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December 17, 2010

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 N62470-10-D-3000
IQC for A/E Services for Multi-Media
Environmental Compliance Engineering Support
Delivery Order (DO) JM01
U.S. Naval Activity Puerto Rico (NAPR)
EPA I.D. No. PR2170027203
Draft Final Corrective Measures Study Final Report for SWMU 45

Dear Mr. Everett:

Michael Baker Jr., Inc. (Baker), on behalf of the Navy, is pleased to provide you with one hard copy of the replacement pages for the Draft Corrective Measures Study Report for SWMU 45, Naval Activity Puerto Rico for your review and approval. These replacement pages make up the Draft Final Corrective Measures Study Final Report for SWMU 45. Directions for inserting the replacement pages into the Draft Corrective Measures Study Report for SWMU 45 are provided for your use. Also included with the copy of the replacement pages is one electronic copy of this report provided on CD.

This document is being submitted in accordance with EPA comments dated October 14, 2010. The Navy responses to these comments are attached for your review.

If you have questions regarding this submittal, please contact Mr. Mark Davidson at (843) 743-2124. Additional distribution has been made as indicated below.

Sincerely,
MICHAEL BAKER JR., INC.

A handwritten signature in black ink that reads "Mark E. Kimes".

Mark E. Kimes, P.E.
Activity Coordinator

MEK/vk
Attachments

cc: Ms. Debra Evans-Ripley, BRAC PMO SE (letter only)
Mr. David Criswell, BRAC PMO SE (letter only)
Mr. Mark E. Davidson, BRAC PMO SE (1 hard copy and 1 CD)
Mr. Pedro Ruiz, NAPR (1 CD)
Mr. Tim Gordon, US EPA Region II (1 hard copy and 1 CD)
Mr. Carl Soderberg, US EPA Caribbean Office (1 hard copy and 1 CD)
Ms. Gloria Toro, PR EQB (1 hard copy and 1 CD)
Ms. Wilmarie Rivera, PR EQB (1 hard copy and 1 CD)
Mr. Felix Lopez, US F&WS (1CD)
Ms. Brenda Smith, TechLaw, Inc. (1 CD)

**NAVY RESPONSE TO EPA COMMENTS DATED OCTOBER 14, 2010 ON THE
DRAFT CORRECTIVE MEASURES STUDY REPORT 45 –
AREA OUTSIDE BUILDING 38 (FORMER POWER PLANT)
DATED JULY 22, 2010**

Regulator comments are provided in Italics while the Navy's response is provided in plain text.

EPA COMMENTS

GENERAL COMMENT

EPA General Comment: *Throughout the human health risk assessment (HHRA) conclusions are made that no corrective actions are necessary other than institutional controls to prevent residential exposure. However, given that risks to various site receptors fall within EPA's risk management range 1×10^{-6} to 1×10^{-4} , the assertion that risk within this range are "acceptable" for these various site receptors for surface soil, subsurface soil, and sediment does not support the exclusion of the identification of chemicals of concern (COCs) and the development of corrective action objectives (CAOs) for these media. Additionally, it should be noted that EPA makes the final decision regarding the acceptable level of residual risk when site risks fall within 1×10^{-6} to 1×10^{-4} . As a result, the CMS requires revisions to address EPA's point of departure risk level of 1×10^{-6} as the starting point for identifying COCs and developing CAOs. Specific comments have been prepared to address this concern.*

Navy Response to EPA General Comment: The Navy partially agrees with this comment. The Navy agrees that the term "acceptable risk(s)" is used inappropriately in some instances in the HHRA. The HHRA will be revised to delete the word "acceptable" when referring to magnitude of risks. Rather, the terms "target risk level" and "target risk range" will be used when discussing the results of the risk calculations.

However, the Navy disagrees with the use of the lower bound of USEPA's target risk range as the starting point for identification of COCs and development of CAOs. The following points are offered as rationale.

- In the National Contingency Plan (USEPA, 1990), the levels of 1×10^{-06} to 1×10^{-04} are given as a range of "generally acceptable risk." This guidance is cited in Section 5.3.4.1 of the SWMU 45 HHRA; specifically, "estimated ILCR [Incremental Lifetime Cancer Risk] values are compared 1×10^{-06} to 1×10^{-04} , which represents the target risk range of ILCR values considered by the USEPA to represent an acceptable risk (USEPA, 1990)." Therefore, in keeping with USEPA guidance, the HHRA identified chemicals presenting "unacceptable risk" as those with ILCRs greater than 1×10^{-04} , or the upper bound of USEPA's "generally acceptable" (or target) risk range. The original HHRA for SWMU 45 (Baker, 1999) also identified chemicals with ILCRs greater than 1×10^{-04} as those presenting "unacceptable risk." This designation was not considered objectionable to the regulatory agencies at that time. Furthermore, this approach has been used in other HHRAs conducted for NAPR without comment up to this point (e.g., Revised Draft RCRA Facility Investigation Report for SWMU 9 [Baker, 2000], and Final Corrective Measures Study Final Report for SWMU 68 [Baker, 2009]). There has been no discussion of an alternative to 1×10^{-04} as an appropriate target level for NAPR. It follows that chemicals with ILCRs greater than 1×10^{-04} would then be designated as COCs for SWMUs at NAPR.
- It should be noted that this HHRA was conducted under the RCRA program. As such, only those chemicals determined to be site-related are carried forward for further action. The SWMU 45

HHRA presented calculated risks and provided recommendations for further evaluation and/or action for COPCs with calculated risk levels above the target risk level (1.0) in the case of noncarcinogens and the target risk range in the case of carcinogens. Base on the results of this HHRA, none of the carcinogenic COPCs (e.g., arsenic and benzo[a]pyrene) were determined to be site-related. Therefore, since there were no carcinogenic COPCs determined to be site-related or with ILCRs greater than or equal to 1×10^{-04} (with the exception of ILCRs calculated for future residential receptors), these chemicals were not recommended for further action (i.e., identified as COCs).

(Note: Future residential receptors are not included as potential human receptors in the RCRA §7003 Administrative Order on Consent for NAPR (USEPA, 2007) based on anticipated future use of SWMU 45 remaining industrial. The future residential exposure scenario is included for conservative comparison with other exposure scenarios. As directed by USEPA, CAOs should reflect the reasonably anticipated land use. Therefore, no further actions in the form of corrective measures are recommended for site media based on risk to future residential receptors.)

- The National Contingency Plan (USEPA, 1990) specifically designates 1×10^{-06} as a starting point for discussion of acceptable target risk. Rather than use 1×10^{-06} to identify COCs and develop CAOs, it is at this point the regulatory agencies have the opportunity to comment on acceptable target risk levels for specific chemicals. If the regulatory agencies are concerned about specific chemicals with ILCRs greater than 1×10^{-06} , pertinent information is available on the calculation of risks for each chemical (e.g., in tables and appendices of the HHRA) and the history of the chemical at the SWMU (if applicable) for discussion between all parties to determine what chemicals should move forward as COCs (for a specific SWMU) and begin development of CAOs.

In summary, it is the Navy's intention to continue its use of the upper bound of USEPA's generally acceptable target risk range (1×10^{-06} to 1×10^{-04}) (USEPA, 1990) to identify those carcinogenic COPCs as COCs for the development of CAOs. No revisions to the document are required based on the use of the lower bound of USEPA's target risk range as the starting point for identification of COCs and development of CAOs.

References

Baker, 1999. Revised Draft RCRA Facility Investigation Report for Operable Unit 3/5, Naval Station, Roosevelt Roads, Puerto Rico. Coraopolis, Pennsylvania. April 1, 1999.

Baker, 2000. Revised Draft RCRA Facility Investigation Report for SWMU 9, Naval Station Roosevelt Roads, Puerto Rico. March 10, 2000.

Baker, 2009. Final Corrective Measures Study Final Report for SWMU 68, Naval Activity Puerto Rico, Ceiba, Puerto Rico. June 12, 2009.

USEPA, 2007. RCRA § 7003 Administrative Order on Consent. In the Matter of: United States, the Department of the Navy, Naval Activity Puerto Rico formerly Naval Station Roosevelt Roads, Puerto Rico. Environmental Protection Agency, EPA Docket No. RCRA-02-2007-7301. January 29, 2007.

USEPA, 1990. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule. Federal Register, 40 Code of Federal Regulations Part 300, March 8, 1990.

SPECIFIC COMMENTS

EPA Specific Comment 1: Section 5.3.1.2.1, COPC Selection Criteria, Page 5-5: *The subsection describing the USEPA Regional Screening Levels (RSL) used in the HHRA states that the December 2009 RSLs were used. This section acknowledges that the RSL table was recently updated in May 2010 and states that “this version would have little to no impact on the current COPC selection, and no changes to the screening were made.” However, the basis for this conclusion is not supported. Additional clarification is required that describes how it was determined that the changes to the RSL table would have “little to no impact” to the current COPC selection process.*

Navy Response to EPA Specific Comment 1: Text will be added to this section that states all COPCs were checked against the May 2010 RSLs and no discrepancies were found and therefore, the data tables were not revised to rescreen the data.

EPA Specific Comment 2: Section 5.3.1.2.3, Selection of COPCs, Page 5-8: *The subsection that describes the COPC selection for fish tissue states that the Regional SL Table does not contain risk-based screening values with which to evaluate fish tissue concentrations. Although the generic Regional SL table does not include a fish consumption pathway, fish-tissue screening levels can be generated using the Regional Screening calculator. EPA Region 3 has recently generated fish SLs based on the default mode in the calculator to yield a list of fish tissue SLs located at the following website:*

http://www.epa.gov/reg3hscd/risk/human/pdf/MAY_2010_FISH.pdf

The default fish consumption rate in the calculator is 54 g/day. If subsistence fishers live near the site, then the calculator may require an adjustment to the consumption rates to screen for populations with consumption rates that differ from the default assumption. The current approach is valid as written, however, consideration of the use of fish SLs in future documents may also be used as another option.

Navy Response to EPA Specific Comment 2: Comment noted. No revisions to the HHRA are required.

EPA Specific Comment 3: Section 5.3.2.4, Data Analysis, Page 5-14: *The last paragraph of this section states that rejected data (R-flagged data) were not used in the risk assessment and that these data reflect only a “small percentage of the analytical data rejected.” However, a list of the data rejected and the number of samples of data rejected by exposure area and medium have not been referenced to demonstrate that the R-flagged data are only a small percentage of the overall data used in the risk assessment. It is correct to exclude R-flagged data from the HHRA. However, it is important to explain how this data exclusion impacts the HHRA from an uncertainty perspective. This section should provide more specific information on what data was rejected by exposure area and medium to include the number of samples rejected versus the number of samples included in the HHRA to support the conclusions regarding the impacts of this excluded data on the overall HHRA.*

Navy Response to EPA Specific Comment 3: Section 5.3.2.4 will be revised to provide further detail in the form of percentage of data by medium that was “R” flagged.

EPA Specific Comment 4: Section 5.3.2.5, Exposure Input Parameters, Page 5-16: *The subsection that describes the exposure factors used to evaluate fishermen indicates that a fish ingestion rate of 0.0417 kilograms per meal (kg/meal) was used and cites EPA’s Exposure Factors Handbook (2007). According to this guidance the recommended ingestion rate for the general population is 63 grams per day (g/day) which corresponds to 0.063 kg/meal. It appears that the value used in the HHRA is too low to represent the general population. It is recommended that the high ingestion rate from EPA guidance*

(2007) be used to evaluate this exposure pathway or discuss in the uncertainty analysis if use of a higher ingestion rate would impact the overall risk conclusions.

Navy Response to EPA Specific Comment 4: The fish ingestion rate will be revised from 0.0417 kg/meal to 0.063 kg/meal. All applicable text, risk calculations, and tables will be revised accordingly.

EPA Specific Comment 5: Section 5.3.4.3, Potential Human Health Effects, Page 5-22: Throughout this section risks are determined to be “acceptable” if the cancer risks were within the 1×10^{-6} to 1×10^{-4} risk range. It should be noted that while cancer risks falling between the range of 1×10^{-6} to 1×10^{-4} may be deemed acceptable by the EPA, this decision is made on a site-specific basis by EPA. The HHRA conclusions should be revised based on 1×10^{-6} as the regulatory benchmark for cancer risks; in addition, this risk level should also be used as the basis for identifying chemicals of concern (COCs). For example, the summary of cancer risks for the Current/Future On-Site Worker states that the total site carcinogenic risk for the on-site worker was 1.8×10^{-5} , and concludes that because this risk is within the USEPA’s acceptable target risk range of 1×10^{-6} to 1×10^{-4} , that there were no unacceptable carcinogenic risks for this receptor associated with exposure to surface soil, surface water, or sediment at SWMU 45. The “acceptability” of risks that fall within EPA’s risk management ranges is determined by EPA, thus, reference to the determination that a risk is acceptable should be removed from all risk summary and conclusions sections. Revise Section 5.3.4.2 to specify whether the risks fall within or outside of EPA’s risk management range of 1×10^{-6} to 1×10^{-4} and remove reference to the determination that a risk is acceptable since this is a risk management decision which is based on a number of factors (e.g., chemical mixtures, enforceable standards, etc.). In addition, include discussions on which chemicals resulted in risks exceeding a point of departure risk of 1×10^{-6} or greater.

Navy Response to EPA Specific Comment 5: Refer to the Navy response to the EPA General Comment.

EPA Specific Comment 6: Section 5.4.1, Qualitative Corrective Action Objectives (CAOs), Page 5-30: This section states that “[n]o unacceptable risks were identified for surface soil, surface water, and groundwater exposures based on industrial receptor scenarios. Therefore, qualitative CAOs for soil, groundwater, surface water, and sediment for the protection of human health assuming continued industrial use were not developed for SWMU 45.” According to Table 5-9, Summary of Receptor Risks and Hazards for COPCs for the current on-site worker, the total risk of 1.8×10^{-5} exceeds the point of departure risk of 1×10^{-6} due to PAHs in sediment and arsenic in surface soil. As stated in previous comments, the acceptability of cancer risks that fall within EPA’s risk range of 1×10^{-6} to 1×10^{-4} is a determination made by EPA; thus, it is inappropriate to exclude risks falling within this range from the selection of COCs that are not representative of background conditions as well as the development of CAOs. As a result, it is likely that the list of COCs is incomplete. To ensure that all potential COCs and CAOs have been considered, EPA’s point of departure risk should be used as a basis for COCs and CAO identification. The CMS should be revised to include COCs and CAOs based on a point of departure risk of 1×10^{-6} .

Navy Response to EPA Specific Comment 6: Refer to the Navy response to the EPA General Comment.

EPA Specific Comment 7: Section 5.4.2, Quantitative Corrective Action Objectives (CAOs), Page 5-30: This section states that “[n]o unacceptable risks were identified for surface soil or surface water exposures based on a residential scenario” and that “[n]o unacceptable risks were identified for exposure to estimated fish tissue concentrations based on a recreational scenario.” Based on these conclusions quantitative CAOs for soil, groundwater, surface water, sediment, and fish tissue for the protection of human health assuming residential/recreational land uses were not developed for SWMU

45. According to Tables 5-10, 5-11, 5-13 and 5-14, Summary of Receptor Risks and Hazards for COPCs for the future current/future adult and child trespassers, future adult and child resident residents, respectively, the total risk for a number of media exceed the departure risk level of 1×10^{-6} . Further, for residential exposures to groundwater, risks exceed the upper bound of the target risk range. As a result, COCs that are not representative of background conditions, and CAOs should be identified for those media exceeding the 1×10^{-6} . For example, according to Tables 5-10 and 5-11, polycyclic aromatic hydrocarbons (PAHs) in sediment pose adult and child trespasser risks greater than 1×10^{-6} however, PAHs were not identified as COCs; as a result, CAOs were also not developed for this medium. To ensure that all potential COCs and CAOs have been considered, the CMS should be revised to consider EPA's point of departure risk as a basis for COCs and CAO identification.

Navy Response to EPA Specific Comment 7: Refer to the Navy response to the EPA General Comment.

EPA Specific Comment 8: Section 6.0, Summary of COCs and CAOs, Page 6-1: Throughout this section the inappropriate use of EPA's point of departure risk of 1×10^{-6} is perpetuated. This section relies on 1×10^{-4} cumulative cancer risk level as the basis for identifying COCs, and as a result, only the residential land use scenario is highlighted as a concern that justifies the need for land use restrictions. As a result, this section is incomplete as it has not highlighted those chemicals contributing to cumulative risk exceedances greater than 1×10^{-6} . Based on the revisions to Section 5.0, Human Health Risk Assessment and Development of CAOs, this section needs to be revised to accurately reflect EPA's point of departure risk level to determine the COCs and subsequent CAOs for all media contributing significantly to overall total exposure.

Navy Response to EPA Specific Comment 8: Refer to the Navy response to the EPA General Comment.

EPA Specific Comment 9: Section 6.2, Subsurface Soil, Page 6-1: Vanadium is described in Section 6.2 as exceeding target limits for future residential and industrial receptor scenarios; however, the exceedance does not present an unacceptable risk because the vanadium levels are representative of background. Section 7.0, Justification and Recommendation of the Corrective Measure, also states that the concentrations of vanadium in subsurface soil and sediment are representative of background. Provide additional information concerning background levels of vanadium at NAPR in order to support the assumption that elevated levels of vanadium are attributable to background levels.

Navy Response to EPA Specific Comment 9: Additional information on background levels of vanadium at NAPR will be included in Section 5.3.6 (Comparison to Background Levels).

EPA Specific Comment 10: Section 7.0, Justification and Recommendation of the Corrective Measure, Pages 7-1 and 7-2: Section 7.0 discusses the selection of the corrective measure (CM) for SWMU 45 but does not go through the technology screening and evaluation process typical of a CMS Report. Revise the CMS Report to provide a description of the remedial technologies that were screened from consideration and the evaluation process that was conducted to determine that Corrective Action Complete (CAC) with institutional controls is the appropriate CM for this site.

Navy Response to EPA Specific Comment 10: Refer to the Navy response to the EPA General Comment. Based on the results of the HHRA, no COCs were identified for SWMU 45 based on an industrial setting. However, an institutional control restricting future residential land and groundwater use was recommended because unrestricted land use cannot be recommended. As such, a technology screening and an evaluation process are not necessary and no revisions to the text are required.

EPA Specific Comment 11: Section 7.0, Justification and Recommendation of the Corrective Measure, Page 7-1: *The exclusion of COCs and quantitative CAOs altogether from the CMS is not justified based on the inappropriate use of EPA’s risk management range. This section should be revised following the updates to Section 5.0 to reflect the list of COCs in each media exceeding 1×10^{-6} and the identification of CAOs subsequent to COC identification.*

Navy Response to EPA Specific Comment 11: Refer to the Navy response to the EPA General Comment.

EPA Specific Comment 12: Section 7.2.3, Human Health Considerations, Page 7-2: *The exclusion of COCs and quantitative CAOs altogether from the CMS is not justified based on the inappropriate use of EPA’s risk management range. This section should be revised following the updates to Section 5.0 to reflect the list of COCs in each media exceeding 1×10^{-6} and the identification of CAOs subsequent to COC identification.*

Navy Response to EPA Specific Comment 12: Refer to the Navy response to the EPA General Comment.

EPA Specific Comment 13: Section 8.1, Corrective Action Complete, Page 8-2: *The exclusion of COCs and quantitative CAOs altogether from the CMS is not justified based on the inappropriate use of EPA’s risk management range. This section should be revised following the updates to Section 5.0 to reflect the list of COCs in each media exceeding 1×10^{-6} and the identification of CAOs subsequent to COC identification. A summary of the environmental media exceeding the 1×10^{-6} point of departure risk level is summarized below.*

Exposure Scenario	Environmental Media Exceeding 1×10^{-6} Cancer Risk					
	Surface Soil	Subsurface Soil	Groundwater	Surface water	Sediment	Fish
Onsite Worker	X				X	
Trespasser					X	
Fishermen						X
Resident	X	X	X		X	
Industrial	X	X	X		X	

Navy Response to EPA Specific Comment 13: Refer to the Navy response to the EPA General Comment.

EPA Specific Comment 14: Figure 2-3, Soil, Groundwater, Surface Water, and Sediment Sampling Locations 1996 and 1997 RFIs and 2003 Additional Data Collection Investigation, and Figure 2-4, Embayment Sediment Sampling Locations Steps 6 and 7 of the Baseline Ecological Risk Assessment: *These figures do not include all symbols used on the maps in the legends. For example, the blue line, green line, and the green circles are not explained on the figures. Include all map symbols within the legend on all figures.*

Navy Response to EPA Specific Comment 14: Figures 2-3 and 2-4 will be revised as necessary to include applicable map symbols in the legends.

PREQB COMMENTS

PAGE-SPECIFIC COMMENTS

PREQB Comment 1: *Page 1-1, Sections 1.1 and 1.2:* This document also presents the ecological risk assessment for SWMU 45. Therefore, please revise the purpose and objectives of this report to include a presentation of the ecological risk assessment.

Navy Response to PREQB Specific Comment 1: Section 1.1 currently includes the presentation of ecological risks as a purpose of the report. However, a bullet item will be added to Section 1.2 to include presentation of ecological risks as a report objective.

PREQB Comment 2: *Page 5-2, Section 5.2:*

- a. *Please clarify why soils down to 10 feet bgs were evaluated in this risk assessment when groundwater is present at depths ranging from 4 to 9 feet bgs. Please describe typical building construction and whether excavations down to 10 feet are typically conducted. Please note that for other sites, subsurface soil down to 6 feet is evaluated for the construction worker due to typical construction practices in Puerto Rico.*

Navy Response to PREQB Specific Comment 2(a): At NAPR, it is considered that soil up to 10 feet bgs could be exposed during construction activities. Therefore, soil down to 10 feet bgs is evaluated as a potentially complete exposure pathway as agreed upon in the January 9, 2009 conference call between the Navy, USEPA, and PREQB.

- b. *Although an adult fisherman may catch the fish, the fish may be brought home and consumed by all family members or youths and children may also catch the fish. Therefore, EQB prefers the more protective approach of evaluating adults, youths and children for fish ingestion.*

Navy Response to PREQB Specific Comment 2(b): The adult recreational fisherman exposure scenario evaluated in the HHRA represents a very conservative approach. Fish/biota tissue exposure concentrations calculated from concentrations of important bioaccumulative chemicals detected in the sediment and conservative USEPA default exposure parameters were used in the risk calculations. The site setting is not conducive to fishing (i.e., public access to site is prohibited; industrial setting consists of the former power plant and the rocky, steep shoreline surrounding Puerca Bay). For these reasons, evaluation of an adult receptor only is considered reasonable and adequate. It is not expected that risks will be significantly underestimated by including only the adult. However, discussion will be added to the uncertainties section (Section 5.3.5) stating that although youth and child recreational fishermen were not evaluated in the HHRA, it is not expected that risks would be significantly underestimated.

PREQB Comment 3: *Page 5-3, Section 5.3.1.1:*

- a. *Please provide a discussion of the usability of the data for risk assessment purposes since the data are from historical investigations that may have been performed for different project objectives. As part of this discussion, please include an evaluation of the detection limits for the data as compared to screening criteria used to identify chemicals of potential concern for the risk assessments.*

Navy Response to PREQB Specific Comment 3(a): Risk assessments were conducted for the documents listed in Section 5.3.1.1, and data usability discussions are provided therein. An evaluation of

the detection limits compared to screening criteria is currently provided in the document in Section 5.3.5.2.

- b. *Appendix A contains data that were used in the risk assessments. Some of the data are qualified as rejected (R). Please clarify if these data were used in the risk assessments. If not, please remove this data from Appendix A.*

Navy Response to PREQB Specific Comment 3(b): The last paragraph of Section 5.3.2.4 (Data Analysis) states that reported concentrations qualified with an "R" (rejected) were not used in the statistical evaluation. However, these data will not be removed from Appendix A because it is stated in the text that "R" qualified data is not used in the risks assessment. Appendix A is a presentation of the data in full for transparency.

PREQB Comment 4: *Page 5-8, Section 5.3.1.2.3, Fish Tissue:* Due to the potential for natural process to convert inorganic mercury to methyl mercury, EQB prefers to include methyl mercury as a COPC for fish tissue, as mercury is identified as a chemical of potential concern in sediment.

Navy Response to PREQB Specific Comment 4: Inorganic mercury was not identified as a COPC in sediment or fish tissue. No revisions to the document are required.

PREQB Comment 5: *Page 5-10, Section 5.3.2.1:* Please clarify why a trespasser exposure scenario is evaluated rather than a recreational exposure scenario (i.e., is public access to the site prohibited?) If it is open to the public, EQB prefers that a recreational exposure scenario be evaluated, where adult, youth and child receptors are quantified, rather than evaluating an adult and youth trespasser.

Navy Response to PREQB Specific Comment 5: A trespasser exposure scenario was evaluated rather than a recreational exposure scenario because public access to the site is prohibited.

PREQB Comment 6: *Page 5-11, Section 5.3.2.1:*

- a. *Please clarify in the text that groundwater in Puerto Rico is considered potable; and although not currently being used, under a future land use scenario, groundwater is considered a potable drinking water source.*

Navy Response to PREQB Specific Comment 6(a): As stated in the RCRA §7003 Administrative Order on Consent for NAPR (USEPA, 2007), groundwater underlying the Facility is not used as a drinking water source or for other usages. It is also expected that future land usage will be similar to land usage patterns currently in place. However, it is acknowledged that future land use is ultimately not known. Therefore, potential exposure to groundwater as a potable source is currently evaluated in the HHRA using future residential exposure scenario. However, Section 5.3.2.1 will be revised to indicate that Puerto Rico considers its groundwater a potential potable source.

- b. *Fisherman may be exposed to soil, sediment, and surface water while fishing at the site. Please include these environmental media for the fisherman exposure scenario. Also, it is unclear that only adult fisherman would be fishing at the site. EQB's preference would be to evaluate an adult, youth and child for this exposure scenario.*

Navy Response to PREQB Specific Comment 6(b): An adult trespasser receptor was evaluated for potential exposures to surface water and sediment at SWMU 45. The surface water/sediment exposure estimates would be comparable to those for the adult recreational fisherman (i.e., the exposure parameters would be the same or similar). A statement will be added to Section 5.3.2.1 to state that the adult

recreational fisherman receptor's potential exposures to SWMU 45 surface water and sediment is considered comparable to that of the adult trespasser. Concerning the addition of youth and child recreational fishermen receptors, refer to the Navy response to PREQB Specific Comment 2(b).

PREQB Comment 7: *Page 5-12, Section 5.3.2.1: Please clarify why a future industrial worker is not evaluated for exposure via ingestion of groundwater. A future worker will consume water while working at a site; therefore, EQB's preference is to include groundwater as an exposure medium for the industrial worker for ingestion exposure since groundwater is considered potable.*

Navy Response to PREQB Specific Comment 7: Evaluation for groundwater exposure via ingestion was not included for the future industrial/commercial worker for the following reasons. Groundwater exposure is not listed as a potentially complete pathway for a future industrial worker in the RCRA §7003 Administrative Order on Consent for NAPR (USEPA, 2007). It is unlikely that a future worker (assuming an indoor office setting) would consume a significant amount of tap water while working at a site when compared to the amount of tap water consumed at a residence. The HHRA currently includes an evaluation of the groundwater ingestion exposure pathway for future residential and future construction worker receptors. Therefore, the potential groundwater exposure is adequately evaluated using the future residential and construction worker receptors.

PREQB Comment 8: *Page 5-12, Section 5.3.2.2: Please clarify why fisherman and trespassers are not included in the future exposure scenarios in the last sentence of the first paragraph.*

Navy Response to PREQB Specific Comment 8: The last sentence of the first paragraph will be revised to include the adult recreational fisherman and trespasser receptors.

PREQB Comment 9: *Tables 5-1 to 5-3: Please revise the column heading for "Regional Screening Level Residential SSL." An SSL denotes a screening level protective of the migration of contamination to groundwater. SSLs are included on the EPA Regional Screening Level table, so it is confusing to refer to "Residential SSLs." The criteria presented on this table are referred to as RSLs, consistent with the text. Please revise this column for clarity to refer to "Residential RSLs."*

Navy Response to PREQB Specific Comment 9: Tables 5-1, 5-2, and 5-5 will be revised to replace "SSL" with "Soil."

PREQB Comment 10: *Page 5-16, Section 5.3.2.5 and Table 5-7:*

- a. *PREQB prefers a more protective approach for evaluating fish ingestion provided by EPA where it is assumed that 8 oz of fish is consumed at each meal (EPA 2000), and fish is consumed at 7 meals per week, based on a fish study conducted in Puerto Rico (Burger and Gochfeld, 1991).*

Navy Response to PREQB Specific Comment 10(a): The Navy agrees that a more conservative fish ingestion rate is appropriate. However, consumption of 8 oz. of fish (approximately equal to 0.23 kg) per meal for 7 meals per week is considered extremely conservative for a recreational exposure scenario at this SWMU. There is currently no presumption of a fish advisory for Puerca Bay as indicated by the EPA (2000) reference. The USEPA recommends a conservative fish ingestion rate of 0.063 kg/meal the general population (refer to Navy response to EPA Specific Comment 4). Given the conservative nature of this exposure scenario (i.e., public access to site is prohibited; industrial setting consists of the former power plant and the rocky, steep shoreline surrounding Puerca Bay), the ingestion rate of 0.063 kg/meal is considered appropriate. Therefore, the HHRA will be revised to reflect a fish ingestion rate of 0.063 kg/meal.

- b. *As an adult is assumed to be present at a residence for 24 years, EQB prefers a more protective approach where this same exposure duration is applicable to the fisherman, who may fish at the site throughout the time period he resides in the area.*

Navy Response to PREQB Specific Comment 10(b): As shown in Table 5-7, the exposure duration used for the adult recreational fisherman is 24 years. No revisions to the HHRA are necessary.

- c. *Children may also ingest fish from the site brought home by fisherman and need to be added as a receptor for the fish ingestion exposure scenario.*

Navy Response to PREQB Specific Comment 10(c): Refer to the Navy response to PREQB Comment 2(b).

- d. *A respiration rate is presented in this table. Please clarify if these values were used in quantifying inhalation exposure, as current EPA guidance (RAGS Part F) differs from this approach.*

Navy Response to PREQB Specific Comment 10(d): The respiration rate was inadvertently included in Table 5-7. Respiration rates were not used in quantifying inhalation exposure. Risks for inhalation exposures were calculated according to RAGS Part F. The respiration rate will be removed from Table 5-7.

PREQB Comment 11: *Page 5-18, Section 5.3.3.1: Please add a reference in this section to the table that lists the reference doses and reference concentrations.*

Navy Response to PREQB Specific Comment 11: A reference to Table 5-8 (Human Health Risk Assessment Toxicity Factors) will be added to Section 5.3.3.1.

PREQB Comment 12: *Appendix C, Calculation of Chemical Concentrations in Fish Tissue: Table C-2: Please clarify why chemicals that are not considered important bioaccumulative chemicals (based on information presented in Table 5-6) are shown on this table, when the note below the table indicates that only chemicals that are important bioaccumulative chemicals are listed on this table.*

Navy Response to PREQB Specific Comment 12: Table C-2 will be revised to show only important bioaccumulative chemicals.

PREQB Comment 13: *Appendix D, Chemical Intake Equations: Page D-2: Please clarify if the inhalation exposure pathway was quantified in accordance with RAGS Part F, as the equation presented in this appendix differs from the current EPA approach for evaluating inhalation exposures and differs from the calculations presented in Appendix E. Please revise this appendix as applicable.*

Navy Response to PREQB Specific Comment 13: Risks for inhalation exposures were calculated according to RAGS Part F. The equation presented in Appendix D contains an error and will be revised to reflect the current equation as presented in RAGS Part F.

References:

Burger and Gochfeld. 1991. Fishing a Superfund Site: Dissonance and Risk Perception of Environmental Hazards by Fishermen in Puerto Rico. Risk Analysis. 11 (2). 269-277.

EPA, 2000. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. Volume 2 Risk Assessment and Fish Consumption Limits Third Edition. Office of Water.