



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

MAY 27 2010

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mark E. Davidson
US Navy
BRAC PMO SE
4130 Faber Place Drive
Suite 202
North Charleston, SC 29405

Re: Naval Activity Puerto Rico (NAPR), formerly Naval Station Roosevelt Roads,
EPA I.D. Number PRD2170027203,

- 1) SWMU 1 – Final Steps 6 and 7 of Baseline Ecological Risk Assessment
- 2) SWMU 2 – Steps 5, 6 and 7 of Baseline Ecological Risk Assessment
- 3) SWMU 9 – Area B Tank 214 Proposal for Additional RFI Sampling
- 4) SWMU 73 (Camp Moscrip/DRMO Scrap Metal Recycling Yard) – Draft Corrective Measures Study Investigation Report
- 5) SWMU 74 (Fuel Pipelines and Hydrant Pits) – Phase I Report of Corrective Measures Study (CMS)
- 6) SWMU 77 (Small Arms Ranges) – Phase I RFI Draft Sampling and Analysis Plan
- 7) Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds

Dear Mr. Davidson:

This letter is addressed to you as the Navy's designated project coordinator pursuant to the January 29, 2007 RCRA Administrative Order on Consent ("the Consent Order") between the United States Environmental Protection Agency (EPA) and the U.S. Navy (the Navy).

EPA has completed its review of the above documents, and has the following comments:

SWMU 1 – Final Steps 6 and 7 of Baseline Ecological Risk Assessment (BERA)

EPA has completed its review of the Final Steps 6 and 7 BERA report submitted by Mr. Mark Kimes' (of your consultant Michael Baker Jr.) letter of April 5, 2010, on behalf of the Navy. Based upon our review and the review of our consultant, TechLaw Inc., EPA finds the Final Steps 6 and 7 BERA report acceptable.

SWMU 2 – Steps 5, 6 and 7 of Baseline Ecological Risk Assessment (BERA)

EPA has completed its review of the Navy's Responses to EPA's previous comments on the BERA and the revisions to the BERA, included with Mr. Mark Kimes' (of your consultant Michael Baker Jr.) letter of April 7, 2010, submitted on behalf of the Navy. Based upon our review and the review of our consultant, TechLaw Inc., EPA approves the April 7, 2010 Steps 5, 6 and 7 of the BERA report.

SWMU 9 – Area B, Tank 214 Area Proposal for Additional RFI Sampling

EPA has completed its review of the Responses to EPA's comments dated September 17, 2009 on the Draft Full RFI Investigation Report for Area B Tank 214, and the proposal for additional investigations to further delineate contamination in the subsurface soil, estuarine wetland sediment and groundwater at SWMU 9. Both were included with Mr. Mark Kimes' (of your consultant Michael Baker Jr.) letter of March 5, 2010, submitted on behalf of the Navy. As part of that review, EPA requested our consultant, TechLaw Inc., to review the March 5 responses and proposal for additional investigations. TechLaw had two comments on the proposal for additional investigations:

- 1) TechLaw's December 23, 2009, evaluation of the November 19, 2009, Navy Response to EPA Comments on the *Draft Full RCRA Facility Investigation Report for SWMU 9 – Area B, Tank 214 Area*, recommended that remedial options for groundwater contamination in the vicinity of, and to the north, and northwest of, wells 9SB41, 9SB42, and 9SB44 be addressed during the Corrective Measures Study. Since the Navy is now proposing additional sampling from several temporary wells and new monitoring wells as part of the supplemental sampling effort, TechLaw recommends that a groundwater sample be collected from temporary well 9TW/SB09 at the time of the proposed additional sampling activities. If temporary well 9TW/SB09 was previously abandoned, it is recommended that a soil boring and/or temporary well be reinstalled in that location for collection of a groundwater sample. Data from 9TW/SB09 will provide a current and more complete delineation of groundwater contamination in this area.
- 2) In addition, one minor comment: the third bullet on page 2 refers to sediment samples "9SD09 through 9SD12." This should be revised to read "9SD109 through 9SD112."

In addition, no schedule for implementing the additional investigations was included with the March 5 letter. Therefore, within thirty days of your receipt of this letter, please submit written responses to the above comments and/or a revised proposal for additional investigations, along with a schedule for implementing those additional investigations and submitting a revised draft Full RFI Report incorporating the results.

In addition, the Puerto Rico Environmental Quality Board (PREQB) has several comments on the March 5, 2010 Responses to previous PREQB comments and proposal for additional investigations. Those are given in the March 29, 2010 letter to myself, which is attached with this letter (Encl. 1). Please submit written responses to PREQB's comments within thirty days of your receipt of this letter.

SWMU 73 (Camp Moscrip/DRMO Scrap Metal Recycling Yard) – Draft Corrective Measures Study Investigation Report

EPA has completed its review of the Draft Corrective Measures Study Investigation Report (the CMS Investigation Report) submitted, on behalf of the Navy, by memorandum dated February 4, 2010 from Mr. Wayne A. Fox of the Department of the Army, U.S. Army Public Health Command. The CMS Investigation Report included as Appendix A, the January 28, 2008 Final CMS Work Plan developed by Michael Baker Jr. Inc., on behalf of the Navy. As part of our review, EPA requested our consultant, TechLaw Inc., to review for adequacy and acceptability, the CMS Investigation Report, but not Appendix A of that Report, as EPA had previously approved (in April 2008) the CMS Work Plan. TechLaw had extensive comments on the CMS Investigation Report, which are given in the enclosed Technical Review (Encl. 2).

In addition, following your revising the CMS Investigation Report to address comments given in the enclosed Technical Review, EPA request that, if the total cancer risk continues to exceed $1E-06$ for future hypothetical residents after the HHRA is revised to address the enclosed comments, EPA considers that implementation of land use controls (LUCs) will be warranted to prevent possible future residential development at SWMU 73. Therefore, if warranted, the Draft CMS Report should be revised to include a proposal for establishing LUCs to restrict future residential development at SWMU 73.

Within seventy five days of your receipt of this letter, please submit a revised report, addressing the above comment and those given in the enclosed Technical Review. Also, since the report makes definitive final recommendations for this site, namely a no further action determination, the title of the report should be revised to constitute a Draft Corrective Measures Study Final Report, and the report should address all relevant topics given in Attachment IV (Scope of Work for A Corrective Measure Study) of the 2007 RCRA Consent Order, with particular emphasis on Tasks I and III.

Also, since definitive final recommendations for this site are being made, please submit, within 75 days of your receipt of this letter, a draft Statement of Basis to support any final recommendations made for SWMU 73. Pursuant to Section XXVIII of the 2007 RCRA Consent Order, the draft Statement of Basis should be consistent with EPA's OSWER Directive 9902.6 (April 1991).

In addition, the Puerto Rico Environmental Quality Board (PREQB) has several comments on the February 4, 2010 Report. Those are given in the March 12, 2010 letter to myself, which is enclosed with this letter (Encl. 3). Please submit written responses to PREQB's comments and/or any necessary revisions to the Report within seventy five days of your receipt of this letter.

SWMU 74 (Aircraft Parking Area) - Phase I Report of Corrective Measures Study (CMS)

EPA has completed its review of the Revised -- Phase I Report of Corrective Measures Study (CMS) and the Responses to comments (included with EPA's letter of January 22, 2010) submitted by Mr. Mark Kimes' (of your consultant Michael Baker Jr.) letter of March 26, 2010, on behalf of the Navy. EPA finds the Responses acceptable in regards to the issues addressed, and the Phase I Report to be acceptable as an interim report. However, EPA's January 22, 2010 letter to you had requested that the Navy submit a work plan and schedule for implementing the Phase II CMS investigations discussed in the Phase I Report. Neither was included with the documents transmitted with the March 26, 2010 letter submitted by Mr. Mark Kimes of Michael Baker Jr., Inc., on behalf of the Navy. Therefore, EPA requests that the Navy submit, within thirty days of your receipt of this letter, a work plan and schedule for implementing the Phase II CMS investigations.

In addition, the Puerto Rico Environmental Quality Board (PREQB) has several comments on the Navy's March 26, 2010 Responses to previous PREQB comments. Those are given in the May 12, 2010 letter to myself, which is enclosed with this letter (Encl. 4). Please submit written responses to PREQB's comments within thirty days of your receipt of this letter.

SWMU 77 (Small Arms Ranges) - Phase I RFI Draft Sampling and Analysis Plan

EPA has completed its review of the Revised Draft Sampling and Analysis Plan (SAP) submitted on behalf of the Navy by Ms. Linda Klink's (of Tetra Tech NUS) letter of March 22, 2010. As part of our review, EPA requested our consultant, TechLaw Inc., to review the Revised SAP. TechLaw's comments are given in the enclosed Technical Review (Encl. 5).

Since the Navy has already commenced implementation of the Phase I RFI investigations at SWMU 77, rather than revising the SAP at this point, EPA requests that the Navy submit written responses and appropriate revisions to the SAP to address the enclosed comments, either when it submits the draft Phase I RFI report for SWMU 77, or a proposal for additional sampling at

SWMU 77 as part of the RFI investigations, whichever occurs first. Within 30 days of your receipt of this letter, please submit a letter confirming when the Navy will address the enclosed comments on the SAP.

In addition, the Puerto Rico Environmental Quality Board (PREQB) has several comments on the Revised SAP and the Navy's March 26, 2010 Responses to previous PREQB comments. Those are given in the May 17, 2010 letter to myself, which is enclosed with this letter (Encl. 6). Please submit written responses to PREQB's comments when you submit written responses and appropriate revisions to the SAP to address EPA's comments, as above.

Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds

EPA has completed its review of the Responses, submitted on behalf of the Navy by Mr. Mark Kimes' (of your consultant Michael Baker Jr.) letter of April 29, 2010, to EPA's March 2010 Comments on Addendum B (Airfield Background Soil) and Addendum C (Freshwater Drainage Ditch Sediment) of the *Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds*, dated February 29, 2008.

As part of our review, EPA requested our consultant, TechLaw Inc., to review the Responses. TechLaw had several comments, which are given in the enclosed Technical Review (Encl. 7). Within 35 days of your receipt of this letter, please submit written responses addressing those comments, and as necessary revisions to Addendum B and/or C. Also, along with written responses addressing the enclosed comments, please submit an updated version of the *Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds*, that reflects the current date (2010) plus any addendums submitted subsequent to February 2008.

If you have any questions, please telephone me at (212) 637- 4167.

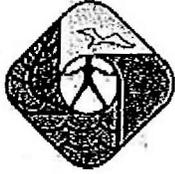
Sincerely yours,



Timothy R. Gordon
Project Coordinator
Resource Conservation and Special Projects Section
RCRA Programs Branch

Enclosures (7)

cc: Ms. Wilmarie Rivera, P.R. Environmental Quality Board, w/encls.
Ms. Gloria Toro, P.R. Environmental Quality Board, w/encls.
Mr. Art Sandford, U.S. Navy, w/encls. #5 and #6 only.
Mr. Barrett E. Borry, P.E., U.S. Army Public Health Command, w/encls. # 2 and #3 only.
Mr. Mark Kimes, Baker Environmental, w/encls.
Ms. Linda Klink, Tetra Tech NUS, w/encls. #5 and #6 only.
Mr. Jonathan Flewelling/Cathy Dare, TechLaw Inc. w/o encls.
Mr. Felix Lopez, USF&WS, w/encls.



COMMONWEALTH OF PUERTO RICO
OFFICE OF THE GOVERNOR
ENVIRONMENTAL QUALITY BOARD

ENCL. #1

Environmental Emergencies Response Area

March 29, 20010

Timothy Gordon
US Environmental Protection Agency -- Region II
290 Broadway -- 22nd Floor
New York, New York 10007-1866

**Re: Draft Full RCRA Facility Investigation
SWMU 9 -- Area B, Tank 214 Area
Response to PREQB Comments
Naval Activity Puerto Rico (NAPR), Celba
EPA ID No. PR2170027203**

Dear Mr. Gordon:

The Federal Facility Coordinator (FFC) and the Hazardous Wastes Permits Division (HWPB) has conducted a technical review of the Navy Responses to PREQB Comments and Evaluations of Navy Responses to PREQB Comments, Draft Full RCRA Facility Investigation Report for SWMU 9 (Area B, Tank 214 Area). Our comments are provided in the attachment.

If you have any additional comments or questions please feel free to contact Gloria M. Toro Agrait at (767) 787-8181 extension 3586 or myself at extension 6141.

Cordially,

Wilmarie Rivera
Federal Facilities Coordinator
Environmental Emergencies Response Area

cc. Gloria M. Toro Agrait, Environmental Permits Officer

Evaluation of Navy Responses to PREQB Comments and Evaluations of Navy Responses to PREQB Comments, Draft Full RCRA Facility Investigation Report for SWMU 9 (Area B, Tank 214 Area)

Please note that only those comments with remaining outstanding issues are presented below. All other comments have been resolved.

Additional Sampling:

- 1. Please analyze a subset of the new sediment samples for a full suite of metals and PAHs to fully document the spatial extent of previously documented exceedances of petroleum constituents and to provide data to evaluate risks to human health and the environment.*

Navy Response: The Navy offers the following points of clarification relative to this comment. A total of 42 sediment samples were collected during the 2009 Full RFI field investigation and analyzed for Appendix IX PAHs and metals. In addition, eleven sediment samples were collected during the 2007 Phase I RFI field investigation, and an additional fifteen sediment samples were collected during a 1999 Phase III RFI field investigation and 2000 CMS field investigation. These 26 sediment samples also were analyzed for Appendix IX PAHs and metals. With the exception of vanadium and lead, the extent of metal contamination in SWMU 9 (Area A, Tank 214) sediment has been defined and additional delineation is not deemed necessary (the proposal for additional sampling as well as the Navy's response to PREQB comment No. 2 below contain recommendations for further delineation of vanadium and lead). Additional evaluation of the available PAH data indicates that PAH contamination in sediment also has been defined except for one location located in the northern portion of the site (9SD92). Therefore, the proposal for additional sampling will be revised to indicate that sediment collected at two proposed locations north of 9SD92 (9SD124 and 9SD125) will include analyses for PAHs. Beyond these proposed analyses, the Navy does not believe additional analyses for metals and PAHs are necessary to define the spatial extent of previously documented petroleum constituents. Furthermore, the Navy believes that a satisfactory number of sediment samples have been collected to provide sufficient data to evaluate risks to human health and ecological receptors.

Evaluation of Response: Contaminants of potential concern (COPCs) include LLPAHs, lead, vanadium, and five other metals that exceed sediment ESVs, some of which were shown to be spatially correlated with fuel-related hydrocarbon contamination (e.g. TPH DRO) from SWMU 9. Recommendations on page 7-2 of the report also concluded that the spatial extent of TPH DRO, LLPAHs, and vanadium in sediment has not been defined. Because ESV exceedances of several organic and inorganic COPCs were found to be spatially coincident, all new samples collected to further delineate the spatial extent of TPH DRO, LLPAHs, lead, and vanadium in sediments also should be analyzed for other key COPCs. Key COPCs for which exceedances of sediment ESVs at numerous locations were documented include benzo(a)pyrene, chrysene, pyrene, cobalt, copper, lead, and vanadium. At a minimum, please analyze a subset of the most distant new sediment "delineation samples" for these seven COPCs. These supplemental data are needed to fully map the nature and spatial extent of ESV exceedances by these key organic and inorganic COPCs in the SWMU-affected sediments.

Evaluation of Responses to PREQB Evaluations of Responses to Comments:

The responses to PREQB's evaluations are acceptable with the exception of the following comment/responses discussed below.

General Comments:

1. Evaluation of Response to General Comment 6 and Page-Specific Comments 23, 29 and 30. As organic lead is a constituent of leaded gasoline, please include an evaluation of tetraethyl lead in the baseline risk assessments (for both ecological and human health) where the fraction of lead considered to be organic is estimated and the potential risks evaluated initially using appropriate screening criteria and then in the baseline risk assessments if identified as a chemical of potential concern.

Navy Response: The Navy respectively disagrees with this comment. As discussed in the Navy responses dated November 19, 2009, The GC/MS technology available for speciation of TEL from other organic and inorganic lead compounds provides a method detection limit (MDL) of 3,200 µg/kg and a reporting limit (RL) of 20,000 µg/kg for solid samples. Noting that TEL's Regional Screening Levels (RSLs) for residential and industrial soil are 0.61 µg/kg and 6.2 µg/kg, respectively, the detection limits provided by the method will not meet the human health screening criteria. The elevated detection limits for TEL also preclude the ability to differentiate between lead species for ecological purposes. While the available technology will not provide detection limits that meet screening criteria, the Navy does not believe it is appropriate to assume an organic lead concentration since there is no known information from the literature upon which to make an accurate estimation.

Evaluation of Response: Because leaded fuel storage tank bottom sludges are known to have been disposed of adjacent to the estuarine wetland, please evaluate, at a minimum, qualitatively the potential human health and ecological risks from exposure to organic lead. Reasonable assumptions can be made about the potential proportion of organic lead that may occur in soil and sediment impacted by leaded fuel releases and/or historical sludge disposal practices at SWMU 9. Please evaluate a worst case scenario for potential organic lead releases, then apply typical concentrations of organic lead in leaded fuels with background soil and sediment data on inorganic lead concentrations to infer the potential fraction of organic lead that may occur in those soils and estuarine sediments, already shown to have been impacted by fuel releases from SWMU 9, to which human and ecological receptors might be exposed.

Page Specific Comments:

1. Evaluation of Response to PREQB Comment 2c, Page 4-2, Section 4.1. The procedure described in the response (i.e., shipping samples in a cooler packed with ice), is the procedure used for refrigerated samples, not frozen samples. Therefore, please clarify whether the samples were received at the laboratory in a frozen state.

Navy Response: It is not known if samples were received at the analytical laboratory in a frozen state as this information was not documented by the analytical laboratory.

Evaluation of Response: There is a potential adverse effect to samples that are frozen in the field, allowed to thaw, and then frozen again in the laboratory. It appears that this may have happened with the low-level VOC samples. Once samples are frozen and allowed to thaw, they must be analyzed within 48 hours of thawing. Therefore, if the state of the samples upon receipt at the laboratory cannot be verified, please update the report to discuss the potential low bias of the VOC results for the low-level soil samples and the potential effect on the human health and ecological screening assessments performed.

2. *Evaluation of Response to PREQB Comment 15, Page 6-1, Section 6.1. Please include a discussion of the potential for soil contamination to be a continuing source of contamination to groundwater, as this should be part of a discussion of nature and extent of contamination.*

Navy Response: The Navy does not believe it is appropriate to compare subsurface soil analytical data to Protection of Groundwater SSLs since groundwater samples have been collected and additional groundwater samples will be collected from existing and new monitoring wells, thus allowing for a quantitative determination of groundwater quality. However, based on the soil and groundwater analytical data, soil contamination is likely a continuing source of contamination in groundwater. Section 6.1 will be revised to include a discussion of this link between soil and groundwater using actual analytical data (not Protection of Groundwater SSLs).

Evaluation of Response: Current groundwater conditions are indicative of contaminants that have already migrated to groundwater. However, the Groundwater SSLs are used to evaluate whether contaminants in soil are present at concentrations that might result in continued impacts to groundwater in the future. Therefore, please conduct a comparison of subsurface soil concentrations to an appropriate Groundwater SSL, either site-specific or default, to evaluate the potential for on-going impacts to groundwater from contaminated soil.

ENCL. #2

REPA4R2-002-ID-181

**TECHNICAL REVIEW OF THE
DRAFT CORRECTIVE MEASURES STUDY INVESTIGATION SWMU 73
DATED FEBRUARY 4, 2010**

**NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203**

Submitted to:

**U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866**

Submitted by:

**TechLaw, Inc.
The Wannalancit Mills
175 Cabot Street, Suite 415
Lowell, MA 01845**

| | |
|---------------------------|-----------------------|
| EPA Task Order No. | 002 |
| Contract No. | EP-W-07-018 |
| TechLaw TOM | Cathy Dare |
| Telephone No. | 315-334-3140 |
| EPA TOPO | Timothy Gordon |
| Telephone No. | 212-637-4167 |

May 17, 2010

**TECHNICAL REVIEW OF THE
DRAFT CORRECTIVE MEASURES STUDY INVESTIGATION SWMU 73
DATED FEBRUARY 4, 2010**

**NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203**

The following comments were generated based on review of the February 4, 2010 *Draft Corrective Measures Study Investigation SWMU 73* (Study Investigation), Naval Activity Puerto Rico (NAPR) Ceiba, Puerto Rico.

GENERAL COMMENTS

1. The rationale for the selected subsurface sampling depths of over ten (10) feet below ground surface (bgs) is unclear. Several instances of samples collected at depths that appear to be below the water table and/or saturated zone were noted. For example, a sample was collected from location 73SB27 at 17 to 19 feet bgs. According to the Final Corrective Measures Study Work Plan for SWMU 73 (CMS WP), samples should have been collected from one (1) to three (3) feet bgs and at a depth shallower than the water table or ten (10) feet bgs, whichever comes first. It is unclear if contamination was suspected at the 17 to 19 foot interval or why a sample was not selected at a shallower depth. Further, no soil boring log was provided for boring 73SB24; therefore, it is unclear why the 17 to 19 feet interval was selected for sampling at 73SB24. It should be noted that a sample was collected from 73SB02 at seven (7) to nine (9) feet bgs; however, according to the soil boring log, a strong odor was detected at 12.5 to 15 feet bgs. In this case, it appears that the CMS WP was followed, in that the sample from the most contaminated interval was not collected since the interval was below the water table and/or saturated zone. Revise the Study Investigation to provide a rationale for each subsurface sampling depth (other than one (1) to three (3) feet bgs) selected. Comment on whether the selected sampling depth allowed the objective of the Study Investigation (i.e., to define the extent of contamination) to be met.
2. According to the CMS WP, groundwater samples collected from 73MW01 (corresponding to location 19E-03) and 73MW03 (corresponding to location 19E-SS06) were to be analyzed for volatile organic compounds (VOCs), semivolatile organic compounds, low level polynuclear aromatic hydrocarbons (PAHs), and metals. Based on review of the Study Investigation, it does not appear that sample 73MW01 was analyzed for low level PAHs. In addition, it appears that sample 73MW03 was analyzed for select metals and low level PAHs only. Provide an explanation for these deviations from the CMS WP. In addition, discuss how the deviations affect the Navy's ability to meet the objectives of the investigation.
3. It does not appear that soil data was compared to the EPA Protection of Groundwater Soil Screening Levels (SSLs). A comparison of soil data to SSLs will aid in determining what constituents in soil, if any, may be contributing to groundwater contamination. Revise the Study Investigation to include a comparison of soil data to the SSLs. Provide a discussion detailing the potential for the soil contaminants to impact groundwater.

4. The Laboratory Data Validation Summary presented in Section 6.4 is lacking in detail. For example, the section does not specify the extent of all the quality control exceedances. Without providing the extent of the exceedances it cannot be verified if data were qualified appropriately. Additionally, a discussion of how precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters were met has not been included. Further, according to Appendix D, the data validation report for the 2009 sampling event indicates that representativeness, as displayed in field blanks, cannot be properly assessed and that comparability for aqueous field samples is not acceptable. However, the study does not discuss how these deficiencies affect data usability. Revise the section to provide a more detailed discussion of data usability.
5. It appears that several results were rejected in both the 2008 and 2009 sampling events affecting completeness goals. However, neither Section 6.0 of the text nor Appendix D specify how much of the data were rejected or how this did or did not impact site decisions. Revise the Study Investigation to discuss the laboratory and field completeness achieved. If the completeness goals were not achieved, ensure either the text of the Study Investigation or Appendix D addresses how site decisions were or were not impacted.
6. Tables 4-17 do not appear to contain the data qualifiers as discussed in Appendix D, Laboratory Validation Reports. For example Appendix D discusses qualifying results as "J-" or "J+" depending on whether there is a negative or positive bias. However, the tables only qualify results as "J." Revise the tables to reflect the qualifiers used by the data validator.
7. The Screening-Level Ecological Risk Assessment (SLERA) and Step 3a of the Baseline Ecological Risk Assessment (BERA) do not fully present the groundwater risk assessment. The SLERA in Section 7.3.4 on Page 28 does not describe the assessment and measurement endpoints, or the components to the conceptual site model associated with potential exposure to groundwater. Furthermore, the SLERA does not include a food-chain assessment of groundwater chemicals of potential concern (COPC) that may enter nearby Bahia de Puerca. It is understood that this pathway has not been quantified, however, at a minimum, the SLERA should describe this pathway and clarify why the food chain was not assessed. In addition, the risk conclusions as presented in Section 7.10.1.3, on Page 50 need to discuss the high COPC hazard quotients (HQs) (e.g., for DDT the HQ = 100), which suggests the potential for risk. Note that this specific risk conclusion is discussed further in the specific comments. In summary, revise the text to acknowledge the groundwater exposure medium in a consistent manner and integrate it into each facet of the ecological risk assessment (ERA). In addition, provide further discussion in Section 7 to detail information pertinent to the groundwater medium.
8. The SLERA does not clearly define the treatment of subsurface soil as an exposure media. The document addresses the potential risk to community level receptors (plants and invertebrates) and wildlife receptors (birds), even though the exposure potential associated with this media is not defined. Further, it is not clear if subsurface soil is consistently defined by depth, or to what depth receptors can be exposed (including the red-tailed hawk). The SLERA should indicate whether the depth was defined based on plant root zones, invertebrate burrowing depth, or some other variable. Revise the Exposure Estimate

presented in Section 7.6.2 on Page 32 and the supporting pertinent sections to clearly describe the subsurface soil exposure assumptions and their relevance to the ERA.

9. The ERA does not bring the endangered species risk conclusions to closure. The American robin was chosen to represent the endangered yellow-shouldered blackbird. An "individual" assessment point was selected to address this species; however the measurement endpoint is the same as the population measurement endpoints for the two other, non-listed avian receptors. Also, the SLERA does not present conclusions for the robin, and an endpoint for the species was therefore not identified in the BERA (see the "Refined Hazard Quotients for Wildlife Populations at SWMU 73" on pages 42 and 43). Revise the text to summarize and clearly present the risk conclusions for this species.
10. The Study Investigation does not present any risk assessment of non-detected chemicals evaluated as part of the COPC process. As per Section 7.7.1, Page 35, non-detected chemicals lacking media-specific screening values should be identified as ecological COPCs. The document does not provide data summaries or discuss the outcome of non-detected chemical screening. At a minimum, both the SLERA and BERA uncertainty assessments should be revised to include non-detected chemical screening information. Revise the document accordingly.
11. Section 8.3.1, Data Reduction, describes a background analysis that was conducted to determine which inorganics detected at SWMU 73 could be screened out on the basis of background. The section states, "[i]norganics that were found to be statistically within background levels were excluded from the analysis. The inorganic substances screened out in this step include barium, cobalt, and vanadium in surface soil." This issue was previously raised in a comment letter dated January 23, 2009 on the Draft Final Correctives Measure Study for SWMU 68. The June 12, 2009 Navy responses to the EPA comment letter stated that chemicals detected above risk-based screening criteria would be retained as COPCs and assessed under total baseline conditions. The Navy responses further stated that those chemicals at, or below, background levels (non-site related) would be discussed as part of the risk characterization and then exit the risk assessment process. This approach is consistent with U.S. Navy Human Health Risk Assessment Guidance (available at <http://www-nmtrcphc.med.navy.mil/downloads/ep/Chapters%201-12.pdf>). It is noted that this approach was considered acceptable (see August 6, 2009 EPA approval letter on the Final Corrective Measure Study for SWMU 68 (reference citation Baker, 2009b).

Revise the Study Investigation to ensure that all inorganic compounds that exceed residential or industrial health-based screening criteria are evaluated in the quantitative risk analysis to demonstrate consistency among all human health risk assessments performed at NAPR SWMUs and compliance with EPA-recommended risk assessment methodologies. In addition, update Section 8.11, Uncertainty, to include a refinement of risk as described above. Further, Section 8.3.1 should be revised to cite the Navy response letter of June 12, 2009. Finally, the Navy response letter and risk assessment document identified in Section 8.3.1 should be added to Section 8.14, References.

12. The COPC selection process appears to use surrogate compounds for chemicals lacking December 2009 EPA Regional Screening Levels (RSLs) (e.g., bis(2-ethylhexyl)phthalate

was used as a surrogate for di(2-ethylhexyl)phthalate (DEHP)). This approach is generally acceptable; however, the HHRA should discuss the use of surrogate chemicals in the COPC selection process, and clarify why the selected surrogates are considered appropriate. Revise Section 8.0, Human Health Risk Assessment and Development of corrective action objectives (CAOs), to indicate that surrogates were used in the COPC selection process and to discuss the structure activity relationship between chemicals lacking toxicity criteria and any identified surrogates.

13. A conceptual site model (CSM) was not included in the Study Investigation to support the Human Health Risk Assessment (HHRA). Revise the Study Investigation to include a human health CSM that illustrates potential exposure pathways at SWMU 73.

14. Section 8.5, Exposure Assessment, presents the exposure pathways evaluated in the HHRA. Additional exposure pathways should be quantitatively evaluated in the HHRA:

- Incidental ingestion of groundwater should be evaluated for construction workers. At the shallowest location on-site, groundwater is encountered at 7.5 feet bgs. Construction workers may encounter groundwater during trenching activities. Revise the HHRA to quantitatively evaluate incidental ingestion of groundwater for construction workers.

- Inhalation of dust and vapor should be evaluated for construction workers. Inhalation of dust-derived soil is a possible exposure pathway at SWMU 73 given that a portion of the site is covered by gravel and not vegetated. Additionally, inhalation of vapor should be evaluated due to the fact that VOCs were detected in groundwater and construction workers may encounter groundwater during trenching activities. Revise the HHRA to quantitatively evaluate inhalation of dust and vapor for construction workers, or provide adequate justification for not evaluating these exposure pathways.

- Ingestion of groundwater should be evaluated for future hypothetical residents. While it is acknowledged that there is no current (or planned) potable use of groundwater, risks and hazards associated with ingestion of groundwater should be evaluated for future hypothetical residents to fully evaluate baseline conditions unless land use restrictions and controls (LUCs) are instituted to prevent residential development (or if the Puerto Rico Environmental Quality Board (PREQB) has classified and/or designated groundwater beneath SWMU 73 as solely for non-potable uses). An assessment of baseline conditions is necessary to assist in making risk management decisions.

- Inhalation of dust should be evaluated for future hypothetical residents. In order to evaluate baseline conditions, this exposure pathway should be evaluated in the HHRA. Given that a portion of the site is covered by gravel and not vegetated, revise the HHRA to evaluate inhalation of soil-derived dust at SWMU 73 for future hypothetical residents.

Additionally, revise Table 40, Potentially Complete Exposure Pathways, to show inhalation of dust-derived soil and vapor as a potentially complete exposure pathways, and revise Table 42, Toxicity Reference Values, to include inhalation toxicity criteria (i.e., inhalation reference dose and inhalation unit risk).

15. It appears that appropriate surrogates could be identified for a few compounds listed in Table 42, Toxicity Reference Values, as missing available toxicity criteria (e.g., pyrene is often used as a surrogate for acenaphthylene). Additional attempts to identify appropriate surrogates for compounds missing toxicity criteria should be made and the risk and/or hazard values updated accordingly. Also, revise the footnotes of Table 42 to identify which compounds utilize surrogate criteria and define "*" in the footnotes. Further, Table 42 indicates that toxicity criteria do not exist for Aroclor 1248; however, toxicity criteria for this compound are available in EPA's RSL Table. Finally, ensure that Table 42 is updated to include inhalation toxicity criteria.
16. While the HHRA presents a discussion of noncarcinogenic compounds driving the hazard index, the HHRA does not include a discussion of the carcinogenic compounds that drive the cancer risk above 1E-06. Revise Section 8.0 and Section 9.2, Human Health, to include a discussion of the compounds that drive risk at SWMU 73.

SPECIFIC COMMENTS

17. **Section 6.1.1, April 2008 Sampling Event, Page 15:** This section states that five VOCs were detected in surface soils samples 73SB01 through 73SB24 and that all data were J-qualified with a negative bias from failure to meet temperature preservation requirements. However, Table 4 does not show all VOC samples as being "J-qualified". Revise the Study Investigation to clarify this discrepancy in the text and tables and ensure all data are qualified correctly.
18. **Section 6.1.2, January 2009 Sampling Event, Page 16:** This section makes no reference to the fact that surface soil samples were collected in January 2009 for PAH analyses, as presented in Table 8, Chemical Results of Follow-up Surface Soil Samples from zero (0) to one (1) foot in depth at the 19E-03 Location (January 2009). Revise this section to provide a summary and discussion of the January 2009 PAH sampling results.
19. **Section 6.3.2, January 2009 Sampling Event, Page 19:** This section states that there were no significant detections of low-level polynuclear aromatic hydrocarbons (LLPAHs) at sample location 73MW03. However, the section also states that most LLPAH data were rejected during data validation due to very low recoveries of matrix spike samples. It appears that there may be matrix interference and that samples may be biased low. However, the section does not specify which samples were rejected, or if any samples were qualified as estimated. Revise the section to provide this information.
20. **Section 6.4.1, Field Duplicate Samples, Page 20:** This section states that field duplicate results generally indicated acceptable precision and representativeness. However, neither this section, nor Appendix D, specify which samples and what analyses had field duplicate results outside acceptable quality control (QC) criteria. Revise the section to identify which field duplicate results were outside QC criteria.
21. **Section 6.4.3, Field Blank Samples, Page 20:** This section states that many of the field blank LLPAH results from the January 2009 sampling event were rejected as a result of

matrix failures. However, it unclear how it was concluded that QC exceedances in blanks were matrix failures. Further, it is not specified how many field blank results were rejected and how it was verified that no field blank contamination existed. Revise the section to discuss this further and to clarify how these rejections affected data quality.

22. **Section 7.2.4.2, Birds. Page 24:** The second full paragraph describing commonwealth species (Least tern, Least grebe; West Indian whistling duck, Caribbean coot and Snowy plover) in this section should provide a summary statement regarding the potential occurrence (or lack thereof) of these species at SWMU 73, similar to that provided in previous subsections of the Study Investigation. Revise the section of the report regarding birds accordingly.
23. **Section 7.2.4.3, Reptiles and Amphibians. Page 25.** This section should summarize if SWMU 73 provides any habitat suitable for the species of special concern. Revise Section 7.2.4.3 to indicate if any habitat suitable for the species of special concern exists at SWMU 73.
24. **Section 7.2.4.5, Threatened and Endangered Species. Page 26:** This subsection fails to mention the presence or absence of the "Cobra negra", a threatened plant species (from Table 19). Either this section, or Section 7.2.2 Terrestrial Habitats, page 23, should address this species. Revise the text to include this information.
25. **Section 7.3.4, Assessment Endpoints. Page 29.** This Section provides measurement and assessment endpoints for "individual" target avian receptors, as well as "wildlife populations". Since the measurement endpoint methods in the analysis phase do not distinguish between population or individual endpoints, there is no need to identify the individual endpoints as being a potentially separate endpoint. This Section should be consolidated to mention only the population endpoints. In the alternative, the text should be revised to mention that the population endpoints will address the threatened and endangered species concerns using a surrogate target receptor approach. Revise the text accordingly.
26. **Section 7.4.2, Ingestion-Based Screening Values. Page 29:** This subsection needs to mention that the screening values refer to "no observable adverse effect level" (NOAEL) values. Revise the text to include this information.
27. **Section 7.7.2, Screening-Level Risk Calculation for Surface Soil, Subsurface Soil, Groundwater and Terrestrial Food Web Exposures, Pages 36 through 37.** This section summarizes the hazard quotient (HQ) assessments for each measurement endpoint. As per the rules for "Selection of Ecological Chemicals of Potential Concern" in Section 7.7.1, Page 35, non-detected chemicals without media-specific screening values should be identified as ecological COPCs. Hence, the subsections in Section 7.7.2 should also describe these COPCs. Revise the text accordingly.
28. **Section 7.7.2.1, Screening-Level Risk Calculation for Surface Soil. Page 36.** The second sentence states that "no VOCs were retained as COPCs." However, the last sentence recognizes that certain VOCs were retained since some of these chemicals lacked soil screening values. Revise the text to state that certain VOCs were retained as COPCs.

29. **Section 7.7.2.3, Screening-Level Risk Calculation for Groundwater, Page 37.** This section lists “silver” as a metal with an HQ above one (1). However, Table 28 shows that silver has an HQ less than one (1), but tin has an HQ above one (1). Revise the Study Investigation to correct the discrepancy.
30. **Section 7.10.1.1, Step 3a Risk Evaluation for Surface Soil, Page 42.** The risk characterization for chromium is not compelling enough to support the conclusion “that further evaluation for chromium is not recommended”. As per standard guidance, COPCs with HQs above 1 should be further assessed; therefore it is recommended that the summary statistics (as provided in Table 35) and spatial distribution of chromium be evaluated to determine if the nature and extent of this COPC is of concern. This information should also include a point-by-point comparison to background levels to help determine if hot-spots occur or to determine if the extent of chromium is significant. Revise this discussion by incorporating a spatial discussion in terms of chromium nature and extent as compared to thresholds and background levels.
31. **Section 7.10.1.1, Step 3a Risk Evaluation for Surface Soil, Page 43.** This subsection describes the risk characterization conclusions for the red-tailed hawk, yet the third sentence in the second paragraph refers to a screening criterion of 401 µg/kg, which is not relevant to this receptor. Revise this paragraph to focus strictly on the hawk receptor. Note that the same error appears in the subsections for the American robin on Page 43 and the mourning dove on Page 45, both of which should also be revised.
32. **Section 7.10.1.1, Section 3a Risk Evaluation for Surface Soil, Page 43.** The subsection dedicated to the American robin should emphasize that this receptor is a surrogate for the yellow-shouldered blackbird, a legally-protected species. As mentioned in the General Comments, the ERA does not fully evaluate the risk to this target species and needs to be revised accordingly. The discussion in this subsection also “dilutes out” the potential risk to the yellow-shouldered blackbird by using HQs based on the maximum allowable toxicant concentration (MATC) and the lowest observed adverse effect level (LOAEL). These less stringent toxicological endpoints are not appropriate to assess the potential ecological risk to a protected species. Revise this subsection to provide a more thorough and conservative estimate of risk to the yellow-shouldered blackbird.
33. **Sections 7.10.1.1, 7.10.1.2 and 7.10.1.3, Step 3a Risk Evaluation for Surface Soil, Subsurface Soil and Groundwater, Pages 40 through 50.** The information in these sections could not be verified based on the HQs provided in Table 34. A summary of the discrepancies are noted as follows:
- As per Table 26, the SLERA COPCs for surface soil include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoroanthene, fluoranthene, indeno(1,2,3-cd)pyrene, pyrene, dieldrin, heptachlor, heptachlor epoxide, barium, lead, nickel, selenium and zinc; which are not summarized in Table 34. Table 34 has a dashed line under the “surface soil” column for chromium, cobalt and copper (which should be defined in the footnotes) suggesting that these metals are not surface soil SLERA COPCs, even though they are identified as such in Table 26. The text that

coincides with these data (refer to lines 1725 through 1728, page 42) indicates that these COPCs are not evaluated since the HQs are less than one (1). While this may be the case, the conclusions could not be verified without the tabular data. Only some of the summary text in this section could be verified without information from Table 34. At a minimum, these chemicals need summary risk conclusions presented (similar to the summaries provided for Kepone, chlordane and others) in order to characterize their risk. This section also presents a frequency of exceedence discussion for Chlordane (beginning on line 1657) that could not be independently verified. A sample-by-sample summary data set needs to be included if this type of line of evidence is to be used. Revise the text accordingly.

- As per Table 27, the SLERA COPCs for subsurface soil include acetone, chlordane, selenium, vanadium and mercury which are not summarized in Table 34. Table 34 has a dashed line under subsurface soil for chlordane, cadmium, chromium, cobalt and mercury that needs to be defined. Section 7.10.1.2 also does not summarize risk conclusions for acetone, selenium, vanadium and zinc. Revise the text to include this information.
- As per Table 28, the SLERA COPCs for groundwater include nickel and tin which are not summarized in Table 34. Table 34 has a dashed line under ground water for cadmium, cobalt and zinc which needs to be defined. This table should also present available HQs, where appropriate. The risk characterization for the ground water COPCs is cursory. Further discussion about COPC attenuation, dilution and possible effects to the bay ecosystem need to be presented in order to bring this potential exposure pathway to closure. Revise the text accordingly.

34. Section 7.10.2, Uncertainties Associated with Step 3a of the Baseline Ecological Risk Assessment, Page 51. This section is incomplete given the amount of assumptions (both under- and over-conservative) used in Step 3.a. This section should be revised to revisit each major component to the Step 3a process and discuss the uncertainties inherent to the process. For instance, it was noted that certain partition factors applied to the food chain modeling of accumulative chemicals (i.e., the bioaccumulation factor of 1.0 for dichlorodiphenyldichloroethane (DDD), dichlorodipenyldichloroethylene (DDE), and dichlorodiphenyltrichloroethane (DDT) are too generic in light of the available information for these chemicals (see Table 4.b in Attachment 4-1, *Guidance for Developing Ecological Soil Screening Levels (Eco-SSLs), Exposure Factors and Bioaccumulation Models for Derivation of Wildlife Eco-SSLs*, OSWER Directive 9285.7-55). This issue is particularly important in light of the relatively high risks associated with DDD, DDE, and DDT to the wildlife receptors feeding at SWMU 73, including the surrogate for the yellow-shouldered blackbird (see Tables 36 and 37 in Section 7). Revise this section thoroughly to provide a more complete assessment of the uncertainty associated with Step 3a.

35. Section 8.3.1, Data Reduction, Page 55: Section 8.3.1 indicates that ProUCL Version 4.00.04 was used for all distribution tests, outlier tests, and comparison of background to site data except for tests of proportion. It is unclear why ProUCL Version 4.00.04 was not used for tests of proportion when such tests are included in the software. Revise Section 8.3.1 to explain why StatXact was used in lieu of ProUCL for all tests of proportion. Further, include a citation for StatXact in the list of references at the end of Section 8.0.

36. **Section 8.3.2, Screening of Sampling Data, Page 55:** For the purposes of determining risk and hazards to current and future site receptors, the Federal Maximum Contaminant Level (MCL) should not be used to eliminate COPCs. The MCL is regulation-based and is not a risk-based screening criterion. While this may not significantly impact the SWMU 73 CMS, ensure that future investigations at other SWMUs do not eliminate compounds from the quantitative risk assessment on the basis of their MCL values. Review the screening approach for groundwater at SWMU 73 and clarify that all compounds exceeding risk-based criteria (i.e., tap water RSLs) in groundwater were carried forward in the quantitative risk assessment.
37. **Section 8.5, Exposure Assessment, Page 56:** Section 8.5 does not clearly indicate if buildings are present on-site. It appears that currently no buildings exist on-site; however, this should be clarified in the Exposure Assessment of the HHRA. Revise Section 8.5 to clearly indicate whether buildings are present on the site or not.
38. **Section 8.9.3.2, Carcinogenic Risk Results, Page 65:** This section states, “[w]hile all of the calculated cancer risk levels were above the 1E-6 level, none exceeded 1E-4 indicating that an unacceptable cancer risk does not exist at the site under the conditions evaluated.” It should be noted that while cancer risks falling between the range of 1E-06 and 1E-04 may be deemed acceptable by the EPA, this decision is made on a site-specific basis. Revise Section 8.9.3.2 to indicate that the ultimate decision regarding an acceptable level of residual risk lies with EPA.
39. **Section 8.10, Vapor Intrusion Modeling, Page 65:** Section 8.10 describes the vapor intrusion evaluation conducted at SWMU 73. The Johnson and Ettinger Model (JEM) was used to model indoor air concentrations, however, EPA does not support the use of the JEM model as the sole line of evidence to discount the vapor intrusion pathway. Revise the SWMU 73 CMS to address the following:
- Revise the HHRA to compare groundwater data to groundwater target levels presented in Table 2c of the *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* dated November 2002 (Subsurface VI Guidance). Based on a cursory review, it appears that groundwater data do not exceed groundwater vapor intrusion criteria; therefore, it appears that the vapor intrusion pathway is incomplete. However, a comparison to Table 2c vapor intrusion criteria should be included in the HHRA as part of a complete vapor intrusion assessment to demonstrate whether vapor intrusion is a potentially complete pathway.
 - Given that buildings are not present on-site, indicate that the construction parameters used in the J&E model represent default values.
 - Delete Table 46, Vapor Intrusion Model Results – Subsurface Soil, and associated JEM data pages in Appendix I, JEM Data Tables. Conclusions regarding the applicability of the vapor intrusion pathway should not be based on soil data. The Subsurface VI Guidance indicates that “use of soil concentrations for assessment of [the VI] pathway is

not encouraged..." due to the uncertainties with soil partitioning calculations, soil sampling and soil chemical analyses for volatile organic compounds.

40. **Section 8.13.3, Results, Page 68:** Section 8.13.3 does not reference Appendix H, which contains the corrective action objective (CAO) calculations. Revise Section 8.13.3 to reference Appendix H.
41. **Section 8.13.3, Results, Page 69:** Section 8.13.3 indicates that the Aroclor 1254 CAOs were compared with the reported site concentrations to determine the rate at which the CAOs were exceeded. Based on this comparison, only two (2) samples returned concentrations above the future hypothetical child resident CAO of 328 µg/kg, and the corresponding samples actually had non-detect results that were subsequently included at the reporting limit (RL) and remained in the dataset. This section indicates that the inclusion of these data appears to have affected the risk and hazard significantly. As such, the text should be revised to clarify if the sample quantitation limit (SQL) was also elevated for Aroclor 1254 (not sufficient to meet the risk-based screening level) and if so, identify the elevated SQL as a data gap and explain if the sample was diluted or if there were matrix interferences in the sample, etc. Further, the text should be revised to describe how this data gap will be addressed. If additional sampling is not proposed, sufficient justification for why additional sampling is not required to fill this data gap should be provided. Risk and hazard values for Aroclor 1254 should be updated after the apparent data gap has been addressed, or sufficient rationale for not updating the risk and hazard values should be included in the HHRA uncertainty analysis. Revise the Study Investigation accordingly.
42. **Section 8.13.5, Conclusions and Recommendations, Page 69:** The HHRA concludes that remedial action at SWMU 73 is not necessary. However, given that risks to various site receptors fall within EPA's risk management range 1E-06 to 1E-04, the assertion that "...any type of remedial action at SWMU 73 would not be necessary based on the findings of this human health evaluation" should be deleted from Section 8.13.5. Ensure this statement is deleted from Section 8.13.5 and similarly revise Section 10.0, Recommended Action. Additionally, it should be noted that EPA makes the final decision regarding the acceptable level of residual risk when site risks fall within 1E-06 and 1E-04.
43. **Table 12, Chemical Results for Ground-Water Samples (April 2008):** The footnotes of Table 12 do not indicate that a surrogate compound was used to evaluate di(2-ethylhexyl)phthalate (DEHP). Revise Section 8.0, Human Health Risk Assessment and Development of CAOs, to discuss any compounds evaluated based on surrogate toxicity, and revise the footnotes of Table 12 to indicate that the tap water RSL for bis(2-ethylhexyl)phthalate was used to screen results for DEHP.
44. **Table 27.** The HQs above one (1) need to be bolded, similar to the format presented in Table 26. Revise Table 27 accordingly.
45. **Table 28.** The HQs above one (1) need to be bolded, similar to the format presented in Table 26. The concentration units need to be changed from µg/kg and mg/kg to µg/L and mg/L; the second footnote at the bottom of Table 28 should reflect this adjustment. Finally, the table

heading for the metals screening values needs to be changed from "surface soil" to "ground water." Revise Table 28 to address each of these items.

46. **Table 29.** The full chemical name for "Aroclor" (Aroclor-1254) should be provided within this table, and the table needs to define the meaning of the "dashed" lines within the table boxes (this same comment applies to Table 30). Revise Tables 29 and 30 accordingly.
47. **Table 34.** This table includes information for chemicals that were eliminated as per information provided in Section 7.10.1.1 (i.e., kepone, chlordane, DDD, DDE, DDT, Hg, Zn and Cu). It is not clear why these chemicals are summarized in this table when they are eliminated from the risk assessment process. Either clarify in the text that the information was used as part of the risk characterization, or remove the eliminated chemicals from this table for consistency.
48. **Table 35.** The text does not refer to this table, and it is not clear how or if this information is used. The information would help the risk characterization for chromium as mentioned in the Specific Comment on Section 7.10.1.1, Step 3a Risk Evaluation for Surface Soil, Page 42. Revise the text to incorporate the information contained in this table.
49. **Tables 36 and 37, Exposure Point Concentrations in Surface Soil and Subsurface Soil, respectively:** Tables 36 and 37 do not provide the concentration units (i.e., ug/kg or mg/kg). Revise these tables to include concentration units.
50. **Appendix D, Laboratory Data Validation Reports:** Appendix D discusses major and minor anomalies in the data. However, it is unclear what QC data was reviewed. For example, calibration results and manual integrations are not discussed. Revise the Appendix D to clarify what QC criteria was analyzed for anomalies and to present all anomalies found.
51. **Appendix H-5, CAO Calculations:** Appendix H-5 contains the construction worker CAO calculation, but not the hypothetical residential child CAO calculation. Revise Appendix H-5 to include the hypothetical residential child CAO calculation.

MINOR COMMENTS

52. **Section 7.5, Analysis Methodology – Exposure Assessment. Page 31:** The text provided on line 1301 should refer to an "organic" COPC for clarification. Revise the text accordingly.
53. **Section 7.6.1, Selection Criteria for Analytical Data. Page 31.** The text in this section should be written in "past tense" rather than future. Revise the text accordingly.
54. **Tables 24 and 33.** The species "Red-tailed hawk" is misspelled in both Tables, and the small mammal "row" was inadvertently wrapped around in Table 33.



COMMONWEALTH OF PUERTO RICO
OFFICE OF THE GOVERNOR
ENVIRONMENTAL QUALITY BOARD



ENVIRONMENTAL EMERGENCIES RESPONSE AREA

March 12, 2010

ENCL. #3

Tim Gordon
US Environmental Protection Agency – Region II
290 Broadway – 22nd Floor
New York, New York 10007-1866

**Re: Technical Review of Draft Corrective Measures
Study (CMS) Investigation Report
SWMU 73 – Camp Moscrip
Naval Activity Puerto Rico (NAPR), Ceiba
EPA ID No. PR2170027203**

Dear Mr. Gordon:

The Federal Facility Coordinator (FFC) and the Hazardous Wastes Permits Division (HWPD) has finished the review of the above-mentioned document.

After a throughout review comments were issued. The review was conducted to determine if the conclusions of the risk assessments support a No Further Action decision. Additional issues with the draft report were identified to improve the accuracy and clarity of the report and they were noted in a separate section. These two comment groups are separated into the following sections: General Comments – Issues Potentially Affecting No Further Action Decision and Page-Specific Comments Not Affecting No Further Action Decision.

Joint comments of the HWPD and the office of EQB's Federal Facility Coordinator are being forwarded to EPA to avoid duplicity. If you have any additional comments or questions please feel free to contact Gloria M. Toro Agrait at (767) 787-8181 extension 3586 or myself at extension 6141.

Cordially,

Wilmarie Rivera
Federal Facilities Coordinator
Environmental Emergencies Response Area

cc. Gloria M. Toro Agrait, Environmental Permits Officer

**Technical Review of Draft Corrective Measures Study Investigation
Report for SWMU 73
Naval Activity Puerto Rico, Ceiba - PR2170027203**

I. General Comments - Issues Potentially Affecting No Further Action Decision

- 1) Groundwater was not evaluated as a potable water source under a future use scenario. If there are no restrictions on the use of groundwater as a potable drinking water supply, then the Maximum Contaminant Levels (MCLs), are considered applicable, relevant and appropriate requirements (ARARs) that would need to be addressed. Note that the following chemicals identified in groundwater exceed their respective MCLs: arsenic, cadmium, di(2-ethylhexyl)phthalate, and selenium.
- 2) The screening conducted to identify chemicals of potential concern (COPCs) that were quantified in the human health risk assessment used unadjusted noncarcinogenic Regional Screening Levels (RSLs). Consistent with other sites in Puerto Rico, noncarcinogenic RSLs are reduced by a factor of 10 to account for multiple chemical effects on the same target organ or system. In order to determine the impact on the results of the human health risk assessment, chemical screening needs to be conducted using RSLs, where the noncarcinogenic RSLs are reduced by a factor of 10 to determine if additional chemicals need to be evaluated quantitatively in the human health risk assessment.
- 3) The datasets for surface and subsurface soil used in the human health risk assessment combined all data from across the site to calculate exposure point concentrations. For a maintenance or outdoor worker, this may be appropriate. However, for evaluating a potential future resident, a hotspot analysis should be conducted for each COPC to ensure that if a residential lot, typically assumed to be ¼-acre in size, is placed anywhere within the site boundary, the risks calculated in this risk assessment are applicable to that residential receptor.
- 4) A variety of surface soil chemicals of potential ecological concern (COPECs) were detected above vegetation screening concentrations. The report eliminates many of these surface soil COPECs based both on the presence of vegetation (healthy vegetation indicating screening benchmarks too low) and the absence of vegetation (plants aren't growing there so screening benchmarks aren't applicable). The risks to vegetation should be clarified at SWMU 73 and should incorporate the findings of the previous Phase I ECP that identified areas of "stressed vegetation" within and adjacent to the gravel storage area. Areas containing elevated 4',4-DDT (and its derivatives) concentrations are of particular concern.
- 5) The pesticide 4',4-DDT and its derivatives were detected at very elevated concentrations (up to 77 mg/kg) in surface/subsurface soils that may potentially adversely affect terrestrial avian receptors. In addition, these pesticides were detected in groundwater at concentrations that may adversely affect aquatic receptors located approximately 300 feet downgradient of SWMU 73. Further evaluation should be provided to justify elimination of these COPECs as limited removal of hot spots appears warranted to reduce risk associated with these pesticides.

II. Page-Specific Comments Not Affecting No Further Action Decision

- 1) Please update bookmarks so a reader can navigate through the main body of the text. Current bookmarks have been included only for the appendices, with detailed bookmarks provided for Appendix A.
- 2) Page 9, Section 4.2 – Surface Soil sampling:
 - a. Second Paragraph: It is stated that the sampling protocol and analysis followed the methods prescribed in the CMS Work Plan. Copy of the Final Corrective Measures (CMS) Work Plan was included at Appendix A. In order to provide evidence of conformance with the aforementioned work plan, please provide more detail on the report regarding the field procedures and analyses performed as part of the activities.
 - b. Line 554: Revise the reference to Appendix E as containing the Soil Boring Logs for the sampling activities. Amend the reference to Appendix C, the one that actually contains the soil boring logs.
 - c. Second Paragraph, last sentence: The mentioned Tables 4 through 6 contains a summary of the chemical results of the analyses performed to the soil samples collected during April 2008. Please revise the content of the sentence, since they does not contain a summary of surface soils collected.
 - d. Third Paragraph, third sentence: Revise the reference to Appendix E as containing the sample collection logs. Amend the reference to Appendix C, the one that actually contains the soil boring logs.
 - e. Third Paragraph, last sentence: The mentioned Tables 7 through 9 contains a summary of the chemical results of the analyses performed to the soil samples collected during January 2009. Please revise the content of the sentence, since they does not contain a summary of surface soils collected.
- 3) Page 9, Section 4.3: There is a widespread reference to Appendix E as containing the Soil Boring Logs for the sampling activities. Please revise the whole section to made appropriate reference to Appendix C, which is the one that actually contains the Soil Boring Logs.
- 4) Page 10, First paragraph:
 - a. Please provide the applicable methods and/or procedures utilized to collect samples for Low Level Polycyclic Aromatic Hydrocarbons (LLPAHs), pesticides, and metals.
 - b. The mentioned Table 10 contains a summary of the chemical results of the analyses performed to the surface and subsurface soil samples collected during April 2008. Please

revise the content of the sentence, since they does not contain only a summary of surface soils collected.

5) Page 10, Section 4.4 – Monitoring Well Installation:

- a. First paragraph, first sentence: The sentence need to be revise since its content needs to identify which well is located at each area. Also, rewrite it to clarify to the north of what point of reference is the sentence referring to.
- b. First paragraph, third sentence: Revise the reference to Appendix E as containing the sample collection logs. Amend the reference to Appendix C, the one that actually contains the soil boring logs.
- c. According to the document, the boring logs for the monitoring wells were completed but not delivered from Puerto Rico. Please provide more information regarding if the soil boring logs were lost, of they were just not available at the moment of preparing the document. Also, please clarify if the document is referring to the wells development logs or the soil boring logs.

6) Page 11, Section 4.5: Revise the reference to Appendix E as containing the wells development logs. Amend the reference to Appendix C, the one that actually contains the soil boring logs.

7) Page 11, Section 4.6 – Groundwater Measurements and Sampling:

- a. Please provide wider information regarding the procedures for sampling collection in order to provide evidence that the sampling technique prescribed in the CMS Work Plan was followed.
- b. Line 644: Include how the samples were “appropriately preserved”.
- c. Line 645: Revise the reference to Appendix E as containing the wells development logs. Amend the reference to Appendix C, the one that actually contains the soil boring logs.
- d. According to the document, the boring logs for the monitoring wells were completed but not delivered from Puerto Rico. Please provide more information regarding if the soil boring logs were lost, of they were just not available at the moment of preparing the document. Also, please clarify if the document is referring to the wells development logs or the soil boring logs.
- e. In this section, please clarify the wells identification for each sampling event, since during the whole investigation three monitoring wells were installed, developed and sampled, but the text is not clear that 73MW-01 and 73MW-02 were sampled during April 2008 and 73MW-02 and 73MW-03 were sampled in January 2009.

- 8) Page 12, Section 4.9.2: The information regarding the Trip Blanks should be revised to clearly state if since no VOCs samples were taken during the January 2009 sampling event, no trip blanks were included during the activities.
- 9) Page 12, Section 4.9.4: Please clarify if the three field blanks and one duplicate were collected for each sampling event (April 2008 and January 2009) or the total of the samples are for both events.
- 10) Page 13, Section 4.9.5: Clarification is needed regarding the quantity of Equipment Rinsate Blanks collected. Revise the wording of the section to include the quantity of samples collected during each event.
- 11) Page 15, Section 6.1: There is a reference to "original samples", provide clarification regarding if the text refers to the samples taken on April 2008, or any other.
- 12) Page 17, Section 6.2.1, First Paragraph: This section is referring to analytical results, hence the paragraph should be revised since it's indicating that the parameters analyzed were collected instead of analyzed.
- 13) Page 17, Section 6.2.1: Correct the reference to Table 6 for Table 10 as the one presenting the results for the April 2008 subsurface soil sampling event. Also, please notice that Table 10 includes subsurface soil analysis results as well as surface soil analysis results.
- 14) Page 17, Section 6.2.2, First Paragraph: This section is referring to analytical results, hence the paragraph should be revised since it's indicating that the parameters analyzed were collected instead of analyzed.
- 15) Page 18, Line 859: Correct the reference to Table 10 for Table 11 as the one presenting the results for the January 2009 subsurface soil sampling event.
- 16) Page 19, Section 6.4: Amend the section to include all the tables that the qualified data as the result of data validation is highlighted, since Tables 4 – 9 were not the only ones. Also at the bottom notes of the Tables the meaning of the yellow background should be established.
- 17) Page 18-19, Section 6.3.1 and 6.3.2. These two sections present the groundwater analytical results. Please clarify why this section does not discuss volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) evaluated in the vapor intrusion study. The vapor intrusion study conducted a screening-level assessment of volatile contaminants

identified in groundwater contaminants that could pose an inhalation risk if they migrated into an overlying residence. Chemical contaminants in groundwater evaluated in the vapor intrusion study included carbon disulfide, toluene, naphthalene, and mercury.

- 18) Page 20, Section 6.4.3, First Paragraph, Second Sentence: Correct reference to the results from the "equipment rinsate" to "field blank" and identification of samples as 73FB01-03 from April 2008 and 73FB04-06 from January 2009, instead of 73ER01-03 from April 2008 and 73ER04-06 from January 2009.
- 19) Page 55, Section 8.3.1, Lines 2176-2177. Please note that EPA strongly recommends against using surrogate values for nondetects, such as one-half the detection limit, when calculating exposure point concentrations (EPA, 2009). Note that this section appears to conflict with Section 8.4, where it is indicated that the detection limits were used. Please clarify.
- 20) Page 55, Section 8.3.2, Lines 2194-2195. Please provide a reference to the table where the screening is conducted and indicate whether the noncarcinogenic RSLs were reduced by a factor of 10 to account for potential cumulative effects.
- 21) Page 56, Section 8.4, Lines 2222-2224. Please add clarification to this section as to whether the exposure point concentrations were calculating using ProUCL in "With NDs" mode, as recommended by the User's Guide (EPA, 2009). Also, please clarify whether the reporting limit or method detection limit were used in calculating the exposure point concentrations. Please note that the reporting limit should be used, rather than the hypothetical method detection limit.
- 22) Page 56, Section 8.5, Lines 2238-2239. Please clarify whether there is a legal restriction on the use of groundwater and whether the groundwater is currently classified as potable under Puerto Rico Water Quality Standards regulation.
- 23) Page 56, Section 8.5, Line 2240. Please clarify why "...the shallow groundwater that was sampled would not be suitable for supplying a potable source..."
- 24) Page 57, Section 8.5, Line 2242. Please note that the appropriate reference for this discussion is EPA's 2002 Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Please add text discussing why this pathway is not of concern for chromium. Also, this pathway is of concern for a potential future construction worker and should be evaluated quantitatively.

- 25) Page 65, Section 8.10. Please add details of the vapor intrusion modeling conducted for soil and groundwater, describing the basis for the input parameters used in the model to support the model conclusions.
- 26) Table 12.
- a) Please develop a method for identifying those chemicals that exceed the Maximum Contaminant Level (MCL), even if they do not exceed applicable groundwater screening criteria.
 - b) Noncarcinogenic chemical RSLs should be adjusted downward by a factor of 10 to account for multiple chemicals detected at the site for screening purposes.
- 27) Tables 36 and 37. Please add units to these tables, either in the column headings or as a footnote.
- 28) Table 37, Exposure Point Concentrations – Subsurface Soil. Please clarify why the EPC for acenaphthylene is listed as 0.00, yet a maximum detected value is listed. Also, there is another Table 36 and another Table 37 in the Tables Section. Please renumber as appropriate.

References

EPA, 2009. ProUCL Version 4.00.04 User's Guide, US Environmental Protection Agency, Office of Research and Development, EPA/600/R-07/038. February 2009.



COMMONWEALTH OF PUERTO RICO
OFFICE OF THE GOVERNOR
ENVIRONMENTAL QUALITY BOARD

ENCL. #4

ENVIRONMENTAL EMERGENCIES RESPONSE AREA

May 12, 2010

Mr. Timothy Gordon
U.S. Environmental Protection Agency -- Region II
290 Broadway -- 22nd Floor
New York, New York 10007-1866

**Technical review of the Navy Responses to
PREQB's Comments on the
Draft Phase I Corrective Measures
Study Investigation -- SWMU 74
Fuel Pipelines and Hydrant Pits
Naval Activity Puerto Rico (NAPR), Ceiba
EPA ID No. PR2170027203**

Dear Mr. Gordon:

The Federal Facility Coordinator and the Hazardous Wastes Permits Division (HWPD) has finished the review of the above-mentioned document.

The Navy's responses to PREQB's comments are acceptable. Additional information or clarification is requested for selected comments.

Enclosed you will find a discussion of the comments that need further clarification. If you have any additional comment or question please feel free to contact Gloria M. Toro Agrait at (787) 767-8181 extension 3586 or myself at extension 6141.

Cordially,

Wilmarie Rivera
Federal Facilities Coordinator
Environmental Emergencies Response Area

cc: Gloria M. Toro Agrait, Environmental Permits Office

**Technical Evaluation of the Navy Responses to PREQB Comments on the
Draft Phase I Corrective Measures Study Investigation for SWMU 74 – Fuel
Pipeline and Hydrant Pits, dated November 19, 2009**

The following evaluation is mostly directed toward requiring the inclusion of the clarifications as part of the text in the Draft Phase I Corrective Measures Study Investigation for SWMU 74 – Fuel Pipeline and Hydrant Pits, dated November 19, 2009. By this means it will be clearly stated that the commented considerations were considered and well justified. Please notice that PREQB comments are in italics, Navy's responses in regular font and PREQB's evaluation of response is in bold.

- 1) *PREQB Comment 5. Page 3-5, Section 3.2, Paragraph 1: Please clarify why screens longer than 10 feet were utilized at some locations. The use of ten feet of screen is an industry standard and the concern in using longer screen a length revolves around the affects of averaging.*

Navy Response to PREQB Page-Specific Comment 5: Fifteen foot screen lengths were used in three wells: 74SB145, 74VP05a and 74VP11b/JP5. A moist silt clay with no distinct water bearing zones was encountered at these locations. A longer screened interval was used to maximize potential groundwater production from the silty clay. No revisions to the text are proposed.

Evaluation of Response: Please include the provided clarification provided in the response in the text of the report.

- 2) *PREQB Comment 6. Page 3-7, Section 3.3, Paragraph 1: Please clarify why the elevations of the ground water monitoring points in the areas outside of the airfield area were not surveyed to allow for the generation of ground water elevation contour maps. The work plan called for surveying of all sample locations, including monitoring wells, and Section 3.6 indicates that each monitoring well location was surveyed using the RTK GPS methods which were highlighted to be able to provide vertical accuracy to within 0.02 feet.*

Navy Response to PREQB Page-Specific Comment 6: As discussed in Section 3.6, monitoring wells were surveyed for location and elevation using the RTK GPS, as specified in the Work Plan. No revisions to the text are proposed.

Evaluation of Response: Please clarify the text by amending sentence 7 in paragraph 1 of Section 3.3 to say, "A ground water map was not created for the other SWMU 74 areas due to a lack of coincident ground water elevation measurements."

- 3) *PREQB Comment 11. Page 4-3, Section 4.3.1 and Table 5.1. Please update the Regional Screening Levels (RSLs) used for screening data to the December 2009 version of the RSL table. Also, consistent with other NAPR investigations, please*

ensure that if the noncarcinogenic RSL is less than 10 times the carcinogenic-based RSL, 10% of the noncarcinogenic RSL is used for screening. Please add this information to footnote 2 of Table 5-1.

Navy Response to PREQB Page-Specific Comment 11: The Draft Report (November 2009) was released prior to the December 2009 version of the RSL table; consequently, no revisions to the RSLs are proposed.

Evaluation of Response: As requested in PREQB's comment, "consistent with other NAPR investigations, please ensure that if the noncarcinogenic RSL is less than 10 times the carcinogenic-based RSL, 10% of the noncarcinogenic RSL is used for screening. Please add this information to footnote 2 of Table 5-1."

- 4) *PREQB Comment 12. Page 4-4, Section 4.4.1 Soil and Table 5-1. As stated here and in Section 5.2.1.1 of the December 2007 Work Plan, "USEPA ecological soil screening levels (Eco-SSLs) for terrestrial plants and invertebrates were preferentially used as soil screening values." The approved Work Plan prescribed this approach to identify contaminants of concern (COCs) for plants and invertebrates in addition to separately identifying COCs for potential food chain exposures of birds. However, the identification of avian food chain COCs appears to be absent from the report. As noted in prior EQB reviews of ERAs at other NAPR sites, USEPA's original intent for the Eco-SSLs was for the lowest available of all Eco-SSLs for plants, soil invertebrates, birds, and mammals to be used in soil COC selection. Avian and mammalian Eco-SSLs are often lower than plant and soil invertebrate EcoSSLs and no screening evaluations were performed for food chain exposures of birds and mammals using ingestion-based screening values and estimated dietary doses. Please revise the selection of soil criteria used to apply the lowest of all available EcoSSLs to identify COCs to be evaluated further in a SLERA and in Step 3a of the BERA. This will assure that no soil COCs that pose a screening-level risk to wildlife receptors are omitted prematurely during Steps 2 and 3a of the ERA.*

Navy Response to PREQB Page-Specific Comment 12: The Navy partially agrees with this comment. Eco-SSLs have been developed for eight receptor groups: plants, soil invertebrates, avian herbivores, avian ground insectivores, avian carnivores, mammalian herbivores, mammalian ground insectivores, and mammalian carnivores. For a given chemical, the lowest Eco-SSL value for plants, soil invertebrates, avian herbivores, avian ground insectivores, avian carnivores, mammalian herbivores will be selected as the soil screening value. Eco-SSLs for mammalian ground insectivores will not be considered for soil screening value development because there are no mammalian ground insectivores in Puerto Rico (mammalian insectivores are limited to aerial insectivores [i.e., bats]). As discussed in Guidelines for Developing Ecological Soil Screening Levels (USEPA, 2005), aerial and arboreal insectivorous birds and mammals were excluded from Eco-SSL development because they are considered inappropriate (i.e., they do not have a clear or indirect exposure pathway link to soil [indirect exposure pathways involve ingestion of prey that have direct

contact with soil]). Eco-SSLs for mammalian carnivores also were not considered for soil screening value development because there are no carnivorous mammals on Puerto Rico. With the exception of bats, the terrestrial mammals represented by potentially complete exposure pathways are limited to nonindigenous, nuisance species (i.e., Norway rat, black rat, and mongoose) that have been implicated in the decline of native reptilian and bird populations (Mac et al., 1998 and United States Fish and Wildlife Service [USFWS], 1996). Eco-SSLs for mammalian herbivores are considered appropriate for soil screening value development based on the presence of fruit-eating and insectivorous bats in Puerto Rico. Section 4.4.1 of the Draft Phase I of the Corrective Measures Study (CMS) Investigation Report will be revised to reflect this approach to soil screening value development. Appropriate soil and subsurface soil comparison tables (i.e., tables comparing detected concentrations at each location to human health, ecological, and background screening criteria) also will be revised to include the revised ecological soil screening values. It is noted that the approach presented above has been accepted by the PREQB for a Full RCRA facility Investigation (RFI) at SWMU 9 (see PREQB comments dated August 27, 2009, Navy responses dated November 19, 2009, and PREQB comments on Navy responses dated December 23, 2009). It is also noted that the work plan did not indicate or state that analytical data generated during Phase I of the CMS investigation would be evaluated for terrestrial avian food web exposures (see Section 4.3 of the final work plan). Therefore, the Draft Phase I CMS Investigation Report did not include this evaluation. However, identification of avian food web COCs will be performed as part of an ecological risk assessment (ERA) conducted as part of the Phase II CMS report.

Evaluation of Response: Response acceptable pending review of the revisions to the Draft Phase I CMS Report.

- 5) *PREQB Comment 16. Sections 5 to 9 Tables & Appendix B. The laboratory reported all nondetect results down to the method detection limit (MDL) instead of the reporting limit. Typically, the MDL is a statistically derived value that is not accurately verified by the laboratory analysis. The reporting limits (or quantitation limits) are accurately verified by laboratory analyses of standards at the unadjusted reporting limit. Table 3-2 of the December 6, 2007 Corrective Measures Study Work Plan and Table 3-3 of this report present the required reporting limits for this program, not the MDLs. It should be noted that reporting limits are typically 3-5 times higher than MDLs prior to adjustment for sample-specific parameters, etc. Please revise all data tables in Sections 5 through 9 of the report as well as the tables of sample results presented in Appendix B to reflect the reporting of nondetect results down to the reporting limit instead of the MDL. The use of the reporting limit would be in accordance with the approved Work Plan. It should also be noted that Sections 5.3.1, 5.3.2, and 5.4.1 of the Work Plan specifically call for the use of reporting limits for the ecological risk assessment process.*

Navy Response to PREQB Page-Specific Comment 16: This issue is currently awaiting resolution pending the outcome of the Response to Comment Letter for the

Draft Phase I RFI for SWMU 60 (Former Landfill at the Marina) dated September 25, 2009. Once this issue is resolved, the final response will be applied to this document. The Navy position is that no revisions to the text or tables are proposed.

Evaluation of Response: PREQB acknowledges that the resolution of this comment is pending.

- 6) *PREQB Comment 24. Page 5-7, Section 5.9, Paragraph 1: Please provide an explanation as to why coring through the concrete apron will not be conducted to allow for the collection of soil samples. It appears that better distribution of soil samples may be obtained if drilling were to be conducted through the apron.*

Navy Response to PREQB Page-Specific Comment 24: The airfield is currently in active use. Sampling through the apron or runways areas would potentially disrupt current operations. No revisions to the text are proposed.

Evaluation of Response: Please add the rationale for not coring through the concrete apron to the text of the report.

- 7) *PREQB Comment 33. Page 6-5, Section 6.7, Paragraph 4: Please provide an explanation as to how pipeline impacts may be differentiated from other petroleum impacts related to nearby SWMUs / AOCs. This comment also applies to Section 7.7.*

Navy Response to PREQB Page-Specific Comment 33: A comparison of contaminant characteristics as well as the distribution and gradient of contaminants may provide some indication as to whether contamination is from the fuel pipeline or from another SWMU. No revisions to the text are proposed.

Evaluation of Response: Please add this information to the appropriate sections of the text.

- 8) *PREQB Comment 43. Page 7-8, Section 7.9, Paragraph 2: Reference is made to the soil and ground water impacts in the areas of soil borings 74SB155 and 74SB156 being addressed as part of the AST 1995/AOC F work. Please clarify whether the PAH (benzo(a)pyrene) impact at location VP10b/DFM is also being further delineated and addressed as part of that effort.*

Navy Response to PREQB Page-Specific Comment 43: The occurrence of TPH contamination in the 7 to 11 foot bgs depth interval at 74SB155, 74SB156, and 74SB157 indicates that SWMU 74 is a likely source rather than the release from AST 1995 at AOC F. The conclusions in Section 7.8 will be revised to indicate that the TPH contamination at these three locations is likely from SWMU 74. The first bullet in Section 7.9 – Recommendations for Phase II, Segment B – DFM Tank Area will be revised to read as follows: □ TPH DRO contamination was detected in the 9 to 11 foot bgs depth interval at locations 74SB155, 74SB156 and 74SB157 and in the 7 to 9

foot depth interval at 74SB156. Ten borings will be advanced in the vicinity of these three locations, of which three will be converted to monitoring wells. Surface and subsurface soil samples will be collected from each boring location and groundwater samples will be collected from the three new wells. These samples will be analyzed for VOCs, LLPAs, metals, TPH GRO and TPH DRO. Based on the results of PID measurements and visual observations, an additional eight locations may be sampled to complete the delineation. This recommended sampling will address the benzo(a)pyrene detection in 74SB156. However, because of a lack of elevated TPH concentrations at 74VP10b/DFM, the detected benzo(a)pyrene in the 7 to 9 foot depth interval at this location is not considered a release from SWMU 74 and will not be further addressed under SWMU 74.

Evaluation of Response: Please note that benzo(a)pyrene was not detected in sample 74SB156 as stated in the comment above, rather it was detected in sample 74VP10b/DFM. Although this detection is not attributed to SWMU 74 and will not be addressed as part of this work, please identify the mechanism by which (or program under which) it will be addressed.

Appendix A

- 9) *PREQB Comment 2. None of the field notes related to groundwater sampling recorded the actual flow rates used during purging and sampling. In all cases, notes state "pumped 1/2 speed", "pumped 1/2 or less speed", "pump speed is ~ 2/3", or "pump speed - full". It is unclear what these notes signify and how they correlate with actual flow rates. Therefore, it is unclear if the samples were collected at a flow rate of 100-250 mL/minute, as required in the EPA Region II SOP. Please clarify.*

Navy Response to Appendix A Comment 2: As indicated by this comment, the field notes do not quantify the actual pumping flow rate. This information will be recorded for subsequent field events.

Evaluation of Response: Flow rate measurements are required in order to comply with EPA Region II low-flow sampling procedures. The usability of these data is therefore questionable based on the lack of flow rate measurements. Please revise the text to reflect the limited usability of these data. When resampling the wells, please ensure that the proper procedures are used in order to obtain definitive data for use in delineation and assessing risk at the site.

Appendix C

- 10) *PREQB Comment 1. The text discusses how the data validation guidelines were modified for blank contamination actions because the lab reported results down to the MDL instead of the reporting limit. The validation modification used causes positive results between the MDL and the reporting limit to be qualified as nondetect at the reported concentration. This is not consistent with the Region 2 validation guidelines which require that positive results between the MDL and reporting limit be*

qualified as nondetect at the reporting limit when affected by blank contamination. The methodology used in this report causes the blank-qualified nondetect results to have lower reporting limits which are not technically accurate. Please follow Region 2 guidelines for blank qualification. This comment affects VOC, PAH, TPH-GRO, and TPH-DRO, and metals sections in all data validation reports as well as associated data tables. Please revise accordingly.

Navy Response to Appendix C Comment 1: This issue is currently awaiting resolution pending the outcome of the Response to Comment Letter for the Draft Phase I RFI for SWMU 60 (Former Landfill at the Marina) dated September 25, 2009. Once this issue is resolved, the final response will be applied to this document. The Navy position is that no revisions to the text or tables are proposed.

Evaluation of Response: PREQB acknowledges that the resolution of this comment is pending.

ENCL. # 5

REPA4R2-002-ID-182

**TECHNICAL REVIEW OF THE RESPONSE TO COMMENTS ON THE DRAFT
SAMPLING AND ANALYSIS PLAN SWMU 77 – SMALL ARMS RANGE
DATED NOVEMBER 2009
AND
REVISED SAMPLING AND ANALYSIS PLAN SWMU 77 – SMALL ARMS RANGE
DATED MARCH 22, 2010**

**NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203**

Submitted to:

**U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866**

Submitted by:

**TechLaw, Inc.
The Wannalancit Mills
175 Cabot Street, Suite 415
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| | |
|---------------------------|-----------------------|
| EPA Task Order No. | 002 |
| Contract No. | EP-W-07-018 |
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| Telephone No. | 212-637-4167 |

May 19, 2010

REVISED
TECHNICAL REVIEW OF THE RESPONSE TO USEPA COMMENTS ON THE
DRAFT SAMPLING AND ANALYSIS PLAN SWMU 77 – SMALL ARMS RANGE
DATED NOVEMBER 2009
AND
REVISED SAMPLING AND ANALYSIS PLAN SWMU 77 – SMALL ARMS RANGE
DATED MARCH 22, 2010

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203

The following comments were generated based on an evaluation of the *Response to Comments on the Draft Sampling and Analysis Plan SWMU 77 – Small Arms Range Dated November 2009*, and the *Revised Sampling and Analysis Plan, SWMU 77 – Small Arms Range, dated March 22, 2010*, for Naval Activity Puerto Rico (NAPR), Ceiba, Puerto Rico, here after referred to as SAP.

GENERAL COMMENTS

Evaluation of the Response to General Comment 3: The response is partially adequate. The response indicates that any misfired bullets in the vicinity of the firing points and/or firing lines would be nominal. Further, the text of the document continues to indicate that munitions constituents (MC) could contaminate soil at all SWMU 77 subareas, except for at the firing points. Based on the project objectives for the Phase I RFI, it is understood why sampling for metals has not been proposed at the firing points and/or firing lines. However, if any of the SWMU 77 subareas move forward to a Full RFI, ensure that potential metals contamination in the vicinity of firing points and/or firing lines is addressed and revise the SAP to indicate that potential metals contamination in the vicinity of firing points and/or firing lines will be addressed.

Evaluation of the Response to General Comment 5: The response does not appear adequate. The response indicates that Method 8330A precision and accuracy meet the data quality objectives (DQOs) for this project. However, several studies (e.g., <http://el.erd.c.usace.army.mil/elpubs/pdf/tr05-2.pdf>) have indicated that Method 8330A (i.e., discrete sampling) underestimates concentrations of explosives. As a result, Method 8330B (i.e., multi-increment sampling) is the preferred method for determining explosives concentrations in soil. Given that the DQOs of this project are to determine whether or not contamination is present at the SWMU 77 subareas (to make a determination as to whether further action is warranted at sites with results below action levels), the use of Method 8330B and multi-increment sampling will better satisfy the project DQOs. Revise the SAP to include the use of Method 8330B and multi-increment sampling instead of Method 8330A and the currently proposed discrete and/or composite sampling. Alternatively, provide further justification for the use of Method 8330A and the current sampling approach. Provide an explanation detailing how the heterogeneous nature of explosives in soils will be addressed to ensure that should a “no further action” determination be proposed, that it is appropriate.

Evaluation of the Response to General Comment 6: The response appears adequate. However, page 111 of 130 of the SAP indicates that the acceptance criteria for a post-digest spike (PDS) is $\pm 25\%$, while Appendix D-3 appears to indicate the limit is $\pm 15\%$; note, Method 6010C indicates $\pm 20\%$ for PDS. Revise the SAP to consistently use criteria equal to, or more stringent than those values presented in the analytical method.

Evaluation of the Response to General Comment 8: The response is partially adequate. The response indicates that the EPA Region 2 Quality Assurance (QA) Guidance and Standard Operating Procedures (SOPs) and forms will be used. However, the metals data validation SOP (located at http://www.epa.gov/Region2/qa/qa_documents/SOP%20HW02%20FINAL%20Rev-13-ILM05_3.pdf) is written for the Contract Laboratory Program (CLP) procedure (i.e., ILM05.3) and it is unclear if this procedure will be modified for SW-846 Method 6010B. Also, the revised SAP does not provide copies of audit checklists or corrective action forms. Revise the SAP to clarify if the EPA Region 2 QA SOP for metals data validation will be modified for SW-846 methodology, or if the SOP will be used as written for CLP. Also, provide copies of audit checklists and corrective action forms.

Evaluation of the Response to General Comment 11: The response is adequate. The response explains why certain metals compounds were selected for the Phase I RFI; however, the text of the response has not been incorporated into the SAP. Revise the SAP to incorporate the text of the response in worksheet 17.

SPECIFIC COMMENTS

Evaluation of the Response to Specific Comment 5: The response is partially adequate. The response explains the values selected for screening levels and the revised document indicates that some of the values were based on the 2009 Los Alamos National Laboratory (LANL) Ecological Screening Levels (ESLs). However, these values could not be independently verified as the LANL website link for the LANL ESLs is no longer active. Revise the SAP to include the 2009 LANL ESLs in an appendix, or include a working website address to allow for verification of the values.

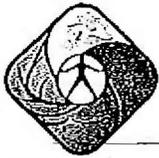
Evaluation of the Response to Specific Comment 6: The response does not appear adequate. X-ray fluorescence [XRF] data is not typically used in risk assessment. Rather, it should be used as a screening tool for locating fixed laboratory samples. The reasons for this, include, but are not limited to:

- XRF and fixed laboratory data may provide good correlation over a narrow range (e.g., for significantly elevated results) but correlations are often of limited value closer to the reporting limits of the XRF (i.e., near action limits); and
- XRF and fixed laboratory data may correlate well for one analyte, but not others, making demonstration of overall sample correlation unlikely.

Therefore, it is recommended that XRF data not be used in risk assessment. If the Navy chooses to continue to pursue use of XRF in this manner, the SAP should be revised to discuss how the

bulleted items listed above will be addressed during data assessment. Further, a correlation of 0.7 or higher should be required. Revise the SAP to address this.

Evaluation of the Response to Specific Comment 13: The response is partially acceptable. However, averaging sample concentrations may not be appropriate, particularly in cases where one of the samples is over the action level, while the other sample is under the action level. Additionally, the SAP does not indicate how the project team will decide which sample concentration to utilize if precision criteria are not met. Given the limited amount of sampling for this project, a conservative approach should be taken by considering the higher concentration when assessing the data. Alternatively, revise the SAP to indicate that the reports will discuss how the project team will decide which sample concentrations shall be utilized for decision making purposes particularly when one result is above and the other below the action limit.



COMMONWEALTH OF PUERTO RICO
OFFICE OF THE GOVERNOR
ENVIRONMENTAL QUALITY BOARD

ENVIRONMENTAL EMERGENCIES RESPONSE AREA

May 17, 2010

Mr. Timothy Gordon
U.S. Environmental Protection Agency – Region II
290 Broadway – 22nd Floor
New York, New York 10007-1866

Re: **Technical Review Response to Comments**
Final Phase I RFI Sampling and Analysis Plan
SWMU 77 – Small Arms Range
Naval Activity Puerto Rico
Ceiba, Puerto Rico
PR2170027203

Dear Mr. Gordon:

The Federal Facility Coordinator of the Puerto Rico Environmental Quality Board has finished the review of the above-mentioned document.

Enclosed please find PREQB's comments on the revision of the document. If you have any additional comment or question please feel free to contact myself at 787-767-8181 extension 6141.

Cordially,

Wilmarie Rivera
Federal Facilities Coordinator
Environmental Emergencies Response Area

cc: Gloria M. Toro Agrait, Environmental Permits Officer

PREQB's Technical Review of the Comment Response Letter and Final Phase 1
RFI Sampling and Analysis Plan for SWMU 77- Small Arms Range, Naval Activity
Puerto Rico, Ceiba, Puerto Rico PR2170027203

Worksheet 12

PREQB Comment 1. Page 57. As per Section 2.6.2 of the UFP QAPP guidelines, please complete one Worksheet #12 for each matrix and each parameter for a total of two worksheets, one for metals in soil and one for explosives/propellant in soil. If this is performed, some of the issues listed below will most likely be eliminated; *Please change the frequency of the equipment blank to one per analysis per type of equipment (not per lab).*

Response: Not provided by the Navy

Evaluation of Response: Please address PREQB Comment 1.

PREQB Comment 1e. The measurement performance criteria for the laboratory duplicates does not agree with the laboratory SOPs provided in Appendix D. For metals analysis, the criteria listed in the SOP is $RPD \leq 20$ if results are $>5x$ the quantitation limit (QL) or \pm the QL if results are $\leq 5x$ the QL. Revise the worksheet accordingly.

Response: This is an instance where the laboratory measurement performance criteria correctly differ from the measurement performance criteria that is applied for data usability. The worksheet will not be revised and the project specific measurement performance criteria listed in Worksheet #12 will not be revised.

Evaluation of Response: The response indicates that the listed measurement performance criteria differed from the laboratory criteria because this is the criteria that would be used for assessing data usability. However, it is still unclear why the criteria being used to assess usability of results based on the laboratory duplicate results is less stringent than both the laboratory criteria and the EPA Region 2 data validation criteria. The criteria listed should, at a minimum, reflect the criteria used in the data validation guidelines cited on Worksheet #36.

PREQB Comment 1g. Per Section 2.6.2 of the UFP QAPP guidelines, this worksheet should also include measurement performance criteria for laboratory QC analyses including surrogates, LCS, serial dilutions, interference checks, method blanks, etc. Please include a note on Worksheet #12 to refer to Worksheet #28 for the measurement performance criteria of these laboratory QC analyses.

Response: Agree. A footnote will be added to Worksheet #12 to refer the reader to Worksheet #28 for this information.

Evaluation of Response: The response is acceptable but the actual footnote provided on the revised Worksheet was incorrect and should be revised as follows: Refer to Worksheet 28 for the measurement performance criteria for other laboratory QC analyses.

Worksheet 15

PREQB Comment 2. The MDL of each explosive analyte is 0.1 mg/kg. Typically, MDLs vary between compounds and are almost never exactly the same for each analyte in a group. Please clarify if these are actual laboratory MDLs.

Response: As indicated above, statistical MDLs are not generally reported. They are used to validate the reported detection limits provided on the forms.

Evaluation of Response: Please clarify whether or not the reported MDLs for each explosive compound in Worksheet #15 are from actual MDL studies performed by the laboratory.

PREQB Comment 3. The QLs provided for antimony (0.75 mg/kg) and arsenic (0.5 mg/kg) are much lower than QLs typically observed using SW-846 method 6010B. The QLs which were provided are more likely if SW-846 method 6020A (ICP-MS) was used. In addition, typical SW-846 method 6010B QLs for these two metals will exceed the listed background values and therefore may not be able to achieve the project objectives. Please clarify the actual QLs for these two metals based on the concentrations of these metals in the QL check standard and if the actual QLs exceed the background values, consider the use of SW-846 method 6020A for analysis in order to achieve the project objectives.

Response: The QL provided for arsenic is based on an alternative digestion using 2g sample and brought to a final volume of 100 ml. The QL provided for antimony is 3.00 mg/kg for SW-846 method 6010B.

Evaluation of Response: The response indicates that an alternate digestion procedure will be used for arsenic. Please address the following:

- a. Please clarify if this alternate digestion procedure will be used for all metals or just arsenic. If it will be used for all metals, adjust the QLs accordingly for all metals.
- b. Please explain how the need for this alternate digestion procedure will be communicated to the laboratory.
- c. Please note that the footnote provided on the revised Worksheet #15 states that the final volume of the digestate will be 1000 mL instead of 100 mL, as indicated in this response.

d. Please explain why the QLs provided for all metals are significantly lower than the QLs provided by Empirical Laboratory in Table I of SOP-105.

Worksheet 17

PREQB Comment 5a, Section 17.2.1, Page 75: Correlation of XRF Data with Fixed-Base Laboratory Samples for Lead

- a. This section states that if the correlation coefficient between XRF and fixed-based laboratory data are ≥ 0.65 , this will be considered adequate to translate XRF results to their equivalent laboratory lead concentrations with confidence. However, per SW-846 method 6200, the correlation coefficient for the results should be ≥ 0.7 for the XRF data to be considered screening level data and if the correlation coefficient is ≥ 0.9 and inferential statistics indicate the XRF data and the confirmatory data are statistically equivalent at a 99 percent confidence level, the data could potentially meet definitive level data criteria. Based upon these method requirements, please clarify why a correlation coefficient objective of ≥ 0.65 is being used for this program.

Response: Under the UFP-SAP, the project team is afforded the latitude to select quality measures considered to be satisfactory to the team. A correlation coefficient of 0.65 has been used with success on multiple past projects and was adopted for this project. It is generally held that obtaining several inexpensive and less precise measurements is preferred to a few highly precise measurements because the additional spatial coverage obtained with the less precise measurements provides a better site characterization than just a few measurements, regardless of the precision or accuracy of those few measurements; therefore, the EPA guidance on XRF data relaxed the 0.7 correlation coefficient for this reason.

The following text will be added to the end of the Correlation of XRF Data with Fixed Based Laboratory Samples for Lead section: *"The magnitude of r, the correlation coefficient describes the strength of a linear relationship. If all pairs of data (xi, yi) were to lie exactly on a straight line then the correlation coefficient would be 1. A value of r close to zero implies that a linear association is weak. Therefore, a correlation coefficient greater than 0.65 would indicate a linear relationship exists between the [two] variables. With a linear relationship established the XRF data could be used to determine the laboratory concentrations with the use of a regression analysis."*

- b. This section states that the XRF data may be used in evaluations of potential human health risk from exposure to contaminants in soil. However, based on the SW-846 method correlation issues noted above, the XRF data with a correlation coefficient of ≥ 0.65 is most likely not of adequate accuracy to be used for human health risk purposes. If data are

to be used for human health risk purposes, much tighter QC criteria must be used including a much higher correlation coefficient (≥ 0.9) and it is highly recommended that site-specific calibration standards be used for each area where XRF analyses are being performed.

Response: Refer to response to Worksheet #17 Comment 5a, above and Worksheet #15, Comment 5.

Evaluation of Response to Comments 5a and 5b: Although a lower correlation coefficient may be appropriate for obtaining data to determine whether an RI should be conducted, the Navy proposes to use XRF data for risk assessment purposes. Therefore, based on this data quality objective, a higher correlation coefficient is requested for data to be used for risk assessment purposes. Also, please clarify the following proposed text (last sentence) "*With a linear relationship established the XRF data could be used to determine the laboratory concentrations with the use of a regression analysis.*" Only laboratory analyzed samples provide laboratory concentrations.

Worksheet 20

PREQB Comment 1b: Page 90. Revise the Worksheet to include laboratory duplicates to cover metals analysis as MSD analyses will most likely not be performed with the metals analyses.

Response: As shown on Worksheet #12, laboratory duplicate samples will be analyzed for all analytical groups, including metals, in order to evaluate precision. Additionally, MS and MDS samples will be collected in the field and analyzed for all analytical groups as a measure of accuracy, bias and precision.

Evaluation of Response: The response indicates that laboratory duplicates will be performed for all parameters as shown on Worksheet #12. However, based on previous comments, Worksheet #12 was revised to show that laboratory duplicates are only performed for metals analyses. The response also indicates that MSD samples will be collected for all parameters. However, as per Worksheet #28 and per the laboratory's SOP, MSD samples are not being collected for metals analyses. Please revise Worksheet #20 accordingly to eliminate MSD samples for metals analyses or revise Worksheet #28 to include MSD samples for metals analyses.

Worksheet 22

PREQB Comment 1f: Pages 93 and 94, XRF. Per the SOP 08 provided in Appendix C, clarify that the acceptance criteria for the calibration verification is 20 % difference or less and not 20% recovery.

Response: The acceptance criteria for the calibration verification will be 20% difference of less; this will be revised and clarified in SOP 08. The reference to Percent Recovery will be formatted with a strikethrough and Percent Difference will be added in italics to SOP 08.

Evaluation of Response: The response is acceptable. However, please update the Worksheet to clarify that the criteria are referring to percent difference.

Worksheet 28

PREQB Comment 1b: Pages 103-105, Metals. Please add requirements for matrix spike, laboratory duplicate, and serial dilution analyses.

Response: These items will be added.

Evaluation of Response: The response is acceptable. However, please clarify why the Worksheet includes percent recovery criteria for the duplicate sample. If the recovery criteria are referring to potential MSD samples, it is also unclear why these criteria are different than those listed for the MS sample. Please clarify.

PREQB Comment 2a. Pages 106-107, Explosives and nitroglycerine. Please change the surrogate compound to 1,2-dinitrobenzene.

Response: The typo will be corrected.

Evaluation of Response: The response is acceptable. However, please note that this typographical error was corrected on the last column of the Worksheet but not in column #2.

PREQB Comment 2c. Pages 106-107, Explosives and nitroglycerine. MS: Please include specific acceptance criteria (50-140% per the SOP in Appendix D) and provide accurate corrective action procedure (post-digestion spikes are not applicable to the explosives analysis).

Response: The requested changes will be made.

Evaluation of Response: The response is acceptable. However, please clarify why recovery criteria of 50-140% are listed for all compounds except for "poor performers" which now have a recovery criteria of 60%. It is unclear how or why "poor performers" would have a higher recovery than the other compounds. In addition, as requested in comment #2d, please clarify which of the compounds are considered "poor performers."

PREQB Comment 2d, Pages 106-107, Explosives and nitroglycerine. Please add requirements for MSD analyses. Clarify what compounds are considered poor performers since the SOP in Appendix D allows higher RPDs for poor performers.

Response: The requested changes will be made.

Evaluation of Response: Please address the request to clarify which compounds are considered "poor performers."

REPA4R2-002-ID-184

**TECHNICAL REVIEW OF THE
NAVY'S APRIL 2010 RESPONSES TO EPA'S MARCH 2010 COMMENTS ON
ADDENDUM B (AIRFIELD BACKGROUND SOIL) AND
ADDENDUM C (FRESHWATER DRAINAGE DITCH SEDIMENT)
DATED JANUARY 2010
OF THE
REVISED FINAL II SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND
CONCENTRATIONS OF INORGANIC COMPOUNDS
DATED FEBRUARY 29, 2008**

**NAVAL ACTIVITY PUERTO RICO
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May 21, 2010

**TECHNICAL REVIEW OF THE
NAVY'S APRIL 2010 RESPONSES TO EPA'S MARCH 2010 COMMENTS ON
ADDENDUM B (AIRFIELD BACKGROUND SOIL) AND
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REVISED FINAL II SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND
CONCENTRATIONS OF INORGANIC COMPOUNDS
DATED FEBRUARY 29, 2008**

The following comments were generated based on an evaluation of the Navy's April 2010 Responses to EPA's March 2010 Comments on Addendum B (Airfield Background Soil) and Addendum C (Freshwater Drainage Ditch Sediment) of the *Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds*, dated February 29, 2008 (Revised Final II Background Summary Report), Naval Activity Puerto Rico (NAPR), Ceiba, Puerto Rico. Only the responses that have not been adequately addressed are discussed.

Evaluation of the Response to EPA Comment 1: The response is partially adequate. The response states, "... those chemicals at or below background levels (non-site related) will be discussed as part of the risk characterization and then exit the risk assessment process." Clarification is required. It should be noted that risk and hazard should be quantified for inorganic compounds that are detected above risk-based screening criteria regardless of background concentrations. To be clear, it is necessary to quantify risk and hazard for all compounds exceeding risk-based criteria (i.e., chemicals of potential concern (COPCs)). The risk characterization should then discuss the quantitative assessment of these COPCs, inclusive of inorganic COPCs detected at or below respective background levels. Subsequently, these inorganic COPCs that *were* detected at or below background, should then be further addressed in the uncertainty analysis. Specifically, the uncertainty analysis should present a refinement of the *total* site risk by segregating residual (site-related) risk and background risk from the total. It is important that the uncertainty analysis breaks down the total site risk so that is clear how much of the total site risk is likely attributable to background. Ensure that this methodology is followed for any human health risk assessment (HHRAs) conducted at NAPR.

Evaluation of the Response to EPA Comment 4: The response is not adequate. The purpose of the recent background sampling events was to establish background levels for the airfield only. It is acknowledged that a site-wide background freshwater drainage ditch sediment data set has not been established at NAPR (though two background sediment data sets do exist; estuarine wetland background sediment and open water background sediment). If the Navy wishes to use the airfield background freshwater drainage ditch sediment data for site-wide comparisons, the following must be addressed:

- Clarify whether all 20 of the airfield samples would be used in the site-wide data set, or just the eight (8) samples noted in the Navy's response to EPA Comment 4 (i.e., 56SD06, 56SD07, FWDBKG-03, FWDBKG-04, FWDBKG-SD08, FWDBKG-SD09, FWDBKG-

SD17, and FWDBKG-SD18). In addition, provide the complete decision rationale for the selection of these samples.

- Propose additional background freshwater drainage ditch sediment sampling locations across NAPR for use in the site-wide data set, or justify why additional background sampling of this medium is not necessary. In this justification, explain why samples for establishing background concentrations in surface soils, subsurface soils, estuarine wetland sediment and open water sediment were collected from across the entire site (Figures 2-1, 3-1, 3-2, 3-3, 4-1, 5-2, and 5-3), while site-wide background freshwater drainage ditch sediment data are represented by the airfield data only.