



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866

OCT 02 2007

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,

Draft Corrective Measures Study (CMS) Work Plans for SWMUs 56, 59, 61, 69, 73 and  
74

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 Region 2 has completed its reviews of the above documents, which were submitted on behalf of the Navy, by Baker Environmental on July 31, 2007, pursuant to the requirements of the Consent Order. Based upon our reviews, which included reviews of the six work plans by our consultant TechLaw Inc., EPA has determined that the six draft CMS work plans are not fully acceptable. EPA has the following comments on those work plans:

1. The required Quality Assurance Project Plan (QAPP), which is included as an appendix to all the above CMS Work Plans, indicates (in Section 1.2 of the QAPP) that it was developed in accordance with EPA guidelines (USEPA, 2001, Environmental Protection Agency [EPA] Requirements for Quality Assurance Project Plans, QA/R-5). However, the information presented in the QAPP does not meet the majority of the specific requirements provided in the above cited QA/R-5. Some examples include the following:

Per Element B5 in QA/R-5, the QAPP did not provide laboratory and field QC methods and procedures, acceptance criteria, and corrective action.

- Per QA/R-5, examples of all forms, labels and checklists should be included as part of the QAPP. These are not all provided.

- The QAPP does not provide sufficient discussion of data management procedures per Element A9 of QA/R-5.

- The QAPP lists the minimum information to be placed on the bottle labels. This list does not include the analysis or preservatives.

- The QAPP discusses the data validation process, but does not discuss how data to be validated will be selected, the percentage of data to be validated, if all data will be fully validated, or if differing levels of validation will be performed.

EPA Region 2's current policy is that QAPPs should be developed in accordance with the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), dated March 2005. The UFP-QAPP was developed using the same standard as that used for development of QA/R-5. QAPPs developed in accordance with UFP-QAPP will meet the requirements of QA/R-5. However, the information presented in the QAPP included with the CMS work plans, lacks sufficient detail to meet the requirements of the UFP-QAPP or QA/R-5. The QAPP should be completely revised to include sufficient detail to meet the requirements of UFP-QAPP guidance.

2. In the July 31, 2007 draft Corrective Measures Study (CMS) Work Plans and the schedules contained in those work plans, the Navy proposes that implementation of the work plans be suspended until the parcels containing solid waste management units (SWMUs) 56, 59, 61, 69, 73 and 74 are transferred or acquired by a "third party" entity, and that implementation of those six CMS work plans then be carried out by the "third party" entity who acquires the parcel. While the January 2007 RCRA Consent Order allows suspension of certain Navy obligations for transferred portions of the facility (if those obligations are satisfied by requirements in a new "third party" Order), it does not allow for suspension prior to such transfers. Therefore, EPA would not be prepared to approve a suspension in the Navy's requirements with regards to these six CMS work plans at this time. However, once acceptable revisions of these work plans are developed to address EPA's comments on these work plans (including those in the below discussed Technical Reviews), EPA would be prepared to consider work plan schedules that reflect a finite period of delay in implementation of the actual work, but not a suspension of the requirements to do that work. Also, please note, EPA would only be prepared to consider a delay for a finite time period, but not an indefinite, open-ended time period.

3. Additional comments are also given in six Technical Reviews (dated August 31, September 4, 11, 13, 18 and October 1, 2007, respectively) prepared for EPA by our consultant, TechLaw, Inc.. Since those six Technical Reviews have been previously transmitted to you via separate Emails, they are not enclosed here. However, if you wish them to be electronically transmitted to you again, please advise. Please revise the six draft CMS work plans to address the comments in those six Technical Reviews (dated August 31, September 4, 11, 13, 18 and October 1, 2007).

Within 60 days of your receipt of this letter, please submit revisions to the above CMS work plans which address the above comments as well as the comments in the six Technical Reviews (dated August 31, September 4, 11, 13, 18 and October 1, 2007), which have been previously transmitted to you via separate Emails.

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

Sincerely yours,



Timothy R. Gordon  
Remedial Project Manager  
Caribbean Section  
RCRA Programs Branch

cc: Ms. Josefina Gonzalez, P.R. Environmental Quality Board.  
Mr. Julio I. Rodriguez Colon, P.R. Environmental Quality Board.  
Mr. Pedro Ruiz, Naval Activity Puerto Rico  
Mr. Dave Criswell, US Navy, BRAC PMO  
Mr. Mark Kimes, Baker Environmental  
Mr. Andrew Dorn, TechLaw Inc.  
Mr. Felix Lopez, USF&WS.



One Penn Plaza, Suite 2509  
New York, NY 10119  
(212) 695-3600  
(212) 564-8651 (Fax)  
[www.techlawinc.com](http://www.techlawinc.com)

**TECHNICAL REVIEW OF THE NAVAL ACTIVITY PUERTO RICO  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 56  
DATED JULY 31, 2007**

**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.  
One Penn Plaza, Suite 2509  
New York, NY 10119**

<b>EPA Task Order No.</b>	<b>002</b>
<b>Contract No.</b>	<b>EP-W-07-018</b>
<b>TechLaw TOM</b>	<b>Andrew Dorn</b>
<b>Telephone No.</b>	<b>312-345-8963</b>
<b>EPA TOPO</b>	<b>Timothy Gordon</b>
<b>Telephone No.</b>	<b>212-637-4167</b>

**August 31, 2007**

**TECHNICAL REVIEW OF THE NAVAL ACTIVITY PUERTO RICO  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 56  
DATED JULY 31, 2007**

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

The following comments were generated based on review of the July 31, 2007, *Draft Corrective Measures Study Work Plan SWMU 56* (Work Plan), Naval Activity Puerto Rico (NAPR) Ceiba, Puerto Rico.

**GENERAL COMMENTS**

1. It should be noted that when comparing background concentrations to the chemical constituents, EPA's Risk Assessment Guidance for Superfund notes it is important that "... background concentrations may present a significant risk, and while cleanup may or may not eliminate this risk, the background risk may be an important site characteristic to those exposed." Accordingly, this guidance should be kept in mind when conducting the risk assessment. Revise the text to include an acknowledgment of this guidance. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.] Revise Section 5.7.1, General Methodology for Step 3a (page 5-10), in accordance with this approach, as the Work Plan indicates that consideration will be given to background data in developing the conceptual site model (CSM) and identifying the contaminants addressed by the CSM.
2. EPA's Risk Assessment Guidance for Superfund also notes that "...chemicals with qualifiers attached that indicate known identities but unknown concentrations (e.g., J-qualified data)..." should be included in the list of chemicals of potential concern (COPCs) for a quantitative risk assessment. Bearing this in mind, revise the Work Plan such that the screening conducted for COPCs reflects this procedure. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.]
3. The data tables included in Appendix B have both shaded and bolded data. The notes section of the tables does not indicate what the bold or shading is intended to highlight, or if they are both representing the same thing. Revise the tables so that both the shading and bolding features are defined in the notes section of the tables.
4. The Navy has proposed using low-flow purging and sampling procedures to sample the temporary wells at solid waste management unit (SWMU) 56. These wells are reported to have one-inch diameter inner well casings. While this is an acceptable procedure for extracting the sample, the usability of the data may be limited. It should be noted that the Region 2 Standard Operating Procedure (SOP) included in Appendix C of the Work Plan

states that the low flow procedure is applicable to *monitoring wells that have an inner casing with a diameter of 2.0 inches or greater*. In addition, although not included in the Region 2 SOP, in order to generate data of acceptable quality to make “final” risk-based decisions, the low flow groundwater samples need to be collected from a properly constructed well that has been adequately developed.

The data collected from the proposed temporary wells at SWMU 56 will be “screening” type data. The results will indicate whether there “is” or “is not” contamination in the shallow aquifer. If the resulting data exceeds screening levels, it may be necessary to install properly constructed wells in order to make risk-based decisions on potential impacts to human health and the environment. Revise the Work Plan to allow for the installation of permanent wells if the “screening” level data shows releases to groundwater.

5. The Appendix D, NAPR Draft Quality Assurance Project Plan (QAPP), dated July 31, 2007, has been developed in accordance with USEPA guidelines (USEPA, 2001, Environmental Protection Agency [EPA] Requirements for Quality Assurance Project Plans, QA/R-5). However, the information presented in the QAPP in Appendix D does not meet the majority of the specific requirements provided in QA/R-5. Some examples include the following:
  - Per Element B5 in QA/R-5, the QAPP did not provide laboratory and field QC methods and procedures, acceptance criteria, and corrective action.
  - Per QA/R-5, examples of all forms, labels and checklists should be included as part of the QAPP. These are not all provided.
  - The QAPP does not provide sufficient discussion of data management procedures per Element A9 of QA/R-5.
  - The QAPP lists the minimum information to be placed on the bottle labels. This list does not include the analysis or preservatives.
  - The QAPP discusses the data validation process, but does not discuss how data to be validated will be selected, the percentage of data to be validated, if all data will be fully validated, or if differing levels of validation will be performed.

EPA Region 2’s current policy is that QAPPs should be developed in accordance with the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), dated March 2005. The UFP-QAPP was developed using the same standard as that used for development of QA/R-5. QAPPs developed in accordance with UFP-QAPP will meet the requirements of QA/R-5. However, the information presented in this QAPP is lacking in sufficient detail to meet the requirements of the UFP-QAPP or QA/R-5. The QAPP in Appendix D should be completely revised to include sufficient detail in order to meet the requirements of UFP-QAPP guidance.

6. The Data Quality Objectives (DQOs) have not been adequately defined for the Appendix D QAPP. Until a complete set of DQOs is provided, the adequacy of the QAPP and Work Plan cannot be fully evaluated. Further, when revised DQOs are provided, the DQOs need to reflect the proposed activities of the revised Work Plan. Both the Work Plan DQOs and QAPP will need to be reviewed to ensure the proposed activities of the Work Plan correlate with the revised DQOs. In revising the QAPP, provide the completed seven step DQOs and ensure they are consistent with the Guidance for Systematic Planning Using the Data Quality

Objectives Process, dated February 2006 (QA/G-4).

7. The Appendix D QAPP indicates that a laboratory has not been selected. This, combined with the incomplete DQOs, severely limits the usefulness of the QAPP. For example, laboratory specific acceptance limits will change the precision, accuracy and completeness values on Table 3-2 of the Work Plan. In revising the QAPP, include laboratory specific information for QC samples, calibration, preventative maintenance, audits, corrective action, sample analysis and preparation, etc. In addition, each laboratory's standard reporting list (e.g., for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs,) and metals) may vary. Ensure that the analyte lists in the QAPP are provided to the laboratory so that the proper contaminants of concern (COCs) are reported.

## **SPECIFIC COMMENTS**

1. **Section 1.3, Investigative History and Basis for the Work Plan, page 1-3:** The Work Plan discusses that sediment samples were collected over the length of the drainage swale and composited. The Work Plan does not indicate what the length of the swale is, or how many sub-samples were collected in support of the composited sample. Revise the Work Plan to include this information, as it could be important for remedy selection if a streamlined CMS is selected.
2. **Section 5.1, Screening-Level Problem Formulation, Third Bullet, page 5-1:** The Work Plan states on the top of page 5-2 that contaminants of impact will be addressed under fate and transport for “source-related chemicals.” Revise the Work Plan by changing this term to “site-specific chemicals” to reflect the fact that all of the potential contaminant sources at a SWMU may not yet be fully defined at the screening level problem formulation phase of the assessment.
3. **Section 5.1.2, Existing Analytical Data, page 5-2:** The Work Plan indicates that the existing data evaluation will consider such factors as sample size. It is unclear how sample size will impact an existing data evaluation. Revise the Work Plan to more clearly indicate how sample size might impact the use of existing data.
4. **Section 5.2, Screening-Level Ecological Effects Evaluation, Page 5-6:** This section states that media-specific screening values and ingestion-based screening values will be developed. However, it does not state which screening values will be used in the risk assessment calculations. It is suggested to revise the text of the Work Plan by including literature references for the media-specific screening values considered for use in the screening level ecological risk assessments (SLERAs), together with a preference hierarchy. The text also needs to reference the toxicity databases that will be used for deriving the ingestion-based screening values for wildlife receptors.
5. **Section 5.2, Screening-Level Ecological Effects Evaluation, Page 5-7:** This paragraph indicates that not all chemicals analyzed in ecologically relevant media will be evaluated for food web exposures in the SLERA. The conservative Tier 1 COPC selection process needs to include all of the measured contaminants, not just those with a propensity to

bioaccumulate. Step 3.a in the Navy ecological risk assessment process allows for a re-evaluation of the Tier 1 COPCs using less conservative assumptions. This refinement step cannot take place in the SLERA phase. Revise the text of the Work Plan to indicate that all of the chemicals will be included in the food web screening calculations.

6. **Section 5.4.1, Selection of Ecological Chemicals of Potential Concern, Page 5-9:** This section states that Hazard Quotients (HQs) will be calculated using No Observed Adverse Effect Levels (NOAELs), Lowest Observed Adverse Effect Levels (LOAELs), and Maximum Allowable Toxicant Concentrations (MATCs). Both EPA guidance [USEPA. 1997a. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final). EPA/540/R-97-006] and Navy guidance [Navy Guidance for Conducting Ecological Risk Assessment, available at <http://web.ead.anl.gov/ecorisk>] recommend using only the more conservative NOAELs in the screening-level risk calculations. Revise the Work Plan to state that only NOAELs will be used in the SLERA risk calculations.
7. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that background data may be considered to refine the conservative assumptions used in the Tier 1 SLERA. EPA has developed guidance to make valid comparisons between background concentrations and concentrations measured in soil samples at Superfund sites. [EPA. 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. EPA 540-R-01-003. September 2002]. The Work Plan should cite this reference for the background comparisons to be performed.
8. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that the frequency at which chemicals are detected may be considered in refining the exposure assumptions in Step 3a. Eliminating constituents based on frequency of detection (FOD) is an appropriate approach to remove COPCs, which are only detected on a limited basis, for ecological risk assessments. The EPA-approved approach is to eliminate a COPC based on FOD considerations only if it is detected in less than 5% of samples when 20 or more samples have been analyzed. The Navy guidance is less explicit, stating that COPCs with “low” detection frequencies (and “sufficient data” for acceptable site characterization) should be identified in Step 3.a for potential elimination. Revise the Work Plan to fully clarify how FOD will be applied to eliminate COPCs.
9. **Section 5.8, Ecological Corrective Action Objectives, Page 5-12:** This section describes how to calculate Corrective Action Objectives (CAOs) by multiplying the medium-specific and ingestion-based screening values by a factor of 0.99. The rationale behind using this value in the two equations presented in this section is not known. Revise this section by including a full justification for using 0.99 as part of the process for calculating CAOs.
10. **Section 6.2, Land Use and Potentially Exposed Receptors:** It is understood that future property use of the site is expected to remain industrial and that the exposure is likely limited to industrial or commercial property use. However, additional information should be provided to clarify why trespassers are not considered a receptor at NAPR. Revise Section 6.2 to include trespassers as potential receptors, or include a rationale as to why trespassers

have been omitted as a likely receptor.

11. **Section 6.3, Selection of Contaminants of Potential Concern, page 6-1:** This section of the Work Plan indicates that the CAO development process in the CMS will identify the potential for human health risk to onsite workers and future residents exposed to surface water and sediment. It is unclear why soils have not been included, or groundwater via vapor intrusion. Revise the Work Plan to indicate that all media will be included in the CAO development process.

In addition, the text states in the following paragraph that the screening criteria selected is the USEPA Region 3 risk based concentrations (RBCs). The use of USEPA Region 9 preliminary remediation goals (PRGs) is referenced in Section 4.3 and Appendix D, Section 1.1, Problem Definition and Performance Standards, page 1-1. The Quality Assurance Project Plan (QAPP) identifies Puerto Rico Environmental Quality Board (PREQB) target levels and Region 9 Preliminary Remedial Goals (PRGs). The PREQB target levels are not identified as performance standards in the Work Plan. The performance standards identified in the Work Plan and QAPP need to be consistent, and should be EPA approved. Revise the Work Plan and QAPP so that the screening criteria/performance standards are the same for both. Ensure that the values selected are also included in Section 2.2 of the Work Plan, Corrective Measures Standards.

12. **Section 7.0, Identification of COCS, Page 7-1:** Elimination of constituents based on frequency of detection (FOD) is a pragmatic methodology designed to allow risk assessors to focus available time and resources on the most likely drivers of site-related risk and hazard. However, this method is generally perceived as dated and was in use prior to the widespread and ready availability of regulatory agency-promulgated health-based screening criteria (e.g., EPA Region 9 PRGs). In addition, use of FOD is inappropriate for chemicals that are considered to be site-related. In developing a site-specific COPC list for the human health risk assessment (HHRA) and as a matter of the public record, any contaminant detected at a concentration in excess of the most relevant health-based screening criterion should be retained as a site COPC and evaluated quantitatively and/or qualitatively within the Risk Characterization section of the HHRA. This screening should be conducted irrespective of FOD results for individual constituents.



One Penn Plaza, Suite 2509  
New York, NY 10119  
(212) 695-3600  
(212) 564-8651 (Fax)  
[www.techlawinc.com](http://www.techlawinc.com)

**TECHNICAL REVIEW OF THE  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 59  
DATED JULY 31, 2007**

**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.  
One Penn Plaza, Suite 2509  
New York, NY 10119**

<b>EPA Task Order No.</b>	<b>002</b>
<b>Contract No.</b>	<b>EP-W-07-018</b>
<b>TechLaw TOM</b>	<b>Andrew Dorn</b>
<b>Telephone No.</b>	<b>312-345-8963</b>
<b>EPA TOPO</b>	<b>Timothy Gordon</b>
<b>Telephone No.</b>	<b>212-637-4167</b>

**September 11, 2007**

**TECHNICAL REVIEW OF THE  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 59  
DATED JULY 31, 2007**

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

The following comments were generated based on review of the July 31, 2007, *Draft Corrective Measures Study Work Plan SWMU 59* (Work Plan), Naval Activity Puerto Rico (NAPR) Ceiba, Puerto Rico.

**GENERAL COMMENTS**

1. It should be noted that when comparing background concentrations to the chemical constituents, EPA's Risk Assessment Guidance for Superfund notes it is important that "... background concentrations may present a significant risk, and while cleanup may or may not eliminate this risk, the background risk may be an important site characteristic to those exposed." Accordingly, this guidance should be kept in mind when conducting the risk assessment. Revise the text to include an acknowledgment of this guidance. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.] Revise Section 5.7.1, General Methodology for Step 3a (page 5-10), in accordance with this approach, as the Work Plan indicates that consideration will be given to background data in developing the conceptual site model (CSM) and identifying the contaminants addressed by the CSM.
2. EPA's Risk Assessment Guidance for Superfund also notes that "...chemicals with qualifiers attached that indicate known identities but unknown concentrations (e.g., J-qualified data)..." should be included in the list of chemicals of potential concern (COPCs) for a quantitative risk assessment. Bearing this in mind, revise the Work Plan such that the screening conducted for COPCs reflects this procedure. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.]
3. The Navy has proposed using low-flow purging and sampling procedures to sample the temporary wells at solid waste management unit (SWMU) 59. These wells are reported to have 1-inch diameter inner well casings. While this is an acceptable procedure for extracting the sample, the usability of the data may be limited. It should be noted that the Region 2 Standard Operating Procedure (SOP) included in the Work Plan states that the low flow procedure is applicable to *monitoring wells that have an inner casing with a diameter of 2.0 inches or greater*. In addition, although not included in the Region 2 SOP, in order to generate data of acceptable quality to make "final" risk-based decisions, the low flow groundwater samples need to be collected from a properly constructed well that has been adequately developed.

The data collected from the proposed temporary wells at SWMU 59 will be “screening” type data. The results will indicate whether there “is” or “is not” contamination in the shallow aquifer. If the resulting data exceeds screening levels, it may be necessary to install properly constructed wells in order to make risk-based decisions on potential impacts to human health and the environment. Revise the Work Plan to allow for the installation of permanent wells if the “screening” level data shows releases to groundwater.

4. The Work Plan explains in Section 1.2 that underground storage tanks (USTs) were reportedly located at the fuel islands. The Work Plan does not discuss the depth of the UST (whether estimated or confirmed through previous soil borings), the presumed groundwater flow direction at this site, or summarize depth to groundwater information. The Work Plan does indicate that groundwater well sampling locations will be advanced to a maximum depth of 30 feet in Section 3.2, but that soil samples will be collected from a maximum depth of 10 feet in Section 3.1. The Work Plan needs to ensure that soil samples are collected from sufficient depth to indicate whether a release had occurred from beneath the USTs, and groundwater samples are collected beneath the USTs or directly downgradient of the USTs with respect to groundwater flow. Revise the Work Plan to explain how the proposed sampling scheme addresses these concerns, or make any necessary modification to do so.
5. The Appendix C, NAPR Draft Quality Assurance Project Plan (QAPP), dated July 31, 2007, has been developed in accordance with EPA guidelines (USEPA, 2001, Environmental Protection Agency [EPA] Requirements for Quality Assurance Project Plans, QA/R-5). However, the information presented in the QAPP in Appendix C does not meet the majority of the specific requirements provided in QA/R-5. Some examples include the following:
  - Per Element B5 in QA/R-5, the QAPP did not provide laboratory and field QC methods and procedures, acceptance criteria, and corrective action.
  - Per QA/R-5, examples of all forms, labels and checklists should be included as part of the QAPP. These are not all provided.
  - The QAPP does not provide sufficient discussion of data management procedures per Element A9 of QA/R-5.
  - The QAPP lists the minimum information to be placed on the bottle labels. This list does not include the analysis or preservatives.
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EPA Region 2’s current policy is that QAPPs should be developed in accordance with the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), dated March 2005. The UFP-QAPP was developed using the same standard as that used for development of QA/R-5. QAPPs developed in accordance with UFP-QAPP will meet the requirements of QA/R-5. However, the information presented in this QAPP is lacking in sufficient detail to meet the requirements of the UFP-QAPP or QA/R-5. The QAPP in Appendix C should be completely revised to include sufficient detail in order to meet the requirements of UFP-QAPP guidance.

6. The Data Quality Objectives (DQOs) have not been adequately defined for the Appendix C QAPP. Until a complete set of DQOs is provided, the adequacy of the QAPP and Work Plan cannot be fully evaluated. Further, when revised DQOs are provided, the DQOs need to reflect the proposed activities of the revised Work Plan. Both the Work Plan DQOs and QAPP will need to be reviewed to ensure the proposed activities of the Work Plan correlate with the revised DQOs. In revising the QAPP, provide the completed seven step DQOs and ensure they are consistent with the Guidance for Systematic Planning Using the Data Quality Objectives Process, dated February 2006 (QA/G-4).
7. The Appendix C QAPP indicates that a laboratory has not been selected. This, combined with the incomplete DQOs, severely limits the usefulness of the QAPP. For example, laboratory specific acceptance limits will change the precision, accuracy and completeness values on Table 3-2 of the Work Plan. In revising the QAPP, include laboratory specific information for QC samples, calibration, preventative maintenance, audits, corrective action, sample analysis and preparation, etc. In addition, each laboratory's standard reporting list (e.g., for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs,) and metals) may vary. Ensure that the analyte lists in the QAPP are provided to the laboratory so that the proper contaminants of concern (COCs) are reported.

## **SPECIFIC COMMENTS**

1. **Section 5.1, Screening-Level Problem Formulation, Third Bullet, page 5-1:** The Work Plan states on the top of page 5-2 that contaminants of impact will be addressed under fate and transport for “source-related chemicals.” Revise the Work Plan by changing this term to “site-specific chemicals” to reflect the fact that all of the potential contaminant sources at a SWMU may not yet be fully defined at the screening level problem formulation phase of the assessment.
2. **Section 5.1.2, Existing Analytical Data, page 5-2:** The Work Plan indicates that the existing data evaluation will consider such factors as sample size. It is unclear how sample size will impact an existing data evaluation. Revise the Work Plan to more clearly indicate how sample size might impact the use of existing data.
3. **Section 5.2, Screening-Level Ecological Effects Evaluation, Page 5-6:** This section states that media-specific screening values and ingestion-based screening values will be developed. However, it does not state which screening values will be used in the risk assessment calculations. It is suggested to revise the text of the Work Plan by including literature references for the media-specific screening values considered for use in the screening level ecological risk assessments (SLERAs), together with a preference hierarchy. The text also needs to reference the toxicity databases that will be used for deriving the ingestion-based screening values for wildlife receptors.
4. **Section 5.2, Screening-Level Ecological Effects Evaluation, Page 5-7:** This paragraph indicates that not all chemicals analyzed in ecologically relevant media will be evaluated for food web exposures in the SLERA. The conservative Tier 1 COPC selection process needs to include all of the measured contaminants, not just those with a propensity to

bioaccumulate. Step 3.a in the Navy ecological risk assessment process allows for a re-evaluation of the Tier 1 COPCs using less conservative assumptions. This refinement step cannot take place in the SLERA phase. Revise the text of the Work Plan to indicate that all of the chemicals will be included in the food web screening calculations.

5. **Section 5.4.1, Selection of Ecological Chemicals of Potential Concern, Page 5-9:** This section states that Hazard Quotients (HQs) will be calculated using No Observed Adverse Effect Levels (NOAELs), Lowest Observed Adverse Effect Levels (LOAELs), and Maximum Allowable Toxicant Concentrations (MATCs). Both EPA guidance [USEPA. 1997a. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final). EPA/540/R-97-006] and Navy guidance [Navy Guidance for Conducting Ecological Risk Assessment, available at <http://web.ead.anl.gov/ecorisk>] recommend using only the more conservative NOAELs in the screening-level risk calculations. Revise the Work Plan to state that only NOAELs will be used in the SLERA risk calculations.
6. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that background data may be considered to refine the conservative assumptions used in the Tier 1 SLERA. EPA has developed guidance to make valid comparisons between background concentrations and concentrations measured in soil samples at Superfund sites. [EPA. 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. EPA 540-R-01-003. September 2002]. The Work Plan should cite this reference for the background comparisons to be performed.
7. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that the frequency at which chemicals are detected may be considered in refining the exposure assumptions in Step 3a. Eliminating constituents based on frequency of detection (FOD) is an appropriate approach to remove COPCs, which are only detected on a limited basis, for ecological risk assessments. The EPA-approved approach is to eliminate a COPC based on FOD considerations only if it is detected in less than 5% of samples when 20 or more samples have been analyzed. The Navy guidance is less explicit, stating that COPCs with “low” detection frequencies (and “sufficient data” for acceptable site characterization) should be identified in Step 3.a for potential elimination. Revise the Work Plan to fully clarify how FOD will be applied to eliminate COPCs.
8. **Section 5.8, Ecological Corrective Action Objectives, Page 5-12:** This section describes how to calculate Corrective Action Objectives (CAOs) by multiplying the medium-specific and ingestion-based screening values by a factor of 0.99. The rationale behind using this value in the two equations presented in this section is not known. Revise this section by including a full justification for using 0.99 as part of the process for calculating CAOs.
9. **Section 6.2, Land Use and Potentially Exposed Receptors, page 6-1:** It is understood that future property use of the site is expected to remain industrial and that the exposure is likely limited to industrial or commercial property use. However, additional information should be provided to clarify why trespassers are not considered a receptor at NAPR. Revise Section 6.2 to include trespassers as potential receptors, or include a rationale as to why trespassers

have been omitted as a likely receptor.

10. **Section 6.3, Selection of Contaminants of Potential Concern, page 6-1:** The second paragraph in this section of the Work Plan indicates that the screening criteria selected are the EPA Region 3 risk based concentrations (RBCs). The use of EPA Region 9 preliminary remediation goals (PRGs) is referenced in Section 4.3 and Appendix C, Section 1.1, Problem Definition and Performance Standards, page 1-1. The QAPP identifies Puerto Rico Environmental Quality Board (PREQB) target levels and Region 9 PRGs. The PREQB target levels are not identified as performance standards in the Work Plan. The performance standards identified in the Work Plan and QAPP need to be consistent, and should be EPA-approved. Revise the Work Plan and QAPP so that the screening criteria/performance standards are the same for both. Ensure that the values selected are also included in Section 2.2 of the Work Plan, Corrective Measures Standards.
  
11. **Section 7.0, Identification of COCS, Page 7-1:** Elimination of constituents based on FOD is a pragmatic methodology designed to allow risk assessors to focus available time and resources on the most likely drivers of site-related risk and hazard. However, this method is generally perceived as dated and was in use prior to the widespread and ready availability of regulatory agency-promulgated health-based screening criteria (e.g., EPA Region 9 PRGs). In addition, use of FOD is inappropriate for chemicals that are considered to be site-related. In developing a site-specific COPC list for the human health risk assessment (HHRA) and as a matter of the public record, any contaminant detected at a concentration in excess of the most relevant health-based screening criterion should be retained as a site COPC and evaluated quantitatively and/or qualitatively within the Risk Characterization section of the HHRA. This screening should be conducted irrespective of FOD results for individual constituents.



One Penn Plaza, Suite 2509  
New York, NY 10119  
(212) 695-3600  
(212) 564-8651 (Fax)  
[www.techlawinc.com](http://www.techlawinc.com)

**REPA4R2-002-ID-026**

**TECHNICAL REVIEW OF THE  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 61  
DATED JULY 31, 2007**

**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.  
One Penn Plaza, Suite 2509  
New York, NY 10119**

<b>EPA Task Order No.</b>	<b>002</b>
<b>Contract No.</b>	<b>EP-W-07-018</b>
<b>TechLaw TOM</b>	<b>Andrew Dorn</b>
<b>Telephone No.</b>	<b>312-345-8963</b>
<b>EPA TOPO</b>	<b>Timothy Gordon</b>
<b>Telephone No.</b>	<b>212-637-4167</b>

**October 1, 2007**

**TECHNICAL REVIEW OF THE  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 61  
DATED JULY 31, 2007**

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

The following comments were generated based on review of the July 31, 2007, *Draft Corrective Measures Study Work Plan SWMU 61* (Work Plan), Naval Activity Puerto Rico (NAPR) Ceiba, Puerto Rico.

**GENERAL COMMENTS**

1. It should be noted that when comparing background concentrations to the chemical constituents, EPA's Risk Assessment Guidance for Superfund notes it is important that "... background concentrations may present a significant risk, and while cleanup may or may not eliminate this risk, the background risk may be an important site characteristic to those exposed." Accordingly, this guidance should be kept in mind when conducting the risk assessment. Revise the Work Plan to include an acknowledgment of this guidance. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.] Revise Section 5.7.1, General Methodology for Step 3a (page 5-10), in accordance with this approach, as the Work Plan indicates that consideration will be given to background data in developing the conceptual site model (CSM) and identifying the contaminants addressed by the CSM.
2. EPA's Risk Assessment Guidance for Superfund also notes that "...chemicals with qualifiers attached that indicate known identities but unknown concentrations (e.g., J-qualified data)..." should be included in the list of chemicals of potential concern (COPCs) for a quantitative risk assessment. Bearing this in mind, revise the Work Plan such that the screening conducted for COPCs reflects this procedure. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.]
3. Most of the figures include polygon features and the solid waste management unit (SWMU) boundary. However, they are lacking in important details. For example, Section 1.2, Site Background, indicates that two areas of disturbed ground, two horizontal storage tanks, drums, and staining were observed in 1958 within the SWMU boundary. Revise the Work Plan to show the locations of the aforementioned areas in relation to the proposed sampling locations and indicate whether the May 2004 soil sampling program focused on these areas. If these areas were not sampled, consider conducting sampling in these areas or provide justification for not sampling the areas.

In addition, the aerial photographs are from 1958. Furthermore, the text indicates that the aerial photography analysis (APA) identified structures no longer in existence. It is not clear from the information presented which structures currently exist. Revise the Work Plan to describe the structures that currently exist at this SWMU and the function/operations within each structure.

4. The Navy has proposed using low-flow purging and sampling procedures to sample the temporary wells at SWMU 61. These wells are reported to have 1-inch diameter well casings. While this is an acceptable procedure for extracting the sample, the usability of the data may be limited. It should be noted that the Region 2 Standard Operating Procedure (SOP) included in the Work Plan states that the low flow procedure is applicable to *monitoring wells that have an inner casing with a diameter of 2.0 inches or greater*. In addition, although not included in the Region 2 SOP, in order to generate data of acceptable quality to make “final” risk-based decisions, the low-flow groundwater samples need to be collected from a properly constructed well that has been adequately developed.
5. The data collected from the proposed temporary wells at SWMU 61 will be “screening” type data. The results will indicate whether there “is” or “is not” contamination in the shallow aquifer. If the resulting data exceeds screening levels, it may be necessary to install properly constructed wells in order to make risk-based decisions on potential impacts to human health and the environment. Revise the Work Plan to allow for the installation of permanent wells if the “screening” level data shows releases to groundwater.
6. The Appendix C, NAPR Draft Quality Assurance Project Plan (QAPP), dated July 31, 2007, has been developed in accordance with EPA guidelines (USEPA, 2001, Environmental Protection Agency [EPA] Requirements for Quality Assurance Project Plans, QA/R-5). However, the information presented in the QAPP in Appendix C does not meet the majority of the specific requirements provided in QA/R-5. Some examples include the following:
  - Per Element B5 in QA/R-5, the QAPP did not provide laboratory and field QC methods and procedures, acceptance criteria, and corrective action.
  - Per QA/R-5, examples of all forms, labels and checklists should be included as part of the QAPP. These are not all provided.
  - The QAPP does not provide sufficient discussion of data management procedures per Element A9 of QA/R-5.
  - The QAPP lists the minimum information to be placed on the bottle labels. This list does not include the analysis or preservatives.
  - The QAPP discusses the data validation process, but does not discuss how data to be validated will be selected, the percentage of data to be validated, if all data will be fully validated, or if differing levels of validation will be performed.

EPA Region 2’s current policy is that QAPPs should be developed in accordance with the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), dated March 2005. The UFP-QAPP was developed using the same standard as that used for development of QA/R-5. QAPPs developed in accordance with UFP-QAPP will meet the requirements of QA/R-5. However, the information presented in this QAPP is lacking in sufficient detail to

meet the requirements of the UFP-QAPP or QA/R-5. The QAPP in Appendix C should be completely revised to include sufficient detail in order to meet the requirements of UFP-QAPP guidance.

7. The Data Quality Objectives (DQOs) have not been adequately defined for the Appendix C QAPP. Until a complete set of DQOs is provided, the adequacy of the QAPP and Work Plan cannot be fully evaluated. Further, when revised DQOs are provided, the DQOs need to reflect the proposed activities of the revised Work Plan. Both the Work Plan DQOs and QAPP will need to be reviewed to ensure the proposed activities of the Work Plan correlate with the revised DQOs. In revising the QAPP, provide the completed seven step DQOs and ensure they are consistent with the Guidance on Systematic Planning Using the Data Quality Objectives Process, dated February 2006 (QA/G-4).
8. The Appendix C QAPP indicates that a laboratory has not been selected. This, combined with the incomplete DQOs, severely limits the usefulness of the QAPP. For example, laboratory specific acceptance limits will change the precision, accuracy and completeness values on Table 3-2 of the Work Plan. In revising the QAPP, include laboratory specific information for QC samples, calibration, preventative maintenance, audits, corrective action, sample analysis and preparation, etc. In addition, each laboratory's standard reporting list (e.g., for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals) may vary. Ensure that the analyte lists in the QAPP are provided to the laboratory so that the proper contaminants of concern (COCs) are reported.

## SPECIFIC COMMENTS

1. **Section 3.1, Surface and Subsurface Soil Sample Locations, Page 3-1:** This section gives three examples of proposed sampling locations (e.g. 61SB08, 61SB15, and 61SB19) that were selected to investigate whether a release of contamination or surface run-off pathway exists. However, the text does not provide any additional rationale for the selection of the proposed locations for the other 17 samples. The rationale is also not apparent from the figures provided in the Work Plan. Revise the Work Plan to provide the rationale for the selection of all the proposed sampling locations.
2. **Section 5.1, Screening-Level Problem Formulation, Third Bullet, Page 5-1:** The Work Plan states on the top of page 5-2 that contaminants of impact will be addressed under fate and transport for “source-related chemicals.” Revise the Work Plan by changing this term to “site-specific chemicals” to reflect the fact that all of the potential contaminant sources at a SWMU may not yet be fully defined at the screening level problem formulation phase of the assessment.
3. **Section 5.1.2, Existing Analytical Data, Page 5-2:** The Work Plan indicates that the existing data evaluation will consider such factors as sample size. It is unclear how sample size will impact an existing data evaluation. Revise the Work Plan to clearly indicate how sample size might impact the use of existing data.

4. **Section 5.2 Screening-Level Ecological Effects Evaluation, Page 5-6:** This section states that media-specific screening values and ingestion-based screening values will be developed. However, it does not state which screening values will be used in the risk assessment calculations. It is suggested to revise the Work Plan by including literature references for the media-specific screening values considered for use in the screening level ecological risk assessments (SLERAs), together with a preference hierarchy. The text also needs to reference the toxicity databases that will be used for deriving the ingestion-based screening values for wildlife receptors.
5. **Section 5.2 Screening-Level Ecological Effects Evaluation, Page 5-7:** This paragraph indicates that not all chemicals analyzed in ecologically relevant media will be evaluated for food web exposures in the SLERA. The conservative Tier 1 COPC selection process needs to include all of the measured contaminants, not just those with a propensity to bioaccumulate. Step 3.a in the Navy ecological risk assessment process allows for a re-evaluation of the Tier 1 COPCs using less conservative assumptions. This refinement step cannot take place in the SLERA phase. Revise the text of the Work Plan to indicate that all of the chemicals will be included in the food web screening calculations.
6. **Section 5.4.1 Selection of Ecological Chemicals of Potential Concern, Page 5-9:** This section states that Hazard Quotients (HQs) will be calculated using No Observed Adverse Effect Levels (NOAELs), Lowest Observed Adverse Effect Levels (LOAELs), and Maximum Allowable Toxicant Concentrations (MATCs). Both EPA guidance [USEPA. 1997a. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final). EPA/540/R-97-006] and Navy guidance [Navy Guidance for Conducting Ecological Risk Assessment, available at <http://web.ead.anl.gov/ecorisk>) recommend using only the more conservative NOAELs in the screening-level risk calculations. Revise the Work Plan to state that only NOAELs will be used in the SLERA risk calculations.
7. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that background data may be considered to refine the conservative assumptions used in the Tier 1 SLERA. EPA has developed guidance to make valid comparisons between background concentrations and concentrations measured in soil samples at Superfund sites [EPA. 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. EPA 540-R-01-003. September 2002]. The Work Plan should cite this reference for the background comparisons to be performed.
8. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that the frequency at which chemicals are detected may be considered in refining the exposure assumptions in Step 3a. Eliminating constituents based on frequency of detection (FOD) is an appropriate approach to remove COPCs, which are only detected on a limited basis, for ecological risk assessments. The EPA-approved approach is to eliminate a COPC based on FOD considerations only if it is detected in less than 5% of samples when 20 or more samples have been analyzed. The Navy guidance is less explicit, stating that COPCs with “low” detection frequencies (and “sufficient data” for acceptable site

characterization) should be identified in Step 3.a for potential elimination. Revise the Work Plan to fully clarify how FOD will be applied to eliminate COPCs.

9. **Section 5.8 Ecological Corrective Action Objectives, Page 5-12:** This section describes how to calculate Corrective Action Objectives (CAOs) by multiplying the medium-specific and ingestion-based screening values by a factor of 0.99. The rationale behind using this value in the two equations presented in this section is not known. Revise this section by including a full justification for using 0.99 as part of the process for calculating CAOs.
10. **Section 6.2, Land Use and Potentially Exposed Receptors, Page 6-1:** It is understood that future property use of the site is expected to remain industrial and that the exposure is likely limited to industrial or commercial property use. However, additional information should be provided to clarify why trespassers are not considered a receptor at NAPR. Revise Section 6.2 to include trespassers as potential receptors or include a rationale as to why trespassers have been omitted as a likely receptor.
11. **Section 6.3, Selection of Contaminants of Potential Concern, page 6-1:** This section of the Work Plan indicates that the CAO development process in the CMS will identify the potential for human health risk to onsite workers and future residents exposed to surface water and sediment. It is unclear why soils have not been included, or groundwater via vapor intrusion. Revise the Work Plan to indicate that all media will be included in the CAO development process.

In addition, the text states in the following paragraph that the screening criteria selected is the EPA Region 3 RBCs. The use of EPA Region 9 Preliminary Remediation Goals (PRGs) is referenced in Section 4.3 and Appendix C, Section 1.1, Problem Definition and Performance Standards, page 1-1. The QAPP identifies Puerto Rico Environmental Quality Board (PREQB) target levels and Region 9 PRGs. The PREQB target levels are not identified as performance standards in the Work Plan. The performance standards identified in the Work Plan and QAPP need to be consistent, and should be EPA approved. Revise the Work Plan and QAPP so that the screening criteria/performance standards are the same for both. Ensure that the values selected are also included in Section 2.2 of the Work Plan, Corrective Measures Standards.

12. **Section 7.0, Identification of COCS, Page 7-1:** Elimination of constituents for human health risk assessment (HHRA) based on FOD is a pragmatic methodology designed to allow risk assessors to focus available time and resources on the most likely drivers of site-related risk and hazard. However, this method is generally perceived as dated and was in use prior to the widespread and ready availability of regulatory agency-promulgated health-based screening criteria (e.g., EPA Region 9 PRGs). In addition, use of FOD is inappropriate for chemicals that are considered to be site-related. In developing a site-specific COPC list for the HHRA and as a matter of the public record, any contaminant detected at a concentration in excess of the most relevant health-based screening criterion should be retained as a site COPC and evaluated quantitatively and/or

qualitatively within the Risk Characterization section of the HHRA. This screening should be conducted irrespective of FOD results for individual constituents.

13. **Figures:** According to the aerial photographs, structures are/were located at the SWMU. Wherever available, provide details regarding the type of work performed in the buildings, what was stored in the buildings, and whether environmental releases may have occurred from the buildings (e.g., through direct discharge, cracks in building floor, etc).



One Penn Plaza, Suite 2509  
New York, NY 10119  
(212) 695-3600  
(212) 564-8651 (Fax)  
[www.techlawinc.com](http://www.techlawinc.com)

**TECHNICAL REVIEW OF THE NAVAL ACTIVITY PUERTO RICO  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 69  
DATED JULY 31, 2007**

**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.  
One Penn Plaza, Suite 2509  
New York, NY 10119**

<b>EPA Task Order No.</b>	<b>002</b>
<b>Contract No.</b>	<b>EP-W-07-018</b>
<b>TechLaw TOM</b>	<b>Andrew Dorn</b>
<b>Telephone No.</b>	<b>312-345-8963</b>
<b>EPA TOPO</b>	<b>Timothy Gordon</b>
<b>Telephone No.</b>	<b>212-637-4167</b>

**September 4, 2007**

**TECHNICAL REVIEW OF THE NAVAL ACTIVITY PUERTO RICO  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 69  
DATED JULY 31, 2007**

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

The following comments were generated based on review of the July 31, 2007, *Draft Corrective Measures Study Work Plan SWMU 69* (Work Plan), Naval Activity Puerto Rico (NAPR) Ceiba, Puerto Rico.

**GENERAL COMMENTS**

1. It should be noted that when comparing background concentrations to the chemical constituents, EPA's Risk Assessment Guidance for Superfund notes it is important that "... background concentrations may present a significant risk, and while cleanup may or may not eliminate this risk, the background risk may be an important site characteristic to those exposed." Accordingly, this guidance should be kept in mind when conducting the risk assessment. Revise the Work Plan to include an acknowledgment of this guidance. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.] Revise Section 5.7.1, General Methodology for Step 3a (page 5-10), in accordance with this approach, as the Work Plan indicates that consideration will be given to background data in developing the conceptual site model (CSM) and identifying the contaminants addressed by the CSM.
2. EPA's Risk Assessment Guidance for Superfund also notes that "...chemicals with qualifiers attached that indicate known identities but unknown concentrations (e.g., J-qualified data)..." should be included in the list of chemicals of potential concern (COPCs) for a quantitative risk assessment. Bearing this in mind, revise the Work Plan such that the screening conducted for COPCs reflects this procedure. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.]
3. Most of the figures include polygon features and the solid waste management unit (SWMU) boundary. However, they are lacking in important details. For example, Section 1.2, Site Background indicates that three aboveground storage tanks (ASTs), a drainage ditch, staining along the southern portion of the site, five existing monitoring wells (e.g., 794-MW2 and 794-MW3), an underground storage tank (UST), and Building 794 are located within the SWMU boundary. Revise the Work Plan to show the locations of the aforementioned areas in relation to the proposed sampling locations and indicate whether the May 2004 soil sampling program focused on these areas. If these areas were

not sampled, consider conducting sampling in these areas or provide justification for not sampling the areas.

In addition, the aerial photographs are from 1961. It is not clear from the information presented whether structures currently exist, or if the buildings were identified only in historic photographs. If there are any recent images available, these should also be reviewed and used if appropriate. Include historical groundwater data for the existing five monitoring wells located in the vicinity of UST 794.

4. The depth of the subsurface soil samples is inconsistently presented in the text and Table 3-1. For example, Section 3.1, page 3-2 indicates that one subsurface soil sample will be obtained from 1.0 to 3.0 feet below ground surface (bgs) and one from a depth shallower than the water table or 10 feet bgs. Table 3-1 indicates that one subsurface soil sample will be collected from 1.0 to 2.0 feet and one from 9.0 to 11.0 feet. Verify the depths of all subsurface soil samples and revise the text and/or tables accordingly.
5. The Navy has proposed using low-flow purging and sampling procedures to sample the temporary wells at SWMU 69. These wells are reported to have one-inch diameter well casings. While this is an acceptable procedure for extracting the sample, the usability of the data may be limited. It should be noted that the Region 2 SOP included in Appendix C of the Work Plan states that the low flow procedure is applicable to *monitoring wells that have an inner casing with a diameter of 2.0 inches or greater*. In addition, although not included in the Region 2 SOP, in order to generate data of acceptable quality to make “final” risk-based decisions, the low flow groundwater samples need to be collected from a properly constructed well that has been adequately developed.

The data collected from the proposed temporary wells at SWMU 69 will be “screening” type data. The results will indicate whether there “is” or “is not” contamination in the shallow aquifer. If the resulting data exceeds screening levels, it may be necessary to install properly constructed wells in order to make risk-based decisions on potential impacts to human health and the environment. Revise the Work Plan to allow for the installation of permanent wells if the “screening” level data shows releases to groundwater.

6. The Appendix D, NAPR Draft Quality Assurance Project Plan (QAPP), dated July 31, 2007, has been developed in accordance with USEPA guidelines (USEPA, 2001, Environmental Protection Agency [EPA] Requirements for Quality Assurance Project Plans, QA/R-5). However, the information presented in the QAPP in Appendix D does not meet the majority of the specific requirements provided in QA/R-5. Some examples include the following:
  - Per Element B5 in QA/R-5, the QAPP did not provide laboratory and field QC methods and procedures, acceptance criteria, and corrective action.
  - Per QA/R-5, examples of all forms, labels and checklists should be included as part of the QAPP. These are not all provided.
  - The QAPP does not provide sufficient discussion of data management procedures per

Element A9 of QA/R-5.

- The QAPP lists the minimum information to be placed on the bottle labels. This list does not include the analysis or preservatives.
- The QAPP discusses the data validation process, but does not discuss how data to be validated will be selected, the percentage of data to be validated, if all data will be fully validated, or if differing levels of validation will be performed.

EPA Region 2's current policy is that QAPPs should be developed in accordance with the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), dated March 2005. The UFP-QAPP was developed using the same standard as that used for development of QA/R-5. QAPPs developed in accordance with UFP-QAPP will meet the requirements of QA/R-5. However, the information presented in this QAPP is lacking in sufficient detail to meet the requirements of the UFP-QAPP or QA/R-5. The QAPP in Appendix D should be completely revised to include sufficient detail in order to meet the requirements of UFP-QAPP guidance.

7. The Data Quality Objectives (DQOs) have not been adequately defined for the Appendix D QAPP. Until a complete set of DQOs is provided, the adequacy of the QAPP and Work Plan cannot be fully evaluated. Further, when revised DQOs are provided, the DQOs need to reflect the proposed activities of the revised Work Plan. Both the Work Plan DQOs and QAPP will need to be reviewed to ensure the proposed activities of the Work Plan correlate with the revised DQOs. In revising the QAPP, provide the completed seven step DQOs and ensure they are consistent with the Guidance on Systematic Planning Using the Data Quality Objectives Process, dated February 2006 (QA/G-4).
8. The Appendix D QAPP indicates that a laboratory has not been selected. This, combined with the incomplete DQOs, severely limits the usefulness of the QAPP. For example, laboratory specific acceptance limits will change the precision, accuracy and completeness values on Table 3-2 of the Work Plan. In revising the QAPP, include laboratory specific information for QC samples, calibration, preventative maintenance, audits, corrective action, sample analysis and preparation, etc. In addition, each laboratory's standard reporting list (e.g., for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals) may vary. Ensure that the analyte lists in the QAPP are provided to the laboratory so that the proper contaminants of concern (COCs) are reported.

## **SPECIFIC COMMENTS**

1. **Section 1.2, Site Background, Page 1-2:** According to this section, a drainage ditch parallels the apron going from west to east. Provide additional details regarding the drainage ditch (e.g., depth, size, evidence of odors in the past, etc). Furthermore, verify if the May 2004 sampling program included sampling in this area or provide justification for not sampling this ditch.

2. **Section 1.3 Investigative History and Basis for Work Plan, Page 1-2:** According to Section 1.2, the Site Background, of the Phase II Environmental Condition of Property Report, staining was identified along the southern portion of the expanded aircraft apron. However, the second paragraph, last sentence of Section 1.3 of the Work Plan indicates that there were no signs of staining at the site. Revise the text to clarify this discrepancy.
3. **Section 1.3.1, Findings of the Investigations, Page 1-4:** This section indicates that a structure, Building 794, is located at the SWMU. Provide details regarding the type of work performed in this building, what was stored in the building, and whether environmental releases may have occurred from this building (e.g., through direct discharge, cracks in building floor, etc).
4. **Section 5.1, Screening-Level Problem Formulation, Third Bullet, page 5-1:** The Work Plan states on the top of page 5-2 that contaminants of impact will be addressed under fate and transport for “source-related chemicals.” Revise the Work Plan by changing this term to “site-specific chemicals” to reflect the fact that all of the potential contaminant sources at a SWMU may not yet be fully defined at the screening level problem formulation phase of the assessment.
5. **Section 5.1.2, Existing Analytical Data, page 5-2:** The Work Plan indicates that the existing data evaluation will consider such factors as sample size. It is unclear how sample size will impact an existing data evaluation. Revise the Work Plan to clearly indicate how sample size might impact the use of existing data.
6. **Section 5.2 Screening-Level Ecological Effects Evaluation, Page 5-6:** This section states that media-specific screening values and ingestion-based screening values will be developed. However, it does not state which screening values will be used in the risk assessment calculations. It is suggested to revise the Work Plan by including literature references for the media-specific screening values considered for use in the screening level ecological risk assessments (SLERAs), together with a preference hierarchy. The text also needs to reference the toxicity databases that will be used for deriving the ingestion-based screening values for wildlife receptors.
7. **Section 5.2 Screening-Level Ecological Effects Evaluation, Page 5-7:** This paragraph indicates that not all chemicals analyzed in ecologically relevant media will be evaluated for food web exposures in the SLERA. The conservative Tier 1 COPC selection process needs to include all of the measured contaminants, not just those with a propensity to bioaccumulate. Step 3.a in the Navy ecological risk assessment process allows for a re-evaluation of the Tier 1 COPCs using less conservative assumptions. This refinement step cannot take place in the SLERA phase. Revise the text of the Work Plan to indicate that all of the chemicals will be included in the food web screening calculations.
8. **Section 5.4.1 Selection of Ecological Chemicals of Potential Concern, Page 5-9:** This section states that Hazard Quotients (HQs) will be calculated using No Observed Adverse Effect Levels (NOAELs), Lowest Observed Adverse Effect Levels (LOAELs), and Maximum Allowable Toxicant Concentrations (MATCs). Both EPA guidance [USEPA.

1997a. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final). EPA/540/R-97-006] and Navy guidance [Navy Guidance for Conducting Ecological Risk Assessment, available at <http://web.ead.anl.gov/ecorisk>) recommend using only the more conservative NOAELs in the screening-level risk calculations. Revise the Work Plan to state that only NOAELs will be used in the SLERA risk calculations.

9. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that background data may be considered to refine the conservative assumptions used in the Tier 1 SLERA. EPA has developed guidance to make valid comparisons between background concentrations and concentrations measured in soil samples at Superfund sites [EPA. 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. EPA 540-R-01-003. September 2002]. The Work Plan should cite this reference for the background comparisons to be performed.
10. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that the frequency at which chemicals are detected may be considered in refining the exposure assumptions in Step 3a. Eliminating constituents based on frequency of detection (FOD) is an appropriate approach to remove COPCs, which are only detected on a limited basis, for ecological risk assessments. The EPA-approved approach is to eliminate a COPC based on FOD considerations only if it is detected in less than 5% of samples when 20 or more samples have been analyzed. The Navy guidance is less explicit, stating that COPCs with “low” detection frequencies (and “sufficient data” for acceptable site characterization) should be identified in Step 3.a for potential elimination. Revise the Work Plan to fully clarify how FOD will be applied to eliminate COPCs.
11. **Section 5.8 Ecological Corrective Action Objectives, Page 5-12:** This section describes how to calculate Corrective Action Objectives (CAOs) by multiplying the medium-specific and ingestion-based screening values by a factor of 0.99. The rationale behind using this value in the two equations presented in this section is not known. Revise this section by including a full justification for using 0.99 as part of the process for calculating CAOs.
12. **Section 6.2, Land Use and Potentially Exposed Receptors, Page 6-1:** It is understood that future property use of the site is expected to remain industrial and that the exposure is likely limited to industrial or commercial property use. However, additional information should be provided to clarify why trespassers are not considered a receptor at NAPR. Revise Section 6.2 to include trespassers as potential receptors or include a rationale as to why trespassers have been omitted as a likely receptor.
13. **Section 6.3, Selection of Contaminants of Potential Concern, page 6-1:** This section of the Work Plan indicates that the CAO development process in the CMS will identify the potential for human health risk to onsite workers and future residents exposed to surface water and sediment. It is unclear why soils have not been included, or groundwater via vapor intrusion. Revise the Work Plan to indicate that all media will be included in the CAO development process.

In addition, the text states in the following paragraph that the screening criteria selected is the USEPA Region 3 risk based concentrations (RBCs). The use of USEPA Region 9 Preliminary Remediation Goals (PRGs) is referenced in Section 4.3 and Appendix D, Section 1.1, Problem Definition and Performance Standards, page 1-1. The QAPP identifies Puerto Rico Environmental Quality Board (PREQB) target levels and Region 9 PRGs. The PREQB target levels are not identified as performance standards in the Work Plan. The performance standards identified in the Work Plan and QAPP need to be consistent, and should be EPA approved. Revise the Work Plan and QAPP so that the screening criteria/performance standards are the same for both. Ensure that the values selected are also included in Section 2.2 of the Work Plan, Corrective Measures Standards.

14. **Section 7.0, Identification of COCS, Page 7-1:** Elimination of constituents for human health risk assessment based on frequency of detection (FOD) is a pragmatic methodology designed to allow risk assessors to focus available time and resources on the most likely drivers of site-related risk and hazard. However, this method is generally perceived as dated and was in use prior to the widespread and ready availability of regulatory agency-promulgated health-based screening criteria (e.g., EPA Region 9 PRGs). In addition, use of FOD is inappropriate for chemicals that are considered to be site-related. In developing a site-specific COPC list for the human health risk assessment (HHRA) and as a matter of the public record, any contaminant detected at a concentration in excess of the most relevant health-based screening criterion should be retained as a site COPC and evaluated quantitatively and/or qualitatively within the Risk Characterization section of the HHRA. This screening should be conducted irrespective of FOD results for individual constituents.



One Penn Plaza, Suite 2509  
New York, NY 10119  
(212) 695-3600  
(212) 564-8651 (Fax)  
[www.techlawinc.com](http://www.techlawinc.com)

**TECHNICAL REVIEW OF THE  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 73  
DATED JULY 31, 2007**

**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.  
One Penn Plaza, Suite 2509  
New York, NY 10119**

<b>EPA Task Order No.</b>	<b>002</b>
<b>Contract No.</b>	<b>EP-W-07-018</b>
<b>TechLaw TOM</b>	<b>Andrew Dorn</b>
<b>Telephone No.</b>	<b>312-345-8963</b>
<b>EPA TOPO</b>	<b>Timothy Gordon</b>
<b>Telephone No.</b>	<b>212-637-4167</b>

**September 13, 2007**

**TECHNICAL REVIEW OF THE  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 73  
DATED JULY 31, 2007**

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

The following comments were generated based on review of the July 31, 2007, *Draft Corrective Measures Study Work Plan SWMU 73* (Work Plan), Naval Activity Puerto Rico (NAPR) Ceiba, Puerto Rico.

**GENERAL COMMENTS**

1. It should be noted that when comparing background concentrations to the chemical constituents, EPA's Risk Assessment Guidance for Superfund notes it is important that "... background concentrations may present a significant risk, and while cleanup may or may not eliminate this risk, the background risk may be an important site characteristic to those exposed." Accordingly, this guidance should be kept in mind when conducting the risk assessment. Revise the Work Plan to include an acknowledgment of this guidance. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.] Revise Section 5.7.1, General Methodology for Step 3a (page 5-10), in accordance with this approach, as the Work Plan indicates that consideration will be given to background data in developing the conceptual site model (CSM) and identifying the contaminants addressed by the CSM.
2. EPA's Risk Assessment Guidance for Superfund also notes that "...chemicals with qualifiers attached that indicate known identities but unknown concentrations (e.g., J-qualified data)..." should be included in the list of chemicals of potential concern (COPCs) for a quantitative risk assessment. Bearing this in mind, revise the Work Plan such that the screening conducted for COPCs reflects this procedure. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.]
3. Most of the figures are lacking in important details. For example, Section 1.2, Site Background, indicates that small spills and stains, miscellaneous debris including vehicle frames, tires, wood, etc., a secondary growth vegetation area, two unidentified metal structures, and Building 31 are located within the solid waste management unit (SWMU) boundary. Revise the Work Plan to show the locations of the aforementioned areas in relation to the proposed sampling locations and indicate whether the May 2004 soil sampling program focused on these areas. If these areas were not sampled, consider conducting sampling in these areas or provide justification for not sampling the areas.

In addition, the aerial photographs are either from 1958 (Figure 1-4) or unknown (Figures 1-3 and 3-1). It is not clear from the information presented whether structures currently exist, or if the buildings were identified only in historic photographs. If there are any recent images available, these should also be reviewed and used if appropriate. Include historical groundwater data for the existing one monitoring well, location 19E-03, located next to an unknown structure.

4. During the May 2004 sampling event, arsenic and/or vanadium were detected in the surface soil above EPA Region 3 Industrial Risk-based Concentrations (RBCs) at locations 19E-01, 19E-02, and 19E-SS04 through 19E-SS09 and above Region 3 Industrial RBCs in the subsurface soil at locations 19E-01 and 19E-02. Vanadium was also detected in the groundwater above EPA Region 3 Tap Water RBCs at locations 19E-01 and 19E-02. The vanadium concentrations were found in samples for dissolved metals, which would be expected to be much lower than what would be found in total metals results. However, the soil and groundwater sampling locations proposed as part of the corrective measures study (CMS) investigation are intended to delineate the extent of contamination at locations 19E-SS06 and 19E-03. It is assumed that the horizontal and vertical extent of vanadium in soil and groundwater will not be evaluated in the areas of the above-referenced locations due to the high background concentrations in the soils (as explained in Section 1.3.1). If this is the case, then the Work Plan should be revised to summarize how the background concentration of vanadium was determined, or to provide a reference to where this information can be found. Otherwise, additional delineation of soil and groundwater contamination appears warranted. In addition, the Work Plan does not explain why the nature and extent of arsenic in soils will not be determined as part of the CMS investigation. Either provide justification for not determining the extent of arsenic in soils, or revise the Work Plan to include additional contaminant delineation at the above-referenced sample locations.
5. The Navy has proposed using low-flow purging and sampling procedures to sample the temporary wells at SWMU 73. These wells are reported to have 1-inch diameter well casings. While this is an acceptable procedure for extracting the sample, the usability of the data may be limited. It should be noted that the Region 2 Standard Operating Procedure (SOP) included in the Work Plan states that the low flow procedure is applicable to *monitoring wells that have an inner casing with a diameter of 2.0 inches or greater*. In addition, although not included in the Region 2 SOP, in order to generate data of acceptable quality to make “final” risk-based decisions, the low-flow groundwater samples need to be collected from a properly constructed well that has been adequately developed.
6. The data collected from the proposed temporary wells at SWMU 73 will be “screening” type data. The results will indicate whether there “is” or “is not” contamination in the shallow aquifer. If the resulting data exceeds screening levels, it may be necessary to install properly constructed wells in order to make risk-based decisions on potential impacts to human health and the environment. Revise the Work Plan to allow for the installation of permanent wells if the “screening” level data shows releases to groundwater.

7. The Appendix D, NAPR Draft Quality Assurance Project Plan (QAPP), dated July 31, 2007, has been developed in accordance with EPA guidelines (USEPA, 2001, Environmental Protection Agency [EPA] Requirements for Quality Assurance Project Plans, QA/R-5). However, the information presented in the QAPP in Appendix D does not meet the majority of the specific requirements provided in QA/R-5. Some examples include the following:
  - Per Element B5 in QA/R-5, the QAPP did not provide laboratory and field QC methods and procedures, acceptance criteria, and corrective action.
  - Per QA/R-5, examples of all forms, labels and checklists should be included as part of the QAPP. These are not all provided.
  - The QAPP does not provide sufficient discussion of data management procedures per Element A9 of QA/R-5.
  - The QAPP lists the minimum information to be placed on the bottle labels. This list does not include the analysis or preservatives.
  - The QAPP discusses the data validation process, but does not discuss how data to be validated will be selected, the percentage of data to be validated, if all data will be fully validated, or if differing levels of validation will be performed.

EPA Region 2's current policy is that QAPPs should be developed in accordance with the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), dated March 2005. The UFP-QAPP was developed using the same standard as that used for development of QA/R-5. QAPPs developed in accordance with UFP-QAPP will meet the requirements of QA/R-5. However, the information presented in this QAPP is lacking in sufficient detail to meet the requirements of the UFP-QAPP or QA/R-5. The QAPP in Appendix D should be completely revised to include sufficient detail in order to meet the requirements of UFP-QAPP guidance.

8. The Data Quality Objectives (DQOs) have not been adequately defined for the Appendix D QAPP. Until a complete set of DQOs is provided, the adequacy of the QAPP and Work Plan cannot be fully evaluated. Further, when revised DQOs are provided, the DQOs need to reflect the proposed activities of the revised Work Plan. Both the Work Plan DQOs and QAPP will need to be reviewed to ensure the proposed activities of the Work Plan correlate with the revised DQOs. In revising the QAPP, provide the completed seven step DQOs and ensure they are consistent with the Guidance on Systematic Planning Using the Data Quality Objectives Process, dated February 2006 (QA/G-4).
9. The Appendix D QAPP indicates that a laboratory has not been selected. This, combined with the incomplete DQOs, severely limits the usefulness of the QAPP. For example, laboratory specific acceptance limits will change the precision, accuracy and completeness values on Table 3-2 of the Work Plan. In revising the QAPP, include laboratory specific information for QC samples, calibration, preventative maintenance, audits, corrective action, sample analysis and preparation, etc. In addition, each laboratory's standard reporting list (e.g., for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals) may vary. Ensure that the analyte lists in the QAPP are provided to the laboratory so that the proper contaminants of concern (COCs) are reported.

## SPECIFIC COMMENTS

1. **Section 5.1, Screening-Level Problem Formulation, Third Bullet, page 5-1:** The Work Plan states on the top of page 5-2 that contaminants of impact will be addressed under fate and transport for “source-related chemicals.” Revise the Work Plan by changing this term to “site-specific chemicals” to reflect the fact that all of the potential contaminant sources at a SWMU may not yet be fully defined at the screening level problem formulation phase of the assessment.
2. **Section 5.1.2, Existing Analytical Data, page 5-2:** The Work Plan indicates that the existing data evaluation will consider such factors as sample size. It is unclear how sample size will impact an existing data evaluation. Revise the Work Plan to clearly indicate how sample size might impact the use of existing data.
3. **Section 5.2 Screening-Level Ecological Effects Evaluation, Page 5-6:** This section states that media-specific screening values and ingestion-based screening values will be developed. However, it does not state which screening values will be used in the risk assessment calculations. It is suggested to revise the Work Plan by including literature references for the media-specific screening values considered for use in the screening level ecological risk assessments (SLERAs), together with a preference hierarchy. The text also needs to reference the toxicity databases that will be used for deriving the ingestion-based screening values for wildlife receptors.
4. **Section 5.2 Screening-Level Ecological Effects Evaluation, Page 5-7:** This paragraph indicates that not all chemicals analyzed in ecologically relevant media will be evaluated for food web exposures in the SLERA. The conservative Tier 1 COPC selection process needs to include all of the measured contaminants, not just those with a propensity to bioaccumulate. Step 3.a in the Navy ecological risk assessment process allows for a re-evaluation of the Tier 1 COPCs using less conservative assumptions. This refinement step cannot take place in the SLERA phase. Revise the text of the Work Plan to indicate that all of the chemicals will be included in the food web screening calculations.
5. **Section 5.4.1 Selection of Ecological Chemicals of Potential Concern, Page 5-9:** This section states that Hazard Quotients (HQs) will be calculated using No Observed Adverse Effect Levels (NOAELs), Lowest Observed Adverse Effect Levels (LOAELs), and Maximum Allowable Toxicant Concentrations (MATCs). Both EPA guidance [USEPA. 1997a. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final). EPA/540/R-97-006] and Navy guidance [Navy Guidance for Conducting Ecological Risk Assessment, available at <http://web.ead.anl.gov/ecorisk>) recommend using only the more conservative NOAELs in the screening-level risk calculations. Revise the Work Plan to state that only NOAELs will be used in the SLERA risk calculations.
6. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that background data may be considered to refine the conservative assumptions used in the

Tier 1 SLERA. EPA has developed guidance to make valid comparisons between background concentrations and concentrations measured in soil samples at Superfund sites [EPA. 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. EPA 540-R-01-003. September 2002]. The Work Plan should cite this reference for the background comparisons to be performed.

7. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that the frequency at which chemicals are detected may be considered in refining the exposure assumptions in Step 3a. Eliminating constituents based on frequency of detection (FOD) is an appropriate approach to remove COPCs, which are only detected on a limited basis, for ecological risk assessments. The EPA-approved approach is to eliminate a COPC based on FOD considerations only if it is detected in less than 5% of samples when 20 or more samples have been analyzed. The Navy guidance is less explicit, stating that COPCs with “low” detection frequencies (and “sufficient data” for acceptable site characterization) should be identified in Step 3.a for potential elimination. Revise the Work Plan to fully clarify how FOD will be applied to eliminate COPCs.
8. **Section 5.8 Ecological Corrective Action Objectives, Page 5-12:** This section describes how to calculate Corrective Action Objectives (CAOs) by multiplying the medium-specific and ingestion-based screening values by a factor of 0.99. The rationale behind using this value in the two equations presented in this section is not known. Revise this section by including a full justification for using 0.99 as part of the process for calculating CAOs.
9. **Section 6.2, Land Use and Potentially Exposed Receptors, Page 6-1:** It is understood that future property use of the site is expected to remain industrial and that the exposure is likely limited to industrial or commercial property use. However, additional information should be provided to clarify why trespassers are not considered a receptor at NAPR. Revise Section 6.2 to include trespassers as potential receptors or include a rationale as to why trespassers have been omitted as a likely receptor.
10. **Section 6.3, Selection of Contaminants of Potential Concern, page 6-1:** This section of the Work Plan indicates that the CAO development process in the CMS will identify the potential for human health risk to onsite workers and future residents exposed to surface water and sediment. It is unclear why soils have not been included, or groundwater via vapor intrusion. Revise the Work Plan to indicate that all media will be included in the CAO development process.

In addition, the text states in the following paragraph that the screening criteria selected is the EPA Region 3 RBCs. The use of EPA Region 9 Preliminary Remediation Goals (PRGs) is referenced in Section 4.3 and Appendix D, Section 1.1, Problem Definition and Performance Standards, page 1-1. The QAPP identifies Puerto Rico Environmental Quality Board (PREQB) target levels and Region 9 PRGs. The PREQB target levels are not identified as performance standards in the Work Plan. The performance standards identified in the Work Plan and QAPP need to be consistent, and should be EPA approved. Revise the Work Plan and QAPP so that the screening criteria/performance

standards are the same for both. Ensure that the values selected are also included in Section 2.2 of the Work Plan, Corrective Measures Standards.

11. **Section 7.0, Identification of COCS, Page 7-1:** Elimination of constituents for human health risk assessment based on FOD is a pragmatic methodology designed to allow risk assessors to focus available time and resources on the most likely drivers of site-related risk and hazard. However, this method is generally perceived as dated and was in use prior to the widespread and ready availability of regulatory agency-promulgated health-based screening criteria (e.g., EPA Region 9 PRGs). In addition, use of FOD is inappropriate for chemicals that are considered to be site-related. In developing a site-specific COPC list for the human health risk assessment (HHRA) and as a matter of the public record, any contaminant detected at a concentration in excess of the most relevant health-based screening criterion should be retained as a site COPC and evaluated quantitatively and/or qualitatively within the Risk Characterization section of the HHRA. This screening should be conducted irrespective of FOD results for individual constituents.
  
12. **Figures:** According to the aerial photographs, one structure is/was located at the SWMU. Provide details regarding the type of work performed in this building, what was stored in the building, and whether environmental releases may have occurred from the building (e.g., through direct discharge, cracks in building floor, etc).



One Penn Plaza, Suite 2509  
New York, NY 10119  
(212) 695-3600  
(212) 564-8651 (Fax)  
[www.techlawinc.com](http://www.techlawinc.com)

**TECHNICAL REVIEW OF THE  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 74  
DATED JULY 31, 2007**

**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.  
One Penn Plaza, Suite 2509  
New York, NY 10119**

<b>EPA Task Order No.</b>	<b>002</b>
<b>Contract No.</b>	<b>EP-W-07-018</b>
<b>TechLaw TOM</b>	<b>Andrew Dorn</b>
<b>Telephone No.</b>	<b>312-345-8963</b>
<b>EPA TOPO</b>	<b>Timothy Gordon</b>
<b>Telephone No.</b>	<b>212-637-4167</b>

**September 18, 2007**

**TECHNICAL REVIEW OF THE  
DRAFT CORRECTIVE MEASURES STUDY WORK PLAN SWMU 74  
DATED JULY 31, 2007**

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

The following comments were generated based on review of the July 31, 2007, *Draft Corrective Measures Study Work Plan SWMU 74* (Work Plan), Naval Activity Puerto Rico (NAPR) Ceiba, Puerto Rico.

**GENERAL COMMENTS**

1. It should be noted that when comparing background concentrations to the chemical constituents, EPA's Risk Assessment Guidance for Superfund notes it is important that "... background concentrations may present a significant risk, and while cleanup may or may not eliminate this risk, the background risk may be an important site characteristic to those exposed." Accordingly, this guidance should be kept in mind when conducting the risk assessment. Revise the text to include an acknowledgment of this guidance. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.] Revise Section 5.7.1, General Methodology for Step 3a (page 5-10), in accordance with this approach, as the Work Plan indicates that consideration will be given to background data in developing the conceptual site model (CSM) and identifying the contaminants addressed by the CSM.
2. EPA's Risk Assessment Guidance for Superfund also notes that "...chemicals with qualifiers attached that indicate known identities but unknown concentrations (e.g., J-qualified data)..." should be included in the list of chemicals of potential concern (COPCs) for a quantitative risk assessment. Bearing this in mind, revise the Work Plan such that the screening conducted for constituents of potential concern (COPCs) reflects this procedure. [Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final, Page 5-19, USEPA Office of Emergency and Remedial Response, December 1989.]
3. The Navy has proposed using low-flow purging and sampling procedures to sample the temporary wells at solid waste management unit (SWMU) 74. These wells are reported to have 1.5-inch diameter inner well casings. While this is an acceptable procedure for extracting the sample, the usability of the data may be limited. It should be noted that the Region 2 Standard Operating Procedure (SOP) included in Appendix D of the Work Plan states that the low-flow procedure is applicable to *monitoring wells that have an inner casing with a diameter of 2.0 inches or greater*. In addition, although not included in the Region 2 SOP, in order to generate data of acceptable quality to make "final" risk-based decisions, the

low flow groundwater samples need to be collected from a properly constructed well that has been adequately developed.

The data collected from the proposed temporary wells at SWMU 74 will be “screening” type data. The results will indicate whether there “is” or “is not” contamination in the shallow aquifer. If the resulting data exceeds screening levels, it may be necessary to install properly constructed wells in order to make risk-based decisions on potential impacts to human health and the environment. Revise the Work Plan to allow for the installation of permanent wells if the “screening” level data shows releases to groundwater.

4. The Work Plan indicates that PAHs will be evaluated during the Phase II sampling. During Phase II, PAHs are to be analyzed at locations where Phase I analytical results "indicate the presence of organic contaminants exceeding screening levels or otherwise elevated concentrations". However, this is not sufficient rationale for determining whether or not Phase I samples should be analyzed for PAHs. First, Table B-1 indicates that a PAH compound was the only organic that exceeded screening levels during the Environmental Condition of Property (ECP) investigation, and at the location where the PAH was detected, no other organics exceeded screening levels. Second, the Work Plan indicates that screening levels have not been established for diesel range organics (DRO) and gasoline range organics (GRO). Third, the Work Plan does not explain why detections of VOCs, GRO or DRO would be indicative of PAH releases; while analysis for DROs typically will detect some PAHs, there is no indication that the DRO analysis will be representative of potential PAH releases from the pipelines. Revise the Work Plan to provide additional justification for the exclusion of PAH analyses from the Phase I sampling event. If this justification is not presented, soil and groundwater samples collected during Phase I should be analyzed for PAHs. Work Plan indicates that polynuclear aromatic hydrocarbons (PAHs) will be evaluated during the Phase II sampling. During Phase II, PAHs are to be analyzed at locations where Phase I analytical results for organic contaminants exceed screening levels "or otherwise elevated concentrations." The most appropriate indicator parameter for PAH contamination from the Phase I analyte list is diesel range organics (DRO). DRO does not have a screening level, at least there is not one presented for DRO in Table B-1. Table B-1 does not include a screening level for gasoline range organics either (GRO). Both DRO and GRO screening levels should be defined to ensure that clear criteria are established for the evaluation of Phase I data. The Work Plan need to be revised to clarify how the Phase I analytical data will be evaluated to determine the need for Phase II sampling for PAHs. Ensure that screening criteria are also provided for DRO and GRO in Table B-1.
5. There were seven different areas of the site that were reportedly investigated, and these areas are described in the bullet points at the end of Section 1.2. Appendix A is referenced to show the site features/conditions observed at these sites. However, there are only two photographs in Appendix A. If available, it would be helpful if additional photographs were included in Appendix A to show each of the seven different areas investigated.
6. The Appendix E, NAPR Draft Quality Assurance Project Plan (QAPP), dated July 31, 2007, has been developed in accordance with EPA guidelines (USEPA, 2001, Environmental Protection Agency [EPA] Requirements for Quality Assurance Project Plans, QA/R-5).

However, the information presented in the QAPP in Appendix E does not meet the majority of the specific requirements provided in QA/R-5. Some examples include the following:

- Per Element B5 in QA/R-5, the QAPP did not provide laboratory and field QC methods and procedures, acceptance criteria, and corrective action.
- Per QA/R-5, examples of all forms, labels and checklists should be included as part of the QAPP. These are not all provided.
- The QAPP does not provide sufficient discussion of data management procedures per Element A9 of QA/R-5.
- The QAPP lists the minimum information to be placed on the bottle labels. This list does not include the analysis or preservatives.
- The QAPP discusses the data validation process, but does not discuss how data to be validated will be selected, the percentage of data to be validated, if all data will be fully validated, or if differing levels of validation will be performed.

EPA Region 2's current policy is that QAPPs should be developed in accordance with the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), dated March 2005. The UFP-QAPP was developed using the same standard as that used for development of QA/R-5. QAPPs developed in accordance with UFP-QAPP will meet the requirements of QA/R-5. However, the information presented in this QAPP is lacking in sufficient detail to meet the requirements of the UFP-QAPP or QA/R-5. The QAPP in Appendix E should be completely revised to include sufficient detail in order to meet the requirements of UFP-QAPP guidance.

7. The Data Quality Objectives (DQOs) have not been adequately defined for the Appendix E QAPP. Until a complete set of DQOs is provided, the adequacy of the QAPP and Work Plan cannot be fully evaluated. Further, when revised DQOs are provided, the DQOs need to reflect the proposed activities of the revised Work Plan. Both the Work Plan DQOs and QAPP will need to be reviewed to ensure the proposed activities of the Work Plan correlate with the revised DQOs. In revising the QAPP, provide the completed seven step DQOs and ensure they are consistent with the Guidance for Systematic Planning Using the Data Quality Objectives Process, dated February 2006 (QA/G-4).
8. The Appendix E QAPP indicates that a laboratory has not been selected. This, combined with the incomplete DQOs, severely limits the usefulness of the QAPP. For example, laboratory specific acceptance limits will change the precision, accuracy and completeness values on Table 3-2 of the Work Plan. In revising the QAPP, include laboratory specific information for QC samples, calibration, preventative maintenance, audits, corrective action, sample analysis and preparation, etc. In addition, each laboratory's standard reporting list (e.g., for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs,) and metals) may vary. Ensure that the analyte lists in the QAPP are provided to the laboratory so that the proper contaminants of concern (COCs) are reported.

## SPECIFIC COMMENTS

- 1. Section 3.1.1, Surface and Subsurface Soil Sample Locations, page 3-2:** The Work Plan states on the top of page 3-2, that “Where pipelines traverse beneath an above-ground structure such as [a] concrete pad, containment basin, or near a building foundation, the nearest location that does not penetrate or interfere with these structures will be selected.” Since a majority of the sampling will consist of collecting subsurface soils, it is not clear why samples will not be collected from beneath certain structures like concrete pads. If there are health and safety issues, or containment issues related to breaching containment areas or affecting building foundations, then it is agreed that these areas should not be penetrated for the purposes of collecting soil samples. However, if there is a concrete pad that is being used to support surface activities (parking area, roadway, etc.), and penetrating these areas will not lead to future environmental releases or health and safety issues, then subsurface soil samples should be collected from beneath the structure. The area penetrated can be plugged using appropriate materials (concrete, grout, etc.) after sampling. Revise the Work Plan to more clearly indicate why all concrete structures are being avoided, or include criteria for determining when it would be appropriate to penetrate non-threatening concrete structures.
- 2. Section 3.1.1, Surface and Subsurface Soil Sample Locations, page 3-3:** The Work Plan indicates that, “Locations for temporary monitoring wells will be selected more frequently [than every 1000 feet along the pipeline length and soil boring locations around valve pits] if elevated photo ionization detector (PID) readings or other observations (visual observations of staining, free-product, obvious odors, etc.) are noted in any subsurface boring soil core.” It is unclear how or if the default well installation frequency will be modified in the event that field conditions warrant the installation of a well in a location that was not preset. Revise the Work Plan to provide explanatory text and an example of how the well installation frequency will be modified in the event that field conditions require the placement of a monitoring well at a location for which a well was not planned.
- 3. Section 3.1.2, Groundwater Samples, page 3-3:** The second paragraph says that temporary wells will be advanced to a depth of approximately 30 feet below ground surface (bgs). This paragraph also indicates that well screens will be placed to straddle the water table. However, Section 1.3.1 indicates that bedrock was encountered at depths ranging from 5 to approximately 15 feet bgs, and groundwater was present in several of the borings. The second paragraph of Section 3.1.2 should be revised to provide a more accurate description of the expected subsurface conditions with respect to the proposed temporary monitoring well installations.
- 4. Section 5.1, Screening-Level Problem Formulation, Third Bullet, page 5-1:** The Work Plan states on the top of page 5-2 that contaminants of impact will be addressed under fate and transport for “source-related chemicals.” Revise the Work Plan by changing this term to “site-specific chemicals” to reflect the fact that all of the potential contaminant sources at a SWMU may not yet be fully defined at the screening level problem formulation phase of the assessment.

5. **Section 5.1.2, Existing Analytical Data, page 5-2:** The Work Plan indicates that the existing data evaluation will consider such factors as sample size. It is unclear how sample size will impact an existing data evaluation. Revise the Work Plan to more clearly indicate how sample size might impact the use of existing data.
6. **Section 5.2, Screening-Level Ecological Effects Evaluation, Page 5-6:** This section states that media-specific screening values and ingestion-based screening values will be developed. However, it does not state which screening values will be used in the risk assessment calculations. It is suggested to revise the text of the Work Plan by including literature references for the media-specific screening values considered for use in the screening level ecological risk assessments (SLERAs), together with a preference hierarchy. The text also needs to reference the toxicity databases that will be used for deriving the ingestion-based screening values for wildlife receptors.
7. **Section 5.2, Screening-Level Ecological Effects Evaluation, Page 5-7:** This paragraph indicates that not all chemicals analyzed in ecologically relevant media will be evaluated for food web exposures in the SLERA. The conservative Tier 1 COPC selection process needs to include all of the measured contaminants, not just those with a propensity to bioaccumulate. Step 3.a in the Navy ecological risk assessment process allows for a re-evaluation of the Tier 1 COPCs using less conservative assumptions. This refinement step cannot take place in the SLERA phase. Revise the text of the Work Plan to indicate that all of the chemicals will be included in the food web screening calculations.
8. **Section 5.4.1, Selection of Ecological Chemicals of Potential Concern, Page 5-9:** This section states that Hazard Quotients (HQs) will be calculated using No Observed Adverse Effect Levels (NOAELs), Lowest Observed Adverse Effect Levels (LOAELs), and Maximum Allowable Toxicant Concentrations (MATCs). Both EPA guidance [USEPA. 1997a. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final). EPA/540/R-97-006] and Navy guidance [Navy Guidance for Conducting Ecological Risk Assessment, available at <http://web.ead.anl.gov/ecorisk>] recommend using only the more conservative NOAELs in the screening-level risk calculations. Revise the Work Plan to state that only NOAELs will be used in the SLERA risk calculations.
9. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that background data may be considered to refine the conservative assumptions used in the Tier 1 SLERA. EPA has developed guidance to make valid comparisons between background concentrations and concentrations measured in soil samples at Superfund sites. [EPA. 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. EPA 540-R-01-003. September 2002]. The Work Plan should cite this reference for the background comparisons to be performed.
10. **Section 5.7.1, General Methodology for Step 3a, Page 5-10:** This section states that the frequency at which chemicals are detected may be considered in refining the exposure assumptions in Step 3a. Eliminating constituents based on frequency of detection (FOD) is an appropriate approach to remove COPCs, which are only detected on a limited basis, for

ecological risk assessments. The EPA-approved approach is to eliminate a COPC based on FOD considerations only if it is detected in less than 5% of samples when 20 or more samples have been analyzed. The Navy guidance is less explicit, stating that COPCs with “low” detection frequencies (and “sufficient data” for acceptable site characterization) should be identified in Step 3.a for potential elimination. Revise the Work Plan to fully clarify how FOD will be applied to eliminate COPCs.

11. **Section 5.8, Ecological Corrective Action Objectives, Page 5-12:** This section describes how to calculate Corrective Action Objectives (CAOs) by multiplying the medium-specific and ingestion-based screening values by a factor of 0.99. The rationale behind using this value in the two equations presented in this section is not known. Revise this section by including a full justification for using 0.99 as part of the process for calculating CAOs.
12. **Section 6.2, Land Use and Potentially Exposed Receptors, page 6-1:** It is understood that future property use of the site is expected to remain industrial and that the exposure is likely limited to industrial or commercial property use. However, additional information should be provided to clarify why trespassers are not considered a receptor at NAPR. Revise Section 6.2 to include trespassers as potential receptors, or include a rationale as to why trespassers have been omitted as a likely receptor.
13. **Section 6.3, Selection of Contaminants of Potential Concern, page 6-1:** The second paragraph in this section of the Work Plan indicates that the screening criteria selected are the EPA Region 3 risk based concentrations (RBCs). The use of EPA Region 9 preliminary remediation goals (PRGs) is referenced in Section 4.3 and Appendix E, Section 1.1, Problem Definition and Performance Standards, page 1-1. The QAPP identifies Puerto Rico Environmental Quality Board (PREQB) target levels and Region 9 PRGs. The PREQB target levels are not identified as performance standards in the Work Plan. The performance standards identified in the Work Plan and QAPP need to be consistent, and should be EPA approved. Revise the Work Plan and QAPP so that the screening criteria/performance standards are the same for both. Ensure that the values selected are also included in Section 2.2 of the Work Plan, Corrective Measures Standards.
14. **Section 7.0, Identification of COCS, Page 7-1:** Elimination of constituents based on FOD is a pragmatic methodology designed to allow risk assessors to focus available time and resources on the most likely drivers of site-related risk and hazard. However, this method is generally perceived as dated and was in use prior to the widespread and ready availability of regulatory agency-promulgated health-based screening criteria (e.g., EPA Region 9 PRGs). In addition, use of FOD is inappropriate for chemicals that are considered to be site-related. In developing a site-specific COPC list for the human health risk assessment (HHRA) and as a matter of the public record, any contaminant detected at a concentration in excess of the most relevant health-based screening criterion should be retained as a site COPC and evaluated quantitatively and/or qualitatively within the Risk Characterization section of the HHRA. This screening should be conducted irrespective of FOD results for individual constituents.

15. **Figure 3-4:** Figure 3-4 shows the pipelines extending out onto two piers. No sampling is associated with the piers once they extend over the water. Revise the Work Plan to clarify why neither sediment nor surface water sampling is proposed for this area.