Sampling Project Strategy and Path Forward

Closed Castner Firing Range
Fort Bliss, TX

29 July 2010

Agenda

- Meeting Goals
- Site Overview
- Defining the Problem
- Study Goals
- Sampling Approach
- Path Forward
- Work Plan
- Schedule
- Questions

Meeting Goals

- Review current project scope and goals
- Introduce proposed sampling approach and procedures
- Present plans for data usability in future investigative efforts
- Understanding TCEQ expectations and level of involvement

Castner Range Overview

- Size
- Location
- Vegetation
- Terrain
- Historical uses
- Munitions types
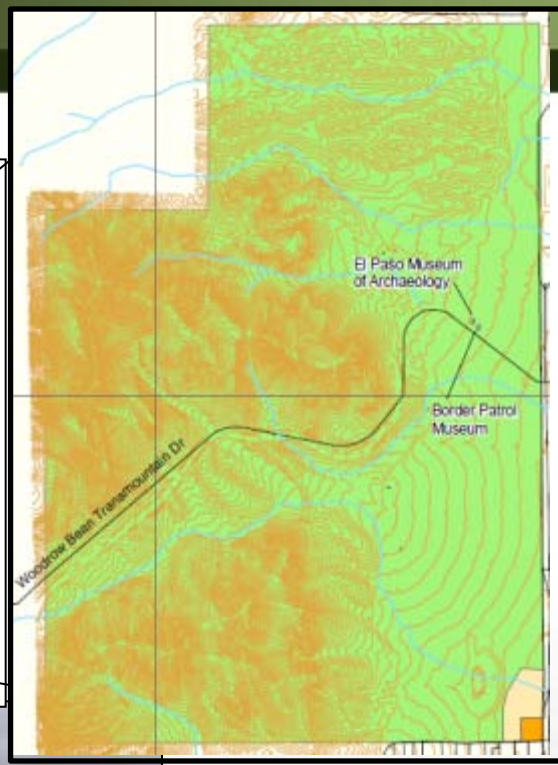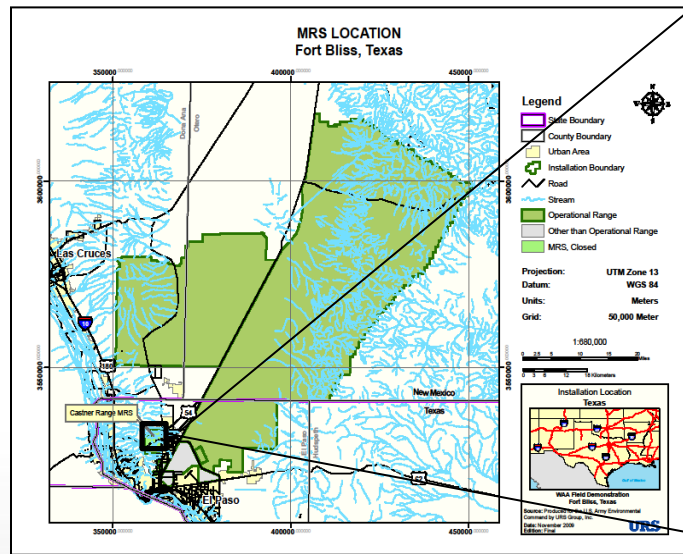
Defining the Problem

- Large Site (7,007 acres)
- Varied types of firing ranges and munitions types used from 1930s – 1960s
- Heterogeneity of munitions constituents in soil
  - Most of surface area uncontaminated (>95%)
  - Most contamination in chunks localized around "low order" (partial) detonations
  - Most MC in top inch of soil on training ranges (deeper at demolition ranges)
- Challenges determining nature and extent of contamination
- Unknown future land use

Project Objectives

- Implement and test the effectiveness of the Army's Incremental Sampling (IS) Protocol on the Closed Castner Firing Range, Fort Bliss, TX
- Gain regulatory acceptance of IS sampling approach and results
- Characterize MC at Castner Range
- Test some hypotheses about the IS sampling approach on Castner Range

Study Goals

- Collect data in a manner that allows for use under Texas Risk Reduction Program (TRRP)

- Determine presence or absence of munitions constituents (MC) (energetics and metals)
  - If presence of MC, then determine nature and extent through comparison to TRRP PCLs

- TCEQ accept sampling results for use in future investigation and remediation efforts
  - Using Texas Accredited Laboratory
  - Validating Data in accordance with TRRP-13

Proposed Study Questions

- Is the Army's Incremental Sampling protocol implementable in a production setting?

- Determining nature and extent of MC on Castner Range (representative concentrations)

- What is the effect of sampling unit size on IS concentrations?

- What is the effect of erosion vs. deposition on MC concentrations?

- What is the correlation between MEC and MD density on MC concentrations?

Sampling Strategy

- Determine Areas of Interest

- Identify Sampling Units

- Determine appropriate PCLs and Ecological Benchmarks for Screening Data

- Ensure data can be used for determining nature and extent
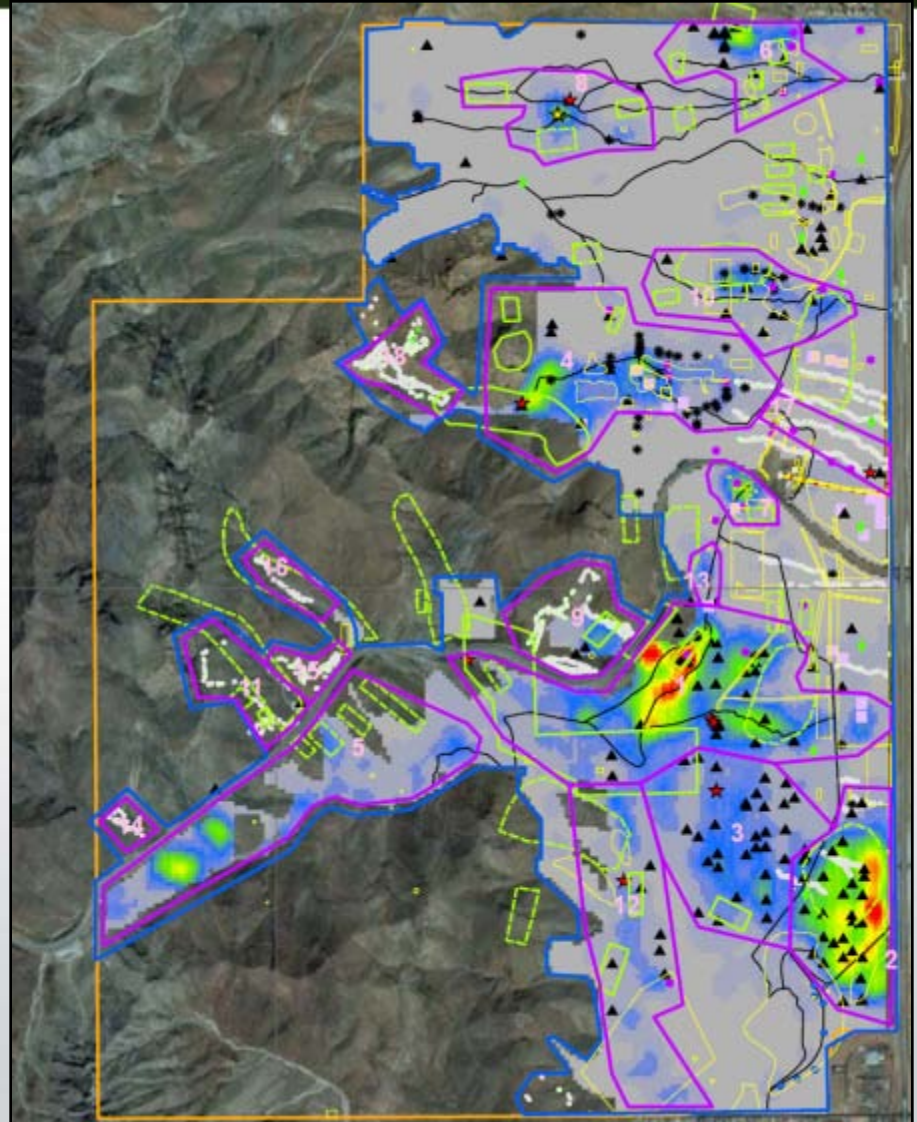
Munitions Constituents (MC)

- Energetics (examples)
  - Nitramines (RDX)
  - Nitroaromatics (TNT)
  - Nitrate Esters (NG)
- Metals (examples):
  - Lead
  - Antimony
  - Zinc
  - Copper

Areas of Interest at the Site determined by evaluating data overlays from previous site characterization activities

Sampling Overview

- Both Incremental and Discrete Sampling will be performed

- Identify sampling units to sample using the Incremental Sampling method

- Collect samples using the Discrete Sampling Method

Identify Sampling Units

- Unknown future land use

- Nearby development and recreational use

- Recommendation:
  - Distribute sampling units across high and low MEC densities
  - Vary sampling unit size to test sensitivity of results
  - Sampling Units will be defined in the Work Plan

Notional Sampling Units
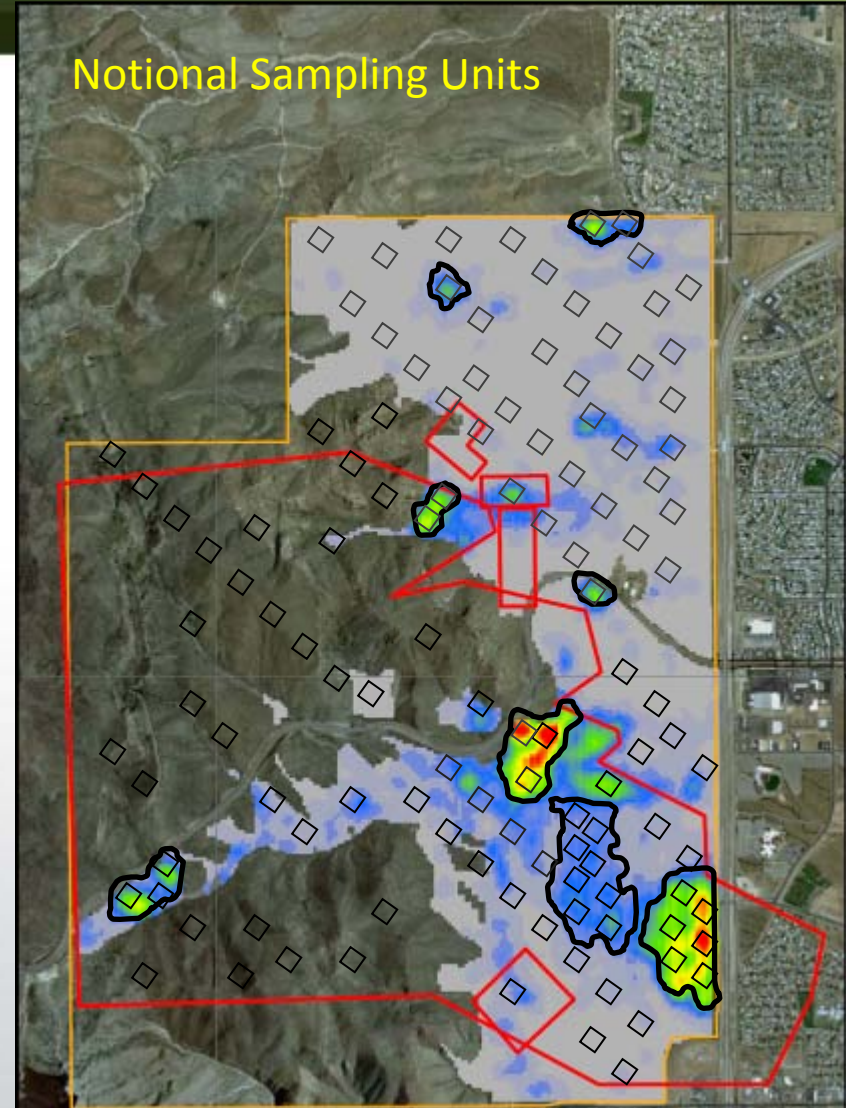
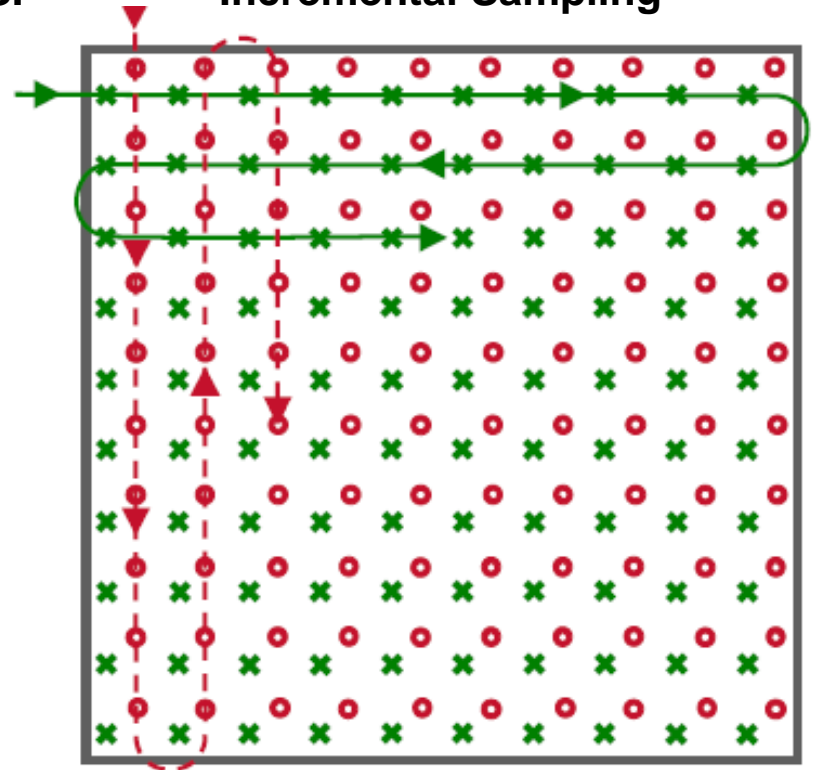# Proposed Solution: Incremental Sampling Design

Discreet Sampling   VS.   **Incremental Sampling**
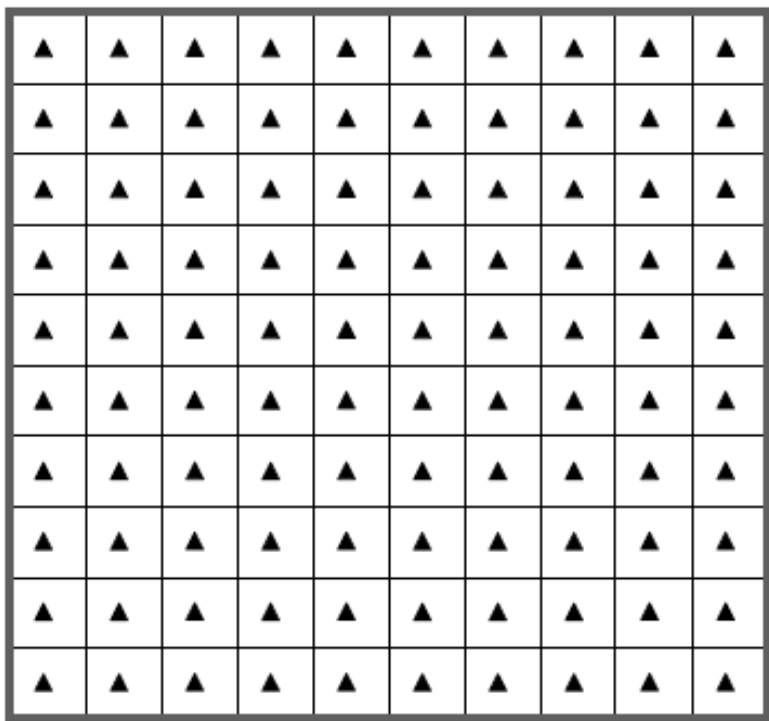
▲ Sample collection point for 100 discrete samples

- - - ➡ Path of travel

⚬ ✕ Increment collection point for two separate MI samples

Soil Sampling Methods

- Shallow surface soils

- Uniform sample depth

- Uniform sample size

- Quick and easy to take a lot of sample increments (minimum of 30 increments)
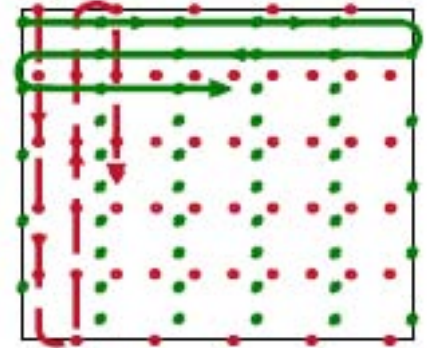
Sample Processing (8330B)

1. Stratify range area

2. Incremental sampling design

3. Whole sample dried

4. Whole sample sieved

5. Whole sample pulverized

6. Subsampling

Path Forward

Utilize the analytical results from the IS and discrete sampling efforts to:

- Determine nature and extent of MC by comparing to appropriate TRRP PCLs
- Focus on areas requiring further assessment and delineation
- Justify areas that do not require further assessment

Data Screening

To define nature and extent, analytical results will be screened against the most current (March 2010) PCLs:

- Data will be initially screened against the Tier 1 Residential PCLs for 30-acre source area
- Select PCLs in accordance with TRRP
  - The lower of the $^{Tot}Soil_{Comb}$, $^{GW}Soil_{Ing}$, and $^{Air}Soil_{Inh-v}$
  - Compare value to background. If higher, utilize background.
- Data will be compared to ecological benchmarks

Work Plan

A Work Plan will be developed to document:

- Areas of interest
- Sampling approach
- Defined sampling units
- Screening levels (PCLs and ecological benchmarks)
- Method for Evaluating Results

Project Schedule

- August 2010 – October 2010: Develop Work Plan & UFP-QAPP

- February 2011: Soil Sampling

- March – May 2011: Analytical analysis and report writing

Questions?