

SERDP and ESTCP Webinar Series

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The webinar will begin promptly at
12:00 pm ET, 9:00 am PT



SERDP and ESTCP Webinar Series

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Quality Assurance Project Plan (QAPP)
for Geophysical Classification
Investigations – Part 1

May 19, 2016



SERDP and ESTCP Webinar Series

Welcome and Introductions

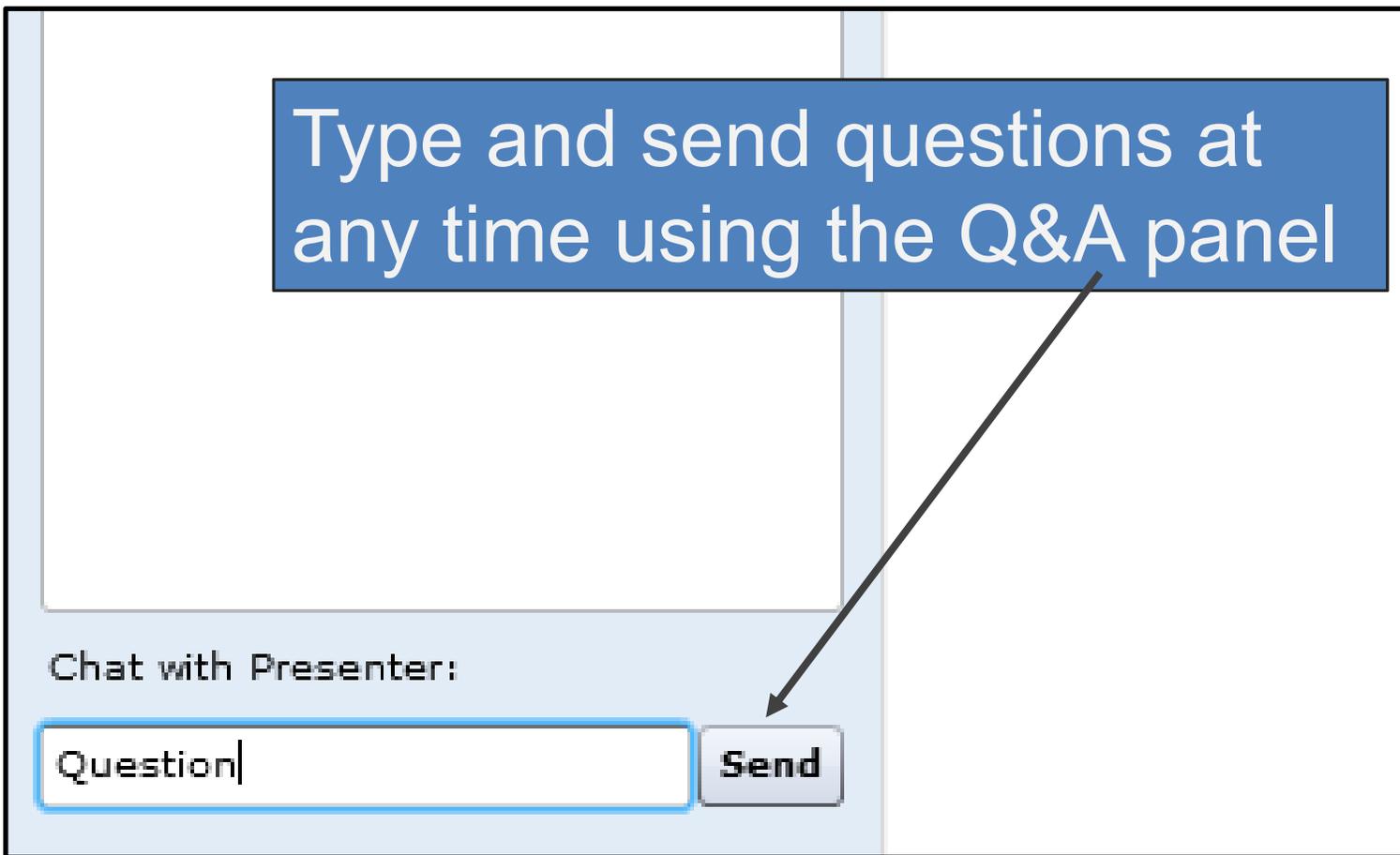
Rula A. Deeb, Ph.D.
Webinar Coordinator



Agenda

- **Webinar Logistics** (5 minutes)
Dr. Rula Deeb, Geosyntec Consultants
- **Overview of SERDP and ESTCP** (5 minutes)
Dr. Herb Nelson, SERDP and ESTCP
- **Quality Assurance Project Plan (QAPP) for Advanced Geophysical Classification Investigations – Part 1** (50 minutes)
Dr. Jordan Adelson, Navy Laboratory Quality and Accreditation Office
Dr. William (Ed) Corl, Navy Laboratory Quality and Accreditation Office
- **Final Q&A session**

How to Ask Questions



Type and send questions at any time using the Q&A panel

Chat with Presenter:

Question|

The image shows a screenshot of a Q&A interface. A large blue callout box with white text is positioned at the top, pointing to a 'Send' button in a chat input field. The input field contains the text 'Question|' and the 'Send' button is to its right. The text 'Chat with Presenter:' is located above the input field.

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SERDP and ESTCP Overview

Herb Nelson, Ph.D.
Munitions Response Program
Manager



SERDP

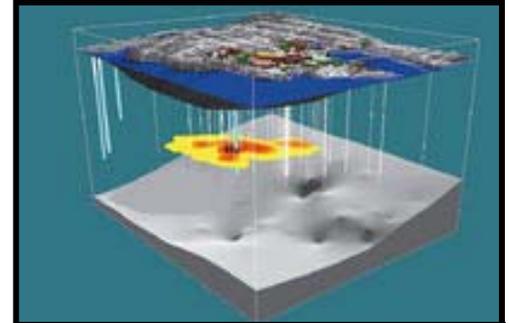
- Strategic Environmental Research and Development Program
- Established by Congress in FY 1991
 - DoD, DOE and EPA partnership
- SERDP is a requirements driven program which identifies high-priority environmental science and technology investment opportunities that address DoD requirements
 - Advanced technology development to address near term needs
 - Fundamental research to impact real world environmental management

ESTCP

- Environmental Security Technology Certification Program
- Demonstrate innovative cost-effective environmental and energy technologies
 - Capitalize on past investments
 - Transition technology out of the lab
- Promote implementation
 - Facilitate regulatory acceptance

Program Areas

1. Energy and water
2. Environmental restoration
3. Munitions response
4. Resource conservation and climate change
5. Weapons systems and platforms



Munition Response

- Munitions on land
 - Classification
- Munitions underwater
 - Wide area and detailed surveys
 - Cost-effective recovery and disposal
 - Characteristics of munitions underwater, their environment and mobility



SERDP and ESTCP Webinar Series

Date	Topic
June 02, 2016	Insensitive Munitions: Environmental Health Criteria, Fate and Transport
June 16, 2016	Quality Assurance Project Plan (QAPP) for Advanced Geophysical Classification Investigations – Part 2
June 30, 2016	Geophysics 101: Realistic Expectations for Geophysics When Used for Site Characterization and Remediation Monitoring – Part 1
July 14, 2016	Remote Methods for Water Conservation
July 28, 2016	An Environmentally Acceptable Alternative for Fast Cook-off Testing, Demonstration, Validation and Implementation Efforts
August 11, 2016	TBD
August 25, 2016	Geophysics 101: Realistic Expectations for Geophysics When Used for Site Characterization and Remediation Monitoring – Part 2

SERDP and ESTCP Webinar Series

<http://serdp-estcp.org/Tools-and-Training/Webinar-Series>



SERDP and ESTCP Webinar Series

“Advanced Geophysical Classification for Munitions Response Quality Assurance Project Plan Template”



Jordan Adelson, Ph.D.
Navy Laboratory Quality and
Accreditation Office (LQAO)



William (Ed) Corl, Ph.D.
Navy Laboratory Quality and
Accreditation Office (LQAO)



Agenda

- **Part 1**

1. Introduction
2. Planning
3. Project organization and personnel

- **Part 2**

4. Data review
5. Data management and assessments
6. Conclusions

1. INTRODUCTION

Jordan Adelson, Ph.D.
Navy Laboratory Quality and
Accreditation Office (LQAO)



Introduction

- Intergovernmental Data Quality Task Force (IDQTF)
- Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP)
- Optimized UFP-QAPP worksheets
- Development of the Advanced Geophysical Classification for Munitions Response QAPP (AGCMR-QAPP)

IDQTF

- Established 1998
- Original consensus (voting) members
 - Director, FFRRO (Chair)
 - DoD (EDQW Chair)
 - DOE (EM-5)
 - EPA (OSWER, OEI, Regions 1, 2, 5, 8)
- MOU – Develop consensus agreements
 - Environmental Quality Systems based on ANSI/ASQ E4
 - UFP-QS, UFP-QAPP, QA/QC Compendium
 - Federal agency roles and responsibilities for data management

IDQTF

- New charter (2013)
- New Executive Committee (voting members)
 - Director, FFRRO
 - EPA/OEI/Quality Staff Director
 - EPA Lead Region QAM for OEI
 - EPA Lead Region QAM for OSWER
 - DoD EDQW Chair
 - DOE?
- Work collaboratively to address environmental issues of emerging concern at Federal Facilities
 - Implement consistent/transparent quality systems
 - Ensure scientific basis for environmental decisions

IDQTF Optimized UFP-QAPP Worksheets (2012)

- Objectives
 - Eliminate redundancy
 - Facilitate worksheet completion, review and use
 - Clarify and promote use of the systematic planning process and “graded approach”
 - Promote consistency in QA/QC terminology and procedures among the Federal agencies
- 37 original worksheets consolidated to 28
- Addresses all requirements of ANSI/ASQ-E4 and EPA/QA G-5
- Signed out by OSD and EPA in August 2014

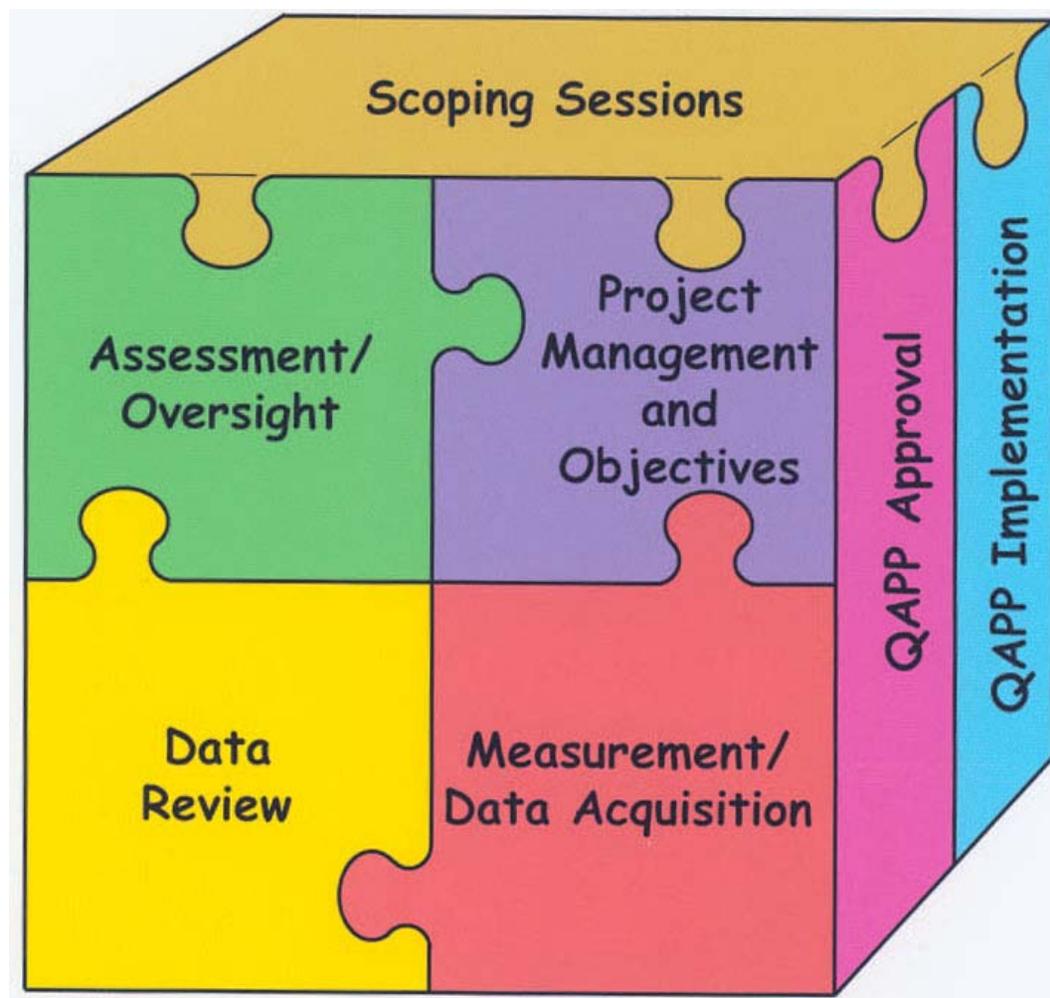
What is a QAPP?

- Integrates technical and quality control aspects of a project including planning, implementation, assessment, and corrective actions
- Presents the steps to ensure collected data are of the correct type and quality required for a specific decision or use
- Provides an organized and systematic description
 - Quality assurance (QA)
 - Quality control (QC)
 - Application to the collection and use of environmental data

Basis for UFP-QAPP

- ANSI/ASQ E4 Section 6 (Part B)
- EPA QA/R-5 and QA/G-5
- Region 1 QAPP Guidance used as starting point
- Organized around four major QAPP elements and use of worksheets

QAPP Process Elements



Systematic Planning Process (SPP) Elements

- Team-based approach to planning
- Project goal, objectives, questions and issues
- Project schedule, resources, milestones and applicable requirements
- Data collection and analysis process matched to project objectives
- Collection and analysis requirements
- Process for generation, evaluation and assessment of collected data

EPA Data Quality Objectives (DQO) Process

1. State the problem
2. Identify the decision
3. Identify the inputs to the decision
4. Define the boundaries of the study
5. Develop decision rules
6. Specify tolerable limits on decision errors
7. Optimize the design

AGCMR QAPP Template Highlights

- Based on the Optimized UFP-QAPP (IDQTF, 2012)
- All decision-makers (DoD, contractors, regulators and stakeholders) participated in planning
- Facilitates and documents the systematic planning process leading to detection and classification of buried munitions and explosives of concern (MEC)
- Results in stand-alone document addressing all elements of ANSI/ASQ E4
- Provides structured, transparent, reproducible process for decision-making in the field
- Ensures a scientific basis for decision-making

AGCMR-QAPP Template Features

- Includes “crosswalk table” identifying where required quality system elements are addressed
 - Green text provides instructions and guidance for completing each worksheet
 - Blue text provides examples of the type of information needed
 - Black text identifies minimum recommended requirements (where applicable)
- Template is based on the remedial action (RA) phase of investigation
- Project teams should modify as needed for other phases

AGCMR QAPP Worksheets

UFP-QAPP Worksheet #	Required Information	GCMR-QAPP
A. Project Management		
<i>Documentation</i>		
1&2	Title and Approval Page	Included
3&5	Project Organization and QAPP Distribution	Included
<i>Project Organization</i>		
4,7&8	Personnel Qualifications & Sign-off Sheet	Included
6	Communication Pathways	Included
<i>Project Planning/Problem Definition</i>		
9	Project Scoping Session Participants Sheet	Included
10	Conceptual Site Model (CSM)	Included
11	Project Quality Objectives/Systematic Planning Process Statements	Included
12	Measurement Performance Criteria Table	Included
13	Secondary Data Criteria and Limitations Table	Included
14&16	Project Tasks & Schedule	Included
15	Reference Limits and Evaluation Table	Excluded
B. Measurement Data Acquisition		
<i>Sampling Tasks</i>		
17	Sampling Design and Project Workflow	Included
18	Sampling Locations and Methods/SOP Requirements Table	Excluded
19&30	Sample Containers, Preservation, & Hold Times	Excluded
20	Field Quality Control Sample Summary Table	Excluded*
21	Field SOP References Table	Excluded*

GCMR QAPP Worksheets

UFP-QAPP Worksheet #	Required Information	GCMR-QAPP
22	Field Equipment Testing, Inspection, and Quality Control	Included
Analytical Tasks		
23	Analytical SOP References Table	Excluded
24	Analytical Instrument Calibration Table	Excluded
25	Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table	Excluded
Sample Collection		
26&27	Sample Handling System & Chain of Custody	Excluded
Quality Control Samples		
28	Laboratory QC Samples Table Screening/Confirmatory Analysis Decision Tree	Excluded
Data Management Tasks		
29	Data Management, Project Documents and Records	Included
C. Assessment Oversight		
31,32&33	Assessments and Corrective Action	Included
D. Data Review		
34	Data Verification, Validation, and Usability Inputs	Included
35	Data Verification and Validation Procedures	Included
36	Geophysical Classification Process Validation	Included
37	Usability Assessment	Included

Summary

- **AGCMR-QAPP template**
 - Facilitates SPP for the implementation of advanced classification at a specific site
 - DQOs are determined upfront and documented in the QAPP
 - Win-win for planning, review and documentation
- **The bottom line**
 - Confidence in decision-making, expedited cleanups, environmental protection and wise resource allocation

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Q&A Session 1



2. PLANNING

William (Ed) Corl, Ph.D.
Navy Laboratory Quality and
Accreditation Office (LQAO)



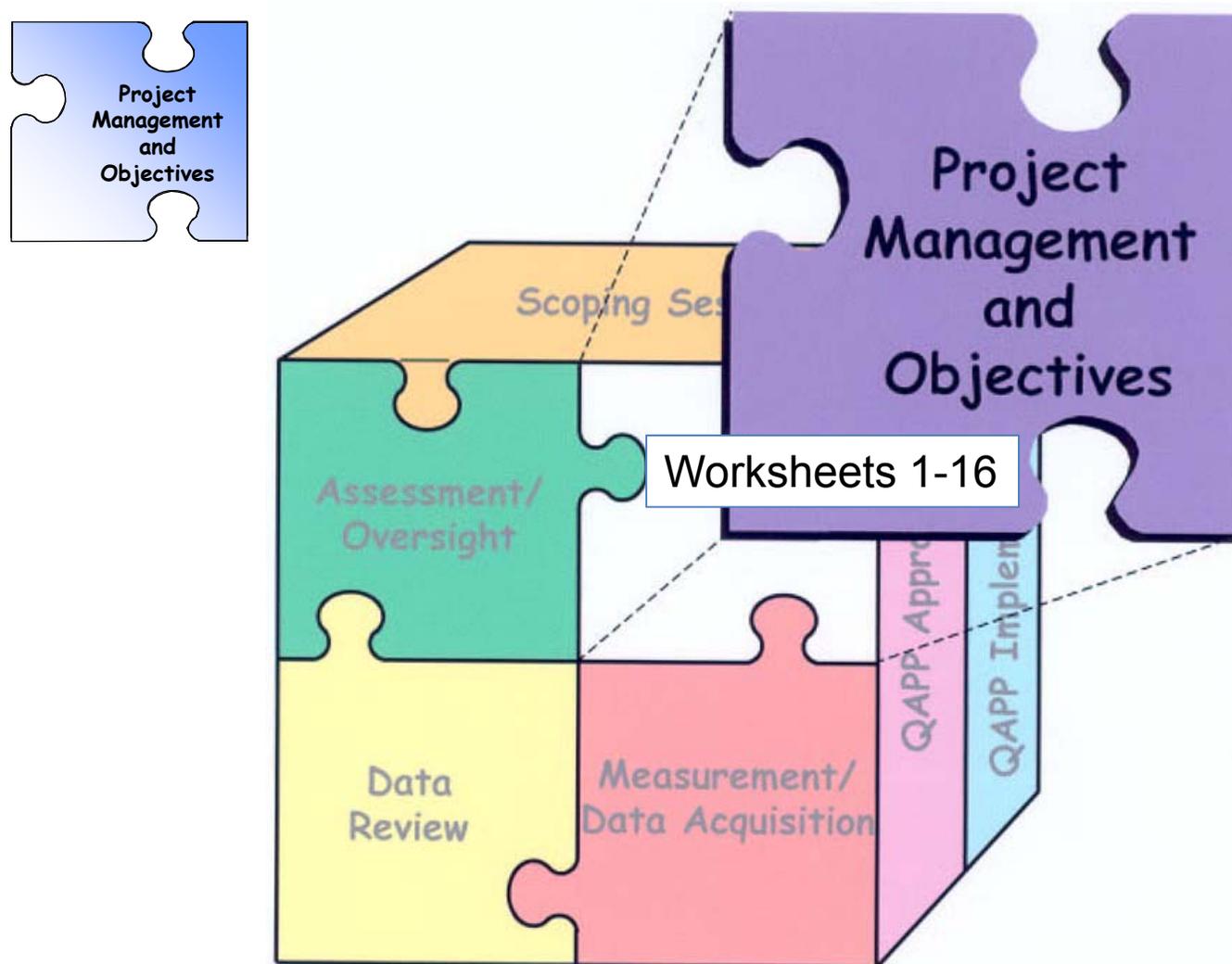
Planning

- Elements of systematic planning
- Initial worksheets used to document planning
- The planning process
 - Conceptual site model
 - DQOs
 - Measurement performance criteria
 - Measurement quality objectives

Project Planning and Documentation

- What about project planning?
 - The best way to ensure that a project meets its goals is to involve all the stakeholders (e.g., data users, data producers, decision-makers) in scoping
 - Worksheets are not populated in numerical order
 - Scoping ensures that all needs are defined adequately
 - The penalty for ineffective planning often is greater conflict and extensive reworking, which results in increased cost and lost time

The Elements of Systematic Planning



Systematic Planning

- Initial worksheets used
 - WS9: Project Planning Session Summary
 - WS10: Conceptual Site Model
 - WS11: DQOs
 - WS12: Measurement Performance Criteria (MPC)
 - WS17: Sampling Design
 - WS22: Measurement Performance Objectives (Field)
- Combined use of worksheets
 - Clearly defines the problem
 - Identifies project goals and objectives
 - Provides performance criteria that are planned and agreed to “upfront” by project team

CSM, DQOs, MPCs and MQOs

WS10

Conceptual Site Model (CSM):
RAOs, Land Uses, Site History, Site Characteristics

WS11

Data Quality Objectives (DQOs)

WS12

**Measurement Performance
Criteria (MPCs)**

WS22

**Measurement
Quality Objectives
(MQOs)**

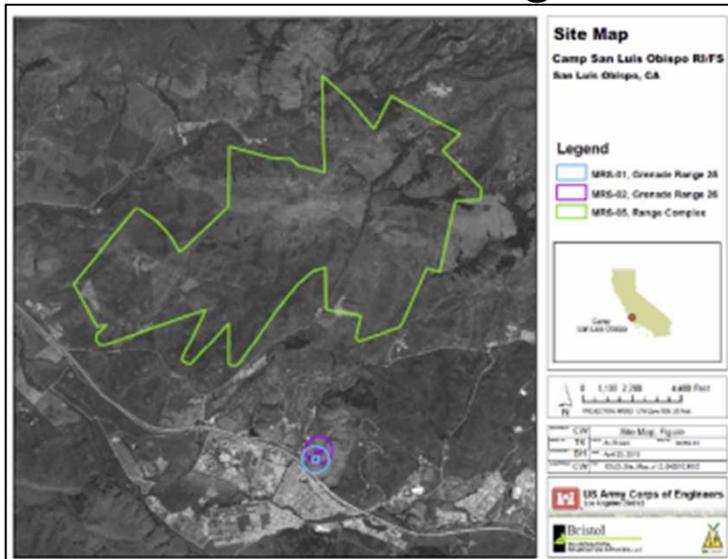
WS9: Project Planning Session Summary

- Document project planning sessions
 - Include face-to-face, web and phone sessions (typically need multiple sessions)
 - List date, participants and meeting purpose
 - List key decisions, agreements and action items
 - Contractor does “heavy lifting”
- Effective external scoping sessions
 - Populate initial planning worksheets in advance
 - Subsequent discussion and agreement

Date of planning session:			
Location:			
Purpose:			
Participants:			
Name	Organization	Title/Role	Email/Phone

WS10: CSM

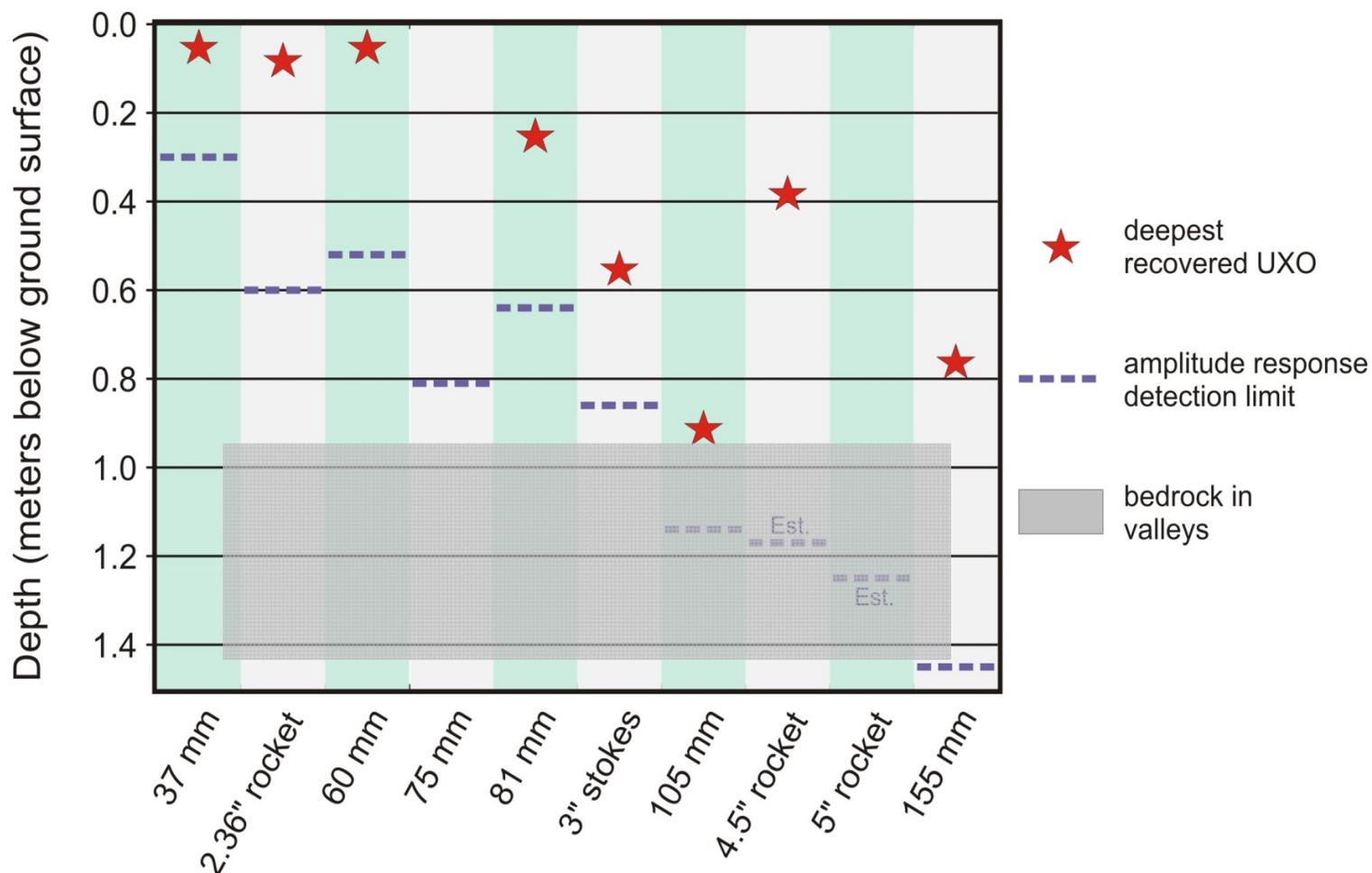
- CSM provides an agreed-upon foundation for DQO process and problem formulation
- Updated as investigation progresses
- Text, tables and figures



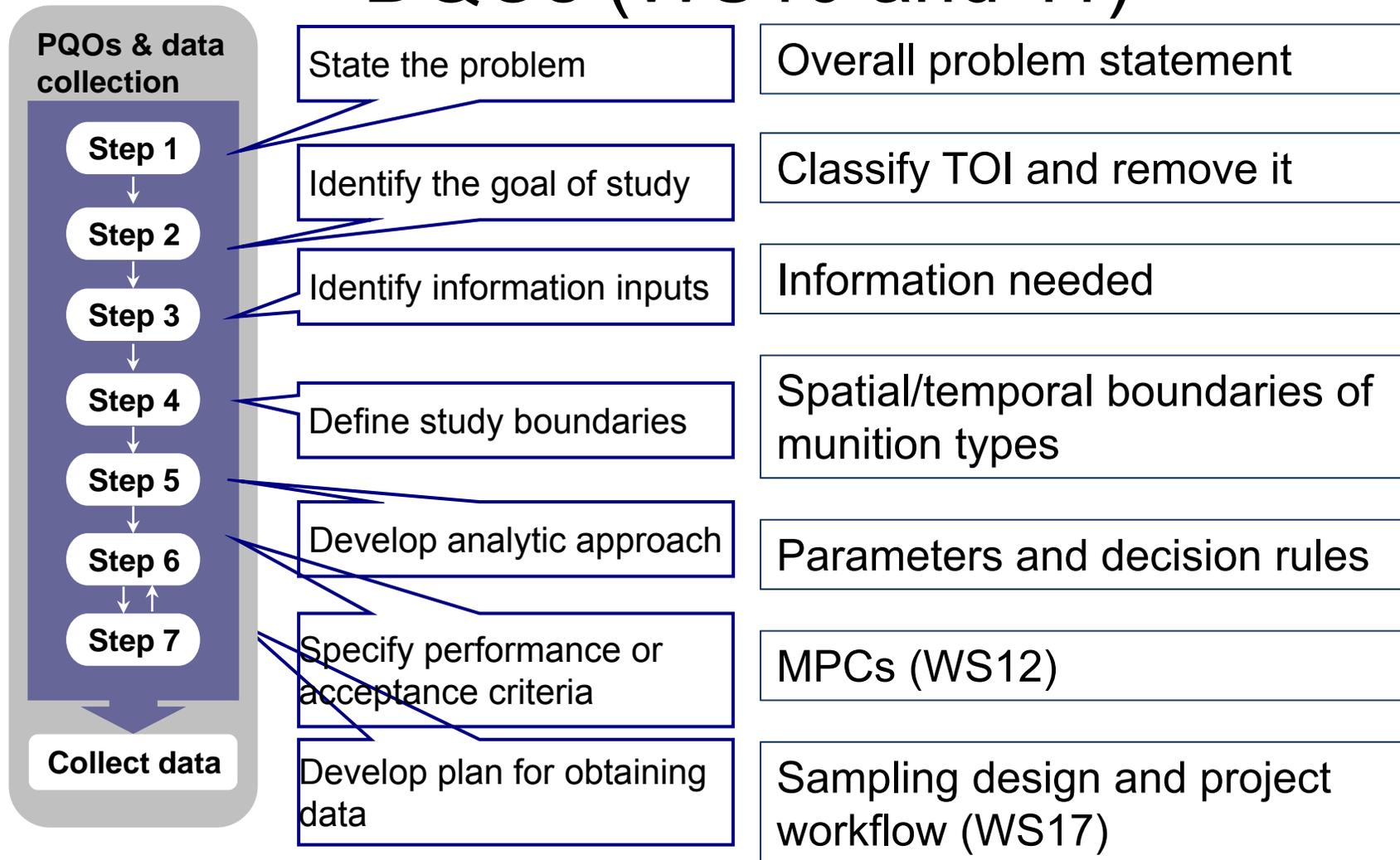
- Case study: A Munitions Response Site is currently used for cattle grazing
- Historically used for live-fire training with munitions
 - 37 mm, 75 mm, 105 mm and 155 mm projectiles
 - 60 mm, 81 mm and 3” stokes mortars
 - 2.36”, 4” and 5” rockets
- Remedial action objective
 - Reduce/eliminate exposure to unexploded ordnance (UXO) in top 1 ft soil

WS10: CSM

Vertical distribution of MEC



Systematic Planning Process and DQOs (WS10 and 11)



WS12: Measurement Performance Criteria (MPCs)

- MPCs are overall specifications that the project must achieve to satisfy the DQOs
 - Developed by internal project team (DoD and contractor), considering DQOs
- MPCs guide development of sample design and data collection technology and methods
- Stakeholders have opportunity to review and approve MPCs during review of the draft QAPP
- During the data usability assessment (DUA), MPCs are criteria for gauging the success of the study

WS12: Measurement Performance Criteria (MPCs)

This worksheet documents the project-specific MPC in terms of data quality indicators (DQI) (i.e., accuracy, sensitivity, representativeness, completeness, and comparability) for advanced geophysical classification projects. 9 MPCs are the minimum performance specifications that the advanced geophysical classification survey design, including instruments and procedures, must meet to ensure collected data will satisfy the DQOs documented in Steps 1-5 on Worksheet #11. They are the criteria against which the detection survey, cued survey, and final DUAs will be conducted as documented on Worksheet #37. Minimum recommended MPCs applicable to the RA phase are presented in black text. Project teams may revise these MPCs or establish additional MPCs if necessary to achieve project-specific DQOs. The project-specific QAPP must explain and justify any changes to black text. An appendix may be used for this purpose.

Precision
Accuracy
Representativeness
Comparability
Completeness
Sensitivity

Table 12-1: Measurement Performance Criteria

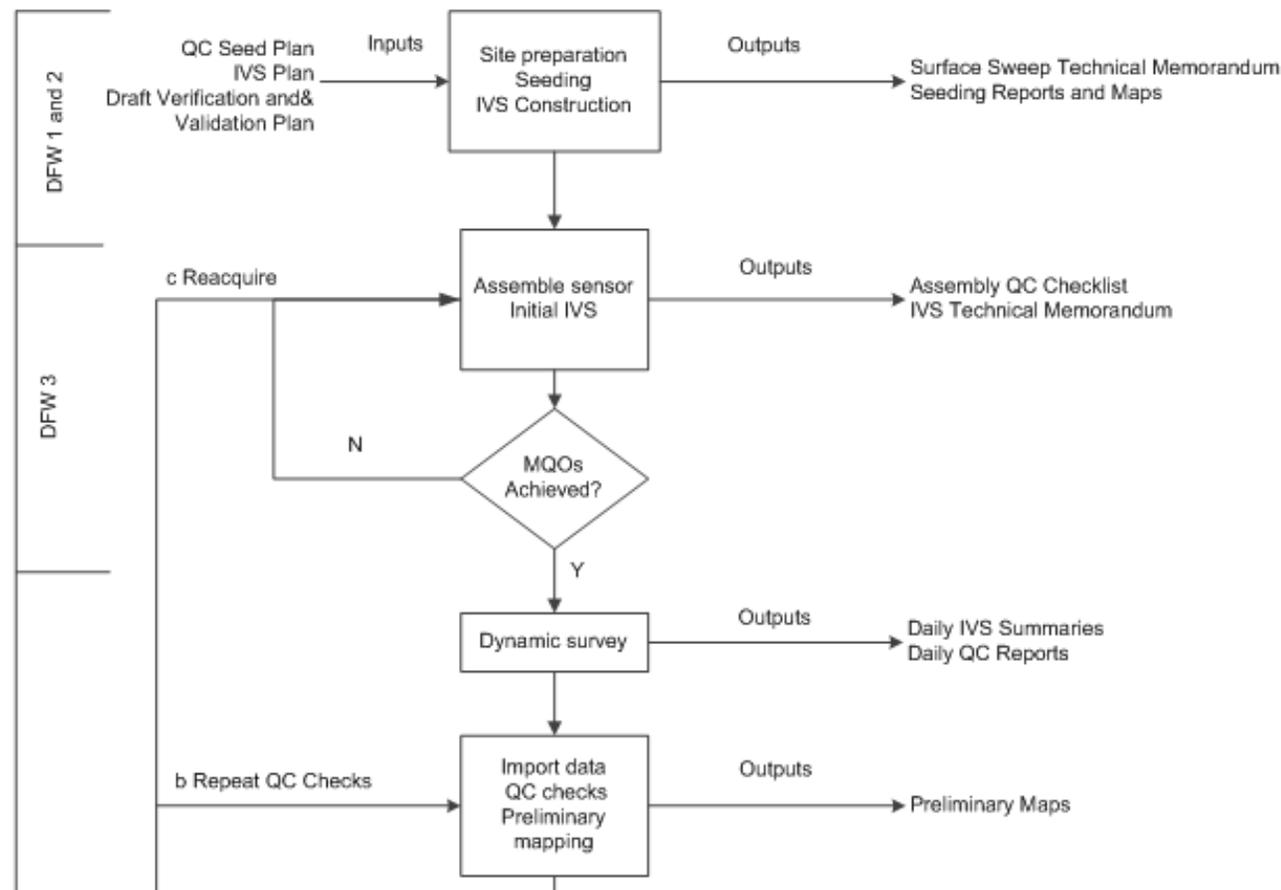
Measurement Performance Activity (or DFW)	Data Quality Indicator	Specification	Activity Used to Assess Performance
QC Seeding	Representativeness	Blind QC seeds will be placed at the site by the contractor. Blind QC seeds must be detectable as defined by the DQOs and located throughout the horizontal and vertical survey boundaries defined in the DQOs. [The blind seed plan should describe the number and types of blind QC seeds.] Blind QC seeds will be distributed such that the field team can be expected to encounter between one and three seeds per day per team.	Review of Production Area QC Seeding Report

WS17: Sample Design

- Describes the project work flow
 - Definable features of work (DFW)
- Includes or references detailed procedures (SOPs, maps)
- Describes decision-making process (“decision tree”)
- Includes procedures to handle contingencies in the event field conditions are different than expected and expected documentation

WS17: Work Flow (Figure 17-1)

Advanced Geophysical Classification Decision Tree Preliminary Tasks and Anomaly Detection Survey



WS22: AGCMR-QAPP

QAPP Worksheet #22: Equipment Testing, Inspection, and Quality Control (UFP-QAPP Manual Section 3.1.2.4)

This worksheet documents procedures for performing testing, inspections and quality control for all field data collection activities. References to the applicable definable feature of work (DFW) and standard operating procedures must be included. Failure response must include a root cause analysis (RCA) to determine the appropriate CA. Examples are provided in blue text. Minimum recommended specifications are provided in black text. The rationale for any changes to black text must be specifically identified, documented and concurred upon by the project team. An appendix may be used for this purpose.

Table 22-1: Detection Survey (instrument: _____)

Measurement Quality Objective	DFW/SOP Reference	Frequency	Responsible Person/ Report Method/ Verified by	Acceptance Criteria	Failure Response
Verify correct assembly		Once following assembly	Field Team Leader/ instrument assembly checklist/Project Geophysicist	As specified in Assembly checklist	RCA/CA: Make necessary adjustments, and re-verify
Initial Instrument Function Test (TEMTADS) (Instrument response amplitudes)		Once following assembly	Field Geophysicist/ Initial IVS Memorandum/ Project Geophysicist	Response (mean static spike minus mean static background) within 20% of predicted response for all transmit/receive (Tx/Rx) combinations	RCA/CA: Make necessary adjustments, and re-verify

WS22: AGCMR-QAPP

Table 22-1 Column Heading	Purpose/Description
Measurement Quality Objective (MQO)	Measurement Performance Objectives for each phase of investigation
DFW/SOP reference	Definable Features of Work (DFW) and Standard Operating Procedures (SOPs) are referenced
Frequency	Frequency and Acceptance Criteria for each MQO
Responsible person/Report method/Verified by	<ul style="list-style-type: none"> ▪ Personnel responsible for recording the MQO ▪ Method of documenting the MQO ▪ How it is verified that the MQO was met
Acceptance criteria	Frequency and Acceptance Criteria for each MQO
Failure response	Corrective Action, if necessary, is implemented at each step, before proceeding to the next step

Summary

- All stakeholders should be involved in project planning
- A well-developed CSM, agreed upon by stakeholders, provides the basis for development of DQOs
- DQOs provide the basis for project-specific MPCs
- MPCs guide the development of the sample design
- Performance of the sample design is controlled by MQOs
- A project-specific decision tree guides field decision-making

3. PROJECT ORGANIZATION AND PERSONNEL

Jordan Adelson, Ph.D.
Navy Laboratory Quality and
Accreditation Office (LQAO)



Project Organization and Personnel

- Project organization
- Personnel qualifications and sign-off
- Communication pathways
- Project tasks and schedule

WS3 and 5: Project Organization and QAPP Distribution

- Identify key project personnel, lines of authority, and lines of communication among DoD, prime contractor, subcontractors and regulatory agencies
- References
 - Figure 3-1: Geophysical survey organization
 - Figure 3-2: Explosives Safety Operations organization
 - Can reference separate document for Explosives Safety Operations organization
- “TBD” for unassigned roles
 - Permissible for draft QAPP
 - Final approved QAPP must identify all key personnel

WS3 and 5: Project Organization and QAPP Distribution

- Worksheet can be used for document control
- Document recipients of controlled copies of the QAPP
 - Can use asterisks or other symbols to designate QAPP recipients
 - Alternatively, may attach a list of QAPP recipients and their contact information
- Provide draft QAPP, final QAPP and any changes/ revisions to all QAPP recipients on this chart
 - Contractors and subcontractors are responsible for document control within their organizations

WS3 and 5: Project Organization and QAPP Distribution

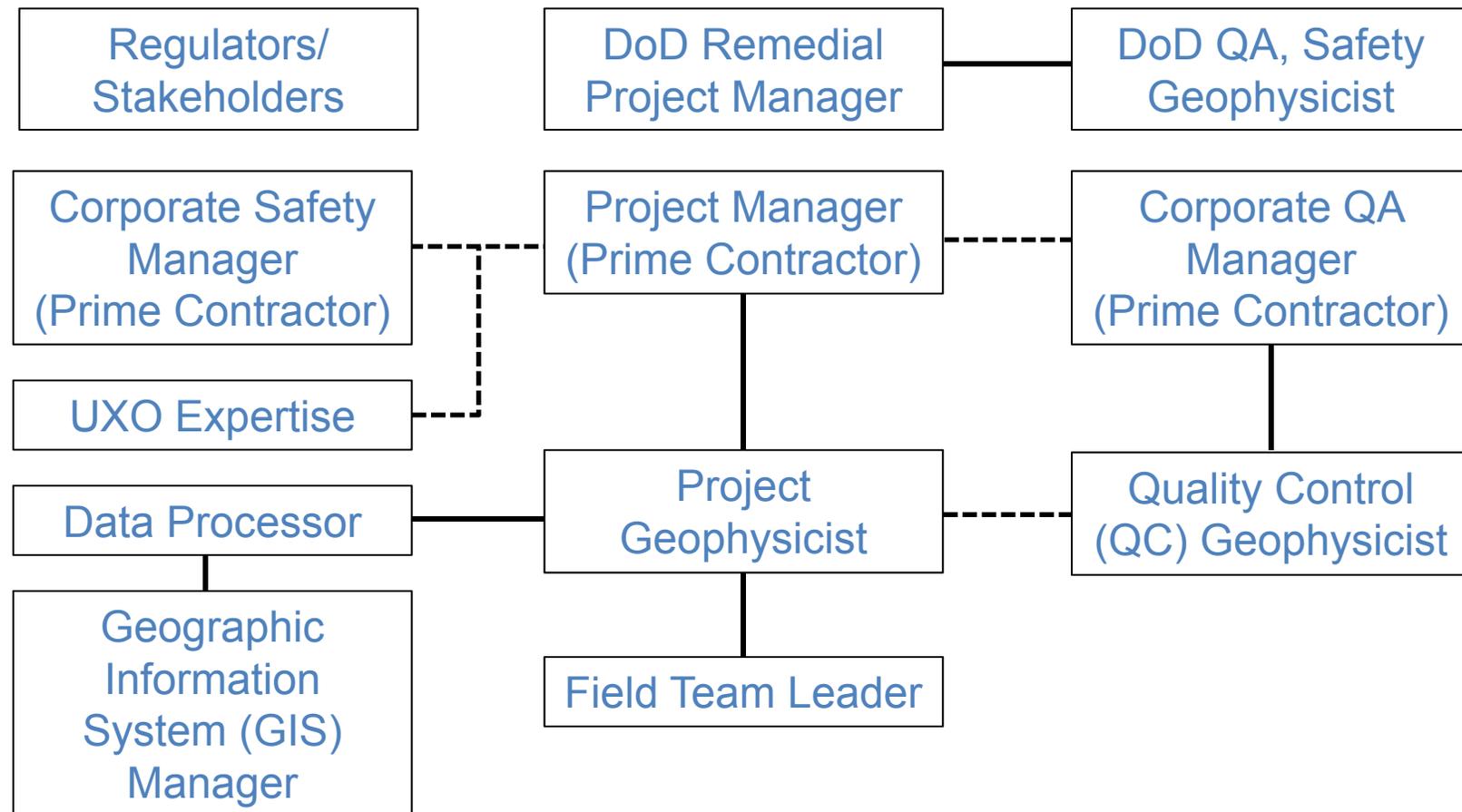


Figure 3-1: Geophysical Survey Organization

WS3 and 5: Project Organization and QAPP Distribution

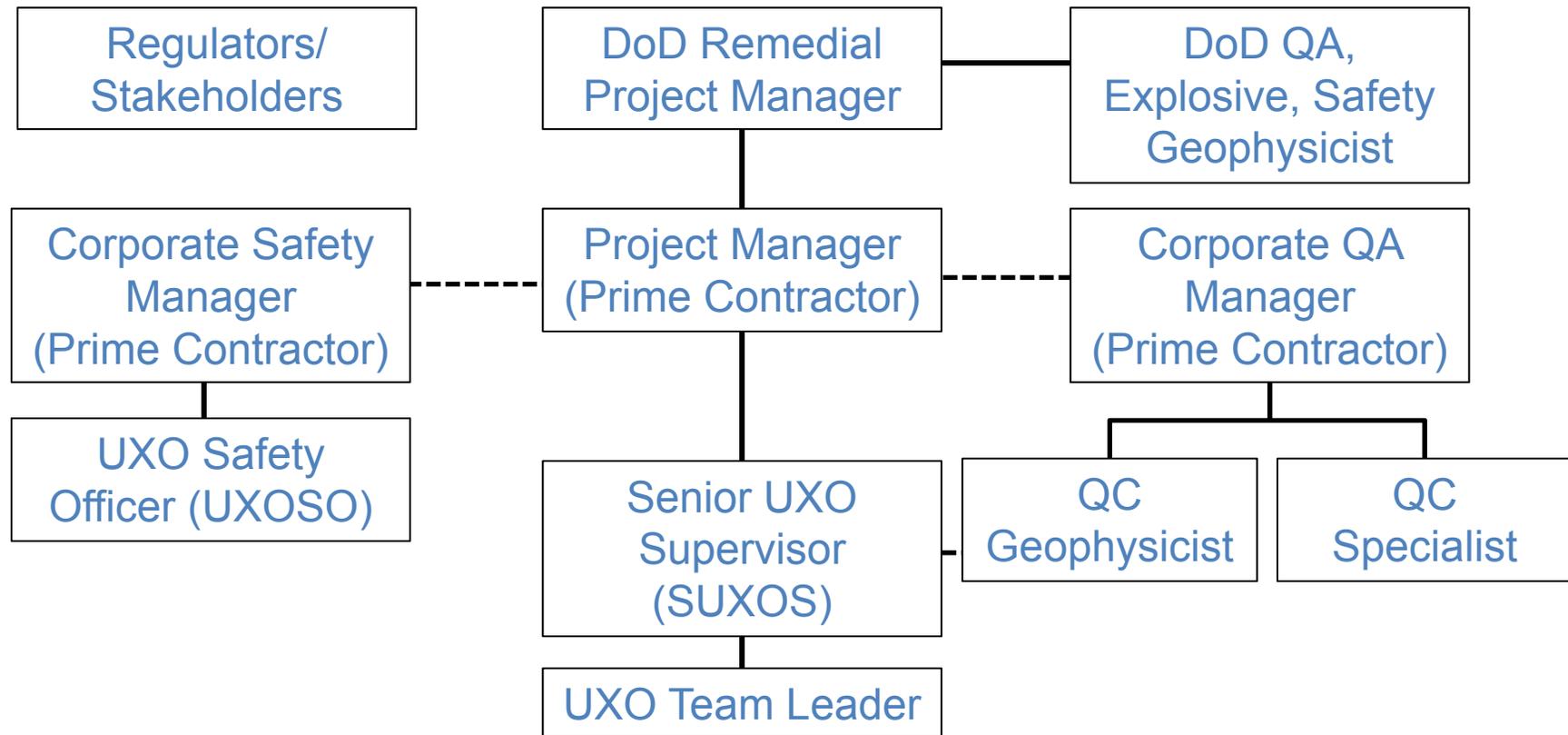


Figure 3-2: ESO Organization

WS4,7 and 8: Personnel Qualifications and Sign-off Sheet

- Identify key personnel for each organization performing tasks defined in QAPP
 - Summarize title or role and qualifications
 - Identify specialized training, licenses, certifications
 - Qualified personnel may fill more than one role
- Include resumes and documentation of relevant experience and training
 - QAPP appendix
- Collect signatures
 - Personnel must read the QAPP and agree to implement it as written
- It is outside the scope of this document to establish minimum qualifications for personnel

WS4,7 and 8: Personnel Qualifications and Sign-off Sheet

Name Contact Information	Project Title/Role	Education/Experience ¹	Specialized Training	Required Licenses/ Certifications ²	Date Signed
	Project Manager	M.S. Chemistry __ years managing munitions response projects PM for __ advanced classification projects			
	Corporate QA Manager	B.S. Civil Engineering Corporate QC manager for __ years Oversight of __ munitions response projects			
	Corporate Safety Manager	M.S. Industrial Engineering		Certified Industrial Hygienist	

¹ Include resumes in an appendix

² Include any State-specific requirements in this column

WS6: Communication Pathways

- One of the first issues addressed during planning
- Identifies issues (communication drivers) that will trigger the need for formal communications
 - Regulatory agency interfaces
 - Approvals to proceed from one definable feature of work (DFW) to the next
 - Field changes
 - Emergencies, non-conforming work, stop-work orders
- Identifies responsibilities, procedures, timing and documentation
- Critically important for dynamic nature of field decision-making

WS6: Communication Pathways

Communication Driver	Initiator (name, project title)	Recipient (name, project title)	Procedure (timing, pathway, documentation)
Regulatory agency interface	Name, DoD RPM	Name, Regulatory Organization	DoD RPM provides weekly project update memorandum to Regulator via email
Stop work due to safety issues	Name, Contractor SUXOS	Name, Contractor PM	As soon as possible following discovery, the SUXOS informs Contractor PM by phone of critical safety issues and generates follow-up Stop Work Memorandum
Minor QAPP changes during project execution	Name, QC Geophysicist	Name, Corporate QC Manager and Name, Project Geophysicist	Minor QAPP changes will be noted on the Daily QC reports and forwarded to the Project Geophysicist and the Corporate QC Manager at the end of each day
Major QAPP changes during project execution	Name, Contractor PM	Name, DoD RPM Name, Contractor QA manager	Within 24 hours, Contractor PM submits field change request form to Corporate QA Manager and DoD RPM for approval. Following approval, DoD RPM informs regulator via email
Mobilization and surface clearance activities are complete	Name, Contractor SUXOS	Name, Contractor PM	Upon completion of surface clearance activities, the SUXOS informs the Contractor PM via Surface Clearance Memorandum

WS14/16: Project Tasks and Schedule

- QAPP should include a project schedule
 - List specific tasks, person or group responsible for execution, and planned start and end dates
- Use WS14/16 template or attach/reference Gantt chart
- List key on-site and off-site activities
- Highlight critical steps and dates

Summary

- Clearly defined roles and responsibilities are critical to effective project execution
- Communication drivers and pathways are planned in advance, enabling rapid response and corrective action in the event of unexpected, nonconforming or emergency events
- Stakeholders know in advance when and how the status of the project will be communicated to them

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Part 2 of this training will be offered
on Thursday June 16, 2016

Register at

[https://serdp-estcp.org/Tools-and-Training/Webinar-Series/
06-16-2016](https://serdp-estcp.org/Tools-and-Training/Webinar-Series/06-16-2016)



SERDP and ESTCP Webinar Series

For additional information, please visit
<https://www.serdp-estcp.org/Program-Areas/Munitions-Response>

Speaker Contact Information

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william.corl@navy.mil; 757-322-4768



SERDP and ESTCP Webinar Series

Q&A Session 2



SERDP and ESTCP Webinar Series

The next webinar is on
June 2, 2016

“Insensitive Munitions: Environmental Health
Criteria, Fate and Transport”



Survey Reminder

Please take a moment to complete the survey that will pop up on your screen when the webinar ends



List of Acronyms

- A: Ampere
- A/E/C: Architecture, Engineering, and Construction
- AGC-QAPP: Advanced Geophysical Classification Quality Assurance Project Plan
- bgs: Below Ground Surface
- CA: Corrective Action
- CAR: Corrective Action Request
- CSM: Conceptual Site Model
- DDESB: Department of Defense Explosives Safety Board
- DFW: Definable Feature of Work
- DGM: Digital Geophysical Mapping
- DMM: Discarded Military Munitions
- DoD: Department of Defense
- DQI: Data Quality Indicator
- DQO: Data Quality Objective
- DUA: Data Usability Assessment
- EMI: Electromagnetic Induction

List of Acronyms (Cont'd)

- EPA: U.S. Environmental Protection Agency
- ESRI: Environmental System Research Institute
- ESTCP: Environmental Security Technology Certification Program
- FUDS: Formerly Used Defense Sites
- GIS: Geographic Information System
- GPS: Global Positioning System
- HAZWOPER: Hazardous Waste Operations and Emergency Response
- IDQTF: Intergovernmental Data Quality Task Force
- IMU: Inertial Measurement Unit
- ISO: Industry Standard Object
- ISO 80: Schedule 80 small Industry Standard Object
- ISO/IEC: International Organization for Standardization/International Electrotechnical Commission
- ITRC: Interstate Technology Regulatory Council
- IVS: Instrument Verification Strip
- MC: Munitions Constituents
- MEC: Munitions and Explosives of Concern

List of Acronyms (Cont'd)

- MPC: Measurement Performance Criteria
- MQO: Measurement Quality Objective
- PA: Preliminary Assessment
- pdf: Portable document format
- PM: Project Manager
- QA: Quality Assurance
- QC: Quality Control
- QAPP: Quality Assurance Project Plan
- RA: Remedial Action
- RCA: Root Cause Analysis
- RI/FS: Remedial Investigation/Feasibility Study
- RPM: Remedial Project Manager
- SDSFIE: Spatial Data Standards for Facilities, Infrastructure, and Environment
- SI: Site Inspection
- SNR: Signal to noise ratio
- SOP: Standard operating procedure

List of Acronyms (Cont'd)

- SPP: Systematic Planning Process
- SUXOS: Senior UXO Supervisor
- TBD: To be determined
- TPP: Technical Project Planning
- TOI: Target of Interest
- Tx/Rx: Transmit/receive
- UFP QAPP: Uniform Federal Policy for Quality Assurance Project Plans
- USACE: U.S. Army Corps of Engineers
- UXO: Unexploded Ordnance
- UXOQCS: Unexploded Ordnance Quality Control Specialist
- UXOSO: Unexploded Ordnance Safety Officer