



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866

OCT 18 2011

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 55 (TCE Groundwater Plume near Tow Way Fuel Farm) – Draft Final Corrective Measures Study (CMS) Addendum, dated August 18, 2011
- 2) SWMU 55 (TCE Groundwater Plume near Tow Way Fuel Farm) – Draft Final Corrective Measures Implementation (CMI) Plan, dated August 18, 2011
- 3) SWMU 7 & 8 (Tow Way Fuel Farm) – Corrective Measures Study (CMS) Addendum and Statement of Basis, Revised Soil Remedy, submitted July 13, 2011
- 4) AOC E (Pineros and Cabeza de Perro Islands) – Phase I RFI Final Addendum No. 2 – Underwater Intrusive Investigation Work Plan, dated June 16, 2011

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).

SWMU 55 - Corrective Measures Study (CMS) Addendum, dated August 18, 2011

EPA has reviewed the above document and the Responses to EPA's previous Comments, both of which were submitted on behalf of the Navy by Mr. Tom Beisel's (of AGVIO/CH2MHill) letter of August 18, 2011. As part of our review EPA requested our consultant TechLaw Inc. to review the CMS Addendum and the Responses to EPA's previous comments. TechLaw's comments are given in the enclosed Technical Review dated October 3, 2011 (Enclosure #1). Based on those reviews, EPA does not fully approve the CMS Addendum or the AGVIO/CH2MHill Responses to the comments transmitted with EPA's letter of May 20, 2011. EPA's basis for this determination is discussed below:

1) EPA's previous comments had requested further justification for system design specifications for the bioreactor, or appropriate monitoring schedules for evaluating the effectiveness of the bioreactor. The Navy's responses indicate that the proposed specifications and monitoring schedules are based on CH2M HILL's previous experiences with the selected technology at seven other sites. However, very little information has been provided to show that conditions at these seven other sites and the SWMU 55 site are similar enough to warrant similar system designs. EPA requests that additional supporting information be provided in the form of a 100% Design Basis document, rather than the Navy's current approach of basing design parameters and system performance solely on previous experiences at reportedly similar sites.

2) Please revise Section 1.2 (Media Cleanup Standards) and Sections 1.2.2 (Soil and Groundwater CAOs) of the Addendum to include the discussion given in your August 18, 2011 Responses to General Comment #1 of Enclosure #1 (TechLaw Technical Review dated March 21, 2011) transmitted with EPA's letter of May 20, 2011.

3) In addition, Section 1.2.1 (Land Use and Potentially Exposed Receptors) must be revised to reflect that the Navy has advised EPA that they have come to terms with the Puerto Rico Local Redevelopment Authority (LRA) on the LRA's application for an Economic Development Conveyance (EDC) transfer of the lands needed for the proposed "Caribbean Riviera" development, and the Navy has further advised that the "Port Parcel" which includes SWMU 55 will also be transferred to the LRA for the proposed "Caribbean Riviera" development, instead of the Puerto Rico Ports Authority as originally proposed. The Navy has indicated these transfers are expected to occur by the end of 2011. Also, please revise Section 1.2.1 (Land Use) to indicate that the proposed future usage of the SWMU 55 site is now as described in the September 2011 Final Supplemental Environmental Assessment for Disposal of Naval Activity Puerto Rico.

4) In light of the above discussed changes in expected future land-use, please address whether the Corrective Action Objectives (CAOs) for SWMU 55, which were developed in the 2005 CMS and reflected in the August 2011 CMI Plan (discussed below), need to be updated to reflect changes in the proposed future land usage for this site as described in the September 2011 Final Supplemental Environmental Assessment for Disposal of Naval Activity Puerto Rico, and if not, please discuss why no change is needed at this time (such as described in the August 18, 2011 Response to General Comment #1 of Enclosure #1 included with EPA's letter of May 20, 2011).

Within seventy five (75) days of your receipt of this letter, please submit revisions to the CMS Addendum which address the above comments and the applicable comments in Enclosure #1, including the evaluation of General Comments #1, 3, 5, 6, 7, 8, 11, 13, and 16, and Specific Comments #1, 2, 4, 11, and 12.

In addition, the Puerto Rico Environmental Quality Board (PREQB) in its letter of September 14, 2011 addressed to myself, had a number of comments on the CMS Addendum. A copy of PREQB's letter is enclosed (Enclosure #2).

Within seventy five (75) days of your receipt of this letter, please submit Responses to address PREQB's comments and any necessary revisions to the revisions to the CMS Addendum Report to address those comments.

SWMU 55 - Corrective Measures Implementation (CMI) Plan, dated August 18, 2011

EPA has reviewed the above document submitted on behalf of the Navy by Mr. Tom Beisel's (of AGVIO/CH2MHill) letter of August 18, 2011. As part of our review EPA requested our consultant TechLaw Inc. to review the CMI and the Responses to EPA's previous comments. TechLaw's comments are given in the enclosed Technical Review dated October 3, 2011 (Enclosure #1). EPA does not fully approve the CMI Plan. EPA's basis for this determination is discussed below and in the Enclosed Technical Review dated October 3, 2011 (Enclosure #1):

- 1) EPA cannot complete its evaluation of the Draft Final CMI until the "new SAP related to the work to be conducted under the CMI", as indicated in the Responses to EPA's comments, is submitted for our review.
- 2) Section 1.3 (Corrective Measures Objectives) of the Draft Final CMI, should be revised to discuss whether the Corrective Action Objectives (CAOs) for SWMU 55 developed in the 2005 CMS and reflected in the CMI Plan need to be revised to reflect changes in proposed future land usage, as described in the September 2011 Final Supplemental Environmental Assessment for Disposal of Naval Activity Puerto Rico. If no changes in the CAOs for soil are warranted at this time, include a discussion of why those CAOs are acceptable in light of the revised land usage plan, and how future changes in any proposed land usage restrictions would be addressed. EPA recommends that you include in Section 1.3 the full text of your August 18, 2001 Responses to General Comment #1 of Enclosure #1 (TechLaw Technical Review dated March 21, 2011) which was transmitted with EPA's letter of May 20, 2011.
- 3) The CMI Plan lacks a performance basis for the corrective measures system design. In many cases, the proposed specifications or monitoring schedules are based on CH2M HILL's previous experiences with this technology at seven other sites. However, very little information has been provided to show that conditions at these seven other sites and the SWMU 55 site are similar enough to warrant similar system designs. The Draft Final CMI Plan needs to be revised to provide supporting calculations for the system design based on site-specific data from NAPR. Also, the CMI should include a 100% Design Basis document. If the Navy is not prepared to include supporting calculations for the system design based on site-specific data and a complete 100% Design Basis document, EPA may consider a performance based design approach for this CMI; however, that would require submission of an acceptable sampling and analysis plan capable of demonstrating achievement (or non-achievement) of the Corrective Action Objectives (CAOs) through the collection of environmental data, and a complete schedule for the collection and evaluation of such environmental data.
- 4) In addition, EPA has reviewed your Responses to Comments on the January 2011 Amended Final Sampling and Analysis Plan Pilot Test at SWMU 54 and 55 (refer to TechLaw Technical Review dated March 21, 2011 enclosed with EPA's letter of May 20, 2011), which was also submitted on behalf of the Navy by Mr. Tom Beisel's (of AGVIO/CH2MHill) letter of August 18, 2011. EPA cannot evaluate the Navy's Responses to General Comments #5, #6, #7 #8, #10, #11, #12 and #13, and Specific Comments #1 through #16 on the January 2011 Amended Final sampling and Analysis Plan Pilot Test at SWMU 54 and 55, until the "new SAP related to the work to be conducted under the CMI", which is discussed in your August 18, 2011 Responses to Comments, is submitted for our review.

Within seventy five (75) days of your receipt of this letter, please submit all necessary revisions to the CMI Plan along with the "new SAP related to the work to be conducted under the CMI". Also, submit written responses to address the above comments, and all applicable comments in Enclosure #1, including the evaluations in Enclosure #1 of the Navy's Responses to General Comments #1, 3, 5, 6, 7, 8, 11, 13, and 16, and Specific Comments # 18, 19, 20, 21, 22, and 30,

In addition, the Puerto Rico Environmental Quality Board (PREQB) in its letter of September 14, 2011 addressed to myself, indicated the Responses to its previous comments were acceptable and that it approved CMI Plan. A copy of PREQB's letter is enclosed (Enclosure #2).

### SWMU 7 & 8 – Corrective Measures Study (CMS) Addendum and Statement of Basis, Revised Soil Remedy

EPA has reviewed the above documents and the Responses to EPA's previous Comments (which were transmitted with my letter of February 9, 2011), both of which were submitted on behalf of the Navy by Mr. Tom Beisel's (of AGVIO/CH2MHill) letter of July 13, 2011. EPA also requested our consultant, TechLaw Inc., to review the above two documents and the Navy's Responses to Comments. TechLaw's comments are given in the enclosed Technical Review dated September 22, 2011 (Enclosure #3). Based on those reviews, EPA has the following general comments:

1) Based on TechLaw's review of the site-specific and background data-sets used to characterize arsenic in soil at NAPR, it appears that both datasets are representative of the same population. This conclusion is based on the results of the nonparametric Wilcoxon Rank Sum analysis and Q-Q plot review. The 95UCL (upper confidence limit) comparison is informative; however, comparison on the basis of the 95UTL (upper tolerance limit) is the more common metric upon which background dataset comparisons are more often predicated. Nevertheless, EPA and TechLaw are inclined to agree with the bulleted decision criteria points regarding the arsenic concentrations detected in soils, as outlined in Section 3.2 of the CMS Addendum, and to concur with the conclusion that the detected arsenic concentrations do appear to reflect natural conditions, and that maximum detected arsenic concentration of 4.3 mg/kg does not appear to reflect "hot spots" associated with anthropogenic activities, but rather is consistent with natural background conditions. Although several individual detections of arsenic in soil do exceed the background range and initial Wilcoxon Rank Sum results tend to indicate exacerbation by facility operations, EPA and TechLaw agree with the Navy's conclusion that this phenomenon could be the result of small dataset variability, based on the distribution of arsenic detections at the site.

2) Section 1.1 (Site Description and Project Background) and Table 1-1 (Soil CAOs) of the CMS Addendum, as well as Section 4.2 (Recommendations) should be revised to include a discussion of whether the Corrective Action Objectives (CAOs) for soils at SWMU 7 & 8, developed in the November 2005 CMS, and incorporated into the CMS Addendum need to be revised to reflect changes in proposed future land usage, as described in the September 2011 Final Supplemental Environmental Assessment for Disposal of Naval Activity Puerto Rico. If no change in the CAOs for soil are warranted at this time, the CMS Addendum should include a discussion of why those CAOs are acceptable in light of the revised land usage plan, and how future changes in any proposed land usage restrictions would be addressed, should that occur.

3) With respect to the Navy's Responses to EPA's previous Comments (which were transmitted with my letter of February 9, 2011), EPA has the following concerns regarding the responses to General Comment Nos. 1 and 2:

The Navy has utilized a Corrective Action Objective (CAO) for polynuclear aromatic hydrocarbons (PAHs) in soil predicated on the USEPA Region-3 risk-based concentration (RBC) for PAHs of 7.8 mg/kg in Industrial Soil. These CAOs were proposed in the 2005 Corrective Measures Study (CMS). The Navy response to both general comment 1 and 2 indicates that the sampling results presented in Table 3-1 of the CMS Addendum do not indicate exceedance of the CAO values. While it is true that all PAH data reported in Table 3-1 are less than 3 mg/kg, all those results are qualified UJ (non-detect, estimated). While it does appear that the existing soil data at SWMU 7 & 8 can support a non-remediation remedy based on the 2005 RBC CAOs for PAHs in soils, as long as future land usage is restricted to industrial/commercial use, EPA notes that RBCs have now been supplanted as screening values by the EPA's National regional screening levels (RSLs), which are significantly more stringent than the RBCs. The benzo(a)pyrene RSL for industrial soil is 0.21 mg/kg and the RSL for residential soil is 0.015 mg/kg. Based on those RSLs, none of the benzo(a)pyrene data in Table 3-1 are sensitive enough to support a recommendation for either industrial or residential land use.

EPA has determined that the PAH soil data shown in Table 3-1 of the CMS are not adequate to justify an unrestricted, i.e. residential, future land usage, regardless of whether the RBCs or RSL values are taken as CAOs. Even when RBCs are used for CAOs, the RBC for benzo(a)pyrene is 0.78 mg/kg for residential soil. The sampling results presented in Table 3-1 are not sufficiently sensitive to support unrestricted/residential land usage, even if the RBC values are used for CAOs. Accordingly, please revise Sections 3.3 (Land Use and Institutional Controls for Site Soils) and 4.2 (Recommendations) of the CMS Addendum.

Also, given the revisions to EPA's recommended applicable risk based screening levels as discussed above, the CMS Addendum needs to either include a discussion justifying continued usage of the 2005 RBC based CAOs in light of EPA's subsequent recommendation that RSL values should be utilized instead of RBCs, or the CMS Addendum must include revised CAOs based on the RSLs and a revised soil remedy proposal. However, as discussed above, even if the original (2005) RBC based CAOs can be justified, the CMS Addendum must be revised to reflect a proposed remedy recommendation for a future land control (LUC) at the SWMU 7 & 8 site to restrict usage to industrial/commercial use, as data shown in Table 3-1 of the CMS are not adequate to justify an unrestricted/residential future land usage.

4) The data validation report (DVR) included in Appendix A, Soil Laboratory Analytical Results, of the CMS Addendum indicates that all polycyclic aromatic hydrocarbon (PAH) soil results were qualified as estimated with low bias due to preservation requirements. However, the impact of this discrepancy is unclear as the text of the CMS Addendum does not discuss how the samples were stored before shipping to the laboratory. Further information on this is requested in the enclosed comments to ensure the sample impact was not so significant that results should be rejected. Because the CMS Addendum based its recommendations on the lack PAH detections, EPA requests that the sample preservation exceedances be further clarified.

5) Also, according to EPA's Technical Factsheet on PAHs, benzo(a)pyrene, when released, is largely associated with particulate matter, soils, and sediments. If released to soil, benzo(a)pyrene is expected to adsorb very strongly and is not expected to leach to groundwater. Biodegradation tests in soils have resulted in a wide range of reported half-lives (two days to almost two years). Based on these values and the apparent lack of a significant competing fate process, biodegradation may be an important process in soils. However, the CMS Addendum does not provide adequate supporting rationale for the statements made regarding the ability of the PAHs to biodegrade. Therefore, EPA requests that a lines-of-evidence discussion/assessment be included in the CMS Addendum to support the conclusion that PAHs do not require further assessment once the PAH data quality concerns identified above are addressed.

Based on the above, EPA requests that within 60 days of your receipt of this letter, the Navy submit a revised CMS Addendum and Statement of Basis to address the above comments, along with those given in the Technical Review dated September 22, 2011 (Enclosure #3). Also, please change the date of the revised CMS Addendum and Statement of Basis to reflect the date it is actually submitted (rather than retaining the March 2011 date).

In addition, the Puerto Rico Environmental Quality Board (PREQB) in its letter of September 2, 2011 addressed to myself, indicated that the CMS Addendum and Statement of Basis were acceptable and that it approved both. A copy of PREQB's letter is enclosed (Enclosure #4).

#### AOC E – Addendum No. 2 – Underwater Intrusive Investigation Work Plan

EPA has reviewed the above document and the Responses to EPA's previous Comments, both of which were submitted on behalf of the Navy by Mr. Thomas Roth's (of CH2MHill) letter of June 16, 2011. EPA also requested our consultant, TechLaw Inc., to review the Responses to comments on the December 2010 Draft Addendum No. 2, and the revised Final Addendum No. 2.

Based on those reviews, please note that Appendix C (Dive Operations Plan) of the Final Addendum No. 2, contains some references that do not correspond with those found in the body of the Final Addendum No. 2. Please note the following references in Section 7, References, of the Addendum No. 2, should have cited the most current versions: US Navy Dive Manual, Rev 6, 2008 (current in Appendix C, Dive Operations Plan); EM 385-1-1, 2008 (current in Appendix C, Dive Operations Plan); and DA PAM 385-64, Revised 24 May 2011. Also, the item listed as "DoD, 2004. ATF Explosives Laws and Regulations," appears to be erroneous, and should probably be described as Department of Justice (DOJ) ATF 5400-7, Federal Explosives Law and Regulations, dated 2007. However, EPA will approve the revised Final Addendum No. 2, dated June 16, 2011, as acceptable, but requests that within 45 days of your receipt of this letter, the Navy submit a corrected Reference Section and Appendix C (Dive Operations Plan) as discussed above, along with an updated schedule for implementation of the Addendum No. 2 investigations.

In addition, the Puerto Rico Environmental Quality Board (PREQB) has completed its review of the Addendum No. 2 and Responses to their comments on the on the December 2010 Draft Addendum No. 2. PREQB's comments on the Responses and the Final Addendum No. 2 are given in their letter of September 9, 2011 to me; a copy of which is included as Enclosure #5.

Within 45 days of your receipt of this letter, please submit responses to PREQB's comments given in Enclosure #5, and if necessary revisions to Addendum No. 2 to address PREQB's comments.

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

Sincerely yours,



Timothy R. Gordon  
Project Coordinator  
Corrective Action and Special Projects Section  
RCRA Programs Branch

Enclosure (5)

cc: Ms. Wilmarie Rivera, P.R. Environmental Quality Board, w/encls #1 & #3 only  
Ms. Gloria Toro, P.R.Environmental Quality Board w/encls #1 & #3 only  
Mr. Tom Beisel, AGVIO/CH2MHill, w/encls.  
Mr. Mark Kimes, Baker Environmental, w/encls.  
Mr. Stacin Martin, US Navy, w/encls.  
Ms. Cathy Dare, TechLaw Inc., w/o encls.  
Mr. Felix Lopez, USF&WS, w/o encls.

**TECHNICAL REVIEW OF THE  
RESPONSE TO EPA COMMENTS AND THE  
CORRECTIVE MEASURES STUDY ADDENDUM AND THE  
CORRECTIVE MEASURES STUDY IMPLEMENTATION PLAN  
SOLID WASTE MANAGEMENT UNIT 55**

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

**DATED AUGUST 2011**

**Submitted to:**

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

**Submitted by:**

**TechLaw, Inc.  
205 West Wacker Drive  
Suite 1622  
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**EPA Task Order No.  
Contract No.  
TechLaw TOM  
Telephone No.  
EPA TOPO  
Telephone No.**

**002  
EP-W-07-018  
Cathy Dare  
315-334-3140  
Timothy Gordon  
212-637-4167**

**October 3, 2011**

**TECHNICAL REVIEW OF THE  
RESPONSE TO EPA COMMENTS AND THE  
CORRECTIVE MEASURES STUDY ADDENDUM AND THE  
CORRECTIVE MEASURES STUDY IMPLEMENTATION PLAN  
SOLID WASTE MANAGEMENT UNIT 55**

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

**DATED AUGUST 2011**

The following comments were generated based on a review of the Response to EPA Comments (RTCs) and the Corrective Measures Study (CMS) Addendum and the Corrective Measures Implementation (CMI) Plan, Solid Waste Management Unit (SWMU) 55, Naval Activity Puerto Rico (NAPR), EPA ID PR2170027203, Ceiba, Puerto Rico. The RTC was reviewed to determine whether EPA's comments on the *Corrective Measures Study Addendum, SWMU 55*, and the *Corrective Measures Implementation Plan, SWMU 55*, both dated January 2011, were addressed adequately, and that any necessary revisions were incorporated appropriately into the *Draft Final Corrective Measures Study Addendum, SWMU 55*, dated August 2011 (Draft Final CMS Addendum), and the *Draft Final Corrective Measures Implementation Plan, SWMU 55*, dated August 2011 (Draft Final CMI Plan). Only those comments that require additional clarification and/or revision to the August 2011 Draft Final CMS Addendum or August 2011 Draft Final CMI Plan are described below.

Additionally, it should be noted that, although a majority of the comments have been addressed to some extent, the Draft Final CMS Addendum and the Draft Final CMI Plan lack a performance basis for the corrective measures system design. In many cases, the proposed specifications or monitoring schedules are based on CH2M HILL's previous experiences with this technology at seven other sites. However, very little information has been provided to show that conditions at these seven other sites and the SWMU 55 site are similar enough to warrant similar system designs. The Draft Final CMS Addendum and Draft Final CMI Plan need to be revised to provide supporting calculations for the system design based on site-specific data to allow for transparency in the design process and expanded to represent a true 100% Design Basis document. If NAPR feels that this is not possible, a performance based design can be considered, but it would require a well documented sampling and analysis plan capable of demonstrating achievement of the Corrective Action Objectives (CAOs) through the collection of environmental data. Further, final approval of the Draft Final CMI Plan is on hold pending receipt and approval of the AGVIQ-CH2M HILL (2011) *Draft Sampling and Analysis Plan, Corrective Action at Solid Waste Management Unit 55 at Naval Activity Puerto Rico*; Prepared for Naval Facilities Engineering Command Southeast (SAP). This document is referenced in the RTCs as the CMI-specific SAP submitted for Navy review on September 9, 2011. The Draft Final CMI Plan refers to this SAP in Section 2.1 on Page 2-1.

### **Evaluation of the Response to EPA General Comment 1:**

The response to EPA General Comment 1 is partially adequate. Additional information to support use of in-situ chemical oxidation (ISCO) and a bioreactor system at the site has been provided. However, the response does not address how it was determined that the proposed 1,300 pounds of sodium permanganate ( $\text{NaMnO}_4$ ), the same amount of mass injected during the pilot scale test, is sufficient to treat the source area prior to the in situ bioremediation (ISB) component of the remedy. Calculations have not been provided in the Draft Final CMS Addendum or Draft Final CMI Plan to show that the proposed 1,300 pounds will be adequate. While the mode of application of  $\text{NaMnO}_4$  differs from the pilot scale test and source area mass will be removed during excavation of soil for the bioreactor prior to addition of  $\text{NaMnO}_4$ , additional justification should be provided to demonstrate how the proposed amount of 1,300 pounds of  $\text{NaMnO}_4$  will be sufficient to address the source area trichloroethylene (TCE) without the need for additional injections. Alternatively, a commitment needs to be provided for a second round of  $\text{NaMnO}_4$  application in the event that TCE concentrations remain too high, thus not allowing the proposed ISB to treat the remaining contamination to the CAO. Please revise the CMI Plan to present calculations in support of the proposed  $\text{NaMnO}_4$  loading or to allow for additional applications of  $\text{NaMnO}_4$  should the levels of TCE remain too high to allow for achievement of the CAO solely by ISB.

### **Evaluation of the Response to EPA General Comment 3**

The response to EPA General Comment 3 is partially adequate. Although the response includes additional information to clarify the proposed approaches for limiting mobilization of TCE, the response does not comment on the adequacy of the proposed monitoring network and proposed sampling events to monitor the effectiveness of these approaches, as well as the potential discharge to Ensenada Honda in the event that the proposed approaches are found to be insufficient. Currently, it appears that post-ISCO performance monitoring will only include select wells and select parameters ( $\text{NaMnO}_4$  and field parameters) and not VOCs (Draft Final CMI Plan, Section 2.1, Post-ISCO Performance Monitoring.) Please clarify how the effectiveness of the proposed approaches for limiting TCE migration will be monitored, and clarify whether the existing network of monitoring wells will be sufficient to determine whether TCE is discharged to Ensenada Honda.

### **Evaluation of the Response to EPA General Comment 5**

The response to EPA General Comment 5 is partially adequate. Please refer to the Evaluation of the Response to Specific Comment 19 on the CMI Plan for additional concerns regarding the revised waste management procedures.

### **Evaluation of the Response to EPA General Comment 6**

The response to EPA General Comment 6 is adequate. However, it is unclear whether there are any known implications or other concerns associated with using a highly concentrated solution of  $\text{NaMnO}_4$ . The concentration proposed in the Draft Final CMS Addendum and CMI Plan (84 grams per liter) is significantly greater than the values originally proposed in the CMS

Addendum (10 g/L) and CMI Plan (16.5 g/L). Please clarify whether there are any known drawbacks or concerns associated with using a highly concentrated NaMnO<sub>4</sub> solution, and the basis for the revised NaMnO<sub>4</sub> concentration.

#### **Evaluation of the Response to EPA General Comment 7**

The response to EPA General Comment 7 is partially adequate. The response clarifies how the mid-aquifer plume maps were generated. However, the utility of these mid-aquifer plume maps is limited since the interpretation of the TCE plume in this portion of the aquifer cannot be validated by data from appropriately-screened permanent wells. It is recommended that, in the future, plume maps be generated for the portion of the aquifer in which the actual data were collected, rather than modeled interpretations of the data, or that the text of the document clearly describe the plume maps as modeled interpretations of the data and discuss any limitations associated with these interpretations.

#### **Evaluation of the Response to EPA General Comment 8:**

The response to EPA General Comment 8 is adequate. An additional well will be installed north of existing well 55MW24 to better define the source area. However, neither the Draft Final CMI Plan nor the Draft Final CMS Addendum describes the additional sampling that will be conducted during installation of this well. It is unclear whether soil will be field screened continuously during installation of the boring, or whether additional soil samples will be collected and submitted for laboratory analysis. Please revise the Draft Final CMI Plan and/or the Draft Final CMS Addendum to clarify how soil will be characterized during installation of the additional monitoring well north of 55MW24 to adequately support source area characterization.

#### **Evaluation of the Response to EPA General Comment 11:**

The response to EPA General Comment 11 is partially adequate. In particular, item "h" of Comment 11 indicated that an Operation and Maintenance Plan (O&M Plan) should be provided. The Draft Final CMI Plan does include an outline of the components of an O&M Plan, but does not present detailed information or indicate when a detailed O&M Plan will be submitted. Additionally, the outline of the O&M Plan does not capture all of the components described in the Final RCRA Corrective Action Plan, OSWER 9902.3-2A, dated May 1994 (Corrective Action Guidance). Additional components include, but are not limited to: project management, personnel training, replacement schedule for equipment and/or components, corrective measure completion criteria, data management and documentation requirements. Please clarify when an O&M Plan will be submitted, and assure that it includes all of the components addressed in the Corrective Action Guidance.

#### **Evaluation of the Response to EPA General Comment 13:**

The response to EPA General Comment 13 requires additional clarification. The original comment requested clarification on how the level of NaMnO<sub>4</sub> would be monitored to assure that it does not enter the mulch layer of the bioreactor. The response indicates that "an observation

well will be placed in the center of the bioreactor to monitor water levels within the bioreactor once groundwater recirculation starts (following ISCO treatment period).” This appears to imply that the observation well within the reactor will only be used after the ISCO treatment period. However, Section 2.1 of the Draft Final CMI Plan states that this observation well will be included in the monthly sampling events for NaMnO<sub>4</sub>. It is unclear why this observation well cannot be used to collect more frequent water level measurements to assure that the NaMnO<sub>4</sub> is not reaching the mulch layer. Please revise the CMI Plan to clarify the approach for monitoring the level of NaMnO<sub>4</sub>.

#### **Evaluation of the Response to EPA General Comment 16:**

The response to EPA General Comment 16 does not address the comment. The response indicates that a technical memorandum discussing data usability will not be provided, even though the *Amended Final Sampling and Analysis Plan for the Pilot Test at SWMU 54 and 55*, dated January 31, 2011 (SAP) states that a data quality evaluation will be provided as part of presentations to the Tier I Partnering Team, followed by the technical memorandum prepared to assess remedy effectiveness. According to the SAP, the technical memorandum will identify any data usability limitations and make recommendations for corrective action if necessary. This data usability discussion, combined with a spot check of the data validation reports, should be provided to allow the site decision-makers to get an overall picture of the data quality without having to review each data validation report individually. Revise the CMS Addendum to present a data usability discussion summarizing the results of the data validation, including an assessment of any major trends/bias noted in the data.

#### **Evaluation of the Response to EPA Specific Comment 1 on the CMS Addendum:**

The response to EPA Specific Comment 1 on the CMS Addendum is partially adequate. The response indicates that the design is based on previous experience of CH2M HILL at seven other sites with similar contaminant concentrations. The response states, “VOCs data collected at these sites demonstrate the residence time achieved within the bioreactor is sufficient to achieve complete degradation of TCE.” While complete degradation is possible, please clarify whether incomplete degradation of TCE was observed at any of the referenced sites, and if so, what measures were implemented to address the build-up of TCE daughter products. Additionally, please clarify how the seven sites at which bioreactors have been implemented successfully relate to the SWMU 55 site.

#### **Evaluation of the Response to EPA Specific Comment 2 on the CMS Addendum:**

The response to EPA Specific Comment 2 on the CMS Addendum is partially adequate. The response clarifies flow rates for the proposed groundwater recovery; however, neither the Draft Final CMS Addendum nor the Draft Final CMI Plan provide supporting data for the stated residence time (10 days) needed to achieve 90 percent or greater TCE destruction. Please clarify how the stated residence time was determined, and provide supporting documentation for its determination.

#### **Evaluation of the Response to EPA Specific Comment 4 on the CMS Addendum:**

The response to EPA Specific Comment 4 on the CMS Addendum is inadequate. While it is understood that continued groundwater monitoring will be used to refine site-specific attenuation rates, the response does not provide any information to clarify how the initial estimate of three to five years for the source area to reach the CAO was established. Please clarify how this initial estimate was derived.

#### **Evaluation of the Response to EPA Specific Comment 11 on the CMS Addendum:**

The response to EPA Specific Comment 11 on the CMS Addendum is inadequate. Section 3.5.2, of Appendix A, needs to be revised to remove reference to 7MW24 since this well was not sampled for TCE during January 2010, or it needs to clarify that TCE at 7MW24 is an estimate based on the presence of  $\text{NaMnO}_4$ . Further, the response indicates that a notation was included on Table 3-1, Summary of TCE Concentrations Detected in Groundwater that addresses this estimate for TCE. Table 3-1 of the Draft Final CMS Addendum does include this notation, but it does not identify specific wells or sampling data to which the notation applies. Please revise the Draft Final CMS Addendum to address these concerns.

#### **Evaluation of the Response to EPA Specific Comment 12 on the CMS Addendum:**

The response to EPA Specific Comment 12 on the CMS Addendum is partially adequate. The response addresses the discrepancy associated with the groundwater flow direction at the site, but it is now unclear why the measured groundwater flow direction (south/southwest) and the movement of TCE (southeast) differ. Section 1.4, Contaminant Migration Potential, of the Draft Final CMI Plan appears to address this issue; however, this information should also be incorporated into the CMS Addendum. Please revise the CMS Addendum to clarify what factors are affecting the dissimilar flow paths of groundwater and TCE.

Additionally, the original comment requested that any presentation of potentiometric data include tidal information and the time over which the water level information was collected to ensure that the information collected has not been skewed by tidal influences. The response does not address this part of the comment, and does not incorporate information regarding a lack of tidal influence as indicated in response to EPA General Comment 13 or PREQB's Appendix A comment response which clarifies that tidal gauging conducted in April 2010 indicates a maximum tidal influence of 0.25 feet in monitoring well 55MW20, as shown in Appendix A. Further, the Draft Final CMS Addendum does not include this information in the potentiometric surface maps (Figures 3-6 and 3-7) or in the associated water elevation summary table (Table 3-3, Water Elevations). Please revise the Draft Final CMS Addendum to address the second half of EPA Specific Comment 12 on the CMS Addendum.

#### **Evaluation of the Response to EPA Specific Comment 18 on the CMI Plan:**

The response to EPA Specific Comment 18 on the CMI Plan is adequate; however, all of the information presented has not been incorporated into the Draft Final CMI Plan. The response indicates that the results of sampling during installation of a well northeast of well 55MW024

may be used to determine the final location of the bioreactor excavation. This information is not included in Section 3.2.3, Excavation, of the Draft Final CMI Plan. Please revise the Draft Final CMI Plan to note that the final excavation for the bioreactor will be determined, in part, on the results of sampling during the installation of this additional source area well, and that the final excavation configuration will be presented to stakeholders.

**Evaluation of the Response to EPA Specific Comment 19 on the CMI Plan:**

The response to EPA Specific Comment 19 is adequate. Waste management procedures will no longer rely on photoionization detector (PID) measurements. However, new information presented in Section 1.7.1, Solid Waste, of the Draft Final CMI Plan requires additional clarification. This section notes that soil removed from 0 to 2 feet below ground surface (bgs) will be stockpiled and used as backfill. This approach is based on soil data collected in September 2003. The Draft Final CMI Plan does not include the results of the September 2003 soil sampling effort, so it is unclear if an appropriate number of surface soil samples were collected within the proposed excavation area to make a determination of acceptability for reuse. Additionally, the criteria that make the soil in this area acceptable for reuse are not presented. Please revise the Draft Final CMI to present the soil data from September 2003 to support the proposed reuse of the top two feet of soil within the proposed excavation area as backfill without further characterization. Additionally, please clarify how the soil stockpile designated for reuse will be segregated from the soil stockpile that requires off-site disposal.

**Evaluation of the Response to EPA Specific Comment 20 on the CMI Plan:**

The response to EPA Specific Comment 20 on the CMI Plan is partially adequate. The original comment requested that the CMI Plan be revised to provide the specifications for the gravel and the mulch to be utilized as backfill for the bioreactor system, and to include quality control requirements for ensuring that the 70 percent mulch / 30 percent gravel ratio is verified on a by weight basis. The response does not address these concerns. Section 3.3, Infiltration Gallery/Bioreactor Construction, of the Draft Final CMI Plan does indicate that the mulch/gravel ratio will be verified on a by weight basis, but it does not provide details on how or how often this verification will be accomplished. Additionally, the Draft Final CMI Plan does not provide the specifications for the gravel and mulch. Please revise the Draft Final CMI Plan to address these concerns.

**Evaluation of the Response to EPA Specific Comment 21 on the CMI Plan:**

The response to EPA Specific Comment 21 on the CMI Plan is inadequate. The response does not address the majority of the comment which requested that the CMI Plan provide a design basis for the proposed recirculation system that demonstrates that the proposed infiltration volume is appropriate, and that the drip lines are sized and placed appropriately. Please revisit Specific Comment 21.

**Evaluation of the Response to EPA Specific Comment 22 on the CMI Plan:**

The response to EPA Specific Comment 22 on the CMI Plan is inadequate. Please clarify why effective porosity is no longer relevant to the discussion of the infiltration gallery. Based on calculations presented in Appendix B of the Draft Final CMI Plan, Calculation Sheets, the injection volume for the NaMnO<sub>4</sub> solution is based on an infiltration gallery porosity of 0.3.

**Evaluation of the Response to EPA Specific Comment 30 on the CMI Plan:**

The response to EPA Specific Comment 30 on the CMI Plan is partially adequate. An additional technical memorandum has been proposed six months after the bioreactor startup. However, additional technical memoranda should be submitted following any other major changes to the system, such as after an additional extraction well is incorporated into the bioreactor (Section 1.5.2, Source Area Approach).

Additionally, the Draft Final CMI Plan has not incorporated all of the information that should be included in the annual reports and technical memorandum. Please revise the Draft Final CMI Plan to state that annual reports and the technical memorandum will include a summary of system effectiveness, a summary of all contacts with representatives of the local community or government and public interest groups, a summary of all problems or potential problems encountered, actions taken or planned to rectify problems, and the projected work for the next reporting period.



COMMONWEALTH OF PUERTO RICO  
Office of the Governor  
Environmental Quality Board



ENC 1 # 2

ENVIRONMENTAL EMERGENCIES RESPONSE AREA

September 14, 2011

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

**RE: REVIEW RESPONSE TO COMMENTS  
NAVAL ACTIVITY PUERTO RICO, CEIBA  
EPA ID NO. PR2170027203;**

Dear Mr. Gordon:

The Hazardous Wastes Permits Division (HWPD) and the Federal Facility Coordinator has finished the review of the following documents:

- 1) Response to comments on Draft Final Corrective Measures Implementation Plan for SWMU 55
- 2) Response to comments on Amended Final Sampling and Analysis Plan, Pilot Test at SWMU 54 and 55
- 3) Response to comments on the Draft Final Corrective Measures Study Addendum for SWMU 55

For the CMI Plan for SWMU 55, the response provided to PREQB comment is accepted, therefore the document can be accepted as final.

For all PREQB comments on the Amended Final SAP, Pilot Test at SWMU 54 and 55, the Navy provide the following response:

The Amended Final Sampling and Analysis Plan, Pilot Test at Solid Waste Management Units 54 and 55 at Naval Activity Puerto Rico (CH2M HILL, 2011) was prepared for the pilot tests conducted at SWMUs 54 and 55 between July 2009 and November 2010. The pilot-testing has been completed and this comment will be incorporated into the SAP related to the CA to be conducted under the CMI Plan. This report addresses only SWMU 55, thus SWMU 54 will not be addressed in this report.

This response indicates that PREQB's comment will not be addressed in the Amended Final Sampling and Analysis Plan but that the PREQB's comments will be incorporated into the Corrective Action SAP. Therefore, PREQB cannot concur with the Amended Final Sampling and Analysis Plan, Pilot Test at SWMUs 54 and 55. Please clarify when the Corrective Action SAP will be submitted for agency review for both SWMUs 54 and 55.

Tim Gordon  
September 14, 2011  
Page 2

The response also states "...This report addresses only SWMU 55, thus SWMU 54 will not be addressed in this report." As the comment refers to a Sampling and Analysis Plan, and the response indicates that a CA SAP will be prepared that incorporates PREQB's comments, please clarify to which report the final sentence of the response refers.

Response to comments on the Draft Final CMS Addendum for SWMU 55 is not fully acceptable, enclosed, please find PREQB's comments.

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 6129.

Cordially,



Wilmarie Rivera  
Federal Facilities Coordinator  
Environmental Emergencies Response Area

cc: Gloria M. Toro Agrait, EQB Hazardous Waste Permits Division  
Mark E. Davidson, US Navy, BRAC PMO SE

**Technical Evaluation of the Navy's Responses to PREQB Comments on the Draft  
Final Corrective Measures Study Addendum for SWMU 55, US Naval Activity  
Puerto Rico, Ceiba, Puerto Rico**

1. PREQB Comment Page 3-2, Section 3.3: Please clarify how the proposed remedy will eliminate the potential for exposure to TCE. As the CAO reduces the concentration, exposure may occur, but the potential for adverse health impacts is reduced. Please address.

*Navy Response: The Navy developed the SWMU 55 CAOs to be protective of an industrial reuse as was originally planned in the 2004 Reuse Plan submitted by the Local Reuse Authority. The CAOs were derived to be protective of industrial workers from indoor air exposure due to vapor intrusion based on existing buildings at the site; however these buildings are no longer occupied. The currently planned CA will reduce the TCE levels over time, thus reducing the potential exposures and related risks under an industrial use of the property. In addition, LUCs to prevent use of the groundwater is part of the remedy (during cleanup and after reaching the CAOs) in order to be protective of human health. The LUCs will be included in any lease or transfer deed associated with SWMU 55. In addition, any lease or transfer deed associated with SWMU 55 will state that vapor intrusion shall be considered by the new owner during the design/construction of any future structures on the parcel. If development other than industrial use (i.e., residential, or per the April 2010 amended Reuse Plan) is proposed, the new owner will have to work with the PREQB and EPA to establish any additional investigation/risk assessment/cleanup activities. If the property owner wishes to remove the LUC on the groundwater from the deed in the future, it will be the responsibility of the property owner to demonstrate the groundwater meets all state and federal MCLs, and must obtain approval from the Navy, EPA and PREQB prior to its removal. This information has been included in Section 2.0 of the CMS Addendum. Also, a summary of the CAO development has been included in Section 1.2.*

PREQB Evaluation of Response: In accordance with the Administrative Order on Consent, the Navy's cleanup needs to comply with applicable, relevant and appropriate requirements (ARARs). Puerto Rico's Water Quality Standards are an ARAR that classifies all groundwater as potable. Therefore, please revise the CAOs to ensure compliance with this ARAR.

2. PREQB Comment, Page 3-2, Section 3.4:
  1. Puerto Rico's Water Quality Standards Regulation has been updated since the original Corrective Measures Study was prepared in 2005. The current version, dated March 2010, classifies all groundwater as SG, waters intended for use as a drinking water supply. In order to comply with this Applicable or Relevant and Appropriate Requirement (ARAR), the Corrective Action Objectives (CAOs) for all chemicals of potential concern (COPC) in groundwater are the SG PRWQS

listed in the regulation. For COPCs lacking an SG PRWQS, federal Maximum Contaminant Levels (MCLs) are the CAO. For all other COPCs, risk-based CAOs need to be calculated that are protective of ingestion of groundwater. The CAO for TCE and benzene would be revised to 5 ug/L. Other chemicals of potential concern may require remediation once the CAOs for groundwater are revised to take into account ingestion exposure. Note that residential development in the vicinity of SWMU 54 suggests that future development for this site may be residential. The methods used to calculate CAOs need to be reviewed and updated to comply with current guidance (e.g., inhalation guidance [EPA, 2009]).

*Navy Response: As agreed to in the Naval Activity Puerto Rico 2004 Reuse Plan, SWMU 55 will be cleaned up to industrial standards and therefore, the CAO will remain as 22 ug/L per the approved August 2005 CMS. If future development would require lower cleanup objectives, the future developer or property owner at that time will be responsible for achieving the more stringent cleanup standards.*

PREQB Evaluation of Response: Please see PREQB's Evaluation of Response to PREQB Comment Page 3-2, Section 3.3 above. Also, cleanup needs to be protective of expected future land use in addition to current land use. Also, as shown in the 2010 Addendum to the 2004 Reuse Plan, SWMU 55 is within the Port Caribe and Commercial Heart section of Parcel III. Table 2-2 of the 2010 Reuse Plan indicates that a hospital is proposed for this section. Due to sensitive subpopulations associated with hospitals, hospitals are considered under a residential exposure scenario. Please revise the CAOs to be protective of potential future receptors, as presented in the 2010 Reuse Plan Addendum.

2. The vapor intrusion modeling conducted that formed the basis for the CAOs needs to consider:
  - a. the presence of dense, non-aqueous phase liquid (DNAPL), where a different model is available to evaluate this vapor source;
  - b. the presence of fractured bedrock (the model does not apply to sites with fractured bedrock, as stated in the User's Guide [EPA, 2004]); and
  - c. soil contamination which can contribute to vapor intrusion into a building.

In addition, the model assumed the least conservative soil type rather than the most conservative soil type, as recommended by the guidance. Site conditions at SWMU 54 were assumed to be similar to SWMU 55, yet no data was available to confirm this assumption. Residential development is occurring near SWMU 54, and a site-specific evaluation of this exposure pathway for SWMU 54 is requested.

*Navy Response: The CAOs included in the CMS Addendum were selected from the final CMS for SWMUs 54 and 55 (Baker, 2005). The CAOs proposed*

*in the final CMS were based on protection against vapor intrusion exposure pathway to the occupants of the onsite building at SWMU 55. The values were derived by conducting a vapor intrusion model and the input assumptions used were not revisited during this addendum report preparation. The high levels of TCE that may be considered a DNAPL area were observed near the former Building 2314 pad. However, there are currently no occupied buildings at SWMU 55. Response to this comment related to SWMU 54 will be provided with the response to comments for the SWMU 54 documents submitted for review in January 2011. In addition, any lease or transfer deed associated with SWMU 54 or 55 will state that vapor intrusion shall be considered by the new owner during the design/construction of any future structures on the parcel.*

PREQB Evaluation of Response: With respect to SWMU 55, please refer to PREB's Evaluation of Response to PREB Comment Page 3-2, Section 3.4, No. 2 above. Note that SWMU 54 is located in an area that the 2004 Reuse Plan proposes for residential development, and current residential development is occurring in the vicinity. Therefore, cleanup at SWMU 54 needs to be protective of residential land use. Also, the vapor intrusion exposure pathway is a relevant exposure pathway for these sites due to the presence of VOCs in groundwater. Should this pathway pose an unacceptable risk to current or potential future receptors, it is PREQB's understanding that the Navy will clean up the site to reduce the risk to acceptable levels unless the land is transferred to an entity that has agreed to take responsibility for any additional cleanup required.

3. Appendix A - Pilot-Scale Test Report, PREQB Comment, Page 3-5, Section 3.2.4: The text states that, based on analytical results obtained for samples collected from wells 55MW13, 55MW20 and 55MW23, the vertical and horizontal extents of contamination have been defined. While these wells and others have contributed to the definition of the lateral extent of TCE contamination at the 40 foot depth interval, it appears that additional vertical delineation and possibly horizontal delineation is needed. For example, 55MWO 1 is the deepest well of the well pair (55MW02 is the shallower of the pair). The concentration of TCE detected in 55MW01 is 1,090 ug/L. A deeper well or wells needs to be installed in this area to complete the definition of the vertical definition of contamination in this area. Similar situations, with the deepest well showing exceedances for TCE, exist in the area of wells 55MW09, 55MW11, 55MW14, 55W02, 55W04 and other areas where only wells screened primarily shallower than 25 feet below grade exist. Note that as shown in the figures, it appears the plume fans out with depth. Additional horizontal delineation may be required in conjunction with delineating the vertical extent of the plume. Please also discuss the impact of tidal fluctuations on plume migration/expansion.

*Navy Response: Additional monitoring will be conducted to evaluate the TCE plume delineation, as described in Section 2.0 of the CMI Plan. As noted in Section 1.4 of the CMI Plan, "Tidal gauging conducted in April 2010 indicates a maximum tidal influence of 0.25 feet in monitoring well 55MW20, as shown in Appendix A."*

PREQB Evaluation of Response: While it is understood the Navy agrees to conduct additional investigation work to complete plume delineation at depth, please provide more detail regarding the planned additional ground water monitoring proposed to facilitate the completion of plume delineation. Review of Section 2.0 of the CMI Plan (January 1, 2011) does not show any detail regarding this proposed additional effort.

**REVIEW OF THE CORRECTIVE MEASURES STUDY ADDENDUM  
SOLID WASTE MANAGEMENT UNITS 7 AND 8 – REVISED SOIL REMEDY  
AND  
STATEMENT OF BASIS/PROPOSED FINAL SOIL REMEDY DECISION  
DATED MARCH 2011**

**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.  
205 West Wacker Drive  
Suite 1622  
Chicago, Illinois 60606**

**EPA Task Order No.  
Contract No.  
TechLaw TOM  
Telephone No.  
EPA TOPO  
Telephone No.**

**002  
EP-W-07-018  
Cathy Dare  
315-334-3140  
Timothy Gordon  
212-637-4167**

**September 22, 2011**

**REVIEW OF THE CORRECTIVE MEASURES STUDY ADDENDUM  
SOLID WASTE MANAGEMENT UNITS 7 AND 8 – REVISED SOIL REMEDY  
AND  
STATEMENT OF BASIS/PROPOSED FINAL SOIL REMEDY DECISION**

**DATED MARCH 2011**

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

The following comments were generated based on a technical review of the *Corrective Measures Study Addendum*, Soil Waste Management Units (SWMUs) 7 and 8 – Revised Soil Remedy, dated March (CMS Addendum), and the Statement of Basis/Proposed Final Soil Remedy Decision, dated March 2011 (SOB), for the Naval Activity Puerto Rico (NAPR) facility in Ceiba, Puerto Rico. TechLaw reviewed the CMS Addendum for overall completeness and compliance with the *Final RCRA Corrective Action Plan*, OSWER Directive 9902.3-2A, dated May 1994 (RCRA CA Guidance).

**GENERAL COMMENT**

1. Section 4.1 (Findings) indicates that polynuclear aromatic hydrocarbons (PAHs) were not detected in the upper two feet in the areas of concern; however, Appendix A (Soil Laboratory Analytical Results) indicates that the PAH samples were not received at the laboratory until two days following the completion of the sample collection. As PAH analytes are temperature sensitive, it is unclear if the PAH analytical results are representative of site conditions. Revise the CMS Addendum to discuss the impact the delayed receipt of the analytical samples at the laboratory had on analytical results and if PAHs may have been detected in the upper two feet in the areas of concern.
2. Section 2.1 (Pre-excavation Sample Grid) indicates that an objective of the post-CMS investigation was to determine if arsenic contamination found at SWMU 7/8 is naturally occurring based on historical background levels; however, the historical background levels are not provided and/or referenced. As a result, it is unclear if the historical background levels are applicable to SWMU 7/8. Revise the CMS Addendum to provide the historical background levels that were used to evaluate whether arsenic contamination found at SWMU 7/8 is naturally occurring.
3. Field log books and boring logs are not provided. As such, it is unclear if the lithologic information provided in Table 2-1 (Pre-Excavation Soil Delineation Sample Summary at SWMU 7/8 [June 2009]) is representative. Revise the CMS Addendum to include a copy of the field log books and boring logs so that the lithologic information provided in Table 2-1 can be verified.

## SPECIFIC COMMENTS

- 1. Section 1.1, Site Description and Project Background, Page 1-2:** The site description provided for the Tow Way Fuel Farm in Section 1.1 lacks sufficient detail. For example, characteristics of the SWMU are not discussed (e.g., type of unit, unit features, operating practices, period of operation, age of the unit, general physical conditions). In addition, several site features are not included on Figure 1-2 (SWMU 7/8 Base Map). For example, the location of the former tanks 470 and 471 are not shown on Figure 1-2. As a result, the CMS Addendum does not provide a comprehensive presentation of the site and project background. Revise the CMS Addendum to provide a more detailed site description for the Tow Way Fuel Farm. In addition, revise Figure 1-2 to include the site features referenced.
- 2. Table 1-1, Soil CAOs, Page 1-3:** Corrective action objectives (CAOs) are provided in Table 1-1; however, it is unclear how the total soil CAOs were established as 73 milligrams per kilogram (mg/kg) for benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene. Revise the CMS Addendum to clarify how the total soil CAOs were established.
- 3. Section 2.1, Pre-excavation Sample Grid, Page 2-2:** The text indicates that the presence of obstructions (tanks and piping) and variations in topography (steep hillside) necessitated moving or omitting several of the sampling locations; however, it is unclear why sampling locations were omitted when they could have been relocated. Revise the CMS Addendum to clarify why sampling locations were omitted when they could have been relocated.
- 4. Appendix A, Soil Laboratory Analytical Results, DVR Pages 3 to 7:** The results for samples JM04-B5(2.0)-060409 through JM04-B11(2.0)-060409 are included in the laboratory analytical results (e.g., Table 3-1 of the CMS Addendum), but these samples are not included in the list of samples covered by this data validation report (DVR). Revise Appendix A to provide the DVR for these samples or to clarify that the laboratory results for samples JM04-B5(2.0)-060409 through JM04-B11(2.0)-060409 were included in data validation.
- 5. Appendix A, Soil Laboratory Analytical Results, DVR Page 8:** The DVR indicates that all soil samples were received at the laboratory up to five days after they were sampled, and that professional judgment and the temperature sensitivity of PAHs caused all results to be qualified "J/UJ" as estimated with a low bias. It is unclear how the samples were stored (e.g., in a cooler on ice) from the time of sampling, or if corrective action was taken to ensure this situation does not reoccur. Revise the DVR to discuss how the samples were stored, and custody maintained between sample collection and shipping. Further, revise the CMS Addendum to briefly discuss any corrective action taken to avoid this situation in the future.
- 6. Appendix A, Soil Laboratory Analytical Results, DVR Page 8:** The DVR indicates that the continuing calibration verification for benzo(a)pyrene exceeded acceptance criteria of 20%; however, the attached Form 7 (page 234 of the laboratory data package) for the continuing calibration check indicates that benzo(b)fluoranthene (20.3%) and indeno(1,2,3-cd)pyrene (24.8%) also exceeded this continuing calibration criterion. Revise the DVR to include the results for benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene in this discussion.

7. **Appendix A, Soil Laboratory Analytical Results, DVR Page 8:** The DVR indicates that internal standard perylene-d12 was outside the acceptance limits with a biased low response, and that the results for benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene were qualified as estimated. It is unclear why results for benzo(a)anthracene were not also included. Revise the DVR to include benzo(a)anthracene in this discussion, or indicate why these results should not be included.



COMMONWEALTH OF PUERTO RICO  
Office of the Governor  
Environmental Quality Board



LAND POLLUTION CONTROL AREA

September 2, 2011

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

Re: Naval Activity Puerto Rico, Ceiba, EPA ID No. PR2170027203

- 1) Corrective Measures Study Addendum  
SWMUs 7 & 8 – Revised Soil Remedy
- 2) Statement of Basis/Proposed Final Soil Remedy Decision  
SWMUs 7 & 8, Tow Way Fuel farm (fuel storage and possible sludge disposal pits)

Dear Mr. Gordon:

The Hazardous Waste Permits Division (HWPD) has finished the review the above mentioned documents. The documents were submitted by AGVIQ-CH2MHILL Constructors Inc. joint Venture III on behalf of the Navy.

The Draft and Draft Final versions of these documents were reviewed and commented by the Hazardous Waste Permits Division (HWPD) and the Federal Facility Coordinator. Responses to comments were issued and reviewed by PREQB. The Draft Final were considered acceptable and a letter sent to EPA dated September 22, 2010. However, EPA issued additional comments to the Draft Final. The final versions were reviewed by the HWPD and no additional comment will be issued, hence, we approved this document as a Final Version.

If you have any additional comment or question please feel free to contact Gloria M. Toro Agrait of my staff at (787) 767-8181 extension 3586 or 787-833-1188.

Cordially,

María V. Rodríguez Muñoz  
Manager  
Land Pollution Control Area

cc: Adalberto Bosque, CEPD  
Wilmarie Rivera, Federal Facilities Coordinator  
Mark E. Davidson, Navy

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COMMONWEALTH OF PUERTO RICO  
Office of the Governor  
Environmental Quality Board

ENCL. #5



ENVIRONMENTAL EMERGENCIES RESPONSE AREA

September 9, 2011

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

RE: TECHNICAL REVIEW RESPONSE TO COMMENTS  
FINAL ADDENDUM NO. 2 UNDERWATER  
INTRUSIVE INVESTIGATION WORK PLAN TO  
CONDUCT PHASE I RCRA FACILITY INVESTIGATION  
PIÑEROS AND CABEZA DE PERRO ISLAND  
NAVAL ACTIVITY PUERTO RICO (NAPR)  
CEIBA, PR PR2170027203

Dear Mr. Gordon:

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

The Navy's responses to our comments are acceptable with some exceptions. Enclosed please find PREQB's evaluation of responses to comments. 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, EQB Hazardous Waste Permits Division  
Mark E. Davidson, US Navy, BRAC PMO SE

Technical Review of the Navy Responses to PREQB Comments  
Final Addendum No. 2 Underwater Intrusive Investigation Work Plan to  
Conduct Phase I RCRA Facility Investigation Piñeros and Cabeza de Perro Island  
Naval Activity Puerto Rico, Ceiba, Puerto Rico  
PR2170027203

The Navy responses to PREQB comments on the Addendum No. 2 Underwater Intrusive Investigation Work Plan are acceptable, with the exception of the following and some additional comments.

Response to Comments:

1) Response to EQB comment No. 1

PREQB intention with the comments regarding justifying not including UW-4 as part of the investigation was to call attention that the work plan does not strongly state the reason for leaving this specific site out of the field work. There is additional discussion as part of the responses to EQB comments that should be added to the text of the work plan.

That additional information is that the seas and currents at UW-4 have been evaluated and it has been determined that it is not possible to investigate this site due to consistent high seas and swift currents that make it unsuitable for diving and boat anchoring. Because of these site conditions EQB would evaluate this site similarly to a terrestrial "inaccessible area", such as a steep slope or flooded area, that cannot be accessed to collect data. This will have to be evaluated further in the project report to fully close the site, but this is the main reason to keep UW-4 in the work plan. Modifying the work plan to collect additional wave and current data and to take local observations of the site during the RFI fieldwork would provide the data needed to conclusively resolve this site by conclusively establishing the harsh site conditions.

However, currently UW-4 is unconvincingly eliminated completely from the field activities to be performed under this work plan. Revising the work plan to include the actions described above to collect additional data on UW-4 is recommended along with adding to the work plan that the harsh conditions caused by high waves and swift currents make it impossible to perform the underwater transect investigation is highly recommended.

2) Response to EQB comment No. 3

Please respond to this comment by developing a DQO, based on some proven scientific method, that supports the adequacy of this statistical approach. Instead the Navy response says that 10% inspection is in the range of "industry-accepted practice" and doesn't offer any additional support for this statistical approach. EQB recommends developing a DQO based on a proven and accepted statistical analysis such as VSP or UXO Estimator and including this information in the work plan to explain the technical basis for the adequacy of the MEC sampling approach. This is a current industry-accepted approach to develop a defensible statistical analysis of the amount of investigation that needs to be performed.

Additional Comments:

- 3) The document doesn't acknowledge the Navy's procedures for allowing "authorized visitors" to enter the EZ. This is done in Section 3.4.7 of the Work Plan and Chapter 8 of the Health and Safety Plan which do not mention the procedures for entrance of authorized visitors into the EZ. These procedures have been in use for years on the Navy Vieques project and there are accepted Navy requirements for qualification as an authorized visitor. Please add these requirements and acknowledge that EQB may apply for entrance into the EZ as an authorized visitor to the document.
- 4) Section 3.4.8 appears to require tracking only MEC. Tracking some minimal data on non-MEC is recommended. For example, tracking the number of anomalies investigated per transect segment (for example, every 50-ft. or 100-ft.) and the results of the overall non-MEC anomaly investigations (for example, 5 cultural debris, 2 MD) is recommended.
- 5) There are no MEC DQOs for underwater investigation presented in the work plan (specifically the QC Plan in Chapter 4) or any other source document. See Comment #2 above for a specific example of a DQO for the quantity of investigation that is needed in order to achieve EQB concurrence. The document should include DQOs that describe the quantity and quality of data needed to support future decision-making.
- 6) The DFWs presented in Section 4.4.3 are different than the DFWs used for the QC inspection program as outlined in Table 4.2. Please establish DFWs and use them consistently throughout all references to DFWs. Please modify Table 4.2 to make it consistent with Section 4.4.3 and including all requirements listed throughout the documents in the inspection program is highly recommended.
- 7) Once approval from the agencies is obtained, please submit an updated project Schedule.
- 8) Section 2.2.2: It is not clear if the mentioned task of developing an Underwater Biological Assessment has been performed. Please provide more information on when the Navy plans to develop such an assessment.
- 9) Please correct the typo on the first line of Page 3-4.