

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN II)
Northern and Central California, Nevada, and Utah
Contract Number N62474-94-D-7609
Contract Task Order 210

Prepared For

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Engineering Field Activity West
Naval Facilities Engineering Command
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Response to Agency Comments for
Draft Offshore Ecological Risk Assessment
Naval Fuel Depot Point Molate, Richmond, California

September 21, 1999

Prepared By

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Agency/ Group	Comment #	Comment	Response
RWQCB – Linda Dorn: General Comments	1	The organization of the report allows the reader to easily follow the complex studies associated with ecological risk assessment. The clear, concise writing is appreciated and sets a good example for future reports. The level of effort and methodology involved in completing the offshore Ecological Risk Assessment provides results that are rarely ambiguous.	Noted.
RWQCB – Linda Dorn: General Comments	2	The ecological risk assessment does not consider groundwater as a source for contamination of the San Francisco Bay sediments at Point Molate. The Regional Board does consider groundwater a source of contamination for the Bay sediments at Point Molate. Section 2.6.2 of the September 12, 1998 Draft Final Ecological Risk Assessment Addendum to the Phase II Remedial Investigation Field Work Plan Naval Fuel Depot Point Molate discusses groundwater as a potential migration pathway of chemicals being transferred offshore and bound to sediments that could result in exposure to aquatic biota. In addition section 2.8.2 of the Draft Final Ecological Risk Assessment Workplan proposed offshore sampling locations partially based on areas potentially contaminated by groundwater migration. In the draft report on the Ecological Risk Assessment please include a discussion of groundwater as a source for contamination of the Bay sediments at Point Molate.	<p>No changes to the report are proposed.</p> <p>The following text provides an expanded discussion of groundwater as a source of contamination of intertidal sediments.</p> <p>The following text from Section 2.3 of the ERA describes possible groundwater inputs to the Bay around NFD Point Molate.</p> <p>“In the past, near-shore sediments at NFD Point Molate may have been impacted by petroleum directly from spills or seeps during facility operations. Additionally, near-shore sediments may be impacted from upland sources via groundwater discharge and surface runoff during rain events. The steep topography at NFD Point Molate facilitates the flow of surface water and groundwater from higher elevations toward San Francisco Bay. During rain storms, surface water flows down ravines into San Francisco Bay and San Pablo Bay. Stormwater outfalls, which may have contained fuels and fuel-contaminated water, also discharge directly into San Francisco Bay.</p> <p>The presence of groundwater at NFD Point Molate is consistent along the near-shore areas that have little or no relief, and forms a highly variable water table that is, in some places, in hydraulic communication with San Francisco Bay. A true aquifer (i.e., a saturated permeable geologic unit that can transmit significant quantities of water under ordinary hydraulic gradients [Freeze and Cherry, 1979]), does not exist at NFD Point Molate. The presence of groundwater is directly related to seasonal infiltration, runoff from the hillsides, and hydraulic communication with the Bay. Some ravines that</p>

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Agency/ Group	Comment #	Comment	Response
RWQCB – Linda Dorn: Specific Comments by Section	2 (continued)		only two points in time. Additionally, erosional and depositional patterns of SF Bay sediments are unknown between 1955 and 1990. If risk is indicated, a better study of erosional and accretional patterns in the area may be recommended for risk management purposes.”
RWQCB – Linda Dorn: Specific Comments by Section	3	<u>Section 2.5.3.1, Aquatic Habitat Resources, page 2 – 8</u> , The first sentence on this page refers to the Navy characterizing the use of the intertidal area at NFD Point Molate by special status species. When will this information be provided?	This information will be provided as part of the EIS which is scheduled to be released in the fall of 1999. No change made to report.
RWQCB – Linda Dorn: Specific Comments by Section	4	<u>Section 2.6.1, Potential Site Receptors and Exposure Scenarios, page 2 – 11</u> , Point number 2 in the first paragraph mentions preening as a “most significant” route of chronic exposure to birds through incidental sediment ingestion. This pathway for exposure is not presented on Figure 2 – 6, NFD Point Molate Offshore Area Site Conceptual Model.	Figure 2-6 has been revised to reflect a solid line between surface sediment and omnivorous/herbivorous mammals and birds (see Attachment 1).
RWQCB – Linda Dorn: Specific Comments by Section	5	<u>Section 2.8.2.4, Comparison of Site specific Doses and Avian Toxicity Data, page 2 – 23</u> , The third bulleted item “Undetermined Finding” should read “PAH dose is greater than 0.03 mg/kg-d.”	Change made to text so that sentence now reads: <ul style="list-style-type: none"> Undetermined Finding – The calculated sum PAH dose is greater than 0.03 mg/kg-d and less than or equal to 0.5 mg/kg-d.
RWQCB – Linda Dorn: Specific Comments by Section	6	<u>Section 2.9, Summary of 1998 Data Collection Activities in Support of the Offshore ERA, page 2 – 24 and page 2 – 25</u> , The issue of the sampling approach being conducted to represent a “worst-case” scenario was discussed at length in previous meetings. The Regional Board agreed to accept the sampling approach as representing the worst-case scenario, at this time. However, what is the worst-case scenario today could be different in the future with changing groundwater hydrology, wave action, remedial actions at the site, seasonal changes, etc... We appreciate the Navy following the same sediment sampling methodology as the Regional Board’s Bay Protection Program. Collecting sediment samples in the top 5.0 centimeters allows for a comparison of Pt. Molate and Bay Protection data.	Comment noted. No change made to text.
RWQCB – Linda Dorn: Specific Comments by Section	7	<u>Table 2 – 5, Measurement Endpoint Weight Calculations using the Scaled Attributes Prepared for the WOE Determination, page 2 – 30</u> , The measurement endpoint weight assigned to each assessment is helpful for direction in evaluating the data in the big picture perspective. Reading and understanding the development of the measurement endpoint weight is time consuming and could add another layer of confusion. The consensus process used to	Comment noted.

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RWQCB – Linda Dorn: Specific Comments by Section	9	<u>Table 3 – 2, Vertical Core Sampling Results</u> , Please identify what the dashes in the table represent. Sample T – 6 at the 3 – 4 for depths from surface does not appear to be a TPH concentration.	A footnote has been added to the table as follows: -- = TPH was not detected in sample. Additionally, the boxes for sample T6 for 2-3' and 3-4' have been merged to indicate that there was only one vertical core sample that contained sediment from both 2-3 and 3-4' and a footnote of explanation has been added. A copy of the revised table can be found in Attachment 2.
RWQCB – Linda Dorn: Specific Comments by Section	10	<u>Section 4.4.1.1, Distribution of COPECs in Clam Tissue</u> , Why was an average PAH tissue concentration calculated instead of using the maximum PAH tissue concentration?	The mean PAH tissue concentration was calculated to evaluate the spatial variability associated with tissue concentrations of PAHs at NFD Point Molate (i.e., to answer the question “Are tissue concentrations higher in one area than another at NFD Point Molate?”). Mean PAH tissue concentrations were not used as the exposure point concentration when risk to avian receptors was evaluated. Tissue data for each sampling location, including maximum concentrations from the north and south coves, were used to calculate doses to avian receptors. No changes to the text are proposed.
RWQCB – Linda Dorn: Specific Comments by Section	11	<u>Table 4.6, Sum PAH Concentrations and Dose Calculations for the Western Sandpiper and Scaup at NFD Point Molate</u> , Please identify samples that were non-detect.	None of the samples were non-detect for all PAHs. All samples were non-detect for 1-methylnaphthalene and some samples were non-detect for several other PAHs. Half of the detection limit for each individual compound that was non-detect was added into the total for sum PAH. A table summarizing the PAH analytical results conducted on invertebrate tissue will be inserted in Appendix F. This Table can be found in Attachment 3.
RWQCB – Linda Dorn: Specific Comments by Section	12	<u>Appendix B, Development of a Weight of Evidence (WOE) Approach at NFD Point Molate, page B – 2</u> , The table referred to on this page should read B-1 and B-2. Table B-2 “Specific Ranking Criteria for Measurement Endpoint Weight Determination” is missing the Quality of Representiveness attribute under Rank 5?	The table references on page B-2 will be changed from E-1 and E-2 to B-1 and B-2. There is no attribute “Quality of Representiveness”. The attributes for spatial and temporal representiveness are included and have criteria for ranks 1 through 5. The attribute for data quality is not included in the table. As per agreement with the agencies, all NFD Point Molate endpoints received the same rank for data quality, and specific ranking criteria were therefore not required. All endpoints were given the same rank because the endpoints and study design were developed based on the ERA DQOs. Assuming the DQOs are adequate, and all data acceptance criteria are met, all data are assumed to be of similar quality and can therefore be given the same rank.

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RWQCB – Linda Dorn: Specific Comments on Figures	1 (continued)	<p>5. Detritus is part of the cycle under the primary producer of plankton, and algae.</p> <p>6. An exposure route of ingestion exists between small omnivorous fish and omnivorous/herbivorous mammals and birds.</p> <p>7. Also omnivorous fish may eat benthic organisms.</p> <p>8. An exposure route of ingestion exists between benthic organisms and carnivorous mammals and birds.</p>	<p>5. Figure 2-6 simplifies the food web to focus attention on the main routes of exposure. Detritus does not belong in the primary producer box and it was not included as a separate box because it was not considered a significant pathway independent of the sediment itself (which is already identified as an exposure medium). For the purposes of this investigation detritus is considered to be a component of the surface water and sediment. Therefore, no changes are proposed.</p> <p>6. A solid line representing a major exposure pathway will be added to the CSM between omnivorous/herbivorous mammals and birds and small omnivorous fish and between omnivorous/herbivorous mammals and birds and benthic organisms.</p> <p>7. A solid line representing a major exposure pathway will be added to the CSM between small omnivorous fish and benthic organisms.</p> <p>8. A dashed line representing a minor exposure pathway will be added to the CSM between carnivorous mammals and birds and benthic organisms.</p>
RWQCB – Linda Dorn: Specific Comments on Figures	2	<u>Plate One, NFD Molate, IR Site 4 Shoreline Area, Distribution of TPH Extractable in Sediment (mg/kg)</u> , The date of sampling and report title should be in the title block of this plate.	<p>This information has been added to the title of plate 1. The title now reads:</p> <p style="text-align: center;">Plate 1 NFD Point Molate IR Site 4 Shoreline Area Distribution of TPH Extractable in Sediment (mg/kg) Shoreline Investigation Soil and Sediment Data Summary August 15, 1994</p>
RWQCB – Linda Dorn: Specific Comments on Figures	3	<p><u>Plate Two, NFD Point Molate, IR Site 4 Shoreline Area, Sum PAH and Total TPH Results</u>,</p> <p>1. The date of sampling and report title should be in the title block of this plate.</p> <p>2. Please label the sampling station points as Intertidal/Subtidal.</p> <p>3. Please explain why some sampling locations have 3 analysis for PAH, EPH, and VPH.</p> <p>4. Sample depth needs to be specified.</p>	<p>1. The title of Plate 2 has been edited and now reads:</p> <p style="text-align: center;">Plate 2 NFD Point Molate IR Site 4 Shoreline Area Sum PAH and Total TPH Results ERA Studies Conducted in 1998</p> <p>2. Sampling stations will be labeled intertidal or subtidal as requested.</p> <p>3. 4 sample stations were sampled in triplicate as a QA/QC measure to test the variability of the analytical procedures. No change made to plate.</p> <p>4. Appendix E Table E1 lists sample depths. No change made to plate.</p>

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Agency/ Group	Comment #	Comment	Response
USEPA – Region 9: Specific Comments	2	<p>Section 2.8 and Appendices B & C, [development of WOE approach]. In light of the generally strong support of the data for a conclusion of no unacceptable ecological risk, I will not object to the structure of the WOE evaluation in this risk assessment. However, I would seek substantial changes in the specific ranking criteria (Table B-2) if the WOE approach was applied to a more contaminated site. Many of the changes I would seek were communicated to the Navy in an email note from Laurie Sullivan (NOAA) to Derek Edge (Entrix, contractor for the Navy) and Lisa Hunt (Navy, EFA West) dated February 17th, 1999. Some of the changes Ms. Sullivan and I suggested were incorporated in the WOE approach. One major difference between the Navy's and my interpretation of the WOE approach are the criteria for ranking the attribute "Sensitivity of the measurement endpoint for detecting change." My interpretation of this attribute is the actual ability of a laboratory or field protocol to detect a change in the data in response to the presence of contaminants. This is not necessarily linked to the availability of toxicity benchmarks for the contaminants, as the Navy suggests.</p>	<p>Comment noted.</p> <p>The Navy will be working with agencies to revise and apply the Weight of Evidence approach to other sites.</p>
USEPA – Region 9: Specific Comments	3	<p>Section 4.4.1.2, Exposure Model [for avian receptors], pp. 4-5 to 4-8. Allometric analysis for birds should incorporate the findings of Mineau <i>et al.</i> (1996).</p> <p>Also, analyses using toxicity reference doses to derive hazard quotients beyond a screening level risk assessment should follow the procedures outlined in the California Dept. of Toxic Substances Control, Human and Ecological Risk Division ERA Note Number 2, which was sent by Dr. James Polisini (DTSC/HERD) via electronic mail to Lisa Hunt (Navy, EFA West) on 9 June 1999. This note is the result of a long standing debate between the Navy and the Region IX BTAG over the use of TRVs. Henceforth, all HQ analyses beyond the screening level should conform to this DTSC note.</p> <p>The DTSC/HERD Ecological Risk Assessment Note #2 on the BTAG approach to the use of TRVs beyond a screening level assessment can be found at www.cwo.com/~herd1. Click on Downloads, then on Eco-Risk Guidance, then on EcoNote2.</p>	<p>The allometric equation developed by Nagy (1987) was used instead of Mineau because it provides a way to estimate an ingestion rate based on a known body weight and is appropriate for use in the dose calculation in the ERA. The Mineau model is used to convert a TRV dose from one species to another. Since an estimated ingestion rate was needed, the Nagy equation is the appropriate model.</p> <p>A hazard quotient approach was not used in this ERA. Section 4.4.3.1 discusses the efforts that were made to develop a TRV. Since development of a formal TRV was not possible, a qualitative approach was selected as described in Appendix D.</p> <p>No changes to the text are proposed.</p>

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CDFG Specific Comments	1	Section 6.4.2.1, pg. 6-7, paragraph 3: A recent study has been published which derived bird and mammalian allometric scaling factors using a database that included environmental chemicals (B.E. Sample and C.A. Arenal 1999). For example, scaling factor of 1.2 should be used for birds. Please clarify what scaling factor was used here.	<p>The following bold text has been added to the paragraph in Section 4.4.1.2 of the ERA, which discusses the exposure model, “Therefore, the average body weight was incorporated into Nagy’s (1987) allometric equation for food ingestion rates for all birds (IR {g/day} = [0.648 x body weight {g}]^{0.651}) and used to derive a daily ingestion rate” (page 4-6).</p> <p>The following changes have been made to the text in Paragraph 3, section 6.4.2.1 on page 6-7 (added text in bold):</p> <p>“Daily ingestion rates were not available in the literature for either species, so an ingestion rate was estimated using the allometric equation developed by Nagy (1987) which is based on body weight. The allometric equation is based on the assumption that as body weight increases, ingestion rate would also increase by a constant rate.”</p>
CDFG Specific Comments	2	Appendix B, pg. B-6, Tables B-2: the “Quality of Data” attribute is missing.	Addressed in RWQCB specific comment by section #12
CDFG Specific Comments	3	Appendix C, pg. C-2, paragraph 3 and pg. C-3, paragraph 1: According to our experience, contaminant levels in sediments vary significantly with short distance and also can vary over time (Finlayson <i>et al.</i> 1999). It is unclear if sediment samples from Pt. Molate were collected as a single grab sample or as a composite sample at a given station within a diameter of 10 meters. From pg. E-1, we understand that the sediment samples were only collected once in Oct. 1998 and that temporal variability over time is unknown. Therefore, if it was a single grab sample, the results from amphipod bulk sediment bioassay might not fully reflect the exposure to the benthic invertebrate community. We recommend, for this measurement endpoint, spatial representativeness and temporal representativeness be rank 3 instead of rank 4 in WOE development.	<p>It is recognized that the ranks for both of these attributes are based to a degree on professional judgement. The rationale given for the selection of a rank of 4 for both spatial and temporal representativeness in Appendix C could support a rank of three. The higher rank of four was given in both cases based on the assumption that the study was temporally and spatially conservative. Although uncertainty exists concerning the temporal representativeness of the study, temporal variability would be expected to be defined by decreasing concentrations over time (as the sources of contamination at NFD Point Molate are historical and concentrations of petroleum compounds are known to naturally attenuate). Similarly, although uncertainty exists concerning the spatial representativeness of the study, the study has been defined to focus in areas of probable worst case contamination and is considered to be conservatively spatially representative.</p> <p>Changing the ranks of these two ranks would only slightly change the weight of the measurement endpoint (from 7.8 to 7.6) and have no effect on the outcome of the risk assessment (since</p>

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TDRC – RAB: General Comments	1 (continued)		<p>purposes. This is one of the reasons that these species are used in a number of testing programs such as the Regional Monitoring Program.</p> <p>The data collected at NFD Point Molate do not allow for the development of dose response relationships for TPH or PAHs as no biologically relevant responses were observed in the laboratory assays conducted. However, if toxic levels of compounds existed in Point Molate sediments, we would have expected to see responses in the test organisms used based on the established sensitivity of the test organisms. Because the sensitivity of these test organisms has been established using standard reference toxicants, the Navy does not believe that there is unacceptable uncertainty associated with the conclusions of the toxicity assessment.</p> <p>No changes to the text are proposed.</p>
TDRC – RAB: Specific Comments	1	The question of ecological risk was decided by the assumptions laid out in this document but once this report reduces all ecological risks to hydrocarbons, and all hydrocarbons to polycyclic aromatic hydrocarbons (PAH's), the <u>assumptions</u> of risk may not match the <u>actual</u> risk.	<p>Although the assumption of risk may not represent actual risk, the assumption is conservative. It assumes that any and all observed effects are due to NFD Point Molate COPECs (i.e., petroleum related compounds). Additionally, the study was designed to evaluate this conservative assumption in the event toxicity was observed. If toxicity was observed, and did not correlate with PAH concentrations, additional evaluation would have been conducted to evaluate toxicity drivers using sediment chemistry data collected for PCBs, pesticides, metals and SVOCs.</p> <p>No changes to the text proposed.</p>
TDRC – RAB: Specific Comments	2	Except on one site, this document simply dismisses the Navy's responsibility for any adverse risks due to pesticide use (see page 2-3: "Based on historic use, NFD Point Molate is not considered a significant source to the offshore sediments of pesticides..."). However, the test results show 19 parts per billion of DDT at T-11A which is well above the 1.58 Effects Range Low (ERL) limit. This level of excessive contamination is not adequately addressed in this report other than calling it an "outlier". If the report were to state that the <u>main</u> effect of activities at Pt. Molate on the offshore environment is in fact hydrocarbons, this report might be more credible.	<p>Although pesticides were not the focus of the Point Molate ERA, pesticide data was collected at all sediment locations to evaluate the contribution of pesticides to toxicity if any toxicity was observed. No toxicity was observed at NFD Point Molate and therefore pesticides were not evaluated as toxicity drivers.</p> <p>The comparison of sediment chemistry results to ER-Ls and/or ER-Ms is typically conducted as a screening exercise. The fact that station T-11A (19 ppb) exceeded the ER-L (1.58 ppb) for DDT is not a concern for several reasons. Although 19 ppb is above the ER-L for DDT, it is only slightly above the ambient</p>

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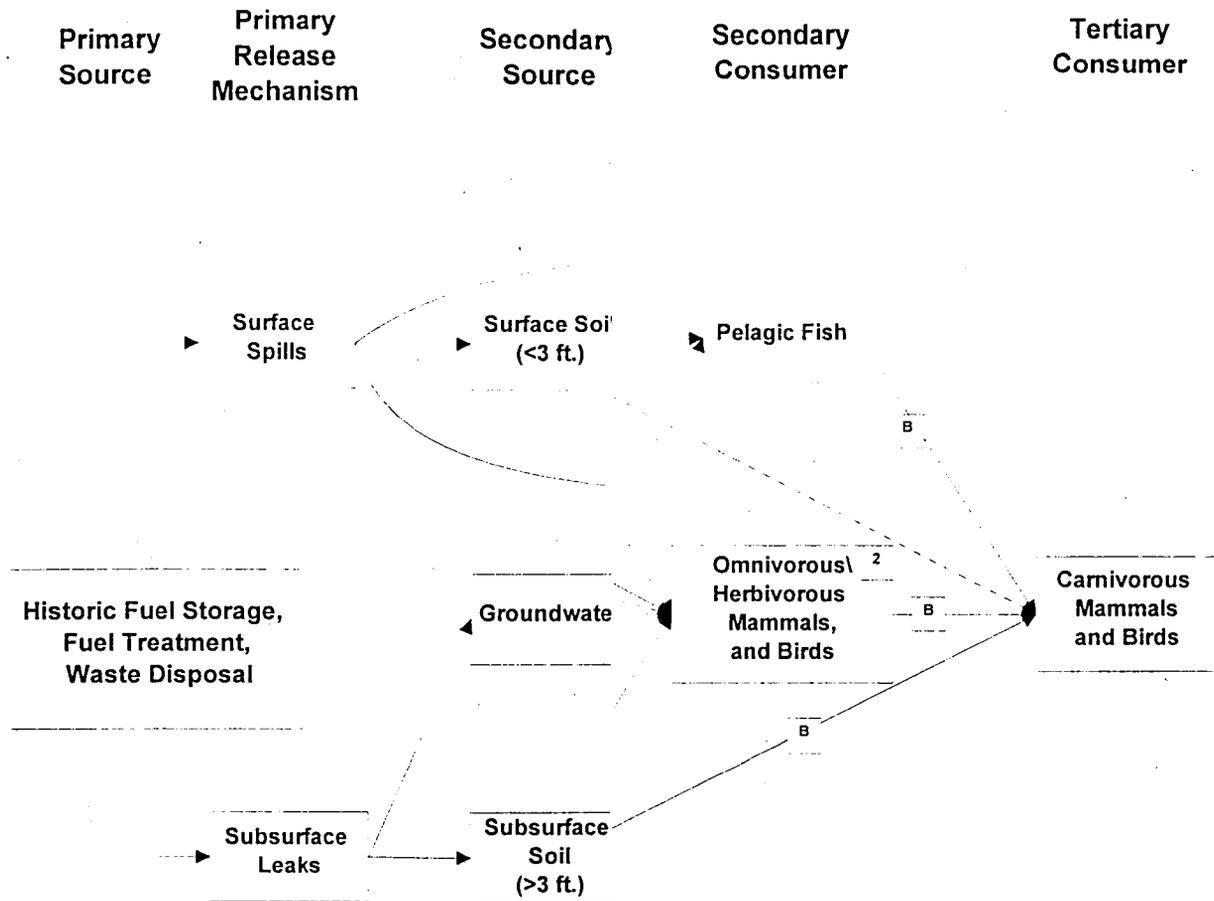
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TDRC – RAB: Specific Comments	4	On page 6 – 8, the report states “The <u>assumption</u> was made that all the toxicity associated with the oil was caused by the sum PAH. While this is not likely to be the case, this assumption ensures conservatism by <u>assuming</u> that a relatively small PAH concentration in crude oil is solely responsible for any observed effect (i.e., toxicity) in the studies reviewed.” (Emphasis added.) This was reiterated on pages D- 4 and D – 5, but the logic here is elusive. Why should ignoring the effects of other components of petroleum be “conservative”?	The conservatism discussed is not a result of ignoring the effects of other (other than PAHs) petroleum-related constituents. However, because this analysis focused on exposure through the food chain, only the PAHs were identified as potentially concentrating in prey items (see response TDRC-RAB comment #3) to an extent that required evaluation. Because the food-chain concern is related to PAHs, a toxicity reference value for PAHs needed to be developed for birds. However, the most relevant studies looked at the effects of petroleum mixtures, only a portion of the toxicity found in these studies are likely to be related to the PAHs in the mixture. By assuming that PAHs were responsible for all observed toxicity, the real toxicity of PAHs was over-estimated. Thus, this was a conservative estimator of toxicity.
TDRC – RAB: Specific Comments	5	On page 2 – 10, the report assumes that constituents of potential ecological concern “in the water column in the intertidal area of NFD Point Molate would be significantly diluted by current and tidal action. Thus, no significant exposure to primary producers [e.g., algae] is expected. . . Since exposure to primary producers is unlikely to be significant, this pathway [primary consumers ingesting primary producers] is not evaluated further.” What about the tendency of oil to be immiscible in and float on water, where some algae concentrate? Primary consumers could ingest the oil from the algae they eat entrained on the surface.	<p>Exposure to oil associated with, or floating on, the surface of the water is not considered a likely exposure scenario as spills, leaks, and or releases at NFD Point Molate are historical events. Petroleum related constituents occurring in sediments resulting from historical operations at NFD Point Molate are expected to be tightly bound to sediments and would not be expected to significantly contribute to surface water contamination.</p> <p>Water column organisms such as algae and phytoplankton move with tides and currents and can not be linked to the sediments in any one area. These organisms are therefore not appropriate receptors for an ERA focused on sediments at a site such as NFD Point Molate.</p> <p>No changes to the text are proposed.</p>
TDRC – RAB: Specific Comments	6	On page 2 – 12, the report further states “Because depositional sediments are not expected to be transported or eroded, organic compounds associated with these sediments are not expected to migrate.” What about dredging, especially around the end of the pier, for instance, where station P3 is? Doesn’t dredging disrupt depositional sediments and cause them to migrate? If the areas around the pier are to be reused as either a part of the proposed new Bay Area ferry system or part of any possible reuse plans that the City may have, wouldn’t it be logical to assume that there might be either dredging around the pier or a disruption of the sediments surrounding the pier?	<p>If dredging, or any other type of physical disturbance is pursued based on a future use scenario, specific evaluations will be conducted (if required) to assess the risk associated with those scenarios as dredging or other regulations require.</p> <p>No changes to the text are proposed.</p>

ATTACHMENT 1



Key :

- 
Major Pathway - A complete exposure pathway with significant potential for contamination
- 
Minor Pathway - A potentially complete pathway but relatively insignificant when compared to the major pathways considered. This pathway would not quantifiably affect the risk assessment.

S

FIGURE 2-6
NFD POINT MOLATE OFFSHORE ERA
CONCEPTUAL SITE MODEL

ATTACHMENT 2

TABLE 3-2

VERTICAL CORE SAMPLING RESULTS

Core Depth (feet from surface)	TPH Concentration (mg/kg)					
	T2	T3	T5	T6	T11	DL1
0 - 1	40	--	--	--	--	--
1 - 2	39	46	18	--	181	186
2 - 3	37	20	23	22*	50	206
3 - 4	12	60	8		28	87

-- = TPH was not detected in sample.

* Only one sample was collected for the depth from 2 to 4 feet at station T6.

ATTACHMENT 3

Table F-1

**Summary of PAH Tissue Data
NFD Point Molate - Offshore ERA**

SAMPID	PERCENT MOISTURE	LIPIDS, TOTAL	NAPHTHALENE	2-METHYL- NAPHTHALENE	1-METHYL- NAPHTHALENE	ACENAPHTHYLENE	ACENAPHTHENE	FLUORENE	PHENANTHRENE	ANTHRACENE
DL-1TI1	85.6	0.97	0.2	0.25	0.15	0.5	1	2	10	3
REF-1-1	87.7	0.61	0.2	0.25	0.15	0.5	0.7	1	10	3
REF-2-1	85.4	0.65	0.2	0.25	0.15	0.6	0.7	1	8	4
REF-3-1	87.2	0.49	0.2	0.25	0.15	0.1	0.7	1	8	2
T10-1TI1	88.1	0.79	0.2	0.25	0.15	0.5	0.9	1	8	2
T11-ATI1	87.7	0.88	0.2	0.25	0.15	0.5	1	2	12	3
T11TI1	85.1	0.78	0.2	0.25	0.15	0.5	1	1	8	2
T2TI1	87.6	0.71	0.2	0.25	0.15	0.1	1	2	22	4
T3-1TI1	86.7	0.42	0.2	0.25	0.15	0.1	0.8	1	12	5
T5-1TI2	84.8	0.75	0.2	0.25	0.15	0.1	1	2	14	8
T6-1TI2	85.1	1.13	8	7	0.15	0.1	3	3	15	7
T9-1TI1	85.1	0.84	0.2	0.25	0.15	0.5	1	2	10	3
T9-2TI1	82.1	0.69	0.2	0.25	0.15	0.3	0.9	1	9	4

SAMPID	FLUORANTHENE	PYRENE	BENZ(A) ANTHRACENE	CHRYSENE	BENZO(B) FLUORANTHENE	BENZO(K) FLUORANTHENE	BENZO(A) PYRENE	INDENO(1,2,3-CD) PYRENE	DIBENZ (A,H) ANTH RACENE	BENZO (G,H,I) PERYLENE	Sum PAH
DL-1TI1	30	24	11	16	16	12	11	10	2	8	17.1
REF-1-1	21	16	9	10	7	6	9	9	1	9	15.8
REF-2-1	16	17	8	9	8	6	9	10	1	10	14.9
REF-3-1	16	17	7	9	8	6	9	11	0.25	11	12.4
T10-1TI1	27	23	11	15	15	11	11	9	1	8	13.0
T11-ATI1	33	26	13	19	17	13	13	12	2	11	19.1
T11TI1	28	30	11	17	14	13	13	10	1	9	13.1
T2TI1	58	48	33	43	22	21	14	13	0.25	10	29.7
T3-1TI1	34	28	17	24	13	12	10	9	0.25	9	19.5
T5-1TI2	35	36	21	29	18	16	16	15	0.25	14	25.7
T6-1TI2	62	52	27	39	24	21	18	14	0.25	12	43.3
T9-1TI1	28	22	13	18	17	11	12	14	4	11	17.1
T9-2TI1	27	20	11	16	14	8	10	10	1	9	15.8

Values in bold represent sample concentrations that were non-detects. The values reported are one half MDLs and are included in the sum PAH value shown in the last column of the table.

ATTACHMENT 4

Figure 2-3
Percent Fines in Sediment
NFD Point Molate and Reference Area

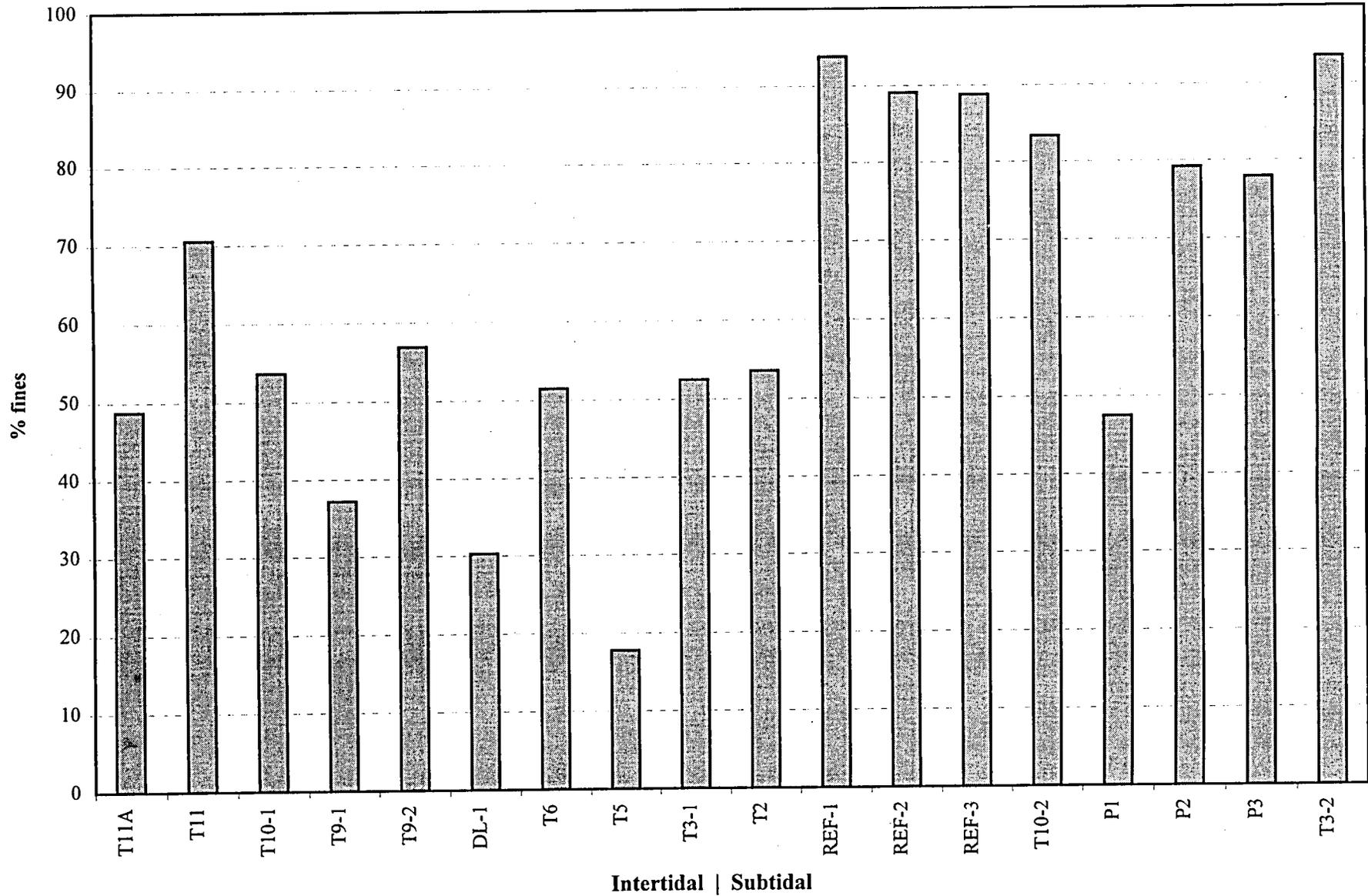


Figure 2-4
Sediment Total Organic Carbon Values
at NFD Point Molate

