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FINAL TECHNICAL MEMORANDUM WORK PLAN SUPPLEMENTAL POND BOTTOM SURVEY AND SEDIMENT SAMPLING FOR SITE 12 POND TIME CRITICAL REMOVAL ACTION WORK PLAN NAS BRUNSWICK ME

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USA ENVIRONMENTAL INC

FINAL

TECHNICAL MEMORANDUM WORK PLAN

SUPPLEMENTAL POND BOTTOM SURVEY & SEDIMENT SAMPLING FOR SITE 12 POND TIME CRITICAL REMOVAL ACTION WORK PLAN

FORMER NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

Submitted to:

Naval Facilities Engineering Command Mid-Atlantic
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Norfolk, Virginia 23511

Submitted by:
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Navy Munitions Response Actions (MRA)
Contract No. N62470-11-D-8007
Task Order WE01

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Reviewed by:

Robert Crownover
Director of Safety and Quality

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LIST OF ACRONYMS

AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
ASI	Aqua Survey, Inc.
BRAC	Base Realignment and Closure
BSI	Blind Seed Item
CD	compact disc
CFR	Code of Federal Regulation
CHSM	Corporate Health and Safety Manager
COC	Contaminant of Concern, Chain of Custody
CPR	Cardiopulmonary Resuscitation
CTO	Contract Task Order
DDESB	Department of Defense Explosives Safety Board
DFW	Definable Feature of Work
DGM	Digital Geophysical Mapping
DGPS	Differential Global Positioning System
DN	Deficiency Notice
DOD	Department of Defense
DQCR	Daily Quality Control Report
DQO	Data Quality Objective
DSQ	Director of Safety and Quality
DU	Decision Unit
EM	Electromagnetic
EOD	Explosive Ordnance Disposal
EPH	Extractable Petroleum Hydrocarbons
ESRI	Environmental Systems Research Institute
ESS	Explosives Safety Submission
FCR	Field Change Request
ft	foot, feet
GIS	Geographical Information System
HAZWOPER	Hazardous Waste Operations and Emergency Response
IAW	In Accordance With
ISO	Industry Standard Object
IVS	Instrument Verification Strip
MEC	Munitions and Explosives of Concern
MEDEP	Maine Department of Environmental Protection
MPPEH	Material Potentially Presenting an Explosive Hazard
MU	Mobile Unit
NAD	North American Datum
NAVFAC	Naval Facilities Engineering Command
NAS	Naval Air Station
NCR	Non-Conformance Report
NOSSA	Naval Ordnance Safety and Security Activity

NTP	Notice to Proceed
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbons
PDA	Personal Digital Assistant
PDF	Portable Document Format
P.E.	Professional Engineer
PLS	Professional Land Surveyor
PM	Project Manager
PMO	Project Management Office
POC	Point of Contact
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
QCP	Quality Control Plan
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RPM	Remedial Project Manager
RTK	Real Time Kinematic
SOP	Standard Operating Procedure
SOW	Statement of Work
SHSP	Site Health and Safety Plan
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TIFF	Tagged Image File Format
TM	Technical Manual
TOC	Total Organic Content
TP	Technical Paper
U.S.	United States
USA	USA Environmental, Inc.
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U. S. Geological Survey
UTM	Universal Transverse Mercator
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer
UXOTII	Unexploded Ordnance Technician II
UXOTIII	Unexploded Ordnance Technician III
VOC	Volatile Organic Compound
VPH	Volatile Petroleum Hydrocarbons
WP	Work Plan

CHAPTER 1. INTRODUCTION

1.1 GENERAL INFORMATION

Under the Navy Munitions Response Action contract N62470-11-D-8007, Contract Task Order (CTO) WE01, USA Environmental, Inc. (USA) will conduct a remedial action to mitigate the potential hazard to human health and the environment related to possible munitions and explosives of concern (MEC) and potentially impacted sediments that may be present within the Site 12 Pond (the pond). This pond is located adjacent to the historic Site 12 Explosives and Ordnance Disposal (EOD) area at the former Naval Air Station (NAS) Brunswick, Brunswick, Maine. Refer to Appendix A, Figures A-1 and A-2, for the general location and site maps. The presence of MEC in and around the pond is suspected due to the EOD activities conducted just west of the pond. A Remedial Investigation (RI) to determine the nature and extent of munitions constituents (MC) at Site 12 was recently completed by Tetra Tech (Tetra Tech, 2013). The RI included an initial investigation of the nature and extent of MC in the pond, which is also defined as Decision Unit (DU) 5. The potential presence of MEC in the pond has not been previously investigated.

It is anticipated that mitigation efforts for the pond will involve pumping down the pond and/or dredging materials from the pond in order to address the MEC. Per the contract Statement of Work (SOW), a benthic investigation and geophysical survey of the pond will be conducted in order to generate a bottom profile, quantify sediments and other materials within the pond and identify locations of metallic anomalies, which could include MEC. Sediment sampling will be performed to determine if the sediment has been impacted by MC or other materials and to obtain relevant data to characterize the sediment for potential treatment and disposal. Information obtained as a result of the preliminary survey and sampling will be used to develop the time critical removal action (TCRA) work plan. The TCRA field work is scheduled to be completed in the fall of 2013. U.S. Environmental Protection Agency (USEPA) and Maine Department of Environmental Protection (MEDEP) will be notified prior to commencement of the field work.

1.2 SCOPE

The following is a summary of the pond benthic investigation, geophysical survey and sediment sampling. Chapter 3 provides more detailed task descriptions. MEDEP and USEPA will be notified if any evidence of a release, such as drums, is observed in the pond during the course of the activities described below.

1.2.1 Data Quality Objectives (DQO) Process

The DQO process, as defined in USEPA QA/G-4W, Data Quality Objectives Process for Hazardous Waste Site Investigations, is iterative and is normally applied to operations requiring the application of data gathered as a result of conducting analytic sampling. The output from one step may lead to the reconsideration of prior steps. This iteration leads to more efficient design of data collection operations. Data users, relevant technical experts, and members of the QC staff will participate in the DQO planning process to ensure their specific needs are included prior to the data collection.

DQOs provide the objective basis for quantitative definition of project requirements. DQOs are developed and used to ensure the amount, type, and quality of data obtained during a field sampling project are adequate to support project decisions with a known level of confidence. The DQO development process includes the following steps.

- State the problem.
- Identify the decision.
- Identify inputs to the decision.
- Define the study boundaries.
- Develop a decision rule.

- Specify limits of decision errors.
- Optimize the design for obtaining data.

1.2.2 Specific Supplemental Pond Survey DQOs

Development of the Supplemental Pond Survey DQOs is provided in Table 1-1.

Table 1-1: DQO Steps

Step		DQO
1.	State the Problem	This pond is located adjacent to the historic Site 12 Explosives and Ordnance Disposal (EOD) area at the former Naval Air Station (NAS) Brunswick, Brunswick, Maine. Refer to Appendix A, Figures 1 and 2, for the general location and site maps. The presence of MEC in and around the pond is suspected due to the EOD activities conducted just west of the pond. Minimal information is available about the pond.
2.	Identify the Goals of the Study	Obtain field data for the pond that is necessary to develop the TCRA WP for the pond. • Assess the nature and extent of MEC in the pond • Assess nature and extent, of MC contamination in the sediment • Characterize the sediment in the event that treatment is required • Characterize the pond (e.g,. water depth, sediment type) to prepare for a TCRA
3.	Identify Information Inputs	The following data will be collected: • DGM data of all areas within the pond that can be accessed for DGM • Bathymetric data • Sediment depth data from bottom/sediment depth probing • Sediment characterization (analytical data) Previous Studies: Tetra Tech performed an RI in 2012 that provides the following information inputs: • Analytical data at six sediment/soil sample locations • Pond depth to sediment in specific areas (see Appendix A, Figure 3).
4.	Define the Boundaries of the Study	Specifying the target population. • Potential MEC items, debris, tree stumps and other features detectable with bathymetric survey techniques • All detectable geophysical anomalies within the boundary of the pond to the water's edge. • Nine sediment samples • Approximately 50 bottom/sediment depth probing locations, or as required to obtain sufficient data Specifying spatial and temporal boundaries and other practical constraints**.** • The normally submerged area of the pond to the water's edge
5.	Develop the Decision Rules	Materials such as concrete culverts, miscellaneous metals, and tree stumps have been deposited within the pond. Results of this survey will allow the project team to plan the appropriate level of effort to remove the materials in order to conduct a complete investigation for possible MEC that may not be visible to the initial survey efforts. Therefore the supplemental survey is not intended to provide definitive information on the presence or absence of MEC. However, the following decisions can be used determine what processes are to be included in the TCRA WP:

Step		DQO
		1. If a munitions item is discovered or suspected to exceed the munition with the greatest fragmentation distance as specified in the approved ESS, then amend the ESS accordingly. 2. If there is a low concentration of metallic anomalies, then incorporate investigation techniques that will enable isolation of small areas around the anomalies or which will enable 'picking' the anomalies from the pond. This is to minimize unnecessary disturbance of the sediment layer and surrounding wetland. 3. If there is a high concentration of metallic anomalies, then incorporate use of larger capacity equipment and consider the need to manage sediments that may be removed along with the anomalies. 4. If no anomalies are detected that are suspected as potential MEC, then the TCRA WP is to focus on debris removal techniques and MEC inspection of the debris and debris areas. **For Sediment:** 1. If new areas of concentrated debris disposal are observed, or if drums or visual discoloration of the soil/sediment is observed, a sediment sample will be collected to represent that area 2. If the site conditions vary in a particular area (e.g. a deep hole is discovered), a sediment sample will be collected to characterize that area. 3. If all sediment samples collected are 'clean', then the results of the RI are supported and no further analysis or treatment for contaminants is to be conducted. 4. If a sediment sample is exceeds action limits established for a particular analyte, the TCRA WP is to incorporate further investigation as well as treatment and disposal options. Assess collection of additional preliminary samples to delineate and quantify the soil/sediment to be remediated.
6.	Specify Performance or Acceptance Criteria	• 100% DGM coverage of accessible areas of the pond. Under-water obstructions will create areas of inaccessibility, and that's acceptable. • Benthic survey data in enough detail with imaging of a high quality to enable appropriate review by the project team. It shall provide adequate details of the objects within the pond, the pond bottom profile, and sediment depths. • Satisfy the QC requirements laid out in Section 4 of this work plan • Comparison of analytical results to the RI sampling and analysis • Conformance to data validation requirements
7.	Develop the Plan for Obtaining Data	Plan for Obtaining Data: Refer to Section 3 and the applicable SOPs of this WP.

1.2.3 Pond Benthic and Geophysical Survey

The benthic investigation consists of employing a combination of visual observations, bottom and sediment depth probing, and side-scan sonar to generate a bottom profile map. Side-scan imaging will

reveal submerged objects and objects proud of the bottom. The geophysical investigation includes full digital geophysical mapping (DGM) of areas accessible to the equipment, primarily the underwater portion of the pond. DGM data will be processed and interpreted to generate a map of metallic anomalies. The project team will evaluate the total number and density of anomalies that could potentially be MEC. With the exception of sediment depth probing, the benthic investigation and geophysical survey is non-intrusive.

1.2.4 Pond Sediment Characterization

The objective of the sediment characterization is to prepare for disposal and treatment options of sediment in support of potential mitigation options.

1.2.4.1 Results of Prior Investigation – Tetra Tech 2012

During the 2012 RI field sampling event, five samples were collected in and around the Pond, designated as DU5. It is noted that samples were collected immediate west of the pond, and the results of these samples confirmed that the media samples was soil, similar to the upland area, and was not sediment. Figure 3, Appendix A shows the location of the RI Samples. The five sediment samples were analyzed for metals, explosives, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) [including Polycyclic Aromatic Hydrocarbons (PAHs), Extractable Petroleum Hydrocarbons (EPH), and Volatile Petroleum Hydrocarbons (VPH)]. No contaminants of concern (COCs) were identified for sediment.

1.2.4.2 Pre-Design Sediment Sampling

The scope of work described in this work plan includes collecting additional sediment data in the pond. The objectives are to further confirm the absence of MC impacts in the pond, as suggested by the 2012 RI, and to characterize the sediment for waste disposal and for handling (e.g., dewatering). Pond surface sediment samples will be collected from a small boat. Sediment sample locations are shown on Figure 3, Appendix A. The locations shown are preliminary and may be adjusted in the field after reviewing preliminary bottom profile and benthic survey results. Approximately four samples are intended to be collected from the deeper areas of both the north and south sections of the pond. Other sample locations will be adjusted to sample areas adjacent to obvious debris disposal areas and areas that were not previously sampled during the RI. Specific details for the sediment sampling approach are provided in Subchapter 3.6 below. These samples are intended to maximize the probability of detecting possible contaminants that may have originated from the deposited materials. The samples will be analyzed for a suite of chemical and geotechnical parameters. The analytical data, in combination with the benthic investigation data, will be reviewed to determine how sediment would be handled if sediments are to be removed from the pond during the MEC remedial effort. It will also be reviewed to determine if any areas are have been impacted by prior disposal activities requiring disposal and/or treatment as special or hazardous soils.

1.2.5 Demolition

Because the areas that will be subjected to this supplemental survey do not have a high probability of containing MEC and MEC removal is to be conducted at a later date, means for USA to conduct on-site demolition during the supplemental survey will not be established. In the event incidental discovery of MEC or other material potentially presenting an explosive hazard (MPPEH) is discovered, USA will notify the Navy Remedial Project Manager (RPM) to initiate coordination with Navy EOD Mobile Unit (MU) 12 and the Installation Caretaker's Office for disposal of the item. USA will also provide assistance to direct EOD to the item/s of concern. EOD will conduct the necessary verification inspection and applicable disposal activity. Refer to Appendix B for project contact information.

CHAPTER 2. TECHNICAL MANAGEMENT PLAN

2.1 PROJECT PERSONNEL

2.1.1 Field Teams

Pond Benthic Survey: Aqua Survey, Inc. (ASI) will provide professional services to USA. ASI will mobilize a two-person team consisting of an Electromagnetic (EM) Marine Geophysicist and a Marine Technician. USA will provide a dual-hatted UXO Safety Officer/UXO Quality Control Specialist (UXOSO/UXOQCS) and a UXO Technician II (UXO TII) or UXO TIII for anomaly avoidance and technical assistance.

The lead UXO technician for the pond survey will report directly to the USA Project Manager (PM). During the pond survey, the UXOSO/UXOQCS will report to the USA Director of Safety and Quality (DSQ) and Corporate Health and Safety Manager (CHSM) and will have a direct line of informational communications to the PM. Figure 2-1 identifies the Task Order project team.

Pond Sediment Sampling: Parsons will provide a field engineer/scientist experienced in sediment sampling. The field engineer/scientist will be accompanied by a UXO escort during sediment sample collection. The field engineer will report directly to the USA personnel on site and will maintain open communication with Parsons' PM.

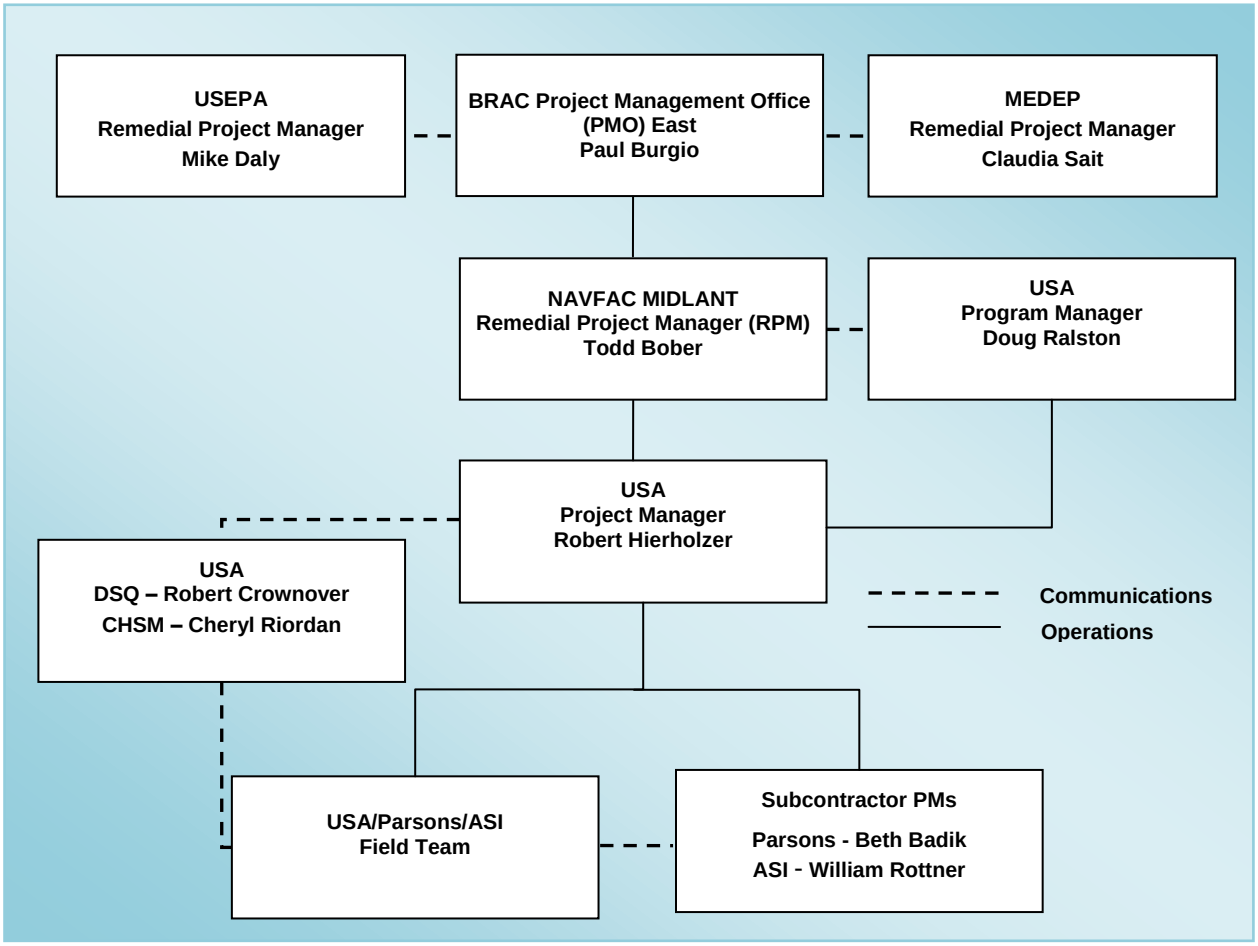

Figure 2-1: Project Team Organization

2.1.2 USA UXO Field Personnel

All USA UXO personnel will meet the requirements set forth in Department of Defense Explosives Safety Board (DDESB) Technical Paper 18 (TP-18), Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel. USA field personnel on this project have completed the training requirements listed in Table 2-1 as required for their specific responsibilities. Additional site-specific training IAW OSHA 29 CFR 1910.120 for Hazardous Waste Operations and Emergency Response (HAZWOPER), as well as Engineer Manual 385-1-1 (U.S. Army Corps of Engineers Safety and Health Requirements Manual), will be provided to all personnel prior to their mobilization. Additionally, all USA field personnel will participate in a Medical Surveillance Program, with the latest exam occurring within 12 months of field operations.

Table 2-1: Personnel Training

Training Course	Personnel Attending
40-Hour HAZWOPER Training	All personnel who have not previously received this training or who do not qualify for certification through documented experience or training equivalent to that in paragraphs (e)(1) through (e)(4) of 29 CFR 1910.120.
8-Hour Supervisor Course	All USA management and supervisory personnel. This includes the UXOSO/UXOQCS and UXO Technicians III (UXOTIIIs).
8-Hour Refresher Course	All site personnel, except those who have completed their initial 40-Hour HAZWOPER training within the past year.
First Aid and Cardiopulmonary Resuscitation (CPR) Training	At least two site personnel will have current first aid and CPR training.
30-Hour OSHA Construction Safety Course	Training Requirement for UXOSO IAW with EM 385-1-1, Section 01.A.17

2.2 COMMUNICATION AND REPORTING

2.2.1 Project Communications

Communications for this project will follow the organizational relationships depicted in Figure 2-1. Communication directly between USA and other Government entities associated with this project will occur only when directed by the Navy. The USA field team will use radios to communicate while conducting the pond survey. Backup emergency communications will be by cellular telephone.

2.2.2 Records Management

2.2.2.1 Project Records

USA will maintain hard copies of primary project records at the USA Corporate Office in Oldsmar, Florida. Such records will include the Task Order SOW and any modifications, substantive correspondence, draft submittals, responses to comments and final submittals, and correspondence received from the Navy or other agencies. USA will retain electronic versions of working products within the USA Oldsmar network server. Access to all servers is password controlled. USA will retain historical records and documents, previous study reports, and related items in the USA PM's office. The Geographical Information System (GIS) Manager will retain GIS information on the Oldsmar GIS Server during the course of the project. Passwords limit access to only those individuals manipulating the data. USA will provide copies of this data to the Navy on compact disk (CD), as required by the SOW.

2.2.2.2 Field Records

During field activities, USA will maintain records in the field, with copies sent weekly to the project files in Oldsmar, Florida. Following completion of the fieldwork, USA will deliver all files to the project files in Oldsmar, Florida. Such records will include daily summary sheets, and related field and daily logs.

USA will maintain a detailed digital account of MEC encountered during operations. This accounting will include the unique identifying number, location of the item, and a digital photograph as part of the official project record. Specific details regarding the items found will include specific nomenclature, type fuzing, condition, external markings, etc. This data will be stored in a digital dig sheet and the project digital database.

USA will maintain a field logbook to record site activities and field data in a neat and legible manner. Logbooks will be bound and pages consecutively numbered. USA personnel will make logbook entries in indelible ink. USA will enter the following information during the course of the safety support activities:

- Date and team location
- Personnel and work performed
- Equipment and instrument checks
- Injuries and/or illnesses
- Changes to work instructions
- Coordination with EOD for MEC/MPPEH disposal
- Work stoppage
- Visitors
- Other relevant events
- Signature of the senior UXO technician.

USA personnel may supplement logbooks and records by using preprinted forms (e.g., safety inspection forms, tailgate safety briefings, etc). These forms help to ensure uniformity of activities being conducted, inspected, and reviewed. Copies of these Contractor forms are located in Appendix C of this WP. All handwritten records and logbook entries will be scanned into an acceptable digital form and submitted as part of the digital data package.

2.3 SCHEDULE

Field work covered under this WP is scheduled to begin 8 July 2013 and is anticipated to take approximately two weeks to complete. A project schedule representing the Site 12 Pond TCRA is provided as Figure 5 in Appendix A. Field activities are highlighted in green.

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CHAPTER 3. FIELD INVESTIGATION PLAN

3.1 SAFETY

The Accident Prevention Plan (APP) for the TCRA WP is provided under separate cover. The APP is applicable to and includes Activity Hazard Analyses (AHAs) for work to be performed during the supplemental survey.

In addition to adhering to the APP, the Naval Facilities Engineering Command (NAVFAC) Contractor Safety Self-Evaluation Checklist is to be reviewed and applicable sections completed by the UXOSO/UXOQCS or the lead USA UXO technician. The checklist is located in Appendix C.

The 2010 Explosives Safety Submission (ESS) for the Site 12 EOD Area has been amended to address the Pond RI/FS and the proposed modification to investigate the 20 acres around the pond. This document, provided under separate cover, is titled, "Final Explosives Safety Submission for Munitions and Explosives of Concern Investigation/Removal Action at Site 12 EOD Area," Amendment 1, April 2013. It applies to the supplemental investigation because of the potential MEC hazard and the need for anomaly avoidance.

3.2 FACILITY POINT OF CONTACT

The facility point of contact (POC) is Robert (Bob) LeClerc, P.E., Navy Caretaker Site Office, (207) 406-2290 (Office), (207) 263-6736 (Mobile).

Upon mobilization, the field team is to "check in" with Mr. LeClerc. When the sampling effort is complete, the senior UXO technician will contact Mr. LeClerc to review the field effort and what marking devices remain in the field.

For emergencies or other issues that may arise, Mr. LeClerc will be contacted in addition to other necessary emergency response entities. The field team will keep Mr. LeClerc informed of ongoing activities and any situations that may arise.

3.3 GENERAL SITE PRACTICES

All operational activities at the site will be performed under the supervision and direction of qualified UXO personnel. Non-UXO qualified personnel will be prohibited from performing operations unless they are escorted and supervised by a UXOTII or higher. Throughout operations, USA will strictly adhere to the following general practices. Detailed safety precautions and procedures are contained in the APP.

3.3.1 Work Hours

Pond benthic and geophysical survey work will be performed during normal working hours of 0700 and 1730 hours. Work days are not anticipated to exceed 10 hours. Schedules will be adjusted in coordination with the Remedial Project Manager (RPM) to accommodate weather delays or unforeseen events that may require USA personnel to work an alternate schedule. The RPM will approve deviations from the normal schedule.

3.3.2 Site Access

USA will control access into Site 12 and will limit access to only those personnel necessary to accomplish the specific operations or who have a specific purpose and authorization to be on the site. All inquiries from outside sources will be referred to the RPM. No hazardous operations will be conducted when unauthorized persons are in the vicinity.

3.3.3 Handling of MEC

Non-UXO site personnel will be emphatically instructed and closely supervised to ensure they do not handle any MEC/MPPEH. USA will not conduct MEC/MPPEH demolition and disposal during the supplemental investigation. Navy EOD MU 12 is to be called-in for this purpose.

--THIS POLICY WILL BE STRICTLY ENFORCED--

3.3.4 Safety Training/Briefing

USA will routinely conduct the following three distinct safety meetings and briefings:

- Daily general briefing
- Daily tailgate safety briefing
- Visitors' safety briefing.

In addition, the UXOSO/UXOQCS may hold a safety stand-down any time he notes any degradation of safety or a safety issue that warrants a review.

3.3.5 Daily General Briefing

The daily general briefing will be conducted for all personnel at the site prior to beginning work. A written record of this briefing and the signatures of personnel attending the briefing will be maintained. The briefing will cover general hazards for the project and any new safety issues or hazards that were identified since the last briefing. This briefing will be conducted by the UXOSO/UXOQCS.

3.3.6 Daily Tailgate Safety Briefing

The tailgate safety briefing will focus on the specific hazards anticipated at each work site during that day's operations and the safety measures that will be used to eliminate or mitigate those hazards. It will also refer to other operations within the area whose proximity may have safety ramifications. As work progresses and team locations change within a site, or from site to site, any corresponding changes in ingress/egress routes and emergency evacuation routes will also be reviewed during this tailgate briefing. This briefing will be conducted by the lead UXO technician.

3.3.7 Visitors' Safety Briefing

Site visitors must receive a safety briefing by the UXOSO/UXOQCS prior to entering the operating area. All visitors entering must sign in on the Visitors' Log.

3.3.8 Safety Violations

Safety violations or unsafe acts will be immediately reported to the UXOSO/UXOQCS. Failure to comply with safety rules/regulations or failure to report violations may result in immediate termination of employment.

3.4 GENERAL DESCRIPTION OF THE POND AREA OF INVESTIGATION

The Site 12 Pond investigation area consists of several distinct features or segments, described as follows and as shown in Figure 4, Appendix A.

1. North Pond Area: At the time of the site visit, this section was separated from the southern pond by an area of emergent wetland. This section of the pond is further removed from the historic demolition areas than the rest of the site and is less likely to contain MEC.
2. South Pond Area: Most of the area of investigation falls within this area, and is the most likely area to contain MEC since it is adjacent to the historic demolition berms within the Site 12 EOD area. Trees were pushed into the pond during land clearing activities associ-

ated with the Site 12 EOD operations. Portions of trees, such as the root balls, are visible from the shoreline.

3. North Emergent Wetland Area: When the pond water elevation is higher, the emergent wetland is submerged, linking the north and south pond areas. During the site visit, USA conducted reconnaissance transect surveys utilizing a White's DFX 300 all-metals handheld detector. The anomaly count was very low. Unless the surface water elevation is higher, and this area is submerged, it will be addressed using handheld detectors during the follow-on RI.
4. Western Exposed Shoreline: This area is comprised of the land between the eastern boundary of the previous Site 12 investigation area down to and including the peat moss mat located along much of the water's edge. Site visit transects revealed very few surface or subsurface anomalies. Some of this area may be submerged if the surface water elevation is higher during the supplemental survey work.
5. Eastern Exposed Shoreline: The majority of the east shoreline is steep and rocky. The steep slopes are less likely to retain material that may have been placed there. This, along with the greater distance from the Site 12 EOD berms, makes it the least probable area of the site to contain MEC. The site visit shoreline transect revealed very few surface or subsurface anomalies.
6. Pond Area Debris Piles: These debris piles are not to be confused with the previously investigated "debris pile" north of the Site 12 EOD area. The pond area debris piles include several areas of consolidated heavy debris, such as concrete with reinforcing steel, metal grating, wire/cable, piping etc. One debris pile is covered in soil and vegetation and is located on the south edge of the north emergent wetland. A second debris pile is partially exposed and is located on the west bank of the southern half of the pond. At the southern tip of the pond, debris piles extend into the water, and are relatively extensive. Due to the amount of metal in these areas, investigation requires visual inspection of the contents in order to determine the presence of MEC. Debris pile inspection will be conducted during the follow-on RI.
7. South Emergent Wetland Area: It is expected that this area will not be submerged. This area is included with the proposed modification to conduct a MEC investigation of the 20 acres surrounding the pond.

3.5 POND BENTHIC INVESTIGATION AND DGM

3.5.1 Location Surveys and Mapping Plan

Prior to mobilization for the surveying activity, USA will coordinate with former NAS Brunswick Base Realignment and Closure (BRAC) Project Management Office (PMO) to obtain the location of any existing survey control monuments. It is understood that survey control was established for installation of the fencing around Site 12, by a Professional Land Surveyor (PLS), licensed in the state of Maine.

3.5.2 Vegetation Removal

Minimal vegetation cutting may be conducted to facilitate launch and recovery of the watercraft that will be used for the pond survey and for safe access and egress from the pond for the benthic and geophysical survey. Gas-powered weed trimmers and hand tools will be utilized to "cut" two access routes from the Site 12 perimeter road eastward to the pond. One access route will be to the northern section of the pond, and another to the southern portion of the pond.

3.5.3 Preliminary Survey (Side Scan Sonar and Bathymetric Survey)

The day prior to the project start, ASI will mobilize crew, airboat, and survey equipment from their main office in Flemington, New Jersey. The Real-Time Kinematic Differential Global Positioning System (RTK DGPS) will be set up and the survey control points verified. The airboat is to be launched in the southern pond and its functionality verified. The pond survey crew will conduct a bathymetric and side scan sonar

survey, where possible (i.e., depths greater than 2 ft) to determine water depths along proposed transects and to look for obstructions. Once the survey of the southern pond is complete we will pull the boat out and launch it into the northern pond to complete the bathymetric survey. Once the collection of bathymetry and side scan sonar is complete, the proposed transect plan will be adjusted as necessary in order to avoid obstacles or sharp depth changes while still maintaining transect separation distances .

3.5.4 Underwater Instrument Verification Strip (IVS)

Upon completion of bathymetric survey, a tentative location for the underwater IVS will be selected where the depth is less than 1 ft in the southern pond. Once a location has been chosen, the Floating UW EM61 Coil System will be used to check the IVS area to ensure it is clear of anomalies. Once an area is selected for the IVS, one small and one medium industry standard object (ISO) will be installed per Table 3-1. Separation distance between the ISOs will be approximately 16 ft. After installation of the ISOs, DGM will be conducted over the IVS, and an "as built" electronic file will be created. An IVS will be set up in both the north and south ponds.

Table 3-1: Instrument Verification Strip

Item and Burial Depth	Burial Depth (in.) – Inclusive of water depth
Small (1-inch D 4-inch long pipe)	7 (7x diameter)
Medium (2-inch D 8-inch long pipe)	14 (7x diameter)

3.5.5 Underwater DGM

Reference Appendix D, SOP 02, Digital Geophysical Mapping, for conducting the Electromagnetic (EM) survey procedures. Daily functional and QC testing is performed on the RTK DGPS and EM equipment. The EM61 equipment tests include a cable shake test, static test, and checkout on the IVS. Results of these tests will be recorded daily, both electronically and in the field logs. If an issue arises it will be remedied prior to any surveying. Upon completion of the equipment functionality testing, ASI will begin surveying. Table 3-2 summarizes the DGM performance metrics.

Table 3-2: DGM Performance Metrics

Performance Metric	Performance Criteria
RTK DGPS at Known Point	Within 10 cm (0.328 ft.)
Sample density along-track	98% <=15.5 cm (0.51 ft.)
Sample density across-track	90% <= 1 m (3.28 ft.)
Anomaly Selection Criteria	5 to 6 times RMS noise established at IVS
ISO Response Range	Determined during initial IVS
Anomaly Positioning Accuracy	Within 0.5 m (1.64 ft.)
Static Background	<= 2.5 mV peak to peak on all time gates
Static Spike	<= 10% of initial response on all time gates
IVS Response	>= Anomaly Selection Threshold

Raw and processed DGM data, anomaly maps, and DGM target lists are to be provided by the DGM team to the USA program geophysicists. USA will then prepare a recommended list of targets for intrusive investigation in support of the intermediate report of the pond benthic survey and DGM. Table 3-3 summarizes the data and format requirement for the DGM.

Table 3-3: DGM Data Management

Process	Responsibility	Records/Deliverable	Format
IVS Installation	ASI	As-Built IVS and Equipment/Operator Checks	Excel Table
BSI Installation	USA UXOQCS	USA QC Logs	Password Protected Excel Table
DGM Survey	ASI	RTK DGPS and floating EM61 daily QC checks. Survey data upload to ftp site	Excel Table and Geosoft Databases
DGM Data Processing	ASI	Processed EM data: Gridded data Geosoft project	Geosoft Database, Gridded results as GeoTIFF
Assess/document DGM Performance metrics and identify data gaps.	ASI	Gridded data Daily test results	GeoTIFF Excel Table and Geosoft Coverage Map
DGM Data QC	ASI & USA Proj Geo	Daily test results	Excel Table and Geosoft Databases
Import initial target selection into GIS and develop target map.	ASI	GIS project with gridded results of survey from Geosoft Oasis with targets plotted.	ArcGIS Project, Geotiff and Excel Diglist
QA Review	Navy		

3.5.6 Manual Sediment Depth Study

It is the intent to conduct sediment probing after generation of DGM anomaly maps, so that sediment probing and sampling locations can be planned to avoid anomalies. This will minimize time spent avoiding anomalies. Sediment probing is to be conducted in locations shown on Figure 3, Appendix A. The type of probing involves a solid rod with a sliding lower plate. When pushed through a sediment layer, the plate rides on top of the sediment by sliding up the probe rod. The rod is pressed downward until refusal. When the rod is withdrawn and examined, the depth of sediment is indicated by the amount of rod exposed below the plate. Water depth, probe penetration/refusal depth and location will be recorded for each location. Once complete, both EM and probe data are compiled into an electronic mosaic accompanied by a survey report, which will be delivered approximately 14 days after survey completion.

3.5.7 Anomaly Avoidance

In addition to defininig sediment probing and sampling locations based on the DGM, a UXO technician will provide anomaly avoidance in accordance with SOP 01. If an anomaly is situated at a probe location, ASI will move the probe approximately 5 ft to either side of the proposed location or until a suitable anomaly-free area is identified. USA will use the Schonstedt down-hole magnetometer for anomaly avoidance while working from the boat. A Schonstedt GA-52CX magnetometer or White's DFX 300 all-metals detector may be used in shallow water, particularly when personnel are wading.

USA will conduct an instrument test of all detection instruments used for anomaly avoidance at the beginning and end of each day. The underwater IVS will be utilized for instrument verification. If an instrument fails to detect the ISO, that instrument will be taken out of service and a replacement instrument will be tested and utilized.

3.6 POND SEDIMENT SAMPLING AND ANALYSIS

Surface sediment samples will be collected at approximately eight locations in the pond. The samples will be collected to characterize the sediment for disposal or basic treatment. The sampler (field engineer/scientist) will be in a jon boat (or similar) with a UXO technician, who will be providing anomaly avoidance. Approximate sample locations are shown on the Site 12 Pond Sediment Survey Plan, Appendix A, Figure 3. Two samples are located in the North Pond Area, and the other sediment samples will be collected in the southern section at locations along the 100-ft survey transects established for the probing. Samples will be collected either with a large clamshell standard ponar sampler or with push cores, depending on site conditions (e.g., sediment type, depth to sediment, etc). The field engineer/scientist will determine the method based on type of sediment and depth to sediment. The field engineer/scientist will collect the samples in accordance with the SOP, and submit the samples to Katahdin Analytical Services in Scarborough, Maine, to undergo the analyses listed in Table 3-4.

Table 3-4: Pond Sediment Analyses

Analytical Group	Analytical Group
Toxicity Characteristic Leaching Procedure (TCLP) VOCs	TCLP metals
TCLP SVOCs	Resource Conservation and Recovery Act (RCRA) characteristics
Metals	Total Organic Content (TOC)
VOCs	Moisture content
SVOCs, including PAHs, EPH, and VPH	Grain size analysis
Explosives	Atterburg limits

Metals, VOCs, SVOCs (including PAHs, EPH, and VPH) and explosives are included to further confirm the findings of the previous sampling event in October 2012. The TCLP and RCRA Characteristics analysis will be performed to characterize the sediment for potential future disposal. The TOC, moisture content, grain size, and Atterburg Limits analyses are proposed to gather geotechnical information on the sediment quality; this information will be used to indentify how to handle the sediment should solidification or dewatering of the sediment be required during future removal action activities.

Table 3-5 presents the basis for each proposed sediment sample location. Note that samples may be relocated in the field based on field observations, such as the presence of debris, visual observations of staining, water levels, etc. The rationale for any change will be documented.

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Table 3-5: Sediment Sample Rationale

Location ID	Location Description	Analyses Type	Rationale
SD06	Mid area of the North Pond Area	All	Collect information on geotechnical characteristics and waste characterization in the northern pond
SD09, SD10	Close to center line in the South Pond Area	All	Characterize the quality of the sediment and confirm whether the sediment has been impacted by MC
SD11, 12	In the South Pond Area along the same transect, off-set from the center line	All	Characterize the quality of the sediment and confirm whether the sediment has been impacted by MC
SD07, SD08, SD13, SD14, SD15	Along the shore at locations where debris have been observed	Metals, VOCs, SVOCs, Explosives	Confirm whether the presence of debris have impacted the sediment.

3.7 GEOSPATIAL INFORMATION AND ELECTRONIC SUBMITTALS

3.7.1 Accuracy

If new survey control monuments are required at the site, USA will establish new survey control using two Class I, 3rd Order Control Monuments. The horizontal control will be based on either the English or the metric system and will be referenced to the North American Datum 1983 (NAD83) and the Universal Transverse Mercator (UTM) Grid System. Vertical control is not required for this project. The northing and easting (X and Y) coordinates for all control monuments, sector corners, and project boundaries will be presented in a certified letter or drawing at the completion of the munitions response. The PLS will provide all required data and include the project-specific coordinate system, datum, and units (e.g., UTM Coordinate System, Zone 19 North, NAD83, units in meters).

3.7.2 GIS Incorporation

The GIS database will be maintained at the USA Corporate office located in Oldsmar, Florida. It is the official project repository of GIS data, including unprocessed feature and attribute data sources that may be used outside the GIS. USA obtained copies of existing site data and uploaded this data into the project GIS. Throughout the project, USA will build upon the existing data and integrate the field data into the system. Upon receipt of the field data, the GIS Manager will perform an accuracy inspection of the data and import this data into the project GIS. All GIS data will be in ESRI Shapefile or Geodatabase format. Raster data such as orthophotography will be in Tagged Image File Format (TIFF) or MrSID-compliant format. Associated databases will be in Microsoft Excel format.

3.7.3 Mapping

The location, identification, coordinates, and elevations of all control points recovered or established at the site will be plotted on a map. Each control point will be identified on the map by its name and number and the final adjusted coordinates and elevations. The coordinates for sector corners will be shown to the closest 1.0 ft.

3.7.4 Digital Design Data

All GIS Data will be delivered in ESRI Shapefile format. A READ ME file will be included with delivered data, which will contain basic information about each Shapefile.

3.7.5 Computer Files and Digital Data Sets

All final document files will be delivered to the Navy in IBM and MS Office-compatible formats. The drawing and plot data will be provided in the UTM Coordinate System, Zone 19 North, NAD83, units in meters. GIS Data will be submitted in ESRI Arc Map compatible format. Raster Data, such as US Geological Survey (USGS) Topographic Quadrangles or Orthophotography, will be provided in either TIFF or MrSID format. All ArcGIS project files (.mxd) will be supplied with the appropriate Final Report. In addition to GIS data and project files, maps will be delivered in Portable Document Format (PDF) for viewing without modification. All final GIS data generated from this project will conform to the Spatial Data Standards for Facilities, Infrastructure and Environment.

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CHAPTER 4. QUALITY CONTROL PLAN

4.1 INTRODUCTION

The USA Quality Control (QC) process is based on commitment and involvement. It provides a framework for comprehensive performance oversight, contract compliance controls, and employee acceptance and understanding of roles and missions. The process ensures the actions, procedures, and tools support every action required to do the job and are in accordance with project requirements.

This abbreviated Quality Control Plan (QCP) provides the procedures and methods to be used for the preliminary pond investigation, which includes sediment sampling and analysis, benthic survey, and geophysical survey. This plan addresses organization and responsibilities, equipment testing and calibration, QC inspections, and reporting procedures. The intent of the QCP is to continuously control and improve the processes, eliminate special cause variation, and control common cause variation to within acceptable limits.

USA will incorporate the collected QC data into the pond survey interim report USA will include this data in a “lessons learned” program to capture and share experiences learned during the prosecution of this project. The lessons learned will be incorporated into the AAR.

4.2 QUALITY MANAGEMENT STRUCTURE

The following paragraphs describe the organizational structure of the USA Quality Management Team during operations at the project site. Names and qualifications of site personnel will be provided prior to mobilization.

4.2.1 Director of Safety and Quality

The USA DSQ has responsibility for USA’s QC program. The DSQ reports directly to the Vice President on matters of effectiveness, adequacy, and status of QC methods and procedures. He maintains an alternate line of communication to the Program Manager for program and project specific QC issues. The DSQ has the following responsibilities:

- Preparing the USA QC policies and procedures
- Monitoring the submission of contract deliverables for timeliness and accuracy
- Reviewing employee qualification records to ensure accuracy
- Conducting periodic field audits of sites, programs, and projects to ensure QC compliance.

4.2.2 UXO Quality Control Specialist

The UXOQCS is responsible for the enforcement of the site QCP. The UXOQCS coordinates with the PM, senior UXO technician, and subcontractors for daily operations and reports directly to the DSQ. The UXOQCS is responsible for all quality processes on site. The UXOQCS has the following responsibilities:

- Conducting a formal, systematic audit throughout the project. The audit will be prepared IAW the SOW, the Data Quality Objectives (DQOs) in Subsection 4.4.1, the Definable Features of Work (DFWs), and this WP. The audit will be developed in conjunction with the DSQ and PM.
- Reviewing, implementing, and enforcing the QCP, including:
  - Proper equipment setup and operation
  - Implementing and monitoring of the QC blind seed item/industry standard object (BSI/ISO) program.
- Coordinating with project personnel to ensure QC procedures are demonstrating validity sufficient to meet QC objectives

- Conducting QC inspections of the DFWs listed in Table 4-1 (audits of documents, work in progress, work performed, and monitoring work practices); recording and reporting the results to the appropriate personnel
- Coordinating with the Navy QA representative to ensure QC objectives are appropriate for the task being performed
- Conducting analysis to determine the root cause of process failures as they occur
- Recommending to the PM any actions to be taken in the event of a QC failure
- Advising the field teams on all QC-related site matters
- Reporting non-compliance with QC criteria to the project personnel.

4.2.3 Senior UXO Technician

The senior UXO technician will be a UXO TIII and is responsible for the day-to-day field operations at the project site, and will provide direct assistance to the subcontractors for the data collection effort. The UXO TIII reports directly to the USA PM and has the following responsibilities:

- Managing and implementing the WP and QC policies and procedures
- Reporting to the USA PM on effectiveness, adequacy, and status of the project
- Coordinating and assisting project personnel for site tasking and schedules
- Reviewing any failures and/or non-conformance issues and implementing corrective actions.

4.3 QUALIFICATIONS AND TRAINING

Qualifications of the USA employees are provided in Section 2.1 of this WP.

USA ensures that only qualified and properly trained personnel are assigned to positions on project sites. Prior to mobilization of personnel, USA ensures that training required by USA, OSHA 29 CFR 1910.120, and the Navy has been completed for all personnel assigned to the project. In addition, prior to the start of operations, all personnel will have received the following, at a minimum:

- Familiarization with the WP and its policies and procedures
- APP orientation and Personal Protective Equipment (PPE) training
- Orientation on environmental considerations peculiar to the operations on the project site
- Instruction and training on equipment usage and safe work practices
- Visitors to the site will be provided with a site orientation and safety briefing prior to entering the work area.

Training will be conducted by USA, and records of attendance will be maintained on site.

4.4 QUALITY CONTROL PROCESS

4.4.1 Data Quality Objectives

Data obtained during pond survey and sediment sampling operations must support the decision-making process. Consequently, data must be of a sufficient quantity and quality to make defensible decisions, to provide an acceptable level of certainty for the decision maker(s). See Section 1.2.1 DQO Process.

Table 4-1: Definable Features of Work

Definable Feature of Work	Audit Elements Breakdown	Frequency of Checks/Audits and Performed By
Pre-mobilization	Ensure that the work to be performed is coordinated with NAVFAC requirements and that a Notice to Proceed (NTP) has been obtained from NAVFAC prior to the beginning of field activities Verify that personnel required for the work activities have been identified, are available, and meet the requirements/ qualifications for the positions or waivers from the Navy have been obtained Confirm that the appropriate Material Safety Data Sheets have been identified and properly submitted Confirm that required equipment has been identified and is available, on-hand, functional, properly calibrated, and appropriate for the work activities Verify that materials and supplies are on-hand and meet contract specifications Verify that all submittals have been approved by the proper authorities	Initially – PM/Parsons
Mobilization/Site Preparation for Pond Benthic Survey	Mobilization of field personnel and equipment Establish location for storage container that can remain after demobilizing from this phase of the work Initial safety orientation and training Inventory equipment and verify serviceability, calibration and accuracy Site Survey Control (RTK DGPS) MRS boundary stakeout Prep Airboat and Survey Equipment	Initially by UXOQCS
Conduct Preliminary EM Pond Survey	Set up DGPS Conduct a bathymetric survey of the ponds Conduct a side scan survey of the ponds in depths >2 feet Identify IVS location in <2 feet of water Set up EM system and survey IVS location 100% to ensure it has no anomalies Set up EM survey grid system	Daily when performing the activity by ASI
Prepare and Install Underwater IVS	Installation of one small and one medium ISO Resurvey with ISOs in place Report/Certification – IVS as-built map	Initially UXOQCS to confirm as-built of the IVS
Underwater EM61 Pond Survey	Randomly place ISOs, a minimum of one per DGM production day within the pond where the water depth is less than 2-ft. RTK DGPS and floating EM61 daily QC checks: Survey grids with 10% overlap Data Download Data Upload to ftp site	UXOQCS to set ISOs a minimum of 1 day in advance of applicable EM survey grids Data checks daily by ASI

Definable Feature of Work	Audit Elements Breakdown	Frequency of Checks/Audits and Performed By
Conduct Geophysical and manual survey of the pond bottom.	Probe anomaly locations Collect location, water depth and sediment thickness at each location and at 100-ft intervals along the transects. Proper performance of anomaly avoidance	Daily ASI and USA UXOQCS
Geophysical Data Processing and Interpretation (Interim Report)	Data processing Assess/document DGM performance metrics and identify data gaps Initial Target Selection Import initial target selection into GIS and develop target map. Inclusion of reference points along the shore to be used to line up on when reacquiring the anomalies in the event it is not possible to dewater the pond prior to reacquiring the targets. QA Review by Navy Final Target Selection & Import to GIS	Daily data processing by ASI. Data checking by USA project geophysicist.
Sediment Sampling Operations	Ensure proper procedures to prevent sample contamination are followed Ensure accurate and complete Data Management Select appropriate sampling methodology based on site conditions	Daily, Parsons
Demobilization	Conduct walk-through of the pond area with the site POC. Ensure no tools, materials or trash is left behind If storage container is to remain on Navy property, ensure it is secure and the site POC is satisfied	At completion - USA

4.5 QUALITY CONTROL METHODS AND PROCEDURES

This section describes quality control inspection, documentation, and testing activities required to ensure that all work performed complies with the specified scope, schedule, budget, and level of quality anticipated by the Navy as well as the requirements of applicable regulations. Responsibility for the implementation and documentation of the QCP rests with the UXOQCS.

The primary tool used by QC is the three phases of control inspection methodology. The following activities comprise the three phases of control methodology:

- Preparatory Inspection – Performed prior to the beginning of each DFW. The purpose of this inspection is to review the work scope and applicable specifications and verify that the necessary resources, conditions, and controls are in place and compliant before the start of work activities. This inspection is conducted using the QC Inspection Check Sheet attached to each individual SOP.
- Initial Inspection – Performed for each DFW once a representative sample of the work has been executed. The purpose of the inspection is to check the preliminary work for compliance with procedures and contract specifications, verify inspection and testing, establish the acceptable level of workmanship, review the minutes of the preparatory phase, and check for omissions and resolve differences of interpretation. This inspection will be conducted using the QC Inspection Check Sheet found attached to each individual SOP.
- Follow-up Inspection – Performed each day that work on a DFW is conducted. The purpose of the inspection is to ensure continuous compliance and level of workmanship. The QC team will

observe the same activities as under the initial inspection and ensure that discrepancies between site practices and approved specifications are identified and resolved. Corrective actions for unsatisfactory conditions or practices will be verified by the QC team prior to continuing work on the affected feature. Each day the QC team will observe field performance of applicable DFWs and document the findings using the QC Inspection Check Sheet. For items which do not have a QC Inspection Check Sheet, the QC team will use a QC Surveillance Report Form, provided in Appendix C (Forms).

4.5.1 Deficiencies and Nonconformance

All deficiencies or nonconforming conditions discovered during inspections or other QC functions will be noted on either a deficiency notice (DN) or a Non-Conformance Report (NCR). A DN will be used for all conditions which do not affect the final work product. An NCR will be used for conditions which do affect the final product. All deficiencies and non-conformances will be resolved according to the following schedule:

- Deficiency or nonconformance can be identified by either the UXOQCS or the UXO TIII. If the problem cannot be resolved immediately, a DN or NCR will be prepared.
- The UXOQCS will conduct an analysis of the cause for the deficiency or nonconformance and will prepare a response which will be submitted to USA's PM within 48 hours. Accepted quality techniques such as root cause analysis, failure mode and effects analysis, cause and effects diagrams, and others may be used to determine the reason(s) for the substandard performance or product and to identify remedies.
- The USA PM will endorse or reject the UXOQCS findings and submit or recommend corrective actions to the UXO TIII for implementation of the selected remedy.

The UXOQCS will maintain a DN and an NCR log to document and track corrective actions to closure. The DN and NCR logs will be included in the After Action Report. The UXOQCS is responsible for tracking deficiencies to closure and reporting their status on daily reports. Appendix D contains the DN and NCR forms.

4.5.2 Field Change Request and Design Change Notice

The Field Change Request (FCR) is used to request and document changes identified as a result of unanticipated field conditions and to facilitate minor changes in the Work Plan documents. Changes to plans or procedures will be documented using an FCR Form. The FCR forms are reviewed by QA and the change is approved by the RPM.

A Design Change Notice (DCN) is initiated to document changes to the scope of work or to reflect significant changes to the work process, changes in major equipment or equipment configurations or other major changes to the remedial action design. Design changes are documented using the DCN form. The DCN forms are reviewed by QA and the change is approved by the RPM.

The inspection program is established to provide the following:

- An objective and independent evaluation of compliance with established policies and procedures (e.g., WP, AHAs, etc.)
- A mechanism for verifying the implementation of corrective actions recommended as the result of inspections
- Records of all inspections will be maintained and controlled as QC records.

Personnel performing QC inspections will be knowledgeable about and will have received training in QC techniques and methodologies, the QCP, and applicable regulations, and will be technically knowledgeable relative to the process being inspected. Inspections will be performed IAW written procedures or checklists. Personnel performing QC inspections will not have direct responsibilities in the areas they are assessing.

System and performance inspections will be undertaken. System inspections will evaluate the components of the QC system, including evaluating items such as approach and adequacy of the preparation step, inspection of the schedules and planned delivery dates, and tracking systems for QC activities. Performance inspections evaluate actual QC activities such as design control, on-site data gathering, calibration and control, inspection and testing activities, and documentation.

Inspecting QC personnel will document inspection results, which will be reviewed by the DSQ and PM. When unsatisfactory or nonconforming conditions or items are found, the responsible organization will implement corrective actions in a timely manner. Previously unsatisfactory areas will be re-inspected to ensure that satisfactory corrective actions have been completed. The results of the inspections will be shared with the team with regard to needed rework and lessons learned.

4.6 FIELD QUALITY CONTROL INSPECTIONS, AUDITS, AND REPORTS

The UXOQCS is responsible for auditing the accomplishment of operational checks of instruments and equipment by site personnel. The appropriate log entries will be made. Inspections will be performed daily at random, with unscheduled checks of the site in general to ensure personnel accomplish all work as specified in the WP. The UXOQCS will utilize the process outlined in Table 4-1 to ensure all field tasks meet quality standards prior to submittal for the QA process. The UXOQCS will submit a report to the SUXOS detailing the results of these checks.

4.6.1 UXO Quality Control Report

The UXOQCS is responsible for preparing and submitting a Daily Quality Control Report (DQCR) to the RPM. An original and one copy of the DQCR with attachments will be submitted to the RPM or designated representative, with a copy to QA, on the first work day following the date covered in the report. All calendar days, including weekends, holidays and non-working days, will be accounted for. As a minimum, one report will be prepared and submitted for every continuous seven days during periods of non-work. The DQCR will provide an overview of QC activities performed each day, including those performed on subcontractor and supplier activities. The DQCRs will present an accurate and complete picture of QC activities. They will report both conforming and deficient conditions, and will be precise, factual, legible, and objective. Copies of the supporting documentation, such as checklists and surveillance reports, will be attached.

4.6.2 Logs and Records

Activity Logs will be documented daily; all entries will be in ink. Logbooks will be bound and pages consecutively numbered. Logbooks and records may be supplemented by the use of preprinted forms (e.g., safety inspection forms, tailgate safety briefings, etc.). These forms help to ensure uniformity of activities being conducted, inspected, and reviewed. Forms are located in Appendix C of this WP. The logbooks and records described in the following paragraphs will be maintained on-site.

4.6.2.1 Daily Journal

USA will maintain a Daily Journal. This journal will provide a summary of all operations conducted on site, to include:

- Date and recorder of information
- Start and end time of work activities, including lunch, breaks, and down-time
- Work stoppage
- Visitors and escorts
- Weather conditions
- Changes to the WP, SHSP, policies, or procedures
- Injuries and /or illnesses
- Safety briefings

- Relevant events and training.

4.6.2.2 Safety Training Records

USA will maintain training safety training records.

- Date and nature of training
- Personnel attending and instructor(s)
- Visitor training and briefings
- Signatures of instructor.

4.6.2.3 Photographic Logbook

USA will maintain the Photographic Logbook. Subcontractors will contribute relevant photos. This logbook will be used to record all photographs taken on the project site. These photographs will be used to document teams and equipment, site/pond conditions, sediment collection, all aspects of the pond survey work, and storage container and contents left on Navy property. Photographs will include the following information:

- Date and time taken
- Unique identifying number(s) relating to the Photographic Logbook
- Location where photograph was taken
- Brief description of the subject matter.

4.7 EQUIPMENT TESTS, FUNCTIONAL CHECKS, CALIBRATION, AND MAINTENANCE

4.7.1 Testing Procedures and Frequency

Instruments and equipment—such as geophysical/navigational, and data analysis and transfer systems—used to gather and generate site characterization data will be tested with sufficient frequency and in such a manner as to ensure that accuracy and reproducibility of results are consistent with the manufacturer's specifications. Instruments or equipment failing to meet the standard will be repaired, recalibrated, or replaced. Replaced instruments or equipment must meet the same specifications for accuracy and precision as the item removed from service.

Operator proficiency will also be evaluated regularly for proper instrument setup, operation, survey technique, and data transfer. UXO support equipment includes, but is not limited to, the White's all-metals detector and Schonstedt GA-52CX magnetometer. Benthic survey and underwater DGM equipment is identified in SOP 02.

Items such as cellular telephones and radios will be tested for serviceability at the start of each work day. Results of these tests will be recorded in the Daily Log. Items failing these tests will be repaired or replaced prior to use.

4.7.2 Routine Equipment Checks

Each MEC team will follow the equipment set-up procedures within the SOPs (see Appendix D) for setup, operation, and data transfer. The SOPs include all QC checks. Specific QC tests include:

- Daily Equipment Warm-up (e.g., a minimum of 5 minutes)
- Analog sensors will be tested at the IVS each work day prior to field activities. This test will include a functions check and the location of the known anomalies. The known anomalies will be ISO's that represent the MEC and failure criteria expected on the site, placed horizontally and vertically, buried approximately 7x the outside diameter of the object.

4.7.3 Calibration

The UXOQCS will check to ensure that instruments and equipment are calibrated or recalibrated IAW the manufacturer's recommendation or owner's manual. Calibrations will be completed on a prescribed schedule and the calibration results recorded in the daily field logbook.

Recalibration will be performed as necessary with the reason for the recalibration and the results recorded in the daily field logbook.

4.7.4 Maintenance

The UXOQCS will check field logbooks to ensure that maintenance of vehicles and equipment is performed on a regular schedule and IAW the manufacturer's recommendation or owner's manual for equipment requiring regular upkeep. USA will coordinate scheduled maintenance of the following equipment IAW the manufacturer's recommendations or the owner's manual:

- Vehicles
- PPE
- Communications Equipment
- Geophysical, Navigational Equipment, and Personal Digital Assistant (PDA)
- Handheld Magnetometers
- Emergency Equipment.

Replacement equipment will meet the same specifications for accuracy and sensitivity as the equipment removed from service. Geophysical instruments will be checked on the IVS daily and after any repairs. They will be required to demonstrate a consistent detection rate for all seed items and any identified background anomalies. Repair or replacement of parts will meet the manufacturer's specifications and recommendations. The UXOQCS will document and maintain records pertaining to the testing, repair, and/or replacement of equipment on site.

Repair or replacement parts will meet the manufacturer's requirements and be installed by personnel authorized to replace parts or make repairs. Records pertaining to the testing, repair, or replacement of instruments and equipment will be maintained on site by the UXOQCS.

4.7.5 Accuracy

Control monument locations, boundaries of project areas scheduled for clearance, and boundaries of cleared areas will be verified and certified by a PLS licensed in the State of Maine. The UXOQCS will verify that accurate sensor positioning is being maintained. The UXOQCS will perform daily reviews of the MEC data to ensure accurate categorization of munitions-related items encountered and to ensure that all MEC items are accounted for. The GIS Manager will evaluate the accuracy of all positioned data before admitting it into the project GIS and posting it to the project web site.

Requirements are Class 1, Third Order, NAD 83, and UTM. Control points will be to the nearest 0.01 ft.

Errors found will be corrected and noted in the operations field logbook. The accuracy of grid corners will be to the closest 1.0 ft. A detected error will result in the data being examined and the correct location and place points will then be determined in the project GIS data set to represent identifiable elements of the feature (i.e., corners or intersections).

4.8 PERIODIC CHECKS AND AUDITS

4.8.1 Daily QC Checks

USA's UXOQCS will perform periodic QC checks and inspections to ensure the investigation teams are following the WP requirements and SOPs. Checklists include:

- Out of the Box Tests
- Position QC Tests
- Daily Position Accuracy Test
- PDA Storage and Transfer Checklist
- Checklist for Field Editing and Processing
- Data Management Checklist.

4.8.2 Blind Seed Item/Industry Standard Object

USA's UXOQCS will place BSIs/ISOs at the minimum rate of one per EM survey day, and will be place at-least one day in advance of the proposed EM survey of the grid area. The UXOQCS will establish the location of each BSI/ISO using the RTK DGPS. These locations will be reported daily to the USA project geophysicist for QC of the data processing by ASI. Any failure to detect a BSI/ISO will constitute a QC grid failure and may require the entire grid to be re-mapped by the DGM team after addressing the quality deficiency.

4.8.3 Corrective Actions

Any QC test failure or failure to detect and report a BSI/ISO will result in the initiation of a root cause analysis to document the cause of the failure, assess any impact of previous work, and initiate a corrective action, including:

- Training refresher
- Equipment repair/replacement
- BSI/ISO Failure:
  - Seed item location error
  - Seed item behind obstruction and not covered by the sensor
  - Seed item buried too deep.

The UXOQCS will assess the effect of the failure on previous data and recommend a resolution that may include resurveying that grid or previous grids, as necessary to ensure project removal action requirements are being met. Any repaired/replaced equipment or change in operators may require a repeat of the IVS survey to document that project objectives and metrics are being met.

4.9 CONTINUOUS IMPROVEMENT PROGRAM

A Continuous Improvement Program will be maintained on site. It will include the following actions. The UXOQCS will solicit, on a weekly basis, lessons learned from on-site personnel. The SUXOS and UXOQCS will review lessons learned for both specific and general applicability. Recommendations for improvements to the work process will be forwarded to the Program Manager and DSQ. Upon review and approval by the Program Manager, recommendations for improvement will be forwarded to the Contracting Officer's Representative for consideration.

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CHAPTER 5. REPORT FOR SUPPLEMENTAL POND SURVEY

USA will prepare a report presenting results of the pond survey work completed under this technical memorandum WP. The report will present the maps of the benthic investigation, quantify and characterize the pond sediment, provide DGM maps. and recommend the level of effort required for the remedial action. This report will be submitted to the Navy and made available for review by the project stakeholders. It is anticipated that a technical planning meeting will be conducted for the project team and stakeholders to discuss and agree upon the remedial approach that will best serve the project objective of reducing the potential hazard associated with MEC and maximizing the availability of the pond for public use.

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CHAPTER 6. REFERENCES

6.1 PRIOR INVESTIGATIONS

- Remedial Investigation Report for Site 12 Explosive Ordnance Disposal Area, Former NAS Brunswick, Brunswick, Maine, Tetra Tech, June 2013.

6.2 FEDERAL REGULATIONS

- ATF Publication 5400.7 Bureau of Alcohol, Tobacco, Firearms and Explosives, Federal Explosives Laws and Regulations.

6.3 OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

- OSHA Regulations, 29 CFR 1910, Hazardous Waste Operations and Emergency Response, March 1989.

6.4 DEPARTMENT OF DEFENSE PUBLICATIONS

- DOD 6055.09-M, Ammunition and Explosive Safety Standards
- DDESB TP-18, Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel, December 2004

6.5 DEPARTMENT OF NAVY PUBLICATIONS

- OPNAVINST 8020.15A, Explosives Safety Review, Oversight, and Verification of Munitions Responses (27 Feb 2008)
- Operations Pamphlet (OP) 5, Vol.1, 7th Revision, Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation and Shipping
- NOSSA Instruction (NOSSAINST) 8020.15D, Explosives Safety Review, Oversight, and Verification of Munitions Response (26 Jan 2009)

6.6 UNITED STATES ARMY CORPS OF ENGINEERS PUBLICATIONS

- U.S. Army Corps of Engineers Safety and Health Requirements Manual. Engineer Manual 385-1-1 (15 September 2008)
- U.S. Army Corps of Engineers (USACE), Washington, DC. Engineer Manual 1110-1-1002, Survey Markers and Monumentation, 1 March 2012

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APPENDIX A. FIGURES

This appendix contains the following figures for use on this project:

- Figure 1. NAS Brunswick Site Location Map
- Figure 2. Site 12 EOD Area and Pond Site Map
- Figure 3. 2012 Pond Investigation Map
- Figure 4. Site 12 Pond Sediment Survey
- Figure 5. Project Schedule.

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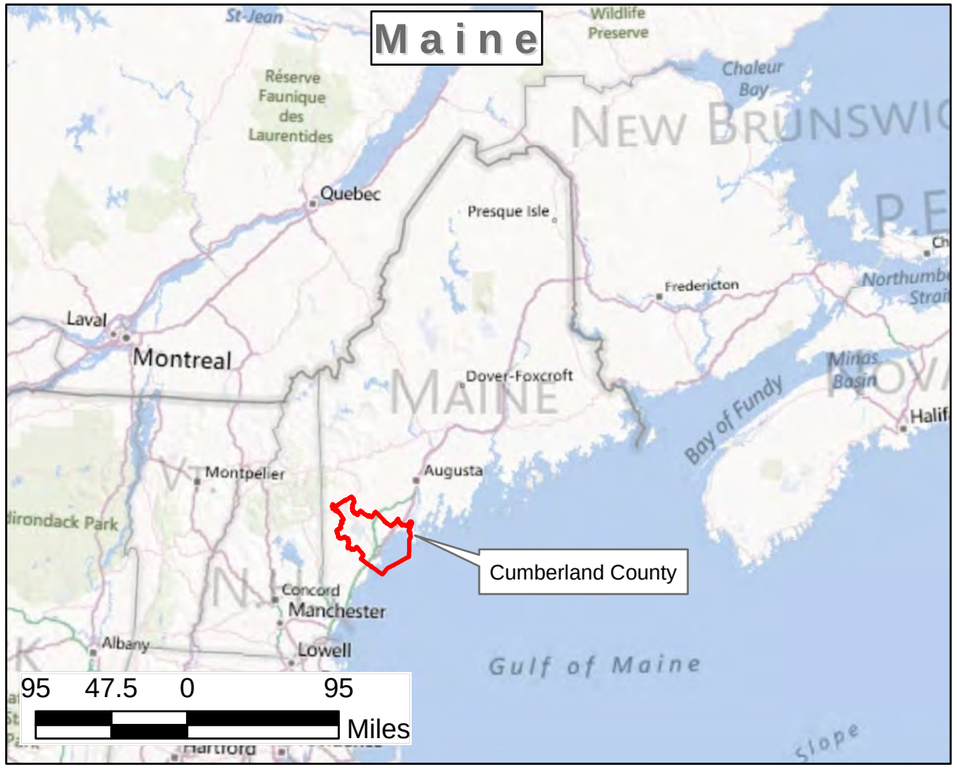
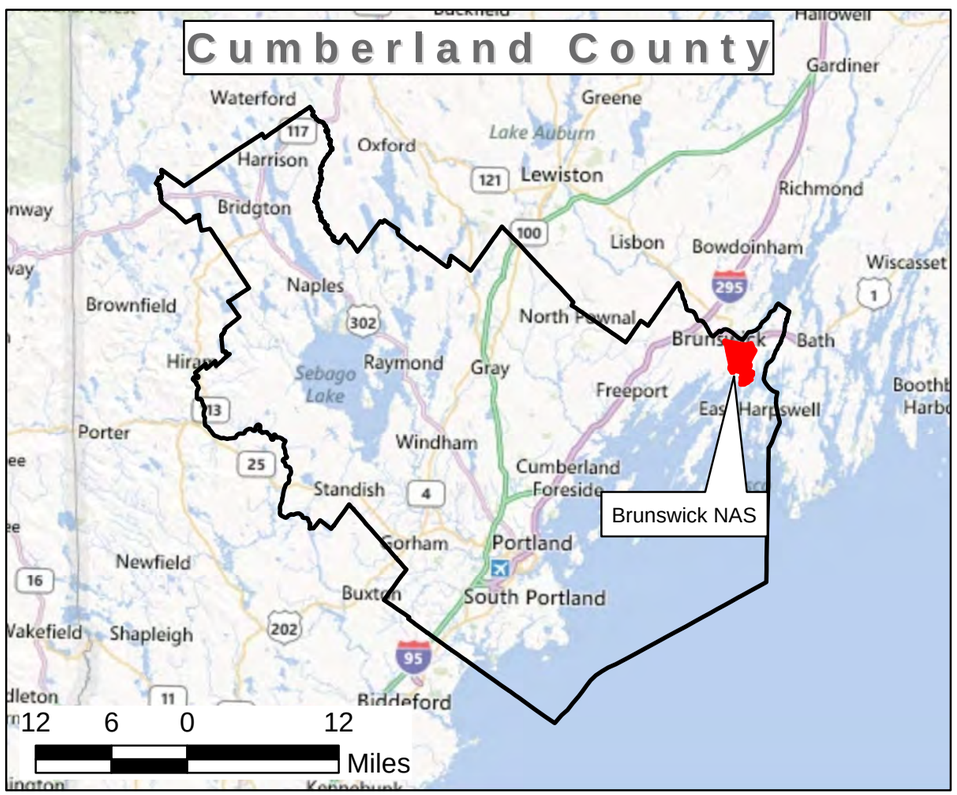
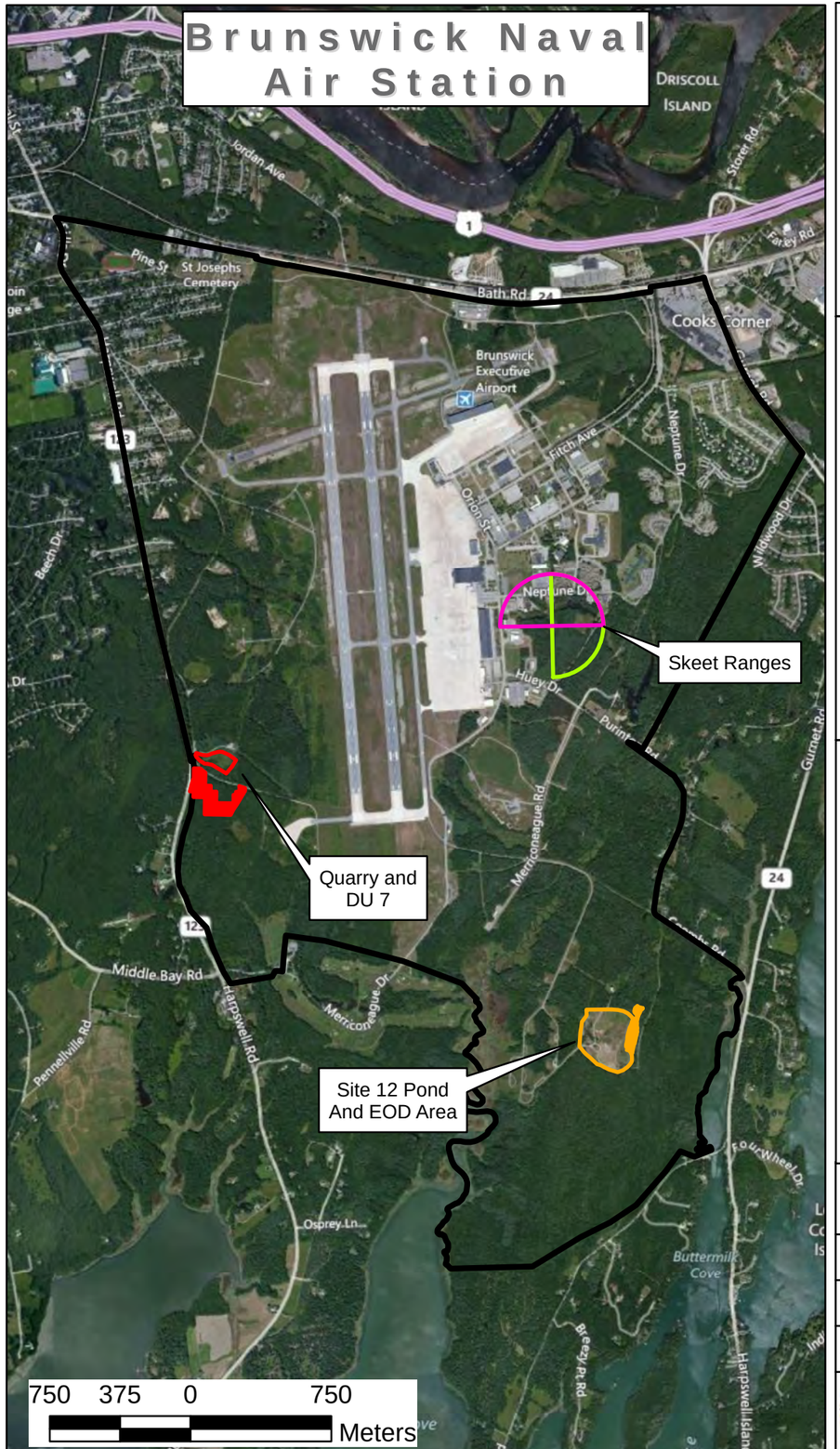






N

Scale Varies

Data is projected to the UTM Coordinate System: Zone 19 North, NAD83, Units in Meters.

NAS Brunswick, Maine

Figure 1

NAS Brunswick Site Location Map

Legend

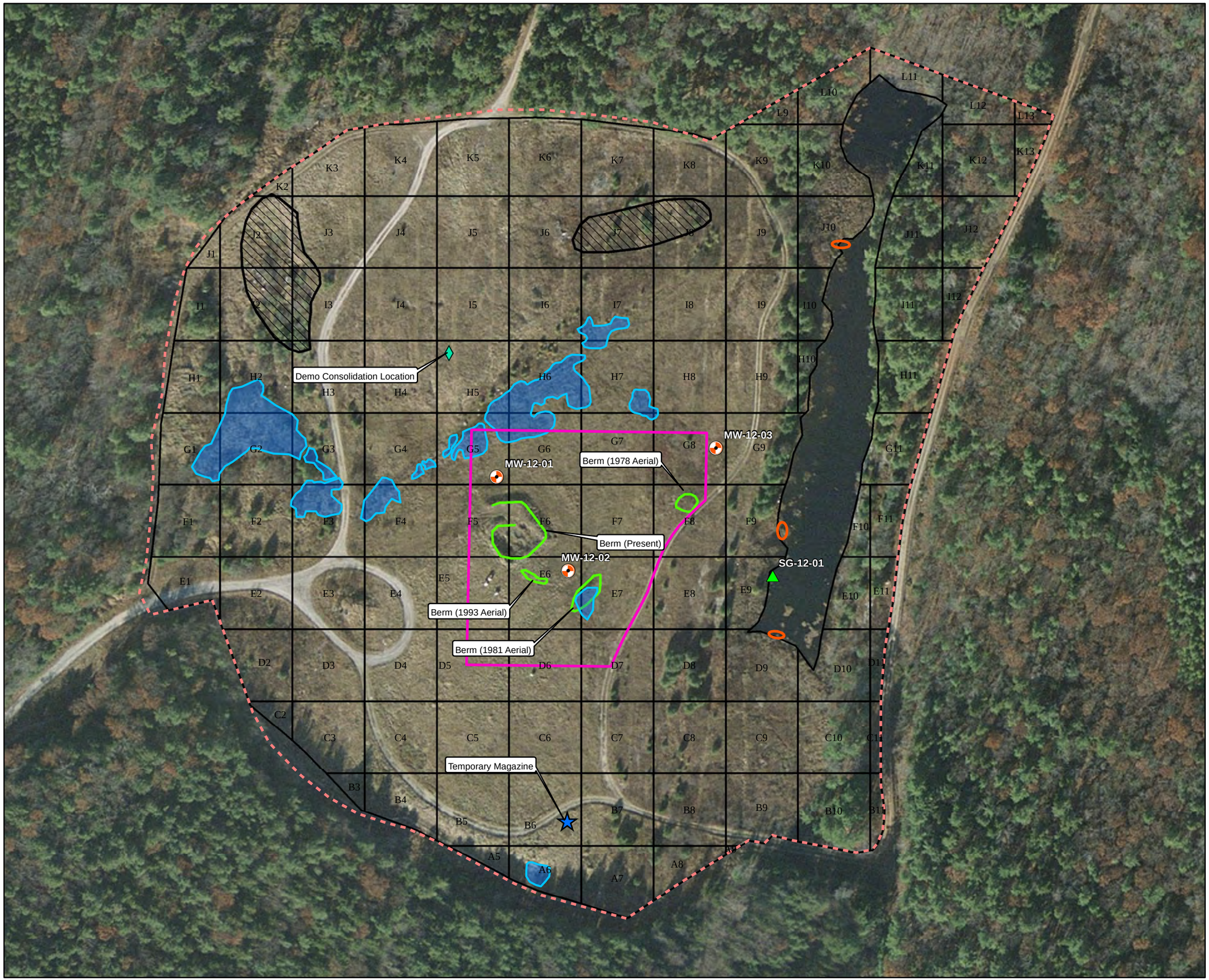
- Skeet Range - post-1950
- Skeet Range - pre-1950
- Quarry
- Quarry/ DU 7
- Site 12 EOD Area
- Site 12 Pond
- Brunswick NAS Boundary

USA Environmental, Inc.

NAVFAC Naval Facilities Engineering Command

Drawn By:	JAL	Scale: Varies	Rev:
Checked By:		Date Drawn: 10-26-2012	
Submitted By:	RH	Revision Date:	

Path: S:\Brunswick NAS\MXD\Work Plan\Fig1_NAS Brunswick Site Location Map.mxd



N

40 20 0 40

Meters

Data is projected to the UTM Coordinate System:
NAD 1983 UTM Zone 19N

Brunswick Site 12 Area

Figure 2

Site 12 EOD Area And Pond Site Map

NAS Brunswick, Maine

Legend

- Monitoring Well
- Staff Gauge
- Temorary Magazine
- Demo Consolidation Location
- Berm Location
- Previously Identified Wetlands
- Proposed Land Use Boundary & Area of Interest (23.79 ac.)
- Steep Rocky Slope
- 100' x 100' Grid System
- DU2 - Berm Area (Not in Current Contract)
- Debris Pile

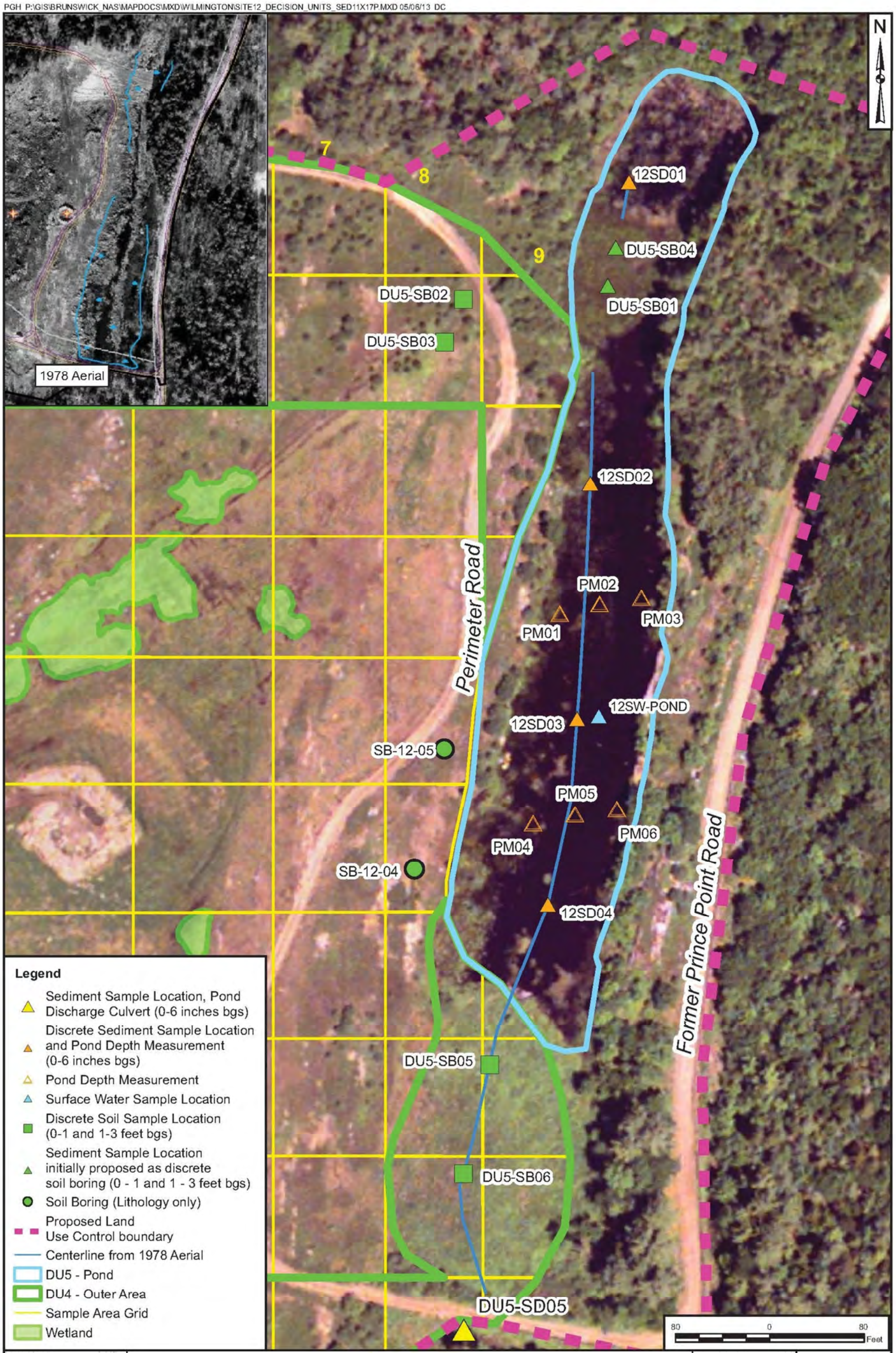
USA Environmental, Inc.

NAVFAC Naval Facilities Engineering Command

Drawn By: CLH	Scale: 1 inch = 40 meters	Rev:
Checked By:	Date Drawn: 4/10/2013	
Submitted By:	Revision Date:	

Path: S:\Brunswick NAS\MXD\ESS\Site 12\Fig 2_Site 12 Site Map.mxd

PGH P:\GIS\BRUNSWICK_NAS\MAPDOCS\MXD\WILMINGTON\SITE12_DECISION_UNITS_SED11X17P.MXD 05/06/13 DC



DRAWN BY: D. COUCH — DATE: 03/15/13	TETRA TECH	CONTRACT NUMBER: 0645	CTO NUMBER: 69
CHECKED BY: — DATE: —	SITE 12 EOD AREA DU4 (OUTER AREA) SOIL AND DU5 (POND) SURFACE WATER AND SEDIMENT LOCATION MAP FORMER NAVAL AIR STATION BRUNSWICK BRUNSWICK, MAINE	APPROVED BY: — DATE: —	
REVISED BY: — DATE: —		APPROVED BY: — DATE: —	
SCALE: AS NOTED		FIGURE NO.: 2-13	REV: 0

6/19/2013

Figure 3
2012 Pond Investigation Map

NAVFAC Naval Facilities Engineering Command

USA Environmental, Inc.

Note:

Figure from Tetra Tech Site 12 RI Report.

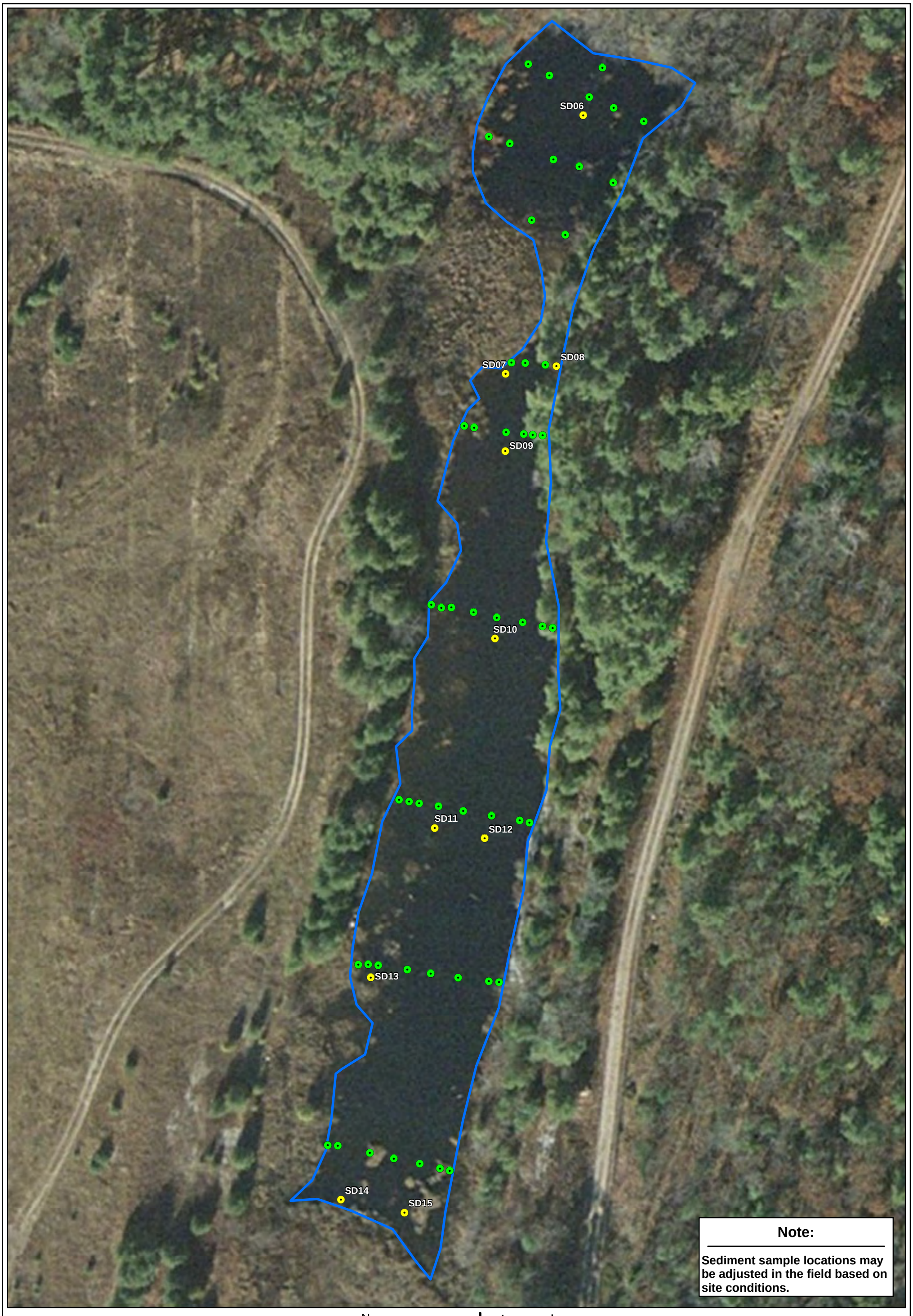


Figure 4
Site 12 Pond Sediment Survey

Brunswick Site 12 Area
NAS Brunswick, ME

N

60 30 0 60
Feet

Data is projected to the State Plane Coordinate System: NAD 1983 StatePlane Maine West FIPS 1802 Feet

Legend

- Bottom Probe
- Proposed Sediment Sample Location
- Pond (Edge of Water)

USA Environmental, Inc.

NAVFAC Naval Facilities Engineering Command

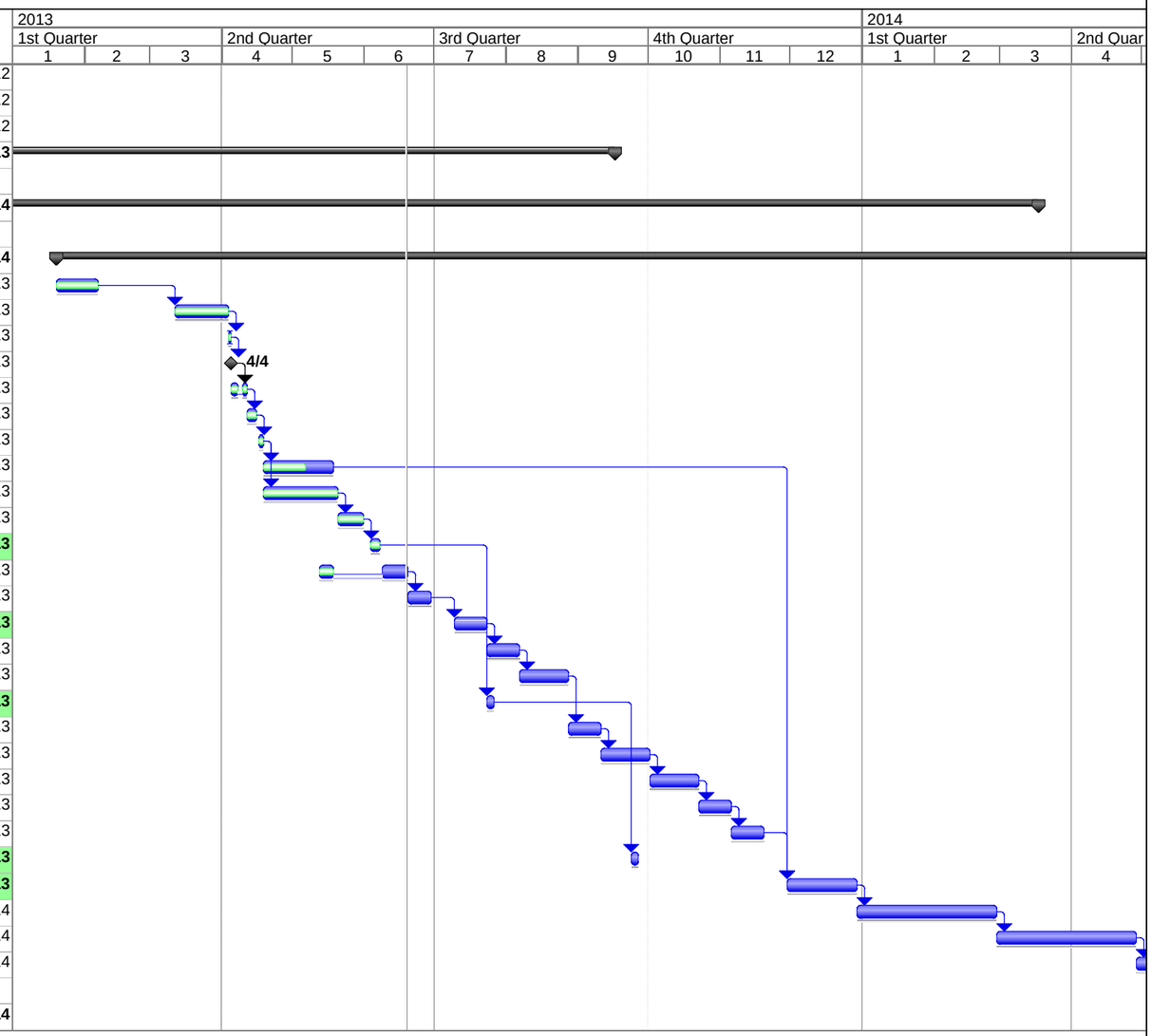
Date Drawn: 6/19/2013 By: CLH

Path: S:\Brunswick NAS\MXD\Work Plan\Site 12\Fig 4_Site 12 Pond Sediment Survey Map.mxd

Figure 5 Project Schedule

NAVFAC MIDLANT - WE01 - NAS BRUNSWICK
Site 12 TCRA, Skeet Range Remediation & Quarry Area TCRA

ID	Task Name	Duration	Start	Finish
1	Contract Award	1 day	Wed 9/5/12	Thu 9/6/12
2	Document Review	26 days	Thu 9/6/12	Tue 10/2/12
3	Site Visit	6 days	Tue 10/2/12	Mon 10/8/12
4	**Munitions Response - Quarry**	**344 days?**	**Mon 10/8/12**	**Tue 9/17/13**
26				
27	**Skeet Range Remediation**	**525.58 days**	**Mon 10/8/12**	**Mon 3/17/14**
51				
52	**Site 12 Pond - TCRA**	**509 days**	**Sat 1/19/13**	**Thu 6/12/14**
53	Preapare & Submit Internal Draft ESS	18 days	Sat 1/19/13	Wed 2/6/13
54	Navy Review Internal Draft ESS	23 days	Mon 3/11/13	Wed 4/3/13
55	Comment Response Period - Internal Draft ESS	1 day	Wed 4/3/13	Thu 4/4/13
56	Prepare & Submit Draft for NOSSA Review	0 days	Thu 4/4/13	Thu 4/4/13
57	NOSSA Review Draft ESS	5.5 days	Thu 4/4/13	Thu 4/11/13
58	Comment Response Period - Draft ESS	4 days	Fri 4/12/13	Tue 4/16/13
59	Submit Final ESS	2 days	Wed 4/17/13	Fri 4/19/13
60	DDESB Acceptance of Final ESS	30 days	Fri 4/19/13	Sun 5/19/13
61	Preapare & Submit TechMemo WP for Supplemental Natural Resource Assessment	31.38 days	Fri 4/19/13	Mon 5/20/13
62	Review & Approve TechMemo WP	11 days	Mon 5/20/13	Fri 5/31/13
63	**Perform Natural Resource Assessment (Spring 2013)**	**4 days**	**Mon 6/3/13**	**Fri 6/7/13**
64	Preapare & Submit TechMemo WP for Supplemental Pond Survey	17 days	Mon 5/13/13	Wed 6/19/13
65	Review & Approve TechMemo WP	10 days	Wed 6/19/13	Sat 6/29/13
66	**Perform Initial Pond Survey (Benthic Investigation, DGM and Sediment Sampling)**	**14 days**	**Tue 7/9/13**	**Tue 7/23/13**
67	Develop & Submit Pond Survey Letter Report	14 days	Tue 7/23/13	Tue 8/6/13
68	Govt. Review of Pond Letter Report	21 days	Tue 8/6/13	Tue 8/27/13
69	**Perform Natural Resource Assessment (Summer 2013)**	**3 days**	**Tue 7/23/13**	**Fri 7/26/13**
70	Prepare & Submit Draft WP	14 days	Tue 8/27/13	Tue 9/10/13
71	Govt. & Regulatory Review - Draft WP	21 days	Tue 9/10/13	Tue 10/1/13
72	Comment & Response Period - Draft WP	21 days	Tue 10/1/13	Tue 10/22/13
73	Prepare & Submit Final WP	14 days	Tue 10/22/13	Tue 11/5/13
74	Final WP Acceptance and NTP	14 days	Tue 11/5/13	Tue 11/19/13
75	**Perform Final Natural Resource Assessment (Early Fall 2013)**	**3 days**	**Mon 9/23/13**	**Thu 9/26/13**
76	**Conduct Pond Remedial Activity**	**30 days**	**Fri 11/29/13**	**Sun 12/29/13**
77	Prepare & Submit Draft Pond AAR (1Dec13)	60 days	Sun 12/29/13	Thu 2/27/14
78	Govt. Review and Response Period - Draft Pond AAR	60 days	Thu 2/27/14	Mon 4/28/14
79	Prepare and Submit Final Pond AAR (30Mar14)	45 days	Mon 4/28/14	Thu 6/12/14
80				
81	**Project Close-Out**	**34 days**	**Thu 6/12/14**	**Wed 7/16/14**



USA Environmental, Inc.
Project: WE01 - June13_revision for site 12 ch
Date: Wed 6/19/13

Task	Summary	Rolled Up Progress	Project Summary		
Progress	Rolled Up Task	Split	Group By Summary		
Milestone	Rolled Up Milestone	External Tasks	Deadline		

APPENDIX B. POINTS OF CONTACT

This appendix contains the Points of Contact applicable to the project.

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EMERGENCY REFERENCE
LOCAL POINTS OF CONTACT
FORMER NAS BRUNSWICK, BRUNSWICK, MAINE

CONTACT	PHONE NUMBER
Emergency Number for Fire, Police, and Ambulance	9-1-1
Fire Department (non-emergency): Central Station 21 Town Hall Place Brunswick, Maine 04011-2003	(207) 725-5541
Police Department (non-emergency): 28 Federal Street Brunswick, Maine 04011	(207) 725-5521
Mid Coast Hospital	(207) 373-3635
Former NAS Brunswick Point of Contact (POC): Robert Leclerc, P.E. Navy Caretaker Site Office 119 Purinton Road Brunswick, Maine 04011	(207) 406-2290 (207) 263-6736
NAVFAC MIDLANT Remedial Project Manager (RPM): Todd Bober	(215) 897-4911
BRAC PMO NE Environmental Coordinator: Paul Burgio	(215) 897-4903
EOD Support: EODMU TWELVE DET Newport 1176 Howell Street BLDG 119 Code 0032 Newport, RI 02841-1708	(401) 832-3301
National Response Center	(800) 424-8802
NORTHERN NEW ENGLAND POISON CENTER	(800) 222-1222
WorkCare	(800) 455-6155 ext. 109

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PROJECT CONTACT INFORMATION

Name	Title/Role	Organization	Telephone Number (Optional)	E-Mail Address or Mailing Address
Todd Bober	Remedial Project Manager (RPM)	NAVFAC MIDLANT 4911 South Broad Street Philadelphia, PA 19112	(215) 897-4911	todd.bober@navy.mil
Paul Burgio	BRAC Environmental Coordinator	Navy BRAC PMO NE 4911 South Broad Street Philadelphia, PA 19112	(215) 897-4903	paul.burgio@navy.mil
Steve Levesque	Executive Director Midcoast Regional Redevelopment Authority (207) 798-6512 (207) 841-9955 Cell	MRRA Hangar 6 2 Pegasus St., Suite 1, Unit 200 Brunswick, ME 04011	(207) 798-6512	www.mrra.us
Michael Green	MRP Senior Technical Advisor	NAVFAC Atlantic Attn: Code EV32 6506 Hampton Blvd., LRA Bldg. A Norfolk, VA 23508	(757) 322-8108	mike.green@navy.mil
Robert LeClerc	Former NAS Brunswick Point of Contact (POC)	Navy Caretaker Site Office Bldg. 53, 119 Purinton Rd. Brunswick, ME 04011	(207) 263-6736	Robert.leclerc@navy.mil----
Carolyn LePage	Technical Advisor to BASCE	LePage Environmental Services 731 Hotel Road Auburn, ME 04210	(207) 777-1049	calepage@adelphia.net
Jennifer Wright	Environmental Technical Support	NAVFAC Atlantic Attn: Code EV32 6506 Hampton Blvd Norfolk, VA 23508-1278 Jen (Code EV32JW)	(757) 322-8428	Jennifer.H.Wright@navy.mil

Name	Title/Role	Organization	Telephone Number (Optional)	E-Mail Address or Mailing Address
Joe Gallant	Safety & Construction Oversight Manager	NAVFAC PWD Maine Portsmouth Naval Shipyard Building 65, Floor 2 Portsmouth, NH 03804-5000		
David Barclift	Navy BRAC PMO NE Technical Support	Navy BRAC PMO NE 4911 South Broad Street Philadelphia, PA 19112	(215) 897-4913	david.barclift@navy.mil
Michael Daly	Remedial Project Manager	US Environmental Protection Agency - Region I OSSR07-3 5 Post Office Square, Suite 100 Boston, MA 02109-3912	(617) 918-1386	Daly.Mike@epamail.epa.gov
Claudia Sait	Remedial Project Manager	Maine Department of Environmental Protection Bureau of Remediation & Waste Management State House, Station 17 Augusta, ME 04333-0017	(207) 287-7713	claudia.b.sait@maine.gov
Chris Evans	Project Hydrogeologist	Maine Department of Environmental Protection Bureau of Remediation & Waste Management State House, Station 17 Augusta, ME 04333-0017	(207) 441-5181	Gordon.C.Evans@maine.gov
Lt. John Corkey	Officer in Charge	EODMU TWELVE DET Newport 1176 Howell Street BLDG 119 Code 0032 Newport, RI, 02841-1708	Desk (401) 832-3302	
Robert Hierholzer	Remedial Contractor PM	USA Environmental	Desk (813) 343-6339 Cell (813) 505-5220	rhierholzer@usatampa.com

APPENDIX C. CONTRACTOR FORMS

This appendix contains copies of the following forms for use on this project:

- Daily Site Report
- Tailgate Safety Briefing
- NAVFAC – Contractor Safety Self-Evaluation Checklist

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DAILY SITE REPORT

SECTION 1	GENERAL INFORMATION				
Project Name:		**Customer(s) Name:**			**Report No.:**
Contract No.:	**TO No.:**	**Completion Date:**	**Location:**		**Date of Report:**
SUXOS Name:		**Telephone No.:**		**Email Address:**	
Site Manager's Name:		**Telephone No.:**		**Email Address:**	
Customer POC Name:		**Telephone No.:**		**Email Address:**	
Project Web Portal Address:					

SECTION 2	WEATHER		
Temp: High / Low	**Precipitation / Humidity**	**Wind:**	**Work Impact / Remarks:**

SECTION 3	USA ASSIGNED PERSONNEL				
Position:	**No. Assigned:**	**No. Present:**	**Position:**	**No. Assigned:**	**No. Present:**
Site Manager			UXOT II		
SUXOS			UXOT I		
UXOQCS					
UXOSO					
UXOT III					

SECTION 4	SUBCONTRACTOR ASSIGNED PERSONNEL				
Position:	**No. Assigned:**	**No. Present:**	**Position:**	**No. Assigned:**	**No. Present:**

SECTION 5	SUBCONTRACTOR / RENTAL HEAVY EQUIPMENT ONSITE			
Description:	**Quantity:**	**Operational:**	**Owner:**	**Remarks:**

SECTION 6	TASK(S) PERFORMED				
Task Performed:	**Acres/Grids:**	**Transects:**	**Re-Acquire:**	**Digs:**	**Other:**
Surface					
Subsurface					
DGM / GIS					
Devegetation					
Demolition					
Survey					
Support					

SECTION 7	WORK DETAILS			
Acres/Grids:	**Transects:**	**Re-Acquire:**	**Digs:**	**Remarks:**

SECTION 8	SAFETY DATA		
1) Were safety inspections held? ☐ Y ☐ N		**2)** Was HW found or recovered today? ☐ Y ☐ N	
General ☐ Tailgate ☐ Task Specific ☐		Type:	
3) Were there any accidents? ☐ Y ☐ N		**4)** Was a "Competent Person" required? ☐ Y ☐ N	
1st Aid ☐ Clinic ☐ Hospital ☐		Type:	
5) Were there any near misses? ☐ Y ☐ N		**6)** Was PPE up or down graded today? ☐ Y ☐ N	
Brief Description:		Changed to:	

SECTION 9	QUALITY CONTROL DATA		
1) Were QC inspections held? ☐ Y ☐ N		**2)** Was a QA submittal made today? ☐ Y ☐ N	
Site ☐ MEC ☐ DGM ☐ Other ☐		Submitted by:	
3) Were there any failures? ☐ Y ☐ N		**4)** Was a Stop Work or CAR issued? ☐ Y ☐ N	
Minor ☐ Major ☐ Critical ☐		Issued by:	
5) Were there any corrections? ☐ Y ☐ N		**6)** Was a Form 948 issued? ☐ Y ☐ N	
Brief Description:		Issued for:	

SECTION 10	MPPEH / MDAS		
No. of MPPEH items found.		Lbs. of MDAS recovered.	
No. of MPPEH items consolidated.		Lbs. of MDAS placed in a "sealed" container.	

SECTION 11	MEC / UXO SUMMARY				
Type:	**Quantity:**	**Live:**	**Practice:**	**Unknown:**	**Location:**
Projectiles					
Grenades					
Rockets					
Bombs					
Mines					
Missiles					
Pyrotechnics					
ICM / Submunitions					

SECTION 12	DEMOLITION OPERATIONS	
Location:	**No. of Items Destroyed:**	**Remarks:**

SECTION 13	DAILY COMMENTS
CUSTOMER/REGULATORY INSTRUCTIONS ISSUED:	

SECTION 14	SIGNATURE BLOCKS	
Type or Print SUXOS Name:	**Signature:**	**Date:**
Type or Print Site Manager's Name:	**Signature**	**Date:**
CC to:		
Government Representative ☐	**Project Manager** ☐	**Customer Representative** ☐
Other – Specify:		

Note: Sections 2 through 13 above may have additional information found in inspection forms, preprinted forms, information sheets, or tabulated data sets (i. e., Sign-In / Sign-out Log, MEC Summary Log, Demolitions Records, QC Inspection Form, Safety Inspection Form). Attach additional information or continuation sheets to this report as needed.

CONTRACTOR SAFETY SELF- EVALUATION CHECKLIST

PWD/ROICC/OICC/FSC OFFICE: DATE: FINAL OVERALL SCORE:

CONTRACTOR: CONTRACT% COMPLETE: TOTAL MONTHLY MAN-HOURS:

CONTRACT TITLE: QC MANAGER: TOTAL CUMULATIVE MAN-HOURS:

SUPERINTENDENT: PERSON COMPLETING INSPECTION:

SITE SAFETY HEALTH OFFICER (SSHO): SSHO LEVEL: (CIRCLE REQUIRED LEVEL) (1), (2), (3), (4), (5), (6)

QUESTIONS ANSWERED "NO" ARE BE ENTERED INTO THE SITE SAFETY AND OCCUPATIONAL HEALTH DEFICIENCY TRACKING SYSTEM FOR CORRECTION (REFER TO EM 385-1-1 01.A.12.d)

PREPARATORY PHASE/ ORM PLANNING		
1	(Yes) (No) (N/A)	ACCEPTED ACCIDENT PREVENTION PLAN (APP) OR ABBREVIATED (APP) ON-SITE and UPDATED TO REFLECT CURRENT MANAGEMENT?
2	(Yes) (No) (N/A)	APPLICABLE UFGS 013526 AVAILABLE IN SITE ?
3	(Yes) (No) (N/A)	COMPETENT PERSON EMPLOYED FULL TIME AS SITE SAFETY AND HEALTH OFFICER (SSH0) UNLESS SPECIFIED DIFFERENTLY IN THE CONTRACT ?
4	(Yes) (No) (N/A)	SSHO ON - SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED ?
5	(Yes) (No) (N/A)	SAFETY INSPECTIONS/AUDITS CONDUCTED BY COMPETENT PERSON, OF THE WORK SITE, MATERIAL, AND EQUIPMENT DOCUMENTED IN WRITING AND AVAILABLE ON REQUEST?
6	(Yes) (No) (N/A)	SAFETY AND HEALTH BULLETIN BOARD ERECTED IN AREA COMMONLY ACCESSED AND IN CLEAR VIEW OF THE ON-SITE WORKERS?
7	(Yes) (No) (N/A)	SAFETY AND OCCUPATIONAL HEALTH DEFICIENCY TRACKING SYSTEM ESTABLISHED and UPDATED DAILY (REFER TO EM 385-1-1 01.A.12.d)?
8	(Yes) (No) (N/A)	QUALIFIED PERSON CONDUCTING/DOCUMENTING ALL TRAINING, MEETINGS AND INDOCTRINATION FOR NEW EMPLOYEES?
9	(Yes) (No) (N/A)	ACTIVITY HAZARD ANALYSIS (AHA) with COMPETENT PERSON IDENTIFIED and PROOF OF QUALIFICATIONS ATTACHED and ACCEPTED BY GOVERNMENT DESIGNATED AUTHORITY FOR EACH WORK ACTIVITY ON SITE?
10	(Yes) (No) (N/A)	WORK NOT STARTED UNTIL ACTIVITY HAZARD ANALYSIS REVIEWED BY CONTRACTOR, SUBCONTRACTOR(S) AND GOVERNMENT ON-SITE REPRESENTATIVES DURING PREPARATION and INITIAL PHASE MEETING?
11	(Yes) (No) (N/A)	ARE REQUIRED WEEKLY SAFETY MEETINGS FOR ALL WORKERS TO REVIEW PAST ACTIVITES, PLAN FOR NEW OR CHANGED OPERATIONS, REVIEW ahA'S BY TRADE, ESTABLISH SAFE WORKING PROCUDRES FOR UPCOMING HAZARDS, PROVIDE SAFETY AND HEALTH TRAINING BEING HELD AND DOCUMENTED?
12	(Yes) (No) (N/A)	ARE REQUIRED MONTHLY SAFETY MEETINGS FOR ALL SUPERVISORS ON THE PROJECT LOCATION TO REVIEW PAST ACTIVITES, PLAN FOR NEW OR CHANGED OPERATIONS, REVIEW ahA'S BY TRADE, ESTABLISH SAFE WORKING PROCUDRES FOR UPCOMING HAZARDS, PROVIDE SAFETY AND HEALTH TRAINING BEING HELD AND DOCUMENTED?
13	(Yes) (No) (N/A)	WRITTEN HAZARD COMMUNICATION PROGRAM SUBMITTED and IMPLEMENTED IAW EM 385 SECTION 06.B.01 ?
14	(Yes) (No) (N/A)	MSDS FOR EACH HAZARDOUS SUBSTANCE MAINTAINED WITH SITE MAP ATTACHED?
15	(Yes) (No) (N/A)	PRIME CONTRACTOR ASSURING SUBCONTRACTOR COMPLIANCE WITH REQUIREMENTS OF EM-385-1-1?
		Other? Extra Credit?
OFFICE TRAILER/SIGNAGE/GENERAL		
16	(Yes) (No) (N/A)	OFFICE AND STORAGE TRAILERS ANCHORED?
17	(Yes) (No) (N/A)	EMERGENCY PHONE NUMBERS POSTED?
18	(Yes) (No) (N/A)	TEMPORARY PROJECT FENCING WHICH EXTENDS FROM GRADE LEVEL TO A MINIMUM OF 48IN. ABOVE GRADE? (UNLESS GDA DETERMINES OTHERWISE BASED ON RISK ANALYSIS)
19	(Yes) (No) (N/A)	SIGNS WARNING OF THE PRESENCE OF CONSTRUCTION HAZARDS AND REQUIRING UNAUTHORIZED PERSONS TO KEEP OUT POSTED ON THE FENCING EVERY 150 FEET?
20	(Yes) (No) (N/A)	CONTRACTOR AWARE OF IMMEDIATE NOTIFICATION FOR ALL INJURIES REQUIRED BY PWD/ROICC/OICC/FSC OFFICE?
21	(Yes) (No) (N/A)	EMERGENCY PLANS IN CASE OF FIRE OR OTHER EMERGENCY PREPARED IN WRITING AND REVIEWED?
22	(Yes) (No) (N/A)	DRINKING WATER WITH DISPOSABLE CUPS AND A WASTE RECEPTACLE AVAILABLE?
23	(Yes) (No) (N/A)	TOILET FACILITIES WITH WASHING FACILITIES AVAILABLE?
24	(Yes) (No) (N/A)	HIGHLY VISIBLE MAP DELINEATING BEST ROUTE TO NEAREST MEDICAL FACILITY POSTED ON SAFETY BULLETIN BOARD?
25	(Yes) (No) (N/A)	FIRST-AID KIT, TYPE III, 16 UNIT, and ONE POCKET MOUTH PIECE OR CPR BARRIER PROVIDED AND MAINTAINED WITH INVENTORY LOG AVAILABLE?
26	(Yes) (No) (N/A)	ALL EMPLOYEES ON SITE WEARING AS A MINIMUM SHORT SLEEVE SHIRT, LONG PANTS, LEATHER OR OTHER PROTECTIVE WORK SHOES OR BOOTS
27	(Yes) (No) (N/A)	EVERY FLOOR, WORKING PLACE AND PASSAGEWAY KEPT FREE FROM PROTRUDING NAILS, SPLINTERS, LOOSE BOARDS, CLUTTER AND UNNECESSARY HOLES AND OPENING?
28	(Yes) (No) (N/A)	WORK AREAS INSPECTED DAILY FOR ADEQUATE HOUSEKEEPING AND RECORDED ON DAILY SAFETY INSPECTION REPORT?
29	(Yes) (No) (N/A)	TRAFFIC CONTROL AROUND SITE ADEQUATE?
		Other? Extra Credit?
FIRE PREVENTION		
30	(Yes) (No) (N/A)	WRITTEN FIRE PREVENTION PLAN ON SITE AND USED TO BRIEF EMPLOYEES?
31	(Yes) (No) (N/A)	FIRE EXTINGUISHERS AVAILABLE, FULLY CHARGED, EASILY VISIBLE WITHIN 75 FEET FOR LOW HAZARD AREAS?
32	(Yes) (No) (N/A)	FIRE EXTINGUISHERS INSPECTED MONTHLY, RECORDED ON TAGS, AND INITIALED?
33	(Yes) (No) (N/A)	FUEL STORED IN SAFETY CANS LABELED/LISTED and PAINTED RED WITH YELLOW BAND AND CONTENTS INDICATED?
34	(Yes) (No) (N/A)	ARE HOT WORK PERMITS BEING OBTAINED FOR WELDING, CUTTING OR OPERATING OTHER FLAME-PRODUCING/SPARK PRODUCING DEVICES FROM THE FIRE DEPARTMENT?
35	(Yes) (No) (N/A)	ARE FIRE WATCHES PROVIDED?
		Other? Extra Credit?
PPE		
36	(Yes) (No) (N/A)	WORKERS WEARING SAFETY-TOED LEATHER SHOES OR BOOTS MEETING ASTM F 2412 - 05 AND F 2413 - 05 ?
37	(Yes) (No) (N/A)	HARD HATS BEING WORN PROPERLY AND MEETING ANSI Z89.1?
38	(Yes) (No) (N/A)	ARE WORKERS INVOLVED IN ACTIVITIES THAT SUBJECT HANDS TO INJURY USING HAND PROTECTION APPROPRIATE FOR THE HAZARD?
39	(Yes) (No) (N/A)	SAFETY GLASSES USED WHERE APPROPRIATE?
40	(Yes) (No) (N/A)	HEARING PROTECTION WHERE APPROPRIATE? (IF YOU NEED TO YELL TO CONVERSE HEARING PROTECTION IS REQUIRED)
41	(Yes) (No) (N/A)	WORKERS WEARING RESPIRATORS WHERE APPROPRIATE?
42	(Yes) (No) (N/A)	IMPALEMENT PROTECTION PROVIDED WHERE PERSONNEL COULD WORK ABOVE VERTICAL IMPALEMENT HAZARD (Rebar etc.)?
43	(Yes) (No) (N/A)	ARE PROTECTIVE LEG CHAPS WORN BY WORKERS WHO OPERATE CHAIN SAWS?
44	(Yes) (No) (N/A)	HIGH VISIBILITY APPAREL BEING WORN WHEN WORKERS ON SITE ARE EXPOSED TO VEHICULAR OR EQUIPMENT TRAFFIC AT UP TO 45 MPH, THERE IS LIMITED OR REDUCED VISIBILITY FOR WORKERS AROUND MOBILE/HEAVY EQUIPMENT OR WORKERS ARE WORKING CLOSE TO VEHICULAR TRAFFIC WITH NO PROTECTIVE BARRIERS?
		OTHER? EXTRA CREDIT?

SCAFFOLD SAFETY		
45	(Yes) (No) (N/A)	HAS A SITE-SPECIFIC FALL PROTECTION AND PREVENTION PLAN and AHA BEEN ACCEPTED BY THE GDA PRIOR TO COMMENCING WORK IN ELEVATED AREAS?
46	(Yes) (No) (N/A)	ALL ERECTION, MOVING, DISMANTLING, OR ALTERING OF SCAFFOLD SYSTEMS UNDER THE SUPERVISION OF A COMPETENT PERSON?
47	(Yes) (No) (N/A)	COMPETENT PERSON USING A COLOR-CODED TAGGING SYSTEM? (GREEN = INSPECTED & SAFE TO USE) (RED = SCAFF0OLD IS UNSAFE TO USE)
48	(Yes) (No) (N/A)	PLANKS OVERLAPPED NOT LESS THAN 6" OR MORE THAN 12" OVER END SUPPORTS WITH TOE BOARDS IN PLACE?
49	(Yes) (No) (N/A)	SCAFFOLD PINNED PROPERLY AND ALL CROSS BRACING IN PLACE?
50	(Yes) (No) (N/A)	SCAFFOLD HEIGHT 4 TIMES SMALLEST BASE DIMENSION AND SYSTEM IS SECURED TO STRUCTURE?
51	(Yes) (No) (N/A)	ALL GUARDRAILS ARE IN PLACE?
52	(Yes) (No) (N/A)	FULL WORK PLATFORM OR DECKS AT EACH WORKING LEVEL WITH NO CRACKS/SPLITS?
53	(Yes) (No) (N/A)	WORK PLATFORM OR DECK SECURELY FASTENED TO THE SCAFFOLD?
54	(Yes) (No) (N/A)	SAFE ACCESS PROVIDED TO EACH WORKING LEVEL?
55	(Yes) (No) (N/A)	IS SCAFFOLD SYSTEM PLUMB AND LEVEL?
56	(Yes) (No) (N/A)	SUSPENDED SCAFFOLD SYSTEMS USING INDEPENDENT PERSONAL FALL ARREST SYSTEM?
57	(Yes) (No) (N/A)	PERSONNEL PROHIBITED FROM RIDING ON MANUALLY PROPELLED SCAFFOLDS?
		Other? Extra Credit?
FALL PROTECTION		
58	(Yes) (No) (N/A)	HAS SITE-SPECIFIC FALL PROTECTION AND PREVENTION PLAN BEEN ACCEPTED?
59	(Yes) (No) (N/A)	WORKERS USING FALL PROTECTION EQUIPMENT USING "BUDDY SYSTEM" T0 BEGIN RESCUE OF FALLEN WORKER IF REQUIRED
60	(Yes) (No) (N/A)	ALL WORKERS ABOVE 6 FOOT FALL PROTECTION THRESHOLD PROTECTED FROM FALLING TO LOWER LEVEL?
61	(Yes) (No) (N/A)	ARE EMPLOYEES TRAINED FOR FALL PROTECTION SYSTEMS IN USE?
62	(Yes) (No) (N/A)	HAS THE CONTRACTOR DESIGNATED A COMPETENT PERSON FOR FALL PROTECTION?
63	(Yes) (No) (N/A)	IS A WRITTEN RESCUE PLAN (IAW ANSI Z359.2) BEEN PREPARED AND MAINTAINED WHEN WORKERS ARE WORKING AT HEIGHTS ?
64	(Yes) (No) (N/A)	IS A FULL BODY HARNESS USED?
65	(Yes) (No) (N/A)	ALL WORKERS ALOFT TIED OFF AT ALL TIMES (100%) TO STRUCTURAL ELEMENT CAPABLE OF SUPPORTING 5,000 LBS?
66	(Yes) (No) (N/A)	HAVE STANDARD GUARDRAILS BEEN PROVIDED WHERE NEEDED?
67	(Yes) (No) (N/A)	ACCESS TO WORK AREAS GREATER THAN 20 FEET HIGH PROVIDED WITH A STAIR SYSTEM?
68	(Yes) (No) (N/A)	HAVE HORIZONTAL LIFE LINES IF USED BEEN DESIGNED AND INSTALLED UNDER SUPERVISION OF A QUALIFIED PERSON?
		OTHER? EXTRA CREDIT?
LADDER SAFETY		
69	(Yes) (No) (N/A)	LADDERS EXTEND 3' ABOVE LANDING PLATFORM AND TIED TO STRUCTURE?
70	(Yes) (No) (N/A)	ARE LADDERS USED WITH HAND TOOLS ONLY?
71	(Yes) (No) (N/A)	ARE LADDER BASE DISTANCES FROM STRUCTURE 1/4 HEIGHT?
72	(Yes) (No) (N/A)	ALL FLOOR OPENINGS EITHER COVERED OR SURROUNDED BY A GUARDRAIL?
73	(Yes) (No) (N/A)	ELECTRICIANS NOT USING CONDUCTIVE LADDERS?
74	(Yes) (No) (N/A)	STAIRWAYS PROVIDED ON ALL STRUCTURES OVER 20' DURING CONSTRUCTION/WITH GUARDRAIL?
75	(Yes) (No) (N/A)	ALL FLIGHTS OF STAIRS WITH 4 OR MORE RISERS HAVE STANDARD STAIR RAILINGS OR HANDRAILS
76	(Yes) (No) (N/A)	PORTABLE STEP LADDERS OVER 20' NOT USED ON THE SITE?
77	(Yes) (No) (N/A)	ARE LADDERS PROPERLY USED?
		OTHER? EXTRA CREDIT?
EXCAVATIONS		
78	(Yes) (No) (N/A)	HAS EXCAVATION/TRENCHING PLAN IN ACCORDANCE WITH (SECTION 25.A.01 a - n) BEEN SUBMITTED AND ACCEPTED BY THE GDA PRIOR TO BEGINNING OPERATIONS?
79	(Yes) (No) (N/A)	COMPETENT PERSON ABLE TO DEMONSTRATE TRAINING, EXPERIENCE AND KNOWLEDGE OF SOIL ANALYSIS: PROTECTIVE SYSTEMS AND REQUIREMENTS OF 29 CFR 1926 SUBPART P AND HAS AUTHORITY TO STOP WORK WHEN REQUIRED?
80	(Yes) (No) (N/A)	COMPETENT PERSON INSPECTED AND DOCUMENTED EXCAVATION DAILY?
81	(Yes) (No) (N/A)	HIGH VISIBILITY APPAREL WORN BY ALL WORKERS EXPOSED TO VEHICLE TRAFFIC OR WORKING AROUND EQUIPMENT
82	(Yes) (No) (N/A)	HYDRAULIC EXCAVATORS, WHEEL/TRUCK/BACKHOE LOADERS USED TO TRANSPORT OR HOIST LOADS WITH RIGGING COMPLY WITH EM 385 SECTION 16 "S" AND HAVE AHA SPECIFIC TO THESE OPERATIONS?
83	(Yes) (No) (N/A)	WRITTEN PROOF OF QUALIFICATION OF EQUIPMENT OPERATORS, RIGGERS INVOLVED IN HOISTING, TRANSPORTING OPERATIONS?
84	(Yes) (No) (N/A)	OPERATIONAL TEST PERFORMED AS DESCRIBED IN 16.F?
85	(Yes) (No) (N/A)	MANUFACTURERS OPERATING MANUAL WITH EQUIPMENT?
86	(Yes) (No) (N/A)	PROPER USE OF RIGGING, INCLUDING POSITIVE LATCHING DEVICES?
87	(Yes) (No) (N/A)	INSPECTION OF RIGGING
88	(Yes) (No) (N/A)	BARRICADE SWING RADIUS OF EQUIPMENT AND LOAD?
89	(Yes) (No) (N/A)	OVER 4' DEEP MUST HAVE A LADDER WITHIN 25' AND TWO MEANS OF EGRESS?
90	(Yes) (No) (N/A)	HAS PROPER SLOPE OR TRENCH BOX/SHORING BEEN PROVIDED?
91	(Yes) (No) (N/A)	IS WATER CONTROLLED/REMOVED?
92	(Yes) (No) (N/A)	IS EXCAVATED MATERIAL AT LEAST 2' BACK FROM TRENCH EDGE?
93	(Yes) (No) (N/A)	HAS SAFE ACCESS/PROTECTION BEEN PROVIDED TO PREVENT PERSONNEL, VEHICLES, AND EQUIPMENT FROM FALLING INTO EXCAVATIONS?
94	(Yes) (No) (N/A)	PERIMETER PROTECTION THAT MEETS CLASS I or CLASS II or CLASS III REQUIREMENTS PROVIDED?
		OTHER? EXTRA CREDIT?

ELECTRICAL		
95	(Yes) (No) (N/A)	HAS A SKETCH OF TEMPORARY POWER DISTRIBUTION SYSTEMS BEEN SUBMITTED /ACCEPTED BY GDA?
96	(Yes) (No) (N/A)	ELECTRICAL WORK PERFORMED BY QUALIFIED PERSONNEL WITH VERIFIABLE CREDENTIALS?
97	(Yes) (No) (N/A)	ENERGIZED WORK PERMIT SUBMITTED TO GDA PRIOR TO ANY WORK ON ENERGIZED LINES ON EQUIPMENT AND IAW NFPA70E AND EM 385 I.E.. 02 C(1) - (8)
98	(Yes) (No) (N/A)	ARE ARC FLASH REQUIREMENTS KNOWN AND ADHERED TO?
99	(Yes) (No) (N/A)	ARE TEMPORARY POWER PANEL AND RECEPTACLES PROTECTED FROM WEATHER?
100	(Yes) (No) (N/A)	GFCI'S IN USE FOR SITE TOOLS - APPLIES TO EXISTING OUTLETS IN RENOVATION PROJECTS AS WELL?
101	(Yes) (No) (N/A)	TEMPORARY LIGHTS INSULATED FROM SUPPORTS PROPERLY WITH ALL LAMPS WORKING AND GUARDED?
102	(Yes) (No) (N/A)	OVERHEAD POWER LINES IN AREA, OPERATIONS PROHIBITED UNLESS MAINTAINING PROPER CLEARANCE DISTANCES?
103	(Yes) (No) (N/A)	HAS HAZARDOUS ENERGY CONTROL PROGRAM BEEN SUBMITTED AND ACCEPTED BY GDA? (OLD LOCK OUT/TAG OUT)
104	(Yes) (No) (N/A)	VERTICAL CLEARANCE OF TEMPORARY WIRING OF AT LEAST 10 FEET MAINTAINED ?
105	(Yes) (No) (N/A)	ALL FLEXIBLE CORDS INSPECTED AT LEAST DAILY? DOCUMENTED?
106	(Yes) (No) (N/A)	FLEXIBLE CORDS NOT SPLICED EXCEPT HARD SERVICE CORDS # 12 OR LARGER WITH MOLDED OR VULCANIZED SPLICES BY QUALIFIED ELECTRICIAN?
		OTHER? EXTRA CREDIT?
CRANES		
107	(Yes) (No) (N/A)	BEFORE CRANE/HOISTING EQUIPMENT IS PLACED IN SERVICE HAS IT BEEN INSPECTED, TESTED, AND CERTIFIED IN WRITING BY A COMPETENT PERSON TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION AND THE REQUIREMENTS OF EM 385?
108	(Yes) (No) (N/A)	CRANE OPERATOR DESIGNATED QUALIFIED AND PROOF OF QUALIFICATION IN WRITING PROVIDED TO THE GDA?
109	(Yes) (No) (N/A)	PROJECT HAS ADEQUATE MEANS FOR MONITORING LOCAL WEATHER CONDITIONS, INCLUDING A WIND-INDICATING DEVICE?
110	(Yes) (No) (N/A)	ARE EM 385-1-1 16.D.08 (AT THE BEGINNING OF EACH SHIFT) START UP INSPECTIONS PERFORMED BY OPERATOR AND SUBMITTED WITH DRI?
111	(Yes) (No) (N/A)	HAS THE PERIODIC INSPECTION BEEN PERFORMED PRIOR TO USE ON SITE IAW EM 385-1-1, TABLE 16-1 AND 16.D.10?
112	(Yes) (No) (N/A)	IS CRANE EQUIPPED WITH ANTI TWO-BLOCK DEVICE IF REQUIRED?
113	(Yes) (No) (N/A)	IS THE CRANE LEVEL AND ON FIRM GROUND AND OUTRIGGERS IN USE WITH APPROPRIATE CRIBBING?
114	(Yes) (No) (N/A)	IAW 16.G.09 WHEN CRANE IS OPERATED WITHIN 20 FOOT OF POWER LINES (OPERATING WORK ZONE IS AREA 360 DEGREES AROUND CRANE) HAS A DETERMINATION BEEN MADE THAT ALL POWER LINES ARE ENERGIZED?
115	(Yes) (No) (N/A)	IAW TABLE 16-3 CRANE NOT ALLOWED TO WORK CLOSER THAN 10 FOOT OF ENERGIZED POWER LINES (DEPENDING ON ACTUAL VOLTAGE OF LINES
116	(Yes) (No) (N/A)	IS CRANE SIDE LOADING PROHIBITED?
117	(Yes) (No) (N/A)	ARE RIGGING CABLES AND SLINGS INSPECTED BY A COMPETENT PERSON BEFORE EACH SHIFT?
118	(Yes) (No) (N/A)	ARE WORKERS PROTECTED FROM THE CRANE SWING RADIUS AND PREVENTED FROM PASSING UNDER THE LOAD?
		OTHER? EXTRA CREDIT?
CONFINED SPACE		
119	(Yes) (No) (N/A)	ALL CONFINED SPACE WORK IAW EM 385 SECTION 34.A.06?
120	(Yes) (No) (N/A)	IS CONFINED SPACE COMPETENT PERSON (CSCP), IN WRITING, IDENTIFIED?
121	(Yes) (No) (N/A)	IS ATMOSPHERE BEING MONITORED?
122	(Yes) (No) (N/A)	IS SPACE BEING VENTILATED?
123	(Yes) (No) (N/A)	ARE ENTRANTS, ATTENDANTS AND ENTRY SUPERVISOR PROPERLY TRAINED?
124	(Yes) (No) (N/A)	IS RESCUE/RETRIEVAL SYSTEM IN PLACE FOR PERMIT REQUIRED CONFINED PLACES?
125	(Yes) (No) (N/A)	ARE ENTRY PERMITS POSTED AT POINT OF ENTRY AND SIGNED BY ENTRY SUPERVISOR?
126	(Yes) (No) (N/A)	IS THE POINT OF ENTRY POSTED "DANGER CONFINED SPACE"?
127	(Yes) (No) (N/A)	HAS BLANKING OR LOCKING OUT OF SYSTEMS TAKEN PLACE?
		OTHER? EXTRA CREDIT?
ROOFING		
128	(Yes) (No) (N/A)	HAS STRUCTURAL ANALYSIS OF THE ROOF BEEN CONDUCTED BY A QUALIFIED PERSON ?
129	(Yes) (No) (N/A)	HAS COMPETENT PERSON COMPLETED A DAILY INSPECTION?
130	(Yes) (No) (N/A)	HAS COMPETENT PERSON DEVELOPED A FALL PROTECTION PLAN, SUBMITTED/ACCEPTED BY GDA?
131	(Yes) (No) (N/A)	ARE KETTLES AT LEAST 25 FEET AWAY FROM BUILDINGS?
132	(Yes) (No) (N/A)	IS KETTLE ATTENDANT WEARING PROPER PPE AT ALL TIMES?
133	(Yes) (No) (N/A)	ARE TWO FIRE EXTINGUISHERS AT THE KETTLE?
134	(Yes) (No) (N/A)	ARE SKYLIGHTS AND ROOF PENETRATIONS COVERED OR BARRICADED APPROPRIATELY?
135	(Yes) (No) (N/A)	HAS THE ROOF BEEN EVALUATED FOR ITS ABILITY TO SUPPORT THE INTENDED CONSTRUCTION LOADS?
136	(Yes) (No) (N/A)	IF WARNING LINES ON LOW SLOPED ROOFS ARE USED, ARE THEY PROPERLY INSTALLED/MAINTAINED?
137	(Yes) (No) (N/A)	ARE FUEL CYLINDERS A MINIMUM OF 10' FROM OPEN FLAME?
		OTHER? EXTRA CREDIT?
EQUIPMENT		
138	(Yes) (No) (N/A)	ALL MACHINERY OR EQUIPMENT INSPECTED DAILY, WHEN IN USE, BY COMPETENT PERSONS?
139	(Yes) (No) (N/A)	ARE OPERATORS TRAINED AND AUTHORIZED TO OPERATE POWERED INDUSTRIAL TRUCKS, LIFT TRUCKS, AND SIMILAR EQUIPMENT?
140	(Yes) (No) (N/A)	MOBILE EQUIPMENT EQUIPPED WITH BACKUP ALARMS? ROLLOVER CAGES/ MOVING PARTS ADEQUATELY GUARDED?
141	(Yes) (No) (N/A)	ARE EQUIPMENT OPERATIONS MAINTAINING SAFE CLEARANCE FROM ELECTRICAL POWER LINES?
142	(Yes) (No) (N/A)	MODIFICATIONS MEET MANUFACTURER INSTRUCTIONS (I.E., LIFTING PERSONNEL WITH FORKLIFT - (NOT ALLOWED BY MANY MANUFACTURERS)?
143	(Yes) (No) (N/A)	ARE SAFETY LASHINGS PROVIDED FOR HIGH PRESSURE HOSE CONNECTIONS, I.E., AIR COMPRESSORS?
144	(Yes) (No) (N/A)	ARE WORKERS CLEAR OF BLIND SPOTS ASSOCIATED WITH MOBILE CONSTRUCTION EQUIPMENT?
145	(Yes) (No) (N/A)	ARE DAILY WALK AROUND INSPECTIONS OF AERIAL LIFTS PERFORMED AND DOCUMENTED BY QUALIFIED OPERATORS?
146	(Yes) (No) (N/A)	DO AERIAL LIFTS HAVE BASKET/PLATFORM WITH GUARDRAIL?
147	(Yes) (No) (N/A)	WORKERS NOT EXTENDING OVER GUARDRAIL OF AERIAL LIFTS?
148	(Yes) (No) (N/A)	ARE ARTICULATING BOOM PLATFORMS (JLG TYPE) USED WITH FULL BODY HARNESS ATTACHED TO PROPER ATTACHMENT POINTS ON BOOM OR BASKET?
149	(Yes) (No) (N/A)	ARE DUMP TRUCK CHECKLISTS BEING USED AND COPIES KEPT ON SITE?
150	(Yes) (No) (N/A)	INSPECTION, MAINTENANCE, AND REPAIRS TO CONVEYORS PERFORMED IAW MANUFACTURER'S RECOMMENDATIONS BY QUALIFIED PERSONNEL?
151	(Yes) (No) (N/A)	EXPOSED MOVING MACHINERY PARTS MECHANICALLY OR ELECTRICALLY GUARDED?
152	(Yes) (No) (N/A)	WHEN TWO OR MORE CONVEYING SYSTEMS ARE INTERFACED ARE ADEQUATE GUARDING AND SAFETY DEVICES IN PLACE?
		OTHER? EXTRA CREDIT?

TREE MAINTENANCE AND REMOVAL		
153	(Yes) (No) (N/A)	ALL TREE MAINTENANCE OR REMOVAL PERFORMED UNDER THE DIRECTION OF A QUALIFIED TREE WORKER?
154	(Yes) (No) (N/A)	ONLY QUALIFIED LINE-CLEARANCE TREE TRIMMER OR LINE-CLEARANCE TRAINEE ASSIGNED TO WORK IN CLOSE PROXIMITY TO ELECTRICAL HAZARDS?
155	(Yes) (No) (N/A)	TREE WORKERS IN A BUCKET OR WORK PLATFORM USING FALL PROTECTION
156	(Yes) (No) (N/A)	ALL TREE WORK OPERATIONS ABOVE 12 FOOT HAVE A 2ND WORKER IN THE AREA
157	(Yes) (No) (N/A)	PRIOR TO FELLING OPERATIONS HAS WORK AREA BEEN CLEARED AND ESCAPE ROUTE PLANNED?
158	(Yes) (No) (N/A)	ALL EMPLOYEES WORKING FROM THE UPHILL SIDE WHENEVER POSSIBLE?
DEMOLITION		
159	(Yes) (No) (N/A)	HAS DEMOLITION PLAN, BASED ON ENGINEERING, LEAD, AND ASBESTOS SURVEY BY A REGISTERED PROFESSIONAL ENGINEER BEEN ACCEPTED?
160	(Yes) (No) (N/A)	WASTE NOT BEING DROPPED > 6' UNLESS IN AN ENCLOSED CHUTE AND AREA SECURED FROM TRAFFIC?
161	(Yes) (No) (N/A)	FOR BUILDING DEMOLITION, HAS NOTIFICATION BEEN MADE TO STATE HAVING JURISDICTION?
162	(Yes) (No) (N/A)	ARE NAILS REMOVED FROM SCRAP LUMBER/MATERIALS?
163	(Yes) (No) (N/A)	FRAGMENTATION OF GLASS CONTROLLED?
164	(Yes) (No) (N/A)	MATERIAL CHUTES AT AN ANGLE GREATER THAN 45º FROM THE HORIZONTAL ENCLOSED?
		OTHER? EXTRA CREDIT?
ABATEMENT		
165	(Yes) (No) (N/A)	HAS ABATEMENT PLAN BEEN SUBMITTED AND ACCEPTED?
166	(Yes) (No) (N/A)	IS INDEPENDENT AIR MONITORING BEING PERFORMED AS REQUIRED INSIDE AND OUTSIDE BARRIERS?
167	(Yes) (No) (N/A)	IS CONTAINMENT IN PLACE WITHOUT INTEGRITY COMPROMISE?
168	(Yes) (No) (N/A)	ARE EMPLOYEES UTILIZING APPROPRIATE PPE?
169	(Yes) (No) (N/A)	IF NEGATIVE AIR IS USED, ARE FANS USED CONTINUOUSLY AND MONITORED FOR PRESSURE DIFFERENTIAL?
170	(Yes) (No) (N/A)	HAS BASELINE BEEN PERFORMED AND NECESSARY FINAL CLEARANCE READINGS TAKEN?
171	(Yes) (No) (N/A)	ARE INSPECTIONS BY INDEPENDENT PQP PERFORMED PRIOR TO BARRIER REMOVAL?
172	(Yes) (No) (N/A)	IS WASTE MATERIAL PROPERLY CONTAINERIZED AND STORED?
173	(Yes) (No) (N/A)	ARE AIR MONITORING RESULTS PROVIDED TO GDA?
174	(Yes) (No) (N/A)	ARE WASTE SHIPMENT RECORDS PROVIDED TO GDA?
		OTHER? EXTRA CREDIT?
WATERFRONT ACTIVITIES		
175	(Yes) (No) (N/A)	WORK OVER OR NEAR WATER AND THE DISTANCE TO WATER SURFACE IS LESS THAN 25 FEET OR MORE AND THE WATER DEPTH IS LESS THAN 10 FEET ARE FALL PROTECTION REQUIREMENTS FOLLOWED? (PFDs NOT REQUIRED)
176	(Yes) (No) (N/A)	WORK OVER OR NEAR WATER AND THE DISTANCE TO WATER SURFACE IS 25 FEET OR MORE ARE FALL PROTECTION REQUIREMENTS FOLLOWED?
177	(Yes) (No) (N/A)	MARINE FALL PROTECTION RAILING TYPE A or TYPE B PROVIDED FOR VESSEL DECKS 6 FT OR MORE ABOVE ADJACENT DECKS, DOCKS, OR OTHER HARD SURFACES?
178	(Yes) (No) (N/A)	PFD's WORN BY PERSONNEL IN AREAS WHERE DECK PERIMETER IS NOT PRESENT
179	(Yes) (No) (N/A)	IS A RESCUE SKIFF AVAILABLE?
180	(Yes) (No) (N/A)	ARE EMERGENCY LIFE RINGS AVAILABLE?
181	(Yes) (No) (N/A)	IF DIVING OPERATIONS ARE TAKING PLACE, HAS A DIVE PLAN BEEN SUBMITTED AND ACCEPTED BY THE DDC?
182	(Yes) (No) (N/A)	IF DIVING, IS FIRST-AID KIT, OXYGEN RESUSCITATION SYSTEM, (30 MINUTE SUPPLY), AND A STOKES LITTER OR BACKBOARD WITH FLOATATION CAPABILITY ON SITE?
183	(Yes) (No) (N/A)	DOES DIVE TEAM CONSIST OF PROPER NUMBER AND QUALIFICATIONS FOR EMPLOYEES?
184	(Yes) (No) (N/A)	HAND RAILS USED FOR FALL PROTECTION ON ALL MARINE VESSELS FOR CONTRACTS AWARDED SINCE MARCH 2007
185	(Yes) (No) (N/A)	MARINE (VESSEL) DECKS 6 FEET OR MORE ABOVE OTHER SURFACES HAVE TYPE A OR TYPE B FALL PROTECTION PROVIDED?
		OTHER? EXTRA CREDIT?
	SCORING: Total applicable for each category = X (where X includes responses for category of "Yes" and "No" but does not include N/A)	
	Total with "Yes" responses for each category = Y * SCORE EQUATION = Y/X *	
	SCORE FOR EACH CATEGORY:	
		1. PREPARATORY PHASE: _____ 7. LADDER SAFETY: _____ 13.EQUIPMENT: _____
		2. OFFICE TRAILER: _____ 8. EXCAVATIONS: _____ 14. TREE MAINTENANCE : _____
		3. FIRE PREVENTION: _____ 9. ELECTRICAL: _____ 15. DEMOLITION: _____
		4. PPE : _____ 10. CRANES: _____ 16: ABATEMENT: _____
		5. SCAFFOLD SAFETY: _____ 11. CONFINED SPACES: _____ 17: WATERFRONT: _____
		6. FALL PROTECTION: 12. ROOFING:
	OVERALL RATING OF CHECKLIST EQUALS LOWEST RATING FOR ANY ONE CATEGORY: _____	
	QUESTIONS ANSWERED "NO" ARE BE ENTERED INTO THE SITE SAFETY & OCCUPATIONAL HEALTH DEFICIENCY TRACKING SYSTEM (REFER TO EM 385-1-1 01.A.12.d)	
		ALTERATION OR CHANGING OF THIS FORM IS NOT AUTHORIZED

COMMENTS:

USA Environmental, Inc.

TAILGATE SAFETY BRIEFING

Date: **Location:**

Time: ☐ **AM** ☐ **PM** **Team #:**

1. Reason for Briefing:			
☐	Daily Safety Briefing	☐	New Site Procedure
☐	Initial Safety Briefing	☐	New Site Information
☐	New Task Briefing	☐	Review of Site Information
☐	Periodic Safety Meeting	☐	Other (Specify):

2. Personnel Attending:		
Name	Signature	Position

3. Briefing Given By:		
Name	Signature	Position

4. **Topics:** (Check All That Apply)			
☐	Site Safety Personnel	☐	Decontamination Procedures
☐	Site/Work Area Description	☐	Emergency Response/Equipment
☐	Physical Hazards	☐	On-Site Injuries/Illnesses
☐	Chemical/Biological Hazards	☐	Reporting Procedures
☐	Heat/Cold Stress	☐	Directions to Medical Facility
☐	Work/Support Zones	☐	Drug and Alcohol Policies
☐	PPE	☐	Medical Monitoring
☐	Safe Work Practices	☐	Evacuation/Egress Procedures
☐	Air Monitoring	☐	Communications
☐	Task Training	☐	Confined Spaces
☐	MEC Precautions	☐	Other:

5. Remarks:

APPENDIX D. STANDARD OPERATING PROCEDURES (SOPS)

This appendix contains the following Standard Operating Procedures (SOPs) for use on this project:

- SOP 1 MEC Avoidance
- SOP 2 Digital Geophysical Mapping
- SOP 3 Collection of Sediment Grab and Core Samples
- SOP 4 Field Operations Documentation.

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1. TITLE PAGE

FINAL

STANDARD OPERATING PROCEDURE

FOR

MEC AVOIDANCE

SOP 1

SUPPLEMENTAL POND BOTTOM SURVEY &

SEDIMENT SAMPLING

SITE 12 EOD AREA POND

FORMER NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

USA ENVIRONMENTAL, INC.

June 2013

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2. REFERENCES

- Naval Ordnance Safety and Security Activity (NOSSA) Instruction 8023.11B
- Site 12 Accident Prevention Plan (APP)
- 29 Code of Federal Regulations 1910, Occupational Safety and Health Standards
- Chief of Naval Operations Instruction (OPNAVINST) 3500.39C
- United States Army Corps of Engineers (USACE), Engineer Manual (EM) 385-1-1, Safety and Health Requirements Manual

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3. ACRONYMS AND ABBREVIATIONS

AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
DGM	Digital Geophysical Mapping
DU	Decision Unit
EM	Engineer Manual
GSV	Geophysical System Verification
ISO	Industry Standard Object
IVS	Instrument Verification Strip
MEC	Munitions and Explosives of Concern
MPPEH	Material Potentially Presenting an Explosive Hazard
NAS	Naval Air Station
NOSSA	Naval Ordnance Safety and Security Activity
OPNAVINST	Naval Operations Instruction
PDA	Personal Digital Assistant
PFD	Personal Flotation Device
PPE	personal protective equipment
SOP	Standard Operating Procedure
SHSP	Site Health and Safety Plan
TSD	Team Separation Distance
USA	USA Environmental, Inc.
USACE	United States Army Corps of Engineers
USCG	U.S. Coast Guard
UXO	Unexploded Ordnance
WP	Work Plan

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TABLE OF CONTENTS

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4. RECORD OF DEVELOPMENT, REVIEW, VALIDATION AND APPROVAL

This standard operating procedure (SOP) contains the procedures and other information that will be needed by USA Environmental, Inc. (USA) Unexploded Ordnance (UXO)-qualified personnel to conduct procedures for avoidance of munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH) during the activities at the former Naval Air Station (NAS), Brunswick, ME. By their signatures, the undersigned certify that this SOP is approved for implementation at Brunswick and will be used to direct avoidance operations.

Developed by: James Walden

28 June 2013

James Walden
Project Quality Control Manager

Date

Reviewed by:

28 June 2013

Robert Hierholzer
Project Manager

Date

TBD
UXO Safety Officer

Date

Approved by: Robert D. Crownover

28 June 2013

Robert Crownover
Director of Safety and Quality

Date

This standard operating procedure (SOP) expires at the conclusion of project activities and will require a review and approval process prior to reissue. A full review of the SOP is required annually to ensure the document remains current. Revision will be made as operational and/or guidance changes occur. The review and approval process must also be conducted prior to implementing any changes to this SOP.

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5. SUPERVISOR'S STATEMENT

I have read and understand this SOP. To the best of my knowledge, the activities described in this SOP can be done in a safe, healthful, and environmentally sound manner. I have made sure that all persons assigned to this process are qualified, have read and understand the requirements of this SOP, and have signed the worker's statement for this purpose. I will ensure the SOP contains current procedures. If a major change to the SOP is necessary, I will ensure that the process is stopped until the SOP is revised and approved. If unexpected safety, health, or environmental hazards are found, I will make sure the process is stopped until the hazards have been eliminated.

_____ _____

TBD *Date*
Senior UXO Supervisor

6. WORKER'S STATEMENT

I have read this SOP and I have received adequate training to perform the procedures addressed in the SOP. If I identify a hazard not addressed in the SOP, or encounter an operation I cannot perform in accordance with the SOP, I will stop the process and notify my immediate supervisor.

Worker's Name	Date	Supervisor's Name	Date

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7. PROCEDURES

7.1 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to provide USA employees and subcontractors with the minimum procedures and safety and health requirements applicable to conduct and observe MEC avoidance procedures during operations within the Site 12 EOD Area on the former NAS Brunswick.

7.2 SCOPE

This SOP applies to all USA site personnel, including contractor and subcontractor personnel, involved in the conduct and adherence to MEC avoidance procedures during the activities within the Site 12 EOD Area on the former NAS Brunswick. This SOP is not a stand-alone document and should be used together with Work Plans, other USA SOPs, the APP, applicable Federal, State, local regulations, and contract restrictions and guidance. Consult the documents listed in Section 2 of this SOP for additional compliance issues.

7.3 MEC/MPPEH BASIC SAFETY PRECAUTIONS

The following basic safety precautions will be observed while conducting MEC avoidance procedures.

- Do not touch or disturb MEC items; mark their location with a red pin flag and avoid them.
- Avoid the forward portions of munitions employing proximity fuzing.
- Do not expose electrically fired munitions to radio, cell phone or satellite phone transmissions within 25 ft.
- Do not collect souvenirs.
- Do not smoke except in designated areas.
- Do not carry fire- or spark-producing devices into the exclusion zone (EZ).
- Prohibit non-essential personnel from entering the site.
- Suspend all operations immediately upon approach of an electrical storm.

7.4 MEC AVOIDANCE

MEC avoidance operations is required in support of the pond survey for installation of the instrument verification strip (IVS), blind seed item (BSI) installation, pond bottom probing and collection of sediment samples, as well as other non-MEC field activities requiring intrusive activities or access by non-UXO qualified personnel (e.g., biologists and visitor access to the EZ).

Most of the avoidance will be conducted in the water, where visual identification of an anomaly will not be possible. However, in the shallow water or within the terrestrial areas around the pond, if MEC items are encountered, the UXO Technician will place a red pin flag near the item, record identification and location information in the Personal Digital Assistant (PDA), take a photograph, advise all personnel of the item's location and avoid the items throughout the conduct of the activity. Under no circumstances will MEC be handled.

7.4.1 Avoidance Procedures for Sediment Sampling and Probing – Shallow Water and On Land

MEC encountered will be marked, avoided, and recorded as stated above. Prior to digging or probing to collect sediment samples on shore or in the shallow water, the UXO Technician will search the location with a handheld metal detector. Any subsurface anomaly will be assumed to be MEC and an alternate anomaly-free location will be chosen.

7.4.2 Avoidance Procedures for Sediment Sampling and Probing – From Floating Platform

A small boat will be used by the team to conduct bottom probing and for collection of sediment samples in the deeper water, approximately 2 ft near shore and 6 to 8 ft at the deepest point. The UXO Technician will utilize a down-hole magnetometer to search the location. If an anomaly is detected at that location, a new location, approximately 5 ft away from the initial detection, will be selected and searched using the same procedure. The process is to be repeated as necessary until an alternate anomaly-free location is identified.

7.5 WORK CLOTHING AND FIELD SANITATION

Work clothing will be appropriate for the conditions encountered. In most cases, this will be Level D personal protective equipment (PPE), which includes the following.

- Short- or long-sleeved cotton coveralls or work clothing will be worn.
- Footwear is sturdy work boots or rubber boots as appropriate (i.e., lug sole and of sufficient height for ankle support). UXO personnel will not wear steel-toe safety boots when using metal detectors.
- Safety glasses.
- Inclement weather gear as required.
- Personal floatation device as required.

The team will be outfitted with field decontamination equipment, which will consist of containers of water, paper towels, and soap. Good housekeeping and decontamination measures will be practiced.

7.6 QUALITY CONTROL

The only specific quality control metrics for the MEC avoidance task are to perform a check on the all-metals detector to ensure it is functioning properly and conduct a communications check. The team will ensure all other equipment needed for the supported task is functional prior to entering the work areas within Site 12.

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8. HAZARD ANALYSIS/RISK ASSESSMENT AND HAZARD CONTROL BRIEF

The hazard analysis matrix (Table 1) lists the existing and potential hazards associated with conducting the MEC avoidance task along with methods to mitigate the hazards.

Table 1: Hazard Analysis Matrix

Activity	Hazard	Triggering Events	Initial Risk Index	Hazard Mitigation	Final Risk Index
MEC Avoidance	Slips, Trips or Falls	Climbing; debris, holes, or crevasses obstructed from view by vegetation.	C/III/4	Personnel will assess their surroundings prior to proceeding with field activities. Ensure footing at all times.	D/IV/5
	Drowning	Loss of balance while on-board a vessel and falling into water. Overturning of the vessel.	C/I/2	All passengers will wear USCG-approved Type II personal flotation device (PFD) at all times while on boat. Personnel will remain seated while boat is in motion. Captain will maintain/ manage balance of the vessel while personnel are working/leaning over the side. Boat will be equipped with rescue equipment to handle a man-overboard situation (such as rescue hook, life preserver with rope, rope bag with a minimum of 90 feet of rope, etc.), readily available.	D/IV/5
	Cold Weather	Seasonal weather patterns	C/III/4	Minimize exposure to cold temperatures, water and wind by wearing layered clothing and wet weather gear Keeping the feet dry (carry extra socks) Monitor team members for signs of cold stress disorder in accordance with the APP	D/IV/5
	Biological	Biting/stinging insects.	C/III/4	Wear long sleeve garments and apply repellent to exposed skin as needed.	D/IV/5
	MPPEH	MPPEH reacts to impact by equipment, tools or personnel.	C/II/3	Maintain the team separation distance between teams for the Quarry Area (see the hazard control briefing that follows)	D/III/5

Activity	Hazard	Triggering Events	Initial Risk Index	Hazard Mitigation	Final Risk Index
				All personnel will receive a safety briefing prior to commencing site activities A UXO-qualified person will escort all non-UXO-qualified personnel and will strictly adhere to the directions of the UXO-qualified escort. UXO-qualified person will locate an anomalous-free area with the metal detector, prior to digging or placing a pin flag into the ground.	
	Weather or Natural Disaster Emergency	Meteorological or environmental event	C/II/3	Account for all team personnel and, if required, implement the emergency response procedures outlined in the APP.	C/IV/5

8.1 HAZARD CONTROL BRIEF

All personnel will attend the tailgate safety briefing given by the Team Leader, on the existing and potential hazards within the project area prior to commencing any field activities. The Activity Hazard Analysis (AHA), in Appendix A of the APP (for the activities the team will perform), will be reviewed and signed by all team personnel.

Personnel will be cognizant of the surroundings at all times and remain observant of their footing as they traverse the Site 12 and pond embankment areas. All personnel will be aware of the signs of cold stress or heat stress as described in Section 9.14 of the APP and be able to recognize the onset of cold or heat stress disorders in themselves and their team members.

Wear long sleeve clothing and apply insect repellant as warranted to mitigate the impact of biting/stinging insects.

The potential for encountering MPPEH in and around the pond is low. The UXO-qualified escort will make observations and provide guidance on areas that may have a higher potential of encountering MPPEH. All personnel will adhere to the direction of the UXO-qualified escort at all times.

In the event of severe weather, account for all team personnel; and follow the Emergency Response Plan in Section 10.2 of the Site Safety and Health Plan (SSHP).

9. DIAGRAMS

The Site 12 EOD and Pond Area site map is located in Appendix A of the Technical Memorandum/Work Plan. Teams will be provided maps of the overall project site and evacuation routes.

10. EQUIPMENT

The UXO technician providing MEC avoidance escort services will be equipped with the following:

- Handheld all-metals detector
- Red pin flags for marking suspected MEC items
- Logbook and PDA for recording data
- Camera
- Communications equipment.

Safety equipment required includes the following:

- First-aid kit
- Level D PPE
- Inclement weather gear as needed.

11. EMERGENCY RESPONSE PROCEDURES

In the case of an emergency, the procedures detailed in the SHSP, Section 10.2, will be followed. A copy of the SHSP is maintained in all project site vehicles.

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1. TITLE PAGE

FINAL

STANDARD OPERATING PROCEDURE

FOR

DIGITAL GEOPHYSICAL MAPPING

SOP 2

SUPPLEMENTAL POND BOTTOM SURVEY &

SEDIMENT SAMPLING

SITE 12 EOD AREA POND

FORMER NAVAL AIR STATION BRUNSWICK

BRUNSWICK, MAINE

USA ENVIRONMENTAL, INC.

June 2013

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2. REFERENCES

- Supplemental Pond Bottom Survey and Sediment Sampling Technical Memorandum\Work Plan (WP)
- USACE. 1995. Geophysical Exploration for Engineering and Environmental Investigations. Department of the Army/U.S. Army Corps of Engineers. Washington, DC.
- Naval Ordnance Safety and Security Activity (NOSSA) Instruction 8023.11D.
- Accident Prevention Plan (APP)
- 29 Code of Federal Regulations 1910, Occupational Safety and Health Standards
- Chief of Naval Operations Instruction (OPNAVINST) 3500.39C

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3. ACRONYMS AND ABBREVIATIONS

APP	Accident Prevention Plan
BC	Back Check
DGM	Digital Geophysical Mapping
DGPS	Differential Global Positioning System
FTL	Field Team Leader
GPS	Global Positioning System
ID	Identification
IVS	Instrument Verification Strip
MEC	Munitions and Explosives of Concern
MPPEH	Material Potentially Presenting an Explosive Hazard
MRS	Munitions Response Sites
NOSSA	Naval Ordnance Safety and Security Activity
PCMCIA	Personal Computer Memory Card International Association
PDA	Personal Digital Assistant
POC	Point of Contact
PQCM	Program QC Manager
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SHSP	Site Health and Safety Plan
TSD	Team Separation Distance
USA	USA Environmental, Inc.
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist

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TABLE OF CONTENTS

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4. RECORD OF DEVELOPMENT, REVIEW, VALIDATION AND APPROVAL

This standard operating procedure (SOP) contains the procedures and other information that will be needed by USA Environmental, Inc. (USA) field staff to conduct digital geophysical mapping (DGM) activities at the former Naval Air Station (NAS), Brunswick, ME. By their signatures, the undersigned certify that this SOP is approved for implementation at this work area and will be used to direct the DGM operations.

Developed by:

Alan Crandall
USA Project Geophysicist

28 June 2013
Date

Reviewed by:

Robert Hierholzer
Project Manager

28 June 2013
Date

Validated by:

TBD
UXO Safety Officer

Date

Approved by:

Robert Crownover
Director of Safety and Quality

28 June 2013
Date

This standard operating procedure (SOP) expires at the conclusion of project activities and will require a review and approval process prior to reissue. A full review of the SOP is required annually to ensure the document remains current. Revision will be made as operational and/or guidance changes occur. The review and approval process must also be conducted prior to implementing any changes to this SOP.

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5. SUPERVISOR'S STATEMENT

I have read and understand this SOP. To the best of my knowledge, the activities described in this SOP can be done in a safe, healthful, and environmentally sound manner. I have made sure that all persons assigned to this process are qualified, have read and understand the requirements of this SOP, and have signed the worker's statement for this purpose. I will ensure the SOP contains current procedures. If a major change to the SOP is necessary, I will ensure that the process is stopped until the SOP is revised and approved. If unexpected safety, health, or environmental hazards are found, I will make sure the process is stopped until the hazards have been eliminated.

_____ _____

TBD Date
Senior UXO Supervisor

6. WORKER'S STATEMENT

I have read this SOP and I have received adequate training to perform the procedures addressed in the SOP. If I identify a hazard not addressed in the SOP, or encounter an operation I cannot perform in accordance with the SOP, I will stop the process and notify my immediate supervisor.

Worker's Name	Date	Supervisor's Name	Date

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7. PROCEDURES

7.1 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide procedures and technical guidance on performing DGM to collect data on targets for potential intrusive investigation during the munitions and explosives of concern (MEC) activities at the Site 12 EOD Area Pond on the former Naval Air Station Brunswick (NASB), Brunswick, Maine. In addition, this SOP ensures that data will be acquired in a consistent manner during this investigation. It also identifies general quality control (QC) procedures to be performed by field personnel and verification points for use by the field QC staff.

7.2 SCOPE & PROCEDURES

This SOP outlines the procedures used for the collection of geophysical and associated coordinate data for the Site 12 EOD Area Pond. To support this activity, Aqua Survey, Inc. (ASI) will use their floating EM system. Refer to ASI's SOP, Attachment 1 of this SOP.

7.3 QUALITY CONTROL

The DGM teams will conduct and document the daily quality control test listed in Subsection 7.6.1 and meet the QC metrics listed on the attached QC Surveillance check sheet in Attachment 4.

The QC team will verify the quality of the task through the three-phased surveillance process and document the results on the check sheet. Any DGM tasks the QC team determines do not meet the quality control metrics will be considered deficient or non-conforming. If a deficiency or nonconformance occurs, the UXOQCS will prepare a Deficiency Notice or Nonconformance Report and submit it to the SUXOS and QA. The QA will conduct a root cause analysis of the deficiency or nonconformance, prepare and submit a response to the Navy Technical Representative within 48 hours.

7.3.1 Daily Quality Control Tests

The DGM team will set up the equipment, verify that all equipment has survived transportation and is operational, and perform the following daily quality control tests, at a minimum:

- Sensor warm up of at least 5 minutes each time the sensor is turned on
- Sensor nulling and RTK DGPS input check
- Acquire morning IVS and noise strip data as established by the Geophysical System Verification (GSV) Report (±20% or ±2x the standard deviation, whichever is greater of the previous week's average, ± 9.8 in (± 25 cm).
- The Site Geophysicist will transfer these morning QC tests (e.g., exchange memory cards or download data) while the DGM team begins production DGM. The QC tests will be examined for conformance to project metrics each morning. The Site Geophysicist notifies each DGM team leader of their Pass/Fail status each morning. Any failures will require equipment/personnel checks, replacement/repair, retesting prior to proceeding to production DGM, and re-collection of affected data.
- Acquire afternoon IVS and noise strip data as established by the Geophysical System Verification (GSV) Plan (±20% or ±2x the standard deviation, whichever is greater of the previous week's average, ± 9.8 in (± 25 cm).

8. HAZARD ANALYSIS/RISK ASSESSMENT AND HAZARD CONTROL BRIEF

The hazard analysis matrix (Table 1) lists the existing and potential hazards associated with conducting the DGM task along with methods to mitigate the hazards.

Table 1: Hazard Analysis Matrix

Activity	Hazard	Triggering Events	Initial Risk Index	Hazard Mitigation	Final Risk Index
Digital Geophysical Mapping	Slips, Trips or Falls	Climbing; debris, holes, or crevasses obstructed from view by vegetation.	C/III/4	Personnel will assess their surroundings prior to proceeding with field activities. Ensure footing at all times. Wear leather safety toe work boot with ankle support and non-slip soles.	D/IV/5
	Drowning	Loss of balance while on-board a vessel and falling into water. Overturning of the vessel (small boat).	C/I/2	All passengers will wear USCG-approved Type II personal flotation device (PFD) at all times while on boat. Personnel will remain seated while boat is in motion. Captain will maintain/manage balance of the vessel while personnel are working/leaning over the side. Boat will be equipped with rescue equipment to handle a man-overboard situation (such as rescue hook, life preserver with rope, rope bag with a minimum of 90 ft of rope, etc.), readily available.	D/IV/5
	Hot Weather	Seasonal weather patterns.	C/III/4	Heat stress monitoring, cool drinking water, work-rest schedule, and cool shelter for breaks.	D/IV5
	Biological	Biting/stinging insects, spiders, rodents and hazardous plants.	C/III/4	Avoid biological hazards. Wear long sleeve garments and apply repellent to clothing and exposed skin as needed. Use barrier cream, as necessary.	D/IV/5

Activity	Hazard	Triggering Events	Initial Risk Index	Hazard Mitigation	Final Risk Index
	Material Potentially Presenting an Explosive Hazard (MPPEH)	MPPEH reacts to impact by equipment, tools or personnel.	C/II/3	Maintain the team separation distance between teams for the Northern MRSs (see the hazard control briefing that follows) All personnel will receive a safety briefing prior to commencing site activities A UXO-qualified person will escort all non-UXO-qualified personnel and will strictly adhere to the directions of the UXO-qualified escort. UXO-qualified person will locate an anomalous-free area with the metal detector, prior to placing a pin flag into the ground.	D/III/5
	Weather or Natural Disaster Emergency	Meteorological or environmental event	C/II/3	Account for all team personnel and, if required, implement the emergency response procedures outlined in the APP.	C/IV/5

8.1 HAZARD CONTROL BRIEF

All personnel will attend the tailgate safety briefing given by the Team Leader, on the existing and potential hazards within the work area prior to commencing any activities in the work area.

Personnel will be cognizant of the surroundings at all times and remain observant of their footing as they traverse the work area and of the boat positioning while working in the pond. All personnel shall be aware of the signs of stress as described in the APP and be able to recognize the onset of heat stress disorders in themselves and their team members.

Apply insect repellant as warranted to mitigate the impact of biting/stinging insects. Avoid contact of the bare skin with poisonous vegetation. If contact does occur, wash the area with soap and water; apply a hydrocortisone cream to reduce the swelling and itching. Avoid exposing the infected area to the sun as well.

The potential for encountering MPPEH is low. However, proper MEC avoidance shall be exercised within all areas of Site 12 and the pond.

If MEC or MPPEH is encountered, it is to be logged and reported to Navy EOD MU 12, as well as the installation POC and USA PM.

In the event of severe weather or a natural disaster, account for all team personnel, contact the UXOSO or Senior UXO technician and follow the Emergency Response Plan in Section 10.2 of the Site Health and Safety Plan (SHSP).

9. DIAGRAMS

Site maps of the work area are located in Appendix A of the WP. Teams will be provided maps of the overall project site and evacuation routes.

10. EQUIPMENT

The teams conducting DGM operations will be equipped with the following:

- Boat and EM survey equipment as identified in Attachment 1.
- Logbooks for recording data
- Camera
- Communications equipment
- Support vehicle.

Safety equipment required includes the following:

- First-aid kit
- PFDs
- Level D Personal Protection Equipment
- Inclement weather gear as needed

11. EMERGENCY RESPONSE PROCEDURES

In the case of an emergency, the procedures detailed in the SSHP, Section 10.2, will be followed. A copy of the SHSP is maintained in all project site vehicles.

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ATTACHMENT 1.
AQUA SURVEY INC. SOP FOR EM UXO SURVEYS

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TITLE: STANDARD OPERATING PROCEDURE FOR EM UXO SURVEYS

CONTENTS **PAGE**

I. OBJECTIVE

The objective of this procedure is to collect EM data for use in the detection of munitions targets as small as 20 mm projectiles, obstructions, submerged cultural resources, for the creation of EM contour maps, target lists, or as reference for other project activities. Similar procedures may be used for other regions or purposes with slight modifications as appropriate.

II. MATERIALS AND EQUIPMENT

1. EM console
2. TX/RX coil with attached cable of appropriate length
3. EM data cable
4. EM power cable and necessary accessories (batteries with jumpers, inverter, generator with extension cord and fuel)
5. Spare parts kit for EM
6. EM operators manual
7. Laptop computer with power supply
8. Inverter for computer
9. Computer hood or mount
10. GPS system (RTK or DGPS) which includes at a minimum: receiver, antenna, power cable, data cable, antenna cable

III. PROCEDURE

1. Preparation

1.1 A project work plan should be prepared and reviewed prior to commencement of survey work. This would include, but is not limited to, determining the exact area to be surveyed, coverage or lane spacing desired, access to the survey area, contact information, previous surveys results, expected hazards or hindrances. In general, parallel lines of equal spacing are sufficient to collect the required data. The spacing between parallel lines will vary depending on the desired coverage or scale of the site.

1.2 The horizontal coordinate system and lane spacing will be determined to set up the survey control software. The specific EM and positioning system to be used must be decided upon and the appropriate drivers configured in the survey control software.

1.3 A suitable vessel must be chosen based on the factors in 1.1. The proper sensor/sled towing point on the vessel must be installed or configured based on the sensor/sled to be used.

1.4 Lane spacing should be determined prior to commencing survey operations. For 100% coverage UXO work lane spacing should be set to between 2.5 and 3.0 feet at the most (e.g. 90% = <3 feet).

2. On-Site Equipment Setup and Calibration

2.1 If using RTK positioning, the base station must be setup. Launch the vessel and transfer all the necessary equipment.

2.2 Assemble the computer, positioning system, and EM system. At dockside, verify that each component is working individually and that the survey control software is receiving data from the GPS. Verify that the EM software is also receiving positioning data.

2.3 Perform a cable shake and static-spike test at the beginning and end of each day. To do this, start the EM system and allow it to warm up and stabilize. Record 1 minute of data without the object in position. Take a known object such as a shot put or appropriate industry standard object (ISO) and place it over the EM coil at a fixed height. Record 1 minute of data. Remove the object and record 1 more minute of data. Compare the value in millivolts (MV) with previous results and ensure they agree within 20 percent. Compare the results with previously tabulated results if available. If tabulated results are not available, the response test will be charted against previous responses for repeatability and stability of readings.

2.4 Perform a check of the positioning system over a known control point and ensure the calculated position is within 1 meter for DGPS and 10 cm for RTK-DGPS of the given coordinates.

2.5 An instrument verification strip (IVS) will be used twice daily.

2.6 After arriving at the survey location, go to the area that is expected to have the deepest water. Deploy the sensor/sled. The sensor/sled should be positioned or towed as appropriate for the specifics of the project. If using a sled, the amount of cable fed out should be measured for layback calculations. Layback should be set either using the Hypack sled driver or manually calculating the layback and entering this into the survey software.

2.7 Go to an area known to be free of metallic targets or with the least likelihood of having a metallic target if possible. Run a test line and review the quality of the records. The records from the sensor/sled should be consistent with little to no variation. If the records are full of spikes, there is interference and the configuration of the equipment needs to be changed (i.e. grounding, source of power, position of sensor, lay of cable, etc). Continue to run test lines until the desired record quality is achieved. Depending on environmental conditions, it may be necessary to run all the lines in the same direction.

3. Data Collection

3.1 Using Hypack software, load the current project in Hypack. Do another hardware test to ensure all of the ports and software components are properly configured. Start the Survey program. Export the towfish positioning to the EM software using the Output - Shared memory – NMEA output.

3.2 Ensure sampling rate is 10 or more times per second. Survey speed should be no greater than 3 knots which will result in sample intervals no greater than 0.51 feet (e.g. 98% = <0.51 feet). Sample interval should not exceed 0.7 feet which occurs at a speed of 4.15 knots.

3.3 Ensure that the line to be surveyed is the active line. Begin the approach to the line with sufficient space to achieve a straight entry. Begin logging data at the start of the line in both Hypack and the EM software. Check to be certain the data is logging. Once at the end of the line, end logging for the EM data. The line should increment or decrement to the next line to be run in Hypack.

3.4 Constantly monitor the EM record to ensure good consistent quality. Monitor the water depth and EM height to ensure the EM coil is at the appropriate altitude, as practical given bottom conditions derived from the benthic survey.

4. Quality Assurance

4.1 All raw survey data and information (e.g., field notes, external debris events) must be documented electronically or in a field note book. At the end of each day, check daily computer data from the Hypack system for error flags. Output all notes to an ASCII file and store with the raw records. Back-up copies of the raw electronic data and make copies of all field log entries.

4.2 Review the records and ensure all targets are recorded and annotated properly. Process and contour the results of the EM survey to better determine target positions and linear objects as well as to ensure a single target detected on multiple survey lines is described as a single target.

4.3 Review data to ensure all required metrics are met (speed, cross-line sample distance, sled altitude, etc). If gaps are found or areas surveyed that do not meet the required metrics, resurvey to complete the project.

4.4 .

5. Deliverables

5.1 All raw data will be downloaded and preliminarily processed daily and converted into an M61 format by the field operators to check for overall data quality. Any major gaps in data should be identified during this timeframe to make any corrections or fill-ins the following day. The data will then be posted (at least) two places besides the computer used for data acquisition, including USA's ftp site.

5.2 Subsequently, the data will be processed in detail, and evaluated. Single color-coded maps will be made for each day's activities and combined into one site-wide master map. Once daily processing activities are completed, the data will be exported into a Geosoft XYZ ascii, JPEG and GeoTIFF image format from each day's activities.

5.3 Once the areas are completely filled in, interpretation will consist of searching for areas which highlight large responding broad areas indicative buried debris or groups of items and marking those with polygons. Depending on the complexity and abundance of anomalies cluttered together, individual anomaly identifications may or may not be deemed necessary. Individual anomalies and polygon anomalies will be tabulated into a common spreadsheet.

5.4 Finally, after steps 5.1 - 5.3 are completed, all final maps, final data files, and final target files will be exported into XYZ and JPEG image formats as a group. Final processed data will be delivered within 5 working days after survey completion. After review and approval of data, a brief summary report will be provided highlighting project activities and deliverables of interest.

IV. REFERENCES

USACE. 1995. Geophysical Exploration for Engineering and Environmental Investigations. Department of the Army/U.S. Army Corps of Engineers. Washington, DC.

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ATTACHMENT 2.
DGM CHECKLISTS

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CHECKLIST FOR OUT OF BOX EQUIPMENT TESTS

Project Name: _____

Project Location: _____

Contractor POC: _____

Equipment Source: _____

Equipment Serial Numbers: _____

_____

Reviewer's Name and Title: _____

Date of Review: _____

	Y	N	N/A
1. Has the equipment been inventoried and inspected for damage or wear?			
2. Has the cable shake test been performed? (Replace any faulty components if necessary)	____	____	____
3. Has the instrument (EM only) been nulled?	____	____	____
4. Has a nearby, noise-free site been selected for static background and static response tests?	____	____	____
5. Have the following instrument function tests been successfully performed:	____	____	____

Background values: TG1_____, TG2_____, TG3_____, TG4_____

- Instrument response test demonstrating normal EM61 Response (Time gate 1> 2 >3 >4)? _____ _____ _____

Response values: TG1_____, TG2_____, TG3_____, TG4_____

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CHECKLIST FOR DAILY IVS CHECKS

Project Name: _____

Project Location: _____

Date: _____

Team: _____

IVS Test AM (example T1IVS081611AM)

File Name: _____Battery Start: _____ _____Battery End: _____ _____

Line 0: Run IVS from start to end.

Line 1: Background Line from end to start

AM IVS Check Pass _____Fail _____

IVS Test PM (example T1IVS081611PM)

File Name: _____Battery Start: _____ _____Battery End: _____ _____

Line 0: Run IVS from start to end

Line 1: Background Line from end to start

PM IVS Check Pass _____Fail _____

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SURVEY AREA REPORT FORM

Project Name: _____ **Project Location:** _____

Geophysical Contractor: _____ **Field Team:** _____

Coordinate System (w/ units): _____ **Survey Type:** _____

Survey Area ID: _____ **Date:** _____

Raw Data File Name: _____ **Repeat Data File Name:** _____

Geophysical Instrumentation: _____ **Serial Number:** _____

Navigation Method: _____ **Serial Number:** _____

Battery Voltage: Start: _____ _____ **End:** _____ _____

Data Collection: Start Time: _____ **End Time:** _____

Terrain:

☐ **Level** ☐ **Moderate Slope** ☐ **Steep**

☐ **Rolling** ☐ **Ruts** ☐ **Gullies**

☐ **Rocky** ☐ **Swampy** ☐ **Dangerous**

Tree Cover: Tree Height: _____

☐ **None** ☐ **Light** ☐ **Medium** ☐ **Thick**

Weather:

☐ **Sunny** ☐ **Cloudy** ☐ **Drizzle**

☐ **Rain** ☐ **Thunderstorms** ☐ **Hail**

☐ **Fog** ☐ **Humid** ☐ **Snow**

Brush:

☐ **None** ☐ **Light** ☐ **Medium** ☐ **Thick**

Sketch of Survey Area- include North arrow, approximate scale, brief description of terrain, site conditions, and any surface features potentially affecting the data quality or coverage.

Additional Comments

_____
_____
_____
_____
_____

CHECKLIST FOR DATA STORAGE AND TRANSFER

Project Name:

Project Location:

Contractor POC:

Reviewer's Name and Title:

Date of Review:

	Y	N	N/A
• Has the transfer medium been approved by contractor?	____	____	____
• Are all files in approved formats?	____	____	____
• Have all of the following been included in the transfer packet:			
– "Read me" file detailing contents?	____	____	____
– Raw data files?	____	____	____
– Edited data files?	____	____	____
– Completed geophysical maps?	____	____	____
– Prioritized target lists?	____	____	____
– Data File Log / Spreadsheet of Delivered Data Files with Dates Sent?	____	____	____
• Have the required number of copies, per contract, been included in the transfer packet?	____	____	____

CHECKLIST FOR FIELD EDITING

Project Name: _____

Project Location: _____

Contractor POC: _____

Reviewer's Name and Title: _____

Date of Review: _____

	Y	N	N/A
1. Have the following items been evaluated for correctness and edited if necessary:			
– Line numbers?	____	____	____
– Start and end points?	____	____	____
– Line direction?	____	____	____
– Fiducial locations?	____	____	____
2. Has the data been examined in profile and evaluated for geophysical noise (all 4 EM61-MK2 time gates or as established at IVS)? Enter background noise value and compare with IVS background:_____ vs. _____	____	____	____
3. Has the data been examined for the presence of drop-outs and spikes?	____	____	____
4. Has the presence of metal on the operator been eliminated as a possible source of geophysical noise?	____	____	____
5. Has the edited data been converted to the appropriate .xyz format?	____	____	____
6. Has the positional data been evaluated for accuracy and completeness?	____	____	____

ATTACHMENT 3.
TRANSECT DEVIATION CHECKLIST

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TRANSECT DEVIATION CHECKLIST

Log Book/ DGPS Code	Condition Making Area Impassable on Foot	Description of Condition	Additional Code Information to Record
SS	Steep Slope	Slope physically too steep to walk on safely while maintaining the EM61-MK2 in a horizontal position, 15 ±1-in (0.38-m ± 2.54-cm) from the surface. Use this code for slopes running upward (ridges). Ravines should be coded with RA (see last code entry). List all other factors which apply from the code list (LR, DV, etc.).	Record inclinometer reading in degrees as 2 digits following code.
LR	Loose Rock/Gravel	Loose rock or gravel over 25% or more of the surface; combined with slope makes the area impassable.	Estimated % of surface covered as 2 digits following code.
CB	Cobbles or Boulders	Cobbles or boulders over 25% or more of the surface (may combine with steep slope).	Estimated % of surface covered as 2 digits following code.
R	Rocky	Hard, rocky surface over 25% or more of the surface; combined with slope makes the area impassable.	Estimated % of surface covered as 2 digits following code.
DV	Dense Vegetation	Thickness/height of vegetation prevent safe traverse or prevent operator from maintaining EM61 in a horizontal position, 15 ±1-in (0.38-m ± 2.54-cm) from the surface. List all other factors which apply from the code list.	
TH	Tundra Heads	Multiple tundra heads prevent safe traverse or prevent operator from maintaining EM61 in a horizontal position, 15 ±1-in (0.38-m ± 2.54-cm) from the surface.	
ST	Stream	A stream which cannot be crossed without submerging boot tops or safely while maintaining the EM61-MK2 in a horizontal position, 15 ±1-in (0.38-m ± 2.54-cm) from the surface. List all other factors which apply from the code list (LR, DV, etc.).	
WM	Wetlands/ Marshes	Wetlands, marshes, ponds or lakes which prevent safe traverse or prevent operator from maintaining EM61-MK2 in a horizontal position, 15 ±1-in (0.38-m ± 2.54-cm) from the surface. Includes areas which cannot be traversed without submerging boot tops.	
RO	Rock Outcropping	Isolated rock outcropping which prevents traverse of an area.	
RA	Ravine	Slope physically too steep to walk on safely while maintaining the EM61-MK2 in a horizontal position, 15 ±1-in (0.38-m ± 2.54-cm) from the surface. Use this code for ravines only. Steep slopes running upward (ridges) should be documented using the code for steep slope (see first code entry). List all other factors which apply from the code list (LR, DV, etc.).	Record inclinometer reading in degrees as 2 digits following code.

TRANSECT DEVIATION CHECKLIST

Log Book/ DGPS Code	Condition Making Area Impassable on Foot	Description of Condition	Additional Code Information to Record
Enter codes directly into the DGPS for waypoints which cannot be reached or at the point of deviation between waypoints. Enter all codes that apply. Enter all supplemental information such as slope reading from inclinometer (degrees) or estimated percent coverage for loose rock, dense vegetation, etc. Use two digits entered following the code for the feature making the area impassable. Photograph the feature(s) making the area impassable. If in doubt about code entries, or if additional information is helpful in evaluating the situation, make supplemental notations in the log book.			

ATTACHMENT 4
QUALITY CONTROL SURVEILLANCE CHECK SHEET

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PREPARATORY, INITIAL, FOLLOW-UP CHECKLIST AND QC SURVEILLANCE

N62470-11-D-8007, CTO WE01

DIGITAL GEOPHYSICAL MAPPING

TEAM INFORMATION		
Team:	**Location:**	**Date:**
Team Leader:		
Personnel Present:		
Target List:		
Phase of Inspection (Circle): ***Preparatory (P); Initial (I); Follow-Up (F)***		

CHECKLIST						
ITEM	**REF.**	**INSPECTION POINT**	**YES**	**NO**	**N/A**	**COMMENTS**
1	**SOP 02 Workers' Statement**	Have all DGM Team Members reviewed SOP 02?				*(P)*
2	**SOP 02**	Are all Team Members trained and qualified to operate the equipment?				*(P), (I), (F)*
3	**SOP 02**	Was the RTK DGPS base station setup on a known survey control point?				*(P), (I), (F)*
3A	**SOP 02**	Did the daily RTK DGPS Reoccupation test measure a second known survey control point within 0.328-ft (10cm)?				*(P), (I), (F)*
4	**SOP 02**	Were the morning and afternoon IVS checks performed?				*(P), (I), (F)*
5	**SOP 02**	Were the work area location procedures followed?				*(P), (I), (F)*
6	**SOP 02**	Were overlapping survey lines for approximately 10% overlap used to map the DGM investigation area?				*(P), (I), (F)*
7	**SOP 02**	Were areas inaccessible to DGM documented in the positioned sensor data maps?				*(P), (I), (F)*
8	**SOP 02**	Were deviations from geophysical survey transect-spacing and orientation documented?				*(P), (I), (F)*
9	**SOP 02**	Were deviations tied to waypoint designations?				*(P), (I), (F)*
10	**SOP 02**	Were slope measurements taken with an inclinometer to document			X	*(P), (I), (F)*

CHECKLIST						
ITEM	**REF.**	**INSPECTION POINT**	**YES**	**NO**	**N/A**	**COMMENTS**
		slopes greater than 30 degrees?				
11	**SOP 02**	Were deviations annotated using the Transect Deviation Checklist (Att. 3)?				*(P), (I), (F)*
12	**SOP 02**	Was a photographic record made of any deviations?				*(P), (I), (F)*
13	**SOP 02**	Were the checklists in Attachment 2 used to document the DGM activities?				*(P), (I), (F)*
14	**SOP 02**	Were photographs of geophysical survey areas taken?				*(P), (I), (F)*
15	**SOP 02**	Were the date, time and subject of each photograph recorded at the time the photograph was taken?				*(P), (I), (F)*
16	**SOP 02**	Were the Field Data Submittals made?				*(P), (I), (F)*

FINDINGS	
Item	**Comments**

Conducted By: _____ **Reviewed By:** _____

1. TITLE PAGE

FINAL

STANDARD OPERATING PROCEDURE

FOR

COLLECTION OF SEDIMENT GRAB AND CORE SAMPLES

SOP 3

SUPPLEMENTAL POND BOTTOM SURVEY &

SEDIMENT SAMPLING

SITE 12 EOD AREA POND

FORMER NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

USA ENVIRONMENTAL, INC.

June 2013

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2. REFERENCES

- Naval Ordnance Safety and Security Activity (NOSSA) Instruction 8023.11B
- Site 12 Accident Prevention Plan (APP)
- 29 Code of Federal Regulations 1910, Occupational Safety and Health Standards
- Chief of Naval Operations Instruction (OPNAVINST) 3500.39C
- United States Army Corps of Engineers (USACE), Engineer Manual (EM) 385-1-1, Safety and Health Requirements Manual

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3. ACRONYMS AND ABBREVIATIONS

°C	degree Celsius
CAB	Cellulose Acetate Butyrate
ft	foot, feet
MD	matrix duplicate
MS	matrix spike
MSD	matrix spike duplicate
PPE	personal protective equipment
QAM	Quality Assurance Manager
QAO	Quality Assurance Officer
SOP	Standard Operating Procedure
USA	USA Environmental, Inc.
VOC	volatile organic chemical

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TABLE OF CONTENTS

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4. RECORD OF DEVELOPMENT, REVIEW, VALIDATION AND APPROVAL

This standard operating procedure (SOP) contains the procedures and other information that will be needed by USA Environmental, Inc. (USA) and USA's subcontractors to conduct sediment probing and sampling procedures during the activities at the former Naval Air Station (NAS), Brunswick, ME. By their signatures, the undersigned certify that this SOP is approved for use at Brunswick and will be used to direct sediment sampling operations.

Developed by:

James Walden — 28 June 2013
Project Quality Control Manager — Date

Reviewed by:

Robert Hierholzer — 28 June 2013
Project Manager — Date

TBD — Date
UXO Safety Officer

Approved by:

Robert Crownover — 28 June 2013
Director of Safety and Quality — Date

This standard operating procedure (SOP) expires at the conclusion of project activities and will require a review and approval process prior to reissue. A full review of the SOP is required annually to ensure the document remains current. Revision will be made as operational and/or guidance changes occur. The review and approval process must also be conducted prior to implementing any changes to this SOP.

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5. SUPERVISOR'S STATEMENT

I have read and understand this SOP. To the best of my knowledge, the activities described in this SOP can be done in a safe, healthful, and environmentally sound manner. I have made sure that all persons assigned to this process are qualified, have read and understand the requirements of this SOP, and have signed the worker's statement for this purpose. I will ensure the SOP contains current procedures. If a major change to the SOP is necessary, I will ensure that the process is stopped until the SOP is revised and approved. If unexpected safety, health, or environmental hazards are found, I will make sure the process is stopped until the hazards have been eliminated.

_____ _____

TBD Date
Senior UXO Supervisor

6. WORKER'S STATEMENT

I have read this SOP and I have received adequate training to perform the procedures addressed in the SOP. If I identify a hazard not addressed in the SOP, or encounter an operation I cannot perform in accordance with the SOP, I will stop the process and notify my immediate supervisor.

Worker's Name	Date	Supervisor's Name	Date

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7. PROCEDURES

7.1 SCOPE

The pond is sampled using a grab sampler (Ponar Grab, Petite Ponar Grab, or equivalent) to obtain surface sediment samples for testing and analysis. Methods for grab and push core sampling techniques, as well as sample processing and handling, are described below.

7.2 SEDIMENT GRAB SAMPLING PROCEDURES

The following methods will be used to collect sediment grab samples for chemical testing/analysis. Sample handling will be conducted as defined in Section 7.3 – Sampling Handling Procedures. Personal protective equipment (PPE) appropriate to the known contaminates of concern will be donned prior to the commencement of sampling as specified in the site-specific safety plan.

1. Select a grab sampler (Ponar or Petite Ponar) suitable for the bottom conditions expected.
2. Securely attach the grab sampler to cable or line of sufficient strength to accommodate the weight of the sampler and the sample.
3. Cock the arms of the Ponar grab sampler to the open position and insert the spring-loaded safety pin.
4. Lower the Ponar to approximately 3 ft above the sediment surface. If the water depth is less than or equal to 3 ft, the device can be dropped from the surface of the water. The grab sampler should be allowed to free fall to the bottom. The jaws will close automatically as the grab sampler is raised from the sediment surface. If the Ponar grab sampler descends too quickly, it creates a "bow wave" that can push sediments out from under the sampler, as well as strike the bottom at an improper angle. However, if it strikes the sediment without enough force, it will not penetrate deep enough for a good sample. Stopping the sampler during the descent may cause the trigger to release. The speed at which it is raised is not as critical as the speed of descent
5. After the sampler contacts the sediments on the bottom, relax the tension on the sampler to allow the jaw locking mechanism to release.
6. Place tension on the cable/line and slowly lift. This should cause the sampler jaws to close, trapping the sample inside.
7. Slowly retrieve the sampler.
8. Hang the sampler above a pre-cleaned container of suitable size and composition (an inert material that will not interfere with or cause cross contamination).
9. Once the grab sampler is on deck, check to see that the jaws are closed properly and that an adequate sample of sediment is inside the Ponar.
10. Empty the contents of the sampler into the container.
11. Repeat the process until sufficient sample quantity has been recovered.
12. Siphon or decant off free water from the top of the sediment sample.
13. Pick objects such as wood debris, vegetation, and living organisms from the sediment and discard.
14. Transfer the sediments to a laboratory designated container(s), seal the container(s), and place in a cooler with ice.

7.3 SEDIMENT PUSH CORE SAMPLING PROCEDURES

The following method will be used to collect a vertical column of undisturbed sediment for lithology and visual observations as well as chemical analysis of sediment within the top 1.0 ft of the sediment bed.

1. Measure water depth at the location and size the push core extensions accordingly.
2. Select sediment core tubes of sufficient diameter and length to obtain the needed sample volume and depth of penetration (1.0-ft cores are targeted to be collected). Depending on the volume of sediment needed, multiple sediment cores may need to be pushed. As much as possible, the number of cores required will be predetermined to avoid having to return to a location for additional cores/sample volume.
3. Assemble the sediment coring device with the appropriate extensions required for the depth of water and install the core tube.
4. Slowly lower the sampler over the side until the sampler reaches the water/sediment interface. The sampler will be lowered by hand.
5. Note the depth to the top of sediment.
6. Advance the sediment core sampler into the sediment to the proposed depth (1.5 ft) or refusal, whichever comes first. If necessary, the push corer may be advanced by tapping the top of the device with a rubber mallet. These samplers are intended for soft sediment and will not tolerate heavy abuse.
7. Slowly retrieve the push corer vertically. Prior to the Cellulose Acetate Butyrate (CAB) tube bottom breaking the surface of the water, cap the bottom of the sample tube to prevent loss of sample. Secure the sampling apparatus.
8. Remove the CAB tubing from the sampling apparatus.
9. Measure core recovery. A core recovery of 70 percent or greater is desired for the core samples.
10. Allow the core to drain, taking care not to disturb the surface of the sediment. At the first sign of sediment in the drained water sample, cease draining and cap the core tube to ensure that the surface sediments layer is retained in the sample.
11. Write the location ID and orientation (up arrow) on the outside of the core tube with a permanent marker.
12. Repeat the process at an offset location (generally within 5 to 10 ft of the original location) until enough cores have been collected to meet the volume required for laboratory analysis.
13. Empty the contents of the sampler into a designated container and homogenize all core samples.
14. Siphon or decant off free water from the top of the sediment sample.
15. Pick objects such as wood debris, vegetation, and living organisms from the sediment and discard.
16. Transfer the sediments to a laboratory designated container(s), seal the container(s), and place in a cooler with ice.

7.4 SAMPLE HANDLING AND TRACKING

7.4.1 SAMPLE METHODS

Any non-disposable sampling equipment used for chemical sampling, as described in Sections 7.2 or 7.3, will be cleaned and decontaminated prior to use to prevent potential cross-contamination between each

use. Additionally, this section describes management, handling, and tracking procedures for investigation-derived waste, including solid and liquid materials, and PPE.

The special precautions described here will be taken to confirm that each sample collected is representative of the conditions at that location and that the sampling and handling procedures neither alter nor contaminate the sample.

For this program, the laboratory will purchase and distribute certified clean sample containers with chemical preservatives. Samples requiring preservation [such as aqueous samples for volatile organic chemicals (VOCs)] will be collected in sample containers provided by the analytical laboratory that already contain sufficient quantities of the appropriate preservative(s) to ensure that the sample is kept in accordance with the method requirements. The laboratory must provide an adequate amount of pre-preserved bottles with traceable high-purity preservatives, and additional preservative for use if the added amount is not sufficient, based on request by the Field Team Leader and on an as-needed basis if additional bottleware is needed during the field activities. The field team must verify that the preservative has been added appropriately.

7.4.2 Sample Numbering

A sample numbering system will be implemented to identify each sample collected during the pre-design sampling and any post-excavation sampling, and for all QC samples. This numbering system will ensure that each sample is uniquely labeled and will provide a tracking procedure to allow retrieval of information about each sample collected.

Every sample number and location will be recorded in the sample logbook, COC documentation, and in daily sampling reports. Every sample number will be preceded by a site name abbreviation (“NASB”) to identify that the sample was collected from the former Naval Air Station Brunswick project site. All sediment samples during the sampling event will employ the following labeling system: 12D-DU5-[SD1##]-[UULL]

- 12 designates that it is from Site 12
- DU5 designates that the sample is collected in DU 5, the pond
- SD designates a sediment sample
- ## is the sample number location starting with 101, and increasing sequentially
- UU is the depth of the top of the interval
- LL is the depth of the bottom of the interval

For example, the sediment sample collected from 0 to 4 in. at location SD101 would be labeled 12D-DU5-SD101-0004.

All MS/MSD samples collected will utilize the following sample label format:

- 12D-DU5-[SD1##]-[UULL/MS/MSD] or 12D-DU5-SD101-0004MS/MSD

All QA/QC samples (equipment blanks collected) will utilize the following sample label format:

- 12D-DU5 -[Type of QA Sample]-[sequential # starting at 1]
- 12D-DU5-EB01

Depths of each sediment sample will be incorporated into the sample number, recorded in the sample logbook, and noted in daily sampling reports. The date and time of sample collection will also be recorded in the sample logbook, on COC forms, and in daily sampling reports.

7.4.3 SAMPLE HANDLING AND CUSTODY

This section presents sample handling and custody procedures for both the field and laboratory. Implementation of proper handling and custody procedures for samples generated in the field is the responsibility of field personnel. Both laboratory and field personnel involved in the chain of custody (COC) and transfer of samples will be trained as to the purpose and procedures prior to implementation. For transfer of samples within the laboratory, an internal COC will be required.

After the samples are collected, they will be split as necessary among preserved containers appropriate to the parameters to be analyzed. Each container will be provided with a sample label that will be filled out at the time of collection. The sampler will print label information, specified below, on each label either before or immediately after collecting the sample with an indelible writing instrument. The label will be protected from water and solvents with clear label packing tape.

The following information, at a minimum, is required on each sample label. (Note the location ID and the sample ID, as described in the Data Management section, below, inherently identify some of this information.)

- Client
- Project name
- Sampling location
- Sample number
- Date and time of sample collection
- Parameters to be analyzed
- Preservative(s) added, if any
- Initials of the sampler.

Following sample collection, excess soil, water, etc., will be wiped from the outside of the sample containers with a paper towel and the lids will be checked to verify they are tightly closed. Each glass container will be wrapped with bubble wrap to minimize breakage during transport. Bottles containing soil, sediment, and water samples will be placed in separate single Ziploc® bags and set on ice (ice bath not necessary). Documentation of equipment and methods used in the field for treating the samples will be maintained in the field logbooks, and a COC will be initiated to document transfer of the samples from the field team to the laboratory. In preparation for shipment to the analytical laboratory, the shipment cooler will be packaged as follows.

- Fill a dry shipment cooler with inert cushioning to a depth of 1 inch to prevent bottle breakage.
- Place the bagged samples and the laboratory-provided temperature blank upright in the sample cooler. The temperature blank should be placed in the center (horizontally and vertically) with the samples surrounding.
- Place additional cushioning material around the sample bottles as necessary.
- Place bags of ice in the remaining void space to keep the samples cooled to 4 °C.
- Complete the COC form (see Figure 1). Place the COC form in a polyethylene, sealable bag (such as a 1-gal Ziploc® bag or equivalent) and tape the bag to the interior of the cooler lid. Field

personnel retain a copy of the COC form; another copy is transmitted to the Quality Assurance Officer (QAO) and the remedial design consultant Project Manager.

- Prior to sealing for shipment, the list of samples will be checked against the container contents to verify the presence of each sample listed on the COC record including the temperature blank.
- Affix a custody seal to the cooler.
- Seal the cooler securely with packing tape, taking care not to cover any labels that may already be present.
- Samples will be delivered to the laboratory by the most expedient means to meet holding times. Whenever practicable, samples will be shipped on the day of collection for delivery to the laboratory the morning of the day after collection. The laboratory will be required to adhere to the holding times for sediment sample analyses. Holding times begin at the date and time that the sample is collected. For sediment cores, the sample collection date and time will be the date and time that the sediment core is processed. The field team will carefully coordinate sampling activities with the laboratory to see that holding times are met.

The required holding times must be adhered to for the initial sample preparation/analysis. If subsequent reanalysis or re-extraction becomes necessary because of method requirements or additional requirements stated here, the laboratory will make every effort to perform those re-extractions and/or reanalysis within the primary holding times. Any holding time that is exceeded will be reported immediately to the Parsons Project Manager and the QAO by the laboratory Quality Assurance Manager (QAM).

7.4.4 FIELD SAMPLE CUSTODY

The primary objective of sample custody procedures is to create an accurate written record that can be used to trace the possession and handling of samples from the moment of their collection through analysis until their final disposition. A sample (or sample container) will be considered under custody if it is:

- In a person's possession
- Maintained in view after possession is accepted and documented
- Locked and tagged with custody seals placed on the sample cooler so that no one can tamper with it after having been in physical custody
- In a secured area that is restricted to authorized personnel.

A COC record will accompany the samples from the time the samples leave the original sampler's possession through the sample shipment's receipt at the laboratory. Triplicate copies of the COC record must be completed for each sample set collected. See chart for data requirements.

If samples are split and sent to different laboratories, a copy of the COC record is sent with each sample.

The REMARKS space on the COC form is used to indicate if the sample is a matrix spike/matrix spike duplicate (MS/MSD) or matrix spike/matrix duplicate (MS/MD), or any other sample information for the laboratory. Since they are not specific to any one sample point, blanks are indicated on separate rows. Immediately prior to sealing the sample cooler, the sampler will sign the COC form and write the date and time on the first RELINQUISHED BY space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper air bill number on the top of the COC form. Mistakes will be crossed out with a single line in ink and initialed by the author.

Sampling personnel will retain one copy of the COC form, and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody seals provided by the laboratory are affixed to the latch and across the back and front lids of the cooler, and the person relinquishing the samples signs his or her name across the seal. The seal is taped, and the cooler is wrapped tightly with clear packing tape. Field personnel then relinquish the cooler to personnel responsible for shipment (typically an overnight carrier).

The COC seal must be broken to open the sample cooler. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Field Team Leader for direction on whether to proceed with the analyses.

Sampling personnel record the information placed on the COC record in the field logbook. They also include in the logbook a detailed description of the exact locations from which the samples were collected, any pertinent conditions under which the samples were obtained, and the lot number of the containers used.

Chain of Custody / Analysis Request

	Privileged & Confidential	Site Name:
	EDD To:	Location of Site:
Client Contact: (name, co., address)	Sampler:	Preservative
	P O #	
Honeywell International	Analysis Turnaround Time:	
101 Columbia Road	Standard -	
Morristown, NJ 07962	Rush Charges Authorized for -	
	2 weeks -	
Hardcopy Report To:	1 week -	
Invoice To:	Next Day -	

Sample Identification				Sample Date	Sample Time	Sample Type	Sample Matrix	Sample Purpose	# of Cont.	Grab/Composite	Field Filtered Sample ?											
	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID							Units											
1																						
2																						
3																						
4																						
5																						
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Special Instructions:

Relinquished by	Company		Received by	Company		Condition	
	Date/Time			Date/Time		Cooler Temp.	
Relinquished by	Company		Received by	Company		Condition	
	Date/Time			Date/Time		Cooler Temp.	

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn. Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (specify):

Figure 1: Chain of Custody Form

8. HAZARD ANALYSIS/RISK ASSESSMENT AND HAZARD CONTROL BRIEF

The hazard analysis matrix (Table 1) lists the existing and potential hazards associated with conducting the DGM task along with methods to mitigate the hazards.

Table 1: Hazard Analysis Matrix

Activity	Hazard	Triggering Events	Initial Risk Index	Hazard Mitigation	Final Risk Index
Digital Geophysical Mapping	Slips, Trips or Falls	Climbing; debris, holes, or crevasses obstructed from view by vegetation.	C/III/4	Personnel will assess their surroundings prior to proceeding with field activities. Ensure footing at all times. Wear leather safety toe work boot with ankle support and non-slip soles.	D/IV/5
	Drowning	Loss of balance while on-board a vessel and falling into water. Overturning of the vessel (small boat).	C/I/2	All passengers will wear USCG-approved Type II personal flotation device (PFD) at all times while on boat. Personnel will remain seated while boat is in motion. Captain will maintain/manage balance of the vessel while personnel are working/leaning over the side. Boat will be equipped with rescue equipment to handle a man-overboard situation (such as rescue hook, life preserver with rope, rope bag with a minimum of 90 ft of rope, etc.), readily available.	D/IV/5
	Hot Weather	Seasonal weather patterns.	C/III/4	Heat stress monitoring, cool drinking water, work-rest schedule, and cool shelter for breaks.	D/IV5
	Biological	Biting/stinging insects, spiders, rodents and hazardous plants.	C/III/4	Avoid biological hazards. Wear long sleeve garments and apply repellent to clothing and exposed skin as needed. Use barrier cream, as necessary.	D/IV/5

Activity	Hazard	Triggering Events	Initial Risk Index	Hazard Mitigation	Final Risk Index
	Material Potentially Presenting an Explosive Hazard (MPPEH)	MPPEH reacts to impact by equipment, tools or personnel.	C/II/3	Maintain the team separation distance between teams for the Northern MRSs (see the hazard control briefing that follows) All personnel will receive a safety briefing prior to commencing site activities A UXO-qualified person will escort all non-UXO-qualified personnel and will strictly adhere to the directions of the UXO-qualified escort. UXO-qualified person will locate an anomalous-free area with the metal detector, prior to placing a pin flag into the ground.	D/III/5
	Weather or Natural Disaster Emergency	Meteorological or environmental event	C/II/3	Account for all team personnel and, if required, implement the emergency response procedures outlined in the APP.	C/IV/5

8.1 HAZARD CONTROL BRIEF

All personnel will attend the tailgate safety briefing given by the Team Leader, on the existing and potential hazards within the work area prior to commencing any activities in the work area.

Personnel will be cognizant of the surroundings at all times and remain observant of their footing as they traverse the work area and of the boat positioning while working in the pond. All personnel shall be aware of the signs of stress as described in the APP and be able to recognize the onset of heat stress disorders in themselves and their team members.

Apply insect repellant as warranted to mitigate the impact of biting/stinging insects. Avoid contact of the bare skin with poisonous vegetation. If contact does occur, wash the area with soap and water; apply a hydrocortisone cream to reduce the swelling and itching. Avoid exposing the infected area to the sun as well.

The potential for encountering MPPEH is low. However, proper MEC avoidance shall be exercised within all areas of Site 12 and the pond.

If MEC or MPPEH is encountered, it is to be logged and reported to Navy EOD MU 12, as well as the installation POC and USA PM.

In the event of severe weather or a natural disaster, account for all team personnel, contact the UXOSO or Senior UXO technician and follow the Emergency Response Plan in Section 10.2 of the Site Health and Safety Plan (SHSP).

9. DIAGRAMS

Site maps of the Site 12 and Pond EOD area are located in Appendix A of the Tech Memo WP. Teams will be provided maps of the overall project site and evacuation routes.

10. EQUIPMENT

- Sampling Vessel
  - 10- 16-ft jon boat or equivalent
  - Oars
  - 12 volt electric trolling motor
- Sediment Collection (Grab)
  - Sampler (box or clamshell sampler, core sampler, probing equipment or instruments)
  - Ropes
  - Winch
- Sediment Collection (core)
  - Push core device
  - CAB tubing 2.0- to 2.5-inch diameter
  - Tubing plugs and caps
- Sediment Processing
  - Aluminum containers, buckets, tubs or equivalent for sample retention
  - Plastic sample scoops (one time use)
  - Laboratory bottle sets
  - Coolers
  - PPE
  - Decontamination supplies, distilled water and alconox

11. EMERGENCY RESPONSE PROCEDURES

In the case of an emergency, the procedures detailed in the SHSP, Section 10.2, will be followed. A copy of the SHSP is maintained in all project site vehicles.

1. TITLE PAGE

FINAL

STANDARD OPERATING PROCEDURE

FOR

FIELD OPERATIONS DOCUMENTATION

SOP 4

SUPPLEMENTAL POND BOTTOM SURVEY &

SEDIMENT SAMPLING

SITE 12 EOD AREA POND

FORMER NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

USA ENVIRONMENTAL, INC.

June 2013

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TABLE OF CONTENTS

2. REFERENCES

- Supplemental Pond Bottom Survey and Sediment Sampling Technical Memorandum\Work Plan (WP)

3. PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to provide USA employees and subcontractors with the minimum procedures applicable to conduct sediment sampling within the Site 12 EOD Area Pond at the former NAS Brunswick. This SOP is not a stand-alone document and should be used together with Work Plans, other USA SOPs, the APP, applicable Federal, State, local regulations, and contract restrictions and guidance.

4. FIELD OPERATIONS DOCUMENTATION

Field operations documentation will, when practical, be generated by field personnel using electronic forms on personal digital assistants (PDA) specifically programmed for this task. In other cases, paper forms will be utilized.

4.1 SOIL SAMPLING RECORD

The Soil Sampling Record will be completed with the sample ID, depth, and description of every sample collected. As appropriate, the form may include a sketch of the sample location.

4.2 FIELD LOGBOOK

A logbook will be maintained by the sample team leader during each sampling event to provide documentation of activities that have occurred in the field on any given day, including samples collected and shipped (or picked up), and conditions or activities that affected the fieldwork. The field logbook will be bound with numbered pages. All pertinent information regarding site activities will be documented as near to real-time as possible. Entries in the logbook will be signed and dated. The following is a partial list of the types of information that may be recorded in the logbook:

- Name and title of author; date and time of entry; and physical/environmental (weather included) conditions during the daily field activities;
- Sampling activity purpose and plan;
- Types of sampled media (e.g., surface soil, sediment);
- Sample collection methods (e.g., discrete);
- Numbers, types, and volumes of samples taken;
- Sample ID numbers;
- Analyses, numbers of containers, and preservation required;
- Locations of sampling points;
- Dates and times samples were collected; and
- Descriptions of sample collection activities and samples.

All entries will be made in permanent, waterproof ink. Any corrections made in the logbook will be marked through with a single line and then dated and initialed.

PAGE OF

SAMPLING RECORD - SURFACE SOIL

PARSONS | CLIENT: | INSPECTOR : | DATE:

PROJECT:
Site:

SOIL TYPE
SURFACE SOIL SEDIMENT

COMMENTS:

MONITORING

INSTRUMENT	DETECTOR	READING

SAMPLE INFORMATION					SOIL INFORMATION					
LOCATION	SAMPLE NUMBER	SAMPLE DEPTH (in) TOP	SAMPLE DEPTH (in) BOTTOM	TIME (military)	GRAB or COMPOSITE SAMPLE	SAMPLE DESCRIPTION (UCSC)	USCS Classification	VOC Screen (PPM)	QC Split (yes or no)	Other Notes

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