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U S NAVY RESPONSES TO U S EPA REGION II AND PUERTO RICO ENVIRONMENTAL
QUALITY BOARD COMMENTS ON DRAFT PHASE I RESOURCE CONSERVATION AND
RECOVERY ACT FACILITY INVESTIGATION REPORT UNDERWATER INTRUSIVE
INVESTIGATION FOR AREA OF CONCERN E NAVAL ACTIVITY PUERTO RICO

5/30/2014
CH2M HILL

**Responses to USEPA and PREQB Comments on
Draft Phase I RCRA Facility Investigation Report, Underwater Investigation of
Area of Concern E – Piñeros & Cabeza de Perro Islands, Naval Activity Puerto Rico (April 2012)**

Comment No.	Document Location	Comment	Response	
USEPA	1	General Comment	<p>As stated in Section 2.2.6 of the report, donor explosives were used to demilitarize the discarded military munitions (DMM) and other material potentially presenting an explosive hazard (MPPEH) recovered during the underwater investigation around Piñeros and Cabeza de Perro Islands. A composite soil sample was subsequently collected from the detonation area to assess the potential presence of residual explosives constituents, perchlorate, and target analyte list (TAL) metals. According to Section 3.3 of the report, no explosives residues or perchlorate were detected in the sample. Detected TAL metals concentrations in the soil were used to develop excess lifetime cancer risk values and non-cancer hazardous quotients associated with the detonation area. These analyses are adequate to document that the detonation area poses no significant risks to human health, even under cumulative residential exposure scenarios.</p> <p>However, the report does not fully evaluate ecological risks associated with the detection of zinc above the relevant ecological screening value (120 milligrams per kilogram [mg/kg]) and background levels for the area (115 to 120 mg/kg). NAPR qualitatively discounts zinc as a concern because of its low concentration and small spatial area. While ecological risks may indeed prove to be of little concern in this area, a semi-quantitative analysis should be performed. The revised analysis should use the maximum detected concentration of zinc (i.e., 204 mg/kg, as reported in the duplicate sample), rather than the average value between the parent sample and its duplicate. Moreover, rather than simply allude to the small detonation site, the size of the detonation area should be specified (and compared to the size of the island as a whole). Ecological receptors of specific concern in this area should also be discussed. A clearer justification for discounting potential ecological risks is necessary before the document can be approved.</p>	<p>Based upon the small area potentially impacted, which is estimated to be an area with a diameter of approximately 6 feet (about 28 square feet) as compared with the size of the island as a whole (310 acres), potential ecological exposures are not biologically significant. The area where the detonation occurred is densely vegetated (scrub) and, based upon biological surveys conducted during the RFI Terrestrial Investigation, no protected species are known to occur in the area of the detonation. This information will be added to the text of Section 3.3.4 to support the conclusion that potential ecological exposures are insignificant. However, for conservatism, a semi-quantitative ecological risk evaluation, consisting of a comparison of site chemical concentrations to ecological soil screening values and background, and the other lines of evidence listed above, was conducted. The methodology used for this evaluation is consistent with that performed for similar investigations on Vieques, which has been accepted by both USEPA and PREQB.</p> <p>Given the large difference in the zinc concentration between the parent sample and the field duplicate (which was not seen in the other metals analyzed for, except lead, which was also elevated in the field duplicate relative to the parent sample), averaging the two values provides a better estimate of the likely exposure concentration. However, even if the higher value (204 mg/kg) is used, the resulting HQ (relative to the ESV) and background ratio (relative to the maximum NAPR background concentration) is only 1.70. Given the small potential for exposure (based upon the limited spatial area impacted) and the lack of any obvious phytotoxic effects at the point of detonation, this possible exceedance is not biologically significant.</p>
USEPA Specific	2	Section 3.2, Underwater MEC/MPPEH	<p>As discussed in Section 4.4 of the report, NAPR conservatively evaluated explosive ordnance factors based on hazards associated with the items from which the identified and recovered munitions debris (MD)</p>	<p>The following introductory paragraph has been added to Section 3.2 to summarize the results of the intrusive investigations at all three investigation areas:</p>

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	Intrusive Investigation, pp. 3-1 and 3-2	originated, rather than from the debris itself. This approach is acceptable in that it tends to overestimate hazards around Piñeros Island. Nevertheless, it is important to clarify in Section 3.2 that only one item of DMM was uncovered during the underwater investigation and that all other MD was recovered as expended cartridge casings, empty canisters, and inert parts.	<i>“Underwater intrusive investigations were conducted at areas UW-1, UW-2, and UW-3. Items recovered included only one unexpended munitions item, a Grenade, Hand: Smoke, M18 Series that was categorized as DMM. All other items were identified as cultural debris (CD) or munitions debris (MD) such as expended cartridge casings, empty canisters, and inert parts.”</i>
USEPA Specific	3 Section 3.2.2, Investigation Area UW-2, pp. 3-1 and 3-2	According to this section seven MD items were recovered from six locations in the UW-2 investigation area – with two items being found at one of the recovery sites. However, there is a discrepancy between Table 3-2 and Figure 3-6 as to where those two items were found. Table 3-2 suggests that the items were found within the first 100-foot interval on Transect 8, which has been identified as MD location 2-6 on Figure 3-6. Whereas, the table on Figure 3-6 indicates that the two pieces of MD were found in the second 100-foot interval on Transect 8 (MD location 2-5). Field notes should be used to determine the actual location (e.g., MD Location 2-5 or 2-6) of these pieces of MD, and the report should be revised accordingly.	The information presented in Table 3-2 is correct; two MD items were recovered in the first 100-foot interval of Transect 8. The table on Figure 3-6 has been revised so that the second listing of Item ID 2-5 is correctly shown as Item ID 2-6.
USEPA Specific	4 Section 3.3.1, Post-Detonation Soil Sample Analytical Results, p. 3-2	For consistency with supporting documentation and files, the files, the designation number for the post-detection composite soil sample, referenced in the first sentence of this section, should be corrected to read “CTO-172-SSMRS0301”.	The sample designation has been corrected to read “CTO-172-SSMRS0301.”
USEPA Specific	5 Section 4.2, Site Factors, p. 4-1	Although the first paragraph in this section addresses site conditions around Piñeros Island, the second paragraph appears to reference site conditions around Cabeza de Perro Islands. As such, the second paragraph should refer to strong currents around investigation area UW 4, rather than UW-2. This revision is critical as the presence of these strong currents is being used by NAPR to rule out the potential presence of human receptors, and thus the need for additional investigation around Cabeza de Perro Island.	The reference to UW-2 in the second paragraph of this section has been corrected to UW-4.
USEPA Specific	6 Section 4.5, Explosives Hazard Assessment Summary, pp. 4-3 and 4-4	In this section, the report references “standard procedures” and “strict accountability procedures” that would have ensured recovery of unexploded MK 8 demolition charges and active 66 millimeter rocket series DMM. The report should provide the specific reference, or at a minimum discuss in detail, these Standard Operating Procedures (SOPs) and confirm that they were in place throughout the period of historic military training operations with these munitions.	This statement was not meant to imply that there were written SOPs in place, but that certain procedures were standard. The statement regarding standard procedures and the remainder of this paragraph have been rewritten as follows: <i>“If these items were discovered in an unfired condition or as UXO, they could present a significant hazard to anyone encountering and disturbing them. Nothing was discovered to indicate that unfired MK 8 Demolition Charges were left on the site. The MD associated with the 66-MM rocket discovered during this</i>

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PREQB	1	<p>There are discrepancies in the number of seed items emplaced and found. These discrepancies are:</p> <ol style="list-style-type: none"> Section 2.2.5 says that 54 total seeds were emplaced. Section 3.2 says that 55 seeds were emplaced by noting that there were 18 emplaced in UW-1 and UW-2 while there were 19 emplaced in UW-3 for a total of 55 seeds. Then Table 3-1 says there were 17 in UW-1, Table 3-2 says there were 18 in UW-2 and Table 3-3 says there were 19 in UW-3 for a total of 54 seeds. <p>Please review the QC records and correct the report to consistently document the placement of QC seeds.</p>	<p><i>investigation was a single fin. Nothing has been discovered to indicate that an impact area for these rockets exists at the site. The probability of encountering a MK 8 Demolition Charge or a 66-MM rocket is considered low."</i></p> <p>The draft report erroneously implied that a certain number of unique seed items were emplaced and recovered. The fourth paragraph of Section 2.2.5 has been revised to accurately describe the QC seed process: <i>"The QC process also included QC seeding with industry standard objects as described in the Work Plan. The QC diver used two seed items. At each transect, the QC diver placed one at the beginning, and one about 25 yards from the beginning of the transect. When a UXO diver found a seed item, the QC diver took it, swam ahead, and placed it in a new location along the transect, repeating this procedure until the end of the transect was reached. The seed items were placed in a minimum of four locations along each transect: one close to the beginning, two randomly spaced in the middle, and one toward the end of the transect. The seed placements were varied between the left side, right side, and centerline of the each transect to ensure that the UXO divers were making a complete search along and to either side of the transect line. All seed items were found by the UXO divers, and there were no QC deficiencies."</i></p> <p>In addition, Tables 3-1, 3-2, and 3-3 have been revised to remove references to seed items.</p>	
PREQB	2	Section 2.2.5	<p>Section 2.2.5 on QC should describe the implementation of the QC program approved on the work plan and also, it should provide the QC documentation required in it. For example, the work plan requires:</p> <ol style="list-style-type: none"> Geophysical equipment warm-up; Personnel test; Static background and static spike tests; Three-phase control process with preparatory, initial and follow-up phase inspections for each definable feature of work with documentation of the inspections and findings. There is no indication that any of these required QC functions were performed and no documentation of any of these QC requirements in the report. Please explain and provide all available documentation. 	<p>The discussion of QC Section 2.2.5 has been expanded to include the following text:</p> <p><i>The QC conformance results for October 2011 (Attachment 1) and DFOW auditing procedures results for October 2011 (Attachment 2) are presented in Appendix C.:</i></p> <ul style="list-style-type: none"> <i>Attachment 1 presents the the MEC-related QC requirements from the Phase I RFI Work Plan (CH2M HILL, 2011) and conformance results. The QC conformance results were based on the following: Instrument QC procedures, transect QC procedures, definable features of work and the three-phase control process, audit procedures, and records</i>

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PREQB	3	Page 2-2, Sections 2.2.6 and 2.3:	<p>a. Please provide details on how the open detonation was designed. It is unclear from the information provided that the area likely to have been impacted is the 1 square meter sampled (i.e., the blast was directed downward rather than outward).</p> <p>b. Please specify that method 8330A was the analytical method for explosives.</p>	<p>generated.</p> <ul style="list-style-type: none"> Attachment 2 details the specific QC audit procedures for the DFOs, including the phase during which it was performed, the frequency of performance, the pass/fail criteria, and actions to take if failure occurred. <p>The preparatory phase, the initial phase, the follow-up phase and final acceptance checklists were not used as described in the Work Plan; however, Attachments 1 and 2 provided in Appendix C serve in lieu of the checklists. These attachments provide the documentation needed to show that the QC program was implemented.</p> <p>Quality control documentation has been added as Appendix C and Appendix D to the report.</p>
PREQB	4	Section 3.2.3 on Page 3-2	<p>Section 3.2.3 on Page 3-2 makes the first mention of finding a significant number (197) small arms ammunition (SAA) at UW-3. This is mentioned again in the Explosives Hazard Assessment in Section 4.4 on Page 4-2. It appears that this is mentioned as if there were no hazards associated with SAA and they are not even mentioned in the bulleted list on the following page. EQB requests more information on these SAA. Were they complete rounds consisting of the projectile, case, powder and primer? Were some found in a container? Were some found clustered together or were all scattered? Were any linked? What were they: .50-cal, .30-cal, 5.56-mm? Also, please explain how the hazard presented by SAA is being treated in</p>	<p>The second bullet under Section 3.2.3 has been revised as follows to clarify the types and conditions of the SAA: "197 expended SAA items consisting of scattered casings and links from 5.56mm, 7.62mm, and .50-cal rounds."</p> <p>The statement in Section 4.4 regarding the recovery of 197 pieces of SAA has been revised as follows: "In addition, 197 pieces of expended SAA were recovered at UW-3. SAA will not be considered further in the hazard assessment because only expended SAA rounds were recovered during the intrusive investigation and</p>

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		this document. Please either explain why this hazard isn't addressed and evaluated or address and evaluate this hazard.	<i>expended SAA does not present an explosive hazard."</i>
PREQB	5 Section 4.4 on Page 4-2	Section 4.4 on Page 4-2 refers to the smoke grenade as "fired". As this ordnance is handthrown it would be better to refer to the intended use of this ordnance as "thrown" or the more general "deployed as designed".	The reference on Page 4-2 to the smoke grenade not being fired has been revised to state that the item had not been deployed as designed. The reference the smoke grenade as unfired DMM under the first bullet on Page 4-3 has been revised to refer to "unexpended DMM."
PREQB	6	The bullet on the "Cartridge, 40mm; Practice M781 Series" contains the statement that "... an unfired cartridge (DMM) is very unlikely to function if encountered by a receptor". EQB believes this statement isn't technically correct. As these DMM are fired by striking the percussion impact primer in the base of the ordnance (similar to SA A) these are very easy to initiate. Someone unfamiliar with this ordnance, a child for example, may possibly strike the base of the case against a rock or other hard object to see what will happen. This will cause the propellant to ignite with disastrous effects. It is likely that the person holding a 40-mm DMM in their hand while the propellant functions will not survive the incident and they will certainly lose their arm in the best-case scenario. Please remove this statement.	The statement "... an unfired cartridge (DMM) is very unlikely to function if encountered by a receptor" has been removed from the text.
PREQB	7	The bullet on "Demolition Charge, MK 8 Series"; Please describe what was found from this ordnance. Was it just the end cap from a functioned charge? Please explain.	The statement "... and only the inert female coupling from a functioned MK 8 was found" has been added to the bullet on "Demolition Charge, MK 8 Series" in Section 4.4.
PREQB	8 Section 4.5 on Page 4-4	Section 4.5 on Page 4-4 says that "Human receptors are not expected to come into contact with MEC/MPPEH around Cabeza de Perro Island because conditions on and around Cabeza de Perro are not amenable to recreational users." EQB requested, and we believe received, agreement that the accessibility of Cabeza de Perro and the surrounding waters would receive a more formal analysis in the supplemental RFI. We understand that the waters were rough during the time that this project was performed. But that one sample of ocean conditions shouldn't be relied upon for decision-making. It should be possible to at least get a sampling of weather data for various times of the year to determine if there are times when the waters around Cabeza de Perro are accessible for recreational use. NOAA or the National Marine Fisheries may be able to provide some additional historical weather data. There should be support for every conclusion in the report and this conclusion (that the waters around Cabeza de Perro are not suitable for recreational use) is not adequately supported in this document.	PREQB's comments of September 9, 2011, on the Final Work Plan included the comment that " <i>Modifying the work plan to collect additional wave and current data and to take local observations of the site during the RFI fieldwork would provide the data needed to conclusively resolve this site by conclusively establishing the harsh site conditions.</i> " The Navy responded that " <i>Section 3.7, Assessment of UW-4, has been added to include periodic observation of diving conditions at UW-4.</i> " Section 3.7 in Revision 1 of the Final Work consisted of the following statement: " <i>During the field effort, water conditions and the presence of recreational users at site UW-4 will be periodically observed to aid in further evaluation of potential threats resulting from possible historical military use of this area.</i> " Daily visual observations conducted in accordance with the above Work Plan requirement confirmed the

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			<p>presence of strong currents that would limit accessibility to recreational users, and also confirmed that recreational users were not present at Cabeza de Perro or in the surrounding waters at UW-4. Similar conditions were encountered during a November 2012 site visit.</p> <p>Furthermore, weather data is not applicable to the analysis of recreational use in this area, as the limiting factor for recreational use of the waters at UW-4 is the presence of strong currents regardless of weather conditions.</p> <p>This conclusion regarding strong currents is supported in the Underwater RFI Report by the second paragraph of Section 4.2, which states "Nautical charts warn of strong tidal currents around Cabeza de Perro (NOAA, 2011)." The cited reference is National Oceanic and Atmospheric Administration (NOAA). 2011. <i>Coast Pilot 5, Chapter 13, Edition 2011.</i></p>