



**DEPARTMENT OF THE NAVY**  
SOUTHWEST DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
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Ser 06CM.FA/312  
27 Apr 00

Ms. Linda Dorn  
Project Manager  
California Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, California 94612

Subject: RESPONSE TO SECOND ROUND OF COMMENTS FOR THE DRAFT  
PHASE II REMEDIAL INVESTIGATION REPORT, NAVAL FUEL DEPOT  
POINT MOLATE

Dear Ms. Dorn:

Enclosed is the response to the second round of comments on the Draft Phase II Remedial Investigation (RI) Report for NFD Point Molate. This document has also been provided to Mr. Kent Kitchingman of the City of Richmond. Resolution of these comments was achieved at the April 5, 2000 working meeting. The Final Phase II RI Report is currently being prepared, and will be issued to you upon its completion. Please contact Ms. Michelle Gallice Sondrup at 619-562-0971 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Faiq Aljabi".

FAIQ ALJABI  
Environmental Baseline Team Leader  
By direction of the Commander

Enclosure: 1. Response to Comments on the Navy's Responses to Original Comments,  
Draft Phase II Remedial Investigation Report, Naval Fuel Depot, Point  
Molate, Richmond, California of June 30, 1999

5090  
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Blind copy to: (w/encl)  
Mr. Kent Kitchingman, City of Richmond  
06CM  
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**RESPONSES TO COMMENTS  
ON THE NAVY'S RESPONSES TO  
ORIGINAL COMMENTS  
DRAFT PHASE II REMEDIAL INVESTIGATION REPORT  
NAVAL FUEL DEPOT POINT MOLATE  
RICHMOND, CALIFORNIA  
JUNE 30, 1999**

**1.0 INTRODUCTION**

This document presents the Navy's responses to comments on the original responses to comments received from the Base Realignment and Closure (BRAC) Cleanup Team (BCT), made up of the Regional Water Quality Control Board (RWQCB), the U.S. Environmental Protection Agency (EPA), and the City of Richmond, on the Draft Phase II Remedial Investigation (RI) Report for Naval Fuel Depot (NFD) Point Molate, dated June 30, 1999. Section 2.0 presents responses to comments received from Ms. Linda Dorn of RWQCB on March 23, 2000, and Section 3.0 presents comments received from Mr. Kent Kitchingman of the City of Richmond in a letter dated April 5, 2000.

**2.0 RESPONSES TO MARCH 2000 RWQCB COMMENTS ON RESPONSES**

**GENERAL COMMENTS**

**Comment 1:** To expedite the review process, please provide Regional Board staff with a strikeout version of the Draft RI, preferably by e-mail. This will allow for a quick review of what changes have been made to the draft version and will allow for a shorter response time to the Final RI.

**Response:** The Navy's Southwest Division Point Molate Team has made the decision that strikeout versions of documents will not be submitted to reduce time and costs of additional document preparation.

**Comment 2:** The two primary areas where Regional Board staff does not concur with responses are regarding:

- The fractured bedrock and bedding planes not being a pathway for migration of contaminants,
- The necessity of groundwater and soil data from the colluvium at the toe of the landfill. (Response for this is included in Comment 3 Response.)

The reason for the disagreement regarding the fractured bedrock as a migration pathway for lateral and vertical transport of contaminants is data gaps exist. Board staff viewed the bedrock cores for the Treatment Pond Area, and Underground Storage Tanks on December 17, 1999. Laboratory analytical results would verify if any contaminants migrated through the fractured bedrock.

The cores in the treatment pond area are primarily what is referred to as competent bedrock and did not appear to have staining indicative of separate phase migration. Laboratory analytical results would verify if any contaminants migrated through the bedrock. The cores from the USTs did appear to have residual staining, which indicates lateral and vertical migration. The bedrock information from the UST characterization should be included in the Final RI report, regarding fate and transport of contaminants through fractured bedrock.

In the Bechtel Environmental/Dames and More (BEDM) April 30, 1993 Additional Hydrogeologic Investigation S.P. Hill Tankfield, prepared for Chevron, the following information regarding bedrock fractures was reviewed:

- 70-100 fractures at three structural stations were measured for orientation, and included characteristics of shape, aperture width, density, length, orientation, and in-filling materials.
- Bedrock cores identified the density of fracturing typically 3 to 15 fractures per foot alternating with occasional highly fractured zone of 30-50 per foot.
- Fractures in the KJss<sup>1</sup> unit at a high angle to bedding were relatively short, less than 2 feet and not continuous across bedding planes.
- Within the KJms<sup>2</sup> units or thick sandstone beds of the KJss fracture lengths ranged from 0.5 to 50 feet, with bedding fractures continuous over much greater areas.
- The hydrogeologic setting is that fractured bedrock is the primary water-bearing unit, with groundwater saturation in the alluvial soils and fill continuous with groundwater saturation in the underlying bedrock.

Please review this report and include a section similar to section 3.7 of the BEDM report, Effects of Geology on Groundwater Flow. Fetter, C.W. (1999, Contaminant Hydrogeology) notes solute transport in fractured rock is as important a process as transport in porous media. Freeze R. A. and Cherry, J. A.,

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<sup>1</sup> KJss-massive, very fine-to medium grained, brownish gray sandstone with rare, thin interbeds of mudstone. Individual sandstone beds, where present, are typically 0.5 to 2 feet thick with occasional massive interbeds as thick as 30 feet.

<sup>2</sup> KJms-thin to thick bedded, very fine-to medium-grained, brownish gray sandstone interbedded with thin-bedded, finely laminated to shaley, dark gray mudstone and thin-bedded, brown to gray siltstone. Mudstones and siltstones separating the thin-bedded sandstones are typically 2 to 8 inches thick.

(1979, Groundwater) state the dominant movement of groundwater is through fractures or along bedding planes, in many flow systems. Throughout the Bay Area examples of water bearing bedrock exist and supply drinking water wells, in some instances.

**Response:** The RI bedrock investigation was conducted in accordance with the RI work plan, which was approved by RWQCB. The process was scoped with the BCT to cover data gaps for the installation restoration (IR) sites and these data gaps have been addressed. The RI conclusions do not directly apply to the underground storage tank (UST) characterization. RWQCB will have the opportunity to review and comment on the UST characterization report and address data gaps at that time. Data gaps for the areas of NFD Point Molate outside the IR sites are not part of the scope of the RI.

As discussed during the April 5, 2000, meeting with the BCT, we believe the indications of staining and field screening, that are clearly discernible if present, verify that petroleum hydrocarbons have been in contact with the bedrock where staining is observed. Sampling of bedrock for laboratory analysis is questionable because of the probable extraction and analytical variations from normal soil samples (noncomparable data). Also the representativeness of samples is questionable. Removal of a small amount of material from a fracture (secondary permeability) does not represent the concentrations in the rock mass as a whole (the Franciscan bedrock has extremely low primary, matrix permeability). For these reasons, analysis of groundwater samples and physical observations are a better indicator of contaminant presence and migration.

The bedrock data presented in BEDM, 1993, Additional Hydrogeologic Investigation S.P. Hill Tankfield, are the same that were presented in the Draft Phase II RI, Section 3.4.3. However, the 1993 report will be referenced and new material representative of conditions at NFD Point Molate will be included.

The first four RWQCB bullets involve data that were provided in the Draft Phase II RI report. The last bullet is accurate for the lower-elevation slopes and ravines. The interpretation is that the primary water-bearing unit of concern is the shallow unconsolidated materials. The bedrock is a water-bearing unit that is less significant with regards to contaminants of concern (COCs). The bedrock was investigated as part of Phase II.

The BDEM, April 30, 1993, Additional Hydrogeologic Investigation S.P. Hill Tankfield report has been reviewed. Some information similar to Section 3.7 will be added as it applies to NFD Point Molate. Fetter notes that solute transport can be as important a process transport in porous media, depending on the hydrogeologic conditions. In conditions where other units have primary permeability, overlie fractured bedrock, and the COCs are light nonaqueous phase liquids (LNAPLs) transport in fractured rock may not be as important as the overlying media. The bedrock at NFD Point Molate is a water-bearing unit, less significant in transport of COCs than the overlying materials. The bedrock,

however, has been investigated in the RI program, and these data will all be presented in the Final Phase II RI Report.

**Comment 3:** In July 1999, Regional Board staff identified a data gap regarding concentrations of Chemical Of Concern (COCs) leaching from the landfill in the groundwater through the colluvium at the base of the landfill. In November 1999, while monitoring wells were being installed for the phase II of the UST characterization, Regional Board staff requested again that a well be installed in the colluvium at the toe of the landfill. After an hour discussion and a site visit, Regional Board staff agreed to not request data be collected from the colluvium at the toe of the landfill before completing the Draft EE/CA, assuming the data could be collected prior to finalizing the EE/CA. Also the data collected from the “stilling well”, can be considered representative of surface water at the toe of the landfill. The concentration of contaminants found in the water sample collected from the stilling well or surface water sample should be included in the isoconcentration maps of the Final EE/CA. Tetra Tech’s response to comments does not recognize the surface water at the toe of the landfill, but also states the stilling well will not be included in the Final RI. Regional Board staff will not concur on a Final EE/CA for IR site 1 or the Final Phase II RI unless:

- the surface water at the base of the landfill is recognized and included on maps,
- analytical results of the “stilling well” groundwater sample and/or surface water sample at the toe of the landfill are included in an isoconcentration map for contaminants at site one, and
- groundwater sample(s) are collected and analyzed from the saturated colluvium at the toe of the landfill.

**Response:** As discussed in Section 2.7, bullet 4 of the draft RI, a distilling well was not installed because heavy rains made the site inaccessible to the equipment. However, a sample of the surface water seep was collected from seep SW02-04 at the toe of Site 1. Although this seep was identified as one of nine ephemeral seeps, surface water (that is, a small puddle of water) has been observed by the Navy at this location throughout most of 1999. However, water has been observed seeping from the ground at this location only during the rainy season. The data from this seep location is presented in the draft EE/CA and will also be presented in the final EE/CA. In addition, the observation of puddles of water at this seep location throughout most of the year will be noted in the final RI report and final EE/CA. Additional description of surface water at the toe of Site 1 will be included in the final RI report and in the final EE/CA.

As agreed upon during the April 5, 2000, working meeting with the BCT, the Navy will undertake additional monitoring at IR Site 1. The Navy has agreed to install two wells at the toe of the landfill. One will monitor groundwater within the colluvium at the toe of the landfill, and one will monitor valve box (VB) 7, as

it may be a source of groundwater contamination at the toe of the landfill. These wells will be monitored for four quarters for total petroleum hydrocarbons (TPH) and polynuclear aromatic hydrocarbons (PAHs). These data will be used by the Navy and RWQCB to demonstrate the contaminants that are associated with the landfill and VB 7, and to evaluate the required time frame of post-closure monitoring. RWQCB approved proceeding with finalizing the engineering evaluation and cost analysis (EE/CA) while these wells are being planned and the data are being collected.

## **SPECIFIC COMMENTS**

**General Comment 4, Response:** The response notes the water table is within fill or colluvium at most areas of IR site 1. The response to the Board's specific comment 9, notes the water table is within weathered bedrock. Additionally wells MW02-13, BR02-19, and BR02-18 are all completed in bedrock. Wells MW02-13 and BR02-19 show a water table at the surface, not within the fill or colluvium. Wells BR02-18 show the water table in bedrock.

Fractured bedrock not being considered a significant pathway is different than knowing through scientific interpretation of verified data. Please include all groundwater and soil analytical data used to verify the bedrock is not a pathway for migration of contaminants.

**Response:** The hydrogeology at IR Site 1 is complex. Water table conditions occur in the fill and in well BR02-18 upgradient. Confined conditions occur in downgradient wells BR02-19 and MW02-13. The Final Phase II RI Report will clarify this information.

Scientific interpretation have been applied to verified data and observations since 1990. These data are included in the Draft Phase II RI. The interpretation, based on low well yields, lack of free product, and very low to non-detect dissolved phase analytical values, still leads to the same conclusion; the bedrock has not functioned as the primary migration pathway. Shallow groundwater in the materials that overlay bedrock have been the primary transport medium of the petroleum hydrocarbon releases. The releases have been shallow, surface or near-surface releases of LNAPLs, and have generally remained in the shallow groundwater.

**General Comment 6, Response:** Please include groundwater and product elevation and measured free product thickness including all data, including data prior to 1994.

**Response:** Available pre-1994 data will be included in the table.

**Specific Comment 6, Response, Section 3.4.3, Bedrock Structures:** Please include the geologist estimates of percentages of filled bedrock fractures in the Final RI.

**Response:** The geologists' estimate of percentages of filled fractures will be included in the Final Phase II RI.

**Specific Comment 7, Response, Section 3.6, Hydrogeology:** The KJms unit is interpreted to underlie the IR site 1 area but is it known to underlie the IR site 1 area? The KJms unit at Chevron, SP Hill tank field can have fracture lengths from .5 to 50 feet, with bedding fractures continuous over much greater areas. Please site the data used to determine the KJms unit is a poor migration pathway?

**Response:** Because NFD Point Molate is heavily vegetated, subunits of the Franciscan Formation must be mapped with limited borehole, trenching, and outcrop data. Integration of all bedrock data from cores, trenches, bore logs, and outcrops indicates that the geologic unit identified as KJms on the Chevron property underlies IR Site 1.

The Chevron report Additional Hydrogeologic Investigation, S.P. Hill Tankfield states the “bedding fractures may be continuous over much greater areas.” This report further states: “The low hydraulic conductivities probably result from the following: (1) fine-grained sediment on secondary crystallization filling in the fractures, (2) the discontinuous nature of fractures of the interbedded units, and (3) small apertures along fractures.” This information is the basis for the interpretation of the bedrock hydrogeology. Additional data include bedrock core, packer tests, and monitoring wells with relatively low yield, lack of free product, and low levels of dissolved petroleum hydrocarbons to non-detected TPH.

**Specific Comment 11, Response, Table 3-3, Vertical Gradients Between Bedrock and Unconsolidated Materials:** A careful review of the boring log for SB02-09, located 21 feet to the E-NE of MW02-13, closer to the landfill, notes saturated conditions from 10-19 feet below ground surface in the colluvium. This soil boring was cored deeper into the bedrock and a well was installed in the bedrock. The field judgment to install the well in bedrock to confirm the bedrock/weathered bedrock is not a preferential pathway for IR site 1, but does not address what is leaching off the landfill in the colluvium.

**Response:** The boring for well SB02-19 (located 21 feet from well MW02-13) was intended for the bedrock well. When the boring for well MW02-13 was drilled, water was not encountered until the bedrock/weathered bedrock interface. As discussed in the April 5, 2000, meeting, the Navy will install and sample a colluvium well at the toe of the landfill.

**Specific Comment 12, Response, Section 4.1.1, Site History and Previous Investigations:** Please include legible copies of aerial photos reviewed for the disposal area use determinations.

**Response:** Southwest Division is currently attempting to obtain the photographs from the Navy’s Engineering Field Activity West (EFA West). The Navy will evaluate methods to make the photographs available. References for the photos are in Table 5-10 of the basewide environmental baseline survey (EBS).

**Specific Comment 13, Response, Section 4.1.2, Sources:** Again this response states most of the colluvium is unsaturated or irregularly saturated and this does not correspond to most of the

area having a water table in the colluvium as stated in response to the Regional Board general comment number 4.

**Response:** The water table is within the colluvium in some areas and not in other areas. The Final Phase II RI will provide this information.

**Specific Comment 14, Response, Section 4.1.3, Soil:** The miscellaneous debris identified below the surface immediately downgradient from the landfill footprint was not included in the Draft EE/CA, as this response states, and should be included in the Final EE/CA.

**Response:** The miscellaneous debris identified immediately downgradient of the landfill footprint will be included in the Final EE/CA and the Final Phase II RI Report.

**Specific Comment 15, Response, Section 4.1.4, Groundwater:** Summing TPH concentrations is conservative and from a regulatory perspective is appropriate. The most downgradient well contains increasing concentrations of TPH and therefore does not fall into a low risk category. The TPH from MW02-07 is most likely from the UST and pipeline releases and will be remediated under the UST program. The statement natural attenuation is taking place is based on what? A ravine where the most downgradient well has increasing concentrations is not indicative of natural attenuation.

**Response:** As discussed in the April 5, 2000 working meeting, RWQCB will not include the benzene, toluene, ethylbenzene, and xylene (BTEX) compounds in summing TPH.

Natural attenuation is being evaluated and further monitoring may clarify the state of the contaminant plume. As also discussed in the April 5 meeting, data for samples from well MW02-07 through time will be analyzed and plotted by linear regression as a data assessment technique in the Final Phase II RI.

**Comment 16, Response, Section 4.1.5, Surface Water:** Regional Board staff has witnessed water at the surface at the toe of the landfill in wet and dry seasons, therefore not meeting the definition of ephemeral. The small surface water area at the toe of the landfill does not appear to have been developed to catch release. The surface water appears to have collected at the toe of the landfill due to artesian conditions. If this surface water location at the toe of the landfill was developed to catch surface release, please state when the work was performed and the dimensions of the catch basin. Also, animal tracks and feces have been present around the surface water at the toe of the landfill indicating terrestrial animals may use it as a drinking water source.

**Response:** Although this seep was identified as one of nine ephemeral seeps at Point Molate, surface water (that is, a small puddle of water) has been observed by the Navy at this location throughout most of 1999. However, water has been observed seeping from the ground at this location only during the rainy season. The data from this seep location is presented in the draft EE/CA and will also be presented in the final EE/CA. In addition, the observation of puddles of water at this seep location throughout most of the year will be

noted in the final RI report and final EE/CA. Additional description of surface water at the toe of Site 1 will be included in the final RI report and in the final EE/CA..

**Comment 17, Response, Section 4.2.1, Site History and Investigations:** Considering the purpose of the RI Report is to define the extent of pollution at a site and it is considered complete by Tetra Tech and the Navy, enough information should exist to estimate a representative density and convert pounds to gallons. Please convert the pounds of free product to gallons.

**Response:** The product was converted to 336 gallons, and this information will be included in the Final Phase II RI.

**Comment 18, Response, Section 4.2.2, Sources:** This section should include information about the ORS system modifications and the impact this will have on the treatment ponds treating storm water. Please identify what data is relevant from the USTs that will be included in Final Phase II RI Report.

**Response:** The effects of closing the oily water recovery system (ORS) system are currently begin evaluated and will not be ready for inclusion in the Final Phase II RI. However, a brief description of the ORS closure and references will be included in the Final Phase II RI Report.

The relevant data from the UST characterization are from the Diesel Road area, data from the Valve Box 7 area, and bedrock geology from all UST coreholes.

**Comment 19, Response, Section 4.2.3, Soil:** Bedrock samples have never been analyzed for any COCs. Laboratory analytical data of bedrock samples would support the belief that the fractured bedrock is an “insignificant” pathway for migration of contaminants.

**Response:** As discussed in the April 5, 2000, meeting with the BCT, the indications of staining and field screening, that are clearly discernible if present, verify that petroleum hydrocarbons have been in contact with the bedrock where staining is observed. Sampling of bedrock for laboratory analysis is of questionable use because of the probable extraction and analytical variations from normal soil samples (noncomparable data). Also, the representativeness of samples is questionable. Removal of a small amount of material from a fracture (secondary permeability) does not represent the concentrations in the rock mass as a whole (the Franciscan bedrock has extremely low primary, matrix permeability). For these reasons, analysis of groundwater samples and visual observations are better indicator of contaminant presence and migration.

**Comment 30, Response, Section 6.4.4.5, Equation and Exposure Parameters for Ingestion of Shellfish:** Are the sightings infrequent because the remedial investigation personnel working in the field making the sightings are infrequent? Please include this description of sightings in the final RI. The incorporation of a range of shellfish ingestion from 20% to 100% is an excellent way of dealing with the uncertainties associated with this pathway for exposure.

**Response:** The shoreline and intertidal areas at the Public Beach Area are distant from the former operations areas of NFD Point Molate. Therefore, observations of shellfishing were incidental to activities by remedial investigation personnel working in the field; dates and frequency of sightings were not documented. Staff relating this information stated that sightings were infrequent. No information on species or quantity of shellfish collected is available. This will be more clearly discussed in the Final RI.

**Comment 31, Response, Section 6.5.3, Assessment of Total Petroleum Hydrocarbons:**

Information from the UST characterization regarding light fuels and surface soils, at a minimum, should be incorporated into this section.

**Response:** In general, light fuels and volatile organic compounds (VOCs) have not been detected in samples of sediment or surface soils at Point Molate. No hydrocarbons, other than heavier-end fuels and their constituents, have been detected in samples collected at the public beach area and no releases in this area have been documented. This information will be added to Section 6.5.3.

**Comment 36, Response, Section 8.1.4, Conclusions IR Site 1:** Plume stability and contaminant concentrations have been monitored sporadically at IR site 1 since 1992. Natural attenuation parameters have not been monitored, and the monitoring for the UST program most likely did not include biodegradation parameters for IR Site 1. Shallow groundwater downgradient of the toe of the landfill should be monitored to determine the attenuation of COCs leaching off the landfill.

Regional Board staff believed a compromise was established verbally between the Regional Board and the Navy regarding the concentration of COCs leaching off the landfill. The assumed compromise was that the data collected from surface water at the toe of the landfill and well MW02-15 would be included in the Final EE/CA as representing what is leaching off the landfill. Regional Board staff agreed with the compromise assuming a well would be installed in the colluvium at the toe of the landfill after the soil cover was completed. The February 1, 2000 Regional Board staff comments on the Draft EE/CA incorporated what was believed to be the compromise of using laboratory analytical results of water sample(s) collected from the surface water sample and MW02-15. The Navy has not responded to the Regional Board's Draft EE/CA comments, therefore Regional Board staff should probably not have assumed verbal agreements would be honored.

At the February 29, 2000 meeting with the Navy and their contractors to formulate Data Quality Objectives for groundwater monitoring at Point Molate, Regional Board staff was informed monitoring well(s) would not be installed through the soil cover to monitor the leachate from the landfill. Monitoring wells would be installed downgradient of the cover which actually would monitor what the Navy has claimed is contamination from the UST system and not the landfill. Regional Board staff will not concur with the Final EE/CA or the Final RI without the data from the surface water sample at the toe of the landfill and monitoring of groundwater in the colluvium at the toe of the landfill in the future for attenuation of COCs.

**Response:** As discussed in the April 5, 2000, meeting with the BCT, an additional well will be installed in the colluvium at the toe of the landfill and sampled for contaminants.

**Plate 11, Response, IR Site 1 Waste Disposal Area Soil Sampling Results:** Please include the newer data that better represents current conditions.

**Response:** All newer data are already presented on Plate 11 in the Draft Phase II RI.

**Plates 15-18, Response :** Please create the supplemental set of black and white plates with the well construction details, free product thickness, groundwater elevations, and analytical results of soil and groundwater samples, if the existing plates cannot be modified to include well construction details.

**Response:** Information on screened intervals and 1999 groundwater elevations will be provided in a useful format, as discussed in the April 5, 2000, working meeting with the BCT.

## **RESPONSES TO EPA COMMENTS ON RESPONSES**

**General Comment 4, Response:** The response does not address the US EPA's issue of the hydrocarbon-stained material being undefined. Please address this statement by using analytical laboratory results of soil and groundwater to verify the extent has been defined.

**Response:** Analytical results were provided in the Draft Phase II RI. Presumptive remedy guidance (EPA 1993c, EPA 1993d, EPA 1996e, and EPA 1997b) was followed and sufficient data were generated to write an accurate EE/CA. It should be noted the Navy conducted more than three times the linear feet of characterization trenching within the Waste Disposal Area than was originally scoped with the BCT and presented in the Final Work Plan.

**General Comment 9, Response:** At recent BCT meetings the question of how the Environmental Baseline Survey sites will be incorporated into the IR sites has been asked. To date a definitive answer has not been given in those meetings. This response indicates the decision of what program those sites will be investigated and remediated under has been made. Exactly what does remaining in the EBS program mean? Please describe the program and how decisions regarding investigation and remediation will be made under an EBS program.

**Response:** The Draft Phase II EBS Report will be released in early summer 2000. This document will make recommendations for the EBS sites.

**Specific Comment 3, Response:** What planning document provides the scenarios for land use?

**Response:** The 1997 City of Richmond Reuse Plan for NFD Point Molate provides the scenarios used for future land use at NFD Point Molate.

**Specific Comment 5, Response:** Please include the response in section 1.3.3.6, IR Site 4 Removal Actions (1996-1998).

**Response:** The Navy has monitored groundwater elevations both up- and down-gradient of the wing-wall extension and the extension appears effective. No free product has been detected in well MW11-22 since 1992 (before the containment well was constructed). Approximately 20 gallons of product have been recovered from well MW11-54 as of December 1999. This information will be included in Section 1.3.3.6 of the Final Phase II RI Report.

**Specific Comment 7, Response:** Please document which well(s) did not survive packer testing. Slug testing can be useful information for estimating hydraulic properties of a formation. Slug test data is not adequate to determine hydraulic properties for a groundwater extraction system design.

**Response:** The response indicates that the materials would probably not survive in our assessment based on the extensive soil borings conducted at the site.

Pumping test data from the 1996 pumping tests in Drum Lot Number 1 will be included in the appendix with other hydraulic data.

**Specific Comment 8, Response** : Exceptions to state well standards can be requested from the agency overseeing well construction, and should not be considered a limiting factor unless a request was made for an exception and the request denied. The fact that water was not encountered until weathered bedrock was encountered is evidence that bedrock (weathered or not) is the geologic formation that transports fluids at Point Molate, in addition to the colluvium. Well MW02-13 and BR02-19 are bedrock wells, not representing what is leaching off the landfill in groundwater in the colluvium at the toe of the landfill. Well MW02-15 could be representative, but the Navy has stated this well represents what is coming from the UST system and not the landfill. Regional Board Site 1 Draft EE/CA specific comments 5,8,9, and 17 and specific comments on figures 3,4, and 5 address the necessity of a well in the colluvium at the current toe of the landfill.

The concept of removing the stilling well means data collected from the well will not be used. Also, laboratory analytical data from the surface water sample collected at the toe of the landfill must be included in the Final Phase II RI and the Final Site 1 EE/CA. As Regional Board staff has stated in meetings, phone conversations, and written responses to the Draft Phase II RI and the Draft EE/CA, this information is not only necessary but is required for Regional Board staff concurrence of the Final Phase II RI and the Final EE/CA, tasks 4d and 3b, respectively, of Regional Board Order 97-045.

**Response:** At the time of the field drilling program, we had not received a waiver on well construction. As discussed in the April 5, 2000, working meeting with the BCT, an additional well will be installed in the colluvium at the toe of the waste disposal area and sampled.

Well MW02-15 has been sampled successfully since March 1999. These results will be included in the Final EE/CA.

**Specific Comment 11, Response:** The grab groundwater sample for boring SB02-09 could be representative of the leachate from the landfill. What were the results from this qualitative field tool? A careful review of the boring log for SB02-09, located 21 feet to the E-NE of MW02-13, closer to the landfill, notes saturated conditions from 10-19 feet below ground surface in the colluvium. This is the area and depth which must have a well installed to verify what is leaching off the landfill before the Final EE/CA can be accepted by Regional Board staff.

**Response:** These data were included in the Draft Phase II RI on Plate 12. Boring SB02-09 is located in the middle of the Waste Disposal Area.

**Specific Comment 12, Response:** What data is used to substantiate the Navy's belief that the wastes exist at near residual, non-mobile concentrations?

**Response:** The petroleum components detected are nearly all very low solubility PAHs, well below their solubility constant (see Fetter 1993, Contaminant Hydrogeology, Chapter 7 and Figure 7.2).. Additionally, monitoring well MW02-06 is directly downgradient (within 40 feet) of trench TR1-7, where waste materials were found. Only low levels of TPH and associated compounds have been detected in samples from this well.

**Specific Comment 13, Response:** This response conflicts with no removal actions having occurred at the landfill. Additionally foaming agents were supposedly removed from the landfill in the early 1990's and should be included in the sources discussion.

**Response:** The terminology "Removal Action" was not used to describe the Navy's proactive removal and proper disposal of these drums. The formal term, as defined in the National Contingency Plan (NCP), refers to a release or threat of a release being necessary to drive a removal action. Because the drums were empty, free of any residue, and intact, these criteria were not present. The drums identified in the site inspection will be included in the discussion of sources.

**Specific Comment 14, Response,** Please put in the flow capacity for the treatment system for the extraction trench waste stream and the storm water treatment pond waste stream.

**Response:** These data will be included in the Final Phase II RI.

### 3.0 RESPONSES TO CITY OF RICHMOND COMMENTSON RESPONSES

#### NEW COMMENT

**Comment 8:** The RI Report should state whether the author thinks that releases from Tanks 5 and 7 (shown on Fig. 4-1) are capable of impacting the landfill.

**Response:** Tanks 5 and 7 are downgradient from IR Site 1 and releases would not impact the area of the landfill itself, but could affect the ravine downgradient. This is shown on Figure 4-1 and will be stated in the Final Phase II RI.

**Comments 12, 16, 19, 22:** The Navy's responses to my comments should be included in the RI Report, but there was no indication they would be.

**Response:** Comment 12: The impacts of closing the ORS systems are currently being monitored, and a separate preliminary report on the ORS system will be presented in May 2000. Impacts of the ORS system will not be discussed in the Final Phase II RI.

Comment 16: The use of Asian Clams as an indicator species for levels of PAHs in tissue has been thoroughly discussed in the Draft Final Ecological Risk Assessment Addendum to the Phase II Remedial Investigation Field Work Plan (TtEMI 1998) and the Draft and Final Offshore Ecological Risk Assessment Reports. These reports are referenced in the Phase II RI Report. Therefore, it will not be included.

Comment 19: The response to the original City of Richmond comments will be included in Section 7.0 of the Final Phase II RI Report.

Comment 22: The information from the original Navy response to the City of Richmond comment will be included in Section 8.0 of the Final Phase II RI Report.

**Comment 14:** My comment wasn't that important, but it referred to JP-5 and diesel found in MW11-22.

**Response:** The response to the original comment contained an error that misidentified the well as MW11-92. The data presented and the original response described the potential source for the LNAPL measured in samples from well MW11-22 in December 1994. The exact source is unknown but may have come from a pipeline leak.

The statement that the exact source of the LNAPL is not known will be included in Section 4.2.1 of the Final Phase II RI.

**Comment 17, 23:** The results of sampling data in Tale 4.8 (Drum Lot 1) show levels of lead and vinyl chloride exceeding the preliminary remediation goal (PRGs) in 12 and 7 samples respectively. In addition, methyl tertiary butyl ether (MTBE) (no PRG) was detected in 6 samples. I think the RI Report should discuss how these are being addressed.

**Response:** As discussed in the original Navy response to comments, the human health risk assessment (HHRA) at the Public Beach Area was scoped to only address that area of IR Site 4. The North Shoreline Drum Lot Number 1, and the South Shoreline IR4 areas will be addressed during an upcoming project.

**Comment 20:** Because of the thickness of the product in ERM-EW1 (the most recent data shows 0.69'), and the proximity of the well to the landfill, the statement that there's "little evidence of free product" may need some explanation or modification.

**Response:** This statement was true in April 1999. This well is cross gradient from the fill footprint of IR Site 1 and does not contribute groundwater flow through the fill of IR Site 1 at the Waste Disposal Area. This well has been further investigated during the Phase I and Phase II UST program. These data will be included in Section 8 of the Final Phase II RI Report.