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**TECHNICAL REVIEW OF THE
RESPONSE TO COMMENTS ON THE DRAFT ADDENDUM NO.1 –
TERRESTRIAL INTRUSIVE INVESTIGATION
WORK PLAN TO CONDUCT PHASE I
RCRA FACILITY INVESTIGATION
DATED MARCH 8, 2010**

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

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**TECHNICAL REVIEW OF THE
DRAFT NO. 1 – TERRESTRIAL INTRUSIVE INVESTIGATION
WORK PLAN TO CONDUCT PHASE I RCRA FACILITY INVESTIGATION**

**PINEROS ISLAND, NAVAL ACTIVITY PUERTO RICO
DATED MARCH 8, 2010**

The following evaluations were generated based on a review of the Response to Comments on the *Draft No. 1- Terrestrial Intrusive Investigation Work Plan to Conduct Phase I RCRA Facility Investigation*, Naval Activity Puerto Rico (NAPR), Ceiba, Puerto Rico, dated March 8, 2010. Only comments with insufficient responses, or which require further clarification are included below. All other responses are considered to be adequate.

GENERAL COMMENTS

1. The Work Plan Addendum contains the Field Investigation Plan (Section 3) and the Explosives Management Plan (Section 6). These plans are both based on the Explosives Safety Submission Phase I RCRA Facility Investigation (ESS). The ESS has evaluated the military ordnance used in training activities on the island to determine the most hazardous explosive item for the Phase I Intrusive Investigation. This item is titled the Munition with the Greatest Fragmentation Distance (MGFD); with the M67 fragmentation grenade chosen and used as the basis for the Exclusion Zone (EZ) distances. With the proposed electromagnetically map and dig (“EM-and-Dig”) technique, and the clearing of the 169 selected anomalies listed in Table 1-1, an unknown amount of MEC may not be properly addressed using the proposed limitation of intrusive MEC work to a depth of two feet and an 8-millivolt (mV) anomaly detection threshold on the EM61-MK2. This mV selection was most likely chosen to reacquire the M67 fragmentation grenade. As a result, other smaller potential MEC listed in the ESS Section 3.1 could be overlooked in this phase of RCRA investigation.

Review the listed portions of the Work Plan Addendum and revise them as necessary to ensure that the characterization goals of the investigation will be met by the selected 8 mV and two foot detection criteria.

CH2M HILL Response – Although all anomalies exceeding the 8 mV threshold will continue to be investigated, a representative portion of anomalies registering between 3 mV and 8 mV will also be investigated to provide information on whether smaller MEC is present in the investigation areas.

The types of munitions reportedly used at the site do not penetrate very far into the ground surface; therefore, MEC is not anticipated below the top few inches of soil. Two feet was selected as an appropriate depth that would allow the recovery of most, if not all, anomaly sources.

The upcoming field work is an investigation to determine the nature of subsurface MEC, and may not represent the final action to be conducted. The results of this investigation will meet the characterization goals of the investigation and will be used to evaluate the need for future responses at the site.

TechLaw Evaluation of Response: The response is sufficient as written, provided that the “representative portion of anomalies registering between 3 mV and 8 mV” investigated is a statistically representative sample and the results support the 8 mV threshold selection.

3. The Work Plan Addendum does not specify what the action levels are for explosives, Target Analyte List (TAL) metals, and perchlorate in soil samples. Therefore, it cannot be determined if the laboratory reporting limits will be sufficient to detect the compounds and metals at or below the action levels. Revise the Work Plan Addendum to provide the concentrations for each of the compounds and metals that will be used to establish whether there is a presence of residual MEC in the soil.

CH2M HILL Response – The objective of the soil samples taken during this phase of work is to verify that BIP actions did not leave any residual MC in the soil. Presence of residual MC is not anticipated and lab data will be compared to the background samples taken in 2006 to determine whether action is needed.

TechLaw Evaluation of Response: The response partially addresses the comment. However, if laboratory data will be compared to background samples from 2006, ensure that the background sample data is provided in the Work Plan Addendum to ensure that the laboratory reporting limits will be sufficient to detect levels above background concentrations for individual constituents.

SPECIFIC COMMENTS

2. **Section 3.2.1, “EM and Dig” Using EM61-MK2, Page 3-2:** The “EM-and-Dig” process using EM61-MK2 appears to be the correct equipment and technique for the ordnance items listed in the historical finding of the Phase I work plan. Target selection of 8mV on the EM61-MK2 (explained in paragraph 4) appears to be an appropriate amplitude level for the M67 fragmentation grenade and larger items at a two-foot below ground surface (bgs) depth. However, it may leave some smaller MEC items such as blasting caps and pyrotechnic signals undetected. In addition, this section also states that as part of the QC process, blind QC seeds (1"x4" pipes) will be buried in areas to be investigated. No statement is made as to the corrective action required if the EM & Dig team does not detect and remove the blind QC seeds. Revise this section to clarify how blind QC seeds are to be used for QC purposes and the related failure criteria. In the alternative, provide a reference to where this information may be found in the work plan supplemented by this draft addendum. Also, explain how the presence of MEC smaller than the M67 fragmentation grenade will not be overlooked using the noted criteria.

CH2M HILL Response – The QC Plan, Section 4.4.4 outlines the corrective action process for the event of a discrepancy or DQO failure discovered during QC activities, to include the following steps: (1) deficiencies or nonconforming items are identified

and a corrective action request (CAR) is issued; (2) an investigation is performed to determine the root and contributing causes; (3) corrective actions are taken based on those root and contributing causes; and (4) follow-up is performed by the UXO Quality Control Officer (UXOQCO) to ensure that the corrective actions have both short-term and long-term effectiveness.

Also, explain how the presence of MEC smaller than the M67 fragmentation grenade will not be overlooked using the noted criteria.

CH2M HILL Response – See response to General Comment No. 1, above.

TechLaw Evaluation of Response: The response is insufficient as written, as it does not fully explain the use of the blind seeds and does not specifically state that the non-detect of a blind QC seed will result in a QC failure and require rework of the affected portion of the investigation. The response should be rewritten and the Work Plan Addendum revised to correct this omission.

5. **Table 3-1, Exclusion Zone Parameters, Page 3-5:** This table notes that the maximum fragmentation distance for the M67 hand grenade detonated with a one-pound donor charge is 464 feet. The M67 contains 6.5 ounces of composition B explosives, thus adding twice the donor explosive (one-pound) to the MEC item being destroyed. The BIP procedure can be accomplished more effectively, and with less MC and environmental stress generated, using a 40-grain (or similar) perforator. Revise the table and other affected sections of the Work Plan Addendum to reflect this change, or provide an explanation for the necessity for the use of the one-pound donor charge to destroy a half-pound munition.

CH2M HILL Response - The table reflects the maximum allowable net explosive weight prescribed under the DDESB-approved Explosives Safety Submission. The actual types and volumes of explosives to be used for each demo shot will be determined by the SUXOS in consultation with the UXOSO, and may not be the maximum allowable NEW.

TechLaw Evaluation of Response: The response is acceptable as written, provided that a footnote is added to the cited table that reflects that the one-pound donor charge is the maximum allowed per the Explosives Safety Submission.

6. **Section 3.4.2, Inspection, Certification and Verification, Page 3-8:** The fifth paragraph of the section states “MPPEH that cannot be certified and verified as ‘Safe’ will be categorized as 3X and will remain at the MRS collection point until treated or demilitarized by BIP procedures.” This process is correct though the BIP terminology is misused. The BIP procedure is applied to very sensitive UXO items too hazardous to move where the material potentially presenting an explosive hazard (MPPEH) described in this section have already been moved to a collection point.

This section also ignores the changes to terminology involving MPPEH items that have been inspected and found to either be safe or to present a confirmed explosive hazard. The two terms to be used in this instance are defined in DoD 6055.09-STD as follows:

- Material Documented as Safe (MDAS): MPPEH that has been assessed and documented as not presenting an explosive hazard and for which the chain of custody has been established and maintained. This material is no longer considered to be MPPEH.
- Material Documented as an Explosive Hazard (MDEH): MPPEH that cannot be documented as MDAS, that has been assessed and documented as to the maximum explosive hazards the material is known or suspected to present, and for which the chain of custody has been established and maintained. This material is no longer considered to be MPPEH.

As is noted in the two definitions, once the MPPEH has been inspected, certified, and placed in a chain of custody, it is no longer MPPEH. So the term “MPPEH-Safe (5X)” contradicts itself.

Revise the Work Plan Addendum to reflect the difference in MEC that will be BIP and MPPEH that will be consolidated into the MPPEH-Safe (5X) container awaiting demilitarization and/or destruction. Also, revise the other terminology referring to MPPEH that has undergone inspection, certification, and has been placed in a chain of custody to reflect the appropriate terminology. In addition, identify the title of the individual listed in this section (Page 3-9) as “UXOQC.”

CH2M HILL Response – The sections in the WP Addendum referencing “demilitarization by BIP procedures” will be changed to say, “demilitarization by controlled detonation procedures”. The work plan addendum was written to be consistent with the DDESB-approved ESS, which was prepared before the terminology was revised. The decision was made to use the terminology in the ESS to avoid possible confusion due to discrepancies between the two documents.

TechLaw Evaluation of Response: The response is acceptable as written with respect to the terminology issues. However, it does not address the definition of the “UXOQC” acronym. The response and the Work Plan Addendum should be revised to address this portion of the comment.

7. **Section 3.7, Investigative-derived Waste Plan, Page 3-14:** This section does not include the procedures for decontaminating equipment used during sampling. Revise the section to include the procedures for decontaminating field equipment.

CH2M HILL Response – All soil sampling equipment will be disposable and used once for each soil sampling location. Sampling equipment

TechLaw Evaluation of Response: The response is acceptable. However, ensure that the response is included in the text of the Final Work Plan Addendum.

10. Section 4.4.7, Personnel Qualifications and Training, Page 4-13: The subsection entitled “All UXO Personnel” reads as follows:

All MEC personnel will comply with the training requirements specified by the Program QC Manager. UXO personnel assigned to the position of UXO Technician I, UXO Technician II, or Corporate MR Safety & QC Officer will be graduates of one of the following schools or courses:

- U.S. Army Bomb Disposal School, Aberdeen Proving Ground, Maryland
- U.S. Naval EOD School, Indian Head, Maryland
- U.S. Naval EOD School, Eglin Air Force Base, Florida
- U.S. Department of Defense-certified equivalent course (UXO Technician I only)

EOD experience in National Guard or Reserve Units will be based on the actual documented time spent on active duty, not on the total time of service.

The UXO Technician III, the SUXOS, the Unexploded Ordnance Quality Control Specialist (UXOQCS), and the Unexploded Ordnance Safety Officer (UXOSO) are not included in this listing. Revise the section to include the required qualifications of these individuals.

CH2M HILL Response – Section will be revised to say that all UXO-qualified personnel should be graduates of one of the listed schools or courses.

TechLaw Evaluation of Response: The response is acceptable provided that it is noted in the Work Plan Addendum that UXO Technician I personnel are not UXO-Qualified.