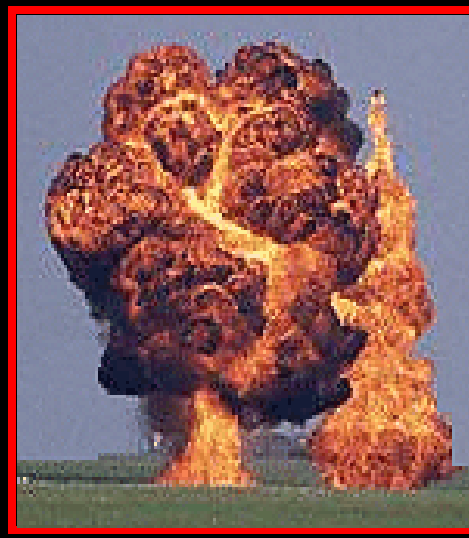
Munitions and Explosives of Concern Hazard Assessment (MEC HA) Initiative

ASTSWMO
August 4, 2005



Purpose of this Briefing

- 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

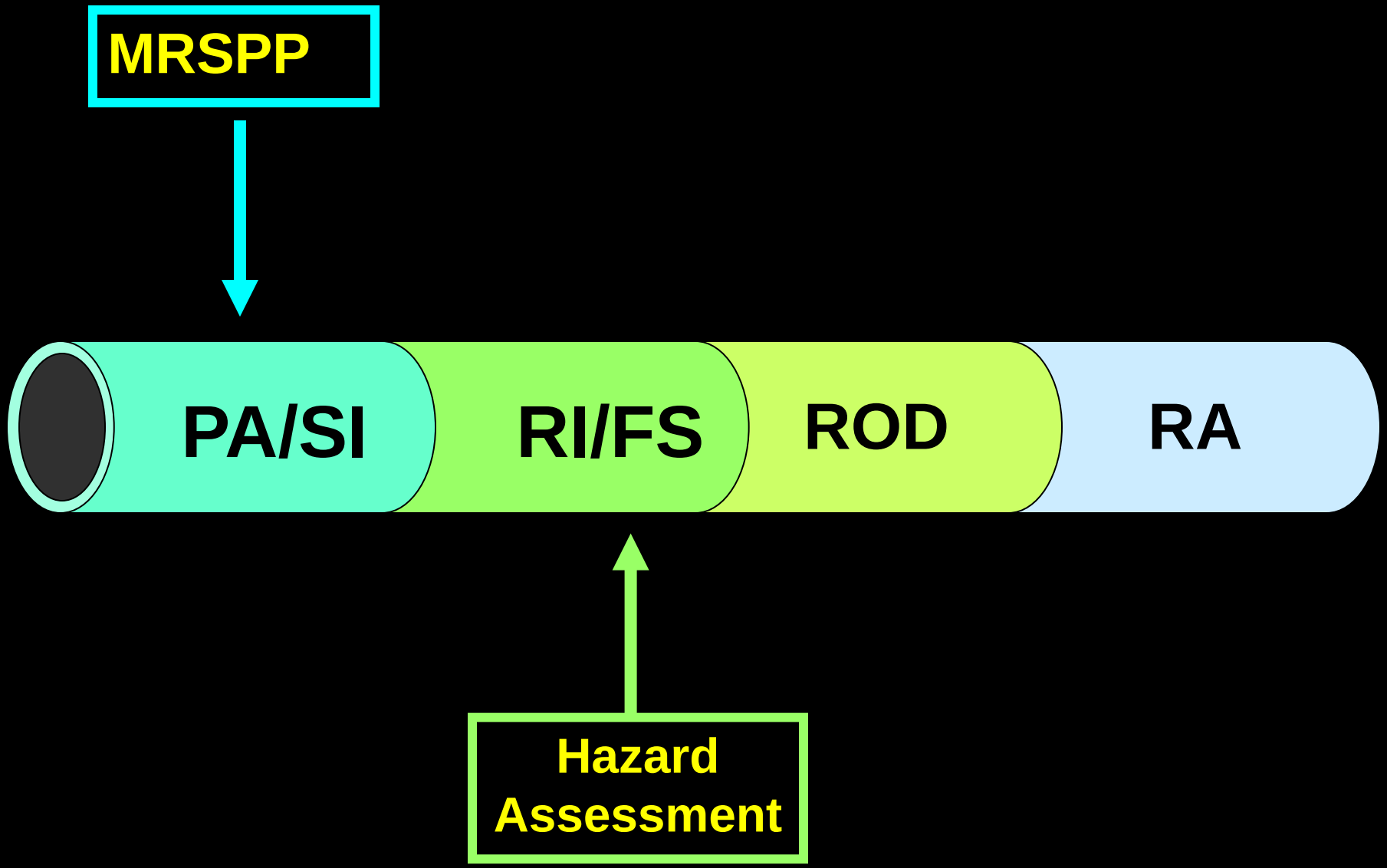
Why a MEC HA ?

- 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



MEC HA Work Group Participants

- EPA
- DOD
- DOI
- ASTSWMO
- TASWER

Work Group Underlying Principles

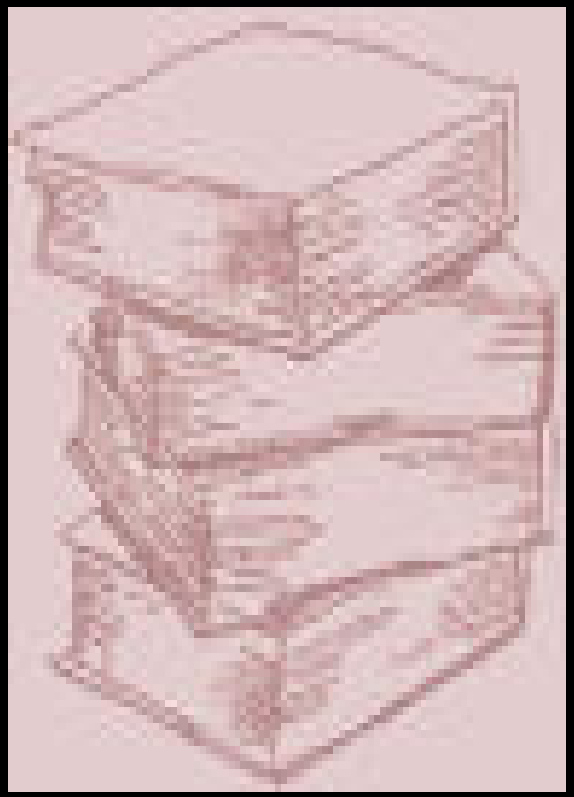
- Support the management of uncertainty
- Connection to the Conceptual Site Model
- Utilize a relative hazard assessment approach

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

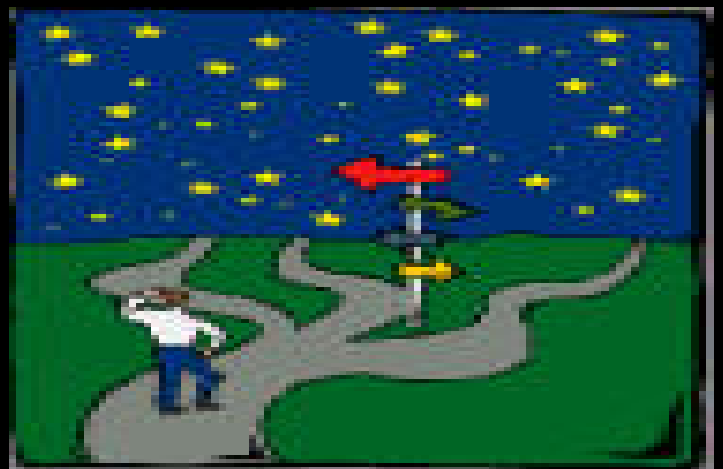
- Performance Objectives
- Comparison of MRSPP to MEC HA
- Input Factors
- Structure and Output
- MEC HA in the CERCLA Process

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

Input Factor	Category or Value	Score		
		Untreated	Surface MEC Response	Subsurface MEC Response
Filler Type	High Explosive	100	100	100
	Incendiary	80	80	80
	Spotting Charge	80	80	80
	Propellant	20	20	20
Distance of Additional Potential Human Receptors to Explosive Hazard	Within MRS or hazardous distance of the MRS boundary	30	30	30
	Outside of the hazardous distance	0	0	0
	Non-HE filler type	0	0	0

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

Input Factor	Category or Value	Score		
		Untreated	Surface MEC Response	Subsurface MEC Response
Site Accessibility	Full accessibility	80	60	15
	Moderate Accessibility	55	25	10
	Limited Accessibility	15	10	5
	Very Limited Accessibility	5	5	5
Potential Contact Hours	Many Hours	120	90	30
	Some Hours	70	50	20
	Few Hours	40	20	10
	Very Few Hours	15	10	5

MEC HA Structure

Input Factor	Category or Value	Score		
		Untreated	Surface MEC Response	Subsurface MEC Response
Amount of MEC	Target area	180	120	30
	OB/OD area	180	140	30
	QA function test range	165	90	25
	Burial Pit	30	30	10
	Maneuver areas	115	15	5
	Storage	25	10	5
	Explosive-related industrial facility	20	10	5
	Firing points	75	10	10
	Safety buffer areas (Range safety fans and OB/OD kick-out areas)	30	5	5

MEC HA Structure

Input Factor	Category or Value	Score		
		Untreated	Surface MEC Response	Subsurface MEC Response
Minimum MEC Depth Relative to the Maximum Intrusive Depth	MEC located on surface	240	Not Applicable	Not Applicable
	MEC located subsurface, intrusive depth overlaps	220	220	150
	MEC located subsurface, intrusive depth does not overlap	25	25	25
Migration Potential	Possible	30	30	10
	Unlikely	10	10	10

MEC HA Structure

Sensitivity: Input Factors

- MEC Category
- MEC Size

MEC HA Structure

Input Factor	Category or Value	Score		
		Untreated	Surface MEC Response	Subsurface MEC Response
MEC Category	UXO special case	180	180	180
	UXO	110	110	110
	DMM with category 1 fuzes	105	105	105
	DMM with category 2 fuzes	55	55	55
	Unfuzed DMM	45	45	45
MEC Size	Small	40	40	40
	Large	0	0	0

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

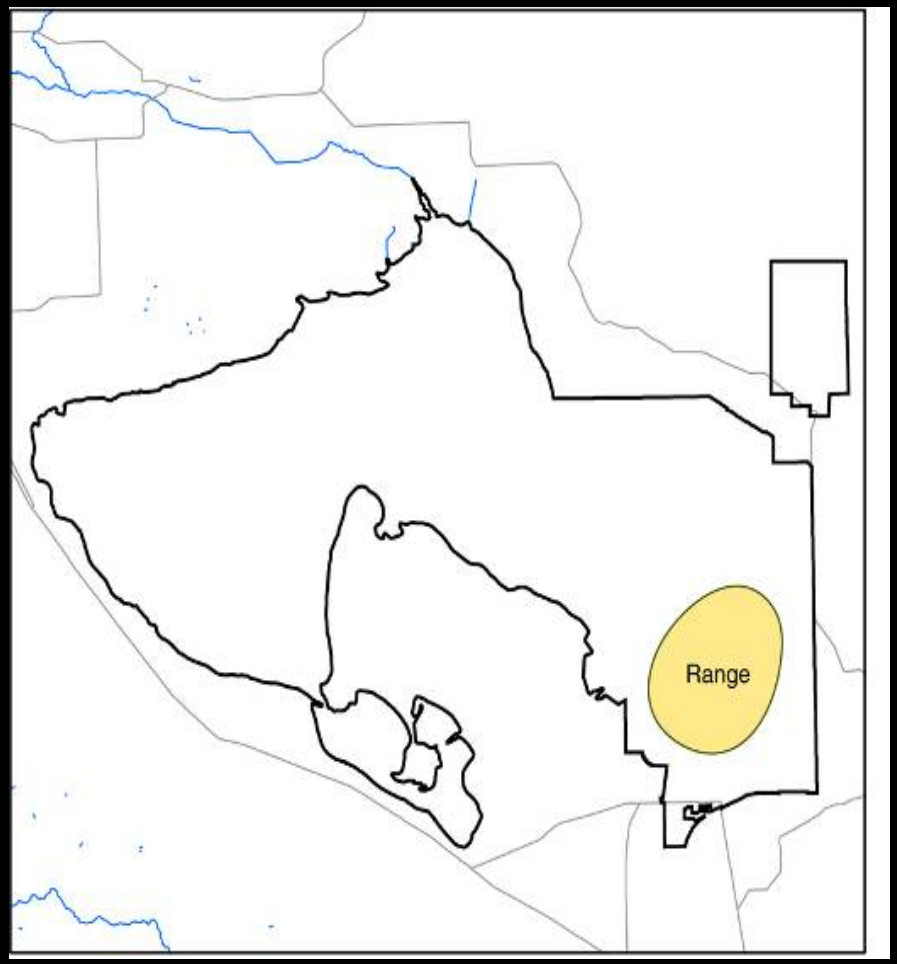
The Output Categories for the MEC HA are:

- ***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

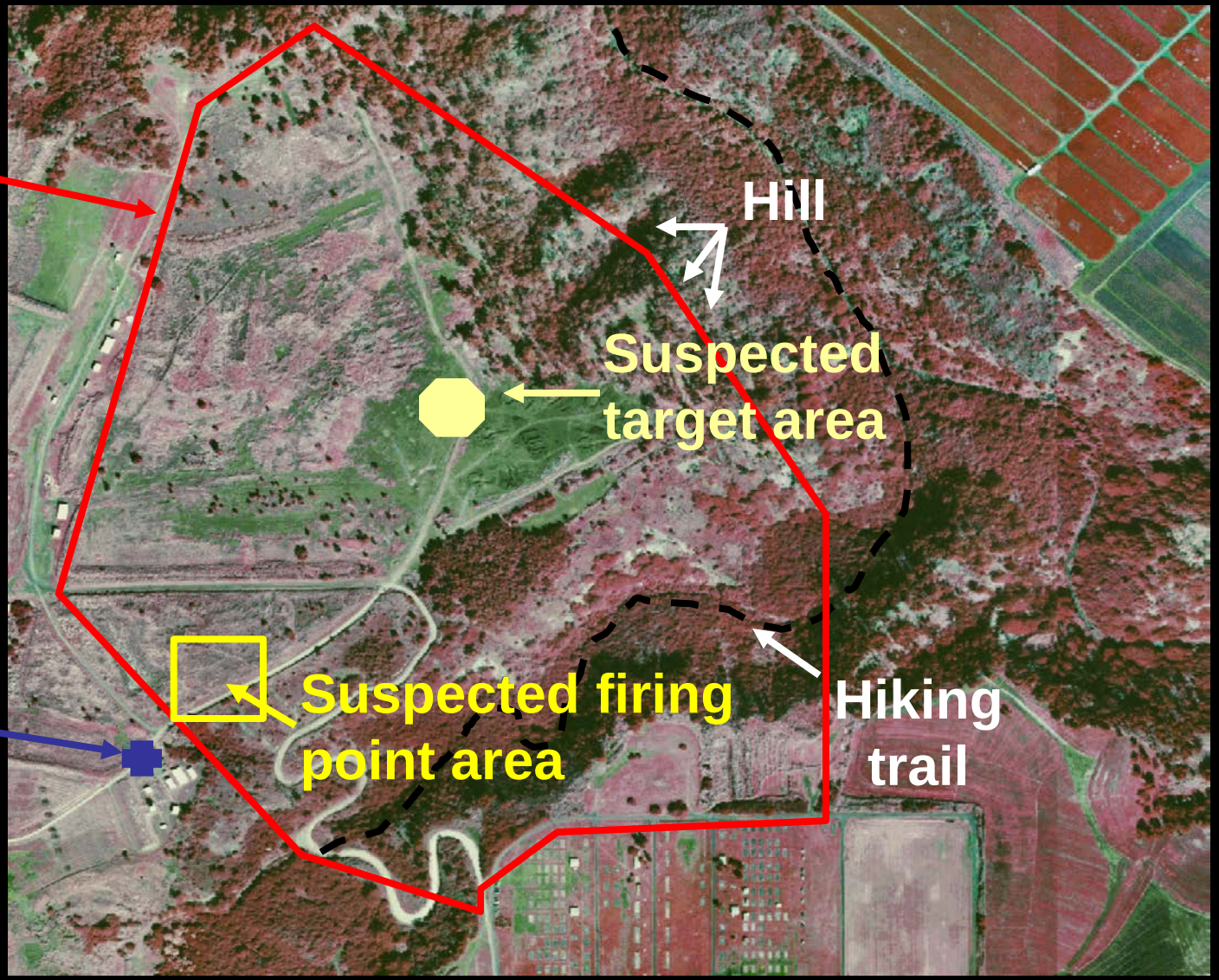
Former “Camp Sample” Site Features

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

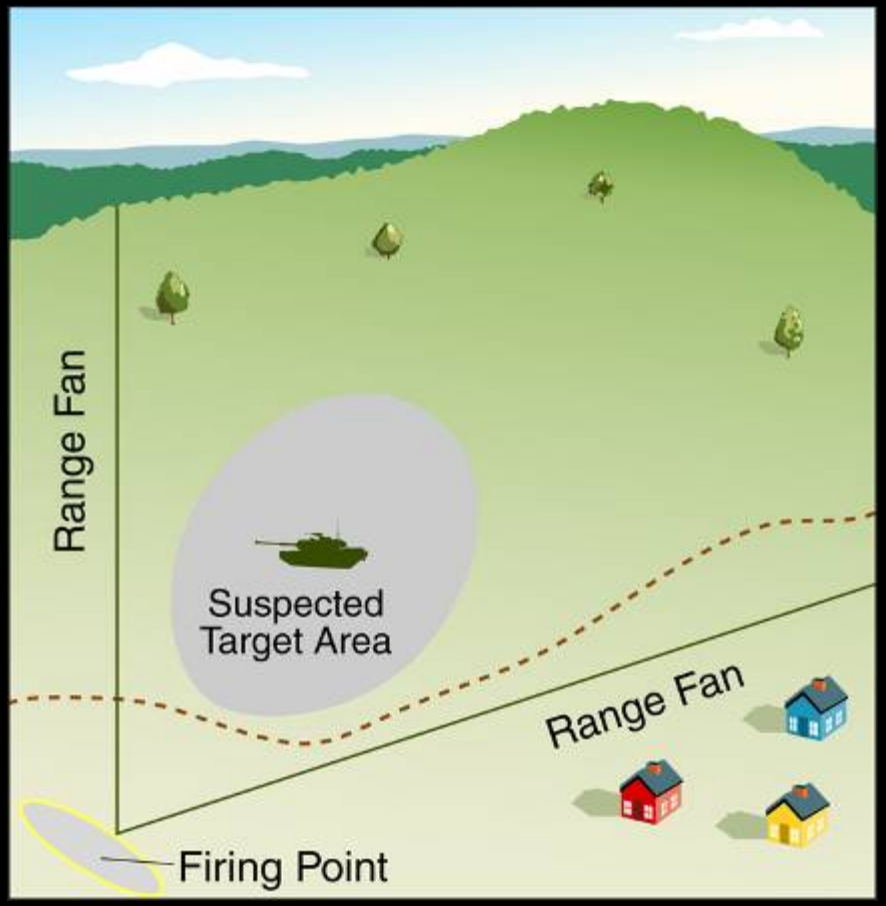
“Camp Sample” Historical Information

- 2.36” rockets used for training
- Training in WWII through1950’s

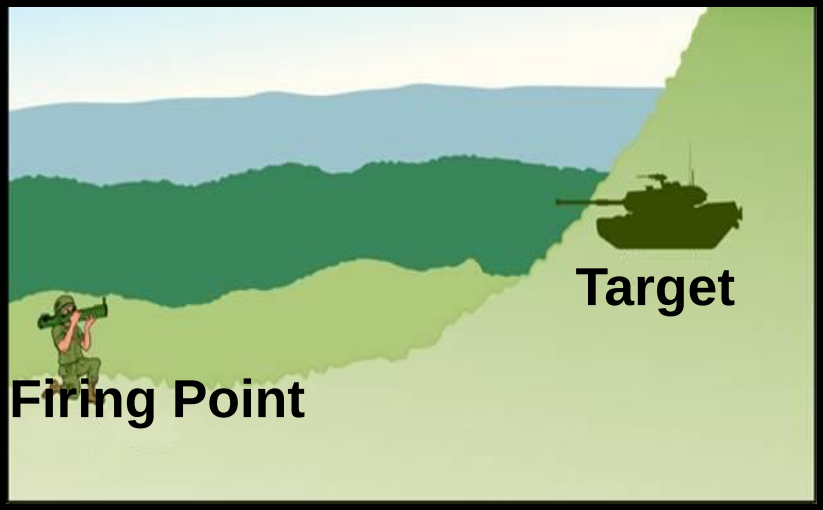
Historical Information



Preliminary Conceptual Site Model



- Suspected locations of
  - Firing point
  - Range fan



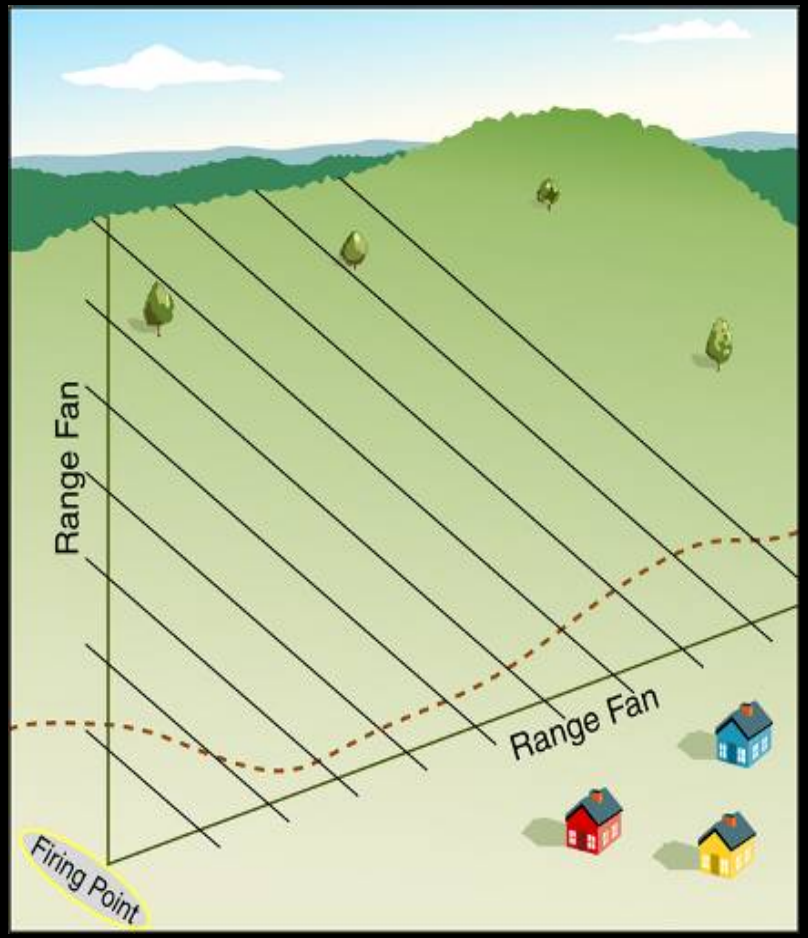
Data Quality Objectives (DQOs)

- 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 ?

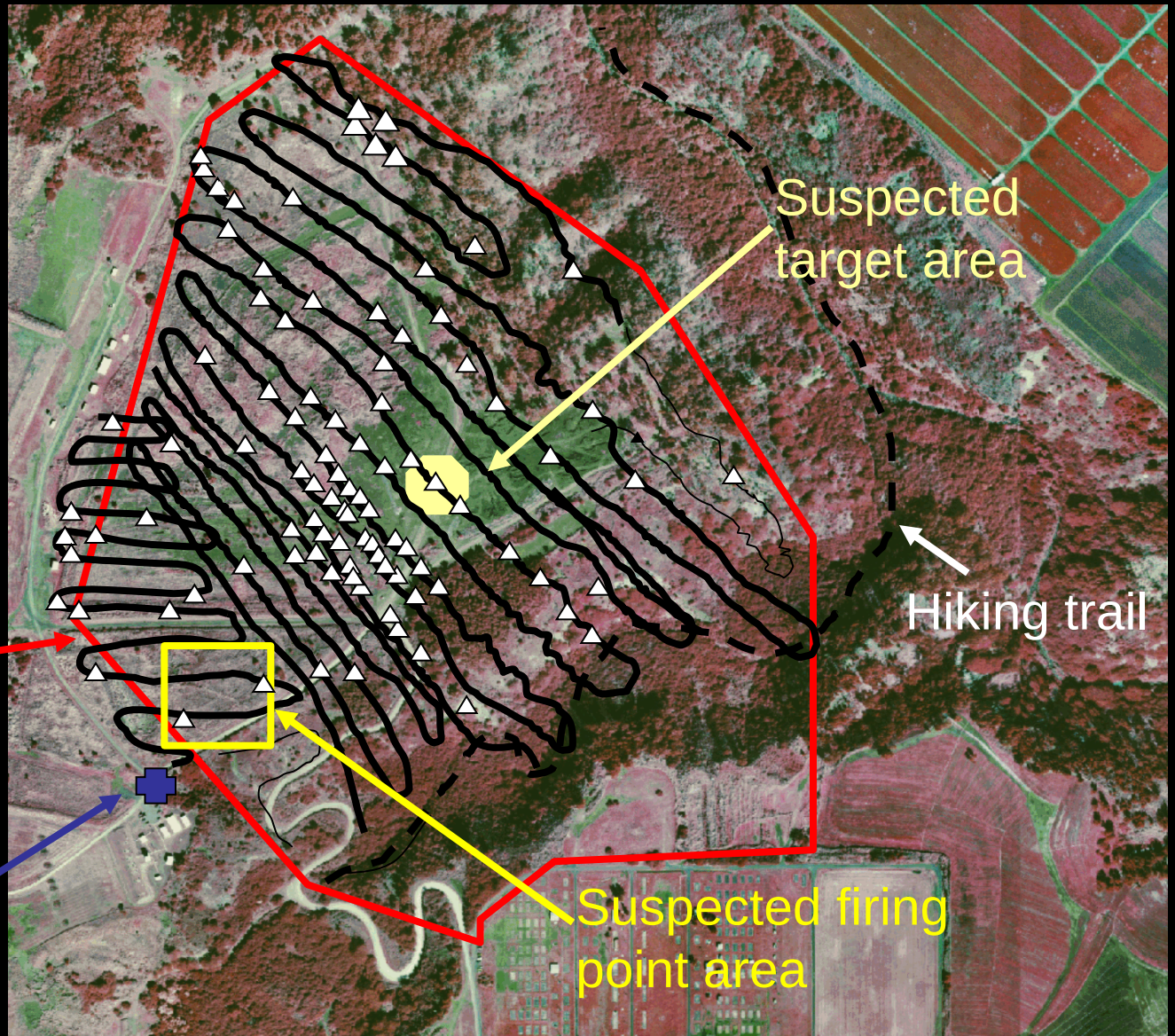
- Increase transect density over suspected target

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**

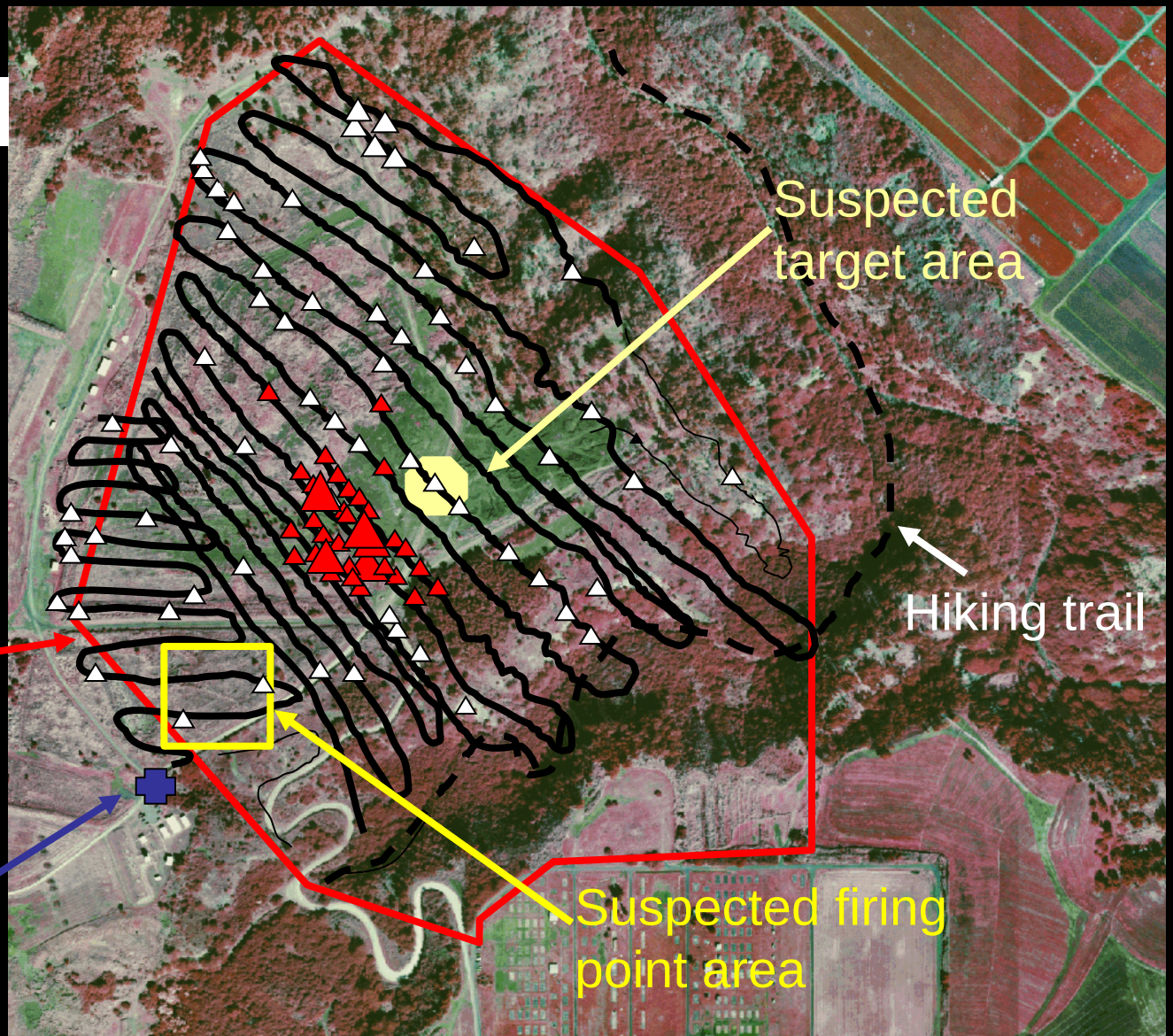


Anomalies Identified

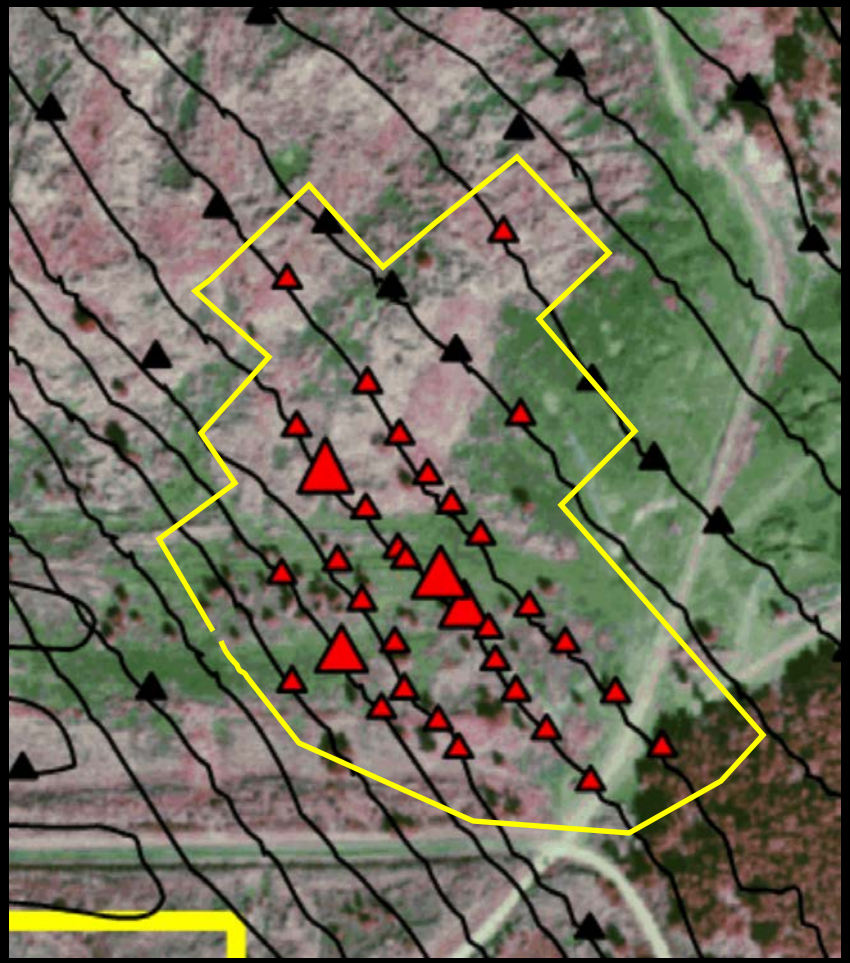
▲ = Non-MEC anomaly

▲ = MEC Frag (2.36” rocket)

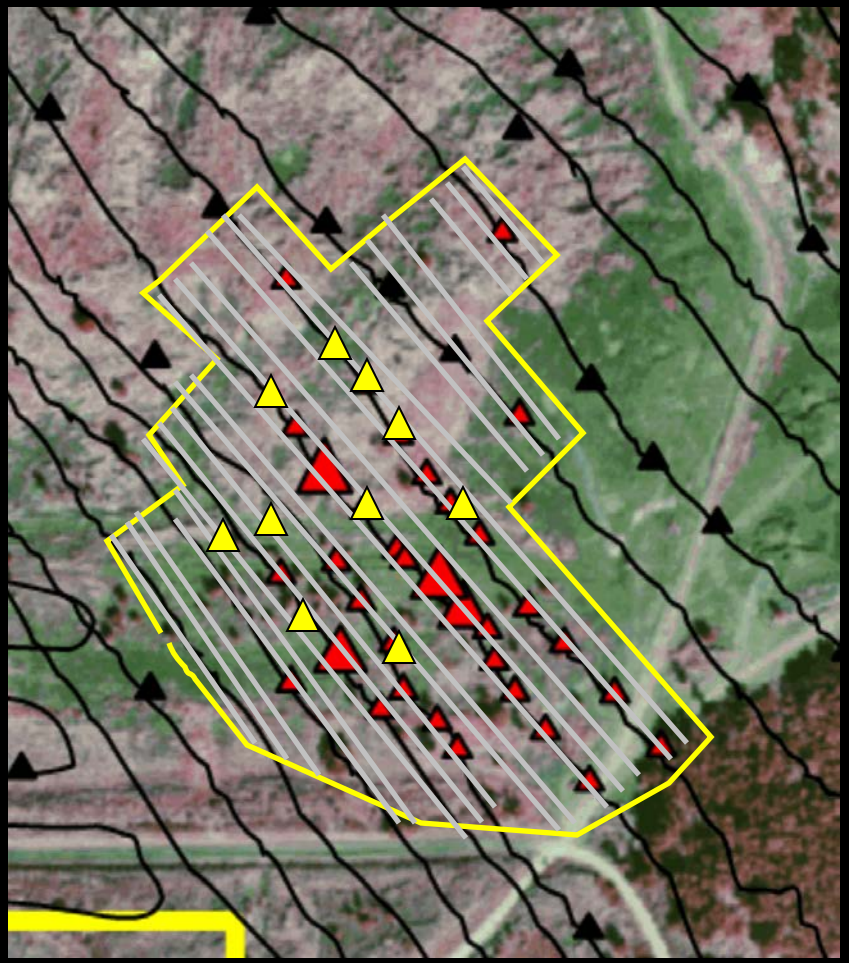
▲ = UXO-2.36” rocket



Results of Increased Transects



Increased transects in this area

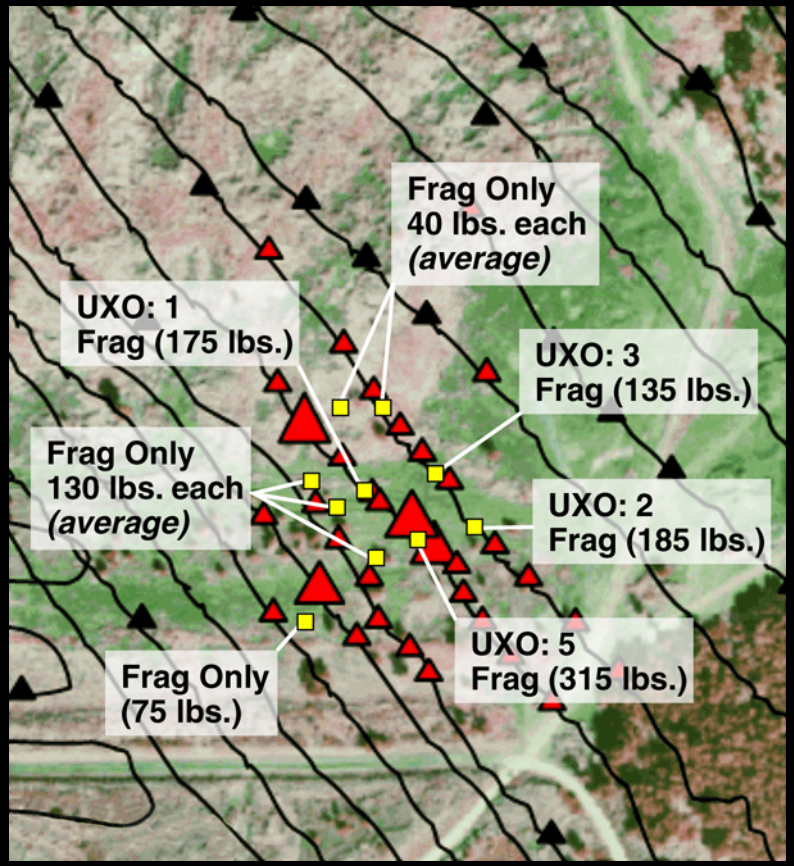


Results of adding 25 foot transects added to investigation

Detailed Sampling Results

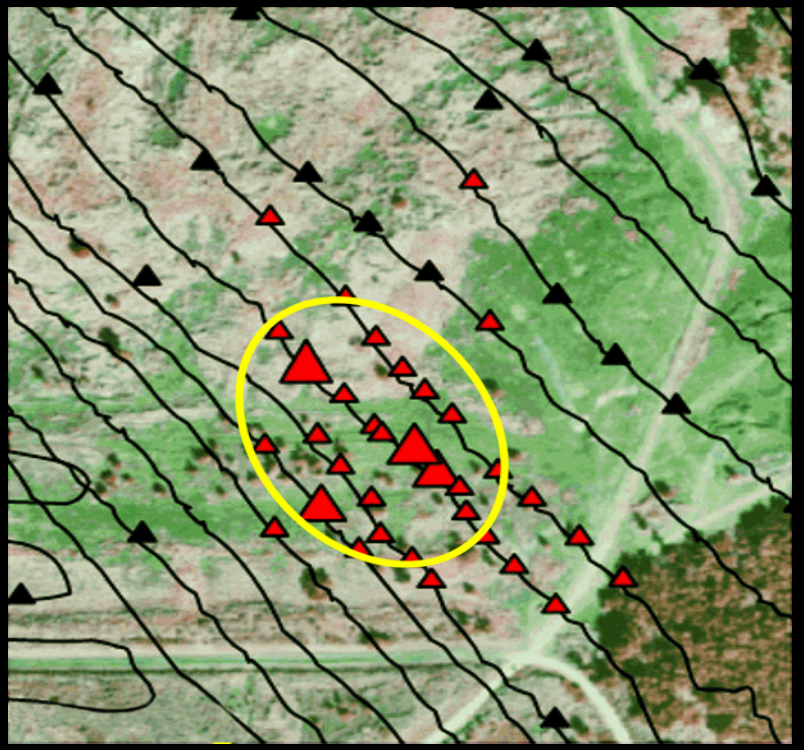
- Items detected: 2.36” rockets (HE) and 2.36” rocket frag
- Depth ranges: Surface to one-foot
- UXO density: estimated 4/acre
- Scrap density:

  estimated 480 anomalies/acre

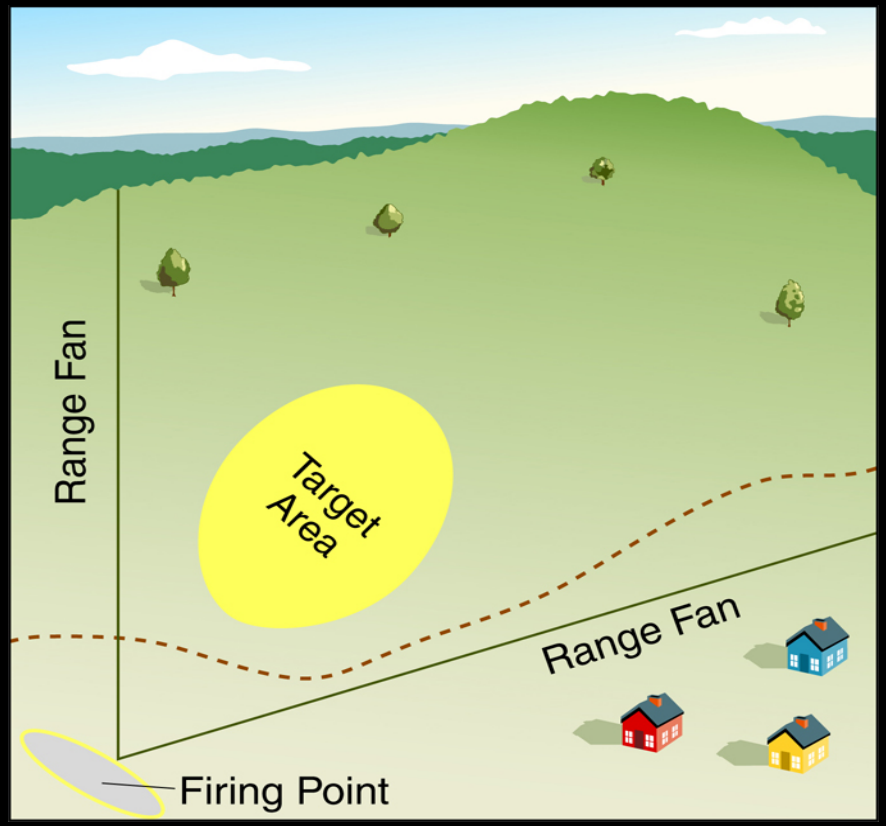


Target Area Delineated – Extent of Contamination

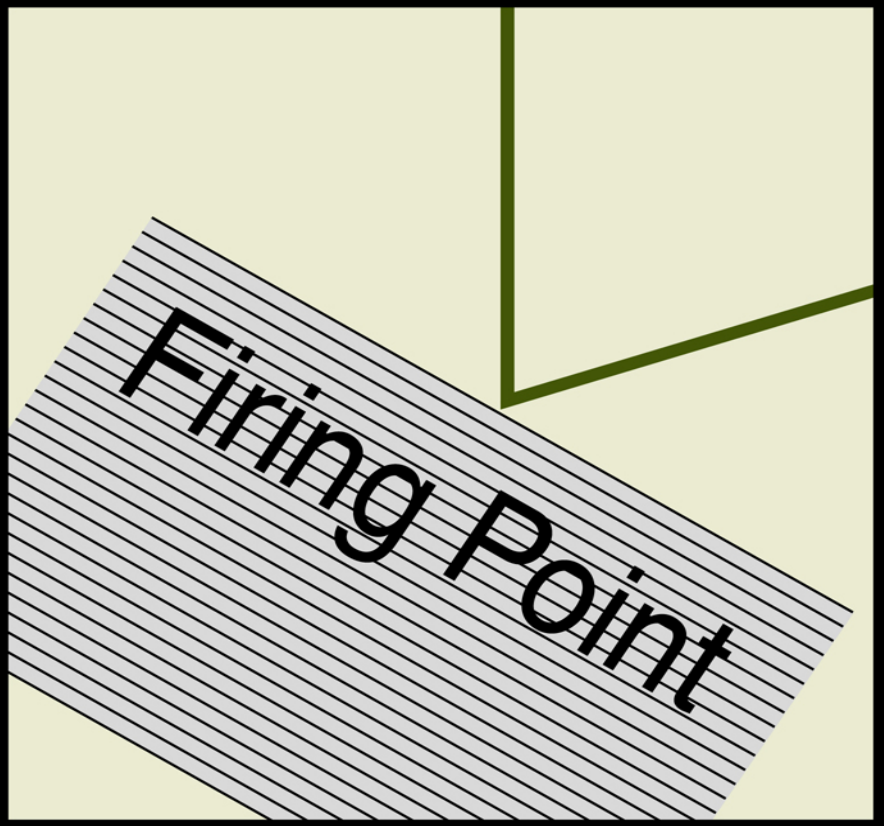
- Estimated target area
  - 17 acres



Continuing the Investigation – Firing Point



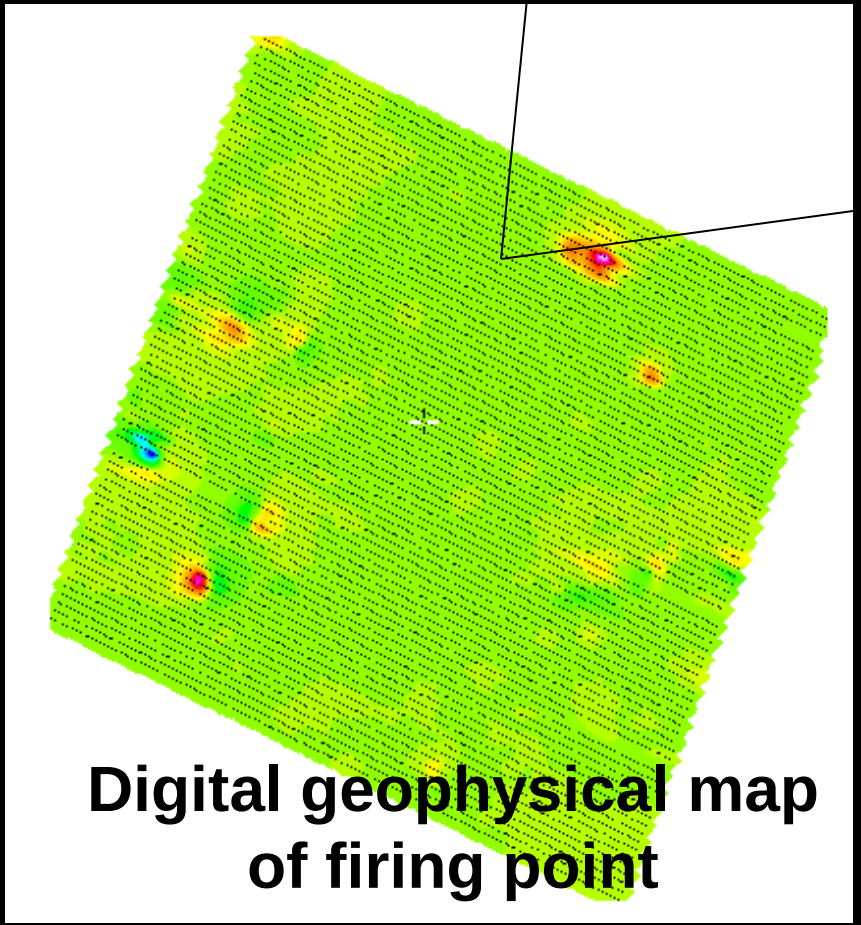
Investigation of range fan complete



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



Digital geophysical map of firing point

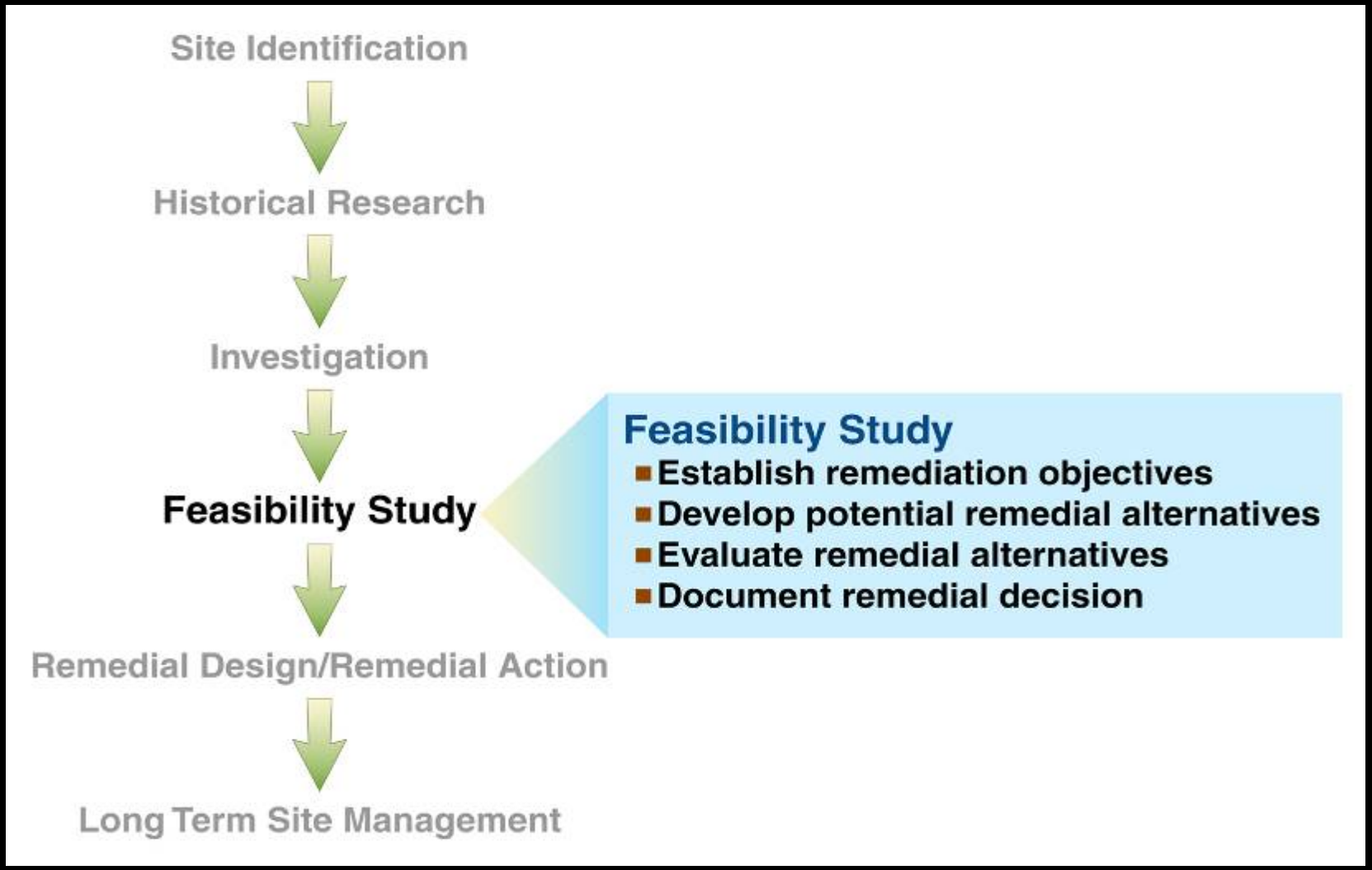
Geophysical Investigation Complete

- 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



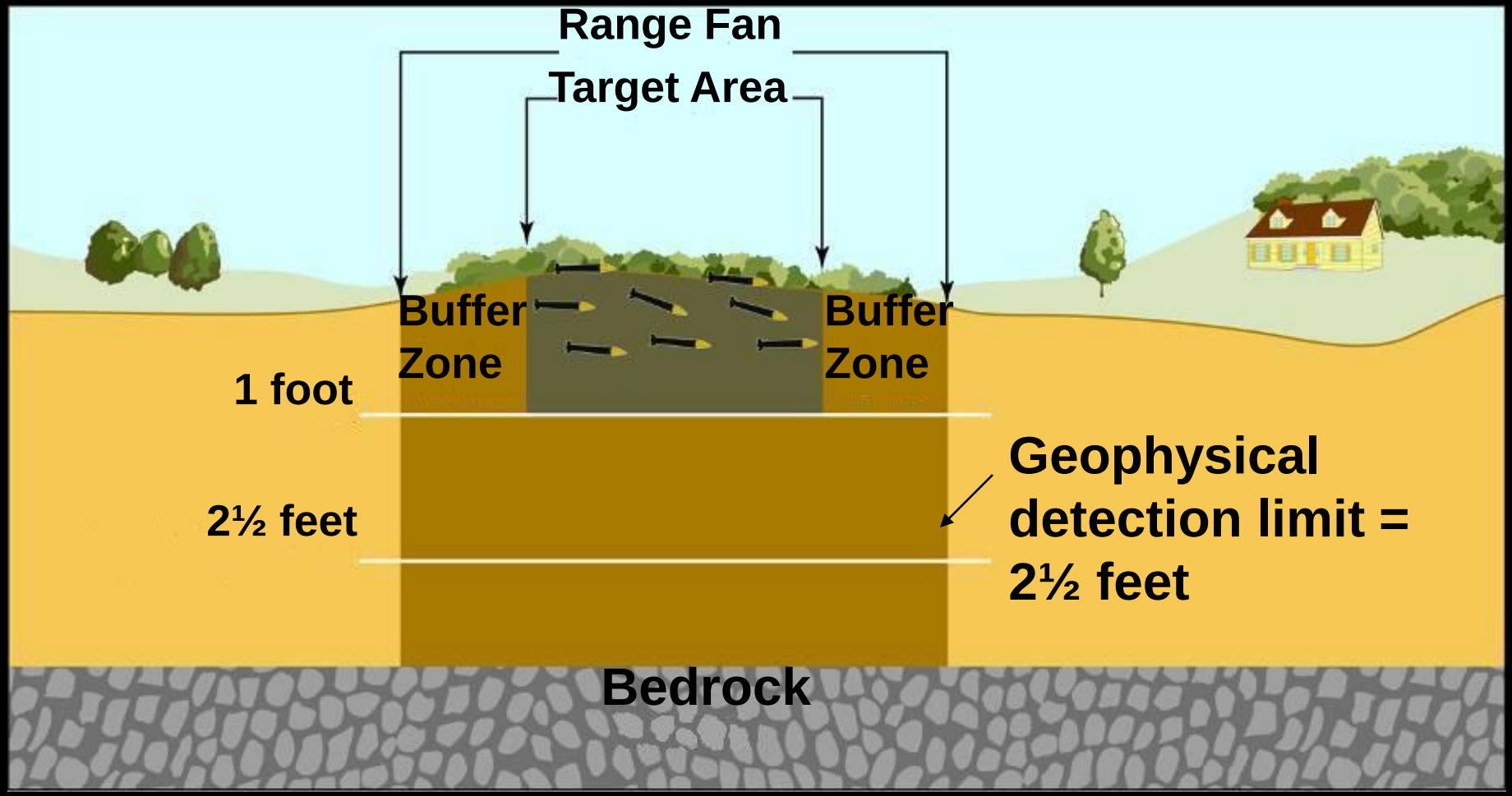
Remediation Objectives for Target Area

- 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

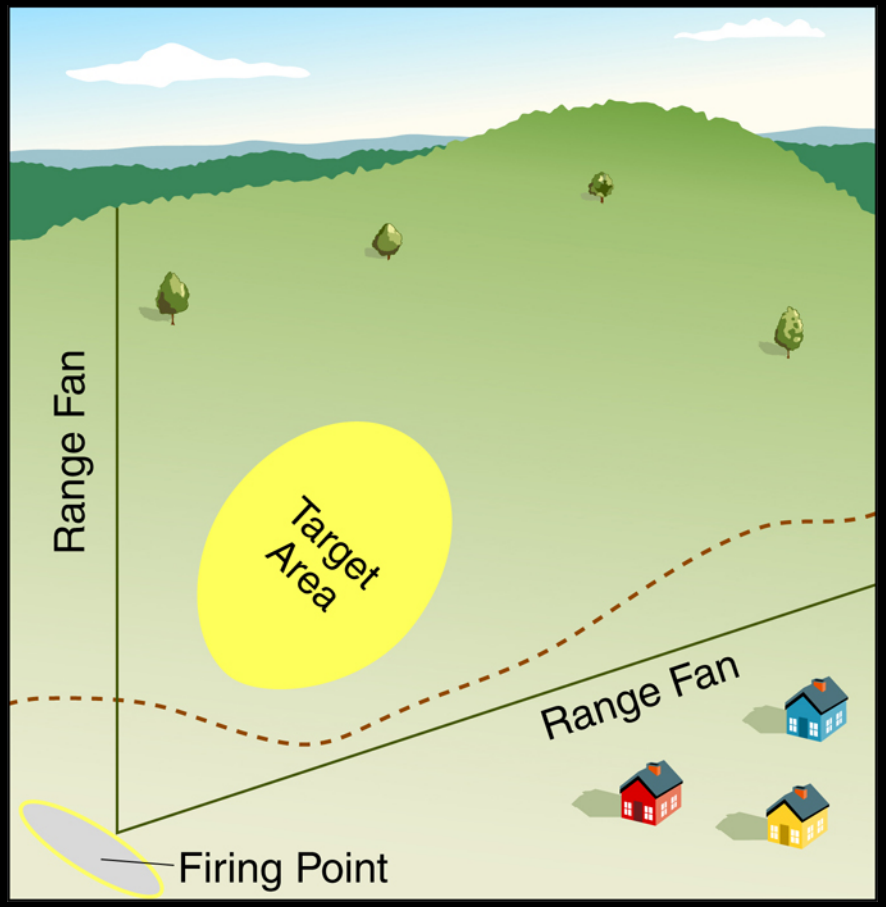
- Technology options developed for target area remedial alternatives
- Alternatives are evaluated using CERCLA nine criteria

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 “Camp Sample” Target Area

- Filler Type - HE
- Distance to Additional Receptors – outside MRS
- Accessibility - Fully
- Contact Hours - Few
- Amount of MEC - Target Area
- MEC Depth vs Intrusive Depth – Overlaps
- Migration – Unlikely
- Category – UXO
- Size – Small

Scoring Example “Camp Sample”

	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 Area

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


1000
900
800
700
600
500
400
300
200
100
0
No Action
Activity Change
Surface
Surface & Activity Change
Subsurface
MEC HA Scores
870
820
750
510
410

Output for Remedial Alternatives "Camp Sample"

- ***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***

Evaluating the Remedial Alternatives

Apply CERCLA nine criteria to remedial alternatives:

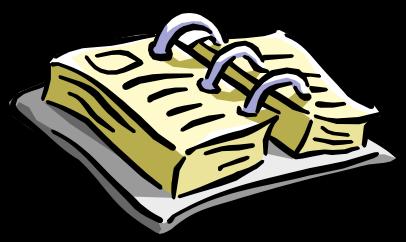
- Threshold criteria
  - Protectiveness of human health and the environment.
  - Compliance with applicable or relevant and appropriate requirements (ARARs)
- Balancing criteria
  - Long-term effectiveness and permanence
  - Reduction of toxicity, mobility or volume through treatment
  - Short-term effectiveness
  - 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/

Next Steps

- Complete Pilot Test Framework
- Stakeholder Workshop
- Draft Guidance in Late 2005



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

Pilot Test Objectives

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

Pilot Test Objectives

- Reality checks based on site-specific data & evaluations from project teams
- Modifications to framework
- Identification of issues for guidance development

Emerging Issues for Guidance Document

- Clear instructions on use of MEC HA needed
- Sufficiency & quality of data
- Emphasis on collaborative decision-making
- 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
- Output category descriptions qualitative
- Framework is biased to cleanup over changes in access, activities

Questions ?

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