Board (Attn: Mr. David Leland)
Subj: DRAFT PETROLEUM CORRECTIVE ACTION PLAN FOR PARCEL B; AND
DRAFT FINAL WORK PLAN FOR PETROLEUM CORRECTIVE ACTION
PLANS, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA
Encl: (1) Response to comments, Draft Petroleum Corrective Action Plan, Parcel B, dated
11 Nov 1997; and Response to comments, Draft Final Work Plan for Petroleum
Corrective Action Plans dated 10 Mar 1999.

1. Enclosure (1) is forwarded for your review.
2. Please direct any comments or questions to the Remedial Project Manager, Ms. Glenna Clark, Code 6223, at (650) 244-2659.

RICHARD E. POWELL
Lead Remedial Project Manager
By direction

Copies to:

Ms. Karla Brasaemle (Roy F. Weston, Inc.)
Mr. Jim Sickles, (Tetra Tech EMI)
Mr. Byron Rhett (San Francisco Redevelopment Agency)
Ms. Amy Brownell (San Francisco Department of Health)
Ms. Jill Fox (HPS RAB Co-chair)
Ms. Christine Shirley (Arc Ecology)

**RESPONSE TO AGENCY COMMENTS ON
DRAFT FINAL WORK PLAN FOR PETROLEUM HYDROCARBON
CORRECTIVE ACTION PLAN FOR
HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA**

This document presents the Navy's responses to comments from the California Regional Water Quality Control Board (RWQCB) on the Draft Final Work Plan for Petroleum Hydrocarbon Corrective Action Plan for Hunters Point Shipyard (HPS), San Francisco, California, dated March 10, 1999. The comments addressed below were received from RWQCB on May 11, 1999.

RESPONSES TO RWQCB

General Comment

1. Comment: The detection limit summary table (Table E-1) indicates that detection limits were elevated above the screening criteria at many wells for all or some of the groundwater sample analyses. This occurred frequently for TPH-gasoline analyses. Please explain how the Navy will address this issue.

Response: For the field work to be performed under the above-referenced draft final work plan, the analytical laboratory was instructed to provide detection limits for petroleum hydrocarbon analyses of soil and groundwater samples below the screening criteria presented in the draft final work plan. The Navy recognizes that some of the analytical data prior to 1993 had detection levels higher than the criteria presented in the draft final work plan, and that it may be necessary to resample and reanalyze the groundwater at HPS where detection levels are above the to-be-determined remedial action levels for petroleum hydrocarbons.

2. Comment: It is the RWQCB's expectation that results generated from this sampling effort and previous sampling and testing efforts (including the bioassays completed under an earlier phase of work) will be applied in the development of remedial action objectives and target cleanup levels for petroleum hydrocarbon-impacted areas. The RWQCB does not concur with or support the Navy's unilateral and unsupported position that the previous work done as part of the CAP program is not longer relevant or useful. In addition, this work plan does not appear to address the development of screening levels or target cleanup levels. The RWQCB continues to expect that these issues will be taken up separately from the data collection effort that is the focus of this plan.

Response: The Navy will consider using some of the data obtained to prepare the AFA Draft Parcel B Corrective Action Plan (CAP). However, the Navy believes that the mysid bioassay results described in the AFA Draft CAP were flawed and therefore are not applicable. Some compounding issues which argue against use of the bioassay data are described below.

In performing bioassays, the assumption often is made that the only components contributing to toxicity is dissolved TPH; however, it has been showed that mysid are very sensitive to ion ratios (Douglas, W.S. and M.T. Horne, 1997, "The interactive effects of essential ions and salinity on the survival of Mysidopsis bahia in 96-d acute toxicity test of effluents discharged to marine and estuarine receiving waters." Environ. Toxicol. Chem. 16: 1996-2001).

Mysids are also very sensitive to small amounts of metals (less than the acutely toxic concentration), pesticides (with LC50s below 1 ppb) (Nimmo, D.R. and T.L. Hamaker, 1982. Mysids intoxicity testing - A review. Hydrobiologia 93:171-178), and suspended particles (Nimmo, D.R., T.L.Hamaker, E. Matthews, and W.T. Young. 1997. The long-term effects of suspended sediment on survival and reproduction of mysid shrimp, Mysidopsis bahia in the laboratory. NOAA Technical Memorandum. ERL MESA, New York Bight Project, 1997).

The Navy believes that these other factors can lead to a misrepresentation of the toxicity of TPH.

In addition, the Navy believes that there are serious technical problems with using acute or chronic toxicity tests with one or a few species to estimate the toxicity of petroleum hydrocarbons in field-collected samples of soil and groundwater as part of ecological risk assessment (M. Power and L. S. McCarty, 1997, Fallacies in ecological risk assessment practices, Environ. Sci. Tech. 31: 370A-375A; Battelle, November 6, 1998, Draft Ecological Risk Based Approach to Developing Cleanup Goals Protective of Aquatic Receptors for Petroleum Contaminated Sites at Naval Facilities, Section 4.0, Prepared for Engineering Field Activity West, NAVFAC, San Bruno).

The development of cleanup levels will be addressed in the CAPs.

3. **Comment:** **The response states that no site-specific survey information is available with which to assess areas of subsidence. It is the understanding of the RWQCB that topographic maps of the facility exist for various dates. Could not these be used to assess differences in elevation at specific locations? The Navy should explain what it means by the statement that no site-specific survey information is available.**

Response: Although there are some limited and inferred pre-1989 data, the Navy believes that there are insufficient facility-wide topographic survey data to quantitatively assess or map landsurface subsidence at HPS. The basis of subsidence identification at HPS is anecdotal information and several site-specific observations at Building 406.

4. **Comment:** The RWQCB acknowledges that the exhaustive, comprehensive data sets proposed for collection at a selection of locations at Hunters Point likely will not be required at all areas of concern. It is not clear how the Navy will demonstrate natural attenuation at other locations where, for example, no groundwater monitoring has been conducted in the last 3-5 years. In any case, a demonstration acceptable to the RWQCB that each former UST site meets the low-risk soil and groundwater criteria will be necessary as a condition of closure. The RWQCB anticipates that this will involve collection of additional data at those locations that the Navy may wish to propose for closure.

Response: The Navy acknowledges that additional groundwater information may be required to demonstrate natural attenuation of petroleum hydrocarbons in locations where there are no current data to compare to historical data. In addition, the Navy will address the low-risk soil and groundwater criteria as a condition of closure at former Underground Storage Tank (UST) sites as a separate action from the petroleum hydrocarbon CAP.

5. **Comment:** On January 15, 1999, the State Water Resources Control Board Office of Chief Counsel concluded in a memorandum to the SWRCB Executive Officer that existing law prohibits the issuance of a closure letter for a petroleum hydrocarbon storage tank site that has not been tested for the presence of MTBE, regardless of whether the site is unlikely to have had any MTBE. The Navy should consider additional sampling to address this requirement. The additional sampling at UST sites for which the Navy anticipates seeking closure could be accomplished as part of this phase of CAP sampling.

Response: The Navy sampled groundwater for methyl-tert-butyl-ether (MTBE) analysis at HPS at a limited number of sites as a cursory screening. The Navy may evaluate MTBE at UST sites as a separate action from the petroleum hydrocarbon corrective action plan.

Comments on Navy Responses to Specific Comments

1. **Comment:** Response to Comment 2, HPS groundwater sink. Review of the groundwater elevation contour map presented in Figure 17 shows flow towards the bay in several areas also shown as being within the groundwater sink. Please explain. In particular, the basis for the portrayal in Figure 17 of large groundwater capture areas in Parcel B is not supported by the groundwater contour data presented on the figure. A flow net explicitly showing interpreted flow direction could be useful.

Response: In constructing Figure 17, the Navy weighed the likely impact of utility lines below the groundwater table, as well as the sparse groundwater-level measurements noted in Parcel B and other data-sparse areas. The inferred groundwater sink in these areas are shown on Figure 17 by dashed lines noted in the Map Explanation as "Groundwater sink inferred from sewer lines." The use of dashed or inferred contours is standard practice. The groundwater level data collected from implementation of the Draft Final Work Plan will be used to verify the sink and its location. The Navy will consider the use of a flow net to interpret the groundwater level data.

2. **Comment:** **Section 3.1, p. 13, 3rd paragraph, 3rd bullet. The document should describe clearly whether sample selection for use of the SPLP would use these or other criteria. The results of previous CAP sampling and elutriate preparation indicate that samples containing TPH-d concentrations as low as 190 mg/kg produced significant elutriate concentrations.**

Response: The Navy used the soil sampling criteria described in the Draft Final Work Plan to select soil sample for synthetic precipitation leaching procedure (SPLP) extraction to assure that total petroleum hydrocarbons (TPH) would be detected in soil and elutriate and that there would be adequate analytical results to calculate leaching factors. The Navy acknowledges that several factors may contribute to a low TPH soil producing a high TPH leachate, including distribution coefficients, petroleum fraction and age, soil particle size, soil clay content, and soil total organic matter content.

3. **Comment:** **Responses to Specific Comments 11, 14, and 15. The RWQCB anticipates that it will be necessary to collect additional data at the locations noted in the comments and at other locations that the Navy may wish to propose for closure. In any case, a demonstration acceptable to the RWQCB that each former UST site meets the low-risk soil and groundwater criteria will be necessary as a condition of closure.**

Response: Please see response to General Comment 4 above.

4. **Comment:** **Response to Comment 13. See Specific Comment 1 above.**

Response: Please see response to Specific Comment 1 above.

5. **Comment:** **Response to Comment 19. The response appears to have misinterpreted the comment. While the hypothesis that seasonal effects play a minor role in attenuation may or may not be true, the variations in time series data induced by seasonality must be addressed in interpreting the data. How does the Navy propose to accomplish this? The response seems to suggest that the Navy will ignore seasonality in interpreting the data. Is this correct?**

Response: The Navy acknowledges that there may be seasonality effects in the natural attenuation process. cursory review of metals and hydrocarbons analytical results from groundwater samples at HPS did not identify seasonality trends in the data possibly because there are several factors that may override seasonality trends, including dry years and wet years. The Navy agrees to revisit seasonality in TPH groundwater at a future date, if the data indicates a need to properly evaluate the data.

6. **Comment:** **Response to Comment 20. See Specific Comment 19 above.**

Response: Please see response to Specific Comment 5 above.

7. **Comment:** **Response to Comment 21. See Specific Comment 19 above. Also, the response describes a standard approach to interpretation of groundwater elevation data in characterizing groundwater flow directions. The concern of the RWQCB is that this standard approach does not appear to have been applied consistently to the groundwater elevation data presented, for example, in Figure 17. This is of particular concern in Parcel B.**

Response: Please see response to Specific Comments 1 and 5 above.

8. **Comment:** **Response to Comment 24. The response states that the Navy bioassay tests used elutriate from soil samples. This is partly true. Bioassays were also run using groundwater samples collected from Hunters Point. The Navy statement in the response that it does not consider the elutriate tests to be applicable has not been explained. On the contrary, the Draft CAP found much of the bioassay work and the results derived from the work to be useable. Nevertheless, the RWQCB stands ready to review any supplemental work plan for conducting bioassays that the Navy may wish to submit.**

Response: Please see response to General Comment 2 above. The Navy is considering additional bioassay testing, if necessary.

Additional Specific Comments

1. **Comment:** **Section 2.1, p. 3. The text states in paragraph 2 that the groundwater sink controls about 80% of A-aquifer groundwater, then states that about 39% of the total groundwater outflow is to the sanitary sewer lines. Please explain or reconcile these statements.**

Response: The Navy estimated the surface area of the HPS groundwater sink at about 80 percent of the A-aquifer and the volumetric flow of the HPS groundwater sink at about 81 percent (39 percent to sanitary sewer lines and 42 percent as storm drains), as noted in the draft work plan text. Please see Section 2.1, page 3, paragraphs 3 and 4.

2. **Comment:** Section 3.1, fifth bullet. The statement that dissolved motor oil constituents have not been identified as a potential risk driver for aquatic life is incorrect. As noted in previous Specific Comment 24, the Navy's previously completed bioassay work included results for a sample containing motor oil that suggested impacts to aquatic life at a concentration of 740 µg/L. The RWQCB does not consider the results of the bioassays to be irrelevant and continues to expect the Navy to use data generated from all its data collection efforts in assessing the need for action to protect human health and the environment in areas where petroleum hydrocarbons have been released. This criterion should be dropped.

Response: The Navy used the criterion in selecting soil samples for the Draft Final Work Plan. Please see response to General Comment 2 concerning the Navy's position on mysid bioassay data for petroleum hydrocarbons.

3. **Comment:** Section 3.1, p. 15. The following reference presents an alternative and more rigorous method of calculating a soil leachate factor from SPLP test results:
Odermatt, J.R., and J.A. Menatti, 1996. Methodology for using contaminated soil leachability testing to determine soil cleanup levels at contaminated petroleum underground storage tank (UST) sites. *Journal of Soil Contamination* 5: 157-169.

Response: The Navy will evaluate the suggested methodology.

4. **Comment:** Section 3.3. The Navy should be prepared to address the possibility that either data gathered in conjunction with this plan or analysis of these data and previously collected data will lead to a conclusion that areas in Parcels B, D, or E meet the criteria. Will the Navy have data adequate to complete an analysis in such an event?

Response: The Navy measured the same natural attenuation parameters at all selected groundwater locations, where feasible, under the Draft Final Work Plan, regardless of whether the groundwater area was classified as an inland groundwater attenuation study, HPS groundwater sink study, or shoreline groundwater attenuation study area. Therefore, the Navy believes that sufficient information was obtained under the work plan to demonstrate natural attenuation processes at the locations studied. Also refer to response to General Comment 4.

5. **Comment:** Section 3.4. The presence of a groundwater sink is likely to be a short-term phenomenon, given the planned redevelopment of the infrastructure at Hunters Point in conjunction with the overall redevelopment of the area. The Navy analysis should address a future condition in which the underground utilities are in good repair and no longer act to capture or remove groundwater.

Response: The Navy acknowledges that future changes in the utility system at HPS may alter the HPS groundwater sink and may therefore affect on the fate and transport of petroleum hydrocarbons in groundwater currently and historically captured by the HPS groundwater sink. The Navy proposes to evaluate the current TPH data within the HPS sink, and anticipates that it may be necessary to monitor or remediate TPH within the HPS sink in the future.

6. **Comment:** **Section 6.1. The Navy should provide a reference for the statement that leaching factors greater than unity reflect natural attenuation by sorption on soils. What is the relationship of the leaching factor and distribution coefficients?**

Response: The leaching factor is a ratio of the mass of contamination retained in the soil to the mass of contamination leached into water (from the SPLP test). Therefore, a leaching factor greater than unity indicates that the numerator exceeds the denominator, and that the mass of material retained in the soil exceeds the mass of material potentially leached into the groundwater.

The relationship between the leaching factor and the distribution coefficient is that both, in different ways, describes the tendency for the contaminant to sorb to the soil. The leaching factor represent the ratio of contaminant mass in the soil to that in the water and is based on measured contaminant concentrations of soil from the site and the elutriate produced by the same soil in the SPLP. The octanol distribution coefficient is the partitioning of the contaminant between octanol and water and it is used as a surrogate for theoretical determination of the tendency of the contaminant to sorb to the soil. The leaching factor and distribution coefficient will be determined for comparison purposes.

7. **Comment:** **Section 6.1. The text states that decreases in TPH concentrations between temporally separated sampling events include intrinsic biodegradation. The RWQCB commented on this language in the draft, and further notes that physical and chemical mechanisms such as leaching and volatilization could also lead to declining concentrations.**

Response: The Navy concurs that the term “natural attenuation” should be used here and not the term “intrinsic biodegradation.” The sentence should read “In addition, a decrease in TPH concentrations from currently sampled soils compared to prior sampling events in the same areas indicate that natural attenuation of TPH occurred in the soil between sampling periods.” The corrected term is underlined.

**RESPONSE TO ARC ECOLOGY'S COMMENTS ON
DRAFT FINAL WORK PLAN FOR ADDITIONAL DATA
FOR PETROLEUM HYDROCARBON CORRECTIVE ACTION PLAN FOR
HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA**

This document presents the Navy's responses to comments from Arc Ecology on the Draft Final Work Plan for Additional Data for Petroleum Hydrocarbon Corrective Action Plan for Hunters Point Shipyard (HPS), San Francisco, California, dated March 10, 1999. The comments addressed below were received from Arc Ecology on April 19, 1999.

Note that the formal 30 day comment period for the Draft Final Work Plan had expired prior to receiving these comments. Because comments were not received during the comment period, the document was considered final. Also note that the field work was underway by the time these comments were received. Because the work plan had been finalized and the field work had begun, these comments cannot be incorporated into this work plan; however, these comments will be considered during the development of future work plans. Note that the Navy believes that addressing these comments in the work plan would not have changed the field sampling approach.

RESPONSES TO ARC ECOLOGY

General Comment

1. **Comment:** **In the response to agency comments (Appendix E of the Draft Final Work Plan), the Navy states that the purpose of this document is to demonstrate if and at what rate natural attenuation or intrinsic bioremediation processes occur at HPS. Unfortunately, the authors of the work plan do a poor job of explaining how their proposed data collection activities will demonstrate whether and at what rate natural attenuation and intrinsic bioremediation processes are occurring at HPS.**

Response: The Navy appreciates Arc Ecology's suggestions to improve the work plan and will consider them in future work plans.

Specific Comments

1. **Comment:** **Section 1.1 (Purpose and Scope) should be rewritten. I suggest the following be substituted for the second sentence in this section:**

"Before these parcel-specific CAPs can be developed, however, the Navy must determine whether and at what rate natural attenuation or intrinsic bioremediation processes are taking place at HPS. These determinations require that the Navy collect additional data. This work plan explains what additional data are necessary and how they will be collected."

Response: The Navy understands that the proposed revision would be helpful in clarifying the goals of the work plan. The Navy will consider this comment when preparing future work plans.

2. Comment: **Section 3.0 Project Objectives and Technical Approach: I found this section to be incongruent—a mish-mash of what without a clear sense of why. It seems that four tests will be conducted, each requiring different site characteristics, each with an individual set of requirements. To clarify the test objectives and requirements I suggest that the Navy include the following table in Section 3.0:**

Test	Objective	Ideal Site Characteristics	Analyses to be Performed
TPH leaching potential	Determine the potential for TPH to leach from soil into groundwater	<ul style="list-style-type: none"> • TPH soil concentrations twice TPH screening criteria; • Underlying TPH-affected groundwater; • No CERCLA contaminants; • Uninfluenced by tidal action; • Uninfluenced by groundwater sink; • Accessible 	<ul style="list-style-type: none"> • TPH extractables on soil and leachate • TPH purgeables on soil and leachate • Total organic carbon on soil • pH of soil • Physical parameters of soil
Intrinsic Bioremediation	Measure parameters indicate that intrinsic biodegradation may be taking place.	<ul style="list-style-type: none"> • TPH concentrations in A-aquifer groundwater “relatively high” • No CERCLA contaminants • Monitoring well located inland of tidally-influenced areas. • Groundwater flows to Bay rather than to groundwater sink 	<p>On Groundwater:</p> <ul style="list-style-type: none"> • TPH-extractables • TPH-purgeables • Total organic carbon • Dissolved gases • Inorganic Carbon • Major anions • Iron II • Manganese II • Total dissolved solids • Alkalinity • pH • Conductivity • Oxidation-reduction potential • Temperature

Test	Objective	Ideal Site Characteristics	Analyses to be Performed
Attenuation— Groundwater Sink	Determine whether inadvertent removal of TPH is taking place via groundwater sink	<ul style="list-style-type: none"> • TPH concentrations in A-aquifer groundwater “relatively high” • No CERCLA contaminants • X years of groundwater monitoring results available • Outside of tidally-influenced zone • Groundwater appears to flow into groundwater sink. 	On Groundwater: <ul style="list-style-type: none"> • TPH-extractables • TPH-purgeables • Total organic carbon • Dissolved gases • Inorganic Carbon • Major anions • Iron II • Manganese II • Total dissolved solids • Alkalinity • pH • Conductivity • Oxidation-reduction potential • Temperature
Attenuation— Tidal Flux	Determine whether tidal flux and intrinsic biodegradation is removing TPH	<ul style="list-style-type: none"> • TPH concentrations in A-aquifer groundwater “relatively high” • No CERCLA contaminants • X years of groundwater monitoring results available • Inside tidally-influenced zone • Samples from nearby, preferably inland, wells available for comparison. 	On Groundwater: <ul style="list-style-type: none"> • TPH-extractables • TPH-purgeables • Total organic carbon • Dissolved gases • Inorganic Carbon • Major anions • Iron II • Manganese II • Total dissolved solids • Alkalinity • pH • Conductivity • Oxidation-reduction potential • Temperature

Response: The Navy will consider using the suggested format it in future work plans.

3. **Comment:** A figure should be added to Section 3.0 that illustrates each step in the work plan and decision points. It seems that four steps are necessary:
1. Identify areas where soil or groundwater are affected by TPH.
 2. Sort and screen identified sites according to test to be performed.
 3. Perform appropriate analyses.
 4. Draw conclusions.

Response: The Navy believes that a flow chart would be a good idea and will consider using one in future work plans.

4. **Comment:** Page 11, first paragraph: Natural attenuation must not be considered for floating product. Spreading floating product is not natural attenuation.

Response: The Navy believes that the natural spreading of floating product can lead to declining total petroleum hydrocarbon (TPH) concentrations by dilution in groundwater, sorption on soils, and intrinsic biodegradation, which would be considered a natural attenuation process.

5. **Comment:** Section 3.1 Soil Leaching and Natural Attenuation: How will the 20 samples be aggregated to calculate a single soil leaching factor? What relationship will the leaching factor have to TPH concentration? How will this relationship be captured in the soil leaching factor? How will the results of the "soil natural attenuation study" be used? Will factors be developed for application at other sites?

Response: The determination as to whether a single leaching factor or a range of leaching factors will be used to determine the potential to contaminate groundwater will be evaluated during the preparation of the CAPs. The rationale for the selection of leaching factor(s) will be presented in the CAPs.

Section 3.1 provides an equation which presents the relationship between leaching factor(s) and TPH concentrations. The equation calculates the soil leaching factor for TPH as a ratio of the analytical laboratory results for TPH concentrations in soil samples and in corresponding elute (leached groundwater) samples resulting from the Synthetic Precipitation Leaching Procedure (SPLP) extraction.

The Navy will perform statistical analysis on the calculated soil leaching factors to identify the range, distribution type, and measures of central tendency and variability. These calculated parameters, along with to-be-determined groundwater cleanup levels that are protective of salt-water aquatic life, may be used to help back-calculate soil cleanup levels if appropriate. These factors are site specific and will be used to propose cleanup levels at HPS, if appropriate.

6. **Comment:** **Section 3.2 Shoreline Attenuation Study: How will the data from this study be evaluated? What hypothesis is being tested?**

Response: The purpose of the shoreline attenuation study is to help evaluate and demonstrate the effectiveness of natural attenuation of TPH in groundwater along the shoreline in the tidally influenced zone (TIZ) as a result of tidal flux and intrinsic biodegradation. Sections 3.2 and 6.2 discuss the rationale of the shoreline groundwater attenuation study for TPH. Section 2.3 of Appendix B presents the data quality objectives related to groundwater within the TIZ.

The Navy will compare the TPH data collected in this work to TPH data collected earlier to establish if there has been a decline in TPH concentrations over time, and if so, at what rate. The TPH data collected will be evaluated to identify if tidal fluxes are significantly reducing the TPH concentration in groundwater throughout the half tidal cycle. In addition, the natural attenuation data collected will be evaluated to determine the presence and effectiveness of intrinsic biodegradation of TPH in groundwater along the shoreline. All of these factors will be considered in the preparation of the various Parcel CAPs.

7. **Comment:** **Section 3.2 Shoreline Attenuation Study: Sampling parameters for this study to not appear on Table 1, nor are they described in sufficient detail in Section 4.3 Groundwater Sampling and Analysis.**

Response: Sampling parameters for the inland groundwater attenuation study are presented in Table 1 (refer to the column "Groundwater Sampling" and refer to "Inland" within that column). Section 4.3 addresses inland groundwater sampling (see Section 4.3, page 23, last paragraph) and present sufficient detail regarding the sampling parameters.

8. **Comment:** **Section 3.4 Confirmation of Groundwater Sink and Effect on TPH-Affected Groundwater: How will tidal effects on TPH-affected groundwater be demonstrated?**

Response: The TIZ generally lies bayward and outside the study areas identified for groundwater sink confirmation. Therefore, tides are expected to have little or no effect on TPH-affected groundwater in these areas.

9. **Comment:** **Section 6.2 Shoreline Attenuation Study: I do not consider groundwater mixing and dilution caused by tidal fluxes along the shoreline to be remediation of TPH-affected areas.**

Response: The Navy considers natural processes that cause a decrease in the concentration of TPH in groundwater to be natural attenuation processes. Thus, groundwater mixing and dilution caused by tidal fluxes along the shoreline is a natural process and may be a factor to consider in a potential remedy for TPH-affected groundwater along the shoreline. In addition, the RWQCB has agreed to consider tidal mixing along the shoreline as a factor in a potential remedy, depending on whether or not the Navy can demonstrate its effectiveness at HPS.

10. Comment: **Section 6.3 Inland Attenuation Study: How will risk to aquatic ecological receptors be determined?**

Response: The scope of the Work Plan does not address risk to ecological receptors; however, the information obtained by this study will be helpful in the evaluation of the risk. The risk to aquatic receptors will be addressed in the parcel-specific CAPs. The methodology for determining the risk to ecological receptors will be proposed by the Navy to the RWQCB based on the results of this data collection effort in conjunction with any other appropriate methodologies currently available.

**RESPONSE TO AGENCY COMMENTS ON THE
DRAFT PETROLEUM HYDROCARBON CORRECTIVE ACTION PLAN FOR
PARCEL B, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA**

This document presents the Navy's response to the comments from the California Regional Water Quality Control Board (RWQCB) and the San Francisco Redevelopment Agency (SFRA) on the Draft Petroleum Hydrocarbon Corrective Action Plan for Parcel B at Hunters Point Shipyard (HPS), San Francisco, California. The comments from the RWQCB and the SFRA were dated January 20, 1998.

As agreed to by the RWQCB in a meeting held on May 7, 1998, the Navy is preparing a new CAP for Parcel B. Because a new CAP is being prepared, the Navy will not respond to the comments on a point by point basis. The Navy appreciates the RWQCB's and the SFRA comments and will utilize the comments in the preparation of the new CAP.