

Management of Advanced Classification Projects

Overall Goal of Advanced Classification: remove anomalies identified as potential TOI while minimizing unnecessary excavations

- **Technical Project Planning (TPP)**
 - Data Quality Objectives (DQOs)
 - EPA seven-step Process
 - Munitions List for the project
 - Typically 37mm and larger
 - 20mm issues
 - Site-Specific Classification Library
 - Subset of Comprehensive Classification Library
 - Includes all known or suspected Munitions for the site
 - Initial Discussion of Decision Rules
 - Dynamic Surveys
 - Cued Surveys
 - Intrusive Surveys

Quality Assurance Project Plans (QAPP)

- **QAPP Worksheets to develop and document data acquisition and decision strategies**
- **Standard Operating Procedures (SOPs)**
 - Contractor SOPs
 - Reviewed by client and accreditation body
- **Safety Elements**
 - Accident prevention plan / site safety and health plan
 - Explosive Safety Submission
 - Explosives Management Plan
- **Seeding Requirements**
 - Blind Seed Firewall Plan
 - Seed Detector vs Munitions Detector

Logistics

- **Personnel**

- Geophysicists
 - Project, site, data collection, data processing, QC
- UXO
 - SUXOS, UXO SO, UXO QC, Tech III, Tech II

- **Equipment**

- Advanced EMI Sensors
 - MetalMapper
 - TEMTADS
 - MPV
- Tow Vehicles
 - Skid Steers
 - Tractors
 - Fork Lifts



Data Collection

- **Dynamic Detection Data**

- Advanced Sensor Dynamic Detection
- EM61-Mk2 Towed Arrays

- **Cued Data**

- **QC Checks**

- Function Tests
- IVS Tests

- **MPCs**

- QC Seeding
- Analog Removal
- Detection Survey
- Classification Survey
- Intrusive investigation

- **Field Change Requests (FCRs)**

- Document changes that need to be updated that were not anticipated during the Development of the QAPP
 - Change in sensor configuration
 - Modification of Function Tests, Target Threshold
 - Powerline and Topographic issues
 - Survey Unit modification
 - IMU Verification Tests

Worksheet #12: Measurement Performance Criteria

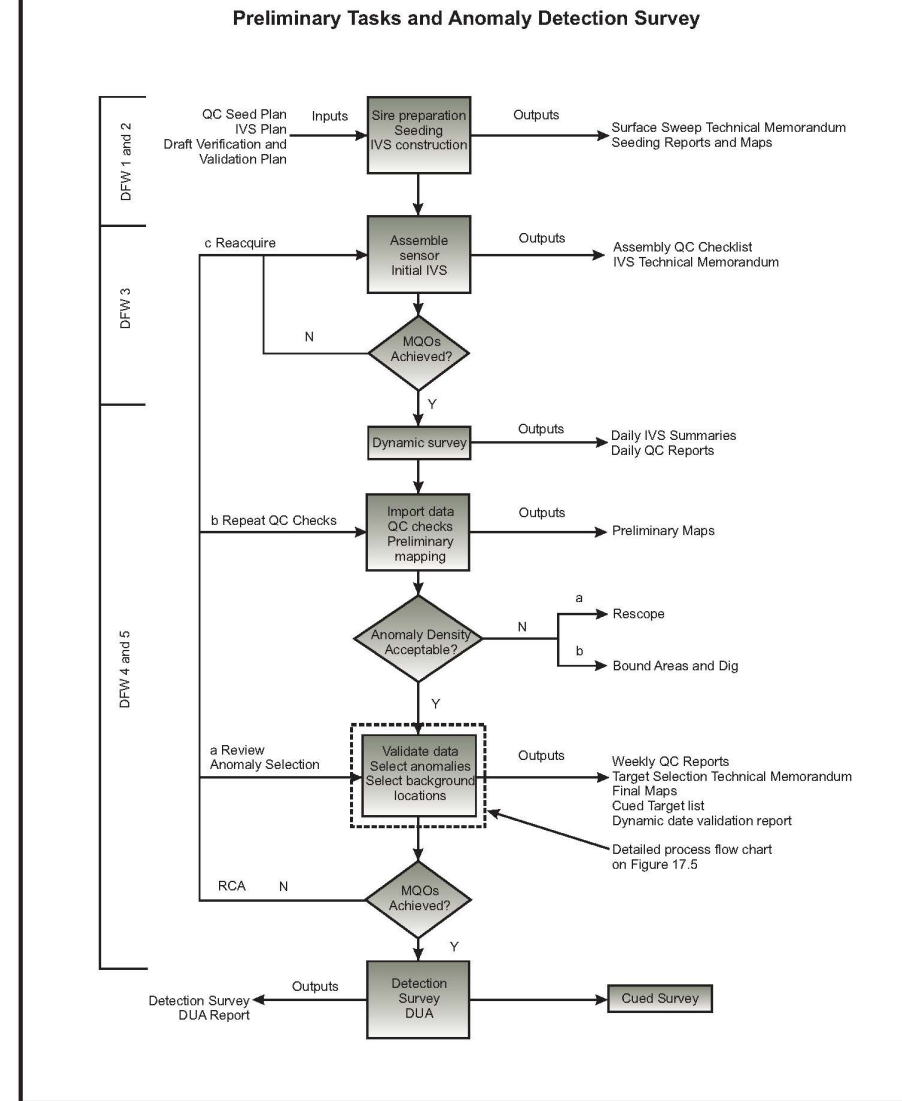
(IDQTF UFP-QAPP Guidance Manual, Section 2.6.2; EPA Guidance QA/G-5, Section 2.1.7)

Measurement Performance Activity (or DFW)	Data Quality Indicator	Specification	Activity Used to Assess Performance
QC Seeding (Analog)	Representativeness	UXOQCS or designee places small ISOs at a depth of 25 cm as blind seeds in analog removal area(s) in accordance with the seed plan.	Review of Production Area QC Seeding Report
QC Seeding (DGM)	Representativeness	Blind QC seeds will be placed at the site by the contractor. Blind QC seeds must be detectable as defined by the DQOs (11.4) and located throughout the horizontal and vertical survey boundaries defined in the DQOs (11.4). Seed items will consist of 2-inch long 5/8" bolts; small schedule 80 industry standard objects (ISOs); medium schedule 40 ISOs and inert 20-mm, 37-mm, and 57-mm projectiles, as available. 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
Analog Removal	Completeness/Accuracy/Comparability	100% of blind seeds must be recovered.	Review of seed recovery results
Detection Survey (DGM)	Completeness	100% of the site is surveyed	Verification of conformance to MQOs for in-line spacing and cross-line spacing (see Worksheet #22)
Detection survey (DGM)	Sensitivity	MetalMapper: The response and dipole filter and amplitude detection thresholds will be set to detect a horizontal 37 mm projectile at a depth of 10 inches bgs EM61-MK2: The EM61-MK2 detection threshold will be set to detect a horizontal 37 mm projectile at a depth of 10 inches bgs	Initial and ongoing function tests and IVS surveys Validation/QC seed detection Analysis of background variability across the site
Detection survey (DGM)	Accuracy/Completeness	100% of validation seeds must be detected	Review of validation seed detection results per survey unit
Detection survey (DGM)	Accuracy/Completeness	100% of dynamic source screening QC targets must be non-TOI	Review of classification results for QC targets and dig results for any classified as likely TOI

Data Processing

- **Dynamic Detection Data and Cued Data**
 - Processing Flow / Data Management
 - QC Checks
 - Function Tests
 - IVS Tests
 - Seed offset
 - Deliverables
 - Zip files (2Gb type file size) on transfer site
- **Subcontractor Processing**
 - Coordination
 - Accreditation issues

FIGURE 17.2 Geophysical Classification Decision Tree — Preliminary Tasks and Anomaly Detection

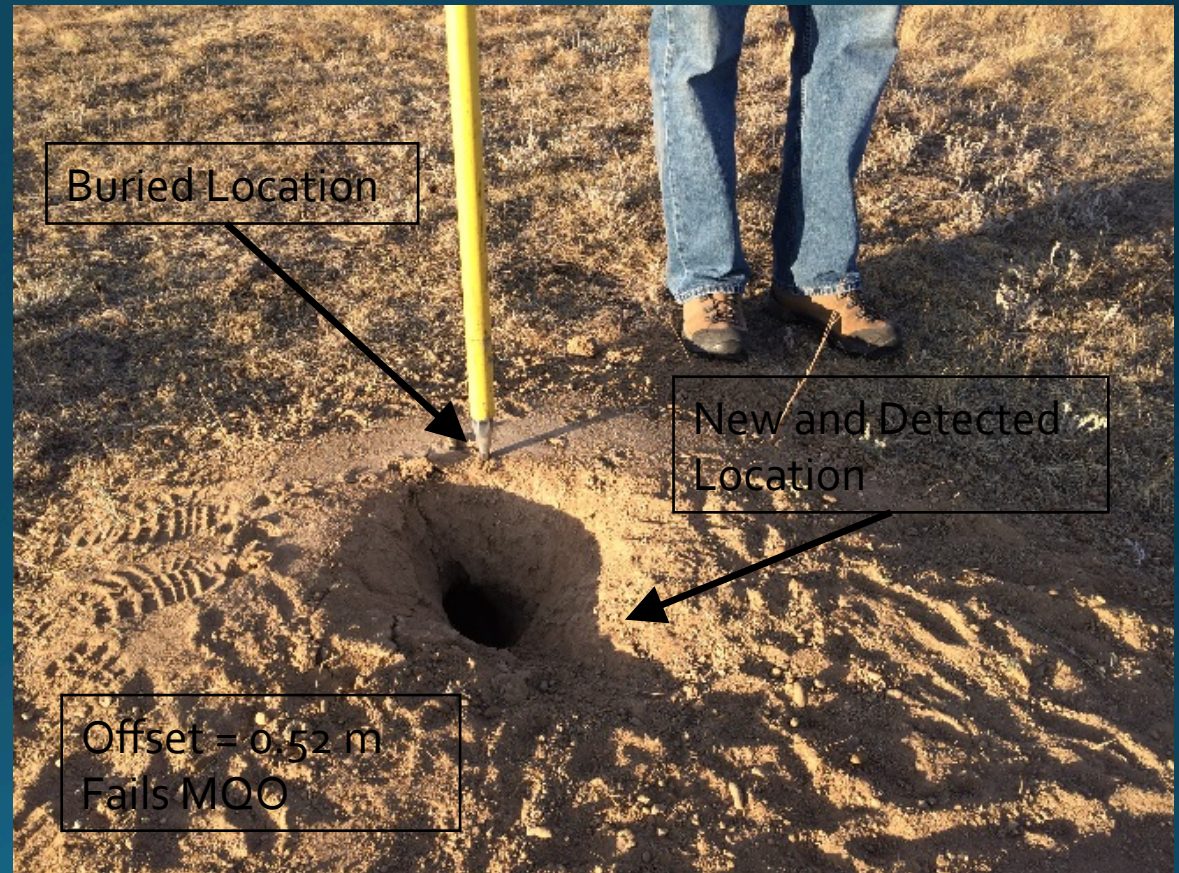


Quality Control / Quality Assurance (QA/QC)

- **MQO Documentation**
- **Seeding**
 - QC Seeding
 - Verify the process (not a seed detector)
 - Discuss challenges
 - QA Validation Seeding
- **QC Review/Stand down**
 - Which Tasks come to a stop?
 - Which Tasks are not impacted?
 - Fix the problem
 - If the contractor is not at fault for missing a validation seed, are they compensated for down time?

Quality Control / Quality Assurance (QA/QC)

- QC Seed Item Migration
 - Originally buried in 2015
 - Prairie Dog activity moved the item 0.52 meters between dynamic and cued surveys.
 - Cued data correctly identified the new location, but did not match original location.
 - Would the project stop work if this were a validation seed item?
 - Where is Bill Murray when you need him?



Reporting

- Daily and Weekly Reports
- QC Reports
- DUAs to validate:
 - Dynamic Detection Survey Data
 - Cued Data/Dig List
 - Final Results
- Access Database:
 - Dynamic Detection
 - EM61
 - MM
 - Cued Targets
 - Data collection
 - Classification
 - QC
 - Intrusive
 - Analog
 - Standard
 - AC



DAILY STATUS REPORT
Removal Action at the GM MRS
U.S. Army Corps of Engineers, Omaha District

W9128F-10-D-0063, Task Order 0001
Former Lowry Bombing and Gunnery Range;
Arapahoe County, Colorado

10 November 2015

2



Weekly STATUS REPORT
Removal Action at the GM MRS
U.S. Army Corps of Engineers, Omaha District

1. GENERAL
Contract:
Project Location:

W9128F-10-D-0063, Task Order 0001
Former Lowry Bombing and Gunnery Range
Arapahoe County, Colorado

FLBGR GM MRS REMOVAL ACTION
DATA USABILITY ASSESSMENT
FOR
DETECTION SURVEY DATA

1. INTRODUCTION

The purpose of this memorandum is to summarize the results of the data usability assessment conducted for the digital geophysical mapping (DGM) detection survey performed for the Former Lowry Bombing and Gunnery Range (FLBGR) Imperator et Apparatus (GM) munitions response site (MRS) Removal Action (RA). This data usability assessment was conducted in accordance with the process laid out on Worksheet #37 of the approved Uniform Federal Policy Quality Assurance Project Plan (QAPP) for the FLBGR GM MRS RA.

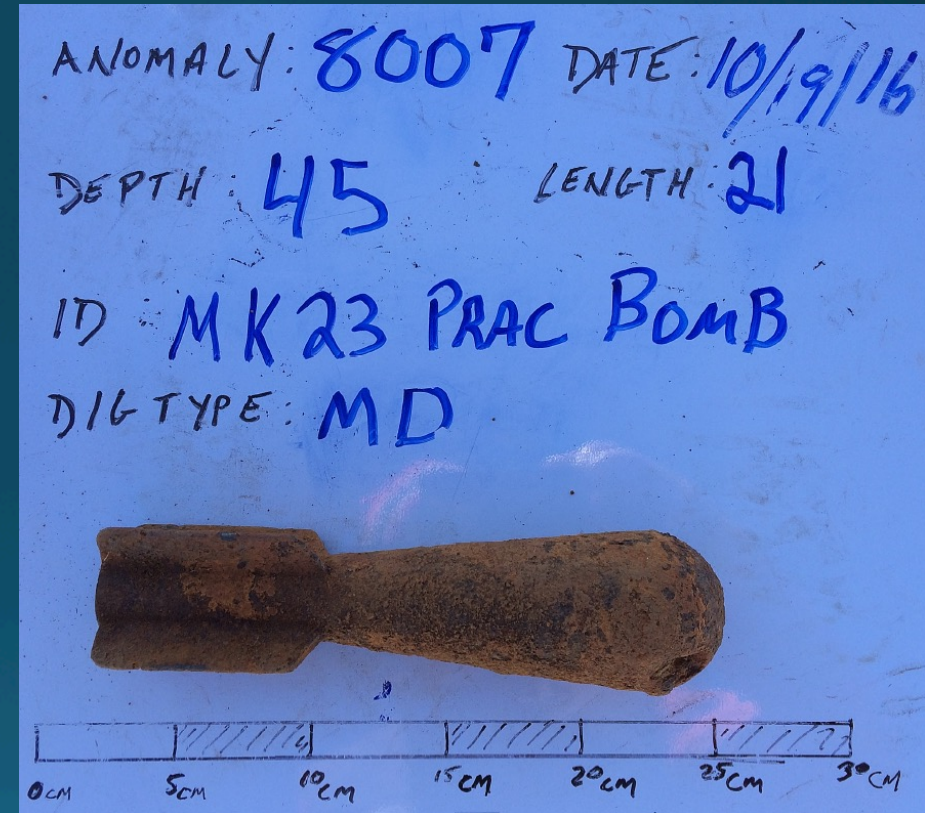
Challenges

- **Implementation**
 - Weather
 - Inclement weather Delays
 - Snow
 - Logistics
 - Personnel
 - Equipment
 - Software Issues
 - TEM₂CSV and UX Analyze
 - Inertial Measurement Unit correction
 - Equipment breakdown
 - MetalMapper
 - TX and RX board issues



Intrusive Investigation

- Increased Documentation
 - Photographs and whiteboard information for each intrusive excavation
- Verification Digs
 - Library matching process
 - Stop dig threshold
- Validation Digs
 - Cluster analysis
 - Feature space
 - Random selection



Accreditation Challenges

- **Current AC Projects**
 - Accreditation easier if you have a current AC project
- **Contractor and outside audits**
- **Consequences of QA Validation Seed Failures**
 - Prairie dog incident: Stop Work? Cost? Resolution?

