Munitions Response Program Update on Guidance, Tools and Templates to Execute the Program

Presented By
Bryan Harre
NAVFAC EXWC

Stacin Martin
NAVFAC Atlantic

Logistics

- **Submit all questions via chat box throughout the presentation**
- **Presentation is being recorded**
- **Complete the webinar survey (main feedback mechanism)**

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Speaker Introduction

Bryan Harre
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Mr. Harre is a Senior Environmental Engineer at the Naval Facilities Engineering and Expeditionary Warfare Center (EXWC) of the Naval Facilities Engineering Command (NAVFAC). His past duties have exposed him to various innovative remediation technologies including remediation of small arms ranges, alternative land-fill covers, remediation of perchlorate contaminated groundwater, coastal contaminate migration monitoring, and advanced geophysical classification for munitions response. Mr. Harre has a B.S. in Chemical Engineering.

Speaker Introduction

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Mr. Martin is a Physical Scientist at the Naval Facilities Engineering Command (NAVFAC) Atlantic with the Vieques Restoration Section. He has experience directly managing both Munitions Response and Installation Restoration Program sites as a Remedial Project Manager. Currently he provides munitions response technical support across the Navy. Mr. Martin has a B.S. in Geology.

OER2 Webinar Series

- **Why Attend?**
  - Obtain and hear about the latest DOD and DON's policies/guidance, tools, technologies and practices to improve the ERP's efficiency
  - Promote innovation and share lessons learned
  - FEEDBACK to the ERP Leadership
- **Who Should Attend?**
  - ERP Community Members: RPMs, RTMs, Contractors, and other remediation practitioners who support and execute the ERP
  - Voluntary participation
- **Schedule and Registration:**
  - Every other month, 4th Wed (can be rescheduled due to holidays)
  - Registration link for each topic (announced via ER T2 email)
- **Topics and Presenters:**
  - ERP community members to submit topics (non-marketing and DON ERP-relevant) to POCs (Gunarti Coghlan – gunarti.coghlan@navy.mil or Tara Meyers – tara.meyers@navy.mil)
  - Selected topic will be assigned Champion to work with presenter

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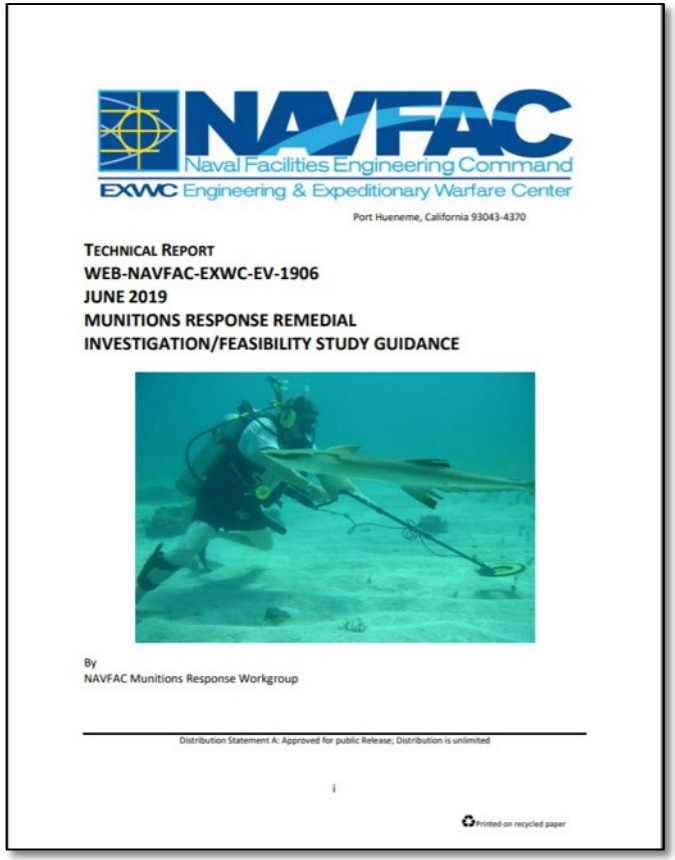
Discussion Topics

- NAVFAC Munitions Response (MR) Remedial Investigation/Feasibility Study (RI/FS) Guidance (Terrestrial and Underwater)
- Intergovernmental Data Quality Task Force MR Quality Assurance Project Plans (QAPP) Toolkit Module 1: RI/FS and the Advanced Geophysical Classification (AGC) QAPP
- NAVFAC MR Scope of Work (SOW) Templates
- NAVFAC Quality Assessment Spreadsheet
- MR QAPP Development and Review
- NAVFAC Remedial Alternative Analysis
- NOSSAINST 8020.15e
  - –Explosives Safety Submission (ESS) review and issues
  - –After Action Report (AAR)

WWII-era 81-mm mortar, Photo courtesy of US Navy.

DON MRP RI/FS Guidance

- Updated June of 2019
- Provides overview of MRP and regulatory framework governing:
  - Investigations
  - Development of response actions
- Discusses roles and responsibilities of key personnel and offices
- The next few slides will highlight topics and content that are covered in the guidance


NAVFAC
Naval Facilities Engineering Command
EXWC Engineering & Expeditionary Warfare Center
Port Hueneme, California 93043-4370

TECHNICAL REPORT
WEB-NAVFAC-EXWC-EV-1906
JUNE 2019
MUNITIONS RESPONSE REMEDIAL
INVESTIGATION/FEASIBILITY STUDY GUIDANCE

By
NAVFAC Munitions Response Workgroup

Distribution Statement A: Approved for public Release; Distribution is unlimited

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DoD/EPA UXO Management Principles

- **DoD and EPA agreed that DoD will:**
  - **Conduct response actions when necessary to address explosives safety, human health, and the environment**
  - **DoD legal authorities include CERCLA, Defense Environmental Restoration Program, and DoD Explosives Safety Board (DDESB)**
  - **A process consistent with CERCLA and these management principles will be the preferred response mechanism**
- **Permanent record of data gathered and a clear audit trail of pertinent data analysis and resulting decisions and actions are required**
  - **To maximum extent practicable, permanent record shall include sensor data that is digitally-recorded and geo-referenced**
- **Explosives safety, cost, and/or technical limitations may limit the ability to conduct a response and thereby limit the reasonably anticipated future land uses**

Other Policies

- **NAVFAC ESS and AAR Pre-Submittal Review Requirements**
  - **NAVFAC policy requires a QA review of draft ESS and AAR documents by NAVFAC Echelon III personnel prior to NOSSA review.**
  - **This process is mandatory for ER,N MRSs. This process does not apply to BRAC explosive safety documents unless explicitly requested.**
- **Optimization Policy for DON ER Program Sites (Remedial Alternative Analysis)**
  - **Purpose of FS review is to agree upon promising alternatives for full evaluation in FS between the contractor, the Remedial Project Manager (RPM), and technical support staff**

EXAMPLE TEMPLATE
Remedial Alternatives Analysis (RAA)

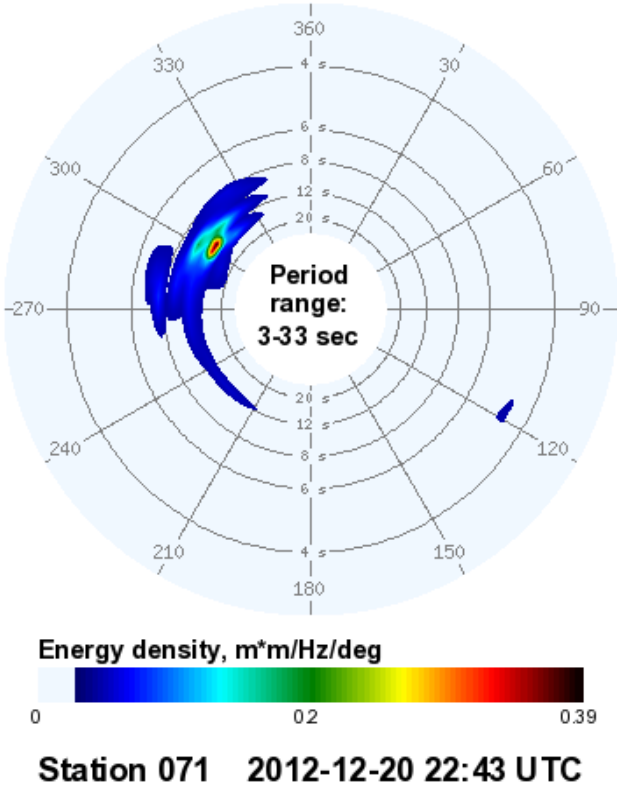
Site # – INSERT PROJECT NAME, SITE #, SWMU, ETC. HERE
BASE NAME, CITY, STATE

Site Conditions

Site Info	Previous Site Use	Provide sufficient information to understand sources of contamination. Fill out all cells below in sufficient detail to lay the groundwork for reviewers to understand the site's working history, remedial actions to-date, risk, and future or proposed activities.
	Size	Approximately XX,XXX square feet OR XXX ACRES
	Previous Actions	BRIEFLY DESCRIBE
	Current Site Use	BRIEFLY DESCRIBE
	Future Site Use	Industrial/Residential/Mixed Use/Other (SELECT ONE OR ADD INFO)
	Affected Media	DESCRIBE affected media (e.g., soil types, depths, groundwater table depth)
	Contamination	Source area or plume, chlorinated solvents or heavy metals, extent
COCs	Surface Soil/Sediment	LIST ALL COCs (and maximum concentrations)
	Subsurface Soil/Sediment	LIST ALL COCs (and maximum concentrations)
	Groundwater	LIST ALL COCs (and maximum concentrations)
	Surface Water/Sediment	LIST ALL COCs (and maximum concentrations)
Risk	Human Health Risk	The HHRA assessment considered five receptors, the hypothetical future resident, the typical industrial worker, the construction worker, the maintenance worker, and the recreational user. DESCRIBE the non-cancer risk estimates (i.e., HIs) that DID/DID NOT exceed 1.0 for any of the receptors evaluated for exposure to surface or subsurface soils. DETERMINE IF carcinogenic risks for exposure to surface and subsurface soil are within the USEPA's target risk range of 10^{-4} to 10^{-6} for all receptors. However, risks associated with exposure to surface soil exceed (STATE REGULATORY, IF APPLICABLE) target risk level of 10^{-4} for the industrial workers, construction workers, lifelong recreational users, and hypothetical future residents.
	Ecological Risk	DESCRIBE results of the ERA AND indicate, based on spatial coverage and hazard quotients, what risks DO exist/DO NOT exist to plants, soil invertebrates, and wildlife OR if they are expected to be minimal at the site.
RAOs	Remedial Action Objectives	DESCRIBE the RAOs for each affected medium.
PRGs	Preliminary Remediation Goals	DESCRIBE the PRGs proposed for this site (and the risk scenario or ARAR driving the PRG)
Applicable Documents		Remedial Investigation (e.g., RI report, 2009)
Additional Comments		CSM figures or plume maps attached

RI/FS Management

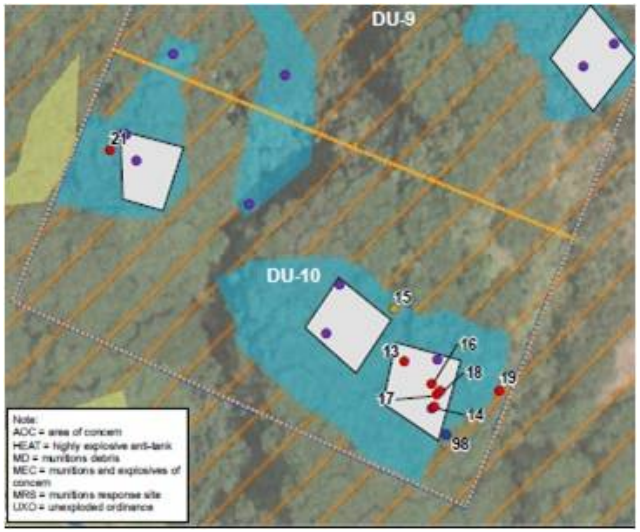
- **The project team must agree on:**
  - **Revised Conceptual Site Model (CSM) out of SI (source, pathway, receptor)**
  - **Reasonably anticipated future land use**
  - **RI/FS investigation approach, objectives, etc.**
- **The definable features of work (Vegetation/Surface removal, Geophysical survey, data collection, and processing, Remotely Operated Vehicle/Autonomous Underwater Vehicle/Diver operations)**
- **Explosives safety planning**
  - **Explosives Safety Submission**
  - **Explosives Safety Quantity Distance Arcs**

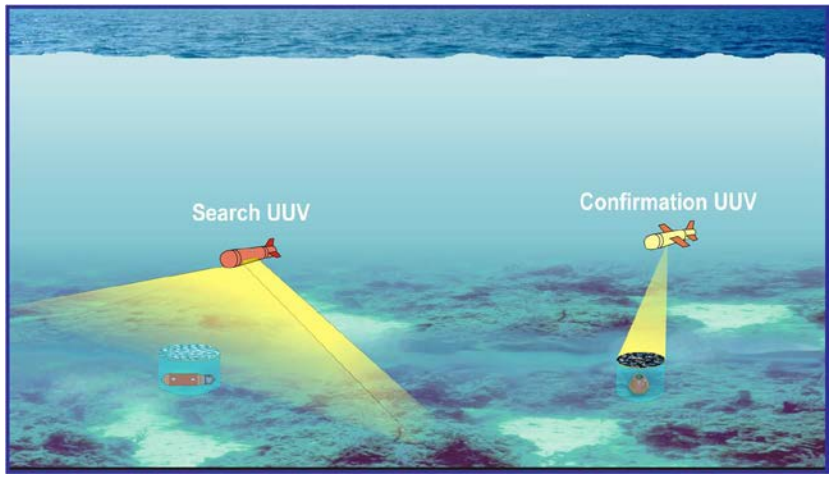


Wave Direction. Graphic courtesy of US Navy.

Terrestrial/Underwater RI

- **Available technologies to conduct the RI:**
  - **Detectors:**
    - Advanced Geophysical Classification/Traditional Electromagnetic Induction/Analog
    - Types of Sonars such as sidescan and synthetic aperture
  - **Positioning technologies**
    - RTK GPS, Fiducial, Robotic Total Station
    - Inertial navigation systems/doppler velocity logs, Ultra short baseline (USBL), Tow cable
- **RI Processes**
    - Site Survey
    - Quality Assurance/Quality Control (QA/QC) such as the geophysical system verification





Graphic courtesy of US Navy.

MEC/MPPEH Treatment and Reporting

Remedial Technology	Process Option
Removal	Mechanical Excavation
	Hand Excavation
Treatment	BIP w/wo Engineering Controls
	Consolidate and Blow
	Contained Detonation Chamber

UXO Technician detecting and removing subsurface anomalies.

Sandbagged enclosure under construction. Photos courtesy of US Navy.

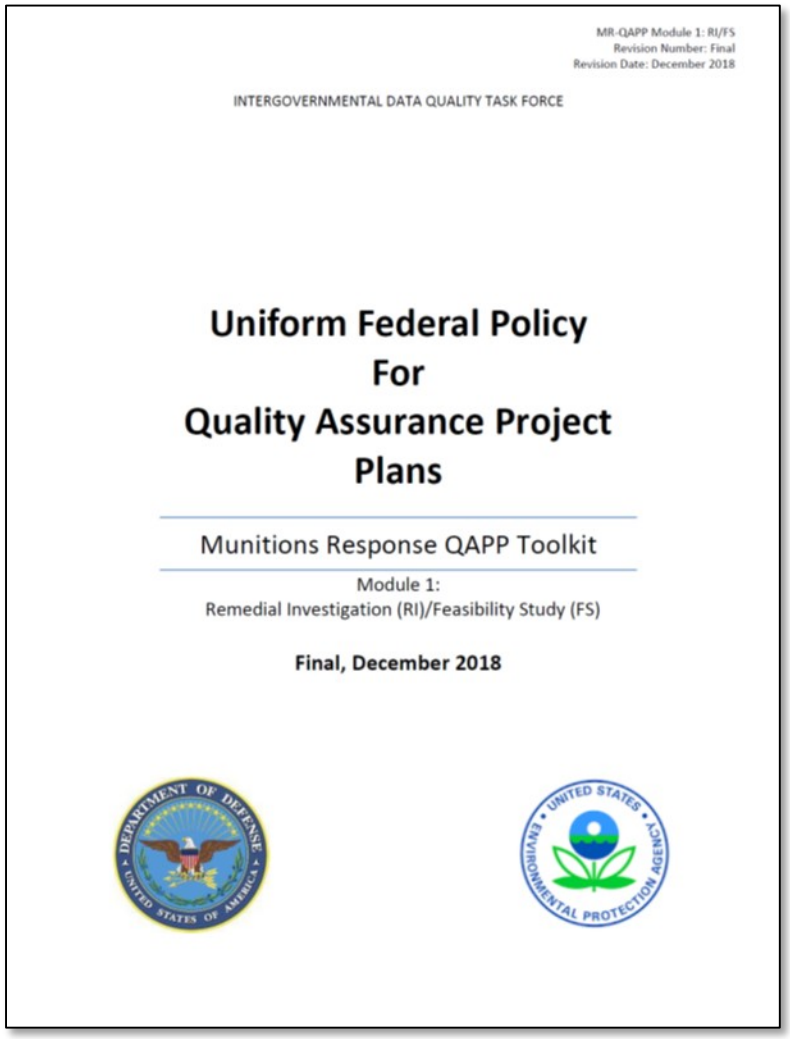
Poll Question #1

- **1. What year did the EPA and DoD agree to the UXO Management Principles?**

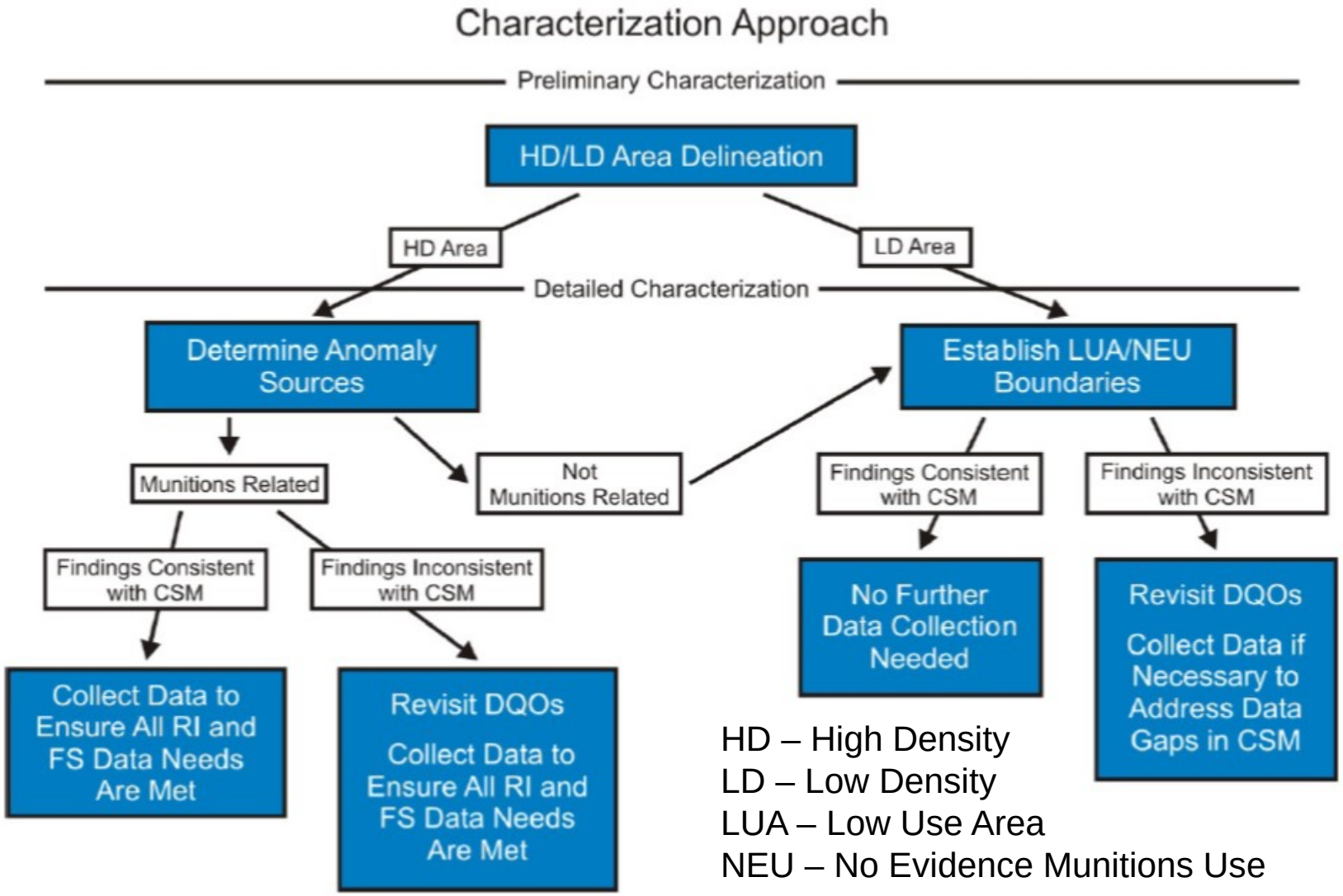
- **Select Your Answer from either the year:**
  - **1998**
  - **2000**
  - **2008**
  - **2018**

MR QAPP Toolkit Module 1 RI/FS

- **Munitions Response RI/FS QAPP Toolkit**
- **QAPP toolkit developed by a workgroup of the Intergovernmental Data Quality Task Force**
- **Currently available and starting point for RI/FS phase**
- **Does not discuss hazard assessment**



MR RI Approach using Weight of Evidence



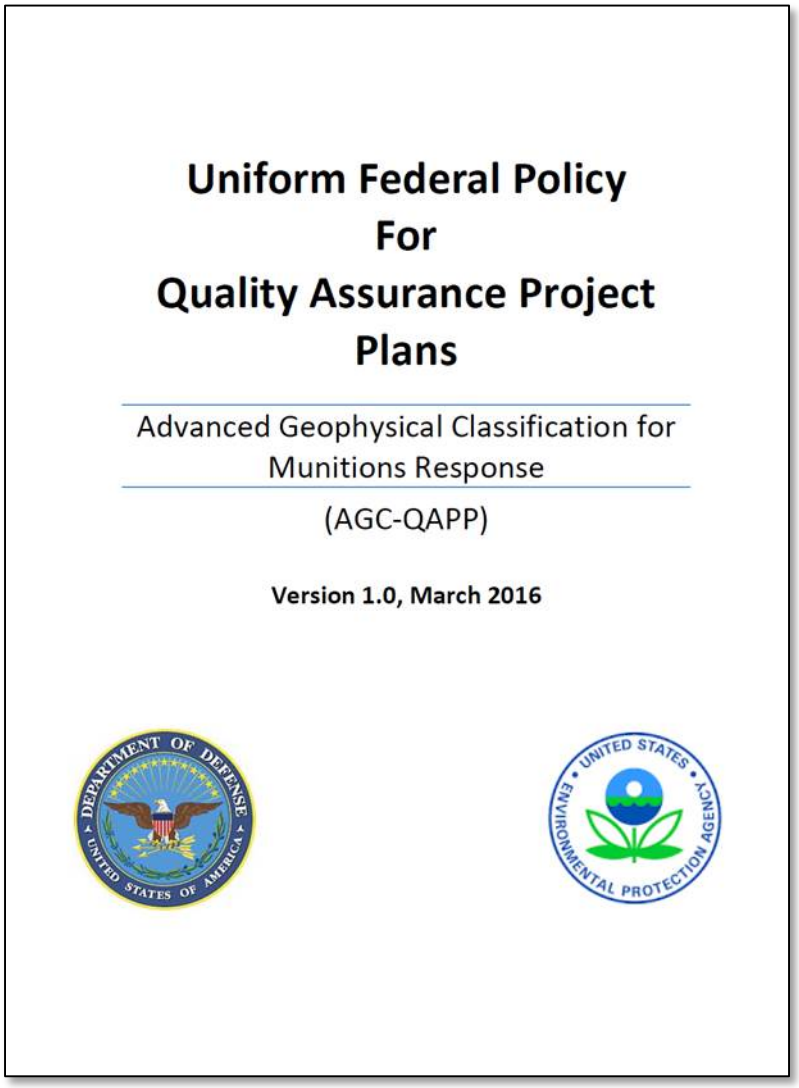
HD – High Density
LD – Low Density
LUA – Low Use Area
NEU – No Evidence Munitions Use

Some Example QAPP Worksheets

MR QAPP Toolkit Module 1 RI/FS	
Worksheet #	**Title**
10	Conceptual Site Model
11	Systematic Planning Process
12	Measurement Performance Criteria
14	Project Tasks & Schedule
17	Sampling Design & Project Workflow
22	Equipment Testing, Inspection, and QC
37	Data Usability Assessment

MR QAPP Toolkit Module 2
Remedial Action w/AGC

- **Advanced Geophysical Classification for Munitions Response QAPP Template**
- **QAPP template developed by a workgroup of the Intergovernmental Data Quality Task Force**
- **Field tested at Camp San Luis Obispo and Former Lowry AFB**
- **Currently available for your use if you are doing removal/remedial work**



NAVFAC SOW Templates

- **Six SOW templates available at NAVFAC MRP Portal: https://www.navfac.navy.mil/go/erb, each developed by MR Work Group:**
  - **PA**
  - **SI**
  - **RI/FS**
  - **Small arms RI/FS**
  - **Quality Assessment**
  - **Removal action**

NAVFAC Quality Assessment Spreadsheet

- **Questions on the following processes**
  - Explosives Safety Submission (ESS)
  - Work Plans
    - MEC QAPP
    - Advanced Geophysical Classification QAPP
    - MC QAPP
    - Accident Prevention Plan/Site Safety and Health Plan (APP/SSHP)
    - Environmental Protection Plan (EPP)
    - Waste Management Plan (WMP)
  - Site Preparation and Mobilization
  - Site Survey/Grid Layout
  - Vegetation Removal
  - Surface Removal
  - Digital Geophysical Mapping/Advanced Geophysical Classification/Geophysical Systems Verification (DGM/AGC/GSV)
  - Anomaly Reacquisition and Intrusive Investigation
  - Soil Sifting
  - Munitions and Explosives of Concern/Material Potentially Presenting and Explosive Hazard (MEC/MPPEH) Management
  - Demobilization
  - Reporting

Example Spreadsheet Questions on ESS

6. Response Actions	6.1 Response Technique	Does the section describe the overall munitions response technique (e.g., surface removal, excavation, land use controls)?
		For each technique employed, does the section describe who, how and when it is to be done?
		Is vegetation reduction discussed in detail including the equipment and processes to be employed and the measures to be taken to protect vegetation operators from the explosive and non-explosive hazards associated with the operation?
		If a mechanized MEC processing operation is being proposed, is the equipment and operation described to include whether low-input mechanical operations are proposed and justification for the low-input categorization?
		Are the types of protections, including engineering controls which will be employed to defeat fragments and protect essential personnel discussed?
		Is shield thickness and barricade design discussed, where appropriate?
		Are the types of blast overpressure protections, including personnel protective measures and engineering controls which will be employed to reduce arcs or reduce minimum separation distances discussed?
		Are the processes by which UXO Technicians will intrusively investigate and recover MEC and/or MPPEH discussed?
		Is a description of how MEC and/or MPPEH will be hazard classified in accordance with OP5 provided?
		Is the decision tree used by the SUXOS and UXOSO to determine whether MEC and/or MPPEH are unsafe to move or safe to move to the designated collection point or storage area described?
		Does the section state that MEC safe-to-move decisions must be documented in writing prior to movement?
		Are collection points within the boundary of the site and separated from intentional detonations by the HFD of the MGFD?
		If engineering controls are used, is the collection point distance still not less than 66 feet?
	6.2 Exclusion Zones (EZs)	Are EZs for the primary and contingency MGFDs shown in tables in Section 3 included in an EZ table in the format of Table 6-1?
		Is a separate EZ table included for each MRS, if multiple sites are covered by this ESS?
		Are the EZs shown graphically on maps in Appendix C?
		Are source documents cited with abbreviated citations in the table notes and fully cited in Section 13?
		Are the Fragmentation Data Review Form(s) and GEQ printouts for MEC and/or MPPEH listed in Table 6-1 included in Appendix B?
		Are the operations to be conducted at each site identified and characterized for the potential for either having an unintentional or an intentional detonation, including collection points?
		Are all exposed sites identified (e.g., UXO personnel, public and non-essential personnel, etc.)?
		Are the basis and size of the ESQD arcs identified?
		Does the Controlling EZ Table (Example Table 6-2) contain the above listed information?

Example Spreadsheet Questions on ESS

6. Response Actions	6.1 Response Technique	Does the section describe the overall munitions response technique (e.g., surface removal, excavation, land use controls)?
		For each technique employed, does the section describe who, how and when it is to be done?
		Is vegetation reduction discussed in detail including the equipment and processes to be employed and the measures to be taken to protect vegetation operators from the explosive and non-explosive hazards associated with the operation?
		If a mechanized MEC processing operation is being proposed, is the equipment and operation described to include whether low-input mechanical operations

Are the types of blast overpressure protections, including personnel protective measures and engineering controls which will be employed to reduce arcs or reduce minimum separation distances discussed?

		Is a description of how MEC and/or MPPEH will be hazard classified in accordance with OP5 provided?
		Is the decision tree used by the SUXOS and UXOSO to determine whether MEC and/or MPPEH are unsafe to move or safe to move to the designated collection

Are the processes by which UXO Technicians will intrusively investigate and recover MEC and/or MPPEH discussed?

		Is a separate EZ table included for each MRS, if multiple sites are covered by this ESS?
		Are the EZs shown graphically on maps in Appendix C?
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Are EZs for the primary and contingency MGFDs shown in tables in Section 3 included in an EZ table in the format of Table 6-1?

		Does the Controlling EZ Table (Example Table 6-2) contain the above listed information?

Poll Question

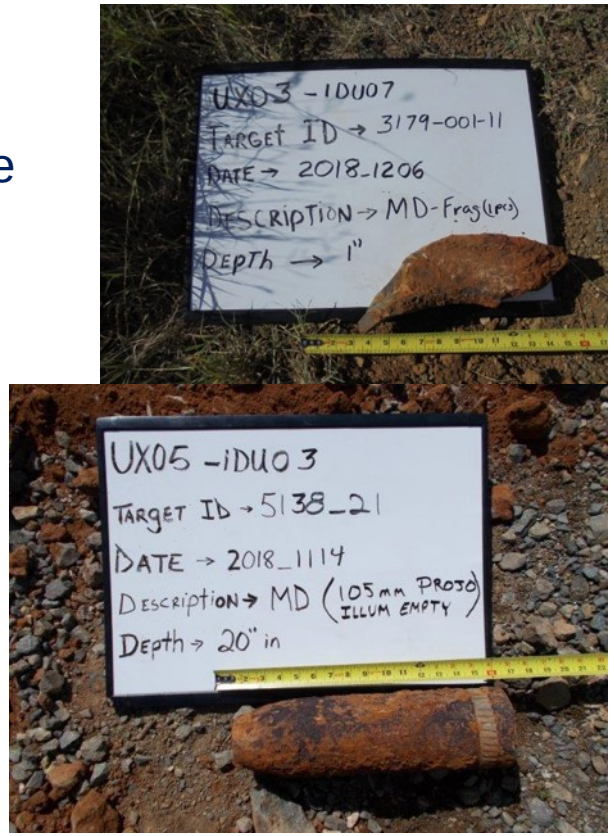
- **2. Who should use the quality assessment spreadsheet?**
  - **a. Contractor QC**
  - **b. Government QA**
  - **c. Remedial Project Manager**
  - **d. Contractor Project Manager**
  - **e. All of the above**

NAVFAC Munitions Response Quality Assurance Project Plan Process

- **For NAVFAC environmental restoration program MR QAPP the following general workflow applies**
  1. **MR project need determined**
  2. **Scope of work and cost estimated developed**
  3. **Execution of contract/task order to conduct work**
  4. ***Contractor develops QAPP***
  5. **Internal Navy project team review of QAPP (e.g., RPM review)**
  6. **QAPP submittal through NIRIS for NAVFAC quality assurance review**
  7. **Project team review (e.g., regulators and stakeholders)**

QAPP Development

- **Contractor Develops QAPP**
  - **There are currently two MR QAPP templates or standard formats available as guides**
    - IDQTF Final UFP for QAPPs, MR Toolkit, Module 1: RI/FS, December 2018
    - IDQTF UFP QAPP, Advanced Geophysical Classification (AGC-QAPP) for MR, Version 1.0, March 2016
    - Examples…
  - **Projects that involve AGC and "other" MR activities should be included in one QAPP – do NOT develop a separate QAPP for AGC**
  - **The RI/FS QAPP toolkit is suitable for other phases of work and should be used as a guide (e.g., worksheets completed should be the same)**



Common MR QAPP Issues

- **Poor or no editing**
- **MR QAPP submitted as appendix to Sampling and Analysis Plan (SAP) and no notification made in NIRIS**
- **AGC QAPP developed separate from other MR activities and included as appendix or separate document**
- **QAPP and ESS approaches are not consistent**
- **Material potentially presenting and Explosive Hazard (MPPEH) training is almost always missing from worksheet (WS) #4**
- **Investigation/removal goals unachievable (e.g., removal depths exceed detection depth) or inappropriate for phase of work (e.g., nature and extent in site inspection (SI))**

Common MR QAPP Issues (cont.)

- **Insufficient or vague decision criteria**
- **ESS used as a reference to how work will be conducted, ESS does not substitute for a standard operating procedure (SOP)**
- **WS #17, workflow incomplete**
- **WS #37, data usability assessment incomplete**

➢ **Organizations/contractors with established internal quality review processes tend to generate more complete and consistent QAPPs**

NAVFAC Remedial Alternatives Analysis for Munitions Response Projects

- **A RAA is required per Department of Navy (DON) policy (Policy for Optimizing Remedial and Removal Action at all DON Environmental Restoration Program Sites, 2012) for all remedial and removal actions**
- **The goal of the RAA is to optimize the evaluation and selection of remedial and removal alternatives and make sure the alternatives are aligned with the remedial action objectives**

NAVFAC Remedial Alternatives Analysis for Munitions Response Projects

- **Typically the RAA will be developed by the contractor who is developing the feasibility study (FS) or Engineering Evaluation/Cost Analysis (EE/CA) plans (or any development of remedial/removal alternatives) prior to the alternatives being developed fully for regulatory and stakeholder submittal**
- **The RAA is submitted through NIRIS and will be routed to the appropriate subject matter expert (SME)**
  - **Comments will be provided by the SME**
  - **Responses to comments will be submitted for concurrence by the SME**

Remedial Alternatives Analysis Common Issues

- **AGC not evaluated for subsurface clearance**
- **Vertical component of CSM not included**
- **Alternatives for subsurface removal do not meet the Remedial Action Objective (RAO) (e.g., detection technology depth and clearance approach has shallower effectiveness than RAO)**
- **Guidance not followed resulting in extraneous or irrelevant information**

Poll Question

- **3. A Remedial Alternatives Analysis (RAA) is required for which of the following?**
  a. **Feasibility Study (FS)**
  b. **Site Inspection (SI)**
  c. **Corrective Measures Study (CMS)**
  d. **Engineering Evaluation/Cost Analysis (EE/CA)**

NOSSA Explosives Safety Submission Process

- **Governing guidance is NOSSA Instruction 8020.15D revised version will be released soon (8020.15E)**
- **ESS Determination Request – ESS DR is submitted when working in an area known to contain Munitions and Explosives of Concern (MEC)/MPPEH and likelihood of encountering MEC/MPPEH is low**
  - **Practicing anomaly avoidance**
  - **On-call construction support**
- **ESS – submitted when explosive operations will be conducted in areas known to contain MEC/MPPEH**
  - **Placement of explosives on a site**
  - **Intentional contact with MEC/MPPEH**
  - **Subsurface activities where avoidance is NOT being practiced**

Naval Ordnance Safety and Security Activity (NOSSA) Explosives Safety Submission Process (cont.)

- **For ESSs and ESS DRs the following general workflow applies**
  1. **MR project need determined**
  2. **Scope of work and cost estimated developed**
  3. **Execution of contract/task order to conduct work**
  4. **Contractor develops ESS or ESS DR**

Naval Ordnance Safety and Security Activity (NOSSA) Explosives Safety Submission Process (cont.)

- **For ESSs and ESS DRs the following general workflow applies (cont.)**
  5. **Remedial Project Manager (RPM) submits ESS or ESS DR through NOSSA WebESS (user manual has step by step instructions)**
     - ESS DRs go directly to NOSSA review, comment, and approval
     - ESS will go to NAVFAC LANT for pre-submittal review (for BRAC projects the pre-submittal review is left up to the RPM)
     - Comments will be provided and ESS revised
     - NAVFAC LANT will verify comment responses and ESS revision
     - ESS will be submitted for NOSSA Review
     - Comments will be provided and ESS revised
     - NOSSA will verify comment responses and ESS revision
     - NOSSA will endorse ESS to Department of Defense Explosives Safety Board (DDESB) for approval

Common ESS Issues, Pre-submittal Review

- **Poor or no editing**
- **Documents do not follow guidance format**
- **Extraneous information not pertinent to the work (e.g., cut and paste technology descriptions)**
- **Outdated Buried Explosion Module (BEM) and Fragmentation Data forms**
- **Poor workflow or work approach descriptions**
- **Description of QC process and testing not complete or insufficient**
- **Maps and map legends are not complete or are overly complicated**

NOSSA AAR Process

- **Governing guidance is NOSSA Instruction 8020.15D revised version will be released soon (8020.15E)**
  - **–8020.15E will have more specific and defined elements required for the AAR**
- **AAR is required for all completed munitions response actions that were done under a DDESB approved ESS**
- **Documents the explosives safety aspects of the selected response have been completed in accordance with the ESS**

NOSSA

NAVAL ORDNANCE SAFETY AND SECURITY ACTIVITY

NOSSA AAR Process

- **Allows all explosive safety quantity distance (ESQD) arcs to be cancelled by NOSSA**
- **Allows site file to be closed out by DDESB**
- **The elements listed in the guidance must be included in the AAR or other document with a crosswalk table for the report and required elements**
- **AAR is submitted through WebESS within six months of response action being completed**

Common AAR Issues

- **Documents do not follow format/contain required elements**
- **Crosswalk table not included for “substitute” documents**
- **AAR not submitted on time**
- **Supporting documents not included (e.g., MPPEH certification forms)**
- **Multiple contractors conducting work and all information not included from different phases and contractors**

Poll Question

- **4. An After Action Report (ARR) is required per NOSSAINST 8020.15D following work conducted under an approved Explosives Safety Submission Determination Request (ESS DR).**
  - **a. True**
  - **b. False**

Contacts and Questions

Points of Contact
NAVFAC EXWC: Bryan Harre – bryan.harre@navy.mil
NAVFAC LANT: Stacin Martin – stacin.martin@navy.mil
Questions ?

Resources, Links, and IDQTF/CECOS Classes

- **NAVFAC MR RI/FS Guidance**
  - **www.navfac.navy.mil/go/erb**
- **Interstate Technology and Regulatory Council (www.itrcweb.org)**
  - **Geophysical Classification document**
  - **Quality Considerations for Munitions Response**
- **DENIX Website**
  - **IDQTF QAPPs for the RI/FS and AGC**
  - **www.denix.osd.mil**
- **MR QAPP Module 1 RI/FS Baltimore, MD Training Class Nov 19-20, NAOC meeting Dec 10-12, Scottsdale, AZ, more to follow**
- **CECOS Training on Basic and Advanced Munitions Response Site Management**
  - **www.public.navy.mil/netc/centers/csfe/cecos/Default.aspx**

Questions

Wrap Up

- **Please complete the feedback questionnaire at the end of this webinar. We are counting on your feedback to make this webinar series relevant!**

- **Next OER2 Webinar Info….**

Title: Quality Document Review (QDR)

Presenter: Paul Landin

Date: 19 March 2020

Time: 1100-1200 (PDT)

- **Thank you for participating!**