

# **Explosives Safety Submission (ESS)**

**U.S. Air Force Environment, Safety, and  
Occupational Health Symposium**

**Pittsburgh, Pennsylvania**

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**Presented by:**

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# Agenda

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- **Why do we need an ESS?**
- **What Type of ESS do we need?**
- **What MMRP Projects need an ESS?**
- **When don't we need an ESS?**
- **Key Guidance Documents**
- **ESS Review Process**
- **Amendments & Corrections to an ESS**
- **ESS Format**
- **Summary**

# Why Do We Need an ESS?

- **Purpose of the ESS is to ensure all applicable DOD and Department of the Air Force Explosives Safety Standards are applied during a Military Munitions Response Program (MMRP) Response Action**
- **The ESS must be consistent with the scope of work, work plans, and decision documents.**

# What Type of ESS do we need?

- **Four different types of ESS**
  - **ESS prepared as part of a response action that involves physical removal of munitions and explosives of concern (MEC)**
  - **ESS prepared as part of a response action when recommended response alternative is Institutional/Engineering Controls**
  - **ESS prepared as part of response action when recommended response is No Department of Defense Action Indicated (NDAI)**
  - **ESS prepared for a Time Critical Removal Action (TCRA)**
- **ESS must be approved prior to the initiation of intrusive operations and recovery of MEC.**

# What MMRP Projects Need an ESS?

- **ESS is required for MMRP actions at the following types of properties:**
  - **Formerly Used Defense Sites (FUDS)**
  - **Base Realignment After Closure (BRAC)**
  - **Transferring Excess property other than BRAC**
  - **Installation Restoration Program (IRP) sites**
  - **Projects located off-post areas near active installations. For example, areas that contain munitions unintentionally fired off post.**

# When Don't We Need an ESS?

- ESS is not required for emergency MEC removal actions (e.g., Explosive Ordnance Disposal (EOD))
- ESS is not required for range clearance operations conducted on active and inactive ranges that reside on DOD property
- ESS is not required for \***site characterization activities** conducted on MMRP sites.
- ESS is not required for standby construction activities

**\*Future change to DOD policy is likely to require a ESS for site characterization activities**

# Key Guidance Documents For ESS

- **DOD 6055.9-STD, DOD Ammunition and Explosives Safety Standards, Chapter 12 – Real Property Contaminated with Ammunition, Explosives or Chemical Agents**
- **Department of Defense Explosives Safety Board (DDESB): “Memorandum Guidance for Clearance Plans” dated January 1998 Air Force Manual 91-201, Explosives safety Standards, Chapter 6 – Real Property Contaminated with Ammunition and Explosives**
- **Air Force Manual (AFM) 91-201 Explosives Safety Standards**
- **Air Force Instruction 90-901, Operational Risk Management**
- **Air Force Pamphlet 90-902, Operational Risk Management Guidelines and Tools**

# ESS Review Process

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- **Local command (usually supported by a contractor) prepare**
- **Submit to Major Command**
- **Submit to Air Force Safety Center**
- **Submit to DDESB**

**Note: Expect approval process to take between six and nine months**

# Changes to an ESS

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- **Required if the hazards, risks, or explosives safety controls change based on actual conditions encountered**
- **Change effected by either an Amendment or a Correction**

# Amendment to ESS

- **Required for changes regarding the assumed or known explosives hazards or any proposed changes in work activities or safety controls that can potentially effect worker or public safety**
- **Requires approval through same process followed for original ESS**
  - **For change that specifies less restrictive requirements approval must be granted before implementation**
  - **For changes more restrictive implementation will be effected immediately pending approval**

# Amendment to ESS (Con't)

- **Example changes that require an amendment to the ESS**
  - Change in planned reuse of the property changes the clearance depth
  - Change in clearance depth changes the planned reuse
  - Change in land restrictions
  - Estimated MEC depth changes, causing a change in the clearance depth (MEC is consistently found at less than the estimated depths and a reduced depth is desired).
  - Clearance depth changes from below the frost line to above the frost line
  - Property owners or stakeholders cause a decrease in the area to be cleared at a FUDS (e.g., right of entry denied)
  - Incorporation of new or modified engineering controls not included in the approved ESS
  - Change in Quantity Distance (QD) arcs.
  - New magazine storage area or demolition ground is established

# Correction to ESS

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- **Corrections are changes that do not have the potential to affect worker or public safety.**
- **Corrections are typically administrative changes.**
- **Corrections do not require the entire approval process, routing to higher-level offices is for information only**

# ESS Format

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- **Format for ESS is described in Department of Defense Explosives Safety Board (DDESB): Memorandum Guidance for Clearance Plans” dated January 1998**
- **U.S. Army Corps of Engineers Engineering Pamphlet (EP) 385-1-95b, Explosives Safety Submission dated 298 March 2003 is an excellent reference**

**ESS Format is being revised and will be included in the revision to DOD 6055.9-STD expected to be published by 3<sup>rd</sup> Quarter FY-07.**

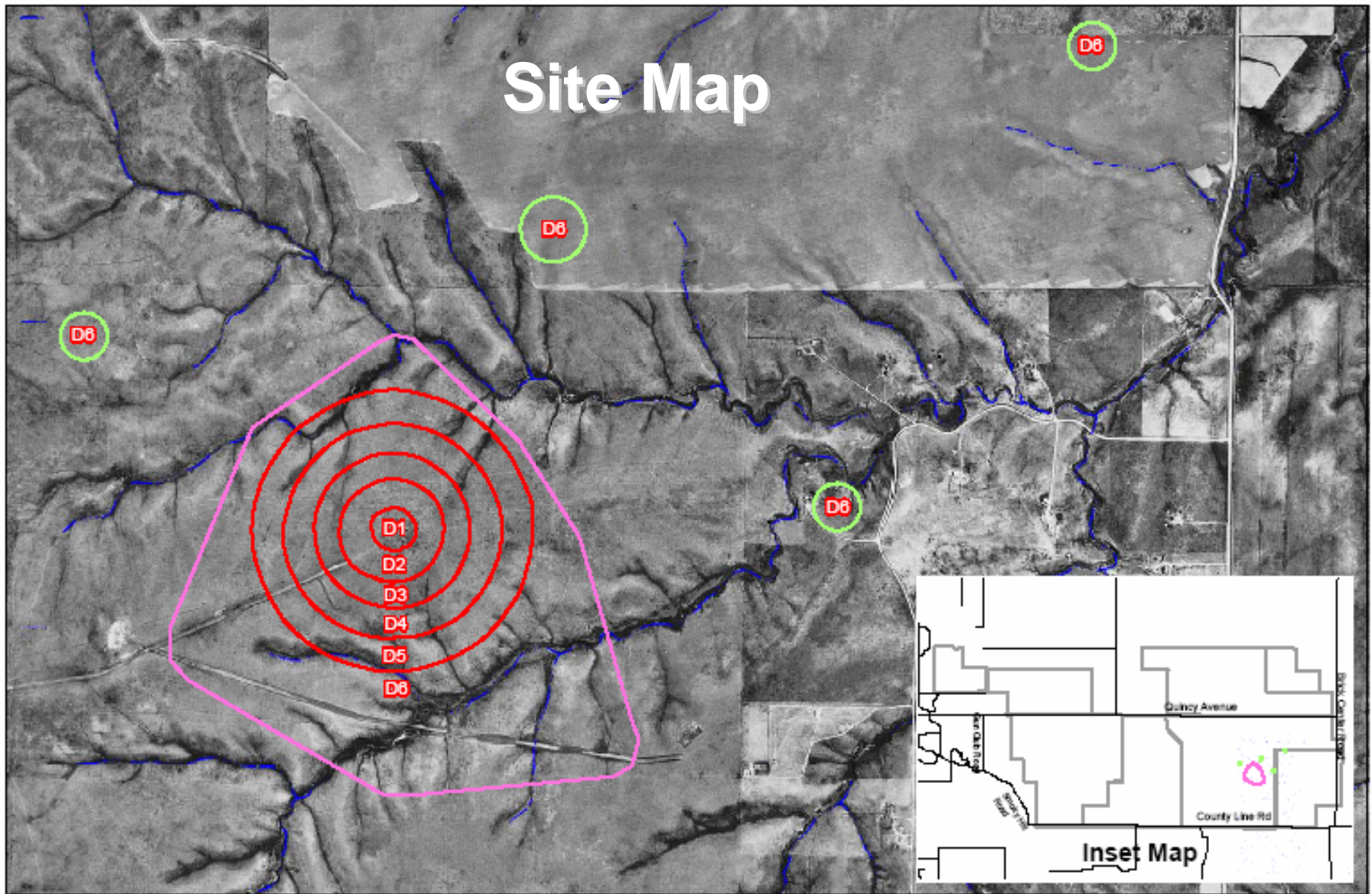
# ESS Format

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- **Introduction – site history and any other pertinent details**
- **Reason for MEC – brief description of why MEC exists**
- **Maps:**
  - **Regional Map**
  - **Site Map**
  - **Q-D maps**
  - **Soil Sampling Maps**

# ESS Format - Maps

- **Site Map**
  - MEC areas covered by the submission
  - MEC removal depth for each MEC area
  - Location of an magazines
  - Location of any planned or established demolition areas
  - Existing or planned use of each MEC area after clearance



- Legend**
- Streams
  - Contours
  - Density Zones
  - Outliers
  - BT5 Boundary

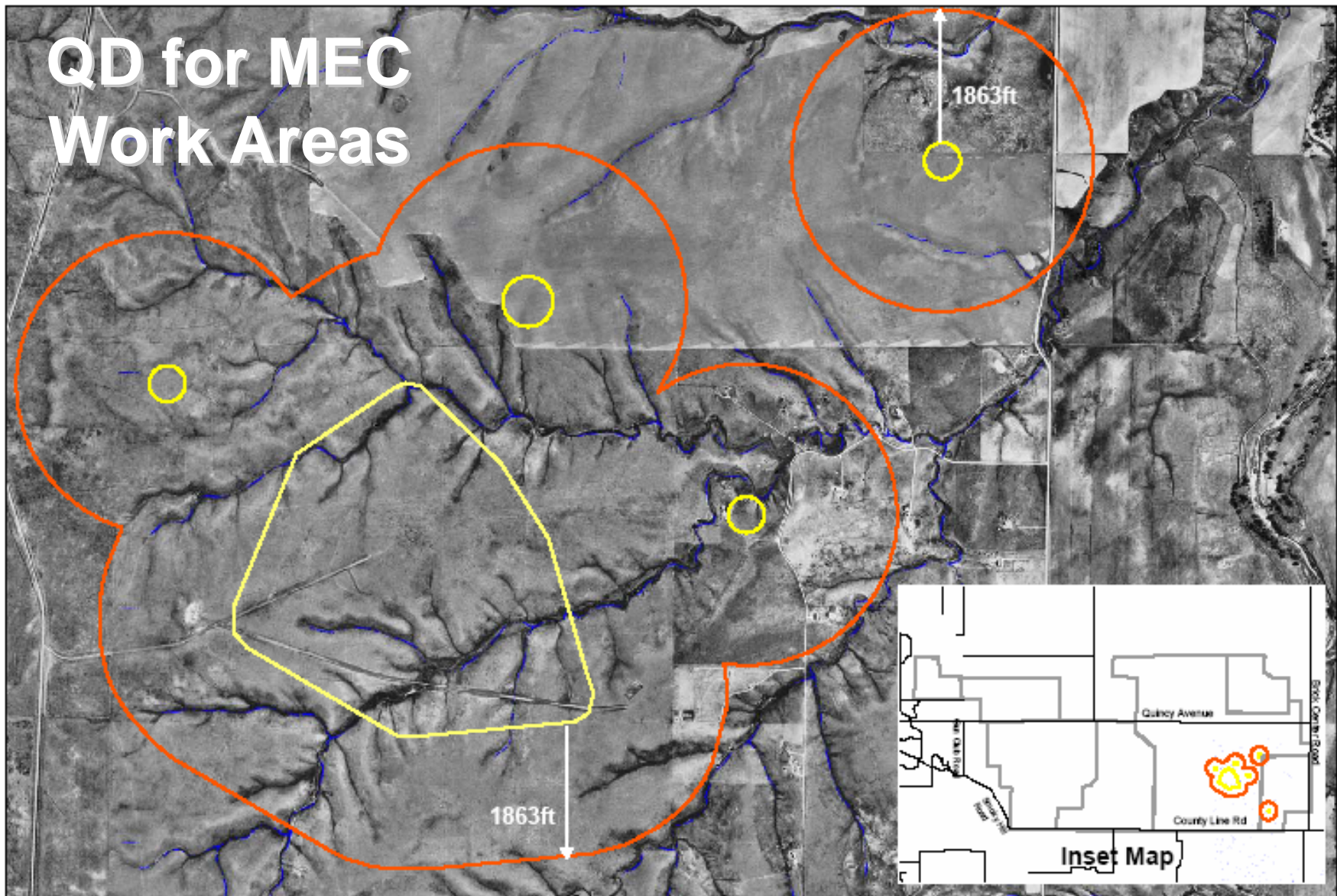


Figure 12-2  
 Sitemap  
 Former Lowry Bombing and Gunnery Range  
 Arapahoe County, Colorado

# ESS Format – Maps (Con't)

- **Q-D maps**
  - **Each MEC area to be cleared under the ESS**
  - **Location of magazines**
  - **Areas planned or established for intentional detonation**
    - **Exclusion area defined by a public withdrawal distance**
    - **Identify every inhabited building distance (IBD)**
    - **Identify every public transportation route (PTR)**
    - **Describe methods taken to eliminate/minimize risk**

# QD for MEC Work Areas



- Streams
- Estimated Extent of Munitions Response Activity
- Exclusion Zone based on 100 lb Bomb GP Mk1

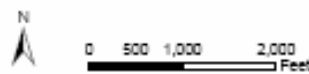
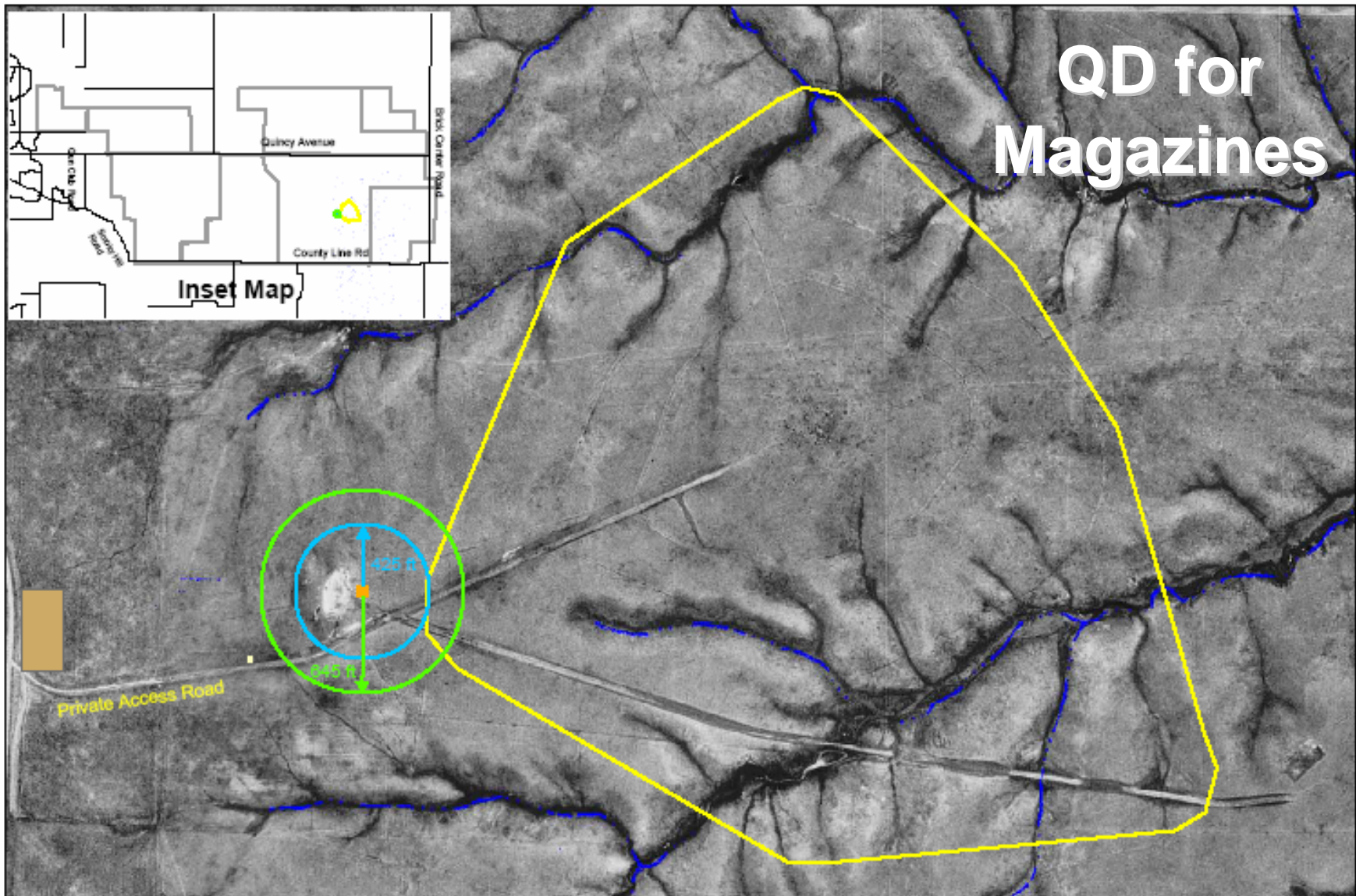


Figure 12-3  
Quantity-Distance Map for MEC Work Areas  
Arapahoe County, Colorado



# QD for Magazines

- Magazine Storage
- IBD - Inhabited Building Distance/HPD - Hazardous Fragment Distance (615 ft)
- PTR - Public Transportation Route Distance (397 ft)
- Administrative Area
- ST5 Boundary
- Streams
- CH2M-HILL

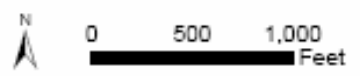


Figure 12-4  
Quantity-Distance for Explosives Magazines  
Arapahoe County, Colorado

# ESS Format – Maps (Con't)

- **Soil Sampling Maps**
  - MEC areas involving explosives in soil
  - Location and depth of sampling points
  - Identify field sampling methods used and concentrations of explosives for each sampling point

# ESS Format (Con't)

- **Amount and Type of MEC**
  - **Munition with Greatest Fragment Distance (MGFD)**
  - **Depth of Removal**
- **Start Date – This is the date intrusive activities for recovery of MEC start**
- **Frost line – Depth of frost line for the area**

# Removal Depths

- **Establishing the depth:**
  - **Preferred method to establish a removal depth is to estimate MEC depth using site specific information, particularly from surface and intrusive sampling**
  - **Absence of site specific information is to use maximum penetration source document or default table in Chapter 12, DOD 6055.9-STD**

# ESS Format (Con't)

- **Clearance Techniques – Techniques used to detect, recover, and destroy MEC**
  - Describe capabilities and limitations of methods of detection
    - Describe selection criteria for technology based on local geology and topography of the site
    - Address limitations imposed by terrain, soil type, etc..
  - Describe quality assurance/quality control standards and pass/fail criteria
  - Describe process that will be used to determine that munitions debris (MD) presents no explosion hazard
  - Describe procedures for disposition of MD removed from the site
- **Alternate Techniques – If on-site method is something other than detonation**

# ESS Format (Con't)

- **Quantity Distance**
  - MEC Areas
  - Magazines
  - Planned or Established Demolition Areas
  - Footprint Areas
    - Blow-in-Place
    - Collection Points
    - In-Grid Consolidated Shots

# ESS Format (Con't)

- **Off Site Disposal**
- **Technical Support**
- **Land Use Restrictions**
- **Public Involvement**
- **After Action Report**

# Summary

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- **The ESS is a necessary document for MMRP Response Actions that include intrusive activities for MEC.**
- **In the future a ESS will be required when contact with MEC is expected.**