



DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
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June 21, 2004

Mr. Michael Work
U.S. Environmental Protection Agency
Region IX
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California Regional Quality Control Board
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Dear BCT Members:

Enclosure (1) is provided for your records regarding the Final Characterization Workplan for Metal Debris Reef and Metal Slag Areas Parcel E, Hunters Point Shipyard San Francisco, California. Also included as Enclosure (2), are the response to agency comments on the Draft Metal Debris Reef and Metal Slag Areas Workplan.

Thank you for your comments and guidance. The Navy intends to begin fieldwork on or about July 6, 2004.

Should you have any concerns, please contact me at (619) 532-0913.

Sincerely,

KEITH FORMAN
BRAC Environmental Coordinator
By direction of the Commander

- Enclosures: 1. Final Characterization Workplan for Metal Debris Reef and Metal Slag Areas Parcel E, Hunters Point Shipyard San Francisco, California.
2. Response to Agency comments on the Draft Characterization Workplan for Metal Debris Reef and Metal Slag Areas Parcel E, Hunters Point Shipyard San Francisco, California

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QUESTIONS MAY BE DIRECTED TO:

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**DON COMMENTS ON THE
DRAFT CHARACTERIZATION WORK PLAN
FOR METAL DEBRIS REEF AND METAL SLAG AREAS
REVISION 0
DATED APRIL 19, 2004
PARCEL E, HUNTERS POINT SHIPYARD,
SAN FRANCISCO, CALIFORNIA**

Comments dated: May 25, 2004

Comments by: Mr. Carl Bonura, Remedial Technical Manager, Code 06CHM.CB

GENERAL COMMENTS (Mr. Carl Bonura)

Comment 1: *Nowhere in the text does there appear to be a mention of the data quality objectives (DQOs) for the planned work. While the majority of discussion of DQOs may be left to the sampling and analysis plan in many such documents, at least a mention should be made in the text to refer the reader to where DQOs may be found. The DQOs appear to be missing some information as indicated in the specific comments.*

Response 1: A general description of and reference to the DQOs will be incorporated into Section 1.1 of the Final Work Plan. Please see responses below regarding specific DQO comments.

SPECIFIC COMMENTS (Mr. Carl Bonura)

Comment 1: *Section 1.1, bullet 4: The number of boreholes cited should be qualified using wording that acknowledges that some may meet refusal and not be replaceable. When stating how many boreholes will be drilled, use language like "up to" so as not to commit to more than actually can be drilled.*

Response 1: The suggested language, of "up to...[10 for within each of the slag and debris areas; 5 along the perimeters of the slag and debris areas]...sampling locations" will be incorporated.

However, significant effort will be made during the sample location selection process to select locations where successful drilling/coring is most likely. Additionally, the drilling methods selected are expected to maximize the likelihood of successful sample collection. Reasonable efforts, as necessary, will be made to relocate and re-drill borings meeting drilling refusal at shallow depths.

Comment 2: *Section 2.2.2: There appears to be a couple of inconsistencies between this section and similar information in the Executive*

Summary (ES). The amount of area covered by the metal slag area is said to be 21,000 ft² in the ES, but here it is said to be 12,445 ft². Also, the estimated depth of the metal slag area is said to be 5 ft in the ES, but here it is said to be an estimated depth of 4 ft.

Response 2:

The values in Section 2.2.2 will be modified. The correct values, which were listed in the Executive Summary, of approximately 21,000 (21,445) square feet and an estimated depth of 5 feet will be incorporated in Section 2.2.2 of the Final Work Plan.

Comment 3:

Section 4.8, paragraph 2, sent 1: Same comment as Section 1.1, bullet 4.

Response 3:

The suggested language, of “up to...[10 for within each of the slag and debris areas; 5 along the perimeters of the slag and debris areas]...sampling locations” will be incorporated.

Comment 4:

Section 4.8.1, paragraph 4: It is not clear why the sampling and testing intervals for the perimeter sediment samples is not the same as for the sediment samples within the footprint of each of the areas. If it is justified for some reason, it should be explained. If not, it should be made the same. It may help the reader to have a little bit more explanation of the rationale for the sampling and testing intervals within the footprint of the areas in the previous paragraph as well. For example, why is it thought that 10 feet is an appropriate maximum depth for both sampling location types?

Response 4:

The following text will be added to Section 4.8.1 to clarify the sampling rationale:

“The sampling depths within the footprint of the metal-impacted areas located at approximately one-half the depth of the slag/debris are intended to provide representative characterization samples of the material contained within the slag and debris areas. Sampling intervals from immediately below the slag/debris are intended to aid in determining if contaminants from within the slag/debris have impacted sediments beneath the debris/slag and/or if these sediments are impacted by contaminants not encountered in the slag or debris. Surface sediment/soil samples from the perimeter borings around the debris and slag areas are intended to aid in determining if surface weathering (physical or chemical) of the slag/debris has resulted in impacts to adjacent sediments. Perimeter boring samples from depths equivalent to the bottom of the adjacent metal debris or slag and from the approximate 10-foot bgs perimeter sediment sample are intended to aid in determining the extent to which contamination from the slag/debris has migrated in the subsurface.”

The following text will also be added to Section 4.8.1:

“At this time, it is estimated that the debris and slag extend only to 5 feet bgs. In the event that site survey activities and/or initial site drilling indicate that the depth of the slag or debris is significantly greater than 5 feet bgs, the DON will be immediately notified and a determination will be made with respect to modifying this Work Plan and the proposed scope of work in order for the site characterization effort to achieve the required goals.

Comment 5:

Table A.8-1, Step 1, sent. 1: This statement indicates that the only potential type of contaminant being considered in this investigation is radiological. The historical information presented in the text, however, indicated that other contaminants were detected at concentrations above the ER-Ms. In addition, Section 4.8.2 states that sediment samples will be tested for SVOCs, PAHs (aren't these SVOCs?), and PCBs. These chemicals probably should be added to this statement.

Response 5:

Table A.8-1 (Data Quality Objectives) will be modified to include the statement that, in addition to radiological contamination, “other contaminants have also been detected along the shoreline areas at concentrations exceeding their respective Effects Range-Median concentrations.”

The reference to analysis for PAHs will be removed. As described in the Sampling and Analysis Plan (SAP), Section 5.0, analyses will be performed for semivolatile organic compounds (SVOCs) by EPA Method 8270C.

Comment 6:

Table A.8-1, Step 1, sent. 2: Same comment as Section 1.1, bullet 4.

Response 6:

The suggested language, of “up to...[10 for within each of the slag and debris areas; 5 along the perimeters of the slag and debris areas]...sampling locations” will be incorporated into Table A.8-1.

Comment 7:

Table A.8-1, Step 3: Based on Section 3.0 of this work plan, there should be more inputs listed in this step. There is significant data that will be collected in the form of topographic and geophysical surveys that are not acknowledged in this step. These data are key in determining the extent of the areas.

Response 7:

Step 3 of the Data Quality Objectives (Table A.8-1) will be modified to include topographic, bathymetric, and geophysical surveys used for decision inputs.

Comment 8:

Table A.8-1, Step 4, paragraph 2, sent. 1: Same comment as Section 1.1, bullet 4.

Response 8: The suggested language, of “up to...[10 for within each of the slag and debris areas; 5 along the perimeters of the slag and debris areas]...sampling locations” will be incorporated into Table A.8-1.

Comment 9: *Table A.8-1, Step 7, sent. 1: Same comment as Section 1.1, bullet 4.*

Response 9: The suggested language, of “up to...[10 for within each of the slag and debris areas; 5 along the perimeters of the slag and debris areas]...sampling locations” will be incorporated into Table A.8-1.

**EPA COMMENTS ON THE
DRAFT CHARACTERIZATION WORK PLAN
FOR METAL DEBRIS REEF AND METAL SLAG AREAS
REVISION 0
DATED APRIL 19, 2004
PARCEL E, HUNTERS POINT SHIPYARD,
SAN FRANCISCO, CALIFORNIA**

Comments dated: May 20, 2004

Comments by: Mr. Michael Work, Remedial Project Manager,
U.S. Environmental Protection Agency

SPECIFIC COMMENTS (Mr. Michael Work)

Comment 1: *Section 2.2, Physical Characteristics, Page 2-2: Tidal and freshwater wetlands are known to exist within the proposed work area and project impact area, but the Draft Characterization Work Plan, Metal Debris Reef and Metal Slag Areas, Parcel E (the Work Plan) does not include a figure showing the location and proximity of the proposed work area to these wetlands. Please include a figure in this Work Plan that shows the location of each wetland that is located in the vicinity of the metal debris reef and metal slag areas.*

Response 1: These areas will be identified on Figures 4-1 and 4-2 of the Final Work Plan.

Comment 2: *Section 2.4, Parcel E Hydrogeology, Page 2-3: It does not appear that groundwater will be characterized during the field activities described in this Work Plan. The text implies that this decision was made because groundwater does not percolate to the surface along the Parcel E Shoreline. However, groundwater is present at the metal slag area at approximately 2 feet above mean sea level (ft msl) and at the metal reef area at approximately 0.30 ft msl (See Final Parcel E Groundwater Summary Report Phase III Groundwater Data Gaps Investigation, Figures 3-11 and 3-12, Tetra Tech 2002). The shoreline of Parcel E in both of these areas appears to be covered by intertidal saltmarsh (See Wetlands Delineation Functions and Values Assessment, Figure 3, Tetra Tech 2002). Therefore, it appears that groundwater may be discharged to the surface through the wetlands at Parcel E. Please remove the statement that groundwater does not percolate to the surface in Parcel E*

Groundwater in the vicinity of the metal reef area is not adequately characterized. Please either include groundwater characterization in the vicinity of the metal reef or provide adequate justification for not

including characterization of groundwater as an objective for this Work Plan and explain where and how groundwater will be characterized.

Response 2:

The text of Section 2.4 will be revised to remove the inference that the absence of observed groundwater percolation to the surface is the justification for not assessing groundwater.

However, groundwater will not be assessed (except as described below) during this site characterization because the purpose of this site characterization effort is solely to assess the technical requirements associated with a planned time-critical removal action (TCRA) of the potentially radioactive metal debris and metal slag present in the Metal Debris Reef (MDR) and Metal Slag Area (MSA). The proposed area of characterization is primarily located within the intertidal and sublittoral (below low-tide) zones, potentially extending into the supralittoral (above high-tide spray) zone. Pore waters contained in the sediments or soils are not representative of terrestrial groundwater, but rather will be either representative of bay waters or a mixture of bay water, groundwater, and surface water.

Limited assessment of "surface" water quality encountered at two boring locations at both MDR and MSA is proposed in the Work Plan (Section 4.8.2, paragraph 4, sentence 4) and the SAP (Sections 4.4 and 6.4). As described above, these water samples are likely representative of a mixture of bay water, groundwater, and surface water.

It should also be noted that only a small fraction of the shoreline area at MDR and MSA proposed for the site characterization and TCRA contains intertidal saltmarsh. The majority of the area of proposed investigation and removal action is located seaward of the intertidal saltmarsh areas shown in the Tetra Tech EM Inc. (2002) report mentioned. In addition, the presence of groundwater is not considered a prerequisite for the occurrence of intertidal saltmarsh plants. Groundwater may be present in the identified saltmarsh areas, as some are located in topographically low-lying areas; however, saltmarsh plants also require periodic contact with saltwater, either via the surface or subsurface, and may be supplied with freshwater either via groundwater or surface water runoff.

Assessment of groundwater will not be conducted as part of this site characterization, as groundwater quality near MDR and MSA does not directly impact the evaluation of TCRA options for metal slag and debris present in these areas.

Comment 3:

Section 2.5, Chemical Characteristics, Page 2-4: Hunters Point ambient levels (HPALs) and preliminary remediation goals (PRGs) are not appropriate comparison criteria for chemicals detected in sediments at the metal reef and metal slag areas. Contaminants detected in sediment samples should be compared to sediment screening criteria such as effects range-median (ER-Ms). Please revise the text and Tables 2-1 and 2-2 to include the ER-Ms in addition to HPALs and PRGs.

Response 3:

ER-Ms will be added to Tables 2-1 and 2-2, and to the text of Section 2.5. We concur that HPALs and PRGs are not applicable with respect to strictly marine sediments. However, because both aquatic and terrestrial organisms are potential ecological receptors in the intertidal zone, which comprises a large percentage of the proposed project area, comparison of site characterization data to ER-Ms, HPALs, and PRGs is appropriate.

Comment 4:

Section 4.5.1, Topographic Survey, Page 4-4: The proposed spacing between topographic survey lines is "not more than 50 feet apart," but it is unclear whether there are any piles of debris or slag that could be missed because they are less than 50 feet in diameter. Detailed infill is only proposed along the transect lines, not between the lines, so it is possible that piles of debris or slag could be missed and not mapped. Please clarify whether the spacing between transects will be adjusted to map all debris and slag piles.

Response 4:

The text will be revised to include surveying of additional infill points and/or adjusting the offsets of the survey lines to capture topographic highs and lows (and particularly any distinguishing slag or debris piles) which fall between the 50x50' survey grid.

Comment 5:

Section 4.8.1, Split-Spoon and Continuous Corings, Page 4-7: The text states that "a 30-foot radius around each boring location will be radiologically screened before drilling to prevent the potential off-site transport of sources," but it is also possible that if sources like radium dials have deteriorated that contaminated soil could be transported off-site. Please revise the text to include the potential for transporting radiologically contaminated soil off-site.

Response 5:

All sediment/soil cores will be screened for radiological contamination promptly upon collection at the surface. As described in the Radiological Control Plan (RCP) (Appendix D), Section 7.4, sections of the cores that are identified as being impacted with radiological contamination will be removed (for 1 foot on either side of a point source) and the radiologically contaminated material will be drummed and handled separately from other core materials. Radiologically impacted materials will not be sent to the chemical-analytical

laboratory. Per the RCP, radioactive materials identified during this project will be stored in Building 406. Reference to these procedures is included in Section 4.8.1.

Comment 6:

Section 5.5, Meetings and Reports, Page 5-4: The text does not specify the document(s) in which data collected during the activities proposed in this Work Plan will be reported. This section discusses meetings and reports during field activities, but does not describe when and in which report the results of these activities will be reported to the regulatory agencies. Please include this information in Section 5.5.

Response 6:

The results of this Site Characterization will be presented in a Time-Critical Removal Action Plan for Metal Debris Reef and Metal Slag Areas, which will be developed based upon the results of this Site Characterization. This will be noted in Section 5.5.

Comment 7:

Appendix A, Section 4.1, Borehole Sampling For Chemical Analysis, Page A4-1: The text states that sample cores will be screened for potential radiological contamination and references Appendix D, but does not discuss measures that will be taken if a core sample is found to be contaminated. As a result, it is unclear whether samples with radiological contamination will be sent for chemical analysis (e.g., for semivolatile organic compounds [SVOCs], pesticides, polychlorinated biphenyls [PCBs], polychlorinated dibenzodioxins or polychlorinated dibenzofurans) or if these samples would be collected from another boring in the vicinity of the boring where radiological contamination was found. Please discuss the procedures to be taken if a core sample is found to be radiologically contaminated and specifically address whether chemical analyses can be conducted on a radiologically contaminated sample.

Response 7:

All cores will be screened for radiological contamination promptly upon collection at the surface. As described in the RCP (Appendix D), Section 7.4, sections of the cores that are identified as being impacted with radiological contamination will be removed (for 1 foot on either side of a point source) and the radiologically contaminated section will be drummed and handled separately from other materials. Radiologically impacted materials will not be sent to the chemical-analytical laboratory. Per the RCP, radioactive materials identified during this project will be stored in Building 406. Reference to these procedures is included in Appendix A, Section 4.1. In the event that the presence of radiologically impacted materials in a core will significantly impact the ability to collect samples at the desired depths, or will prevent collection of sufficient sample volumes, a decision will be made in the field regarding whether or not an additional core will be collected in the same area.

Comment 8:

Appendix A, Section 4.2, Waste Characterization Sampling, Page A.4-2: The Work Plan appears to use sediment and soil interchangeably when referring to sampling or waste characterization activities. This is evident not only in the discussions of investigation derived wastes, but also in the screening criteria displayed in Tables 2-1 and 2-2. Also, it is unclear if sediment samples will be dewatered prior to disposal and if so, what will be done with the potentially contaminated water. Please clarify whether soil and sediment or only sediment samples will be collected and amend the work plan and the sampling and analysis plan with the correct information.

Response 8:

Because both the Metal Debris Reef (MDR) and the Metal Slag Area (MSA) are located within the intertidal zone, the distinction between "sediment" and "soil" in these areas is not obvious. Generally, finer-grained materials encountered below mean-low water should be referred to as "sediments"; whereas, finer grained materials containing both organic matter and rock/mineral grains encountered above the high-tide line would typically be referred to as "soil". Because the investigation areas at MDR and MSA contain a mixture of these components and are at times (based on the tides) exposed directly to marine life and to terrestrial ecological receptors (which affects the selection of screening criteria), no clear distinction can be made. The Work Plan text will be modified to be more consistent and accurate in these distinctions; however, some ambiguity is inherent in this discussion as related to this specific project.

Saturated sediments/soils that are not used for chemical, physical or radiological analyses will be drummed (after screening and separation of potentially radioactive materials). Water that accumulates above the settled sediment/soil in the drums will be decanted into liquid-only drums for disposal. Both sediment/soil- and liquid-containing drums will be sampled and profiled for off-site disposal.

Comment 9:

Appendix A, Section 5.3, Field Quality Control Samples, Page A.5-2: The Work Plan states that field duplicates for the borehole samples will not be collected during this sampling program. However, the discussion of quality control criteria included in Section 8.2.1 and the quality control acceptance criteria in Table A.8-3 indicate that relative percent difference will be used to calculate precision. Please collect 3 field duplicates (10% of 30 total samples) during this sampling program.

Response 9:

Field quality control samples for sediment/soil analyses are not proposed, as contaminant heterogeneity present even in closely adjoining samples may often exceed the permissible relative percent difference (RPD), but this does not reflect the precision of the

sampling and analytical methods used. RPDs for sediments/soils will be compared and assessed based on matrix spike/matrix spike duplicate and laboratory control sample/laboratory control sample duplicate analyses.

Comment 10:

Appendix A, Section 5.3.1, Equipment Rinsate Samples, Page A.5-2 and Appendix A, Section 6.1, Borehole Sampling Procedures, Page A.6-1: The procedures described in Section 5.3.1 are inconsistent with those included in Section 6.1. The text in Section 5.3.1 states that "equipment rinsate samples will be collected only if reusable sampling equipment is used," but Steps 6 and 7 of Section 6.1 indicate that reusable equipment will be used and decontaminated. Therefore, equipment rinsate samples will be necessary. Please revise the text of Section 5.3.1 to state that equipment rinsate samples will be collected.

Response 10:

Section 5.3.1 will be revised to state that equipment rinsate samples will be collected and analyzed.

Comment 11:

Appendix A, Section 6.1, Borehole Sampling Procedures, Page A.6-1: The decision criteria for using sampler liners is not included in the procedures for borehole sampling. The text indicates that samplers may not be filled with liners due to potential interference with the radiological screening process. Please include criteria for field personnel to use when deciding whether to place a liner in the sampler.

Response 11:

The text of Appendix A, Section 6.1 will be modified to include the following text:

"A liner will not be used for hollow-stem auger or rotary-sonic drilled cores, unless it is found to be necessary for maintaining sufficiently intact soil/sediment cores. For the vibrocore sampling, a thin aluminum tube is used as the core casing, and the core casing will be cut open for radiological screening using a cutting device designed to minimize or eliminate any metal shavings. Provided that drilled materials are sufficiently competent, the sonic drill core barrel will recover cores in 3- to 5-foot length sections, which will be vibrated out of the cores directly into new, clean plastic bags (approximately 2 to 3 feet in length each). The plastic bags will be cut open using a clean, sharp blade so that radiological screening can be conducted. For all core samples, sediments or soils for chemical analyses will be taken from center sections of the core not in contact with either the core barrel or plastic bag."

Comment 12:

Appendix A, Table 8-1, Summary of Data Quality Objectives: The Data Quality Objectives (DQOs) do not reflect DQO guidance and are incomplete. Step 2 should be formulated as a series of questions. Step 3 radiological results that match those in Appendix D. Step 3 is

missing the topographic survey, bathymetric survey, and geophysical surveys. Step 4 should include the physical and temporal boundaries of the study, not the number of samples to be collected. Step 5 should include decision rules and be rewritten in an "if ... then" format. Step 6 does not indicate whether the sampling design is judgmental or systematic, or state the tolerable errors for analytical data. Step 7 should include the number of samples. Please revise the DQOs in accordance with EPA DQO guidance to address the issues listed above.

Response 12:

The DQO Table (Table A.8-1) will be revised as follows:

- 1) Step 2 will be modified in the form of questions related to the adequacy of the planned site characterization for determining the nature and extent of the impacted areas with respect to the data uses specified in Step 2.
- 2) Step 3 will be modified to include all radiological analyses, and the topographic, bathymetric, and geophysical survey data inputs.
- 3) Step 4 will be modified to describe the approximate physical boundaries of the characterization areas. Data collection is proposed over a very limited time span only, with no temporal data collection other than that required to establish adequate controls for the bathymetric survey (tidal data).
- 4) Step 5 will be modified to reflect the structure suggested by the reviewer.
- 5) Step 6 will be modified to state that the sampling design is judgmental. The judgments made regarding final sampling design in the field will reflect professional interpretations of the combined topographic, bathymetric, and geophysical survey data combined with knowledge of any limitations of the sampling equipment to be used.
- 6) Step 7 will be revised to include a description of the number of sampling points.

**ARC ECOLOGY STAFF COMMENTS ON THE
DRAFT CHARACTERIZATION WORK PLAN
FOR METAL DEBRIS REEF AND METAL SLAG AREAS
REVISION 0
DATED APRIL 19, 2004
PARCEL E, HUNTERS POINT SHIPYARD,
SAN FRANCISCO, CALIFORNIA**

Comments dated: June 1, 2004

Comments by: Mr. Cian B. Dawson, Staff Scientist
Arc Ecology

SPECIFIC COMMENTS (Mr. Cian B. Dawson)

Comment 1: *Section 2.4 Parcel E Hydrogeology states, "... groundwater was never observed to be percolating to the surface in the Parcel E shoreline area; therefore, groundwater is not discussed further in this document." This statement implies that, because groundwater is not seen at the surface, it is not impacted by the metal slag and metal reef areas. Runoff from precipitation events may transport contaminants from the metal slag and metal reef into the subsurface and the groundwater. The groundwater in the metal slag and metal reef areas should be fully characterized to assess the impact of the metal slag and metal reef on groundwater and to assess the potential for migration of contaminants – metals and radionuclides, in particular – through groundwater.*

Response 1: The text in Section 2.4 will be revised to remove the inference that the absence of observed groundwater percolation to the surface is the justification for not assessing groundwater.

However, groundwater will not be assessed (except as described below) during this site characterization because the purpose of this site characterization effort is solely to assess the technical requirements associated with a planned time-critical removal action (TCRA) of the potentially radioactive metal debris and metal slag present in the Metal Debris Reef (MDR) and Metal Slag Area (MSA). Furthermore, the proposed area of characterization is primarily located within the intertidal and sublittoral (below low-tide) zones, potentially extending into the supralittoral (above high-tide spray) zone. Pore waters contained in the sediments or soils are not representative of terrestrial groundwater, but rather will be either representative of bay waters or a mixture of bay water, groundwater, and surface water.

Limited assessment of "surface" water quality encountered at two boring locations at both MDR and MSA is proposed in the Work Plan (Section 4.8.2, paragraph 4, sentence 4) and the SAP (Sections 4.4 and 6.4). As described above, these water samples are likely representative of a mixture of bay water, groundwater, and surface water.

Assessment of groundwater will not be conducted as part of this site characterization, as groundwater quality near MDR and MSA does not directly impact the evaluation of TCRA options for metal slag and debris present in these areas.

Comment 2:

Please provide additional information on previous metals sampling and analysis data from the metal reef and metal slag areas, as these data would be helpful in assessing the Navy's plans for characterization of the areas in question. Please include a figure showing the locations where soil samples were collected and analyzed for metals, indicating where samples exceeded HPALs and/or PRGs.

Response 2:

Results from previous metals sampling and analysis at the MDR and MSA were summarized in the Tetra Tech EM, Inc. (TtEMI) (2002) *Sampling and Analysis Plan for Parcel E Standard Data Gaps Investigation*. Previous radiation survey results for the MDR and MSA were presented in the PRC Environmental Management Inc. (1992) *Surface Confirmation Radiation Survey*. Additional shoreline radiation surveys were conducted for the TtEMI (2003) *Draft Parcel E Standard Data Gaps Investigation, Interim Data Analysis Report*. The locations of the samples collected for each of these reports are shown on Figures 2-1 and 2-2. The results of the metals analyses (TtEMI, 2002) are summarized on Tables 2-1 and 2-2.

Comment 3:

The work plan does not state when and where the results will be documented.

- a. *Please revise Section 5.5 and Figure 5-1 to include information on where the results of the metal slag and metal reef area characterization will be documented and when the Navy anticipates releasing those documents for regulatory and/or public review.*
- b. *How does this schedule relate to the anticipated Time-Critical Removal Action (TCRA) timeframe and public comment process? It will be important for the characterization results to be released and to have gone through regulatory review prior to the release of the related TCRA work plans.*

Response 3:

The results of this site characterization effort will be summarized in the TCRA Work Plan for MDR and MSA. The data from the site

characterization will be presented in an appendix to the TCRA Work Plan. Section 5.5 and Figure 5-1 (Project Schedule) will be revised to include this information. The site characterization effort is being undertaken solely for the purpose of supporting decision-making process for the planning and implementation of the TCRA for the MDR and MSA. Therefore, no separate regulatory or public review of the results of the site characterization is deemed necessary or incorporated into the project schedule. By incorporating the site characterization data into the proposed TCRA Work Plan, the regulatory agencies and public will have the opportunity to evaluate any proposed removal actions with respect to the data collected during the site characterization.

Comment 4:

The work plan descriptions for the land surface and marine surveys (geophysical, topographic, and bathymetric) indicate a significant potential variation in the lateral extent of the surveys (“100 to 250 feet beyond the toe of the shoreline slope,” “100 to 250 feet landward of the shoreline”). While it is understandable that the actual extent of the surveys may need to be determined in the field, it is not clear what criteria will be used by field personnel or supervisors to determine the extent of the areas being surveyed. Please revise the work plan to clarify how these decisions will be made.

Response 4:

The lateral extent of the surveys will be based upon both visual observations of the surface and the preliminary results of bathymetric and geophysical measurements made at the surface. For example, surveys will be continued laterally if geophysical measurements indicate that significant metallic debris is present and/or if bathymetric surveys indicate that significant debris is present on the bottom of the adjoining offshore waters. This will be clarified in the text of Sections 4.5, 4.6 and 4.7.

Comment 5:

The work plan does not provide enough information on the planned surface, borehole, and marine geophysical surveys for the reader to assess whether the work plans for these surveys are appropriate and sufficient to meet the stated objectives. Please revise these sections to provide more specific detail on the survey plans, including instrumentation and survey methods.

Response 5:

This comment is unclear regarding the reviewer’s specific concerns. Sections 4.5, 4.6, and 4.7 provide information regarding the survey spacing and performance requirements for the equipment to be used. In addition, documentation of the instrumentation and procedures used for the surveys will be presented with the data results from the site characterization in the TCRA Work Plan.

Comment 6:

Descriptions of the plans for landside and marine geophysics mention decisions to be made based on comparison of field data to "background" readings. Please clarify for each instrument how and where "background" levels will be measured and the rationale for those choices.

Response 6:

In general, background readings will be more consistent and of lower amplitude (geophysical anomalies) or more uniform and level (bathymetric) than within metal debris and slag areas. Background levels will be measured outside of the suspected limits of disposal. It is anticipated that such areas will be present approximately 100 feet or more offshore. For upland areas, background levels may be more difficult to identify due to the presence of a variety of fill materials used in the initial construction of HPS (for example, blocks of serpentine rock). However, reasonable attempts will be made to establish "background" levels in the upland areas at various points adjacent to MDR and MSA.

Comment 7:

Section 4.8 Borehole Drilling Activities:

- a. Please revise Section 4.8 Borehole Drilling Activities to specify the criteria that will be used to [s]ite boreholes used for geophysical surveys and/or sampling.*
- b. The work plan states that radiological screening of each boring location and its vicinity will be conducted prior to drilling. Please provide more information on what type of screening will be done and how the results of the screening will impact drilling and sampling decisions.*

Response 7:

The criteria used to locate boreholes for sampling will be based on a combination of topographic/bathymetric and geophysical survey interpretation, and practical limitations on the placement of the drilling rig and coring vessel. Because conditions at MDR and MSA present a wide variety of challenges to successful drilling/coring, it is impractical to develop a distinct set of criteria to be used for the selection of sampling locations. Reasonable attempts will be made to sample representative areas of both the MDR and MSA to delineate the nature and extent of contamination that may impact implementation of the TCRA.

The Radiological Control Plan (RCP) (Appendix D) provides details regarding the conduct of the radiological surveys at the borehole locations. The intent of the survey radiological survey is to mitigate against contamination of the drilling equipment or personnel prior to or during drilling activities via contact with radioactive materials.

- Comment 8:** *Section 4.8.2 Soil and Sediment Sample Collection states that soil removed from each boring will be screened with a high-sensitivity gamma scintillator detector. Will these samples be screened for overall gamma activity or will the energy of the gamma emissions and number of gamma emissions associated with each energy level be measured in order to identify the possible source radionuclides? Also, please revise the section to clarify how these field screenings will impact field work and/or sampling handling.*
- Response 8:** The SAP (Appendix A), Sections 4.1, 5.0, and 6.0, and RCP (Appendix D) Section 7.0 provide details on borehole radiological screening and sampling procedures, including details on how detection of radioactive materials will impact the sample handling.
- Comment 9:** *Please check for any reference to TtEMI, 2003 and correct to the appropriate document (either TtEMI, 2003a or TtEMI2003b).*
- Response 9:** This clarification will be made.
- Comment 10:** *When will the Internal Draft Parcel E Standard Data Gaps Investigation, Interim Data Analysis Report, Hunters Point Shipyard, San Francisco, California, dated December 10, 2003, be available for public review?*
- Response 10:** This report is currently under internal review. A specific date for release of the results of the Parcel E Standard Data Gaps Investigation has not been determined.
- Comment 11:** *Section 2.2.1 mentions a "survey conducted using a continuity meter to detect all metal near the ground surface." Please provide a reference where these data and results have been documented.*
- Response 11:** These data were collected by TtEMI. Please see Comment/Response 10 regarding the availability of these data.
- Comment 12:** *Section 6.2. Public Participation states, " The RAB held several meetings during the investigation and preparation of a Draft Action Memorandum." Please revise the section to clarify what investigation and memorandum are being referred to.*
- Response 12:** This information will be added to Section 6.2.

**RWQCB STAFF COMMENTS ON THE
DRAFT CHARACTERIZATION WORK PLAN
FOR METAL DEBRIS REEF AND METAL SLAG AREAS
REVISION 0
DATED APRIL 19, 2004
PARCEL E, HUNTERS POINT SHIPYARD,
SAN FRANCISCO, CALIFORNIA**

Comments dated: June 3, 2004

Comments by: Mr. James D. Ponton, R.G., Project Manager
Regional Water Quality Control Board, San Francisco Bay Region

GENERAL COMMENTS (Mr. James D. Ponton)

Comment 1:

Water Board Staff believes that the Draft Characterization Work Plan could benefit from a flow chart that depicts the sequential order of the proposed drilling, borehole geophysical logging, and sampling. As written, the Draft Characterization Work Plan and supporting Sampling Analysis Plan (Appendix A) states that hollow-stem auger or rotary sonic drilling will be used to drill the borings within the footprint of each of the study areas. The borehole locations will be positioned within areas that are determined to have slag and metal present in the subsurface, but an attempt will be made to avoid material that may not be penetrated by the drill rig (i.e., drilling locations will be based on the results of the topographic and bathymetric surveys and landside and marine geophysical surveys). Each boring will be drilled to a depth of about 10 feet below ground surface (bgs). Sediment samples from borings within the footprint of each of the areas will be collected at several intervals within the metal debris/slag and beneath the metal debris/slag horizon. The precise depth of the metal debris/slag sample will correspond to 1/2 the thickness of the metal debris, as indicated by the down-hole geophysical survey.

Based on the information summarized above, Staff understands the following sequence of field events:

- a. Sequence A – Drill a borehole, perform the borehole geophysics, evaluate the borehole geophysics, determine/calculate the thickness of waste (metal debris/slag), identify the relative mid-point of waste (i.e., 1/2 thickness), drill a compatible/adjacent hole in which metal debris/slag samples will be collected at 1/2 the thickness of waste.*

- b. *Sequence B – Drill a borehole while collecting a continuous core through the metal debris/slag, perform the borehole geophysics, evaluate the borehole geophysics and identify the mid-point of the waste (for purposes of sampling), and collect a sample for the proposed chemical and physical analyses from the core.*

In Sequence A, it appears that a second borehole will need to be drilled in order to collect the proposed sample (i.e., ½ thickness of waste). In Sequence B, the visual appearance of the core sample coupled with drilling observations (i.e., cuttings, rate of penetration, bit resistance, etc.) should provide ample information to the field geologist in determining the proposed ½ metal debris/slag thickness sampling point.

Given Staff's current understanding of the nature of waste (dense slag and metal debris), and the drilling, borehole geophysics, and sample collection sequence, Staff questions whether the employment of borehole geophysics is necessary.

Response 1:

The intended sequence of proposed sampling follows the “Sequence B,” as described in the reviewer’s comments above. Separate borings will not be drilled solely for geophysical evaluation. The sequence of events for borehole drilling, downhole geophysical surveying, and sample collection will be further clarified by adding text to Section 4.8 of the Work Plan. We believe that a flow chart is not necessary because clarification of the text of the work plan is sufficient to accurately and clearly describe the planned sequence of events.

The proposed geophysical surveys are intended to provide an efficient means of estimating both the lateral and vertical extent of the metal debris and slag. Time-domain electromagnetic induction (TDEMI) is designed to be insensitive to geology and non-metallic materials, and will be used for the surface geophysical survey. Frequency domain EMI (FDEMI), which is the method proposed for use in the downhole geophysics, will detect both metal and variations in ground conductivity, (for example, slag versus “native soils”). Direct measurements of the thickness of debris/slag cannot be made with either method TDEMI or FDEMI from the surface; however, estimates can be made that there is more or less metal in different areas. These variations may reflect significant shallow metal, with very little at depth. Downhole geophysical measurements provide a means to estimate thickness in specific locations, and when combined with surface geophysics, thickness of slag/debris may be inferred over larger areas that have similar readings.

SPECIFIC COMMENTS (Mr. James D. Ponton)

Comment 1: Executive Summary, pages ES-1 and ES-2: Please clearly label the locations of the 1-acre disposal area located at IR Site 02, the Building 241 Foundry and Building 408 Smelter referenced on page ES-1 and ES-2 on Figure 1-1.

Response 1: These locations will be added to Figure 1-1.

Comment 2: Executive Summary, page ES-2 and Section 2.5.1 Metal Debris Reef and Section 2.5.2, Metal Slag Area, page 2-4: Please provide a figure that shows the locations and results of the previous Parcel E shoreline investigations and Phase 1 radiological investigations that are referenced and summarized on pages ES-2 and 2-4. Staff believes that it is important for the reviewer to understand the density and distribution of sampling that has already been conducted within the metal debris reef and metal slag areas relative to survey and sampling efforts that are proposed in this Characterization Work Plan.

Response 2: Sampling locations from previous investigations are shown on Figures 2-1 and 2-2. Summaries of the metals analytical results from these investigations are presented in Tables 2-1 and 2-2. The purpose of this additional site characterization effort is solely to support the development of a TCRA Work Plan for the MDR and MSA.

Comment 3: Executive Summary, page ES-3 and Section 4.5, Topographic and Bathymetric Surveys, page 4-3:

- a. Staff finds that the discussion regarding the reasons behind conducting the topographic, bathymetry, landside and marine geophysical surveys, and how these resultant survey data will be used, confusing. The text states that the referenced surveys will be used to define the "lateral extent" of debris/waste (i.e., no mention of using the data for vertical thickness determinations). Furthermore, the "geophysical results will be correlated with the site topography survey to select representative locations for placement of area and perimeter borings." It is Staff's understanding that time-domain electromagnetic induction surveys are used to primarily to map thickness of deposits (lithologic units) and will be used at [HPS] to help define the thickness of the metal slag and metal reef. Staff infers from this statement that the proposed survey data serves a dual purpose and these data will be compared and used to profile the thickness of debris/waste and not only be used for the determination of lateral extent. Please review and correct the text as appropriate.
- b. The fifth paragraph of the Executive Summary, page ES-3, states that out of the 30 total boring locations, ten of the borings will be advanced in perimeter locations. Please

expand on whether the proposed perimeter borings will be located on the bay side or landside (or some combination of both) of the debris/waste fields.

- c. *Staff questions the need for down-hole geophysics as proposed in the Characterization Work Plan. As written, the purpose of running the borehole geophysics is to “measure the thickness of the metallic or slag-containing horizons.” It is staff’s opinion that given the unique nature (i.e., density) of the metallic or slag containing debris as compared to native shoreline sediments, that the drilling process (i.e., drill rate/speed, core, cuttings, etc.) will clearly demonstrate and show the transition from metal slag/debris to sediment making the down-hole geophysics unnecessary. Staff is also concerned that given the shallow depth of the boreholes (10 feet bgs total depth), that edge effects (air/soil interface) and probe length relative to total borehole depth might mask the shallow formational or lithologic data that is the target of the proposed study in noise.*

Response 3:

(a) The proposed geophysical surveys are intended to provide an efficient means of estimating both the lateral and vertical extent of the metal debris and slag. TDEMI is designed to be insensitive to geology and non-metallic materials, and will be used for the surface geophysical survey. FDEMI, which is the method proposed for use in the downhole geophysics, will detect both metal and variations in ground conductivity, (for example, slag versus “native soils”). Direct measurements of the thickness of debris/slag cannot be made with either method TDEMI or FDEMI from the surface; however, estimates can be made that there is more or less metal in different areas. These variations may reflect significant amounts shallow metal in locations containing very little metal at greater depth. Downhole geophysical measurements provide a means to estimate thickness in specific locations, and when combined with surface geophysics, thickness of the slag/debris may be inferred over larger areas that have similar readings.

(b) The text will be clarified to indicate that 5 seaward (bayside) perimeter samples will be collected from each of the MDR and MSA. Of the remaining 10 boring locations at each MDR and MSA, it is anticipated that some will be drilled at or near the upland perimeter as well. The exact placement of sampling locations, with respect to perimeter of the debris/slag, cannot be determined until the survey data have been analyzed.

(c) Rotary-sonic drilling, which is planned for use on the land-

accessible portions of the site characterization, will not provide useful information regarding the nature of the cored materials based solely on drilling rate or speed, as there are too many variables with respect to the types of fill materials present at the MDR and MSA. Also, due to the fragmentary and friable characteristics of much of the metal debris, visual identification of the metal and non-metal materials in the cores will not be reliable. The borehole FDEMI planned for use has a 0.5 meter layer resolution. The response could be slightly lower within the first 0.5 to 1 meter of the surface (due to the lack of soil above), but if there is slag and metal present, it will be detected, even in the top meter; therefore, edge effects are not expected to be significant for this application.

Comment 4: *Physical characteristics, Section 2.2 (Draft Characterization Work Plan), Section 4.3 (Environmental Resources Survey), and Appendix C, Section 1.2 (Environmental Protection Plan):* Please show the locations of the tidal wetlands and shoreline and inland seasonal freshwater wetlands described in the referenced sections on appropriate site figures.

Response 4: Wetlands information will be added to Figures 4-1 and 4-2. Due to the significant tidal variations present at HPS, the delineation of a specific "shoreline" is not made.

Comment 5: *Objectives and Scope of Work, Section 1.1, page 1-1 (Draft Characterization Work Plan), and Objectives, Section 1.1 (Appendix A, Sampling and Analysis Plan):* Please expand the project objectives to clearly state that the sample collection (i.e., proposed underlying sediment sampling) will be used to characterize the vertical and lateral extent of contamination resulting from the overlying metal debris/slag. Currently, as written, the project objectives include:

- a. *Assessing the lateral and vertical extent of the metal slag and metal debris reef and,*
- b. *Determining the type and design of engineering controls required to control sediment dispersion during the TCRA.*

Given that the contaminant distribution in the underlying sediments will influence the design and type of engineering controls employed during the TCRA, Staff requests that the sediment contamination characterization data quality objective be clearly stated.

Response 5: The stated project and data quality objectives will be clarified in Work Plan Section 1.1, and in the SAP (Appendix A) Section 1.1 and Table A.8-1 to include characterization of the vertical and lateral extent of contamination resulting from the overlying metal debris/slag.

Comment 6:

Hydrogeology, Section 2.4: *Water Board staff does not agree with conclusion reached (i.e., "... groundwater was never observed to be percolating to the surface in the Parcel E shoreline area; therefore, groundwater is not discussed further in this document.") in Section 2.4. It is Staff's opinion that the groundwater quality in the metal slag and metal debris areas is not well characterized. Water Board staff requests that the Draft Characterization Work Plan and supporting documents be amended to include the collection and analysis of groundwater samples from a subset of the proposed boreholes drilled within the footprints of the metal waste areas and perimeter borings drilled adjacent to the metal waste footprints. The chemical analyses of groundwater should parallel, as appropriate, the analytic suite proposed in Section 4.4 for surface water, and the analytic suite proposed for the groundwater wells completed near the two sites (Base-wide Groundwater Sampling Plan).*

Response 6:

The text of Section 2.4 will be revised to remove the inference that the absence of observed groundwater percolation to the surface is the justification for not assessing groundwater.

However, groundwater will not be assessed (except as described below) during this site characterization because the purpose of this site characterization effort is solely to assess the technical requirements associated with a planned TCRA of the potentially radioactive metal debris and metal slag present in the MDR and MSA. The proposed area of characterization is primarily located within the intertidal and sublittoral (below low-tide) zones, potentially extending into the supralittoral (above high-tide spray) zone. Pore waters contained in the sediments or soils are not representative of terrestrial groundwater, but rather will be either representative of bay waters or a mixture of bay water, groundwater, and surface water.

Limited assessment of "surface" water quality encountered at two boring locations at both MDR and MSA is proposed in the Work Plan (Section 4.8.2, paragraph 4, sentence 4) and the SAP (Sections 4.4 and 6.4). As described above, these water samples are likely representative of a mixture of bay water, groundwater, and surface water.

Assessment of groundwater will not be conducted as part of this site characterization, as groundwater quality near MDR and MSA does not directly impact the evaluation of TCRA options for metal slag and debris present in these areas.

Comment 7:

Section 2.5.1, Metal Debris Reef, Section 2.5.2, Metal Slag Area, and Tables 2-1 and 2-2: *The text states that metals, pesticides and PCBs detected in sediment samples collected from the debris reef exceed effects range-median (ER-M) screening criteria and that sediments by*

the metal slag area contain metals at concentrations exceeding ER-M screening criteria. Tables 2-1 (Chemicals Exceeding Ambient Levels at the Metal Debris Reef Area) and Table 2-2 (Chemicals Exceeding Ambient Levels at the Metal Slag Area) do not include ER-M values. Staff requests that Tables 2-1 and 2-2 be amended to include the ER-M values referenced in the text. Additionally, Staff notes that an additional sediment sample screen, in addition to those listed, should include HPAL as compared to the San Francisco Bay Regional Monitoring sediment data set, which ever is lower.

Response 7:

ER-M values will be added to Tables 2-1 and 2-2, and to the text of Section 2.5. We concur that HPALs and PRGs are not applicable with respect to strictly marine sediments. However, because both aquatic and terrestrial organisms are potential ecological receptors in the intertidal zone, which comprises a large percentage of the proposed project area, comparison of site characterization data to ER-Ms, HPALs, and PRGs is appropriate.

Comment 8:

***Figure 2-2:** Minor comment. The legend provided on Figure 2-2 (i.e., "IR73 site boundary" and "Approximate Limits of Burn Disposal Area" does not appear to relate to the Metal Slag Area. Please review and correct the legend as appropriate.*

Response 8:

This figure will be modified to address this comment.

Comment 9:

***Appendix A -Section 4.3, Geotechnical Sampling:** – Staff notes that the column settling, Dredge Elutriate and Modified Elutriate testing discussed in Section 4.3 may not be appropriate for [HPS]. It is Staff's understanding that Dredge Elutriate testing is designed for unconfined aquatic disposal of dredge sediments that originate from harbor projects and that Modified Elutriate testing is applied to the analysis of effluent originating from sediments placed in an upland disposal sites. These management scenarios do not seem applicable to this project. Please review and revise the text as appropriate.*

Response 9:

Elutriate and column settling tests, as proposed, are intended to evaluate potential mobilization of contaminated sediments that may be present in the MDR and MSA. Mobilization of contaminants may occur during the TCRA, which is anticipated to involve some form of excavation of the slag and debris. The results of these tests will be used to aid in the selection of appropriate engineering controls (such as silt barriers or sheet-pile walls) during the TCRA. Based on this rationale, Dredge Elutriate Testing, Modified Elutriate Testing, and column settling testing is deemed appropriate for this application.