

# Unit 23 Risk Reduction

Impact Area Munitions Response Area

Former Fort Ord, California

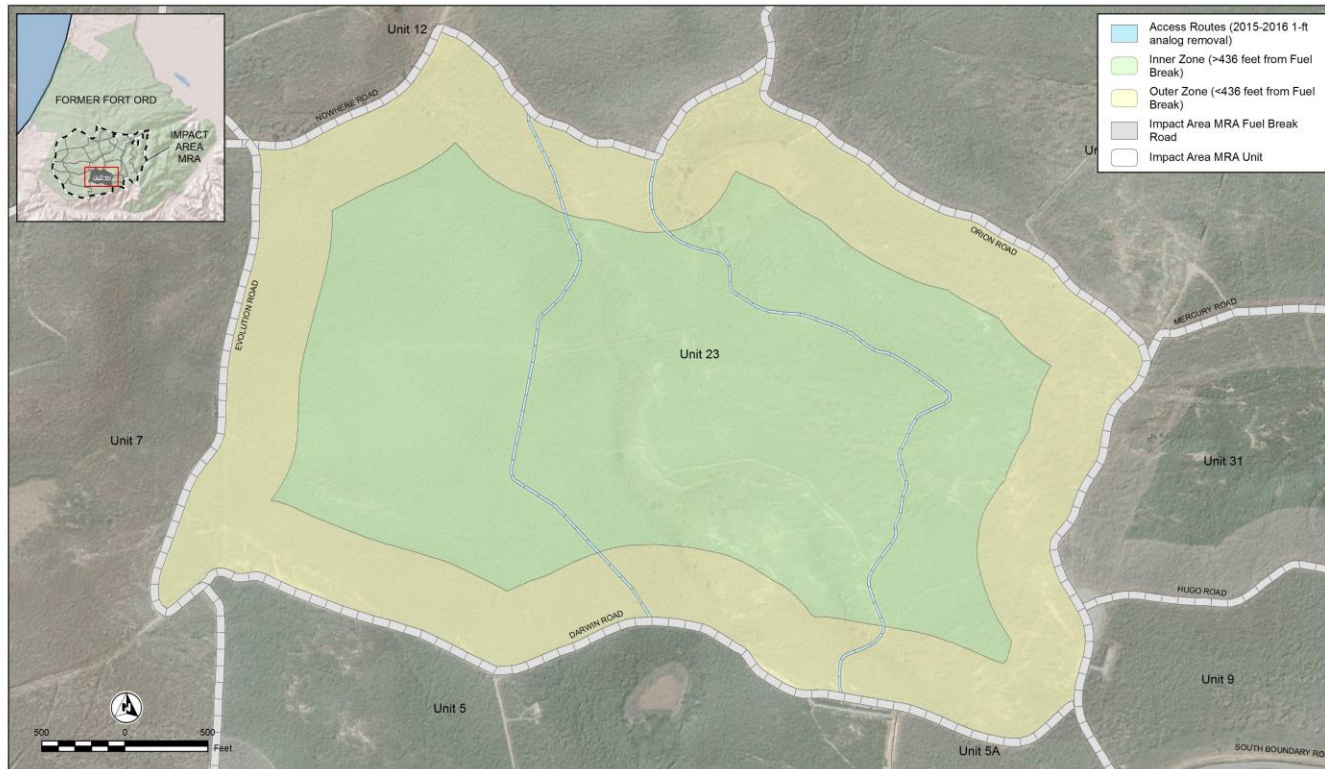
# Unit 23 Risk Reduction Objective

- Reduce risk to prescribed burn personnel by removing large, near-surface MEC that might unintentionally detonate during prescribed burn operations
- Targets of interest (TOI)
  - 155mm projectiles
  - 8-inch projectiles
  - Larger MEC

# Removal Depth Requirements

- Outer Zone (within 436 feet of fuel breaks)
  - Unintentional detonation presents a risk to burn personnel on perimeter fuel break roads
  - Removal of TOI to 2-foot depth
- Inner Zone (greater than 436 feet from fuel breaks)
  - Unintentional detonation presents a risk to support aircraft flying overhead
  - Removal of TOI to 1-foot depth

# Risk Reduction Zones




 Unit 23 Risk Reduction  
Former Fort Ord, California

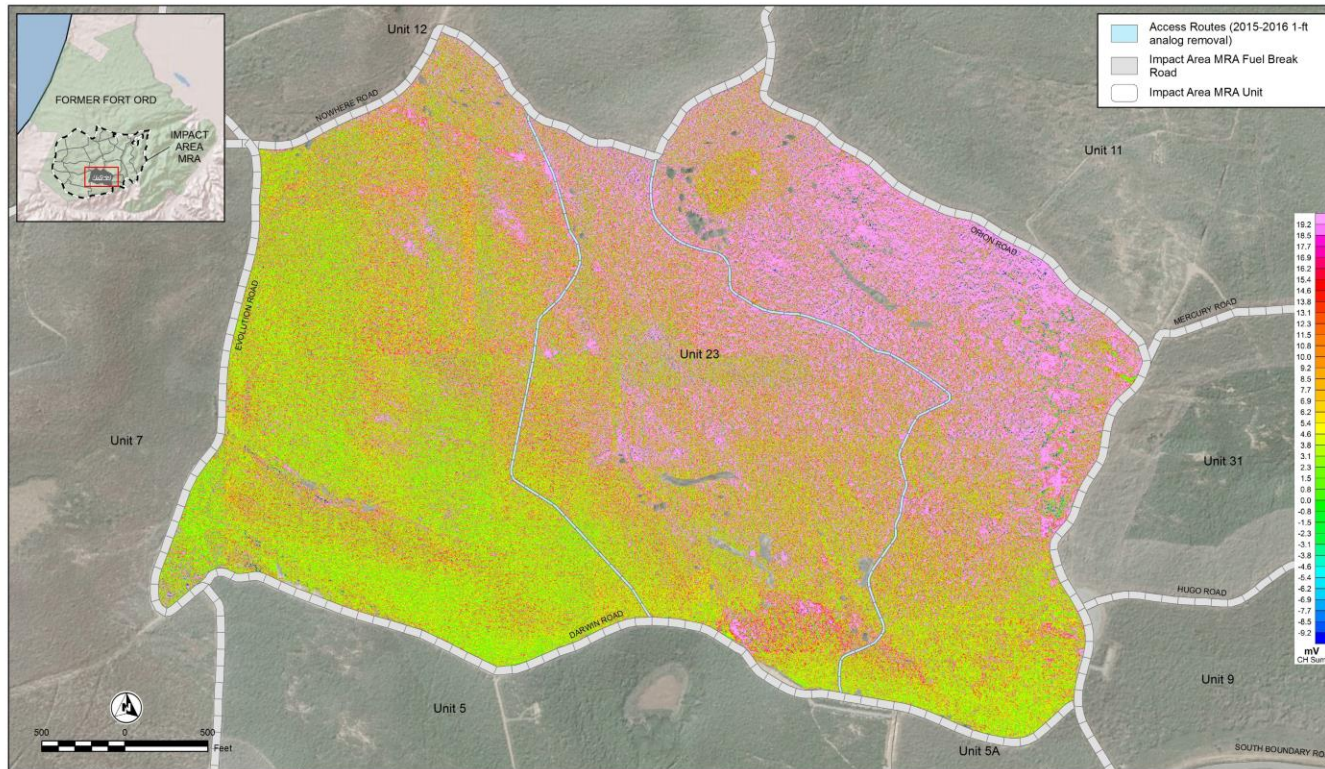
Figure 1  
Risk Reduction Zones

G:\A\50\SUSACE\Fat\_Oh\PROJECT\104\_7\4d\_Work\_2018\11\_25\_RR\Map\_Docs\102\_701\_Zones.mxd 3/14/2019 10:47 AM ADASCHO, Gilbane

# Risk Reduction Approach

1. EM61 Detection DGM survey
2. Cued MetalMapper 2x2 classification survey
  - Potential TOI
    - Category 0: Cannot Analyze
    - Category 1: High-Confidence TOI
    - Category 2: Inconclusive
  - Non-TOI
    - Category 3: High-Confidence Non-TOI
3. Intrusive investigation of potential TOI

# Detection DGM




 Unit 23 Risk Reduction  
Former Fort Ord, California

Figure 2  
Digital Geophysical Mapping Data

G:\Work\BUSA\Fort\_Ord\PROJECT\104\_7\_Hel\_Wrk\_2018\H1\_25\_RR\Map\_Docs\103\_701\_DGM\_Data.mxd 3/14/2019 10:50 AM AD\KCHD, Gilbane

# Anomaly Selection

- Based on minimum response of a 155mm projectile
- Target selection thresholds
  - Outer Zone: 114mV
  - Inner Zone: 446mV
- 1,279 detected targets
  - Outer Zone: 1,258 targets
  - Inner Zone: 21 targets

# Classification Survey Locations




 Unit 23 Risk Reduction  
Former Fort Ord, California

Figure 3  
Detected Subsurface Anomalies

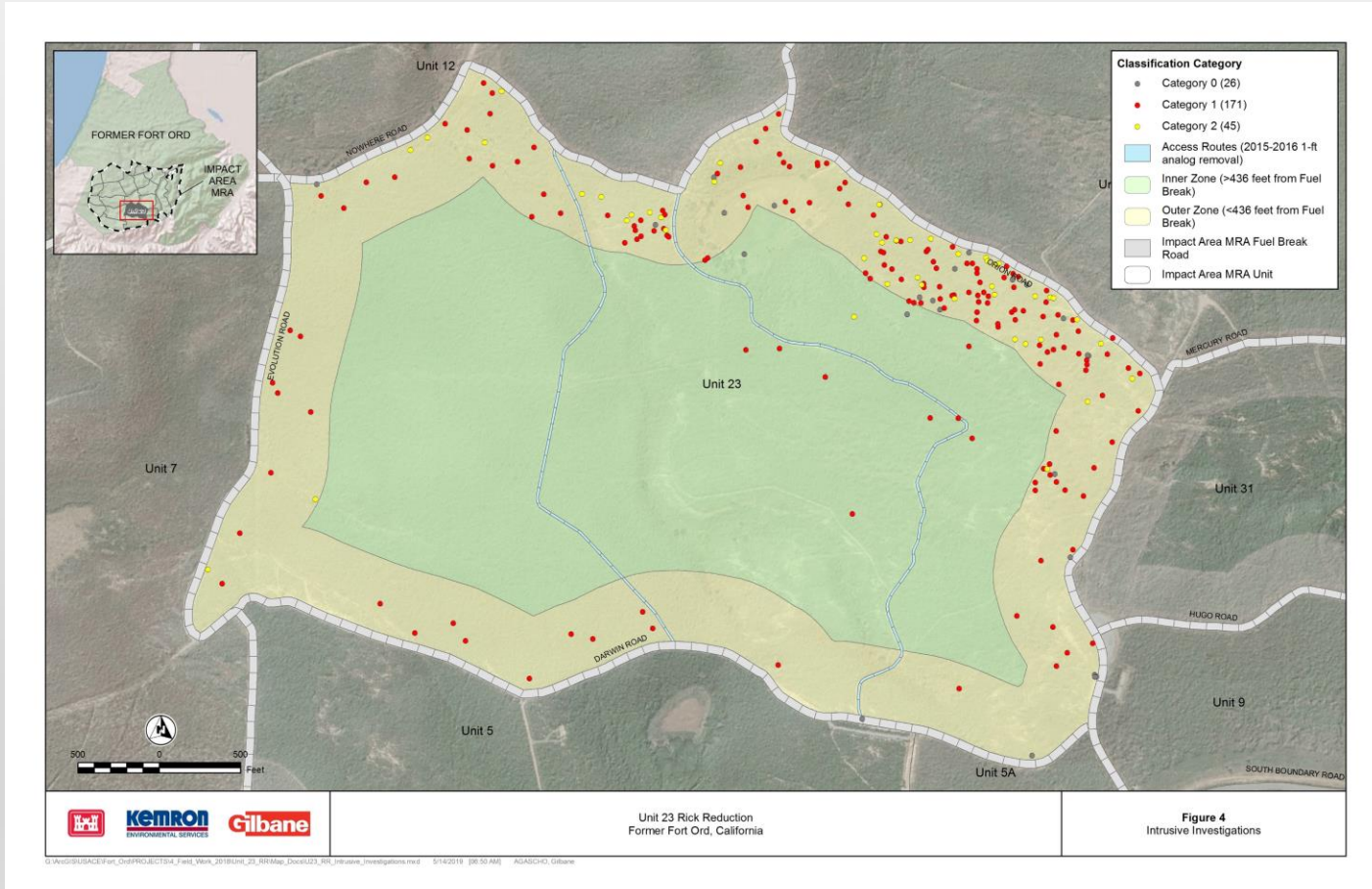
G:\A\02\SUBFACE\Fat\_OH\PROJECT\T04\_7\rel\_Work\_2018\H1\_20\_RR\Map\_Docs\023\_201\_Detected\_Targets.mxd 5/14/2018 10:51 AM AGA\G401 Gilbane



# Classification Analysis

- 242 potential TOI
  - Category 0 (Cannot Analyze): 26
  - Category 1 (High-Confidence TOI): 171
  - Category 2 (Inconclusive): 45
- 1,037 high-confidence non-TOI

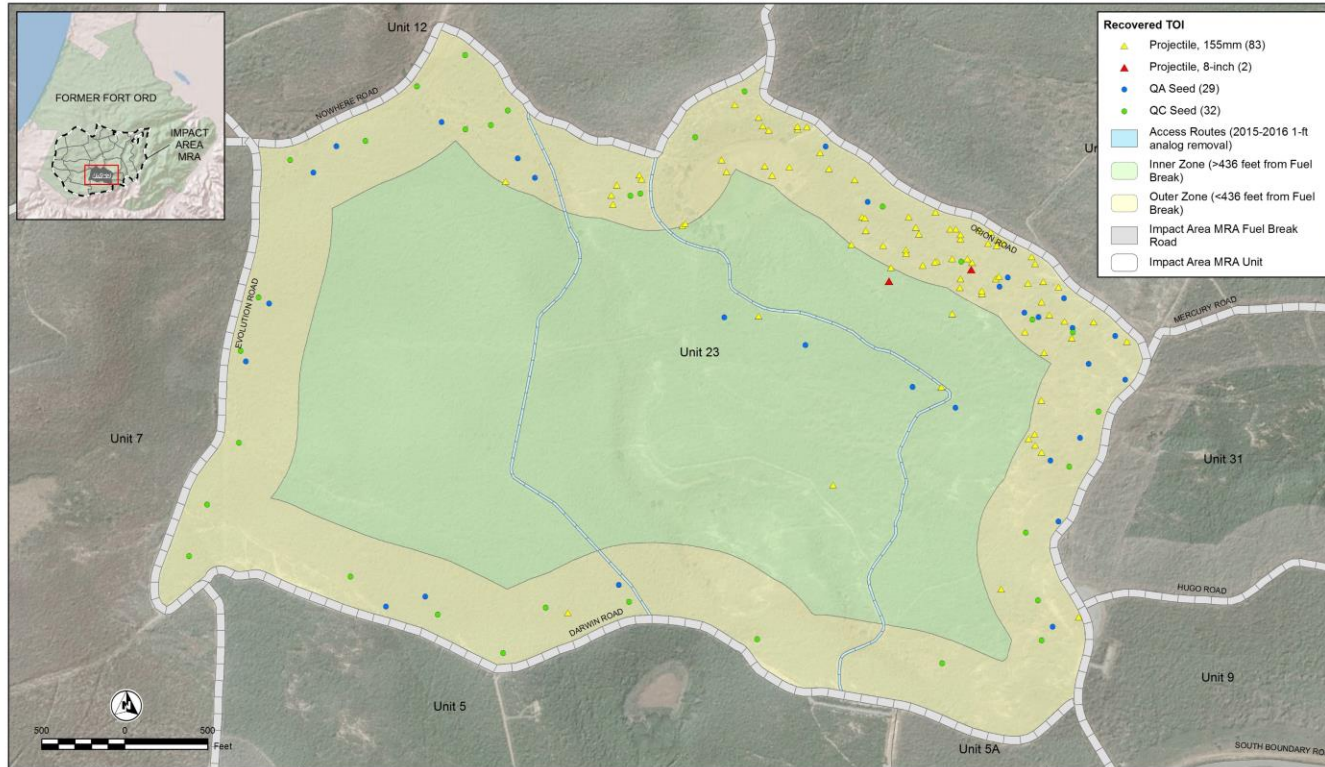
# Intrusive Investigation Locations



# Intrusive Investigation Results

- 242 Intrusive Investigations
- TOI: 146
  - 8-inch projectiles: 2
  - 155mm projectiles: 83
  - QC seeds: 32
  - QA seeds: 29
- Clutter: 71
- 25 QA validation digs
  - No recovered TOI

# Recovered Targets of Interest



Unit 23 Risk Reduction  
Former Fort Ord, California

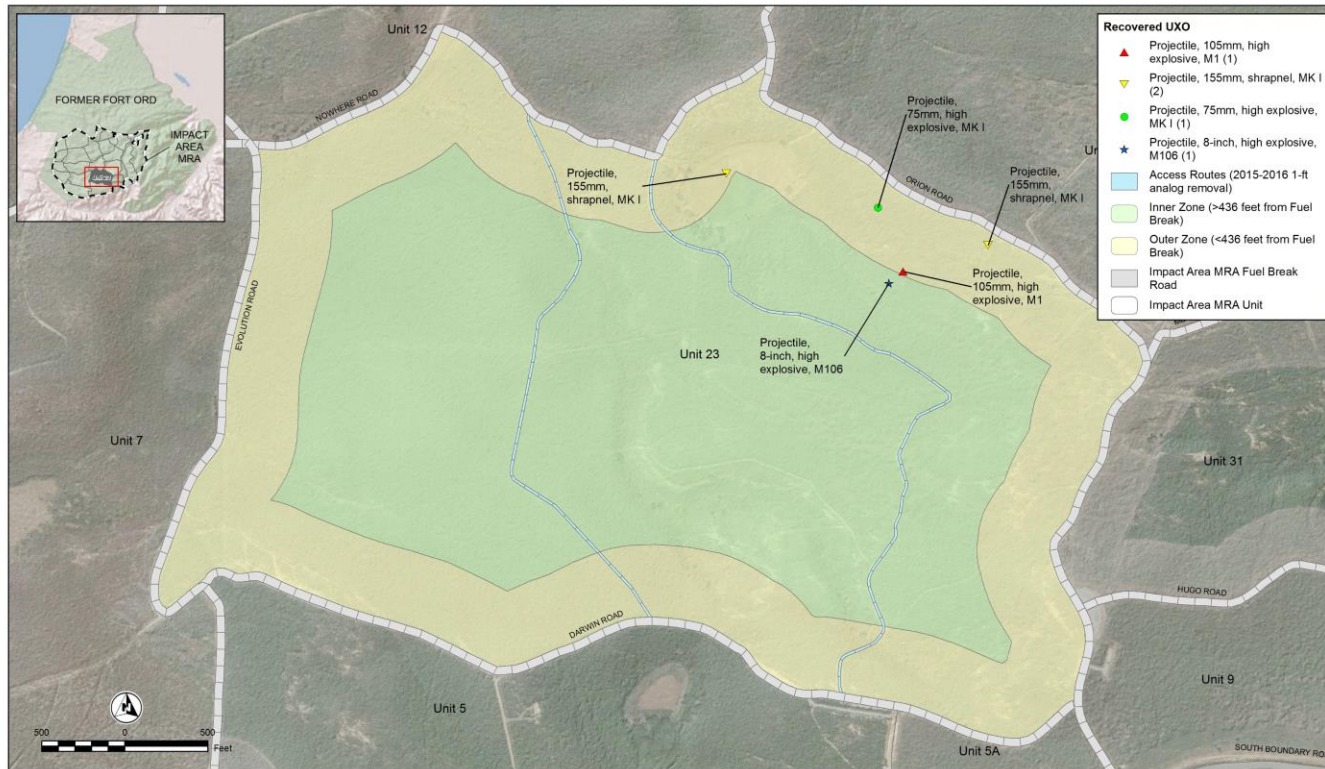
Figure 5  
Recovered Targets of Interest

G:\Work\SUBAREA\Fuel\_Oil\PROJECT\T04\_Final\_Work\01\RH\02\_RR\Map\_Docs\023\_RR\_T01.mxd 01/14/2019 09:25 AM AG/SCHO, Gilbane

# Recovered MEC

- 3 recovered TOI UXO
  - 1 projectile, 8-inch, high explosive, M106
  - 2 projectile, 155mm, shrapnel, MK1
- 2 recovered non-TOI UXO
  - 1 projectile, 105mm, high explosive, M1
  - 1 projectile, 75mm, high explosive, MK1

# Recovered MEC

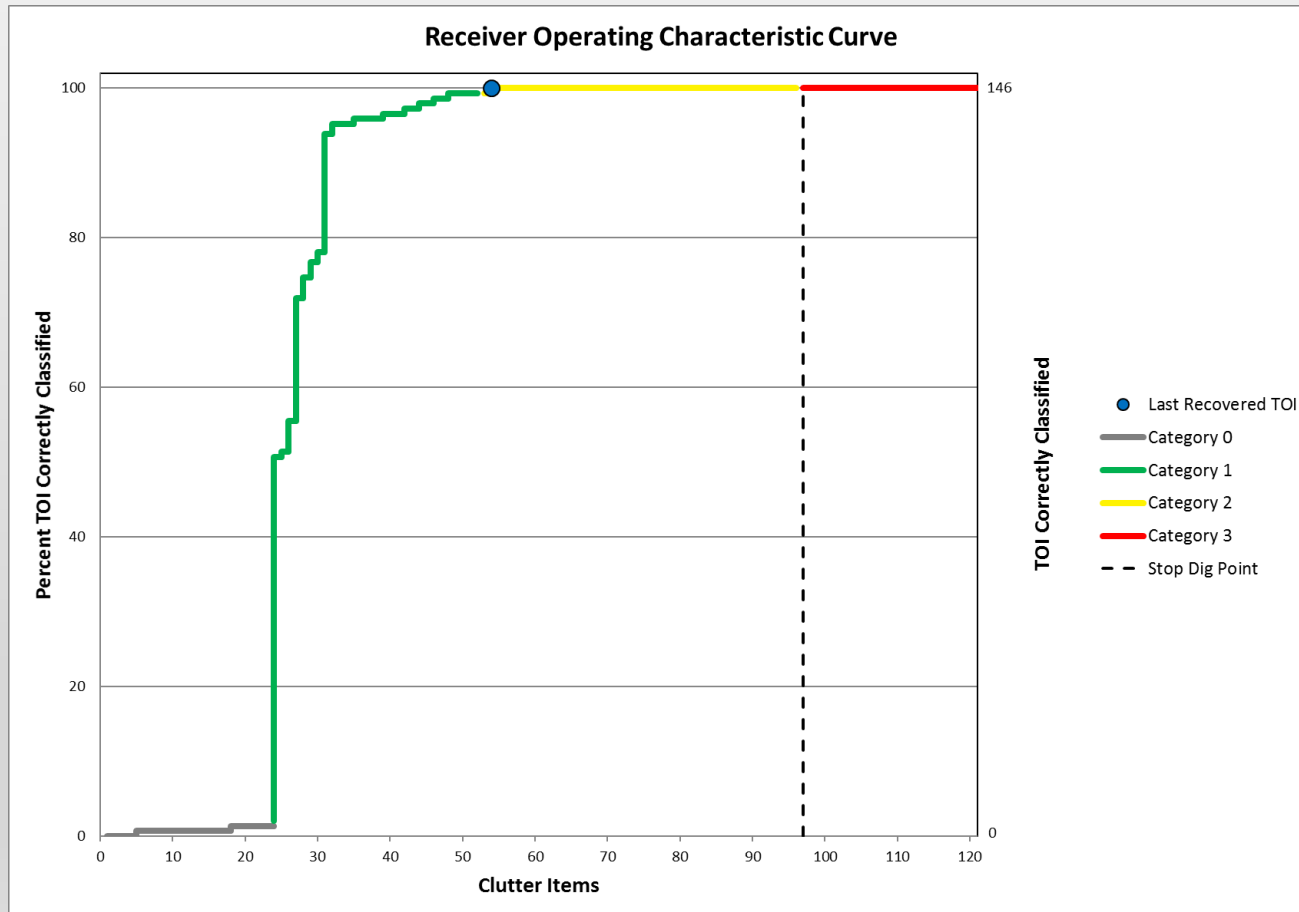


Unit 23 Risk Reduction  
 Former Fort Ord, California

Figure 6  
 Recovered Munitions and Explosives of Concern

G:\W\2015\SUB\ENR\_Fort\_Ord\PROJECT\04\_7\_14d\_Work\_2018\04\_25\_BRM\Map\_Docs\023\_R01\_MEC.mxd 3/14/2018 10:55 AM AJASCHS, Gilbane

# Receiver Operating Characteristic Curve



# Conclusion

- Risk reduction goals successfully met
- Results verified by the QC process
- Results validated by the QA process