DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY, WEST
NAVAL FACILITIES ENGINEERING COMMAND
900 COMMODORE DRIVE
SAN BRUNO, CALIFORNIA 94066-2402

IN REPLY REFER TO:

5090
Ser 1842.5/7117
13 Feb 1997

Ms. Mary Rose Cassa, R.G.
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710

Subj: RESPONSE TO AGENCY COMMENTS ON DRAFT TIME-CRITICAL REMOVAL ACTION MEMORANDUM, NFD POINT MOLATE, CA

Dear Ms. Cassa:

Response to agency comments are provided in enclosure (1). Agency comments and Navy response to comments will be indexed and added to the information repository records.

The Navy is in the process of finalizing the Action Memorandum and proceeding with the design in order to expedite this Time Critical Removal Action. Differences between the agencies and the Navy exist over the length of the trench wall; these differences and agency concerns will be addressed during Phase II Remedial Investigation.

Please call me at 415-244-2638/2552 if you have any questions.

Sincerely,

Izzat Ahmadiyya

IZZAT AHMADIYYA
Remedial Project Manager

Encl:
(1) Response to Agency Comments

Copy to:
Department of Toxic Substances Control (Randy Adams)
Regional Water Quality Control Board (James Nusrala)
U.S. Environmental Protection Agency (Phillip Ramsey)

RESPONSE TO AGENCY COMMENTS
ON DRAFT TIME-CRITICAL REMOVAL ACTION MEMORANDUM, SHORELINE AREAS (IR-04) NAVAL FUEL DEPOT POINT MOLATE

REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) COMMENTS

GENERAL COMMENT

Comment 1: *RWQCB staff feel it is imperative for the Navy to continue the groundwater extraction trench extension design depicted in Figure 2-3, down to the fuel pier, approximately 400 feet to the south of the proposed design. There are several reasons for us making this request now. First, both the 1994 groundwater monitoring reports (March, June, September, and December) and the most recent groundwater sampling in September 1996 show levels of total petroleum hydrocarbons (TPH) as extractable up to 10,000 micrograms per liter (µg/L) in wells MW11-57 and PZ11-76. These monitoring wells are located between the end of the proposed trench extension design and the fuel pier at Point Molate. These groundwater contaminant levels are significantly greater than the TPH toxicity effects thresholds determined in the San Francisco International Airport study (Revised Site Cleanup Requirements, RWQCB Order 95-136). This study determined through soil elutriate bioassays that values above 200 µg/L total TPH are toxic to aquatic receptors. Secondly, the Site Cleanup Requirements for Point Molate (RWQCB Order 95-235) requires the Navy to provide a final design of the corrective action to capture contaminated groundwater beyond the trench extension by June 1, 1997, and to ensure implementation of this corrective action by December 1, 1997. The Navy must capture the entire length of the polluted groundwater depicted in Figure 2-9 with the proposed trench extension in order to comply with this Order. Lastly, the pump test results at well MW11-57 described in Section 2.2.2.3 show that pumping at MW11-57 caused saltwater intrusion in both the pumping and observation wells. This would argue that a containment wall is necessary in order to effectively contain the contaminated groundwater that is documented in the 1994 and the 1996 monitoring events. A Navy proposal to provide containment of the extent of the contaminated groundwater and floating free product to the north of the fuel pier would complete a timely and ecologically critical remediation project, and could potentially*

set Point Molate up for a no-further action Record of Decision at the completion of the Remedial Investigation/Feasibility Study process.

Response : The Navy and regulatory agencies agreed during Base Realignment and Closure (BRAC) Cleanup Team (BCT) meetings on August 27 and October 22, 1996, that the primary objective of the Site 4 removal action is to contain floating fuel immediately south of the existing extraction trench. The removal action recommended in the final action memorandum will satisfy this primary goal and is consistent with the Navy's commitment to protect human health and the environment.

Based on available site information, the Navy is unable to determine that contaminated groundwater poses an imminent threat to the San Francisco Bay ecology or potential human receptors. Consequently, the Navy does not believe it prudent to conduct large-scale extension of containment of site groundwater under a time-critical removal action. Rather, the Navy plans to evaluate potential risks associated with aqueous-phase petroleum contamination during the Site 4 remedial investigation/feasibility study (RI/FS), which is planned to begin in the spring of 1997. The RI/FS will allow thorough evaluation of Site 4 contamination and associated risks and provide a mechanism for determining the most economically and technically advantageous cleanup solution.

RWQCB's request to extend the containment wall to the fuel pier is primarily based on a comparison of site groundwater contaminant concentrations to potential cleanup requirements as presented in RWQCB Order 95-136, which was issued to the San Francisco International Airport (SFIA). The Navy does not believe that this comparison is appropriate for determining the length of the sheet pile wall under the Site 4 removal action for the following reasons:

1. The TPH evaluation presented by RWQCB assumes that aquatic organisms in San Francisco Bay will be directly exposed to contaminant concentrations detected in upgradient groundwater monitoring wells. This assumption ignores dilution of groundwater contaminant concentrations upon mixing with bay water and the evaporation of volatile contaminants (such as benzene, toluene,

ethylbenzene, and xylene) as a result of wave action. In addition, RWQCB's evaluation does not consider natural biological, chemical, and physical attenuation of groundwater contaminants during groundwater from upland areas to San Francisco Bay. These transport and attenuation parameters need to be considered before determining final site cleanup and containment requirements.

2. Cleanup requirements contained in RWQCB Order 95-136 are site-specific and not necessarily applicable to Naval Fuel Depot (RFD) Point Molate.

3. The total petroleum hydrocarbon (TPH) cleanup requirements contained in RWQCB Order 95-136 are based on a Tier 1-level risk screening and are considered tentative. The order requires that additional bioassay studies be conducted to verify preliminary toxicity test results. (Note that the preliminary toxicity results were used to "calculate" a TPH cleanup level; actual toxicity values are not provided in the order.) Furthermore, the order clearly states that a more detailed, Tier 2 evaluation may be conducted if SFIA believes that the Tier 1 standards are not applicable to the site because of unique contaminant, hydrogeologic, or ecological or human health exposure considerations. The Navy will determine appropriate cleanup requirements based on site-specific considerations and sound scientific bases.

The containment wall extension shown in the final action memorandum complies with RWQCB Order 95-235, Item 11. Item 11 of the order does not specify the extent of hydraulic containment required. The Navy believes that the proposed extension meets the objective of this removal action.

SPECIFIC COMMENTS

Comment 1: *Section 2.1.4. Release or Threatened Release Into the Environment of a Hazardous Substance or Pollutant or Contaminant, page 2-3. The Navy should provide the sediment results that are referenced as showing high TPH and Polynuclear Aromatic Hydrocarbons (PAHs) in the vicinity of the proposed design here in this section. The analytical results are discussed in the following Navy document: Shoreline*

Investigation, Soil and Phase I Sediment Data Summary, August 15, 1994. This will allow the reader to evaluate the potential impact of site activities in the vicinity of Drum Lot Number (No.) 1 on the off shore sediment environment. Additionally, the following sentence on page 2-3 needs to be revised: "Ambient levels of sediment contaminants in the bay are currently unknown, but should be evaluated before determining the impact of NFD Point Molate activities." This office, through the Regional Monitoring Program for Trace Substances (RMP), has determined ambient values for sediment contaminants in the San Francisco Bay Area. The Navy needs to compare the sediment values from the 1994 shoreline investigation with values determined in the RMP in the vicinity of Point Molate. These RMP numbers are the best attempt to establish ambient values in the bay.

Response: Sediment data will not be provided in the final action memorandum.

This is a removal action for source containment of floating product. A discussion of sediment impact is not relevant and will be addressed in the Site 4 RI phase.

Comment 2: ***Section 2.2.2, Current Actions to Date****. RWQCB staff understand that the Navy has partially complied with RWQCB Order 95-235 Task 2, Semiannual Groundwater Monitoring at a select group of wells, by monitoring the group of wells in Drum Lot No. 1 in Tables 2-4 through Table 2-7. However, staff request that the Navy monitor the analytical chemistry for the remainder of the wells listed in Table 1 of the Order in a timely manner. The Order states that the Navy will begin semiannual monitoring in 1996.*

Response: This comment is not relevant to the removal action. The Navy plans to award a contract for semiannual groundwater monitoring during the second quarter of fiscal year 1997.

Comment 3: ***Table 2-6, Drum Lot No. 1 Groundwater Sampling Results, Total Petroleum Hydrocarbons****. What is the detection limit for the TPH extractable parameters? The detection limit for TPH should be between 50 and 100 µg\L as stated in the Tri-Regional Board Guidelines for Underground Storage Tank Removal and Investigation,*

August 1990. This will ensure an accurate level of precision for petroleum measurements in groundwater.

Response: The detection limit for TPH extractables using U.S. Environmental Protection Agency (U.S. EPA Modified Method 8015 for diesel-range fuels is normally 0.1 milligrams per liter (mg/L) or 100 micrograms per liter (µg/L). This detection limit complies with the limit set forth in the document titled "Tri-Regional Board Guidelines for Underground Storage Tank Removal and Investigation" (August 1990). However, the practical quantitation limit (PQL) for this method varies based on the specific fuel standard used in the instrument calibration and the dilution factor used for each specific sample. For example, TPH extractables as motor oil or bunker fuel have PQLs that need those for diesel and JP-5, usually by one order of magnitude. In the case of the Modified Method 8015 analyses conducted for the October 1996 Drum Lot No. 1 groundwater samples, NFD Point Molate site-specific fuel standards were used, specifically for F-76 (diesel), JP-5, and bunker fuel. The use of these standards resulted in higher PQLs reported by the laboratory. The PQLs for the extractable ranges are as follows: diesel, F-76, JP-5, and other components - 0.25 mg/L (250 µg/L); bunker fuel - 2.0 mg/L (2,000 µg/L); motor oil - 1.0 mg/L (1,000 µg/L); and JP-4 - 2.0 mg/L (2.,000 µg/L). Text in the action memorandum will be changed accordingly to reflect these detection limits.

U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA) COMMENTS

GENERAL COMMENTS

Comment 1: *The U.S. EPA has reviewed the subject removal memo and has also reviewed comments provided by DTSC, RWQCB, and CDFG. U.S. EPA agrees with the state that the removal memo does not adequately address groundwater contamination in Drum Lot No. 1 and recommends that the containment wall be extended to include capture and control of groundwater contamination in the area of piezometer PZ11-76. U.S. EPA also agree with the state regarding a need for performance monitoring wells, geologic cross-sections, and an expanded data evaluation.*

Response: Removal action by definition (CERCLA and NCP) can not fully address groundwater contamination. Also, see the responses to RWQCB and California Department of Toxic Substance Control (DTSC) general comments.

Comment 2: *In general, the Navy has made a good initial effort to document the distribution and magnitude of contamination at Drum Lot No. 1. However, the removal memo does not support a decision to terminate the containment trench at a location between PZ11-75 and PZ11-74. Based upon statements made by the Navy, U.S. EPA understands that the decision to terminate the trench at the proposed location was based primarily on funding limitations. U.S. EPA also understands that additional funding is possible from the Navy for priority projects; therefore, U.S. EPA encourage the Navy to seek necessary funds as soon as possible.*

Response: The Navy's decision to limit the extent of the containment wall is consistent with the objectives of this removal action. Large-scale containment is not justifiable under this removal action. After comparing site groundwater chemical data to federal and state ecological screening criteria, the Navy is unable to identify an imminent threat to the shoreline ecology or human health. Therefore, the Site 4 removal action will not involve large-scale groundwater containment and instead will focus on the containment of floating fuel.

SPECIFIC COMMENTS

Comment 1: *Section 2.1.5, NPL Status. Please revise text to indicate that Pt. Molate has been preliminarily scored as part of the Preliminary Assessment/Site Inspection (PA/SI) and is a low priority, active Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) site.*

Response: Comment noted.

Comment 2: *Section 2.1.4, Release or Threatened Release. No discussion is provided regarding past disposal practices at the shoreline area/treatment pond site. Since contamination detected at Drum Lot No. 1 may be a result of disposal activities at the pond site, these*

documented releases (i.e., batteries, miscellaneous sludges, contaminated fuels...) should be discussed in this section.

Response: Drum Lot No. 1 is considered part of a separate Installation Restoration (IR) site, Site 4 or the Shoreline Area at NFD Point Molate. Although some influence on groundwater contamination in Drum Lot No. 1 can be attributed to migration of hydrocarbons in the Treatment Ponds Area toward Drum Lot No. 1, this influence is generally not considered the primary source of hydrocarbon contamination. The differentiation between Drum Lot No. 1 and the Treatment Ponds Area is based on geomorphologic attributes (specifically, the existence of subcropping shallow bedrock just north of monitoring well MW11-21, which forms a partial groundwater divide between the two areas). This subcropping bedrock extends from the hillside bedrock outcrop northeast of monitoring well MW11-21 toward and just north of the truck loading rack (Building 94). Drum Lot No. 1 and Treatment Pond Areas are probably hydraulically connected in the vicinity of monitoring wells MW11-16 and MW11-25. In fact, subcropping bedrock very likely serves to "channel" the migration of residual hydrocarbons along Diesel Road toward monitoring wells MW11-25 and MW11-93, and subsequently toward the chronic hydrocarbon seepage noted in the sandbag area before the installation of the Treatment Pond Area extraction trench. However, with the extraction trench in place and through the continued operation of southernmost extraction well EW-A, the hydraulic communication between Drum Lot No. 1 and the Treatment Pond Area should be significantly less than before and should reverse the potential for contaminant migration in groundwater from the Treatment Pond Area toward Drum Lot No. 1.

Comment 3: *Section 2.1.4. It may not be necessary to collect samples to determine background concentrations of metals and polycyclic aromatic hydrocarbons (PAHs). The RWQCB has characterized background metals and PAHs for the North Bay. These numbers can be found in the attached Table 3.2-4 (see Enclosure B) of the Draft Long-Term Management Strategy for the placement of Dredged Materials in the San Francisco Bay Region, Volume 1, April 1996, prepared by: U.S. EPA, Region 9; U.S. Army Corps of Engineers, San Francisco District; San Francisco Bay Conservation and Development*

Commission; RWQCB; and State Water Resources Control Board. The Navy should use the background data which already exists for the Bay.

Response: Sediment data will not be provided in the final action memorandum.

This is a removal action for source containment of floating product. A discussion of sediment impact is not relevant and will be addressed in the Site 4 RI phase.

Comment 4: *Section 3.3.3, Current Actions. U.S. EPA notes that soil borelogs that are referenced as contained in Appendix B are not provided. U.S. EPA prefers to review these logs prior to receiving a final removal memo.*

Response: Soil borelogs for newly completed Drum Lot No. 1 piezometers have been provided to the regulatory agencies.

Comment 5: *Section 2.2.2.2, and Table 2-1, Water Level and Product Thickness Measurements. U.S. EPA notes that the water levels and product thickness measurements are provided for all facility monitoring wells, however, only those wells within Drum Lot No. 1 were illustrated. U.S. EPA recommend that groundwater elevation contours and product thickness illustration be included for all wells listed on Table 2-1.*

Response: The inclusion of facility-wide water level contours is not pertinent to the evaluation of hydraulic conditions within Drum Lot No. 1 and will incur additional effort. However, additional water level and product thickness data collected on January 14, 1997, will be provided in the final action memorandum. Additionally, a revised figure depicting water level contours that extend into the Treatment Pond Area and South Shoreline may be provided in the final action memorandum.

Comment 6: *Section 2.2.2.4, Groundwater Sampling and Figure 2-5, Drum Lot No. 1 Groundwater Elevation Contours. Contrary to text, Figure 2-5 does not show locations of the thirteen (13) sampled wells or piezometers in Drum Lot No. 1; it shows the location of 20 existing wells/piezometers. Please clearly identify the thirteen wells sampled in Figures 2-3, 2-4, 2-5, 2-7, 2-8, and 2-9.*

Response: The figures depicting monitoring well and piezometers from which groundwater samples were collected in October 1996 will be modified so that sampled locations can be easily identified.

Comment 7: *Figure 2-5, Drum Lot No. 1 Groundwater Elevation Contours. For monitoring well MW11-54, the figure indicates 0.01-foot of diesel product was measured, however, Table 2-1 indicates "Bunker/Diesel."*

Response: The reference to the product type at monitoring well MW11-54 in Figure 2-5 will be modified to reflect the product type listed in Table 2-1. Monitoring well MW11-54 commonly contains a mixture of diesel and bunker fuel of a brownish-black color; however the consistency of the fuel is more often typical of diesel. During the January 14, 1997, water level and product thickness measurements at monitoring well MW11-54, the product type is again described as a diesel-bunker mixture, but this mixture had a consistency closer to that of diesel.

Comment 8: *Tables 2-4, 2-5, and 2-6. U.S. EPA requests that the three referenced data tables also include analyte-specific detection limits.*

Response: Analyte-specific detection limits (PQLs) for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and TPH purgeable and extractable compounds will be added to Tables 2-4, 2-5, and 2-6, respectively.

Comment 9: *Appendix C, Well Development Forms. U.S. EPA notes that nine (9) of the piezometers (PZ11-70, PZ11-71, PZ11-72, PZ11-73, PZ11-75, PZ11-76, PZ11-77, PZ11-78 and PZ11-79) are described as having noticeable hydrocarbon (HC) or fuel odors. Noticeable HC and/or fuel odors are also recorded in Appendix E, Sampling Forms, for monitoring wells MW11-19, MW11-20, MW11-21, MW11-54, MW11-55, and MW11-57. U.S. EPA notes that no photo-ionization detector (PID) or flame ionization detector (FID) field screening values are included in Appendices C or E; however, PID/FID field screening is typically conducted as part of field sampling and health and safety monitoring.*

Response: The value of photoionization detector (PID) and flame-ionization detector (FID) readings at wellheads are basically inconsequential to the interpretation of the groundwater data in Drum Lot No. 1 and provide less tangible information than physical observations of hydrocarbon occurrences, such as odors or sheen. It is quite common for a fuel odor to be sensed but not have a PID detection. This type of field information is extremely useful in evaluating the presence and type of product in groundwater. Because this type of information cannot be obtained from PID of FID readings alone, the action memorandum will not be revised.

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL (DTSC) COMMENTS

GENERAL COMMENT

The removal Action Memorandum does not adequately address the concept of a containment wall in the area of the Drum Lot No. 1. Department of Toxic Substance Control (DTSC) recommends including several conceptual drawings including cross-sections along the alignment of the proposed containment wall describing the geology of the site and the placement of steel sheet piling. Based on interpretation of groundwater data from September and December 1994, DTSC believes the proposed length of the containment wall as shown on Figure 2-3 will not contain all the groundwater contamination in the area of monitoring well MW-11-57, piezometers PZ11-73 and PZ11-76, and soil boring SB11-58. SB11-58 is not shown on Figure 2-3 and should be included. DTSC recommends that the containment wall be extended to capture groundwater contamination in the vicinity of PZ11-76 and MW11-58.

Performance monitoring wells or piezometers down gradient of the containment wall have not been included in this proposal. In the interim, following completion of the containment wall, extraction wells up gradient of the containment wall can be monitored for salt water intrusion when operation begins. The presence or absence of salt water in extraction wells will be an indication of the containment wall performance.

An evaluation of groundwater data for September and December 1994 and October 1996 by California Department of Fish and Game finds that the concentration of contaminants in groundwater in wells

outside the proposed containment wall of Drum Lot No. 1 may pose an environmental risk to the ecological habitat of San Pablo Bay.

Response: The Navy will provide detailed drawings of the proposed sheet pile wall alignment and a cross section along the alignment showing the site lithology as part of the Site 4 removal action design drawings, which will be submitted 30 days after final action memorandum submittal. Figure 2-3 in the final action memorandum will show the proposed alignment of the sheet pile wall. Section 5.1.1 of the final action memorandum will clearly state that the sheet pile wall will penetrate the continuous bay mud horizon.

The Navy does not plan to extend the containment wall to capture groundwater in the vicinity of piezometer PZ11-76 and soil boring SB11-58, (monitoring well MW11-58 does not exist). Soil boring SB11-58 was not completed as a monitoring well because of the presence of shallow bedrock and insufficient groundwater volume in this boring. Based on available site information, the Navy is unable to determine that contaminated groundwater in this area poses an imminent threat to San Francisco Bay ecology or potential human receptors. Consequently, the Navy does not believe it is appropriate to conduct large-scale containment of Drum Lot No. 1 groundwater under a time-critical removal action. Instead, the Navy plans to evaluate potential risks associated with aqueous-phase contamination during the Site 4 RI/FS, which is scheduled to begin in the spring of 1997. See response to the RWQCB general comment.

SPECIFIC COMMENTS

Comment 1: *Section 2.2.24 Groundwater Sampling Results. Groundwater sampling results for October 1996 are discussed in this section. Tables 2-1 through 2-7 summarize this data. DTSC notes that contaminants found in wells where groundwater will be contained by the containment wall are also found at well locations where a containment wall is not proposed (See Drum Lot No. 1 Data). Groundwater data from September and December 1994 support this finding. The December 1994 groundwater data shows higher concentration of contaminants in wells in this vicinity. This*

suggests seasonal variation most likely due to rain fall. DTSC recommends that this September and December 1994 groundwater data be included in this document.

Response: A detailed evaluation of contamination trends and presentation of chemical data from numerous sampling events is beyond the scope of the of the Site 4 action memorandum. Furthermore, presentation of data from these previous sampling events will not change the overall interpretation of site contamination or the proposed removal action approach. Therefore, the final action memorandum will discuss previous sampling events only but will not present historic groundwater (chemical) data.

Comment 2: *Section 2.3.1 Potential for Continued State and Local Response. Change the last sentence of the first paragraph to read, "The Regional Water Quality Control Board, San Francisco Bay Region, will be the lead agency for the purpose of addressing the California Environmental Quality Act for this action."*

Response: All references to CEQA will be removed from the final action memorandum.

CALIFORNIA DEPARTMENT OF FISH AND GAME - ENVIRONMENTAL SERVICES DIVISION (CDFG) COMMENTS

GENERAL COMMENTS

Comment 1: *In our view, the Navy must complete the entire extension of the cut-off wall to isolate San Pablo Bay from the source of contaminated groundwater. This action will ensure the best possible protection for natural resources in the Bay. San Pablo Bay is habitat for many important aquatic species. Listed below are some special status species which may occur adjacent to Point Molate.*

- *Winter-run chinook salmon (Oncorhynchus tshawytscha) - state endangered*
- *California least tern (Stema antillarum browni) - state and federal endangered*
- *Western snowy plover (Charadrius alexandrinus nivosus) - federal threatened*
- *American peregrine falcon (Falco peregrinus anatum) - state and federal endangered*

In addition to special status species, the Department has jurisdiction over the conservation, protection and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. In that role, we are concerned with minimizing impacts to all native species in San Pablo Bay. This responsibility extends to special habitats such as the eel grass beds adjacent to Point Molate.

Response: The Navy will assess the existing shoreline habitat and animal and plant species and potential ecological risks associated with Site 4 contamination during the Site 4 RI/FS, which is scheduled to begin in the spring of 1997. The Navy believes that until this assessment is complete, it is difficult or impossible to determine if large-scale containment of groundwater along the shoreline is warranted.

The CDFG indicates that a "containment wall will ensure the best possible protection for natural resources in the bay. While the containment presently provides effective protection of San Francisco Bay, the wall does not address final remedial goals. If the Site 4 RI reveals that a groundwater response is required, the most technically and economically sound cleanup method to meet project objectives will be determined during the Site 4 FS.

Comment 2: *While specific clean-up levels are not available for many of the contaminants found in the groundwater, soil and sediment at Point Molate, a groundwater cleanup standard has been developed for Total Petroleum Hydrocarbons Diesel Range (TPH-d). A clean-up standard of 200 µg/L has been set to provide ecological protection at the San Francisco International Airport. This number is based upon Sea Urchin Elutriate Bioassays. The plume adjacent to San Pablo Bay immediately north of the pier shows concentrations of bunker fuel in the groundwater as high as 16,000 µg/L. This level is unacceptable, and installation of the cut-off wall would provide protection to natural resources while making clean-up feasible.*

Response: The Navy and regulatory agencies agreed during Base Realignment and Closure (BRAC) Cleanup Team (BCT) meetings on August 27 and October 22, 1996, that the primary objective of the Site 4 removal action is to contain floating fuel immediately

south of the existing extraction trench. The removal action recommended in the final action memorandum will satisfy this primary goal and is consistent with the Navy's commitment to protect human health and the environment.

Based on available site information, the Navy is unable to determine that contaminated groundwater poses an imminent threat to the San Francisco Bay ecology or potential human receptors. Consequently, the Navy does not believe it prudent to conduct large-scale extension of containment of site groundwater under a time-critical removal action. Rather, the Navy plans to evaluate potential risks associated with aqueous-phase petroleum contamination during the Site 4 remedial investigation/feasibility study (RI/FS), which is planned to begin in the spring of 1997. The RI/FS will allow thorough evaluation of Site 4 contamination and associated risks and provide a mechanism for determining the most economically and technically advantageous cleanup solution.

RWQCB's request to extend the containment wall to the fuel pier is primarily based on a comparison of site groundwater contaminant concentrations to potential cleanup requirements as presented in RWQCB Order 95-136, which was issued to the San Francisco International Airport (SFIA). The Navy does not believe that this comparison is appropriate for determining the length of the sheet pile wall under the Site 4 removal action for the following reasons:

1. The TPH evaluation presented by RWQCB assumes that aquatic organisms in San Francisco Bay will be directly exposed to contaminant concentrations detected in upgradient groundwater monitoring wells. This assumption ignores dilution of groundwater contaminant concentrations upon mixing with bay water and the evaporation of volatile contaminants (such as benzene, toluene, ethylbenzene, and xylene) as a result of wave action. In addition, RWQCB's evaluation does not consider natural biological, chemical, and physical attenuation of groundwater contaminants during groundwater from upland areas to San Francisco Bay. These transport and attenuation parameters need to be considered before determining final site cleanup and containment requirements.

2. Cleanup requirements contained in RWQCB Order 95-136 are site-specific and not necessarily applicable to Naval Fuel Depot (RFD) Point Molate.

3. The total petroleum hydrocarbon (TPH) cleanup requirements contained in RWQCB Order 95-136 are based on a Tier 1-level risk screening and are considered tentative. The order requires that additional bioassay studies be conducted to verify preliminary toxicity test results. (Note that the preliminary toxicity results were used to "calculate" a TPH cleanup level; actual toxicity values are not provided in the order.) Furthermore, the order clearly states that a more detailed, Tier 2 evaluation may be conducted if SFIA believes that the Tier 1 standards are not applicable to the site because of unique contaminant, hydrogeologic, or ecological or human health exposure considerations. The Navy will determine appropriate cleanup requirements based on site-specific considerations and sound scientific bases.

The containment wall extension shown in the final action memorandum complies with RWQCB Order 95-235, Item 11. Item 11 of the order does not specify the extent of hydraulic containment required. The Navy believes that the proposed extension meets the objective of this removal action.

Comment 3: *Other contaminants in the area are hard to analyze due to the large number of nondetects and estimated levels shown in the data. It is possible that some of these contaminants are also being released at levels harmful to fish and wildlife resources.*

Response: The 1994 TPH extractable data for sediment indicates the nearly ubiquitous detection of nonspecific hydrocarbon compounds or "TPH other components" as reported by the laboratory. U.S. EPA Modified Method 8015 was used in these analyses to incorporate site-specific fuel standards so that a reasonable gas chromatograph (GC) match could be attained. The site-specific fuel standards used include fresh and weathered fuels, and weathered fuel collected directly from existing near-shore monitoring wells at NFD Point Molate, thus providing the most reasonable and local source of TPH identification. The resulting, nonspecific TPH fuel ranges detected in sediment suggest that fuel contamination in near-shore sediment at NFD Point Molate

is weathered and potentially contains mixtures of several degraded fuels from local and regional sources.

Also, variability is inherent in the laboratory analyses. For example, variability is introduced by the laboratory technician when diluting and preparing the site-specific fuel standards and when matching resulting GC patterns to those of fuel standards. Earlier sediment data collected at NFD Point Molate during a 1992 investigation (PRC 1992) resulted in more definitive hydrocarbon matches using TPH extractable Modified Method 8015.

To assess potential ecological risk in the near-shore environment at NFD Point Molate under the RI/FS, specific analytes that have established toxicological values, such as semivolatile components of fuels. Specific bioaccumulative compounds, such as phenanthrene, anthracene, pyrene, chrysene, and 2-methylnaphthalene can be and have been detected in sediment at NFD Point Molate. Although commonly detected at estimated concentrations, these SVOCs should remain as target indicators of toxicological risk rather than relying on nonspecific TPH indicators using non-specific receptor species.

REFERENCES

PRC. 1994. NFD Point Molate, Treatment Ponds Area Final Site Characterization Report. Prepared for Department of the Navy, Western Division, San Bruno, California. July 29.