From: Kimes, Mark
Sent: Friday, September 25, 2009 11:04 AM
To: 'Gordon.Timothy@epamail.epa.gov'
Cc: 'Davidson, Mark E CIV OASN I&E, BRAC PMO SE'; wilmarierivera@jca.gobierno.pr; gloriatoro@jca.gobierno.pr; Pedro Ruiz; Wood, Karren T; Malinowski, John; Aschenbrenner, Rick
Subject: Navy Responses to EPA Letter Dated August 6, 2009

Tim,

The attached two files make up the Navy Response to EPA and EQB Comments for the RFI Reports for SWMU 60 and 70 in your letter dated August 6, 2009. The Navy would like for the EPA and EQB to review the responses to determine if they are acceptable? If they are not, than it may be beneficial to hold a conference call to discuss any outstanding issues. After the comments are resolved, final response to comments along with the two RFI documents will be revised accordingly and submitted for review and approval.

Thank you,

Mark

NAVY RESPONSES TO EPA COMMENTS DATED JULY 20, 2009 AND PREQB COMMENTS DATED JULY 29, 2009

EPA AND PREQB COMMENTS ON THE DRAFT PHASE I RCRA FACILITY INVESTIGATION REPORT SWMU 60 (FORMER LANDFILL AT THE MARINA) DATED JUNE 18, 2009

EPA COMMENTS DATED JULY 20, 2009

(EPA comments are provided in italics, while the Navy responses are provided in regular print.)

EPA TECHNICAL REVIEW COMMENTS

1. *According to the Phase I RFI Report, groundwater flow direction at the site was not determined during the RFI due to uncertainty associated with the linear alignment of the two permanent and one temporary monitoring wells. Section 5.2.2, Hydrogeology, states, "[e]xpected groundwater flow is to the south and southeast towards the Ensenada Honda, although the concrete slips and docks may be causing some mounding of shallow groundwater near the shoreline where these exist." Future investigations at SWMU 60 should better define the groundwater flow direction(s) at the site, and determine the interaction between shallow groundwater and Ensenada Honda. Data from such an investigation would aid in better defining the contaminant migration pathways. Revise the Phase I RFI Report to include recommendations to better define groundwater flow patterns at SWMU 60 and to determine the interaction between Ensenada Honda and shallow groundwater. Tidal influence should also be addressed.*

Navy Response to EPA Technical Review Comment No. 1: Agreed. Section 7.2 of the Phase I RFI Report will be revised to include the following statement: "Additional data will be collected during the Full RFI to better define groundwater flow patterns at SWMU 60, as well as determine the interaction between Ensenada Honda and shallow groundwater. Tidal influence will also be addressed during the Full RFI."

2. *Limited information appears to be available on the history of SWMU 60. According to the Phase I RFI Report, the site was originally identified due to the observation of solid waste and scrap metal piles in a 1958 aerial photograph. However, it is not clear whether buried waste may also exist at the site. In addition, limited sampling has been performed in the solid waste and scrap metal pile areas identified in the 1958 photograph (designated by polygons on the Phase I RFI Report figures), to determine the absence or presence of waste materials or contamination. For example, Figure 4-1, Sample Location Map, shows only one sample location within the southwestern polygon (an area that extends more than 120 feet north to south); three sample locations within the eastern polygon (an area that extends more than 500 feet north to south), and two sample locations within the northwestern polygon (an area which extends more than 300 feet north to south). Revise the Phase I RFI Report to detail whether it is known or suspected that waste materials may have been buried in the landfill areas onsite. If buried waste is known or suspected, analyses should be proposed (e.g., geophysical survey) to better delineate the disposal areas. Furthermore, revise the Phase I RFI Report to provide additional justification for limiting the sampling within the suspected landfill areas to a few sampling locations within each area (as detailed above). In the alternative, propose a more widespread investigation of these areas to adequately determine the presence or absence of contamination.*

Navy Response to EPA Technical Review Comment No. 2: This comment correctly indicates that limited information is available on the history of SWMU 60. Consequently, it s not known whether buried waste is present at the site. Section 2.2 will be revised to include a statement indicating that it is unknown whether buried waste exists at the site.

The scope of the Phase I investigation was limited to confirming the presence or absence of potential site contamination. Additional sampling will be proposed in detail in the Work Plan for the recommended Full RFI Investigation with the purpose of characterizing the site and delineating the extent of contamination. As stated in the recommendation in Section 7.2: "… the Full RFI should include further investigation of PAHs and metals in the surface and subsurface soil, sediment, and groundwater, define the likely source area(s), and determine the potential for unacceptable risks to human health and/or the environment." However, the specifics of additional investigative activities will be addressed during the development of the Work Plan for the Full RFI.

3. *During the Site Characterization investigation in 1999, benzene was detected in groundwater from monitoring well MW3 at a concentration of 190 micrograms per liter (µg/l). This detection was well above the current tap water Regional Screening Level (RSL) of 0.41 µg/l and federal maximum contaminant level (MCL) of 5 µg/l. Monitoring well MW3 is shown on the figure included in Appendix B, Summary of Analytical Results from 1999 Site Characterization, but its location in relation to the most recently collected groundwater samples has not been detailed in the Phase I RFI Report. Additionally, it is unclear whether MW3 still exists and whether it can be re-sampled to confirm or deny the presence of benzene. Revise the Phase I RFI Report to show the location (or former location) of monitoring well MW3, and all other prior wells, in relation to current groundwater sample locations. Additionally, clarify the current status of monitoring well MW3 and the other monitoring wells that were installed during previous investigations.*

Navy Response to EPA Technical Review Comment No. 3: The Phase I RFI report will be revised as suggested by this comment. The estimated location of monitoring well MW3 and all the other previously installed monitoring wells will be shown on Figure 2-4. The current status of the wells also will be indicated on the figure. Monitoring wells MW1, MW2 and MW3 could not be located in the field during the Phase I RFI investigation activities. Monitoring well MW4 was located in the field, although a groundwater sample was not collected during this phase of the investigation.

4. *The Phase I RFI Report has not presented a conceptual site model (CSM) for SWMU 60. Specifically, a CSM should discuss contaminant release mechanisms, contaminant migration pathways, and receptors associated with SWMU 60 in order to provide an initial understanding of site contamination, and to help formulate an approach for subsequent investigations. It is recommended that the Phase I RFI Report be revised to present an initial CSM utilizing both text and graphics that incorporate all relevant site data. The CSM should then be utilized to refine data needs for the full-scale RFI. In addition, the CSM should be updated as additional data are collected and analyzed.*

Navy Response to EPA Technical Review Comment No. 4: It is the purpose of the Phase I RFI to indicate whether or not there has been a release from the SWMU. If it is determined a release has likely occurred, a Full RFI may be recommended. The RCRA 7003 Administrative Order on Consent (USEPA Docket No. RCRA-02-2007-7301) issued to NAPR by USEPA Region II states that information pertaining to the CSM (e.g., contaminant release characterization, contamination migration, and potential receptor identification) is to be included in the Full RFI to be completed for the SWMU. Therefore, a CSM will be developed as part of the scoping process to help refine the data needs for the Full RFI Work Plan.

PREQB COMMENTS DATED JULY 29, 2009

(PREQB comments are provided in italics, while the Navy responses are provided in regular print.)

1. *Page 2-2, Section 2.2, paragraph 3. Please include the dates of operation for the ASTs and associated piping systems for clarity.*

Navy Response to PREQB Comment No. 1: No further information is available regarding the dates of operation of the AST or the underground piping system. The Site Characterization Report for the MWR Marina (CH2M HILL, December 1, 1999) indicated that the ASTs and underground piping system were not in operation in 1999. The Phase II Environmental Condition of Property Report (NAVFAC Atlantic, 2005) further indicates that the piping system was removed sometime after 1999. Portions of Section 2.2 and 2.3 in the text of the report will be revised to clarify the available information and the timeline for this SWMU.

2. *Page 2-3, Section 2.3.1, paragraph 1. Please clarify which set of ASTs is the source of the petroleum releases. This paragraph discusses the original ASTs that were removed during construction of the Marina and current ASTs located at the same location. The third sentence indicates that a release from the ASTs occurred. However, the text does not state which set of ASTs is the source and when the release occurred. Please provide this information in the text.*

Navy Response to PREQB Comment No. 2: The release reportedly occurred in the original underground piping system that was connected to the AST and was the driver for conducting the original Site Characterization in 1999. The release occurred prior to this time (i.e., 1999); however, an exact date is not available. As indicated previously in the response to PREQB Comment No. 1, appropriate portions of Sections 2.2 and 2.3 in the text of the report will be revised to clarify the available information and timeline for this SWMU.

3. *Page 2-4, Section 2.3.2, Paragraph 6: This paragraph discusses the higher concentrations of PAHs at location 6E-SW/SD01 and also states that the PAHs were not detected at the other location (6E-SW/SD02) sampled in the Phase I/II ECP investigation. Upon review of the results, the reporting limits for the PAHs in sample 6E-SW/SD02 were much higher than the concentrations detected in sample 6E-SW/SD01 and therefore it cannot be definitively stated that PAHs were not detected at similar concentrations in sample 6E-SW/SD02. Please revise the text to address this issue.*

Navy Response to PREQB Comment No. 3: The text states that 6E-SW/SD01 had concentrations of SVOCs that were "higher than the Marine Sediment Screening Values" not that they were higher than those in 6E-SW/SD02. It does not make a direct comparison of the PAH concentrations of the two samples. However, it should be noted that the PAHs detected in 6E-SW/SD01 were qualified as estimated (i.e., "J") because they were detected at concentrations less than the reporting limit but greater than the MDL. This indicates that the reporting limits could be significantly greater than those detected concentrations. Finally, upon further review of the data, the reporting limits were 610 µg/kg for PAHs in sample 6E-SW/SD01 (Final Phase I/II ECP Report [NAVFAC Atlantic, 2005]), while the reporting limits for corresponding PAHs in sample 6E-SW/SD02 were 770 µg/kg. Consequently, the reporting limits for the two samples are comparable. No revisions to the text are necessary.

4. *Page 3-1 to 3-5, Section 3.0. As required by EPA's Interim Final RCRA Facility Investigation (RFI) Guidance, OSWER Directive 9502.00-6D, please describe the environmental setting for the SWMU and surrounding areas that may be impacted by this SWMU based on the nature and extent of site-derived contaminants in surface soil, sediment, and surface water of terrestrial, wetland and aquatic habitats. Statements about ecological conditions and the types of habitats in the study area appear*

scattered amongst other sections of the report but should be consolidated and expanded within Section 3.0 or in a new section dedicated to site ecological characterization. The habitat descriptions should document dominant plant communities, the nature of fish and wildlife populations likely to inhabit or use these habitats, and information on surface water depths and salinity that is sufficient to support the selection and use of ecological screening benchmarks to assess analytical data for media sampled from each habitat type, for which sample locations and results appear Figures 2-4, 4-1, 4-2, 5-1, 5-3, 6-1, 6-3, 6-4, and 6-5.

Navy Response to PREQB Comment No. 4: It is the purpose of the Phase I RFI to indicate whether or not there has been a release from the SWMU. If it is determined a release has likely occurred, a Full RFI may be recommended. EPA's Interim Final RFI Guidance states that "as specified by the regulatory agency in the permit or order, the owner or operator should provide in the RFI Work Plan information describing the human populations and environmental systems that may be susceptible to contaminant releases from the facility." The RCRA 7003 Administrative Order on Consent (USEPA Docket No. RCRA-02-2007-7301) issued to NAPR by USEPA Region II states that this information is to be included as a stand-alone section of the Full RFI to be completed for the SWMU. Therefore, this information will be provided in the Full RFI Work Plan and subsequently the Full RFI Report as directed by the RCRA 7003 Administrative Order on Consent.

5. *<u>Page 3-1 to 3-5, Section 3.0.</u> As required by EPA's Interim Final RCRA Facility Investigation (RFI) Guidance, OSWER Directive 9502.00-6D, please include a discussion of the human receptor groups that may come in contact with SWMU-related contamination. Please provide a conceptual site model that depicts the current understanding of sources, migration pathways and potential receptors.*

Navy Response to PREQB Comment No. 5: Please refer to response to PREQB Comment No. 4. A discussion of potentially affected human receptor groups, as well as a conceptual site model, will be provided in the Full RFI Work Plan and subsequently the Full RFI Report.

6. *<u>Page 4-2, Section 4.1, paragraph 1.</u> It is stated on page 4-2 that "Surface soil samples were collected after removing any vegetation and topsoil/root zones." Removal of this rooting zone soil seems to undermine the original intent of surface soil sampling for comparison to ecological screening values, as conveyed on page 4-1 of the Final RFI Work Plan, in which the importance of the rooting zone is emphasized by stating that "most heterotrophic activity and soil invertebrates occur on the surface or within the oxidized root zone." Because much of the biological activity of invertebrates and most plant uptake of soil/sediment contaminants occurs within this rooting zone, especially in estuarine wetlands where anoxic sediments may occur a short distance below the rooting zone, the absence of rooting zone soil from the samples is a significant uncertainty to be addressed in any ecological risk considerations. Please address.*

Navy Response to PREQB Comment No. 6: Section 4.1, paragraph 1, will be revised to read: "Surface soil samples were collected after removing any vegetation from the topsoil/rootzone". The surface soil samples were representative of the rooting zone. Therefore, this is not a data gap or uncertainty.

7. *<u>Page 4-2, Section 4.1, Paragraph 2:</u>*

   a. *According to the chains-of-custody in Appendix A, three vials were collected for GRO analysis at each soil sample location. Please clarify in the text of this section the procedure used for the collection of soil samples for GRO analysis.*

Navy Response to PREQB Comment No. 7a: The GRO soil samples were collected using one 40-ml vial containing methanol and two 40-ml vials containing laboratory supplied deionized water. This will be clarified in the text sections that three vials were collected for GRO.

b. *Clarify in the text how the samples were frozen in the field, the temperature used for freezing, and how the frozen VOC samples were shipped to the laboratory in a manner to maintain their frozen state.*

Navy Response to PREQB Comment No. 7b: As requested in the comment, Section 4.1 will be modified as follows for clarification: "As a precautionary measure, the two vials containing the laboratory supplied deionized water were frozen in a refrigerator freezer within 24 hours following sample collection and then shipped to the laboratory in a cooler packed with ice." The freezer utilized for freezing the samples did not contain a thermometer. Therefore, the exact temperature is unknown.

However, it is important to note here that appropriate methodology was followed for the collection and preparation of solid samples for analysis of volatile organics (Method 5035A). Method 5035A states that these samples should be frozen within 48 hours of sample collection. As noted on the chains-of-custody in Appendix A, the soil samples collected for VOC and GRO analyses were received at the laboratory within 48 hours, at which time they were additionally frozen at the laboratory. Therefore, appropriate procedures were clearly followed, and freezing the samples in the field was simply an additional preservation approach that is cited in the Method.

8. *<u>Page 4-3, Section 4.2, Paragraph 1:</u> The text states that 4-1/4 inch inside diameter hollow stem augers (HSAs) were used to install the permanent monitoring wells. However, according to the field log book notes and the boring logs, 3-1/4 inch inside diameter HSAs were used. Please revise the text accordingly.*

Navy Response to PREQB Comment No. 8: The typographical error in the text will be corrected to reflect the 3-1/4 inch inside hollow stem auger size as shown on the boring logs and in the field log book notes.

9. *<u>Page 4-5, Section 4.8, Paragraph 1:</u> According to the text, groundwater samples were collected using polyethylene and silicone tubing. According to the Region 2 low-flow groundwater sampling procedure, polyethylene tubing is not allowed when sampling for organic parameters and silicone tubing is not listed as an option at all in the Region 2 procedure. Silicone tubing is known to have sorption and desorption issues for organic compounds which cause a negative bias to the analytical results. Polyethylene tubing can leach plasticizers into the sampled water, can sorb organic contaminants from the sampled water and later desorb the same contaminants into samples. Please explain why this deviation occurred and qualify the data accordingly.*

Navy Response to PREQB Comment No. 9: The Navy concurs with this comment. Future groundwater samples to be analyzed for organic compounds will be collected using Teflon-lined polyethylene tubing. The Full RFI will include sampling of the existing groundwater monitoring wells, which will utilize the appropriate tubing for sample collection. The Full RFI sampling event will provide a new baseline of the organic contaminants in the groundwater. However, it is important to note that for this Phase I RFI, the equipment rinsate samples did not indicate the addition of organic compounds to the sample results.

10. *<u>Page 4-7, Section 4.10.3:</u> Please explain why MS/MSD samples were not collected for the sediment matrix. As per Section 3.5 of the December 2007 RFI Work Plan, MS/MSD samples were to be collected for each group of samples of a similar matrix. These analyses are especially critical for the metal analyses where there is no other measure of matrix effects on sample results.*

Navy Response to PREQB Comment No. 10: MS/MSD samples were collected from location 60SD01 for the sediment matrix, as noted in SDG No. 44016-2. Section 4.10.3 and Table 4-1 will be revised to include this information.

11. *<u>Page 6-1, Section 6.0.</u> The laboratory reported all nondetect results down to the method detection limit (MDL) instead of the reporting limit. Typically, the MDL is a statistically derived value that is not accurately verified by the laboratory analysis. The reporting limits (or quantitation limits) are accurately verified by laboratory analyses of standards at the unadjusted reporting limit. Table 3-2 of the December 2007 Phase I RFI Work Plan and Table 4-3 of this report present the required reporting limits for this program, not the MDLs. It should be noted that reporting limits are typically 3-5 times higher than MDLs prior to adjustment for sample-specific parameters. The reporting limits (not MDLs) should be used for the evaluation of the data when comparing to the human health and ecological risk criteria. Revise Tables 6-1 through 6-6, the tables of sample results presented in Appendix D and the tables of IDW results presented in Appendix A to reflect the reporting of nondetect results down to the reporting limit instead of the MDL. It should be noted that the Site Characterization data from 1999 as well as the Phase I/Phase II data from 2004 presented in Appendix C reported nondetect results down to the reporting limit, not the MDL.*

Navy Response to PREQB Comment No. 11: TestAmerica Savannah's process for performing MDL studies is outlined in laboratory SOP SA-QA-007: *Determination and Verification of Detection and Reporting Limits*. This process is performed in accordance with the 40CFR Part 136 Appendix B procedure and includes determining a statistical MDL value using the standard deviation of results from the analysis of a minimum of 7 replicates spiked near the reporting limit. The laboratory has also adopted an MDL verification procedure such that this statistical MDL value is verified via an MDL verification sample and the long term evaluation of method blanks. This verification procedure ensures the laboratory's MDL values are reasonable, consistently recovered, and at least 3 times the background noise. The laboratory's MDL study, MDL verification data, and SOPs are available for review upon request.

The convention for evaluating non-detect values to the MDL is a common industry-wide laboratory practice. This convention is consistent with that outlined in the Department of Defense Quality Systems Manual (DOD QSM) and several other state requirements, including the Florida Department of Environmental Protection, FLDEP, who issues the laboratory's NELAC certification upon which our Puerto Rico certification is based.

Based on the above, no revisions to the text or tables are proposed.

12. *<u>Page 6-1, Section 6.1.</u> Please clarify which type of background concentration was used for screening – the upper limit of the means, as stated in this section, or the upper limit of the means plus 2 standard deviations, as stated in Tables 6-1 to 6-5, Note 1. The RFI Work Plan did not list the specific type of background concentrations that would be used; therefore, please clarify whether the agencies have approved of the use of these specific background values for screening purposes.*

Navy Response to PREQB Comment No. 12: The upper limit of the mean, defined as the mean plus two standard deviations, was used as the background concentration for screening inorganic data. These NAPR base-wide inorganic background values were developed in the approved *Revised Final II Summary*

Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, Puerto Rico, dated February 29, 2008. Section 6.1 will be revised as follows: "The upper limit of mean (defined as the mean plus two standard deviations) background levels (inorganics only) (Baker, 2008) were used to compare concentrations of inorganic constituents in soil, open water sediment, and groundwater at SWMU 60 to those present at NAPR in corresponding unimpacted media."

13. *Page 6-1, Section 6.1.1. Please clarify if the Maximum Contaminant Levels (MCLs) were used as screening levels for groundwater only if a tapwater RSL was not available. Please clarify the text accordingly.*

Navy Response to PREQB Comment No. 13: As stated in Section 6.1.1, MCLs were included as screening criteria for groundwater along with the USEPA Regional Tap Water SLs and inorganic background concentrations. No revisions to the text are necessary.

14. *Page 6-2, Section 6.1.1.2. An MCL Goal (MCLG) is calculated to protect human health. An MCL is established as close to the MCLG as is technically feasible. Although an MCLG is calculated as presented in the second sentence of this paragraph, many MCLs are set above the calculated MCLG, so are not necessarily protective of the exposure scenario presented in the second sentence. Please revise the text accordingly.*

Navy Response to PREQB Comment No. 14: Section 6.1.1.2 will be revised as follows:

"Federal Drinking Water MCLs are enforceable standards for public water supplies promulgated under the Safe Drinking Water Act and are designed for the protection of human health. MCL Goals are calculated based on laboratory or epidemiological studies and apply to drinking water supplies consumed by a minimum of 25 persons. They are designed for prevention of human health effects associated with a lifetime exposure (70-year lifetime) of an average adult (70 kilograms [kg]) consuming 2 liters of water per day. MCLs consider both the MCL Goal and the technical feasibility of removing the contaminant from the public water supply. Accordingly, MCLs are established as close to the MCL Goal as technically feasible (USEPA, 2008b)."

15. *Page 6-2, Section 6.1.2.1 and Table 6-1. This section states that "USEPA ecological soil screening levels (Eco-SSLs) for terrestrial plants and invertebrates were preferentially used as soil screening values." Eco-SSLs for birds and mammals are also available and are often lower than Eco-SSLs for plants and invertebrates. The Final RFI Work Plan proposed to use Eco-SSLs to evaluate surface soil analytical data but did not propose that only the plant and invertebrate subset of Eco-SSLs would be used. The lowest available Eco-SSL was not applied for High Molecular Weight PAHs (HMW PAHs), DDT compounds, and nine inorganics (antimony, beryllium, cadmium, chromium, copper, lead, silver, vanadium and zinc). Data in Appendix D show that one or more surface soil samples exceeded avian and/or mammalian Eco-SSLs for several analytes, which should be but were not identified as COPECs. Please revise the report to provide adequate justification for only using the Eco-SSLs for plants and invertebrates or conduct the screening using the lower of the avian and mammalian EcoSSLs when those are lower than Eco-SSLs for plants and invertebrates.*

Navy Response to PREQB Comment No. 15: The Navy partially agrees with this comment. For a given chemical, the soil screening evaluation presented in Tables 6-1 (surface soil) and 6-3 (subsurface soil) will be conducted using the avian Eco-SSL value if the avian value is less than plant- and invertebrate-based Eco-SSLs for that chemical. Section 6.1.2.1 also will be revised to indicate that avian Eco-SSLs were considered in the process used to select soil screening values. However, the Navy does not believe it is appropriate to use mammalian-based Eco-SSLs as soil screening values since terrestrial mammals on Puerto Rico with a direct exposure pathway link to soil (i.e., ingestion of soil dwelling biota

and incidental ingestion of soil as a result of foraging at the soil surface) are limited to nonindigenous, nuisance species (i.e., Norway rat, black rat, and mongoose) that have been implicated in the decline of native reptilian and bird populations (Mac et al., 1998 and United States Fish and Wildlife Service [USFWS], 1996).

References:

Mac, M.J., P.A. Opler, C.E. Puckett Haecker, and P.D. Doran. 1998. Status and Trends of the Nation's Biological Resources. 2 Vols. U.S. Department of the Interior, U.S. Geological Survey, Reston, Va. http://www.nwrc.usgs.gov/sandt/index.html.

United States Fish and Wildlife Service (USFWS). 1996a. *Recovery Plan for the Yellow-Shouldered Blackbird (Agelaius xanthomus).* USFWS, Southeast Region, Atlanta, GA.

16. *Page 6-2, Section 6.1.2.1 and Table 6-1. As noted above, the lowest of all Eco-SSLs, including avian and mammalian Eco-SSLs, should have been used to screen surface soils. However, the RFI used the higher Dutch Intervention Value of 401 ug/kg for DDE (MHSPE, 2000), rather than apply the mammalian (21 ug/kg) or avian (93 ug/kg) Eco-SSLs for Total DDT and its metabolites (DDD and DDE). Please revise the report to apply the mammalian Eco-SSL for DDT, DDD, and DDE.*

Navy Response to PREQB Comment No. 16: As discussed in the Navy response to PREQB Comment No. 15, the Navy does not believe it is appropriate to screen soil using mammalian Eco-SSLs. However, because the avian Eco-SSL for DDD and its metabolites (93 µg/kg) is less than the Dutch Intervention Value (401 µg/kg), the avian Eco-SSL value for DDT and its metabolites will be used to screen 4,4'-DDD in surface soil and 4,4'-DDD and 4,4'-DDE in subsurface soil.

17. *Page 6-4, Section 6.1.2.2. After explaining the basis for the Long and Morgan (1991) and Long et al. (1995) ER-L and ER-M sediment benchmarks, the last sentence in the first paragraph states that "Only ER-Ls were selected as sediment screening values" but does not state which version was applied. Please revise the text to verify that ER-Ls based on marine-only sediment ecotoxicity data from Long et al. (1995) were used for estuarine/marine sediments. Also, since the possible use of freshwater screening criteria are discussed for groundwater in Section 6.1.2.3, please clarify why no freshwater sediment criteria were discussed in this section.*

Navy Response to PREQB Comment No. 17: The description of ER-L and ER-M sediment benchmarks presented within Section 6.1.2.1 will be revised to indicate that ER-Ls based on marine-only sediment benchmarks from Long et al, (1995) were used for estuarine wetland and open water sediment screening.

Freshwater toxicological benchmarks were considered for use as sediment screening values for those chemicals lacking literature-based marine/estuarine values. The specific freshwater toxicological thresholds considered were consensus-based sediment quality guidelines (MacDonald et al., 2000), sediment quality assessment guidelines for Florida inland waters (MacDonald et al., 2003), Ontario Ministry of the Environment Provincial sediment quality guidelines (Persaud et al., 1993), and Canadian interim freshwater sediment quality guidelines (CCME, 2002). Because no value was identified for any chemical lacking a marine/estuarine toxicological threshold, they were not discussed in Section 6.1.2.2. However, to clarify that freshwater toxicological benchmarks were considered during the selection of sediment screening values, Section 6.2.2.2 will be revised to include a list and description of the freshwater toxicological thresholds considered during the sediment screening value selection process.

References:

CCME. 2002. Canadian Sediment Quality Guidelines for the Protection of Aquatic Life: Summary Tables. Updated 2002. In: Canadian Environmental Quality Guidelines, 1999, CCME, Winnapeg. http://www.ccme.ca/publications/ceqg_rcqe.html?category_id=124.

MacDonald, D.D, C.G. Ingersoll, D.E. Smorong, R.A. Lindskoog, G. Sloane, and T. Biernacki. 2003. *Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters*. Prepared for Florida Department of Environmental Protection, Tallahassee, Florida. January 2003.

MacDonald, D.D., C.G. Ingersoll, T.A. Berger. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. *Arch. Environ. Contam. Toxicol*. 39:20-31.

Persaud, D.R., R. Jaagumagi, and A. Hayton. 1993. *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario*. Ontario Ministry of the Environment (OMOE).

18. *Pages 6-5 to 6-6, Section 6.1.2.3; Table 6-5 and Appendix C. As shown in Tables C-6 and C-9 of Appendix C, the Puerto Rico Water Quality Standards (PRWQS) for the protection of aquatic life were used to evaluate surface water and groundwater analytical data in the Phase II ECP Report. However, the PRWQS were not used in the RFI report. Please explain why the PRWQS were not used and identify any PRWQS that are lower than the national ambient water quality criteria (NAWQC) used in the screening. If any PRWQS are more stringent than the NAWQ, please clarify why the lower criteria were not applied to site-affected groundwater that could emerge into estuarine or marine habitats.*

Navy Response to PREQB Comment No. 18: Puerto Rico Water Quality Standards (PRWQS) applicable to coastal/estuarine waters have been established for ten Appendix IX metals (antimony, arsenic, cadmium, copper, lead, mercury, nickel, selenium, silver, and zinc), six Appendix IX organochlorine pesticides (4,4'-DDT and metabolites, endosulfan, endrin, gamma BHC, methoxychlor, and toxaphene) and one Appendix IX SVOC (pentachlorophenol). Values are located within the water quality standards regulation amendments dated March 28, 2003. A review of the amended regulations indicate that standards established for aquatic life within coastal/estuarine water bodies represent National Ambient Water Quality Criteria (NAWQC) published within the document entitled *National Recommended Water Quality Criteria – Correction* (USEPA, 1999).

Of the seventeen Appendix IX chemicals for which Puerto Rico water quality standards have been developed, three metals (arsenic, lead, and nickel) were detected within the total recoverable fraction of one or more of the groundwater samples collected at SWMU 60. Arsenic and nickel also were detected within the dissolved fraction of one or more of the SWMU 60 groundwater samples. Screening values used for total recoverable nickel and lead represent dissolved saltwater NAWCQ converted to total recoverable concentrations, while the screening value used for dissolved nickel represents the dissolved saltwater NAWQC established for this metal (USEPA, 2006). Because Puerto Rico water quality Standards for lead and nickel represent USEPA NAWQC expressed as dissolved concentrations and the fact that dissolved NAWQC were either used directly as screening values (in the case of dissolved nickel) or indirectly by converting dissolved NAWQC to total recoverable criteria (in the case of total recoverable lead and nickel), Puerto Rico Water Quality Standards for these two metals were not considered as ecologically-based groundwater screening values. In the case of arsenic, the Puerto Rico water quality standard (1.4 µg/L) represents a human health NAWQC based on the consumption of aquatic organisms (USEPA, 1999). As this standard does not represent an ecologically-based value, the

USEPA saltwater CCC value for this metal was selected as the groundwater screening value (36 µg/L; dissolved and total recoverable fraction).

In summary, given that available PRWQS represent 1999 NAWQC and the fact that the 1999 NAWQC have been updated since 1999 (USEPA, 2002 and 2006), PRWQS were not considered for use as a source of potential groundwater screening values. The selection of NAWQC based on consumption of aquatic organisms by humans for several chemicals, including arsenic, also preclude their selection as ecologically-based screening values. It is noted that one error was identified in Table 6-5. The nickel screening value used in the comparison to dissolved groundwater concentrations is a USEPA CCC value expressed as a total recoverable concentration. Table 6-5 will be revised to show the correct screening value (i.e., USEPA CCC value expressed as a dissolved concentration [8.2 µg/L]).

References:

USEPA. 2006. National Recommended Water Quality Criteria. Office of Water and Office of Science and Technolocgy, Washington, D.C. http://www.epa.gov/waterscience/criteria/wqctable/.

USEPA 2002. *National Recommended Water Quality Criteria: 2002*. Office of Water and Office of Science and Technology. EPA 822-R-02-047.

USEPA. 1999. *National Recommended Water Quality Criteria - Correction. 1999*. Office of Water. EPA 822-Z-99-001.

19. *Page 6-6, Section 6.1.2.3. Please clarify the use of freshwater NAWQC when prior discussions of sediment excluded freshwater sediment criteria. Please include a discussion of the salinity regime and whether any freshwater or brackish wetlands occur between contaminant source areas and potential groundwater-receiving habitats of Ensenada Honda and what data were compared to freshwater NAWQC.*

Navy response to PREQB Comment No. 20: The Navy offers the following points of clarification relative to the use of freshwater screening values. As discussed in Section 6.1.2.3, freshwater toxicological benchmarks and toxicity test data (e.g., NOECs) were identified as groundwater screening values for those chemicals lacking literature-based marine toxicological benchmarks and toxicity test data. Although the applicability of freshwater values to groundwater discharging to a marine environment (Ensenada Honda) is uncertain, using these values creates less uncertainty than if no screening value was used. This approach was originally requested by the EPA in their comment letter dated October 4, 2001 on the *Draft Screening-Level Ecological Risk Assessment Problem Formulation and Additional Data Collection Work Plan for SWMUs 1 and 2* (dated September 5, 2001).

As depicted on Figure 2-3, an estuarine wetland habitat is located within the southeast boundary of the SWMU (classified as Estuarine, Intertidal, Scrub-Shrub, Broad-Leaved Evergreen [E2SS3] by the Cowardin wetland classification system [Cowardin et al., 1979]). The E2SS3 wetland unit, delineated by Geo-Marine, Inc. in December 1999 from 1993 color infrared and 1998 true color aerial photography, includes portions that are located between contaminant source areas and the Ensenada Honda. No freshwater wetlands are located within or contiguous to the SWMU. Therefore, a salinity regime is not likely to exist within the wetland unit. As evidenced by Photograph No. 6 in Appendix A, standing water was not encountered at or contiguous to the two soil boring locations (60SB02 and 60SB01) established within the boundary of the wetland unit. These observations are supported by the depth to groundwater encountered at 60SB02 (5.62 feet below ground surface). Appendix A will be revised to include additional photographic evidence supporting this observation. It is acknowledged that conditions within the wetland unit east of the boring locations are not known. This information gap will be addressed as

part of the Full RFI (i.e., Section 7.2 will be revised to include text stating that conditions within the E2SS3 wetland unit east of the SWMU 60 boundary will be investigated during the Full RFI).

References:

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-79-31. Office of Biological Services, Fish and Wildlife Service, U.S. Department of the Interior, Washington, DC.

20. Pages *6-7 to 6-13, Sections 6.2 to 6.5.* *Please discuss whether chemicals not detected in a particular medium had elevated detection limits above human health or ecological screening criteria. Chemicals with detection limits above screening criteria should be identified as COPCs unless adequate justification is provided for why these chemicals with detection limits above screening criteria were not selected as COPCs.*

Navy Response to PREQB Comment No. 20: The text in Sections 6.2 through 6.5 will be revised to indicate those instances where detection limits were elevated above human health or ecological screening criteria. The identified chemicals will be considered in the development of the Work Plan for the Full RFI, and designation of COPCs will take place during the risk assessment process.

21. *Page 6-10, Section 6.3, Last Paragraph:* *The text currently states that selenium does not exceed ecological soil screening values at any location. Please revise the text to state that selenium exceeds the ecological soil screening values in sample 60SB04-01D.*

Navy Response to PREQB Comment No. 21: Section 6.3, last paragraph, will be revised as indicated in the comment. Table 6-3 will also be revised to shade the selenium concentration (0.71 mg/kg) in 60SB04-01D to show the exceedance of the ecological screening critierion.

22. *Page 6-14, Section 6.6.2, Last Paragraph.* *The last sentence of this section states that the changes in the results due to the validation process are not expected to significantly compromise the data quality objectives for this SDG. However, based on the validation process, results for almost all VOCs in sample 60GW04 should be rejected due to the reaction of the sample with the hydrochloric acid in the VOA vial. The rejection of most VOC results in this sample may have a significant impact on the achievement of the objectives for this program and should be highlighted in this section.*

Navy Response to PREQB Comment No. 22: The analytical results for sample 60GW04 were re-evaluated by the validator using the information in the field log books. Based on the revised validation narrative, all non-detected compounds were rejected and all positive results in the VOA and GRO fractions were estimated. Section 6.6.2 will be revised to reflect this updated information.

23. *Page 7-1, Section 7.2.* *This section states that "the Full RFI should include further investigation of PAHs and metals in the surface and subsurface soil, sediment, and groundwater, define the likely source area(s), and determine the potential for unacceptable risks to human health and/or the environment." This recommendation should be amended after the COPEC screening has been revised using the appropriate Eco-SSLs and identifying any additional surface soil, sediment and/or groundwater COPECs for which detection limits of NDs exceed screening benchmarks.*

Navy Response to PREQB Comment No. 23: Section 7.2 will be revised as necessary based upon the revisions made to Eco-SSLs. As stated in Response to Comment No. 20, COPCs will not be identified in

the Phase I RFI, although chemicals detected at concentrations greater than their screening criteria will be identified and considered in the development of the Work Plan.

24. Appendix A, Field Log Book Notes.

a. *Page 21 of the January 15, 2009 field notes by Michael Cromley states that field technician went to SWMU 60 to develop a temporary well and the well was not in the correct boring hole. Please clarify what this means and if it is referring to the temporary well at 60SB02.*

Navy Response to PREQB Comment No. 24a: A temporary well screen was mistakenly placed in the borehole for 60SB03 by the driller. The well screen was pulled from 60SB03 and a new well screen was placed in the 60SB02 borehole. Mr. Cromley's notes refer to the well screen in 60SB03, before the situation was corrected.

b. *Page 32 of the January 18, 2009 field notes by Michael Cromley states that at 11:45, all but two 1-liter ambers were filled at the temporary well at 60SB02. Please clarify why all other bottles were filled but these two 1-liter amber bottles. These amber bottles are used to sample organic parameters (either SVOCs or pesticides) and should have been collected prior to the bottles for metals analyses.*

Navy Response to PREQB Comment No. 24b: The temporary well 60SB02 was a low yield well and the metals bottle was filled prior to the 1-liter ambers because of sample volume. The metals bottle required only 250-ml of sample. The 1-liter ambers were filled after the water level recovered; this was inadvertently left out of the field technician's notes.

c. *Last page of the January 15, 2009 field notes by Darrin Hupe states that the groundwater sample from 60GW04 reacted to the hydrochloric acid in the VOA vials. Based on this statement, this sample should have been recollected for VOCs and GRO without HCl. That fact that a reaction occurred with the acid makes these results invalid due to the potential volatilization that occurred during this reaction. It is noted that there were air bubbles in the field duplicate sample at this location that caused results to be rejected. However, based on the field logbook, all VOC and GRO results should be rejected at this location.*

Navy Response to PREQB Comment No. 24c: The results for groundwater sample location 60SB04 have been qualified as "estimated" for the positive results and "rejected" for nondetects. In the future, samples that react with HCL will be resampled using an unpreserved vial and will be extracted by the laboratory within seven days of the sample collection time.

25. Appendix D:

a. *Please revise the data tables to eliminate the reporting of a value with rejected results (e.g., 4.2 R). These results are rejected and are therefore not usable for meeting project objectives. The value reported with the "R" qualifier is misleading and should be eliminated. Only the "R" qualifier should be reported.*

Navy Response to PREQB Comment No. 25a: The data tables will not be revised to eliminate the value of rejected results. It is acknowledged that these results are rejected and not usable, which is clearly indicated in the notes/qualifiers of the data tables. However, the reported concentrations of the rejected results can provide insight into potential contaminant concentrations above screening criteria in those locations.

b. *As discussed in Page-Specific Comment 11, please revise all data tables to report nondetect results down to the reporting limit instead of the MDL.*

Navy Response to PREQB Comment No. 25b: Refer to the response to PREQB Comment No. 11.

26. <u>Appendix E:</u>

a. *The text discusses how the data validation guidelines were modified for blank contamination actions because the lab reported results down to the MDL instead of the reporting limit. The validation modification used causes positive results between the MDL and the reporting limit to be qualified as nondetect at the reported concentration. This is in direct conflict with the Region 2 validation guidelines, which require that positive results between the MDL and reporting limit be qualified as nondetect at the reporting limit when affected by blank contamination. The methodology used in this report causes the blank-qualified nondetect results to have lower reporting limits, which are not technically accurate. Region 2 guidelines for blank qualification must be followed and there is no technical justification to modify these guidelines. This affects VOC, SVOC, and metals sections in all data validation reports as well as associated data tables. Please revise accordingly.*

Navy Response to PREQB Comment No. 26a: The blank contamination actions were modified in response to a laboratory modification in how the non-detect results were reported. The Region II validation SOPs were written based on the assumption that non-detect results would be reported to the reporting limit. However, many laboratories currently report non-detect results to the MDL. For this project the laboratory reported all non-detect results to the MDL. The validator proposes that raising a few results to the reporting limit because of blank contamination would introduce an inconsistency in the manner of reporting non-detects. Since reporting results to the MDL is a common laboratory practice, it made sense to accommodate this practice by modifying the validation guidance as noted in the validation reports. The blank-qualified non-detect results do not have lower reporting limits. The reporting limits are not changed. The "U" flag is stating that the qualified result should be considered non-detect at the reported value due to blank contamination (consider the value as a raised MDL) rather than positive at the reported value. Reporting limits are present on all validated EDD files for these SDGs.

Based on the above, no revisions to the data validation reports or data tables are proposed.

b. *SDG NAPR44002-1: Based on the field log book notes, all nondetect VOC and GRO results for sample 60GW04 should be rejected and all positive VOC and GRO results in this sample should be qualified as estimated due to the reaction of the sample with HCl. Revise the validation report and associated data tables accordingly.*

Navy Response to PREQB Comment No. 26b: The analytical results for sample 60GW04 were re-evaluated by the validator using the information in the field log books. Based on the revised validation narrative, all non-detected compounds were rejected and all positive results in the VOA and GRO fractions were estimated. Appendix E will be revised to include the corrected data validation report pages and Form I. Applicable data tables will be revised accordingly.

c. *SDG NAPR44077-3, page 6: The low recovery of phenol-d5 in sample JAN09-FB02 should not cause qualification of all SVOC results, as was performed. As per the Region 2 data validation guidelines, the low recovery affects the results for the acid compounds only. Please revise the data validation memo and any associated tables accordingly.*

Navy Response to PREQB Comment No. 26c: Concerning sample JAN09-FB02 (SDG# NAPR44077-3), the worksheets state the correct qualification "J/R, acid"; however in typing the report "acid fraction" was not added to the statement and all compounds were qualified instead of only acid fraction compounds. Appendix E will be revised to include the corrected data validation report pages and Form I. Applicable data tables will be revised accordingly.

NAVY RESPONSES TO EPA COMMENTS DATED JULY 2, 2009 AND PREQB COMMENTS DATED JULY 6, 2009
EPA AND PREQB COMMENTS ON THE
DRAFT PHASE I RCRA FACILITY INVESTIGATION REPORT
SWMU 70 (DISPOSAL AREA NORTHWEST OF LANDFILL) DATED MAY 26, 2009

EPA COMMENTS DATED JULY 2, 2009

(EPA comments are provided in italics, while the Navy responses are provided in regular print.)

EPA GENERAL COMMENT

1. *The Draft Phase I RFI Report recommends a full RCRA Facility Investigation (RFI) focused around Phase I RFI sample locations in the northern portion of the SWMU (70SB01, 70SB02, 70SB04, and 70SB05) and around sample location 70SB07 in the southern portion of the SWMU. Based on a review of the data provided, it is unclear why sample locations 70SB01, 70SB02, 70SB04, 70SB05, and 70SB07 were selected and why other sample locations were not included. While sample location 70SB07 is recommended as a focus area to the south, the origin of elevated contaminant levels in open water sediments remains unclear. As a result, it is strongly recommended that all detected concentrations in estuarine sediments and groundwater be considered in conjunction with open water sediment concentrations to determine if SWMU 70 is a potential source. Background concentrations should not be considered in this analysis. Based on the results, the scope of further investigations in this area should be redefined, including consideration of the need for additional sampling locations. Revise the Draft Phase I RFI Report to address this issue.*

Navy Response to EPA General Comment No. 1: The purpose of the Phase I RFI is to identify whether or not a release has occurred at a SWMU from past site activities. Some of the tools used to assist in making this determination are human health and ecological screening criteria and the approved background screening values. For the purpose of identifying a site-related contaminant in the case of inorganics, a site-related contaminant is defined as an inorganic analyte that exceeds both human health or ecological screening criterion and the corresponding NAPR base-wide background value. These NAPR base-wide inorganic background values were developed in the approved *Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, Puerto Rico,* dated February 29, 2008. Additionally, it is important to recognize the conservativeness of using Regional Screening Levels for residential and industrial soil to screen the sediment data. These screening criteria are used in the absence of sediment-specific screening criteria in order that the data may be evaluated from the human health perspective.

Elevated concentrations, with respect to the screening criteria and background, of arsenic were noted in the surface soil and groundwater in the vicinity of sample locations 70SB01, 70SB02, 70SB04 and 70SB05 indicating a potential release. Consequently, these areas were selected as areas for further investigation in the full RFI. Similarly, elevated concentrations of chromium, nickel and vanadium, as defined by exceedances of screening criteria and background, were noted in the estuarine sediment at sample location 70SB07 indicating a potential release. Consequently, this area was also recommended for further investigation in the Full RFI.

The origin of elevated contaminant levels in open water sediment is not believed to be the result of a release from past activities at SWMU 70. Although acetone was detected in all of the sediment samples (both estuarine and open water), the concentrations in all samples were relatively low and are considered to be laboratory artifacts rather than site related contamination. Cobalt was detected in two of the three open water sediment samples at concentrations in excess of both the Regional Screening Level for Residential Soil and

the background screening criteria. However, cobalt was not identified as a site-related contaminant at SWMU 70 in any upgradient media (surface soil, subsurface soil, groundwater, or estuarine sediment) since it was not detected at concentrations above approved background levels. Therefore, the cobalt concentrations in open water sediment are not considered related to past activities or the result of a past release at SWMU 70. Since the open water sediment concentrations are not site-related, no further sampling is recommended for open water sediment. No changes to the recommendations in the Draft Phase I RFI are required.

EPA SPECIFIC COMMENT

1. ***Section 7.1, Conclusions, Page 7-1:*** *Section 7.1 indicates cobalt concentrations in upgradient media are less than background concentrations and therefore, are not contributing to cobalt concentrations detected in open water sediments. However, the relationship between open water sediment concentrations and upgradient media concentrations has not be adequately addressed in the Draft Phase I RFI Report as upgradient concentrations below background levels have been eliminated from considerations. The relationship should be analyzed without consideration of background concentrations to determine if upgradient contaminants could be migrating to open water sediments. This information is relevant for establishing the nature and extent of contamination at SWMU 70. Once the potential for migration is determined, background concentrations should be considered in determining if detected concentration levels pose a risk or hazard to human health and the environment. Revise Section 7.1 to discuss the relationship between detected cobalt concentrations in open water sediments and upgradient media without consideration of background concentrations.*

Navy Response to EPA Specific Comment No. 1: Refer to the Navy Response to EPA General Comment No. 1. As noted in the comment, concentrations below background levels were eliminated from further consideration as site-related contaminants in the Draft Phase I RFI. Cobalt was not identified as a site-related contaminant at SWMU 70 in any upgradient media (surface soil, subsurface soil, groundwater, or estuarine sediment) since it was not detected at concentrations above background levels. It is acknowledged that cobalt may be migrating from upgradient media to open water sediment. However, the cobalt concentrations in open water sediment are not considered related to past activities at SWMU 70 because cobalt was not identified as site-related in any other medium. Section 7.1 will be revised to reflect this rationale.

Additionally, it is important to recognize the conservativeness of using Regional Screening Levels for residential and industrial soil to screen the sediment data. These screening criteria are used in the absence of sediment-specific screening criteria in order that the data may be evaluated from the human health perspective. It should also be noted that there were no cobalt exceedances of the industrial soil and ecological screening criteria.

PREQB COMMENTS DATED JULY 6, 2009

(PREQB comments are provided in italics, while the Navy responses are provided in regular print.)

1. *The following bullets are some minor corrections that should be appointed:*

   - *At page 2-3, the first paragraph stated that the subsurface soil that was obtained from 16E-01 and 16E-02 were collected to a depth of 15 feet bgs and 5 feet bgs, respectively. Then, the next sentence indicated that groundwater at both locations was encountered at 5 feet bgs. Please clarify if there is a typographical error.*

   - *Deviations from the approved work plan were clearly enumerated and justified at the report.*

- *The first bullet on page 6-6 appears to have a typographical error, please check if there should be a "to" after the NOEL acronym.*

Navy Response to PREQB Comment No. 1:

- The information presented in the first paragraph on page 2-3 is correct. Based on a review of the boring logs, boring 16E-01 was drilled to a depth of 15 feet bgs, while boring 16E-02 was drilled to a depth of 5 feet bgs. Groundwater was encountered at 5 feet bgs at both locations.

- Comment noted.

- As noted in the comment, the word "to" will be added after the NOEL acronym in the first bullet on page 6-6.