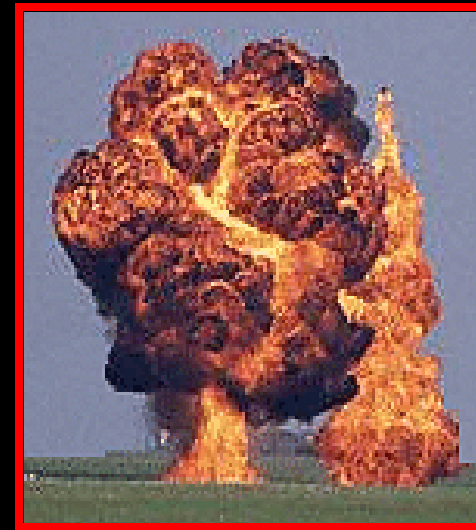


**Munitions and Explosives  
of Concern Hazard  
Assessment (MEC HA)  
Initiative**

**Stakeholder  
Workshop  
Sept 21, 2005**



# Purpose of this Briefing

---

- Workshop Objectives
- Overview – Why a MEC HA?
- Discuss the participants, progress, and process
- Discuss what the MEC HA will provide
- Structure overview
- Scoring example “Camp Sample”
- Discuss next steps and outreach
- Emerging issues for Guidance document

# Stakeholder Workshop Objectives

---

- Evaluation & Feedback
  - Usability
  - Transparency
  - Consistency
  - Do the input factors make sense?
  - Does the weighting & scoring work well?
  - Do the output factors make sense?

# Stakeholder Workshop Objectives

---

- Reality checks based on site examples – Camp Sample
- Modifications to framework
- Identification of issues for guidance development

# Why a MEC HA ?

---

- CERCLA & NCP require “**risk assessment**”
- Traditional risk assessment methods not applicable to MEC hazards
- Need for consistent method under CERCLA for MEC response actions
- ***Emphasis*** for EE/CA, RI/FS analysis to support remedy selection

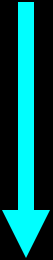
# Relationship Between the MEC HA and the MRSPP

---

- MRSPP Supports Programmatic Goals
  - *Provides relative priority for each Munitions Response Site, based on overall risks*
  - *Allows sequencing decisions to consider Other Factors (e.g., programmatic, environmental justice, development)*
- MEC HA Supports Site Specific Decisions
  - *Removal & Remedial Actions*
  - *Land Use Activities*

# CERCLA PROCESS

**MRSPP**



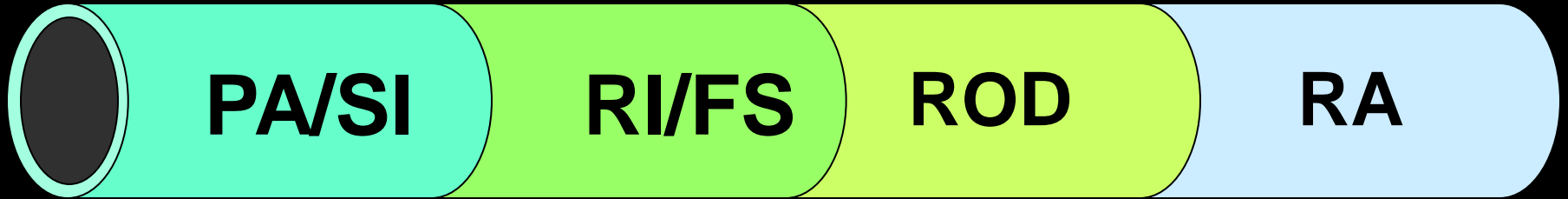
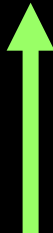
**PA/SI**

**RI/FS**

**ROD**

**RA**

**Hazard  
Assessment**



# MEC HA Work Group Participants

---

- EPA
- DOD
- DOI
- ASTSWMO
- TASWER



# Work Group Underlying Principles

---

- Support the management of uncertainty
- Connection to the Conceptual Site Model
- Utilize a relative hazard assessment approach

# Work Group Underlying Principles

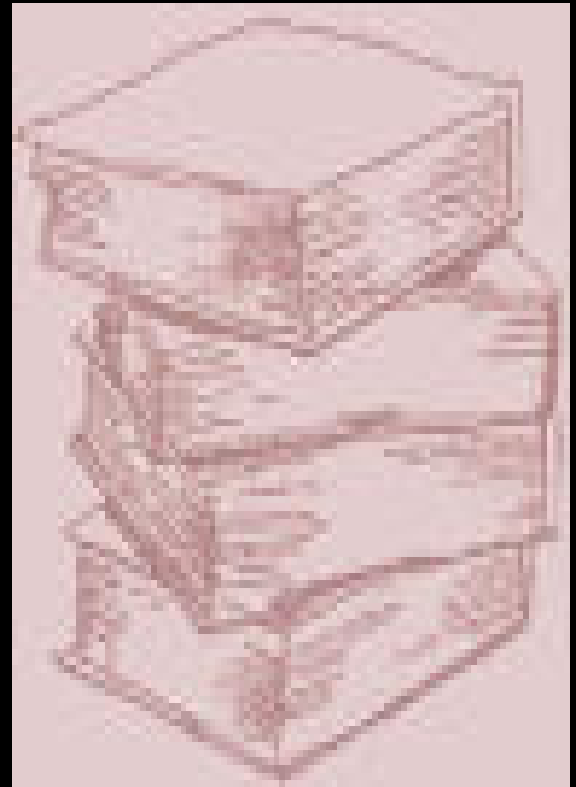
---

- Rely on input factors compatible with the MRSPP
- Support early decision making
- Support communication with stakeholders.

# Work Group Progress

---

- Issue Papers
- Framework Papers
- Outreach Plan
- Pilot Tests



# Issue Papers

---

- Review of Existing Methods
- Purpose of MEC HA
- Role of Uncertainty
- Probabilistic Risk
- Input Factors
- Analysis of Response Alternatives
- MEC HA as Communication Tool

# Framework Papers

---

- Performance Objectives
- Comparison of MRSPP to MEC HA
- Input Factors
- Structure and Output
- MEC HA in the CERCLA Process

# What will the MEC HA Provide ?

---

- Consistent framework for developing a site-specific hazard assessment
- Assistance in managing uncertainty
- Facilitate site-specific land use activity decisions

# What will the MEC HA Provide ?

---

- Evaluation of hazard management choices – response actions
- Support hazard communication
- Build confidence in decision making process



# Relationship to Conceptual Site Model (CSM)

---

- The CSM components (source, pathways, receptors) are addressed by the MEC HA
- MEC HA organization follows the Hazard Assessment functions
  - Recognizes the fundamental differences from human health risk assessment
  - Focus on the functions of the MEC HA



# MEC HA Structure

---

- Includes scoring, weighting, and combining input factors
- Will use a relative numeric approach, similar to the approach used in the EHE module of the MRSPP
- The organization of the structure will follow the severity, accessibility and sensitivity components.

# MEC HA Structure

---

The functional relationships addressed in the MEC HA are:

- **Severity:** The potential severity of the result should an MEC item function.
- **Accessibility:** The likelihood that a receptor will be able to interact with an MEC item.
- **Sensitivity:** The likelihood that an MEC item will function should a receptor interact with it.

# MEC HA Structure

---

## **Severity:** Input Factors

- Filler Type
- Distance to Additional Receptors
- Proximity of Critical Infrastructure
- Proximity of Cultural Resources
- Proximity of Ecological Resources

# MEC HA Structure

---

## ***Accessibility:*** Input Factors

- Site Accessibility
- Potential Contact Hours
- Amount of MEC
- MEC Depth Relative to Intrusive Depth
- Migration Potential

# MEC HA Structure

---

***Sensitivity:*** Input Factors

- MEC Category
- MEC Size

# MEC HA Outputs

---

- The Output Categories for the MEC HA are based on relative numeric scores
- Score Range is from 115 to 1000
- Score Range is broad enough to differentiate between hazard categories
- Uses a different range than the MRSPP

# MEC HA Outputs

---

The Output Categories Scores for the MEC HA are:

- **Category 1:** 860 - 1000
- **Category 2:** 720 - 855
- **Category 3:** 475 - 715
- **Category 4:** 115 - 470

# MEC HA Outputs

---

The Output Categories for the MEC HA are:

- **Category 1:** Sites with the highest hazard potential under current use conditions.
- **Category 2:** Sites with a hazard potential under current use conditions.
- **Category 3:** Sites compatible with current uses, not with more intrusive future uses.
- **Category 4:** Sites compatible with current or future uses.

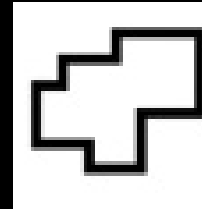
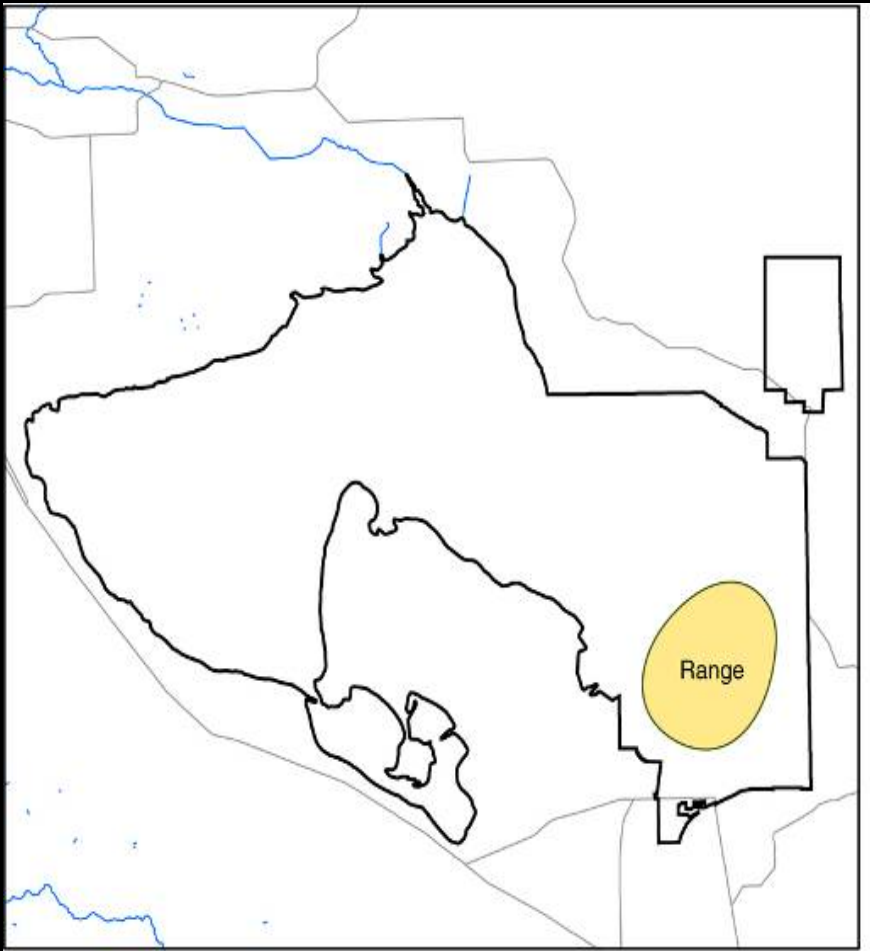


# MEC HA Scoring Example

---

***“Camp Sample”***

# Historical Research at “Camp Sample” Practice Range Identified



**Installation  
boundary**



**Roads**



**Water body**



**Range**

# Former “Camp Sample” Site Features

- Undeveloped inside boundaries
- Nature trail through portion of the property
- Existing residential area nearby
- Elementary school planned nearby

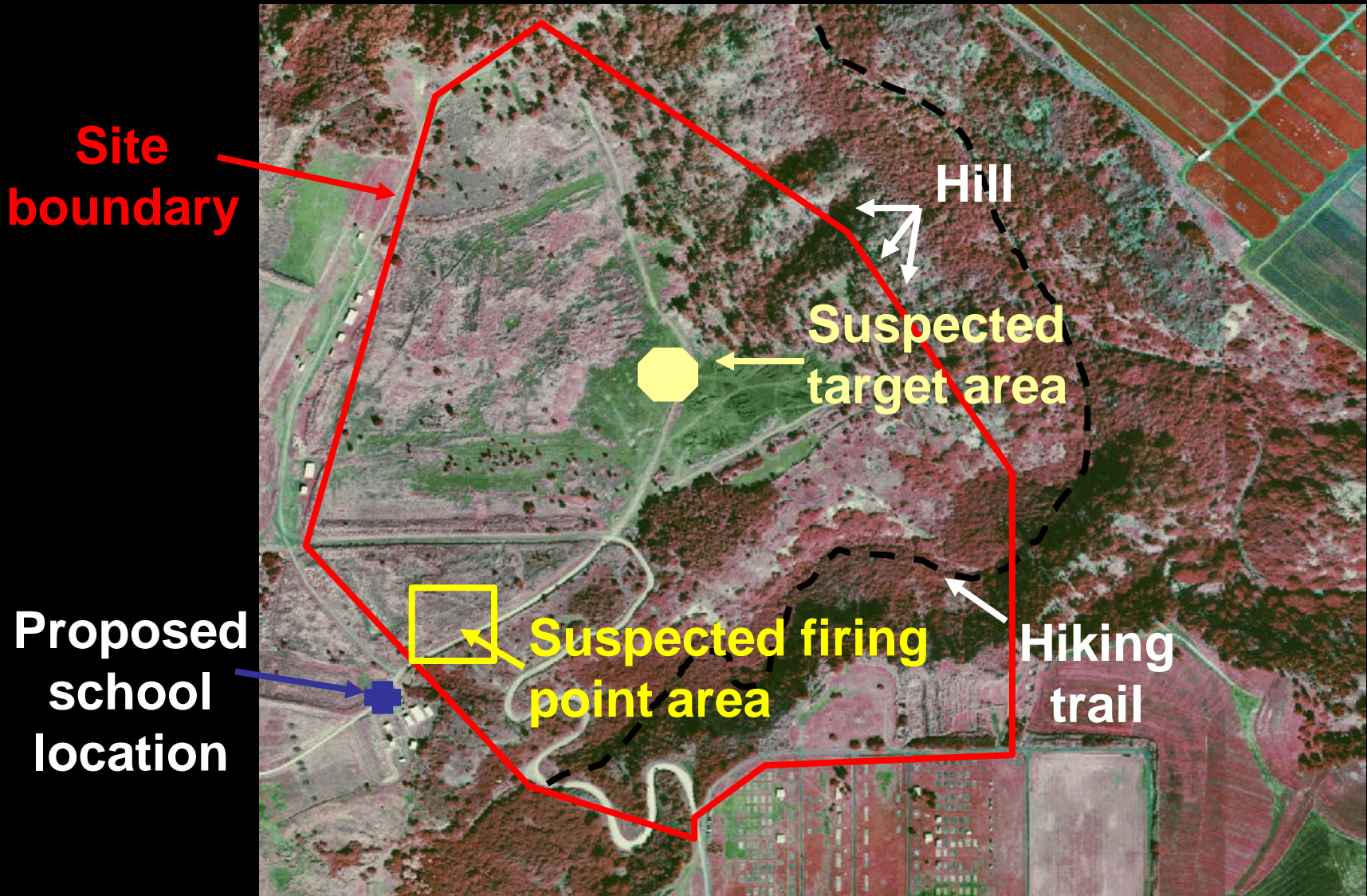


# “Camp Sample” Historical Information

- 2.36” rockets used for training
- Training in WWII through 1950’s

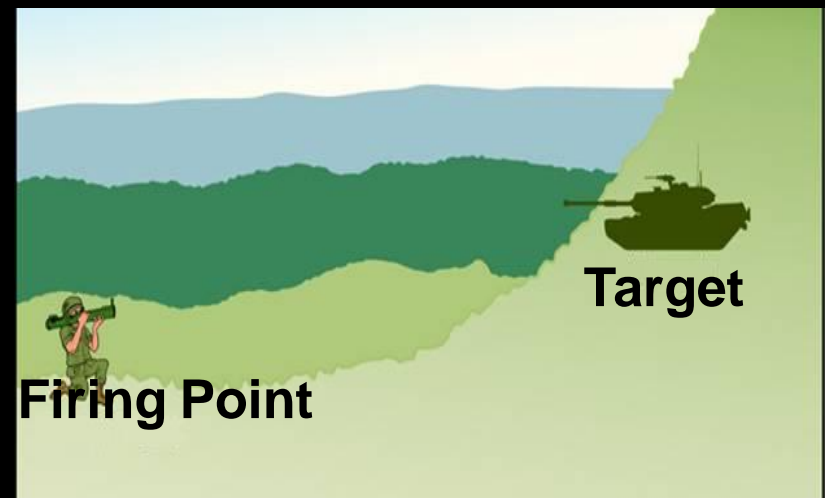
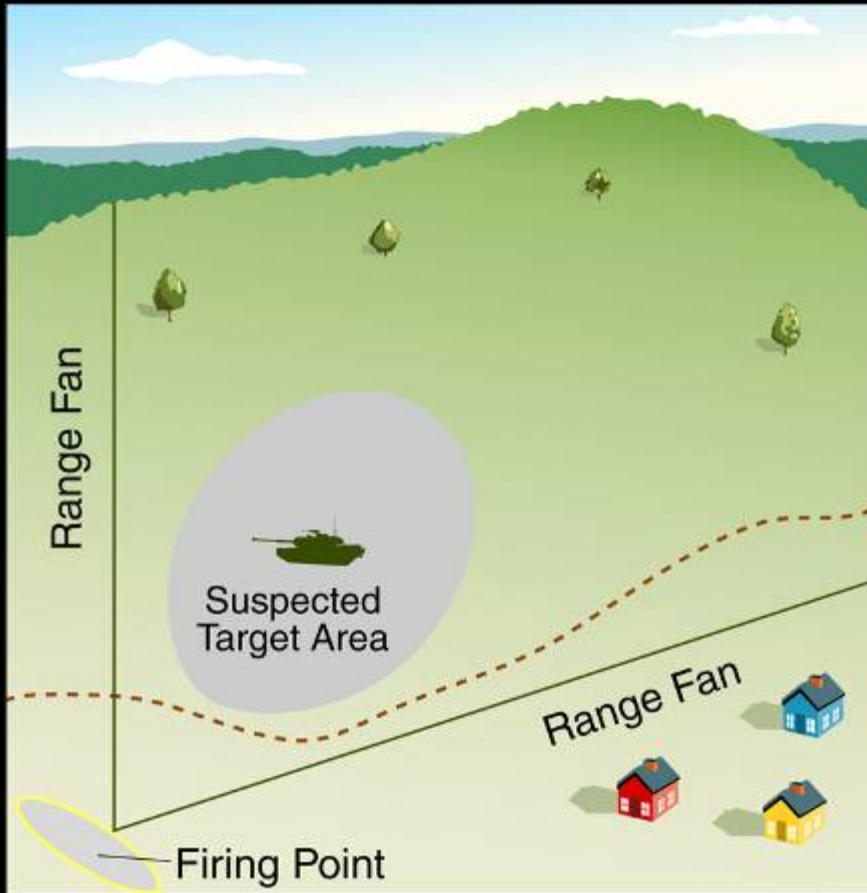


# Historical Information



# Preliminary Conceptual Site Model

- Suspected locations of
  - Firing point
  - Range fan



# Data Quality Objectives (DQOs)

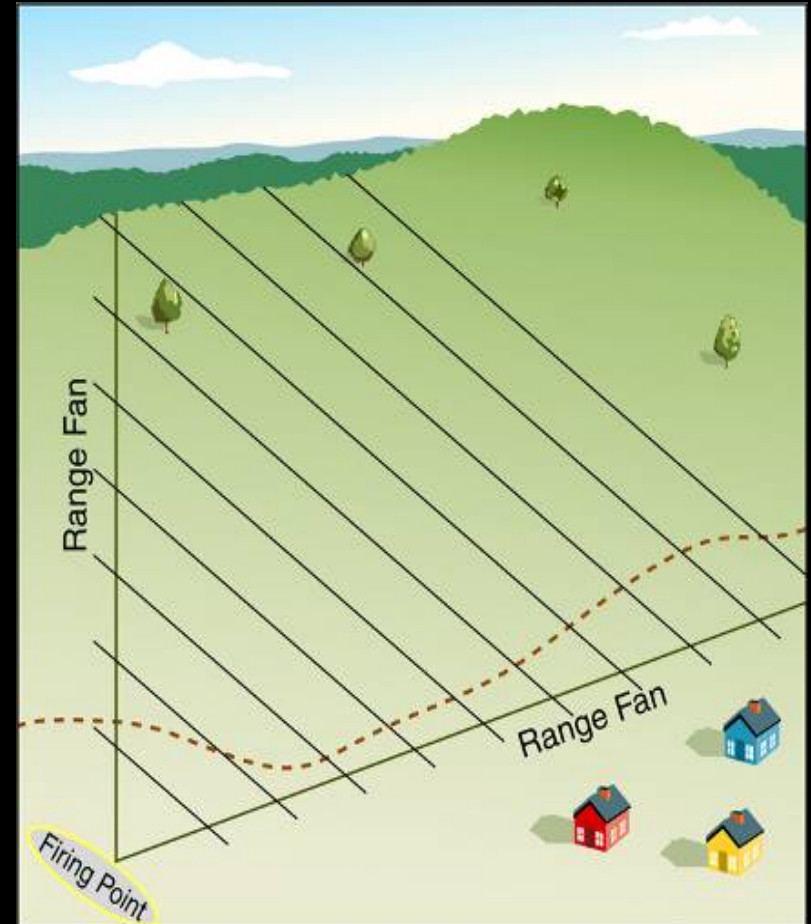
---

- Specify the type and quality of data needed to support site investigation
- Statements that :
  - Clarify objectives of data collection
  - Specify how data will be used to support hazard assessment
  - Define appropriate type, quantity, and quality of data to collect
  - Specify acceptable levels of decision errors

# Identify Data Needs for Investigation Design

## Data Need 1.

- Define boundaries of the target area
- Define geophysical transect spacing





# Identify Data Needs for Investigation Design (Cont)

---

Data Need 2: Where is the most likely boundary of the target area ?

- Increase transect density over suspected target

Data Need 3: What are the UXO distributions in the target area ?

- Use of mini-grids to better define nature and extent within target area.

# Detected Anomalies

▲ detected anomaly

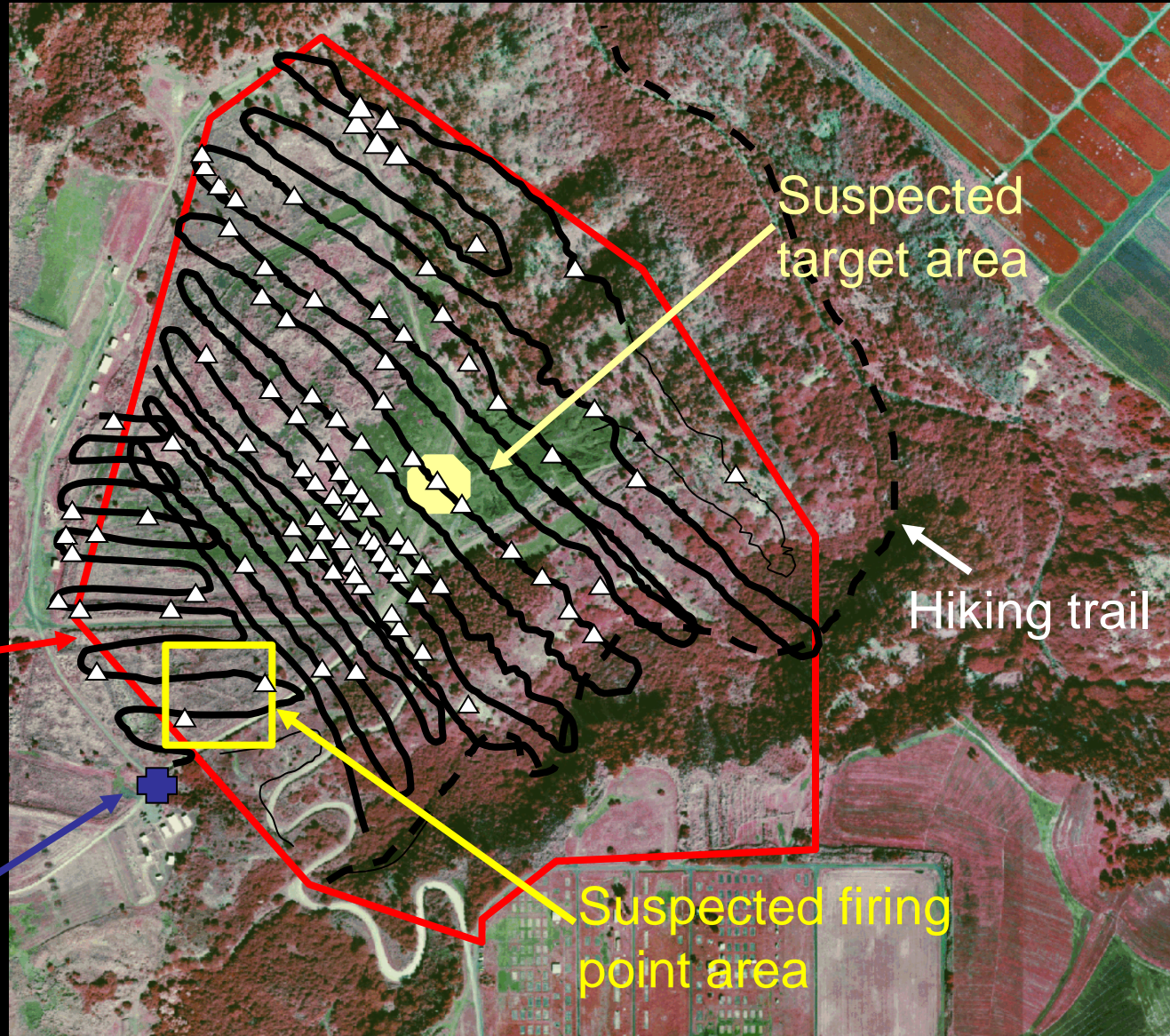
Site boundary

Proposed school location

Suspected target area

Hiking trail

Suspected firing point area



# Anomalies Identified

▲ = Non-MEC anomaly

▲ = MEC Frag  
(2.36" rocket)

▲ = UXO-2.36" rocket

▲ = Practice Round  
(60mm mortar w/  
spotting charge)

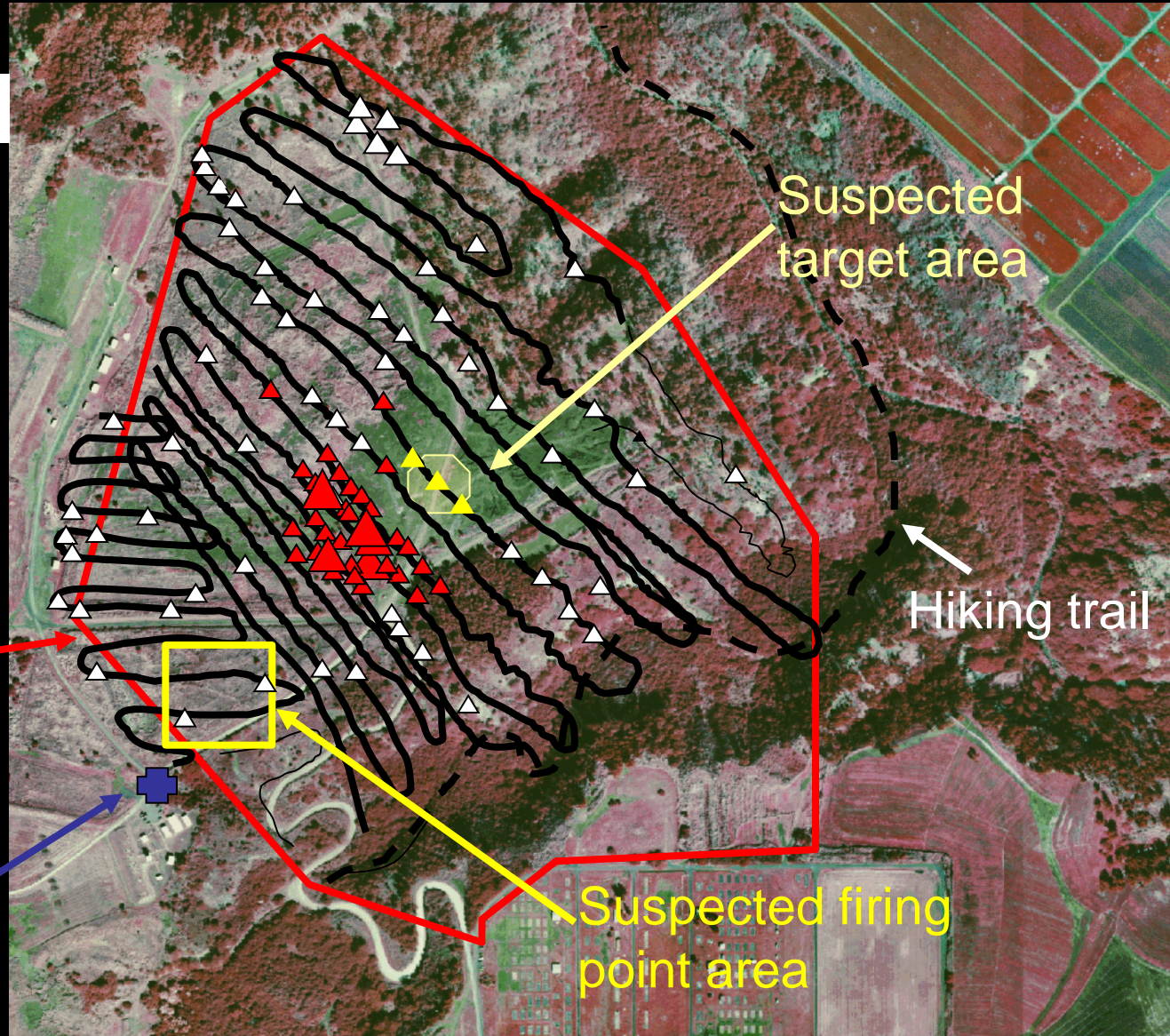
Site  
boundary

Proposed  
school  
location

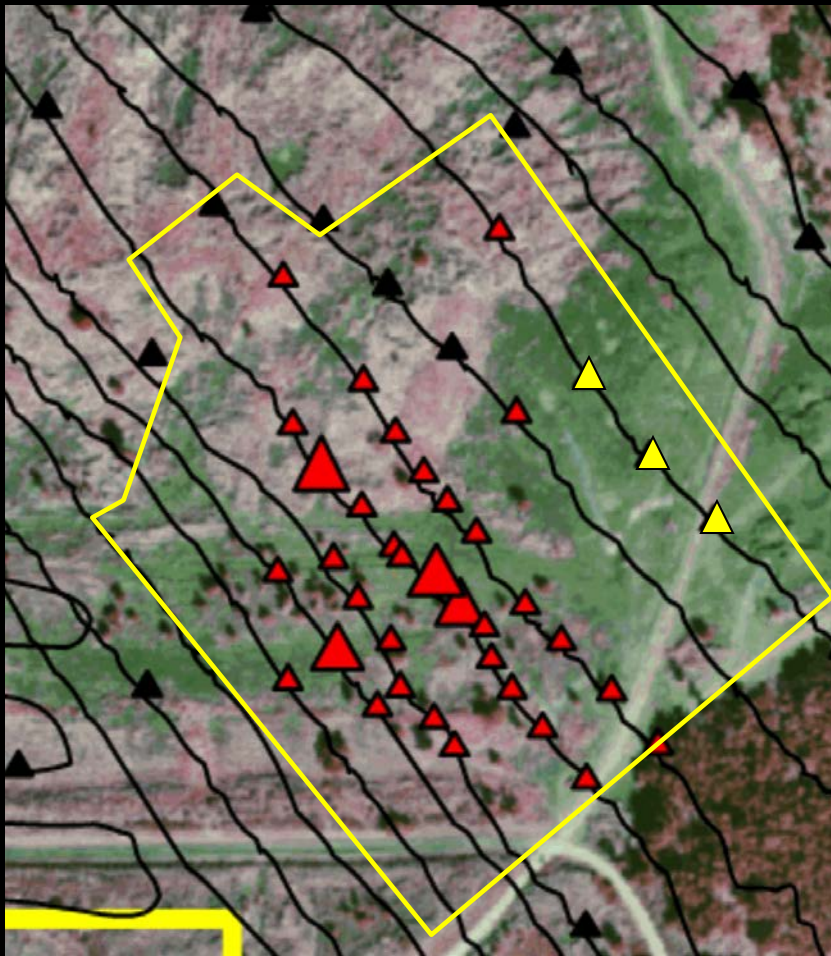
Suspected  
target area

Hiking trail

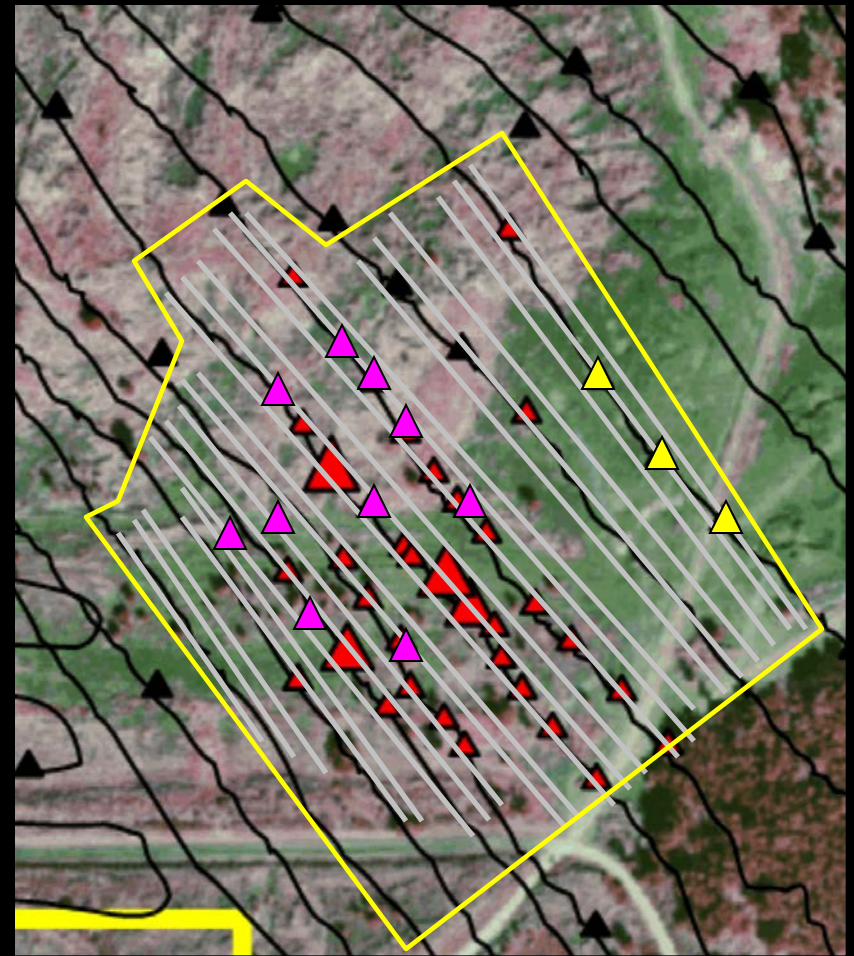
Suspected firing  
point area



# Results of Increased Transects



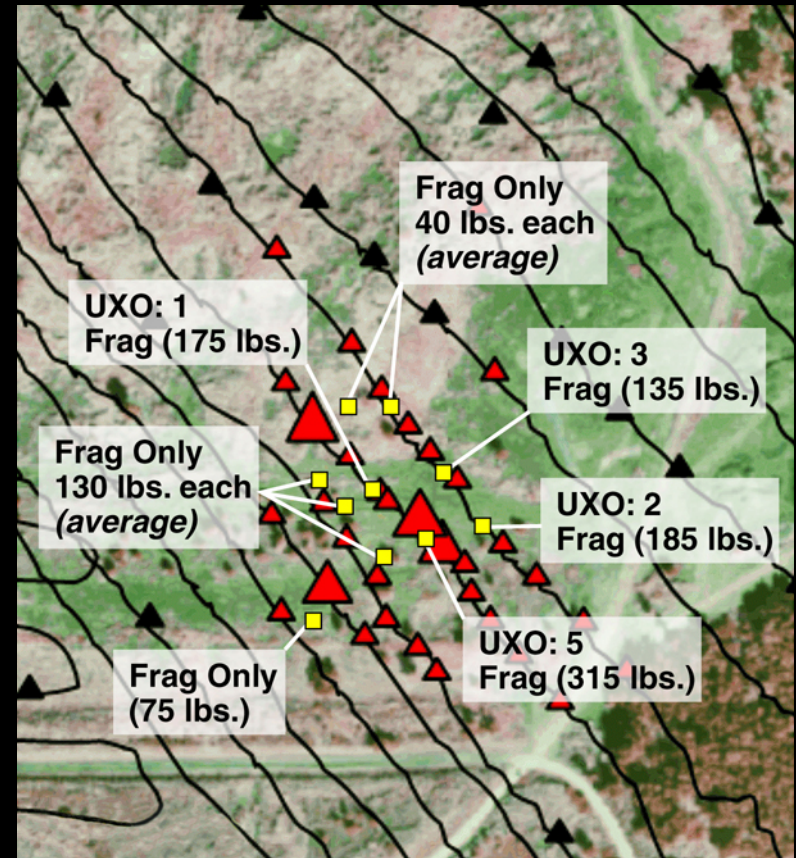
Increased transects in this area



Results of adding 25 foot transects added to investigation

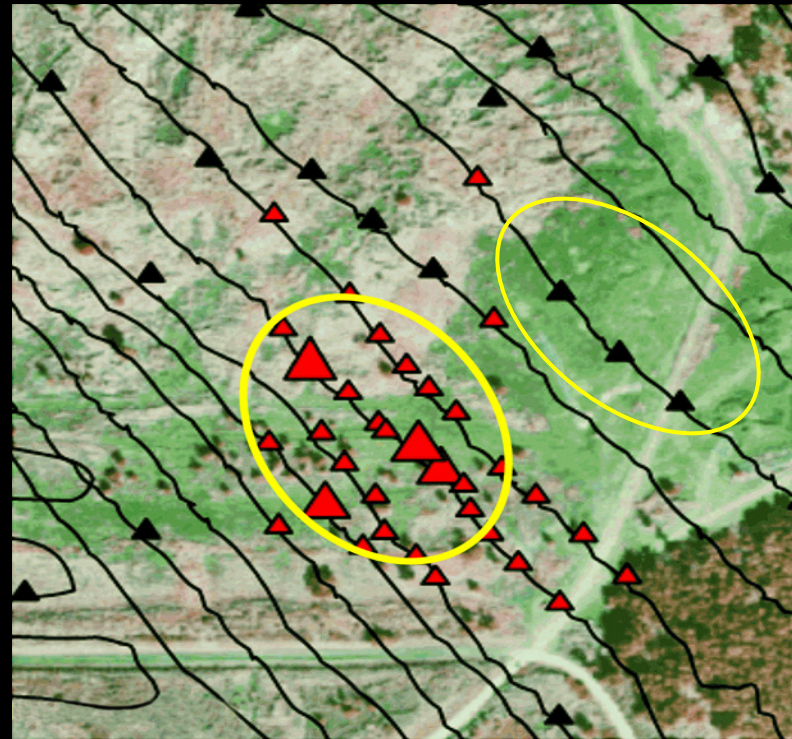
# Detailed Sampling Results – Live Target Area

- Items detected: 2.36" rockets (HE) and 2.36" rocket frag
- Depth ranges: Surface to one-foot
- UXO density: estimated 4/acre
- Scrap density: estimated 480 anomalies/acre

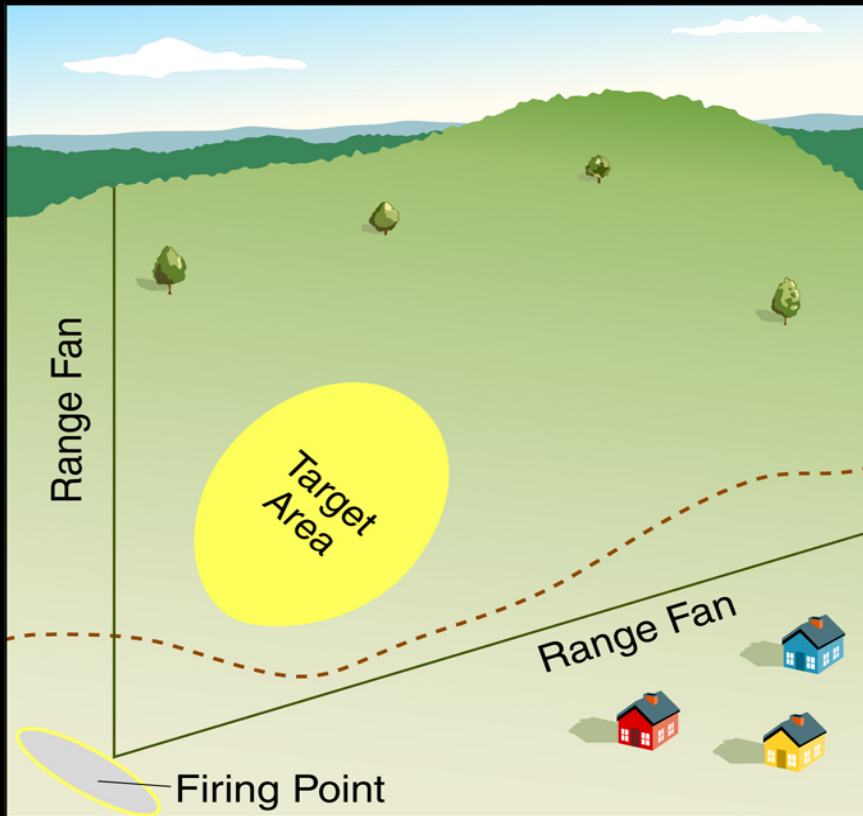


# Target Area Delineated – Extent of Contamination

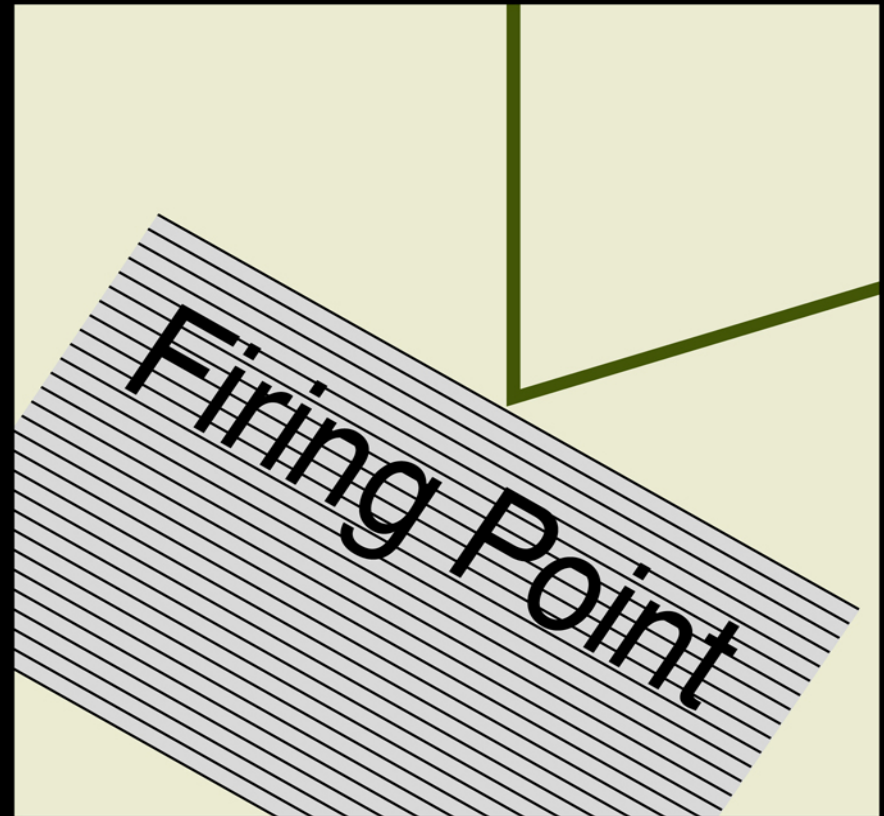
- Estimated area of targets
  - Live target: 17 acres
  - Practice target: 15 acres



# Continuing the Investigation – Firing Point



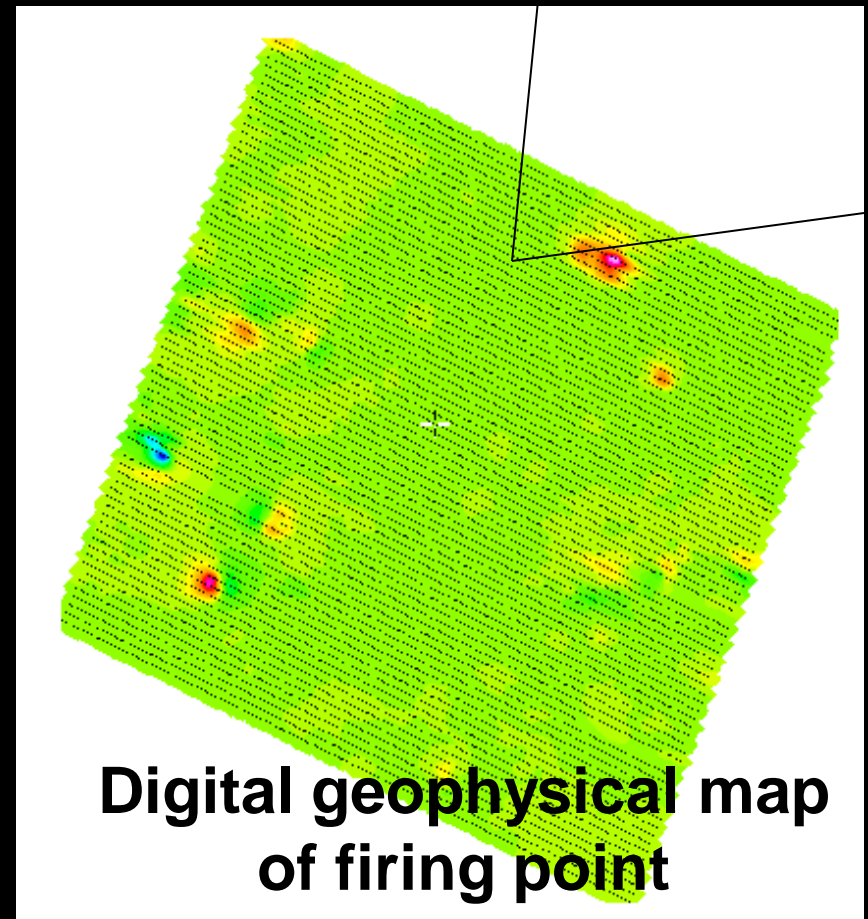
**Investigation of range fan  
complete**



**100% investigation of firing point  
to be conducted**

# Results of the Investigation of the Firing Point

- Anomalies identified during mapping are cultural features (buried tin rations and metal fence)
- No evidence of buried discarded military munitions found





# Geophysical Investigation Complete

---

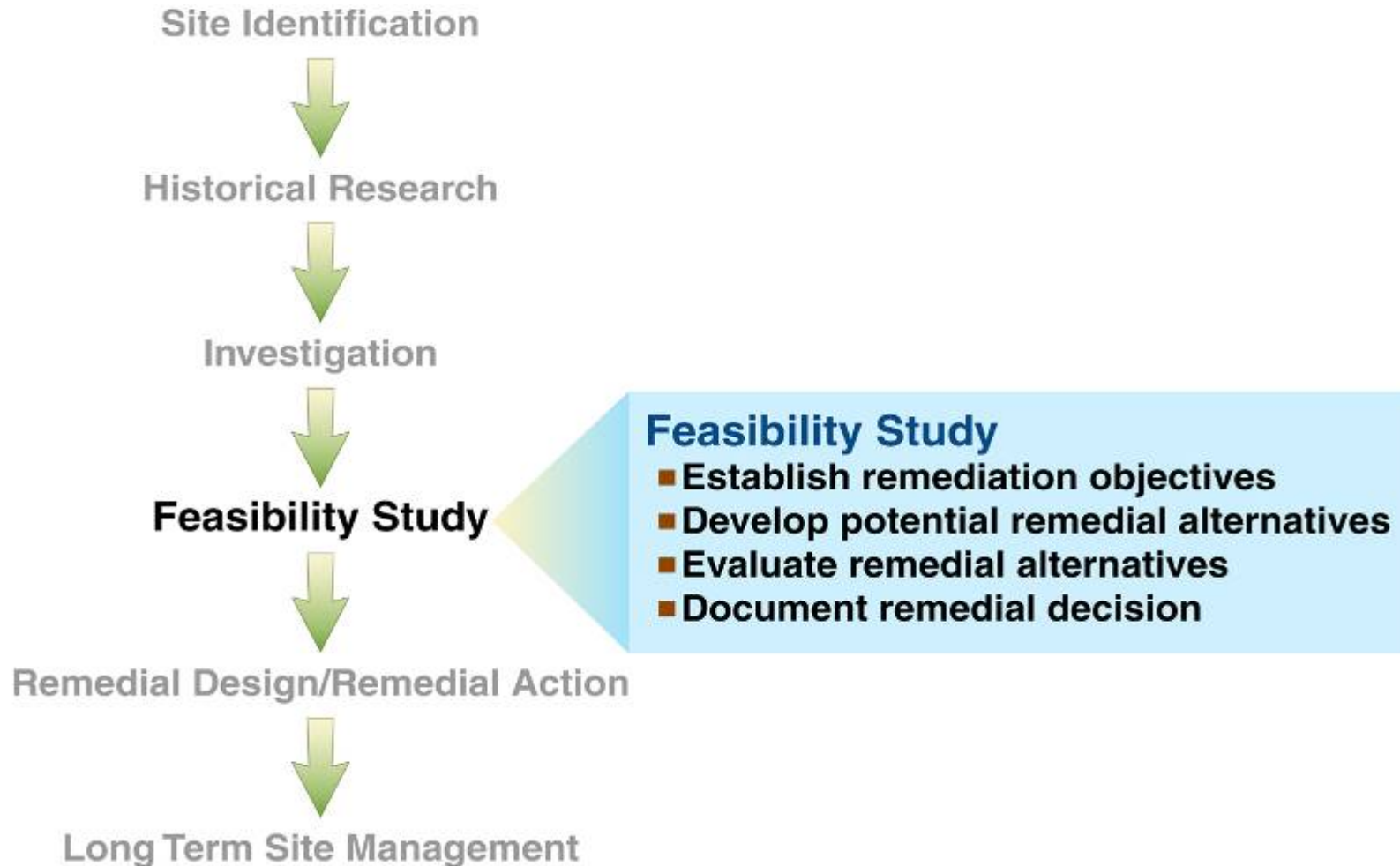
- Additional site information needed for MEC HA
- Ready to begin feasibility study and site remediation process
- Camp Sample example is a simplified example of an investigation of a munitions response site

# Additional Site Information for MEC HA

---

- Determine distance to additional receptors
- Accessibility determination
- Estimate potential contact hours
- Determine if there are intrusive site activities that could result in contact with MEC items
- Evaluate migration potential

# Ready to Begin Feasibility Study



# Remediation Objectives for Target Area

---

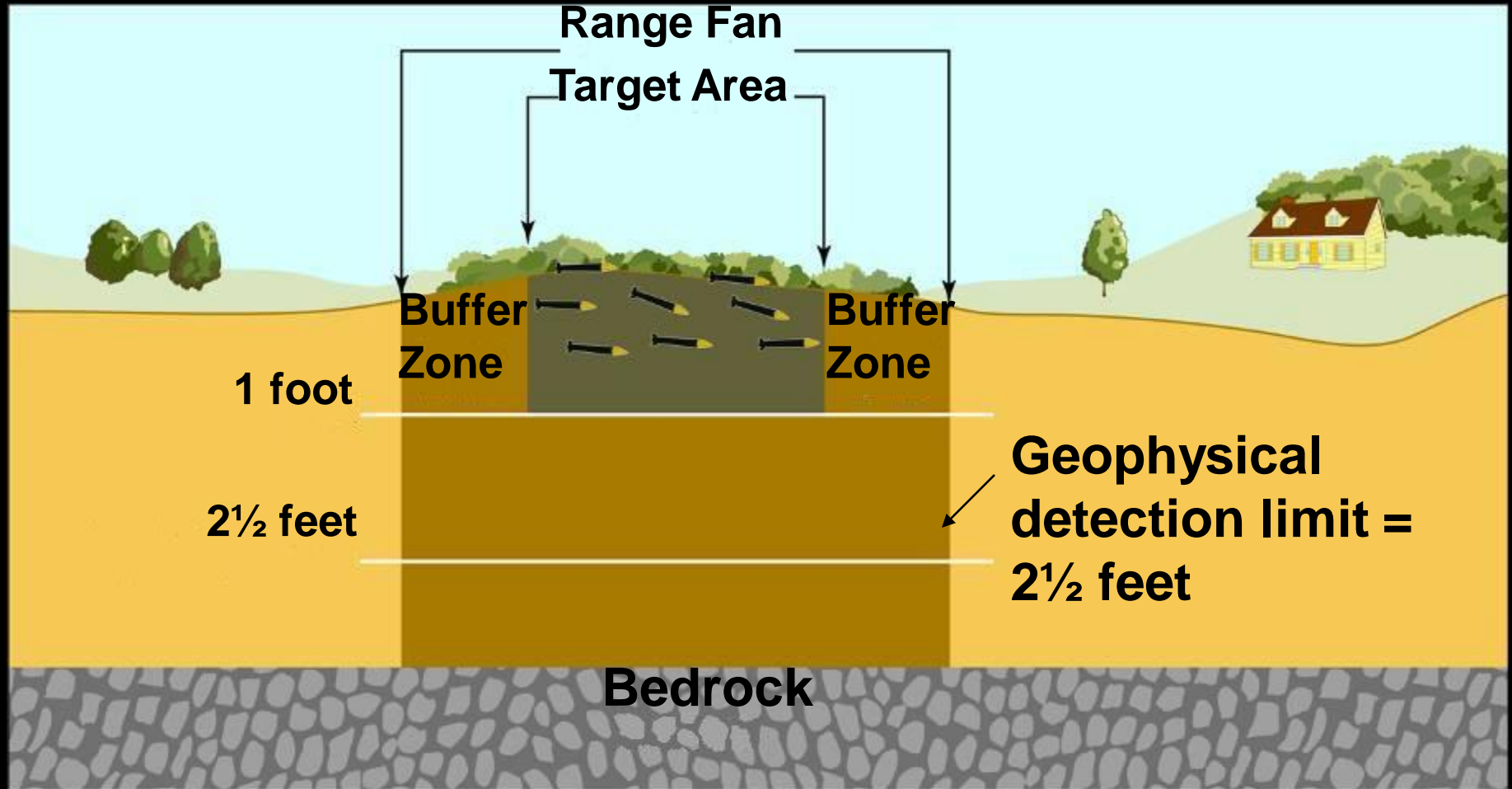
- Target area objective: remove detectable UXO
  - To maximum depth of penetration as determined in investigation
  - Use best available technology
  - To support future land use activities

# Developing Specific Remedial Alternatives

---

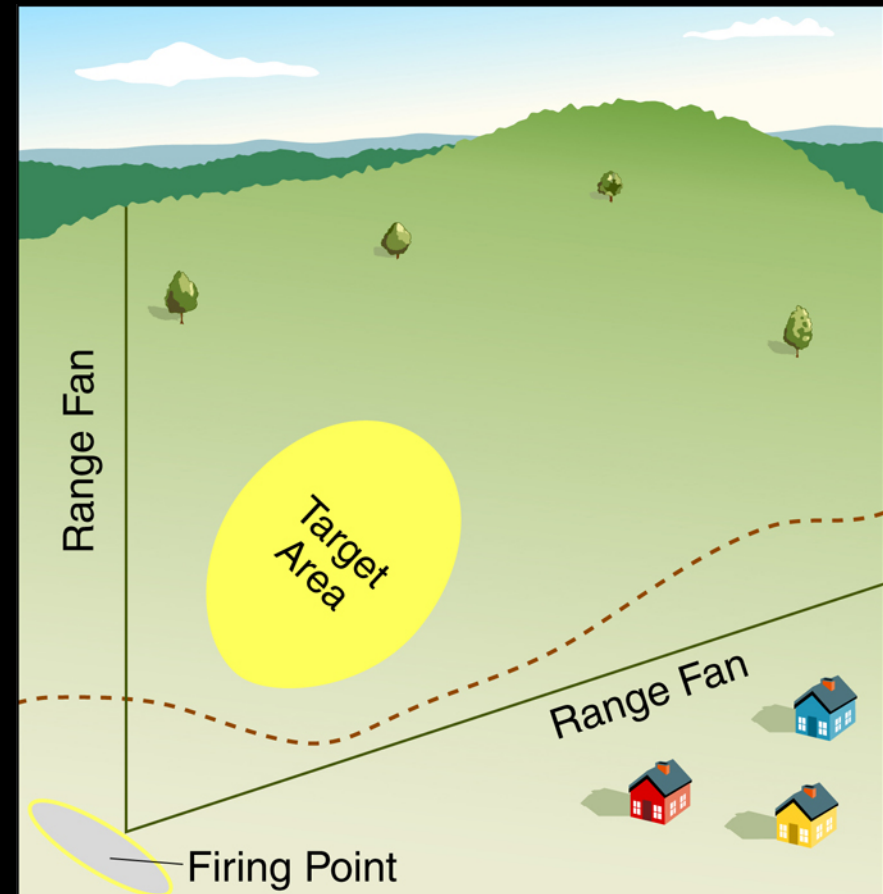
- Technology options developed for target area remedial alternatives
- Alternatives are evaluated using CERCLA nine criteria

# Example Alternative: Clearance to Depth of Detection for Target Area



# Other Information to Inform the Remedial Alternatives Evaluation

- Consider remediation objectives and land use
- Consider site-specific conditions
  - Proximity to populations
  - Terrain, site geology, vegetation
  - Nature and extent of contamination
  - Cultural and ecological resources



# Scoring Example: 2.36" Rockets

	Current Conditions	
Input Factor	Input Factor Category	Score
Type of Filler	High Explosive	100
Distance between additional receptors and explosive hazard	Outside of the hazardous distance	0
Site Accessibility	Full accessibility	80
Potential Contact Hours	Few Hours	40
Amount of MEC	Target area	180
Minimum MEC Depth/ Maximum Intrusive Depth	MEC located on surface	240
Migration Potential	Unlikely	10
MEC Category	UXO, Special Case	180
MEC Size	Small	40
Total Scores		870
	Output Category	1



# Remedial Alternatives for Camp Sample Target Areas

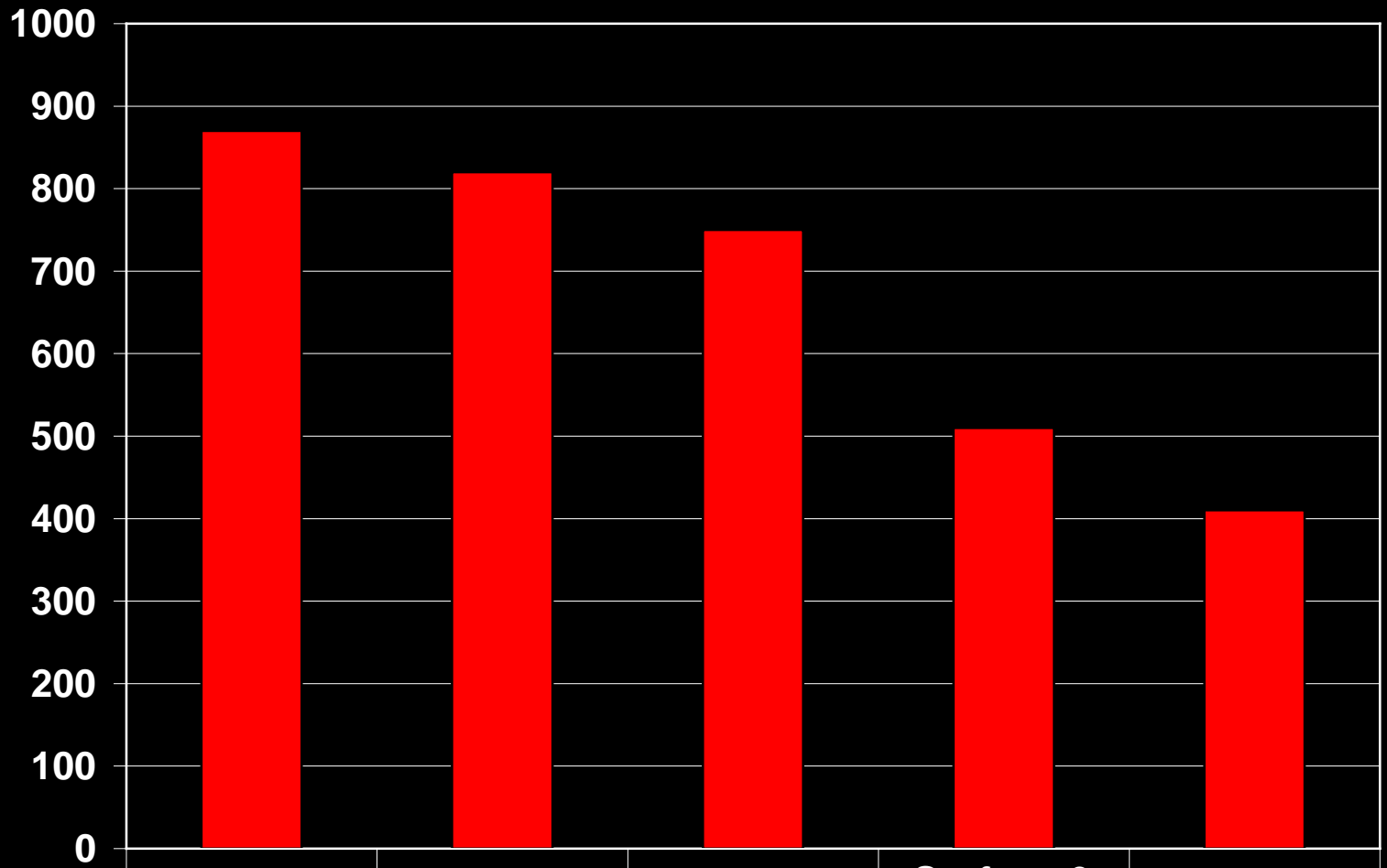
---

- ***No Action***
- ***Land Use Activity Change***
- ***Surface Treatment***
- ***Surface Treatment and Land Use Activity Change***
- ***Subsurface Treatment***

# Remedial Alternatives Outputs for 2.36 “ Rocket Target Area

---

- ***No Action – Category 1***
- ***Land Use Activity Change – Category 2***
- ***Surface Treatment – Category 2***
- ***Surface Treatment and Land Use Activity Change – Category 3***
- ***Subsurface Treatment – Category 4***



<b>■ MEC HA Scores</b>	<b>870</b>	<b>820</b>	<b>750</b>	<b>510</b>	<b>410</b>
------------------------	------------	------------	------------	------------	------------

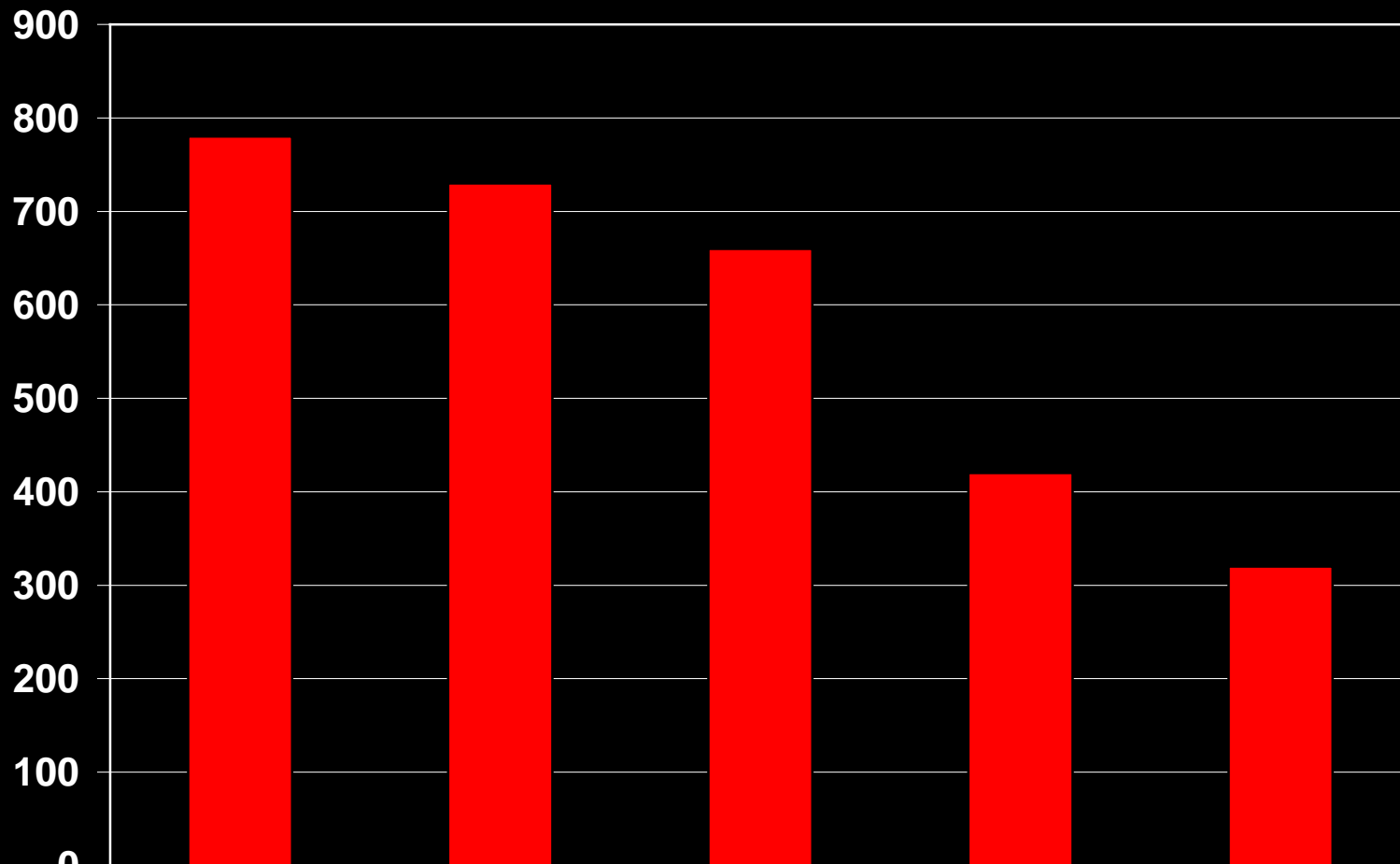
# Scoring Example: Practice Target Area

	Current Conditions	
Input Factor	Input Factor Category	Score
Type of Filler	Spotting Charge	80
Distance between additional receptors and explosive hazard	Outside of the hazardous distance	0
Site Accessibility	Full accessibility	80
Potential Contact Hours	Few Hours	40
Amount of MEC	Target area	180
Minimum MEC Depth/ Maximum Intrusive Depth	MEC located on surface & Subsurface	240
Migration Potential	Unlikely	10
MEC Category	UXO, Normal Fuze	110
MEC Size	Small	40
Total Scores		780
	Output Category	2

# Remedial Alternatives Outputs for Practice Target Area

---

- ***No Action – Category 2***
- ***Land Use Activity Change – Category 2***
- ***Surface Treatment – Category 3***
- ***Surface Treatment and Land Use Activity Change – Category 4***
- ***Subsurface Treatment – Category 4***



	<b>No Action</b>	<b>Activity Change</b>	<b>Surface</b>	<b>Surface &amp; Activity Change</b>	<b>Subsurface</b>
<b>■ MEC HA Score</b>	<b>780</b>	<b>730</b>	<b>660</b>	<b>420</b>	<b>320</b>

# Scoring Example: Range Safety Fan

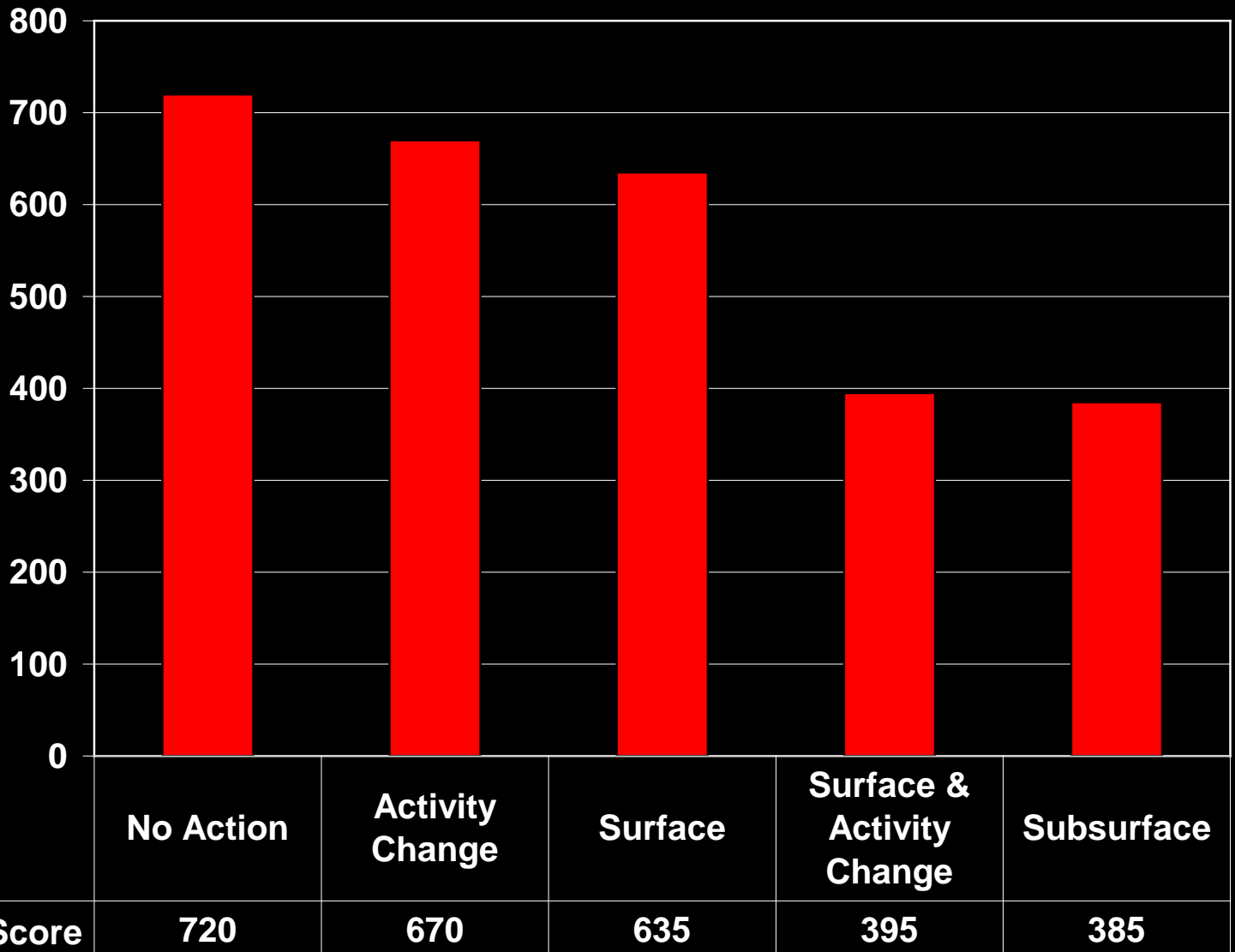
	Current Conditions	
Input Factor	Input Factor Category	Score
Type of Filler	High Explosive	100
Distance between additional receptors and explosive hazard	Outside of the hazardous distance	0
Site Accessibility	Full accessibility	80
Potential Contact Hours	Few Hours	40
Amount of MEC	Safety buffer area	30
Minimum MEC Depth/ Maximum Intrusive Depth	MEC located on Surface & Subsurface	240
Migration Potential	Unlikely	10
MEC Category	UXO, Special Case	180
MEC Size	Small	40
Total Scores		720
	Output Category	2

# Remedial Alternatives Outputs for Range Fan

---

- ***No Action – Category 2***
- ***Land Use Activity Change – Category 3***
- ***Surface Treatment – Category 3***
- ***Surface Treatment and Land Use Activity Change – Category 4***
- ***Subsurface Treatment – Category 4***





# Evaluating the Remedial Alternatives

---

Apply CERCLA nine criteria to remedial alternatives:

- **Threshold criteria**
  - Protection of human health and the environment.
  - Compliance with applicable or relevant and appropriate requirements (ARARs)
- **Balancing criteria**
  - Long-term effectiveness and permanence
  - Reduction of toxicity, mobility or volume through treatment
  - Short-term effectiveness
  - Implementability
  - Cost
- **Modifying criteria**
  - State acceptance
  - Community acceptance

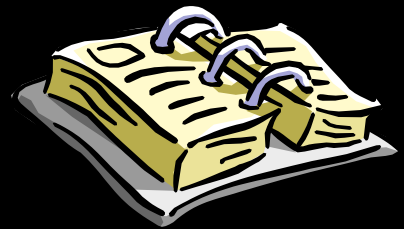
# Outreach Plan

- The Outreach Plan includes:
  - Munitions Response Committee involvement
  - Opportunities for Stakeholder involvement.
  - Schedule for informational briefings.
  - Use of outlets such as websites, fact sheets, and mailing lists.
  - [www.epa.gov/fedfac/documents/munitions/](http://www.epa.gov/fedfac/documents/munitions/)

# Next Steps

---

- Incorporate Pilot Test Feedback
- Stakeholder Workshop Feedback
- Draft Guidance in Early 2006



# Pilot Test Process

---

- Camp Beale complete, Camp Butner complete on August 9th
- Interaction between project teams and MEC HA TWG on framework details
- Evaluation of MEC HA, feedback to TWG
- Modifications to framework in response to pilot process with project teams
- Identification of guidance issues

# Emerging Issues for Guidance Document

---

- Emphasis on collaborative decision-making
- Clear instructions on use of MEC HA needed
- Sufficiency & quality of data
- Use of MEC HA to support NOFA

# Emerging Issues for Guidance Document

---

- Should Construction Support be included in MEC HA scoring?
- Activity (intrusiveness) has greater emphasis than land use category
- Scores are relative
- Greater scoring reduction for clearance than for activity or access changes
- Output category descriptions qualitative

# Stakeholder Workshop Objectives

---

- Evaluation & Feedback
  - Usability
  - Transparency
  - Consistency
  - Do the input factors make sense?
  - Does the weighting & scoring work well?
  - Do the output factors make sense?



# Stakeholder Workshop Objectives

---

- Reality checks based on site examples – Camp Sample
- Modifications to framework
- Identification of issues for guidance development

# Questions ?

Kevin Oates

334-270-3427

[oates.kevin@epa.gov](mailto:oates.kevin@epa.gov)