

Appendix G

USACE Digital QA Procedures

APPENDIX G

USACE DIGITAL QA PROCEDURES

G.1 OVERVIEW OF QA

A quality management program defines specific processes for ensuring that program and project objectives are properly defined and attained. The general objective of geophysical investigations is to efficiently locate OE/UXO for proper evaluation, recovery, and disposition. The project team defines a project's specific geophysical investigation objectives, which must be risk-based, measurable, and attainable.

QC is an evaluation performed by the contractor to ensure that the work performed meets prescribed requirements and complies with applicable laws, regulations, and sound technical practices.

QA is a review by the USACE of the overall effectiveness of the contractor's QC program, processes, and compliance of work by others. The QA procedures are the process by which the Government fulfills its responsibility of being certain that QC is functioning and that site operations were performed IAW the SSWP.

G.2 ANALOG QA PROCEDURES

The USACE will be responsible for performing analog QA on all aspects of the investigation and removal activities in the Ranges 43–48 IA site. Analog QA procedures in the Ranges 43–48 IA site will include the USACE OESS inspecting at least 10% of each grid with a Schonstedt GA-52/Cx magnetometer to check for any additional undetected targets after the grid has been inspected by Parsons' UXOQC (with a Schonstedt as well).

G.3 DIGITAL QA PROCEDURES

Before the USACE OESS's final analog QA inspection, digital QA procedures will be implemented during the Parsons' digital geophysical operations.

Several of the digital QC/QA procedures are similar to the analog procedures, including the observation of field procedures and activities. In addition to these procedures, digital QA entails collecting site-specific data that is used to comprehensively analyze the entire digital geophysical survey—from data acquisition to processing and interpretation. This detailed analysis will be performed away from the field.

The collected data will be used to evaluate the following aspects of the digital geophysical survey: signal levels and repeatability (compared to QC and QA surveying); precision and accuracy of locations; adequacy of site coverage from survey track plots; and the detection and discrimination capabilities of the instruments (from signal response levels in the site-specific soil and vegetation conditions).

In addition, the collected data will be used to evaluate the performance of personnel. Geophysical instrument operators will be evaluated by observing their instrument operation, data acquisition, and reacquisition procedures. Geophysical data processors will be evaluated by analyzing the quality of the data processing, as shown in the initial and final processed data files and the target selection/interpretation results listed in the dig sheets.

The digital QA process will entail five other major components that are described in subsections G.3.1–G.3.5:

- (1) Monitoring the clearance of metallic clutter from the surface
- (2) Monitoring the acquisition of digital field data
- (3) Monitoring the management of digital data
- (4) Independent surveying
- (5) Seeding OE-scrap targets

G.3.1 MONITORING CLEARANCE OF SURFACE CLUTTER

The USACE OESS will monitor the clearance of metallic objects from the surface (section 2.3.5), which will be performed before the digital geophysical survey begins to reduce surficial noise and increase the probability that deeper OE targets are detected.

G.3.2 MONITORING DIGITAL FIELD DATA ACQUISITION

USACE geophysicists will monitor and evaluate the acquired and processed data. Any data that indicates one the following problems will be noted and then either reacquired or reprocessed by Parsons:

- (1) Missing survey lines within a grid.
- (2) Data “gaps” along survey lines.
- (3) Bowing out of survey lines beyond 50% of survey line spacing.
- (4) Unreasonable data “spikes.”
- (5) Data incongruity across survey grids (data levels in one grid are not reasonably compatible with data levels in neighboring grids).
- (6) Data density along survey traverse.
- (7) Lack of accurate, precise locations; survey line orientation.
- (8) Inadequate site coverage.
- (9) Missing or noncompliant instrument standardization checks.

G.3.3 MONITORING THE MANAGEMENT OF DIGITAL DATA

All data files will be checked to ensure that they follow an appropriate and informative naming convention reflecting the grids surveyed. The USACE geophysicists will check that Parsons manages the field and processed data in a professional manner, including organization, daily maintenance, and complete documentation. The transfer and delivery of data will be monitored for meeting the agreed-upon deadline, and the accompanying documentation will be checked for completeness and accuracy. The USACE geophysicists will evaluate digital planimetric maps of the processed data, survey transects, and QC survey results. QC dig sheets and post-excavation information will also be evaluated. The USACE geophysicists will ensure that the Parsons geophysicists give full and careful consideration to subtle target responses.

G.3.4 INDEPENDENT SURVEYING

USACE geophysicists will conduct independent digital QA surveys of approximately 3–10% of the Ranges 43–48 IA site with the same digital instrument used by Parsons. The number of grids

and the amount of each grid subject to a digital QA survey is determined on a project-specific basis— actual digital geophysical QA protocols are being developed by the CENHC. A minimal amount of QA field surveying is necessary to record signal levels, instrument responses, and effects of vegetation and topography. This data will be used to check that Parsons' data is correct, consistent, and accurately represents the surveyed area. The 3–10% digital QA survey is deemed appropriate to meet the needs of the QA program in combination with the other components described in section G.2., and it meets the recommended minimum acreages listed in Table 7.4 of EM 1110-1-4009 [Ref. 28]. The Parsons QCM will track the digital QA survey.

G.3.5 SEEDING OE-SCRAP TARGETS

OE-scrap items recovered from previous investigations at the former Fort Ord will be seeded throughout the Ranges 43–48 IA site as part of the USACE digital QA program. First, the results of previous OE investigations in the surveyed area will be evaluated. Similar inert OE scrap items will then be seeded in a hybrid random/biased pattern over the site. Each OE-scrap item will be clearly marked (painted orange), and inventoried for easy identification. The locations of the QA-seeded OE-scrap items will be recorded with a Trimble Pro-XR GPS.

Some items will be seeded at depths equal to or beyond the expected detection capabilities of the geophysical instruments. This will be done to test the instruments' performance on items that are on the edge of their detection capabilities.

Overall, the QA seeding program is used to accomplish the following:

- (1) Check that data is acquired over the complete survey area
- (2) Evaluate instrument detection and discrimination capabilities in representative site-specific soil and vegetation conditions
- (3) Validate the digital geophysical survey (anomaly acquisition and reacquisition) and anomaly excavation procedures
- (4) Ensure that the digital geophysical survey and anomaly excavations are being integrated into a single, smoothly-operating OE investigation.