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August 2, 2007

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

Attn: Mr. Adolph Everett, P.E.
Chief, RCRA Programs Branch

Re: Contract N62470-02-D-3052
Navy CLEAN, District III
Contract Task Orders (CTO) 0121
U.S. Naval Activity Puerto Rico (NAPR)
Navy Responses to EPA Comments dated June 11, 2007
EPA I.D. No. PR2170027203

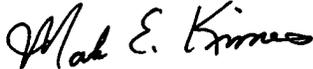
Dear Mr. Everett:

Baker Environmental, Inc. (Baker), on behalf of the Navy, is pleased to provide you with the attached Navy Responses to EPA Comments dated June 11, 2007. These comments were on the Draft Phase I RCRA Facility Investigation (RFI) Report for SWMU 16, Naval Activity Puerto Rico dated March 26, 2007; the Draft Phase I RFI Report for SWMU 42, Naval Activity Puerto Rico dated March 23, 2007; and the Draft Phase I RFI Report for AOC A, Naval Activity Puerto Rico dated April 25, 2007.

Upon EPA approval of the Navy response to comments the Navy will modify the documents as outlined in the responses and submit Final documents for the sites covered in the EPA comments. If you have questions regarding this submittal, please contact Mr. Mark E. Davidson at (843) 743-2135. Additional distribution has been made as indicated below.

Sincerely,

BAKER ENVIRONMENTAL, INC.



Mark E. Kimes, P.E.
Activity Manager

MEK/lp
Attachments

cc: Ms. Jean Mann, NAVFAC Atlantic – Code AQ119 (letter only)
Mr. David Criswell, BRAC PMO SE (1 copy)
Mr. Jeffrey G. Meyers, Navy BRAC PMO SE (1 copy)
Mr. Mark Davidson, Navy BRAC PMO SE (1 copy)
Mr. Pedro Ruiz, NAPR (1 copy)
Mr. Tim Gordon, US EPA Region II (1 copy)
Mr. Matt Larry, TechLaw Inc. (1 copy)
Mr. Carl Soderberg, US EPA Caribbean Office (1 copy)
Mr. Manny Vargas, PR EQB (1 copy)
Ms. Willmarie Rivera, PR EQB (1 copy)
Mr. Felix Lopez, U.S. F&WS (1 copy)
Mr. John Swenfurth, CH2M Hill Tampa (1 copy)

NAVY RESPONSES TO EPA COMMENTS DATED JULY 27, 2007

**EPA COMMENTS ON THE NAVAL ACTIVITY PUERTO RICO
DRAFT RCRA FACILITY INVESTIGATION REPORT
FOR SWMU 16-FORMER WASTE EXPLOSIVES STORAGE BUILDING
DATED MARCH 26, 2007**

**DRAFT RCRA FACILITY INVESTIGATION REPORT
FOR SWMU 42-WATER PURIFICATION LAGOONS
DATED MARCH 23, 2007**

**DRAFT RCRA FACILITY INVESTIGATION REPORT
FOR AOC A-FORMER TORPEDO SHOP
DATED APRIL 25, 2007**

**CLOSURE CERTIFICATION FOR BUILDING 2009, AND FORMER BUILDINGS 2009 A-
D, AND PROPOSED LAND USE CONTROLS, BUILDING 2009 AREA
DATED JUNE 11, 2007**

Draft Phase I RFI Report for SWMU 16 (former Waste Explosive Storage Building)

While EPA generally concurs with the conclusions and recommendation given in Section 6.0 of the Report, EPA requests that several items be clarified and/or modified prior to our approving the Draft Phase I RFI report. Specifically, EPA requests that the Navy submit, within 45 days of your receipt of this letter:

1) written responses and/or revised portions of the Draft Phase I RFI Report, to address all comments given in the enclosed Technical Review prepared by our consultant, TechLaw, Inc.; and

Navy Response to EPA Comment #1: Upon EPA's approval of these responses, the next version of the RFI report will be issued by the Navy.

2) the recommendation given in Section 6.2 of the Report should be revised to propose either a corrective action complete determination (with or without controls), pursuant to the January 2007 RCRA Consent Order, and describe the basis for that recommendation or a recommendation for further investigation or other actions.

Navy Response to EPA Comment #2: Section 6.2 will be revised to recommend a determination of Corrective Action Completion without Controls for this site.

Draft RFI Report for SWMU 42 (Water Purification Plant Lagoons)

EPA does not fully concur with the recommendation given in Section 6.2 of the SWMU 42 RFI Report that "...no further action is warranted in order to assess environmental impact and/or remediate this site." Specifically acrolein was detected above both its residential and industrial Region IX preliminary remediation goal (PRG) concentrations for soils in all 5 of the sediment samples collected within the two water purification plant lagoons. Although section 6.1 of the RFI Report states that "This compound [acrolein] is likely associated with aquatic herbicides applied to the lagoon area to prevent weed growth", the fact that it may have resulted from past herbicide usage, would not exempt the Navy from addressing any resulting contamination.

Navy Response to EPA General Comment (regarding acrolein): Acrolein was detected in a single sediment sample collected from the two water purification plant lagoons (220J ug/kg in 42SD01). Acrolein results for sediment samples 42SD01D, 42SD02, 42SD03, 42SD03D, and 42SD04 were originally reported as non-detect, "U" by the analytical laboratory. However, these non-detected results were qualified as rejected, "R" by the data validator due to issues associated with initial calibrations (unacceptable %RSDs and mean RRF values).

If acrolein was a constituent of the herbicide, and that herbicide was used for its intended purpose, i.e., to control vegetative growth in the sludge lagoons, then it would not constitute a hazardous chemical release, and therefore excluded from regulation under RCRA. Consequently, it would be considered a component of anthropogenic background. Department of Navy policy does not allow cleanup below background levels (See *Navy Interim Final Policy on the Use of Background Chemical Levels*. Memo from Chief of Naval Operations (N45) (Rear Admiral L.C. Baucom, Director, Environmental Protection, Safety, and Occupational Health Division), to: Commander, Naval Facilities Engineering Command. 5090, Ser. N453E/OU595690. September 18, 2000.). Also, according to Navy guidance, synthetic or natural substances that have been released to the environment as a result of human activities (anthropogenic activities), but are not related to specific activities conducted at the site, including the use of pesticides (and by context, herbicides) may also be considered ubiquitous background constituents. (See [Guidance for Environmental Background Analysis, Volume I: Soil](#). NFESC User's Guide UG-209-ENV. April 2002.) However, the Navy has evaluated potential human health risks for information purposes as discussed below.

In order to evaluate potential human health risks from acrolein in lagoon sediment, preliminary risk calculations were performed under future industrial worker and future trespasser exposure scenarios. The lagoon sediment was conservatively screened against USEPA Region IX residential and industrial soil PRGs for the following reasons: 1) the lack of human health-based sediment screening criteria, and 2) the possibility of the Plant being taken out of service and the lagoon sediment drying out. However, current information indicates the Water Purification Plant will continue to provide water after property transfer to the Puerto Rico Aquaduct and Sewer Authority (PRASA) and therefore, the two water purification plant lagoons will remain in operation. Continued operation of the plant is also expected to include continued periodic removal of the sediment with off-site landfilling, which is currently on a 5-year cycle. As such, the preliminary risk evaluation was based on potential exposure to sediment. Furthermore, given the need for continued operation of the Water Purification Plant after property transfer, a future residential exposure scenario is not applicable and therefore it was not evaluated. Currently, there is no potential for exposure to trespassers because of the presence of a fence preventing access to the lagoons. The results of the preliminary risk evaluation are presented below.

In addition, copper was detected in all 5 of the sediment samples analyzed for inorganic constituents above its residential PRG for soils (but below the industrial PRG) and above the site-wide background "Upper Limit of Means" (ULM) for copper in soils of 168 mg/kg established in the October 2006 base wide Background Report. Also, in all 5 sediment samples vanadium exceeded its residential PRG for soils and its industrial PRG for soils in one sample; however, the vanadium in those sediment samples did not exceed the ULM for soils established in the Background Report.

Navy Response to EPA General Comment (regarding copper): As with acrolein in lagoon sediment, preliminary risk calculations were performed under future industrial worker and future trespasser exposure scenarios in order to evaluate potential human health risks from exposure to copper and vanadium in lagoon sediment. It should be noted that although vanadium did not exceed its ULM for soils established in the October 2006 Background Report, it was included in the preliminary risk evaluation due to the absence of a freshwater sediment background data set. The results of the preliminary risk evaluation are presented below.

In all four surface soil and all 6 subsurface soil samples, arsenic was measured at concentrations above the residential PRG concentration, but below the industrial PRG, and below the ULMs of 2.65 mg/kg and 1.59 mg/kg for surface and subsurface soils, respectively, established under the October 2006 Background Report. Vanadium was detected in all 4 surface soils and all 6 subsurface soil samples at concentrations above both the residential and industrial PRG concentrations, but below the ULM of 287 mg/kg and 434 mg/kg, respectively as established under the base wide background concentration established in the October 2006 Background Report. However, as indicated in my letter of May 29, 2007, EPA has concerns about the ULMs established for vanadium under the October 2006 Background Report may not be truly reflective of natural site-wide conditions at the NAPR facility.

Navy Response to EPA General Comment (regarding arsenic and vanadium in soil): The EPA has previously expressed concern regarding the basewide surface soil and subsurface soil background criteria established for arsenic and vanadium within the Revised Final Summary Report for Environmental Background Concentrations of Inorganic Compounds (Baker, 2006) in a comment letter addressing the Draft RFI Report for SWMU 68 and the Final RI Report for SWMU 14 dated May 29, 2007. The Navy responded to these concerns in a letter dated July 20, 2007, which included probability plots of the basewide background surface and subsurface arsenic and vanadium soil data sets (see Figures 1 through 4 of this response to comments). As discussed in the Navy's July 20, 2007 letter, a probability plot is a graph of concentration values plotted against their cumulative probabilities. Probability plots can be used to estimate background concentration ranges by identifying outliers and differentiating between separate populations within the data sets (i.e., a population that represents background conditions and a population that represents contamination). A continuous straight-line plot with no large gaps indicates that the data represent a naturally occurring population. An inflection point or discontinuity in a probability plot may indicate the threshold separating two populations in the data set. If concentrations in the upper range depart from the line or trend shown on the probability plot (i.e., a distinct increase in slope), the upper range of the concentration distribution is likely to represent a separate population (i.e., contamination). As evidenced by Figures 1 through 4, the upper range of arsenic and vanadium concentration values within the surface soil and subsurface soil data sets do not deviate in an upward direction from the trends shown on the probability plots, supporting the conclusion that the NAPR background surface and subsurface soil data sets for these two metals are representative of background conditions.

The response to comments letter dated July 20, 2007 also included a comparison of the basewide vanadium background surface soil analytical data to USGS vanadium data for Puerto Rico. For this response to comments, this table was revised to include SWMU 42 and USGS arsenic data (see Table 1 attached to this response to comments). The USGS arsenic and vanadium data summarized in Table 1 were previously presented and discussed in the document entitled Final Corrective Measures Study Investigation Report for SWMU 9 (Baker, 2003). As evidenced by Table 1, the range of arsenic and vanadium concentrations within the NAPR background data set falls within the range of concentrations within the USGS data set. This comparison indicates that the NAPR background surface soil data for arsenic and vanadium are representative of background conditions for Puerto Rico.

In summary, based on the surface and subsurface soil probability plots included as Figures 1 through 4 and the comparison of the NAPR background surface soil data set to the USGS surface soil data set presented in Table 1, the Navy does not believe that background arsenic and vanadium surface and subsurface soil levels established within the revised final background report require revisions.

References:

[Baker Environmental In. \(Baker\). 2006. Final Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, Puerto Rico. September 15, 2006.](#)

[Baker. 2003. Final Corrective Measures Study Investigation Report for SWMU 9, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 25, 2003.](#)

In the groundwater, lead was measured above its' maximum contaminant level (MCL) of 0.015 ug/L in two of the four groundwater samples collected at SWMU 42; however, it did not exceed the UCL of 26.25 ug/L established for lead in groundwater under the October 2006 Background Report

Navy Response to EPA General Comment (regarding lead in groundwater): The MCL for lead was incorrectly stated in Table 5-4 of the Draft Phase I RFI Report. The correct value for the lead MCL is 15 ug/L. When the correct MCL is applied to the analytical data, none of the lead concentrations detected in SWMU 42 groundwater exceed the MCL. Table 5-4 of the Draft Phase I RFI and associated text will be revised to reflect the correct MCL value.

The Draft RFI Report does not contain definitive recommendations with regards to potential future risks posed by these inorganic constituent detections or the acrolein detections. Therefore, EPA requests that the Navy submit, within 45 days of your receipt of this letter, the following:

1) written responses, and/or revised portions of the SWMU 42 RFI Report, to address the above comments and all comments given in the enclosed Technical Review, prepared for EPA by our consultant, TechLaw, Inc.;

Navy Response to EPA General Comment (regarding written responses and revised RFI report): See responses to comments provided herein. A revised report will be prepared after resolution and EPA's approval of these responses.

2) a proposal for further evaluating human health risks resulting from possible future exposure to the water purification plant lagoon sediments containing acrolein, and/or copper and/or vanadium in concentrations exceeding Region IX PRG residential levels, and possible future exposure to surface and/or subsurface soils containing arsenic and/or vanadium; and

Navy Response EPA General Comment (regarding a proposal for human health risks for potential exposure to lagoon sediment): Preliminary risk calculations were conducted under future industrial worker and future trespasser exposure scenarios to evaluate human health risks resulting from potential exposure to the water purification plant lagoon sediments containing acrolein, copper, and vanadium in concentrations exceeding Region IX PRG residential levels. As noted on Table 5-3 of the Draft RFI Report, arsenic also was detected at a concentration exceeding its Region IX residential soil PRG (3.1J mg/kg in 42SD01). Therefore, arsenic was included in the risk calculations in order to conservatively evaluate all constituents that exceeded PRGs. The preliminary risk evaluation was based on potential exposure to sediment since available information indicates the Water Purification Plant will continue to provide water after property transfer and therefore, the two water purification plant lagoons will remain in operation. Given the small data set for sediment (4 environmental samples, 2 duplicates) and the small size of the area in which the lagoons are located, the maximum detected concentrations of acrolein, arsenic, copper, and vanadium were used as exposure point concentrations. Exposure parameters used in the preliminary risk calculations are presented in Table 2. The results of the preliminary risk calculations are presented in Table 3 (future industrial worker), Table 4 (future adolescent trespasser), and Table 5 (future adult trespasser). As

evidenced by Tables 3 through 5, there are no unacceptable carcinogenic or noncarcinogenic risks calculated from potential exposure to acrolein, arsenic, copper, and vanadium in lagoon sediment at SWMU 42. The Draft RFI Report will be revised to incorporate this preliminary risk evaluation.

3) if an unacceptable human risks are indicated due to possible future exposure to the water purification plant lagoon soils and/or sediments, a proposal for institutional and/or engineering controls and/or remedial measures to address those indicated risks, if any; or,

Navy Response EPA General Comment (regarding unacceptable human health risks from potential exposure to lagoon sediment): As indicated by the preliminary risk calculations presented in Tables 3 through 5, there are no unacceptable carcinogenic or noncarcinogenic risks calculated from potential exposure to acrolein, arsenic, copper, and vanadium in lagoon sediments.

4) if no unacceptable risks are indicated, a recommendation for a Corrective Action Complete (with or without controls) determination, and a discussion of the justification for such a determination.

Navy Response EPA General Comment (regarding a recommendation for Corrective Action Complete): As noted in response to the comment on evaluating whether unacceptable human health risks exist, a proposal for institutional and/or engineering controls and/or remedial measures is not necessary as long as the plant remains in operation. Consequently, the Draft Phase I RFI will be revised to include a recommendation for a Corrective Action Complete without Controls, with the requirement that the sediments from the lagoons be removed and disposed of properly if the plant ceases operation.

EPA also notes that the vanadium concentrations measured in the three of the four groundwater samples collected at SWMU 42, are only a fraction (between 1/100 to 1/8) of the "Upper Limit of Means" of 484.66 up/L for that constituent, as established under the base wide background concentration established in the October 2006 Background Report. This suggests to EPA that the natural occurring vanadium background levels in groundwater may not be correctly established by the October 2006 Background Report, and that as requested in my letter dated May 29, 2007, the vanadium background levels established by the October 2006 Background Report may need to be revised.

Navy Response to EPA General Comment (regarding background levels of vanadium in groundwater): The EPA has previously expressed concern regarding the basewide groundwater background criteria established for vanadium within the Revised Final Summary Report for Environmental Background Concentrations of Inorganic Compounds (Baker, 2006) in a comment letter addressing the Draft RFI Report for SWMU 68 and the Final RI Report for SWMU 14 dated May 29, 2007. The Navy responded to these concerns in a letter dated July 20, 2007, which included a probability plot of the basewide background groundwater data set (see Figure 5 attached to this response to comments). As evidenced by Figure 5, the upper range of concentration values within the background groundwater data set does not deviate in an upward direction from the trend shown on the probability plot, supporting the conclusion that the NAPR background groundwater data set is representative of background conditions. Therefore, the Navy does not believe that background vanadium groundwater levels established within the revised final background report require revisions.

References:

Baker Environmental In. (Baker). 2006. Final Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, Puerto Rico. September 15, 2006.

Draft RFI Report for Area of Concern (AOC) A (former Torpedo Shop)

While EPA generally concurs with the conclusions and recommendation given in Section 6.0 of the Report, EPA requests that several items be clarified and/or modified, prior to our approving the Draft Phase I RFI report. Specifically, Section 6.1 (Conclusions) states that "...there has been no impact on the outside environment due to Navy activities at A.C. A." EPA notes that this statement is only applicable to soils, since no investigations were conducted on possible impacts to the groundwater.

Navy Response to EPA General Comment (regarding Conclusions/Recommendations): The statement will be clarified to note that no impact has occurred to surface soil or subsurface soil within the area investigated at the site.

Furthermore, Section 6.2 of the Report (Recommendations) states "There is some contamination present on the surfaces of the Torpedo Shop..." and goes on to state "Since the Torpedo Shop is not currently being used, no action is warranted at this time." EPA does not fully concur. Since, the future usage of the torpedo shop site will likely change, EPA requests that the Navy submit, within 45 days of your receipt of this letter, a proposal to address any indicated potential risks either through remedial actions or access and/or usage restrictions. Please note that this is also required under Paragraph 25. F (Land Use, Institutional, and Engineering Controls) of the January 2007 RCRA Consent Order which states that "...for all SWMUs and/or AOCs where no Corrective Action Complete Determination has been made, Respondent shall ensure that acceptable Land Use Controls are established and maintained until either a Corrective Action Complete Determination Without Controls has been approved or a clean-up action based on unrestricted site usage has been completed...."

In addition, within 45 days of your receipt of this letter, please also submit written responses, and/or revised portions of the Report, to address the above comments and those given in the enclosed Technical Review, prepared for EPA by our consultant, TechLaw, Inc.

Navy Response to EPA General Comment (regarding Recommendations): It is expected that the deed for the property will specify that the building must continue to be used for industrial purposes to prevent potential unacceptable human health exposure from other uses. A recommendation will be added for Corrective Action Complete with Controls for the building in order to ensure transfer of the ownership of the building to prohibit uses that may pose an unacceptable risk to human receptors. A recommendation will also be added to this section for Corrective Action Complete without Controls to address the soil outside the building.

Closure Certification, Building 2009, and former Buildings 2009 A-D, and Proposed Land Use Controls, Building 2009 Area

EPA has reviewed the Land Use Control (LUC) proposal for the area of TRPH impacted soils adjacent to the Building 2009 ramp area, as described in the Mr. Darrel J. Molzan's (Base Closure Manager, Navy BRAC PMO SE) letter of May 30, 2007. With submission of this LUC proposal, EPA has determined that the March 15, 2007 Closure Certification for Building 2009 and former Buildings 2009 A-D, signed by James E. Anderson (Director, Navy BRAC PMO SE) is now acceptable and complete.

As described in Mr. Molzan's letter, upon conveyance of the parcel (containing the area of TRPH impacted soils adjacent to the Building 2009 ramp) to non-Navy entity, the Navy will impose the LUC provisions on the acquirer of, that parcel via restrictions placed on the deed. In the future, failure to comply with the LUC requirements to maintain the integrity of the existing concrete cover, or the removal of that concrete cover, could result in EPA requiring the Navy and/or a non-Navy acquirer of

that parcel, to implement corrective measures to address the TRPH contaminated soils adjacent to the Building 2009 ramp area.

Navy Response to EPA General Comment: Comment noted.

TECHLAW, Inc.
TECHNICAL REVIEW OF THE NAVAL ACTIVITY PUERTO RICO
PHASE I RCRA FACILITY INVESTIGATION REPORT FOR SWMU 16
DATED MARCH 26, 2007
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID No. PR2170027203

GENERAL COMMENTS

1. Various sections in the RFI Report mistakenly indicate that temporary monitoring well TW06 was installed and potentially screened in a 37-foot-deep soil boring. As indicated in RFI Report Section 3.3.4 and the Test Boring Records in Appendix A.3, soil boring 16SB02, which was located south of Building 1666, was logged to auger refusal, or 37 feet below ground surface (bgs). Temporary monitoring well TW06, the sole monitoring well associated with SWMU 16, was installed at 16SB06, which was located north of Building 1666. The Test Boring and Well Construction Record for 16SB06/TW06 indicate that 16SB06 was logged to 18 feet bgs, backfilled to 10 feet bgs, converted into temporary monitoring well TW06, and sampled later for explosives. Revise the applicable sections of the RFI Report to clearly disassociate TW06 from 16SB02.

Navy Response to TechLaw General Comment #1: References to 16TW06 being “installed and potentially screened in a 37-foot deep soil boring” will be corrected. 16SB02 was advanced to 37-feet without encountering groundwater. 16TW06 was installed (to 10-feet bgs) in the only location where groundwater was observed. Sections 4.0, 4.2.2, and 4.2.3 will be revised to reflect this correction.

2. The generation of investigation derived wastes (IDW) was not discussed in the RFI Report. According to the second paragraph in Section 3.8.2 of the approved Work Plan, two IDW samples were to be collected and analyzed during the investigation. Furthermore, the soil and water IDW were to be removed from the site and disposed of upon review of the IDW sample analytical data. Per the approved Work Plan, revise the RFI to include a description of IDW associated with the sampling efforts and provide waste manifests for the disposal of the generated IDW. If IDW was not collected and analyzed, provide the rationale behind deviating from the approved Work Plan.

Navy Response to TechLaw General Comment #2: IDW was not collected. Because there was no evidence of contamination (e.g., PID readings, visual/olfactory indications) the cuttings were returned to each boring, in accordance with Section 3.8.2 of the work plan. The RFI report will be revised to include a description of the lack of IDW associated with the sampling efforts.

3. The RFI does not discuss whether decontamination activities took place. According to Section 3.8.3 of the approved Work Plan the drill rig, including all applicable soil sampling equipment, will be decontaminated between each sampling location. If this work took place, revise the text to include a section on decontamination activities. If not, provide a rationale for deviating from the approved Work Plan.

Navy Response to TechLaw General Comment #3: Sampling equipment was decontaminated between each sample location following the procedures presented in the 1995 RFI work plan. A section describing the decontamination procedures will be included.

SPECIFIC COMMENTS

1. **Section 4.2.1 Surface and Subsurface Soils:** The depth of the surface soils appears to deviate from the approved Work Plan. Table 3-1 in the approved Work Plan indicates that surface soil samples will be collected between 0.0 and 0.5 foot bgs. Section 4.2.1 of the RFI Report documents that surface soil samples 16SB01-00 through 16SB06-00 were collected between 0.0 and 1.0 foot bgs. Revise the text to explain this apparent deviation from the approved Work Plan.

Navy Response to TechLaw Specific Comment #1: Surface soils were collected to 1-foot bgs at SWMU 16. The work plan was in error for collecting the samples from 0 – 0.5 ft bgs. The preferred sample depth is 0 – 1.0 ft bgs for evaluation of potential of ecological risks as this depth interval is the most biologically active zone. Text will be added to this section to explain this deviation.

2. **Section 4.2.3 Water Levels:** The RFI Report does not clearly document how the groundwater was sampled at TW06. According to Section 3.3 of the approved Work Plan, groundwater was to be sampled by using the low flow sampling technique, as described in Appendix A. RFI Report Section 4.2.3 is not clear in its attempt to document flow rates, recharge rates, well volume, and overall groundwater sampling methodology. Revise the text in this section to document the development and sampling of this well, and to describe how this overall sampling effort was consistent with the low flow sampling technique described in the Work Plan.

Navy Response to TechLaw Specific Comment #2: Section 4.4.2 will be revised to describe groundwater sampling methodology. It should be noted that temporary wells do not necessarily require purging prior to sampling (see USEPA Region IV SOP-QAM, 2001). The USEPA Region II low-flow procedures were proposed in the work plan to provide a technically sound and consistent method for sampling. Groundwater yields were quite low and did not allow for low-flow procedures to be followed. Some recovery was evident a day later, at which time a sample was collected.

3. **Section 4.3.5 Equipment Rinsates:** It is not clear if equipment rinsate samples were collected from analyte-free water. According to Section 3.7.2 of the approved Work Plan, equipment rinsate samples are to be collected from an analyte-free water rinse of the decontaminated sampling equipment. Revise the text to clarify the type of water used for the equipment rinsate samples.

Navy Response to TechLaw Specific Comment #3: The laboratory supplied the Baker field team with analyte-free water, which was used to collect the blank samples. The text will be revised accordingly.

4. **Table 5-1:** The source for the Selected Ecological Surface Soil Screening Value was not included in Table 5-1. Indicate in the footnote section of this table which source was used for the screening value.

Navy Response to TechLaw Specific Comment #4: Table 5-1 will be revised to include a footnote identifying the source of the 1,3,5-trinitrobenzene ecological soil screening value. It is noted that the text in Section 5.1.2 does not include a complete description of sources of ecological soil screening values. This section will be revised to include a complete description of the various sources of ecological soil screening values. The revised text is shown in italics below.

USEPA ecological soil screening levels (Eco-SSLs) for terrestrial plants and invertebrates (available at <http://www.epa.gov/ecotox/ecossl/>) were preferentially used as soil screening values. For a given metal, if an Eco-SSL has been established for both terrestrial plants and invertebrates, the lowest value was selected as the soil screening value. For those chemicals lacking an Eco-SSL, the literature-based toxicological benchmarks listed below were used as soil screening values.

- Toxicological thresholds for earthworms and microorganisms (Efroymson et al., 1997a)*
- Toxicological thresholds for plants (Efroymson et al., 1997b)*

When more than one screening value was available from Efroymson et al. (1997a and 1997b), the lowest value was selected as the surface soil screening value. For those chemicals lacking an Eco-SSL or a toxicological threshold from Efroymson et al. (1997a and 1997b), the following literature-based values, listed in their order of decreasing preference, were used as soil screening values:

- Toxicity reference values for plants and invertebrates listed in USEPA, 1999.*
- Soil standards developed by the Ministry of Housing, Spatial Planning and Environment (MHSPE, 2000), assuming a minimum default soil organic carbon content of 2.0 percent.*
- Canadian soil quality guidelines (agricultural land use) developed by the Canadian Council of Ministers of the Environment (CCME, 2006).*

CCME soil quality guidelines were given the lowest preference since they are background-based values that do not represent effect concentrations.

TECHLAW, Inc.
TECHNICAL REVIEW OF THE NAVAL ACTIVITY PUERTO RICO
PHASE I RCRA FACILITY INVESTIGATION REPORT FOR SWMU 42
DATED MARCH 23, 2007
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID No. PR2170027203

GENERAL COMMENTS

1. The RFI report and field notes are lacking some information related to sampling activities at SWMU 42. For example, the field notes attached to the report do not contain or confirm the following information: (1) the collection of sediment samples, (2) the decontamination of field equipment, (3) the collection of equipment rinsates, (4) the collection and testing of investigation derived waste, (4) type of field equipment used to collect surface soil and sediment samples, and (5) the criteria used to select the depths of surface and subsurface samples. Apparent deviations from the EPA-approved work plan, such as the method for collecting surface soil samples and the change in location of the sediment samples, were not documented in the text of the report or field notes. Revise the report to address the above-mentioned information.

Navy Response to TechLaw General Comment #1: The above-mentioned list of items will be addressed in the text of the report, as noted in the responses to the specific comments that follow herein.

2. The report does not include an explanation of how the groundwater samples were collected by using the low flow technique. In Section 3.3 of the approved work plan, it states that groundwater will be sampled by using a low flow technique. However, during the groundwater sampling event, the field notes indicated that the groundwater did not recharge quickly enough to (1) keep the wells from going dry during sampling, or (2) collect field parameters to verify stabilization before sampling. Revise the report to clarify how the groundwater samples were collected by using the low flow technique.

Navy Response to TechLaw General Comment #2: Section 4.2.3 will be revised to describe the groundwater sampling methodology. It should be noted that temporary wells do not necessarily require purging prior to sampling (e.g., USEPA Region IV SOP-QAM, 2001). The USEPA Region II low-flow procedures were proposed to provide a technically sound and consistent method for sampling. Groundwater yields were quite low and did not allow for low-flow procedures to be followed.

3. The generation of investigation derived wastes (IDW) was not discussed in the RFI report. According to the second paragraph in Section 3.8.2 of the approved Work Plan, two IDW samples were to be collected and analyzed during the investigation. Furthermore, the soil and water IDW were to be removed from the site and disposed of upon review of the IDW sample analytical data. Per the approved Work Plan, revise the RFI to include a description of IDW associated with the sampling efforts and provide waste manifests for the disposal of the generated IDW. If IDW was not collected and analyzed, provide text to support the rationale behind deviating from the approved Work Plan.

Navy Response to TechLaw General Comment #3: IDW was not collected. Because there was no evidence of contamination (e.g., PID readings, visual/olfactory indications) the

cuttings were returned to each boring, in accordance with Section 3.8.2 of the work plan. The RFI report will be revised to include a description of the lack of IDW associated with the sampling efforts.

4. The RFI does not discuss whether decontamination activities took place. According to Section 3.8.3 of the approved Work Plan, the drill rig, including all applicable soil sampling equipment, was to be decontaminated between each sampling location. If this work took place, revise the text to include a section on decontamination activities. If not, provide a rationale for deviating from the approved Work Plan.

Navy Response to TechLaw General Comment #4: Sampling equipment was decontaminated between each sample location following the procedures presented in the 1995 RFI work plan. A section describing the decontamination procedures will be included.

5. The "notes" section of Tables 5-1 through 5-4 does not contain an explanation for the use of highlights, bold, italics, and underlining. Clarify the meaning of the different use of the fonts in the "notes" section of each table.

Navy Response to TechLaw General Comment #5: Explanatory notes will be provided in each table for each of the requested fonts/styles.

SPECIFIC COMMENTS

1. **Section 4.1 Soil Boring Advancement and Temporary Well Installation:** It is stated in the first paragraph that "one boring is located north of the lagoons, one to the south of the lagoons and one to the west of the lagoon." According to the legend in Figure 4-1 the sampling locations are proposed sampling locations that vary slightly from the proposed locations shown in Figure 3-5 of the approved Work Plan. Revise Figure 4-1 to show the actual sampling locations, and clarify, if necessary, the difference between sampling locations on Figure 3-5 of the approved Work Plan and Figure 4-1 in the RFI Report.

Navy Response to TechLaw Specific Comment #1: The soil borings were actually located as specified in the Work Plan. The boring locations were inadvertently labeled as "proposed" on Figure 4-1. Therefore the word "proposed" will be deleted.

2. **Section 4.1 Soil Boring Advancement and Temporary Well Installation:** According to the Field Log Book, temporary monitoring well 42SB03 was set on November 13, 2006 and surface soil samples were collected before the Geoprobe rig arrived for the day on November 14, 2006. It appears that surface soil samples were collected by hand, without a drill rig. The first paragraph of Section 4.1 indicates that surface and subsurface samples were collected with a Geoprobe rig. Furthermore, according to the third full paragraph on page 3-3 of the approved Work Plan, all soil borings will be advanced using a Geoprobe rig. Revise the text to indicate how surface soil samples were collected and, if applicable, provide the rationale behind deviating from the approved Work Plan for the sample collection.

Navy Response to TechLaw Specific Comment #2: All surface soils were collected by hand at SWMU 42. This was done to maintain the field schedule. Text in Section 4.1 will be revised to reflect this change.

3. **Section 4.1 Soil Boring Advancement and Temporary Well Installation:** The second paragraph in this section states that groundwater monitoring wells were installed with 10-foot long PVC screens. According to the second paragraph in Section 3.2 of the approved Work

Plan, monitoring wells will consist of five-foot PVC screens. Provide the rationale behind deviating from the approved Work Plan.

Navy Response to TechLaw Specific Comment #3: Evidence of water bearing zones in first temporary well at the site (TW03) was not strong. Water was evident in some fractures, but it wasn't clear how many and which fractures would provide the best yield. To ensure that the upper-most water-bearing zone was captured at all wells, a longer screen length (10 feet) was chosen for TW01 and TW02 for consistency. Text will be included in Section 4.1 to address this deviation.

4. **Section 4.2.1 Surface and Subsurface Soils:** The depth of the surface soils is inconsistently presented throughout the RFI Report. Table 5-1 indicates that surface soil samples were collected between 0.0 and 1.0 feet below ground surface (bgs). However, Table 3-2 in the approved Work Plan and the first paragraph in Section 4.2.1 indicates that surface soil samples will be and were collected between 0.0 and 0.5 feet bgs. Revise the text in Section 4.2.1 or revise Table 5-1 to indicate the correct unit of depth for surface soil samples. If necessary, provide text to support the rationale behind deviating from the approved Work Plan. Furthermore, clarify the rationale employed in deciding at what depth the surface soil samples were collected.

Navy Response to TechLaw Specific Comment #4: Surface soil samples were collected to a depth of 1 foot bgs. The work plan was in error for collecting the samples from 0 – 0.5 ft bgs. The preferred sample depth of 0 – 1.0 ft bgs for evaluation of potential of ecological risks as this depth interval is the most biologically active zone. Text will be included to explain this deviation and the rationale.

5. **Section 4.2.2 Sediment:** Neither the Field Log Book nor the text indicate the depth of the sediment samples, a description of the material, the sampling equipment and containers used for collection, the procedures that were followed for the collection of samples for volatile organic compound (VOC) analysis, and QC procedures employed for the sediment samples. Revise the text to include the aforementioned information.

Navy Response to TechLaw Specific Comment #5: The information omitted from the report will be provided in the revised version.

6. **Section 4.2.3 Groundwater:** The RFI Report does not contain details regarding the installation and sampling of the three temporary groundwater monitoring wells. The text should include a discussion of why the wells were terminated where they were, the process for selecting the screened intervals, the recharge rate at each temporary monitoring well, whether there was enough water volume to obtain field parameters at each of the three wells, description of the water samples, and the rationale behind collecting all QC samples from monitoring well 42TW01. Revise the text to address each of these concerns.

Navy Response to TechLaw Specific Comment #6: The text will be revised to address each of the stated concerns. The borings advanced to observe and sample soil to the top of the upper-most water bearing zone. The borings were then advanced deeper to allow installation of temporary wells. See response to comment #3 for rationale. Section 4.1 will be revised to include this explanation.

Section 4.2.3 will be revised to include a discussion on groundwater sampling procedures. It should be noted that temporary wells do not necessarily require purging prior to sampling (e.g., USEPA Region IV SOP-QAM, 2001). The USEPA Region II low flow procedures

were proposed to provide a technically sound and consistent method for sampling. Groundwater yields were quite low and did not allow for low flow procedures to be followed. The well was purged dry, even with a flow rate of less than 100-mL. It became necessary to begin sample collection without complete purging or measuring water quality parameters.

7. **Section 4.2.4 Water Levels:** The text in this section indicates that the slow recovery in well 42TW01 did not allow adequate time to stabilize. According to the Field Log Book, groundwater monitoring wells 42TW02 and 42TW03 were slow to recharge. There was no mention of a slow recharge rate at well 42TW01. Furthermore, the last paragraph in Section 3.3.4, indicates that wells 42TW02 and 42TW03 may reflect slow recharge due to the clay formations observed at these locations. Revise this section of the text to be consistent with Section 3.3.4 and the Field Log Book.

Navy Response to TechLaw Specific Comment #7: The text regarding the slow recharge at 42TW01 is incorrect (it should refer to 42TW03) and it will be deleted. The slow recovery rate at 42TW03 will be noted in Section 4.2.3 (Groundwater) which describes the sample collection.

8. **Section 4.3.5 Equipment Rinsates:** It is not clear if equipment rinsate samples were collected from analyte-free water. According to Section 3.7.2 of the approved Work Plan, equipment rinsate samples were to be collected from an analyte-free water rinse of the decontaminated sampling equipment. Revise the text to clarify the type of water used for the equipment rinsate samples.

Navy Response to TechLaw Specific Comment #8: The laboratory supplied the Baker field team with analyte-free water, which was used to collect the blank samples. The text will be revised accordingly.

9. **Tables:** Tables 5-1 through 5-4 include the relevant screening concentrations for comparison to the detected contaminant levels. However, the source(s) of these values were not provided. Indicate in the text and footnotes which sources were used for the screening values.

Navy Response to TechLaw Specific Comment #9: Tables 5-1 through 5-4 will be revised to include footnotes identifying sources of the various ecological screening values. Although not specifically requested by this comment, the ‘notes’ section of these tables also will be revised to clarify the meaning of the different fonts used for sample concentrations values (bold, italics, shading, and underlining).

TECHLAW, Inc.
TECHNICAL REVIEW OF THE NAVAL ACTIVITY PUERTO RICO
PHASE I RCRA FACILITY INVESTIGATION REPORT FOR AOC A
DATED APRIL 25, 2007
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID No. PR2170027203

GENERAL COMMENTS

1. No comparison of contaminant levels to applicable regulatory levels, or a discussion of potential risks to human health is included in the RFI Report for the wipe and concrete chip sample data. Since the recommendation for AOC A is no further action, a discussion of the contaminant levels relative to applicable regulatory levels and the potential risk to human health is warranted. Revise the RFI Report to include a comparison of the wipe sample and concrete chip sample data to applicable regulatory levels and an evaluation of the potential risks to human health.

Navy Response to TechLaw General Comment #1: The Navy requests the reference for the applicable regulatory levels and the potential risk to human health stated in the comment that could be applicable to concrete chip samples or wipe samples.

2. The generation of investigation derived wastes (IDW) was not discussed in the RFI report. According to the second paragraph in Section 3.8.2 of the approved Work Plan, two IDW samples were to be collected and analyzed during the investigation. Furthermore, the soil and water IDW were to be removed from the site and disposed of upon review of the IDW sample analytical data. Per the approved Work Plan, revise the RFI to include a description of IDW associated with the sampling efforts and provide waste manifests for the disposal of the generated IDW. If IDW was not collected and analyzed, provide text to support the rationale behind deviating from the approved Work Plan.

Navy Response to TechLaw General Comment #2: IDW was not collected. Because there was no evidence of contamination (e.g., PID readings, visual/olfactory indications) the cuttings were returned to each boring, in accordance with Section 3.8.2 of the work plan. The RFI report will be revised to include a description of IDW associated with the sampling efforts.

3. The RFI does not discuss whether decontamination activities took place. According to Section 3.8.3 of the approved Work Plan, the drill rig, including all applicable sampling equipment, will be decontaminated between each sampling location. If this work took place, revise the text to include a section on decontamination activities. If not, provide a rationale for deviating from the approved Work Plan.

Navy Response to TechLaw General Comment #3: Sampling equipment was decontaminated between each sample location. A section on decontamination will be prepared. Procedures presented in the 1995 RFI Work Plan were followed.

SPECIFIC COMMENTS

1. **Section 2.2 AOC A Description History:** Section 2.2 does not document the historical use of the Torpedo Shop. The report indicates only that the Torpedo Shop is a metal framed building with metal siding and concrete floors. Section 2.2 should be revised to summarize historical manufacturing activities and identify chemical compounds formerly managed at the Torpedo Shop.

Navy Response to TechLaw Specific Comment #1: The manufacturing activities and chemicals used at this shop are of a military-sensitive nature and therefore, not available for public disclosure. It is understood that the drones were refurbished in this structure which included refueling the target drones with otto fuel II and painting.

2. **Section 4.2.1 Subsurface Soils:** Section 4.2.1 does not explain the rationale for (1) collecting only one sample per boring, and (2) selecting the depth intervals of the subsurface samples. Per the approved Work Plan, two subsurface soil samples were to be collected from each boring. As indicated in the report, only one sample from each boring was collected. Also, although the Work Plan indicates that the actual sample depth will be determined in the field, the report should document the basis for selecting the depth intervals of the samples. Revise Section 4.2.1 to document the rationale for reducing the number of subsurface samples, and for selecting specific sampling intervals for laboratory analysis.

Navy Response to TechLaw Specific Comment #2: Section 4.2.1 will be revised to provide sampling rationale and quantity of subsurface soil samples collected from each boring. Groundwater was encountered within 3-feet bgs, which allowed for the collection of only one subsurface soil sample (approximately 1- to 3-feet bgs). The sample intervals were selected based on the observed depth to water.

3. **Section 4.2.2 Concrete Chip Samples:** Section 4.2.2 does not adequately summarize sampling activities related to the collection of concrete chip samples. This section indicates only that six samples were collected by using a clean hammer or chisel or other similar means. Section 4.2.2 does not specifically identify the actual sampling tools used to collect the concrete chip samples. Also, although the Work Plan indicates in Section 3.6 that the sampling locations are subject to change based on field observations, the report should document the rationale for selecting the actual locations, particularly why one sample was not collected in the Machinery Equipment Room. Field notes associated with the collection of the concrete chip samples were not included in the RFI Report. Revise Section 4.2.2 to document the actual sampling methodology used to collect the samples, and include the rationale for the field selection of sampling locations. Add the field notes associated with this effort to the RFI Report.

Navy Response to TechLaw Specific Comment #3: The requested information will be provided in the final report.

4. **Section 4.2.2 Concrete Chip Samples:** As indicated in Section 4.2.2, some fuel-related contamination appears to be present in the Torpedo Shop. The RFI Report presents the results of the concrete chip sampling event but does not evaluate whether the chip samples adequately characterize contamination within and below the concrete surface. No comparison to applicable standards has been included in the document, and there is no discussion of the significance of the fuel contamination present in the chip samples or the potential risks to human health, if any. The conclusions section merely states that the constituents detected may be associated with the epoxy coating present on the shop floor. Revise the report to compare

the results of chip samples to applicable regulatory levels and discuss the potential risks to human health, if any. In addition, because the first one-half inch of concrete is contaminated, the report should evaluate whether additional sampling of deeper concrete is warranted. This evaluation should include a discussion of whether samples should be collected in the Machinery Equipment Room.

Navy Response to TechLaw Specific Comment #4: Regarding comparison of the result to applicable regulatory levels, please see response to TechLaw General Comment 1. Upon receipt of the requested information referenced in the comment additional sampling of deeper concrete will be evaluated and discussed in the report.

5. **Section 4.2.3 Wipe Samples:** Section 4.2.3 does not adequately summarize sampling activities related to the collection of wipe samples. The text does not include a description of the material used for the wipe samples, the containers used to store the wipe samples, and the procedures that were followed for the collection of samples. Field notes associated with the wipe samples were not included in the RFI Report. Although the Work Plan indicates in Section 3.5 that the sampling locations are subject to change based on field observations, the RFI Report should document the rationale for selecting the actual locations, particularly why one sample was not collected in the Machinery Equipment Room. Revise Section 4.2.3 to document the actual sampling methodology used to collect the wipe samples, and include the rationale for the field selection of the sampling locations. Add the field notes associated with this effort to the RFI Report.

Navy Response to TechLaw Specific Comment #5: The information omitted from the report will be provided in the revised version.

6. **Section 4.3.2 Trip Blanks:** Section 4.3.2 does not appear to accurately associate the trip blanks to the samples. Section 4.3.2 indicates that AOCATB01 and AOCATB02 were shipped with the wipe and subsurface samples, respectively. According to the Chain of Custody (COC), AOCATB01 was shipped with the subsurface samples, and AOCTB02 was shipped with the concrete chip and wipe samples. Section 4.3.2 should be revised to correct this apparent discrepancy and clearly document which trip blank, if any, is associated with the concrete chip samples.

Navy Response to TechLaw Specific Comment #6: The text will be revised to indicate that AOCATB-01 is associated with the subsurface soil samples and AOCATB02 is associated with the wipe samples and concrete chip samples.

7. **Section 4.3.5 Equipment Rinsates:** The Equipment Rinsate (ER) samples associated with sampling activities at AOC A were not collected on the same day as their associated sample matrices. As documented in Section 4.3.5 and the COCs in Appendix A, the following table summarizes the ER samples associated with AOC A:

ER Sample ID	Sampling Tool	ER Collection Date	Sample Matrix	Sample Date
2006ER01	Spoon	11/13/06	Subsurface soil	11/16/06
2006ER02	Macro-Core Liner	11/14/06	Subsurface soil	11/16/06
2006ER05	Chisel	11/17/06	Concrete	11/18/06

As shown above, ER sample 2006ER01 was collected three days before the subsurface soil samples were collected at AOC A. Section 3.4.1 of EPA's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods Manual (SW-846) states that one equipment rinsate

sample should be collected per day for each matrix being sampled. An EPA Region 3 fact sheet on quality control blanks dated November 15, 2001 (available at: www.epa.gov/region3/esc/QA/Blanks_QC_Tools.pdf) further stipulates collection of one equipment rinsate sample per day per matrix or one for every 20 samples per matrix, whichever is more frequent. Revise Section 4.3.5 to include an explanation to justify the relevance of the ER samples reportedly associated with AOC A. Provide an explanation as to how they could be considered relevant (particularly the VOC results), even though they were collected up to three days before their associated matrix samples were collected. Also clarify whether the equipment rinsate samples were collected from an analyte-free water rinse, as stated in Section 3.7.2 of the approved RFI Work Plan.

Navy Response to TechLaw Specific Comment #7: The referenced fact sheet is available at www.epa.gov/region03/esc/QA/Blanks_QC_Tools.pdf (note the correction in “region3”). This fact sheet and other reference documents (such as the OWSER guidance document: [RCRA Ground-Water Monitoring: Draft Technical Guidance, November 1992](#)) state that equipment rinsate blanks are to be collected to verify that non-disposable equipment have been adequately decontaminated. In the case of disposable equipment, the guidance does not specify such a rinsate; however, as an added QA/QC measure, Baker typically includes a “batch” rinsate blank or one sample per type of disposable equipment used at NAPR, such as stainless steel spoons. Therefore, the actual date of this rinsate preceding the sample collection date should not be of concern.

8. **Section 5.5.2 STL Savannah SDG 22098-2:** Based on all available data, it is not clear whether the sampling results for chip samples AOCACC02, AOCACC06, and AOCACC05 should be qualified strictly based on the results of equipment rinsate (ER) sample 2006ER05. In the last bullet on Page 5-4 of the RFI Report, it states that equipment blank concentrations in sample 2006ER05 resulted in qualifying the detected concentrations of toluene in samples AOCACC02 and AOCACC06 as estimated values, while the detected concentration in sample AOCACC05 was rejected. As documented in the previous Specific Comment, ER sample 2006ER05 was not collected on the same day as the above-mentioned samples. If toluene detection was strictly associated with the chisel, the toluene may have volatilized before sampling activities began the following day. Because the rinsate water may have been the source of the toluene detection, the sampling data for the above-mentioned chip samples may not need to be qualified. Finally, because toluene was detected in all 17 wipe samples and most of the chip samples, it may not be reasonable to qualify the detected concentrations of toluene in samples AOCACC02, AOCACC06, and AOCACC05. Section 5.2.2 should be revised to evaluate all environmental data and conditions as part of the process for qualifying the sampling data.

Navy Response to TechLaw Specific Comment #8: The text in the last bullet on page 5-4 in Section 5.5.2 will be corrected to address an error to read the following: “Equipment blank contamination in sample 2006ER05 resulted in qualifying the detected concentrations of toluene in samples AOCACC02, AOCACC05, and AOCACC06 as not detected. It should be noted that the qualified result for AOCACC05 as not detected was additionally qualified as rejected as discussed in the first bullet of this discussion.” All of the data from this investigation went through a third party data validation and are presented in this document. It was noticed that the result for toluene in sample AOCACC05 is incorrectly reported in Table 5-2 as 1.3 J when it should actually read 5.2 R due to the findings of the data validator. Any additional modifications to the document resulting from this error will be corrected in the final version of the report.

9. **Tables:** Table 5-1 includes the relevant screening concentrations for comparison to the detected contaminant levels. However, it is unclear of the source in which these values were found. Indicate in the text and footnotes which sources were used for the screening values. Furthermore, the "notes" section of this table does not contain an explanation for the use of highlights, bold, italics, and underlining. Clarify the meaning of the different use of the fonts in the "notes" section of each table.

Navy Response to TechLaw Specific Comment #9: Table 5-1 will be revised to include footnotes identifying sources of the various ecological screening values.

The "notes" section of this table also will be revised to clarify the meaning of the different fonts (bold, italics, shading, and underlining) used for sample concentration values. Using Table 5-1 as an example, a bolded value indicates that the concentration exceeds the USEPA Region IX Residential Soil PRG, an italicized value indicates that the concentration exceeds the USEPA Region IX Industrial Soil PRG, a shaded value indicates that the concentration exceeds the ecological soil screening value, and an underlined value indicates that the concentration exceeds the NAPR Basewide Background screening value (mean plus two standard deviations).

10. **Tables:** The "notes" section of Table 5-2 does not contain an explanation for the use of the letter "R." Clarify the meaning of this letter in the "notes" section of the table. Also, as indicated in the above Specific Comments, equipment blank concentrations in sample 2006ER05 resulted in qualifying the detected concentrations of toluene in samples AOCACC02 and AOCACC06 as estimated values, while the detected concentration in sample AOCACC05 was rejected. Table 5-2 indicates that toluene was undetected in samples AOCACC02 and AOCACC06. Revise Table 5-2 to resolve this apparent discrepancy.

Navy Response to TechLaw Specific Comment #10: A footnote will be added to note that "R" refers to "Rejected" value based on data validation. Please see response to Comment #8 regarding the qualifier on toluene results.

11. **Tables:** In Table 5-4, the date associated with ER sample 2006ER02 is November 15, 2006. According to the COC, the sampling date for sample 2006ER02 is November 14, 2006. Table 5-4 should be revised to resolve this apparent discrepancy.

Navy Response to TechLaw Specific Comment #11: The date associated with ER Sample 2006ER02 has been revised from November 15, 2006 to November 14, 2006 to be consistent with the Chain of Custody documentation.

12. **Figures:** Revise the "notes" section in Figure 4-2 to read "were determined in the field" not "will be determined in the field".

Navy Response to TechLaw Specific Comment #12: The notes section in Figure 4-2 has been revised from "will be determined in the field" to read "were determined in the field" as requested.

13. **Logbook:** It is not clear why equipment rinsate sample ER01 was not included on the COC. According to Page 38 of the Logbook, equipment rinsate sample ER01, collected from the stainless steel spoon, was collected on November 16, 2006 at 0645. The COC located in Appendix A.2 does not indicate that this sample was submitted to STL. Revise the RFI Report to explain why sample ER01 was not included on the COC.

Navy Response to TechLaw Specific Comment #13: The fifth page of Appendix A.2 contains the COC showing that ER01 was collected (labeled as “2006ER01”) on November 13, 2006. The author of the log book made an error in the entry of the collection of this rinsate on November 16, 2006.

TABLES

TABLE 1
COMPARISON OF NAPR BACKGROUND VANADIUM SURFACE SOIL CONCENTRATIONS TO USGS ISLAND-WIDE
ANALYTICAL DATA FOR PUERTO RICO
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Chemical	NAPR Background					USGS Island-Wide				
	No. of Positive Detections/No. of Samples	Range of Positive Detections (mg/kg)	Range of Non-Detects (mg/kg)	Maximum Detected Concentration (mg/kg)	Arithmetic Mean (mg/kg)	No. of Positive Detections/No. of Samples	Range of Positive Detections (mg/kg)	Range of Non-Detects (mg/kg)	Maximum Detected Concentration (mg/kg)	Arithmetic Mean (mg/kg)
Arsenic	15/21	0.21J - 2.5J	0.69UJ - 1.8J	2.5J	1.16	205/284	0.15 - 22	0.3U - 0.5U	22	2.14
Vanadium	19/19	35 - 270	NA	270	148	292/292	50 - 1,500	NA	1,500	393

Notes:

J = Estimated value

UJ = Not detected, estimated value

NA = Not applicable (vanadium was detected in each sample)

mg/kg = milligram per kilogram

USGS = United States Geological Survey

NAPR = Naval Activity Puerto Rico

TABLE 2

**SUMMARY OF EXPOSURE PARAMETERS
SWMU 42
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Parameter	Units	Future Adult Trespassers		Future Adolescent Trespassers		Future Adult On-Site Workers	
		RME	CT	RME	CT	RME	CT
Sediment							
Ingestion Rate of Sediment (IR-S)	mg/day	100 USEPA, 1993	--	100 USEPA, 1993	--	100 USEPA, 1997	--
Fraction Ingested from Source (Fi)	NA	1 Prof Judge	--	1 Prof Judge	--	1 Prof Judge	--
Exposure Frequency (EF)	days/year	52 Prof Judge	--	52 Prof Judge	--	250 USEPA, 1991	--
Exposure Duration (ED)	years	24 USEPA, 1991	--	9 USEPA, 1991	--	25 USEPA, 2004	--
Surface Area Available for Contact (SA)	cm ² /day	5,700 USEPA, 1997	--	3,200 USEPA, 1997	--	5,700 USEPA, 1997	--
Conversion Factor (CF)	kg/mg	1.00E-06 USEPA, 1989	--	1.00E-06 USEPA, 1989	--	1.00E-06 USEPA, 1989	--
Averaging Time (Non-Cancer) (AT-N)	days	8,760 USEPA, 1989	--	3,285 USEPA, 1989	--	9,125 USEPA, 1989	--
Other Parameters							
Body Weight (BW)	kg	70 USEPA, 1997	--	45 USEPA, 1997	--	70 USEPA, 1997	--
Soil to Skin Adherence Factor (AF)	mg/cm ²	0.07 USEPA, 1997	--	0.2 USEPA, 1997	--	0.2 USEPA, 1997	--
Averaging Time (Cancer) (AT-C)	days	25,550 USEPA, 1989	--	25,550 USEPA, 1989	--	25,550 USEPA, 1989	--

Notes:

RME - Reasonable Maximum Exposure
CT - Central Tendency

ABS - Absorption Factors

USEPA, 2004: Risk Assessment Guidance for Superfund Vol 1, Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R-99/005.

The following USEPA Region III default absorbance factors will be applied in the absence of reference values from USEPA, 2001 to estimate dermal intake of COPCs in soil and sediment (USEPA, 1995):

0.05% and 3.0% - VOAs (chemical specific)	3.2% - Arsenic	10% - SVOAs, Pesticides, Explosives, Herbicides, TPH
1.0% - Inorganics	14% - PCBs	13% - PAHs
3.0% - Dioxins / Furans		

Prof Judge - Professional Judgment

Cowherd, et al., 1995: Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination. OHEA. EPA/600/8-85/002

USEPA, 1989. Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part A) Interim Final

USEPA, 1991. Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual Supplemental Guidance "Standard Default Exposure Factors."

USEPA, 1997. Exposure Factors Handbook. Vol. 1: General Factors. ORD. EPA/600/P-95/002Fa.

TABLE 3
 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
 REASONABLE MAXIMUM EXPOSURE
 SWMU 42
 RCRA FACILITY INVESTIGATION
 NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Scenario Timeframe: Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Sediment	Acrolein	--	--	--	--	--	(o) Whole Body, (i) RsS	0.0004	--	2.5E-06	0.0004
			Arsenic	1.6E-06	--	5.6E-07	--	2.18E-06	(o) Skin / CVS	0.01	--	0.003	0.01
			Copper	--	--	--	--	--	(o) GIS	0.02	--	0.002	0.02
			Vanadium	--	--	--	--	--	(o) GIS / Kidney	0.12	--	0.51	0.63
			Chemical Total	1.6E-06	--	5.6E-07		2.18E-06		0.15	--	0.52	0.67
			Exposure Point Total					2.18E-06					0.67
			Exposure Medium Total				2.18E-06				0.67		
			Sediment Total				2.18E-06				0.67		
			Industrial Workers Total				2.18E-06				0.67		

Notes:
Target Organ Abbreviations:
 CVS = Cardiovascular System
 GIS = Gastrointestinal System
 RsS = Respiratory System

(o) Oral exposure
 (i) Inhalation exposure

Total Risk Across Sediment = 2.2E-06
 Total Risk Across All Media and All Exposure Routes = 2.2E-06

Total Hazard Index Across Sediment = 0.67
 Total Hazard Index Across All Media and All Exposure Routes = 0.67

Oral and Dermal Exposure Routes:
 Oral / Dermal Gastrointestinal System HI = 0.65
 Oral / Dermal Cardiovascular System HI = 0.01
 Oral / Dermal Skin HI = 0.01
 Oral / Dermal Kidney HI = 0.63

TABLE 4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
SWMU 42
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total	
Sediment	Sediment	Sediment	Acrolein	--	--	--	--	--	(o) Whole Body, (i) RsS	0.0001	--	4.5E-07	0.0001	
			Arsenic	1.9E-07	--	3.6E-08	--	2.26E-07		(o) Skin / CVS	0.003	--	0.0006	0.004
			Copper	--	--	--	--	--		(o) GIS	0.006	--	0.0004	0.01
			Vanadium	--	--	--	--	--		(o) GIS / Kidney	0.04	--	0.09	0.13
			Chemical Total	1.9E-07	--	3.6E-08		2.26E-07			0.05	--	0.09	0.14
			Exposure Point Total					2.26E-07						
			Exposure Medium Total									0.14		
			Sediment Total					2.26E-07				0.14		
			Adolescent Trespassers Total					2.26E-07				0.14		

Notes:
Target Organ Abbreviations:
CVS = Cardiovascular System
GIS = Gastrointestinal System
RsS = Respiratory System

(o) Oral exposure
(i) Inhalation exposure

Total Risk Across Sediment	2.3E-07	Total Hazard Index Across Sediment	0.14
Total Risk Across All Media and All Exposure Routes	2.3E-07	Total Hazard Index Across All Media and All Exposure Routes	0.14

Oral and Dermal Exposure Routes:

Oral / Dermal Gastrointestinal System HI =	0.14
Oral / Dermal Cardiovascular System HI =	0.004
Oral / Dermal Skin HI =	0.004
Oral / Dermal Kidney HI =	0.13

TABLE 5
 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
 REASONABLE MAXIMUM EXPOSURE
 SWMU 42
 RCRA FACILITY INVESTIGATION
 NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total	
Sediment	Sediment	Sediment	Acrolein	--	--	--	--	--	(o) Whole Body, (i) RsS	0.0001	--	1.8E-07	0.0001	
			Arsenic	3.2E-07	--	3.9E-08	--	3.63E-07		(o) Skin / CVS	0.002	--	0.0003	0.002
			Copper	--	--	--	--	--		(o) GIS	0.004	--	0.0002	0.004
			Vanadium	--	--	--	--	--		(o) GIS / Kidney	0.02	--	0.04	0.06
			Chemical Total	3.2E-07	--	3.9E-08		3.63E-07			0.03	--	0.04	0.07
			Exposure Point Total					3.63E-07						
Exposure Medium Total							3.63E-07					0.07		
Sediment Total												3.63E-07	0.07	

Adult Trespassers Total								3.63E-07					0.07
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Notes:
Target Organ Abbreviations:
 CVS = Cardiovascular System
 GIS = Gastrointestinal System
 RsS = Respiratory System

(o) Oral exposure
 (i) Inhalation exposure

Total Risk Across Sediment 3.6E-07
 Total Risk Across All Media and All Exposure Routes 3.6E-07

Total Hazard Index Across Sediment 0.07
 Total Hazard Index Across All Media and All Exposure Routes 0.07

Oral and Dermal Exposure Routes:
 Oral / Dermal Gastrointestinal System HI = 0.07
 Oral / Dermal Cardiovascular System HI = 0.002
 Oral / Dermal Skin HI = 0.002
 Oral / Dermal Kidney HI = 0.06

FIGURES

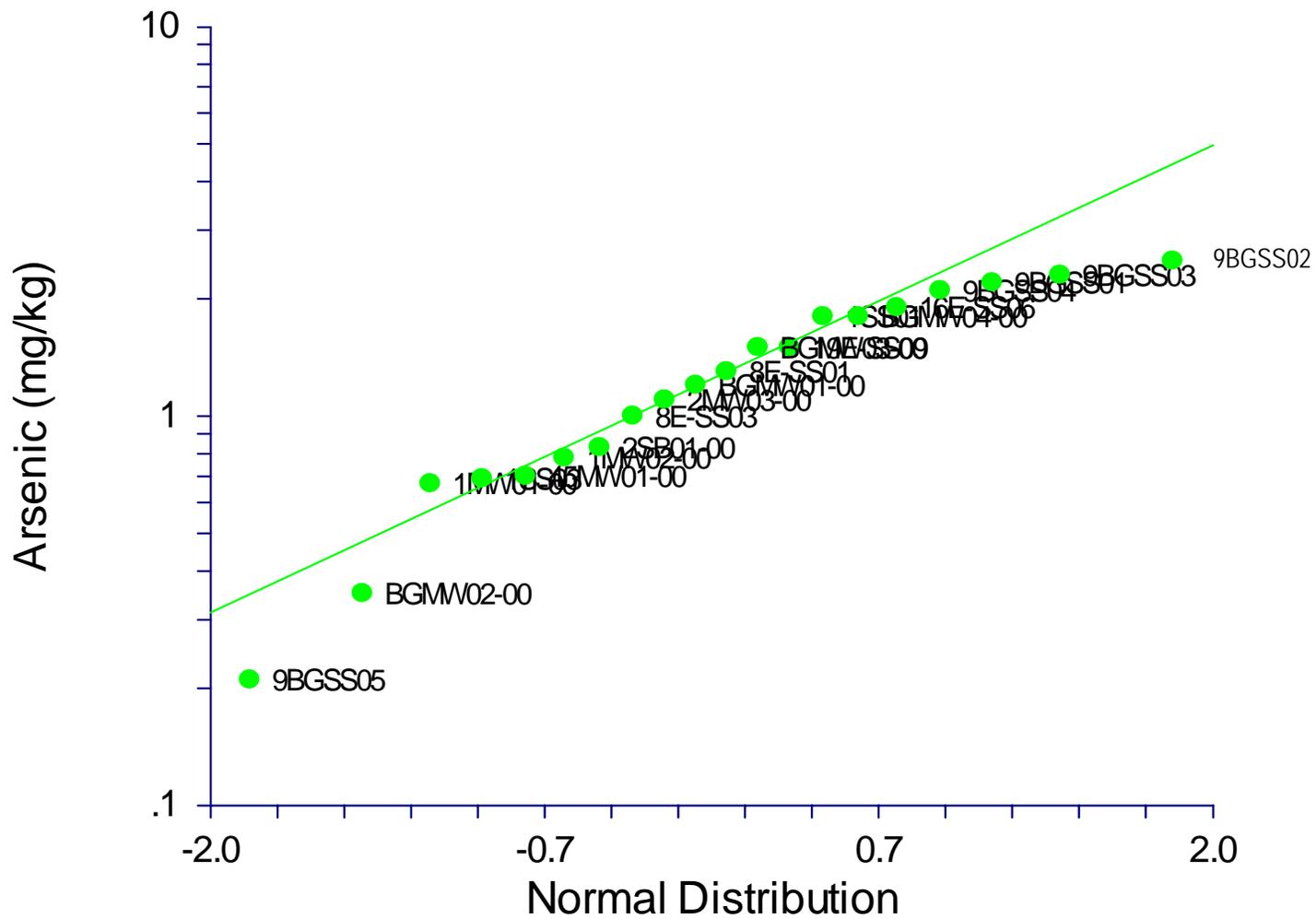


FIGURE 1
PROBABILITY PLOT OF ARSENIC IN NAPR
BACKGROUND SURFACE SOIL
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

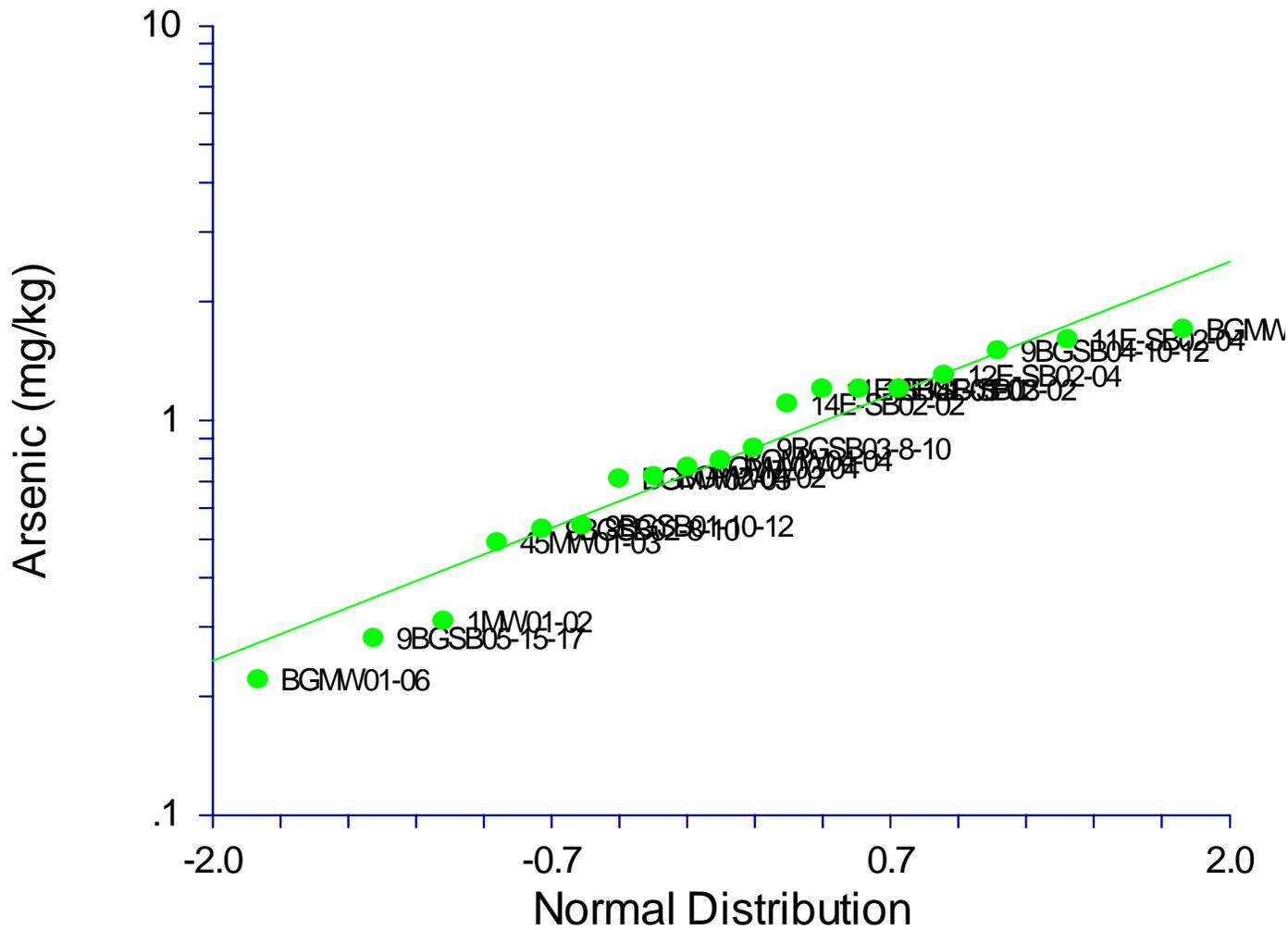


FIGURE 2
PROBABILITY PLOT OF ARSENIC IN NAPR
BACKGROUND SUBSURFACE SOIL
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

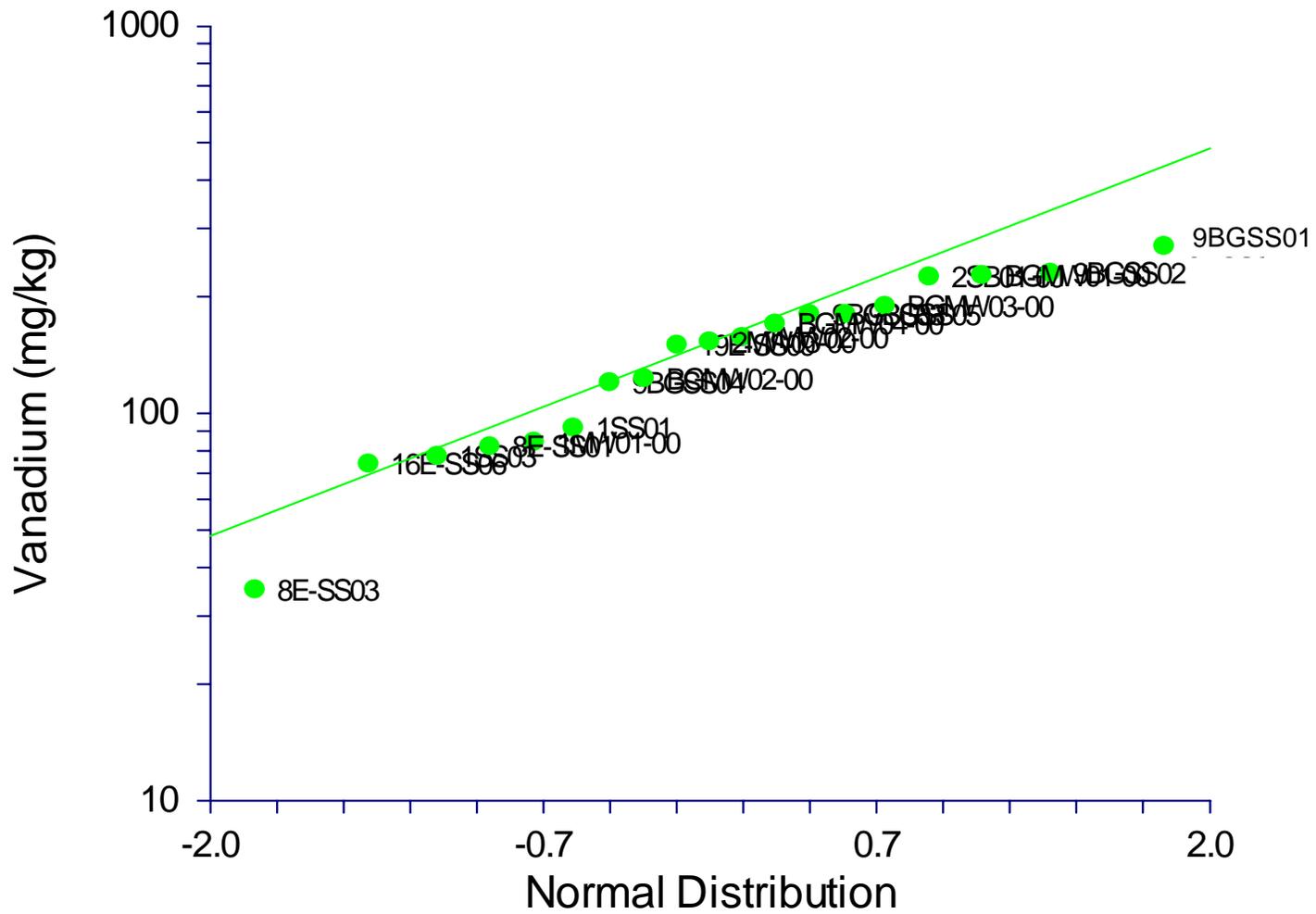


FIGURE 3
PROBABILITY PLOT OF VANADIUM IN NAPR
BACKGROUND SURFACE SOIL
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

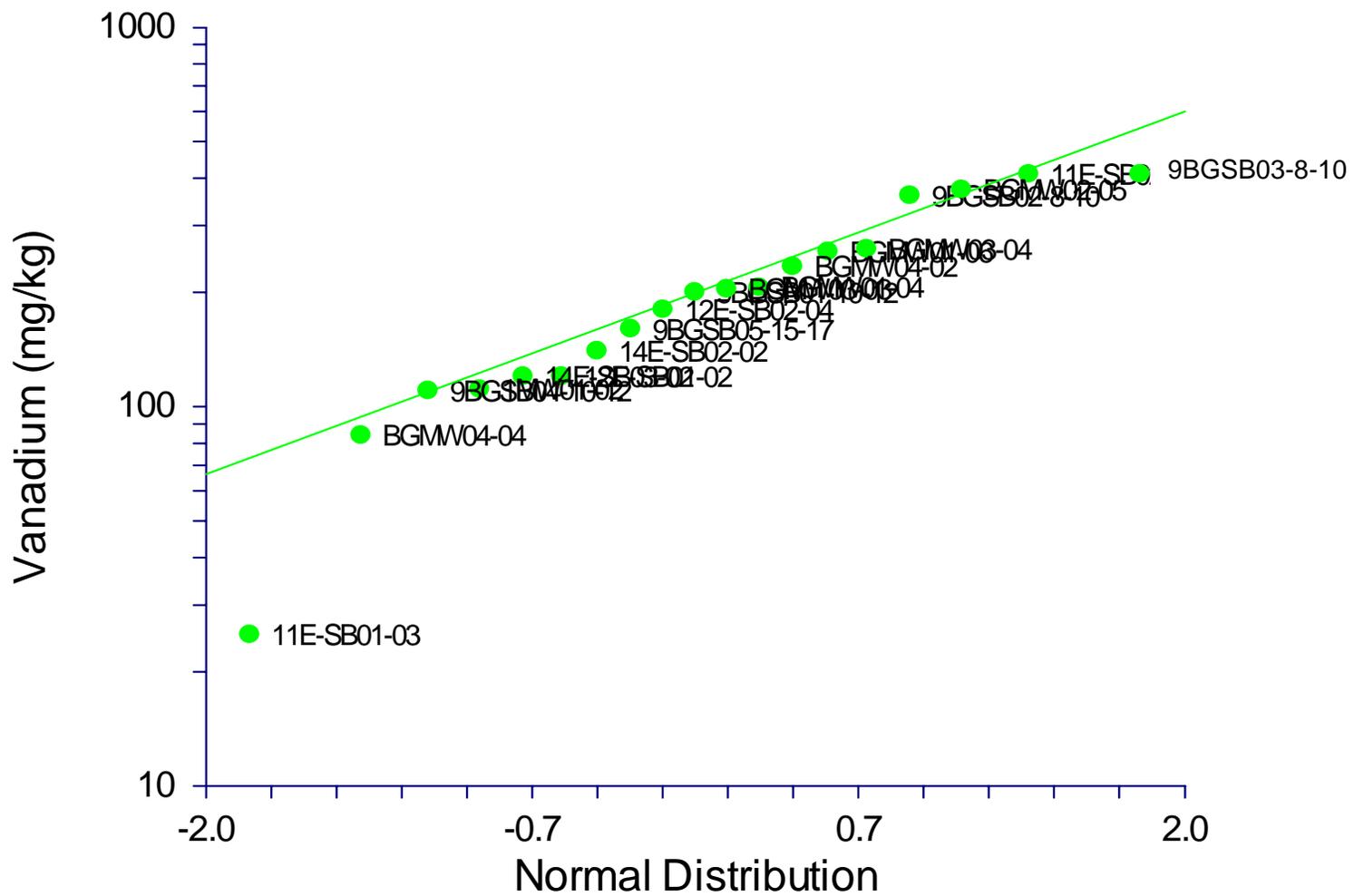


FIGURE 4
PROBABILITY PLOT OF VANADIUM IN NAPR
BACKGROUND SUBSURFACE SOIL
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

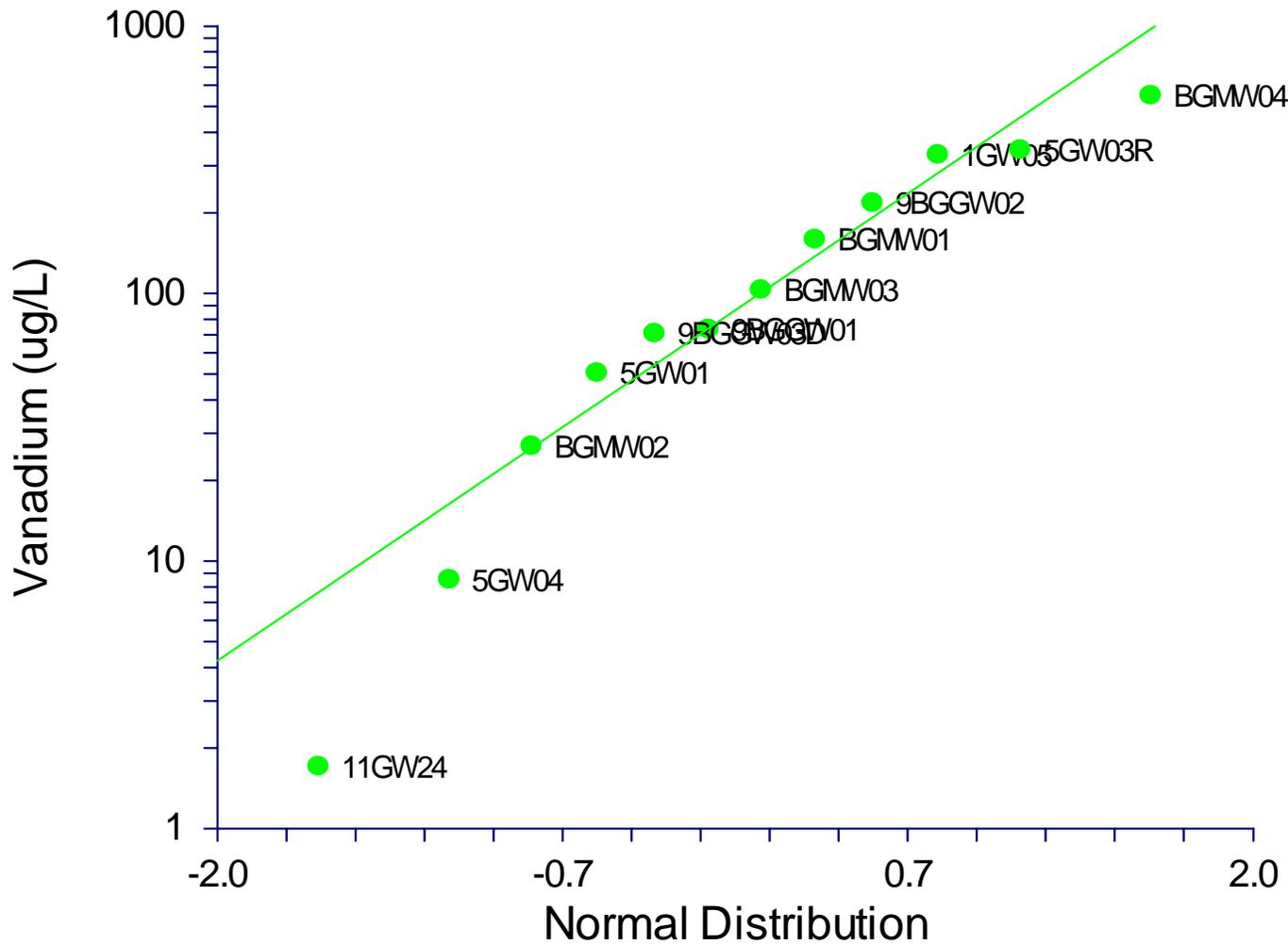


FIGURE 5
PROBABILITY PLOT OF VANADIUM IN NAPR
BACKGROUND GROUNDWATER
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO