BROADWAY BYPASS
MEC REMEDIAL ACTION
TRACK 3 IMPACT AREA MRA
FORMER FORT ORD, CALIFORNIA

REMEDIAL ACTION OBJECTIVE

- Broadway Bypass:
  - 2.1 acres
  - 2,000 feet in length
  - 45 feet wide
- A part of the network of fuel break roads within the Impact Area MRA where, under the Track 3 ROD, subsurface removal will be conducted

REMEDIAL ACTION APPROACH

- Surface removal was previously completed

- DGM using advanced classification to identify subsurface anomalies requiring removal

- 2-phased DGM approach:

  - Dynamic detection survey to identify subsurface anomalies

  - Static classification survey to acquire more robust measurements at each detected anomaly location

- Modeling and classification of measured data to identify each anomaly source as a likely target of interest (TOI) or non-TOI

- Intrusive investigation and removal of anomaly sources classified as potential TOI

DYNAMIC DETECTION SURVEY

- April 13-April 19, 2017

- 2 acres surveyed with the Naval Research Laboratory TEMTADS

- Data processed by NAEVA Geophysics with UX-Analyze Advanced software

- Subsurface anomalies selected using a 2.5mV/amp threshold

- 5,021 selected subsurface anomalies

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STATIC CLASSIFICATION SURVEY

- April 24-July 10, 2017

- 5,021 anomalies surveyed with the TEMTADS in static mode

- Inversion modeling resulted in the identification of 5,216 individual anomaly source locations

  - 3,041 classified as high-confidence non-TOI (safe to leave in the ground)

  - 2,175 identified for intrusive investigation

Classification Category	Quantity	Dig/Do Not Dig
Category -1 (Training Digs)	61	Dig
Category 0 (Cannot Analyze)	12	Dig
Category 1 (High-Confidence TOI)	291	Dig
Category 2 (Inconclusive)	1,811	Dig
Category 3 (High-Confidence Non-TOI)	3,041	Do Not Dig
TOTAL	5,216	

INTRUSIVE INVESTIGATION AND SUBSURFACE REMOVAL

- September 13, 2017-February 21, 2018

- 50 recovered TOI

    - 30 TOI recovered from Category 1 targets (high-confidence TOI)

    - 20 TOI recovered from Category 2 targets (inconclusive)

- 2.3% of investigated anomalies had TOI sources

- 47.7% of investigated anomalies resulted in the recovery of MD

- 58.5% of investigated anomalies resulted in the recovery of 50cal small arms

- No TOI were recovered from the 104 Category 3 QA validation digs

RECOVERED TARGET OF INTEREST SUMMARY

Item	Quantity Recovered	Successfully Identified for Intrusive Investigation	Category -1[1]	Category 1[2]	Category 2[3]	MEC	MD[4]
Rocket Motor	1	1	0	1	0	0	1
Signal, Illumination	1	1	0	1	0	0	1
Projectile, 57mm, HE, M306 series	12	12	0	4	8	3	9
Projectile, 60mm, mortar, HE, M49 series	4	4	0	3	1	3	1
Projectile, 81mm, mortar, model unknown	15	15	0	7	8	0	15
Projectile, 105mm, model unknown	2	2	0	2	0	0	2
Projectile, 155mm, model unknown	1	1	0	0	1	0	1
QC Seed	10	10	0	9	1	N/A	N/A
Validation Seed	4	4	1	2	1	N/A	N/A

[1] Category -1 = Training Dig

[2] Category 1 = High-Confidence TOI

[3] Category 2 = Inconclusive

[4] Specific model and filler designations are listed for MEC items only. Specific model and filler designations for recovered MD items are unknown.

RECOVERED MEC ITEMS

- 6 recovered TOI were UXO
    - 5 were positively classified as Category 1 (high-confidence TOI)
    - 1 classified as Category 2 (inconclusive)

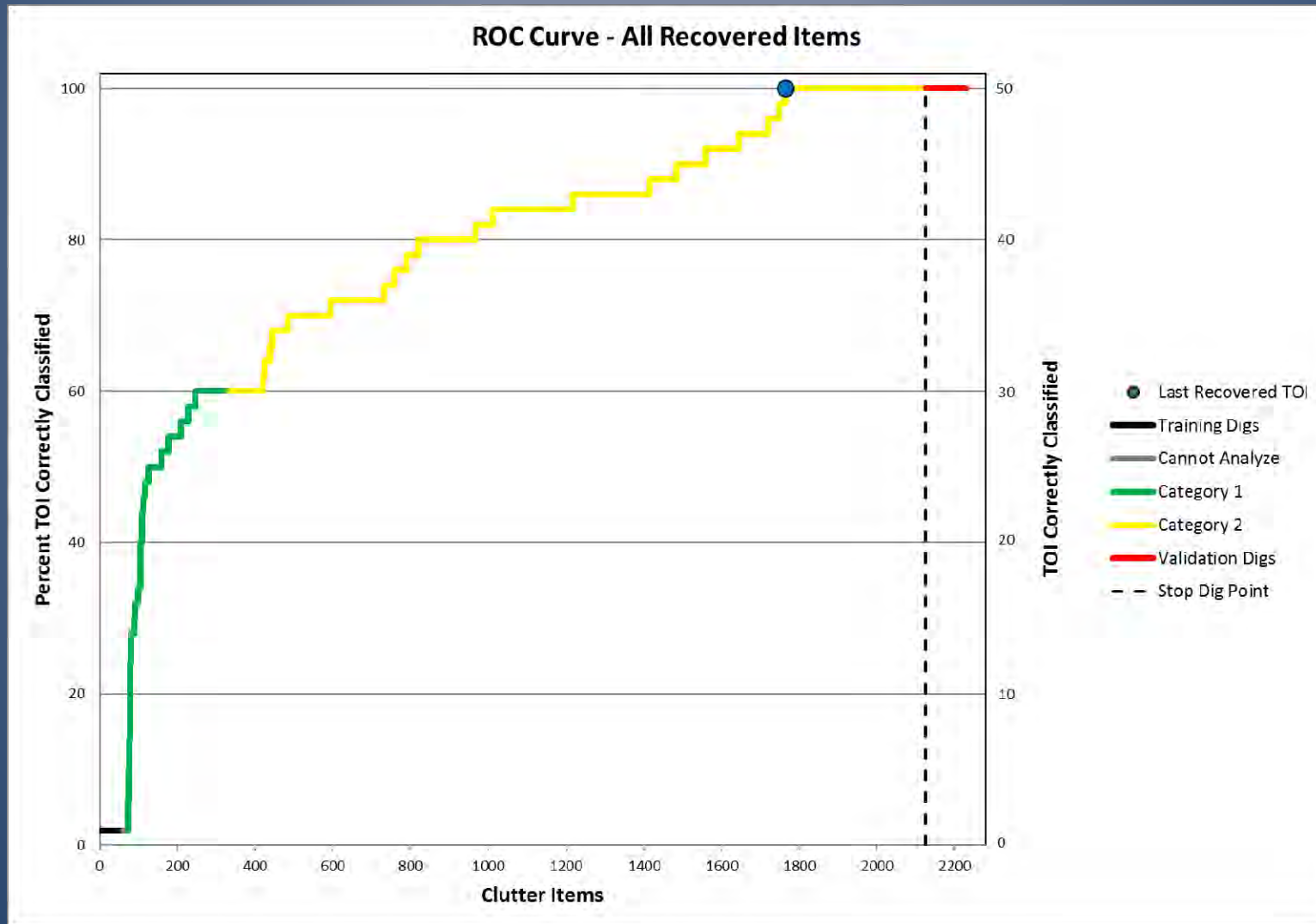| Flag ID	Type	Model Description	Recovery Depth (inches)	Classification Category[1]
1005	UXO	Projectile, 57mm, HE, M306 series	3	1
4013	UXO	Projectile, 57mm, HE, M306 series	12	2
5005	UXO	Projectile, 57mm, HE, M306 series	7	1
7004	UXO	Projectile, 60mm, mortar, HE, M49 series	24	1
7045	UXO	Projectile, 60mm, mortar, HE, M49 series	7	1
8014	UXO	Projectile, 60mm, mortar, HE, M49 series	6	1

[1] Classification Category 1 = High-Confidence TOI; Classification Category 2 = Inconclusive
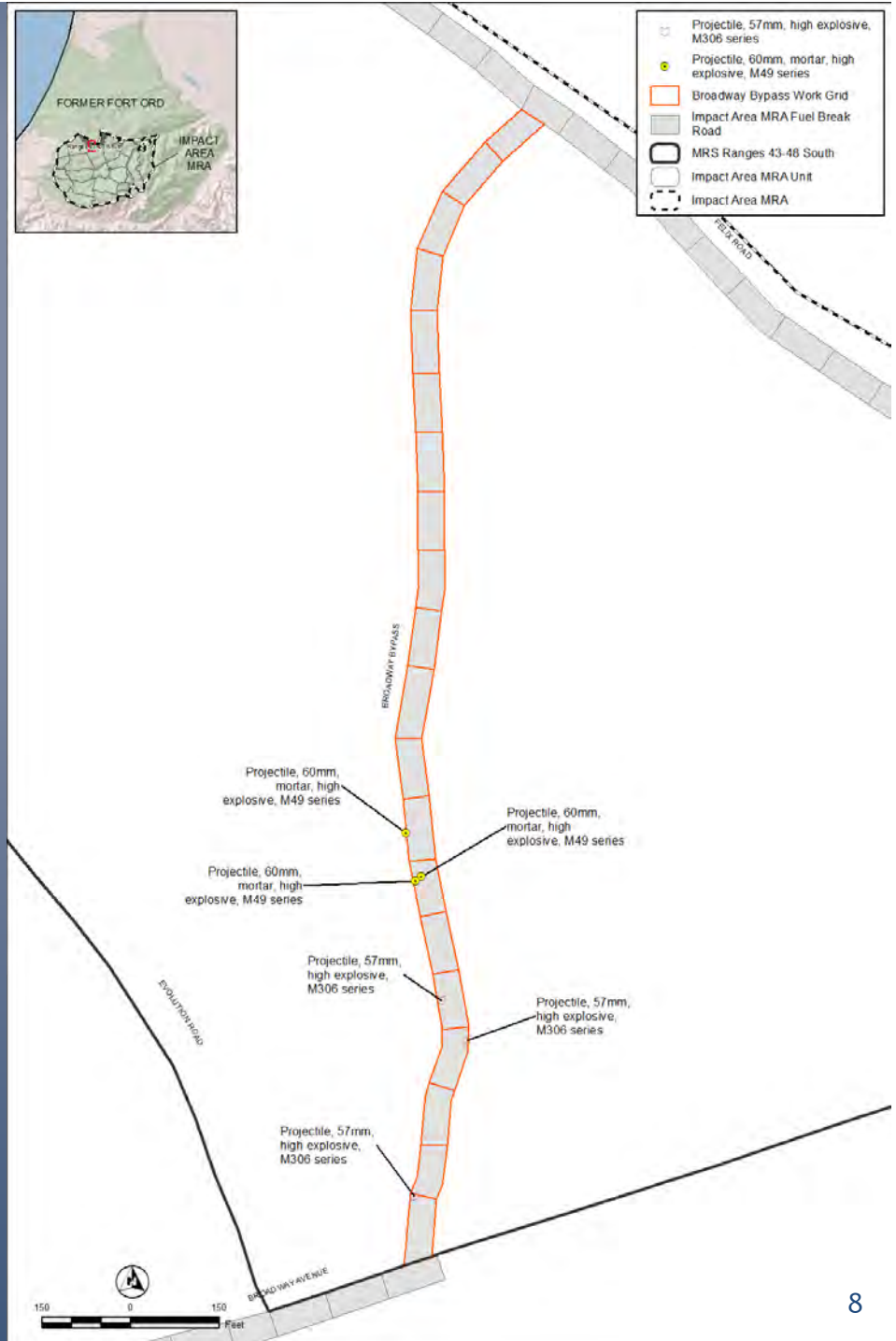
QUALITY CONTROL AND QUALITY ASSURANCE

- Quality Control verification activities:
  - Blind seeding (10 ISO-80 QC seed items)
  - MQO performance verification
  - Daily instrument verification (function tests and IVS surveys)
  - 360 library match threshold verification investigations
  - 11 cluster analysis verification investigations
  - Inspections of DGM and UXO activities and intrusive investigation results
- Quality Assurance validation activities:
  - Blind seeding (4 inert 40mm projectile QA seed items)
  - 104 QA validation investigations

ROC Curve - All Recovered Items

CLASSIFICATION PERFORMANCE
DECISION STATISTIC PLOT