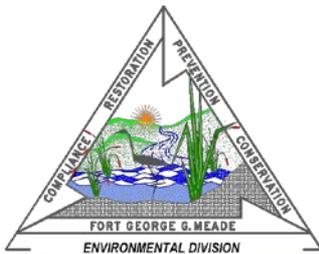




Fort George G. Meade

Former Pesticide Shop

Restoration Advisory Board Meeting September 20, 2012



ARMY STRONG.



Status of CERCLA* Process



- ✓ Remedial Investigation (RI) - characterization of site
- ✓ Feasibility Study (FS) - assessment of possible remedies
- ✓ Proposed Plan (PP) - solicit public input on preferred remedy
- ❑ Record of Decision (ROD) - legal documentation of remedy selection
- ❑ Remedial Design (RD) - remedy implementation plan
- ❑ Remedial Action (RA) - remedy implementation

*Comprehensive Environmental Response, Compensation, and Liability Act





Presentation Agenda



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- Site Information
 - Location
 - History
- Field Investigations
 - Summary of Findings
- Remedial Alternatives
- Preferred Alternative





Site Location



Former Pesticide Shop Aerial View



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Site
Location





Former Pesticide Shop Background



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- The former building (6621) was reportedly used as a Mess Hall for prisoners of war during WWII.
- Used as a pesticide shop for 20 years from 1958 through 1978 housing a maintenance facility for landscaping equipment.
- Building demolished and the Site graded in 1996.





Current Land Use



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- The Site is presently a fenced-in lot with no structures
- The site is grass covered and contains a few trees.





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RI Field Investigation



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- RI fieldwork conducted between 1997 and 2010 to determine the nature and extent of impacts to soil and groundwater associated with past operations.
- Scope of the investigations were developed in partnership with U.S. Environmental Protection Agency (USEPA) and Maryland Department of Environment (MDE).





RI Field Investigation

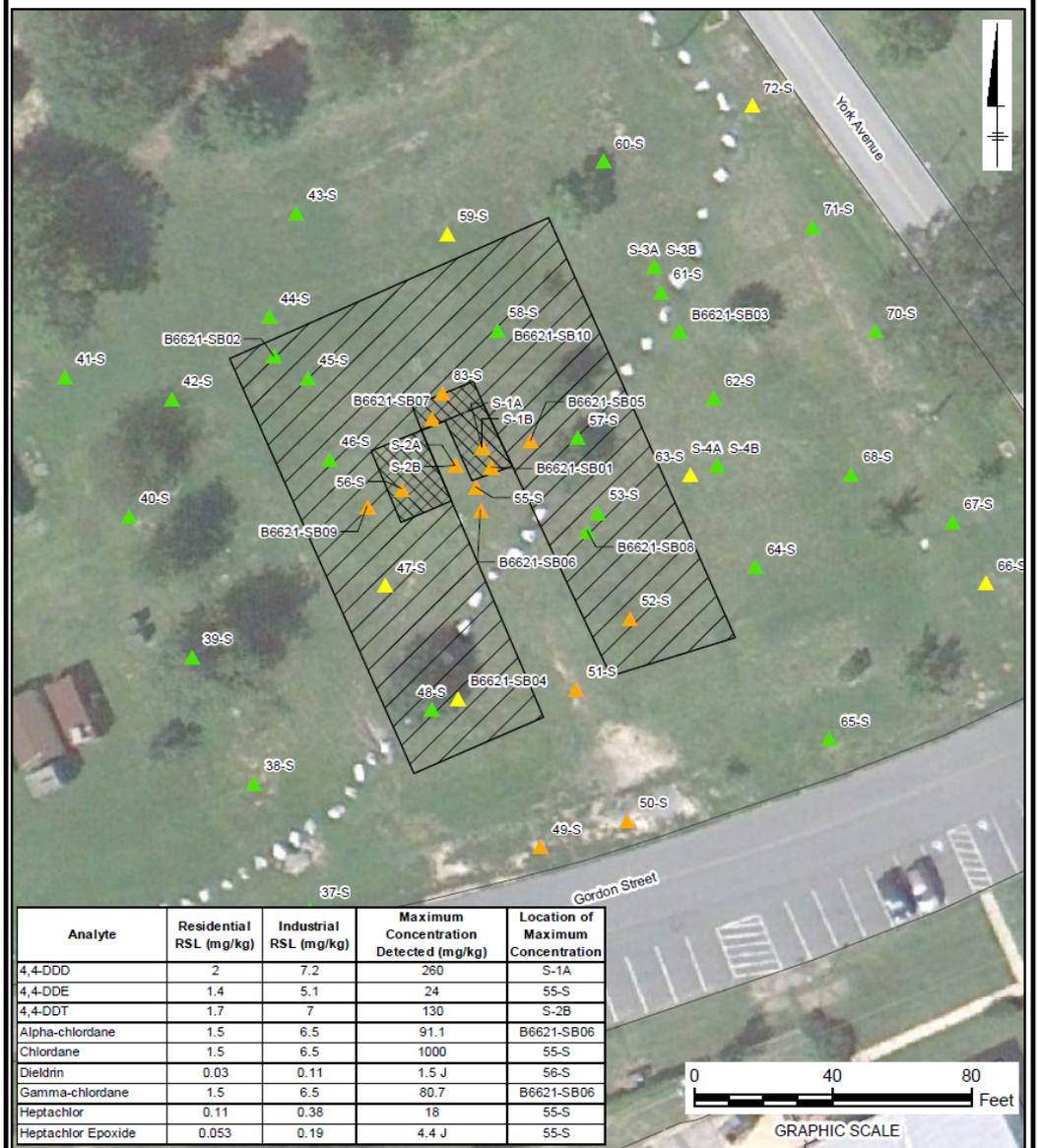


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- Soil sampling results revealed the presence of arsenic and several pesticides above screening levels.
- Groundwater sampling results indicated the presence of volatile organic compounds and pesticides above screening levels.
- Impacts in both soil and groundwater are limited to the general vicinity of the Former Pesticide Shop building.



Surface Soil Results-- Pesticides



Legend:

- ▲ No Exceedance
- ▲ Exceeds Residential RSL
- ▲ Exceeds Residential and Industrial RSL

- Former Pesticide Shop Areas
- Former Building 6621

Notes:

1. RSL = Regional Screening Level
2. mg/kg = Milligrams per kilogram
3. J = Analyte detected at an estimated concentration
4. Imagery 8/29/2010 Google Earth Pro, Accessed 5/1/2012 © 2012 Google, 2012 GeoEye, U.S. Geological Survey

FGGM-13 FORMER PESTICIDE SHOP, BUILDING 6621
FORT GEORGE G. MEADE, MARYLAND

Surface Soil (0-2') Pesticide Screening Results



FIGURE
3-8

VOC Groundwater Results above MCLs



LEGEND:



Well



Demolished Structures

0 100 200
Feet

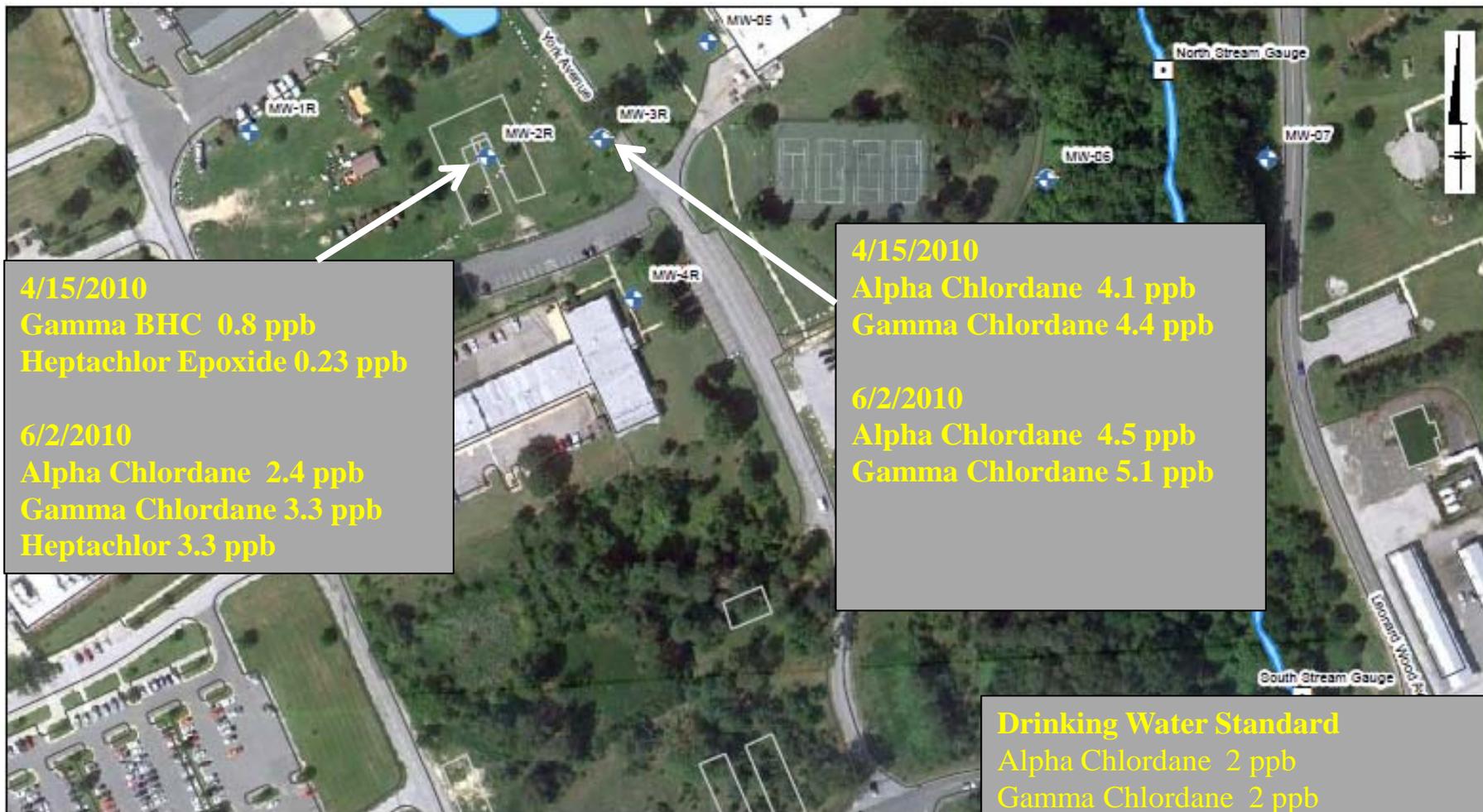
GRAPHIC SCALE

Drinking Water Standard

TCE 5 ppb

PCE 5 ppb

Pesticide Groundwater Results above MCLs



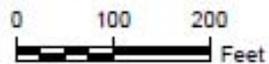
LEGEND:



Well



Demolished Structures



GRAPHIC SCALE



Human Health Risk Assessment Results



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- The human health risk assessment found no unacceptable risks under current land uses, including outdoor military maintenance workers.
- The Site could pose a non-cancer hazard to future construction workers who might construct buildings at the Site and be exposed to soil and groundwater.
- Adverse health effects could also occur to people from exposure to site constituents under a hypothetical future residential land use scenario.



Screening Level Ecological Risk Assessment Results



- Risks from a number of chlorinated pesticides are elevated for several species.
- Site is small (0.5 acres) and does not present significant ecological habitat.
- Further ecological risk evaluation was not deemed necessary.





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Feasibility Study



- An FS was conducted in 2012 to evaluate the ability of possible remedial alternatives to meet site objectives at the Former Pesticide Shop.
- The site objectives were to:
 - Prevent human exposure to soil and groundwater that would cause unacceptable risk to human health.
 - Restore groundwater to beneficial use.



Feasibility Study



- The following remedial alternatives were developed:
 - **Alternative 1** – No Action;
 - **Alternative 2** – Land Use Controls (LUCs) with Long Term Monitoring (LTM) of Groundwater; and
 - **Alternative 3** – Soil Excavation with Off-site Disposal, LUCs, and Enhanced Reductive Dechlorination (ERD) with LTM for Groundwater.



Remedial Alternative Evaluation



- **Alternative 1 - No Action**

- Not protective,
- Does not meet applicable regulations,
- No long-term effectiveness or permanence,
- No reduction in toxicity or mobility,
- Readily implemented, and
- No cost.



Remedial Alternative Evaluation



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- **Alternative 2 – LUCs with LTM of Groundwater**
 - Future health risks controlled through LUCs,
 - Complies with applicable regulations,
 - Long-term effectiveness through control of exposure,
 - No reduction in toxicity or mobility,
 - Readily implemented through existing LUCs, and
 - Relatively low cost.





Remedial Alternative Evaluation



- **Alternative 3 – Soil Excavation with Off-Site Disposal, LUCs, and ERD with LTM of Groundwater**
 - Future health risks eliminated through removal of impacted soil and treatment of groundwater,
 - Complies with applicable regulations,
 - Long-term effectiveness and permanence through removal and treatment of impacted media,
 - Effective at treating and removing impacted material.
 - More complex but readily implemented, and
 - Higher cost but still cost effective.



Presentation Agenda



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Preferred Alternative



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- **Alternative 3 – Soil Excavation with Off-site Disposal, LUCs, and ERD with LTM of Groundwater**
 - **Soil Excavation and LUCs**
 - Excavate and dispose of approximately 700 tons of impacted soil.
 - Pre-excavation sampling to refine limits.
 - Post-excavation confirmatory sampling.
 - LUCs include restricting site to industrial land use, signage, and fencing.
 - **Groundwater Treatment and LTM**
 - Emulsified Vegetable Oil (EVO) will be injected into groundwater to enhance naturally occurring biodegradation.
 - LTM includes installation of one new down-gradient monitoring well and regular groundwater sampling from site-related monitoring wells.





Soil Remedy



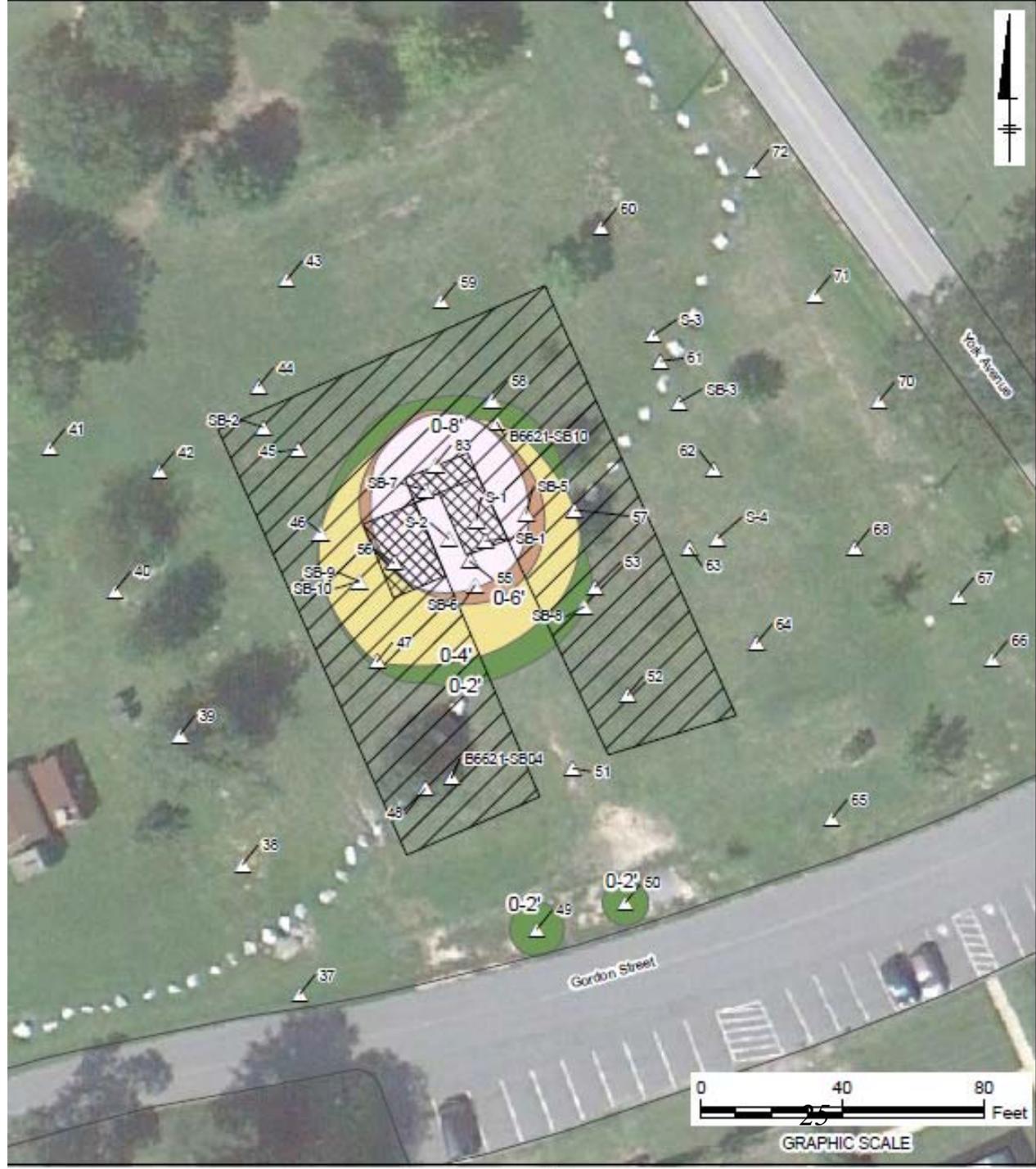
Soil Remedy- Approximate Area of Soil Removal

 0 to 2 feet bgs

 0 to 4 feet bgs

 0 to 6 feet bgs

 0 to 8 feet bgs

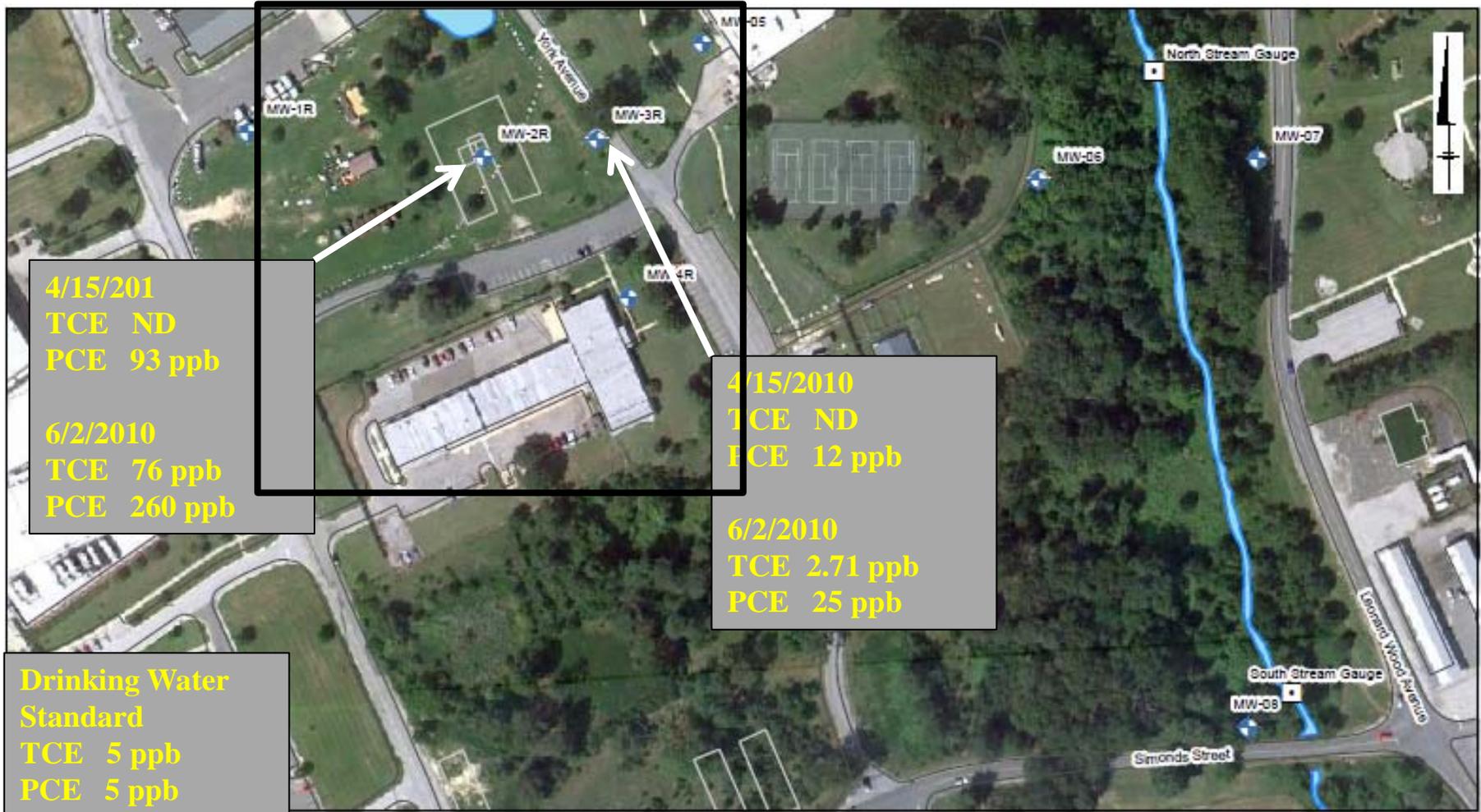




Groundwater Remedy



TCE and PCE Groundwater Results



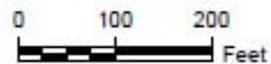
LEGEND:



Well



Demolished Structures



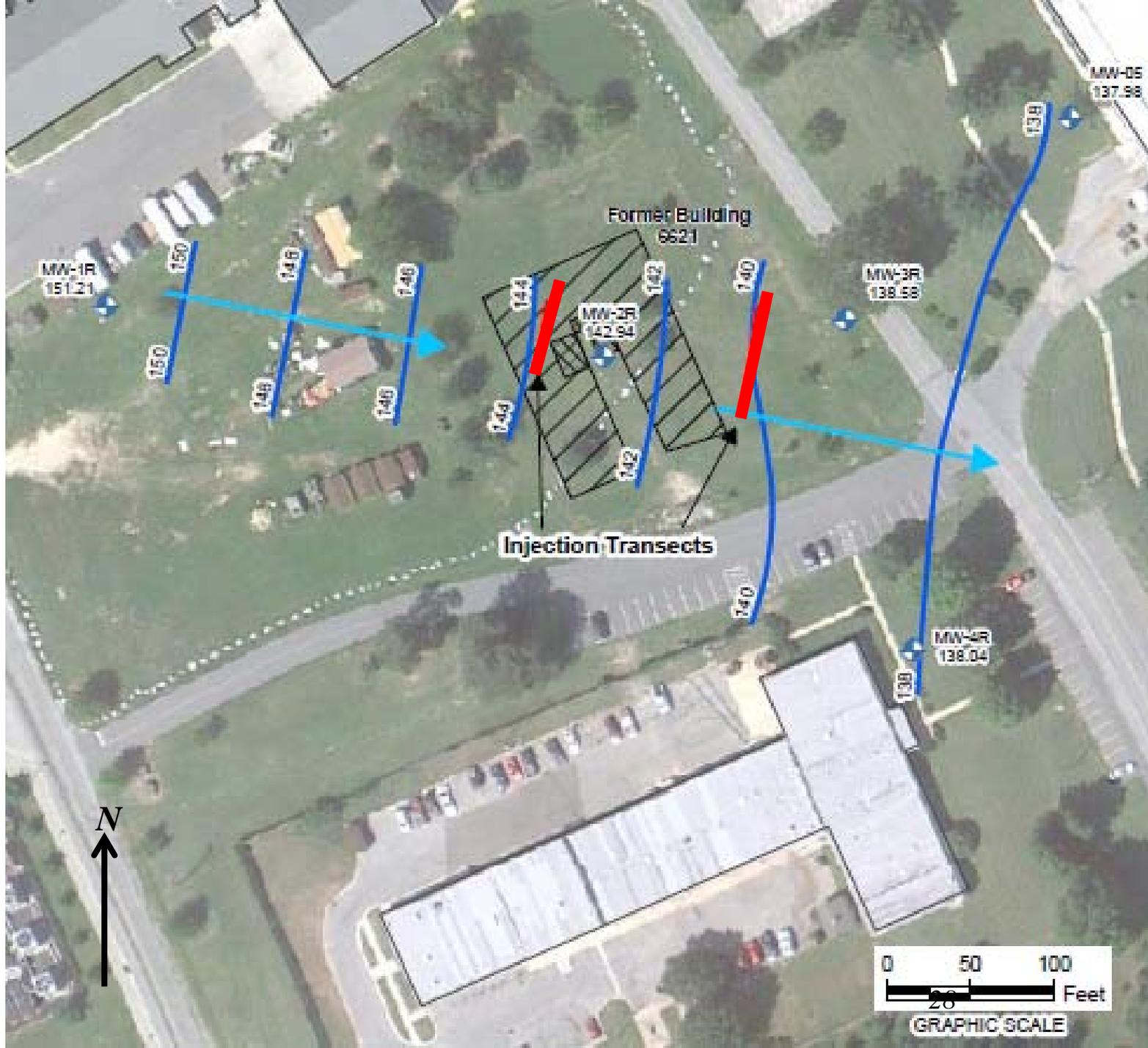
GRAPHIC SCALE

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FORT GEORGE G. MEADE, MARYLAND

Groundwater Remedy— EVO Injection

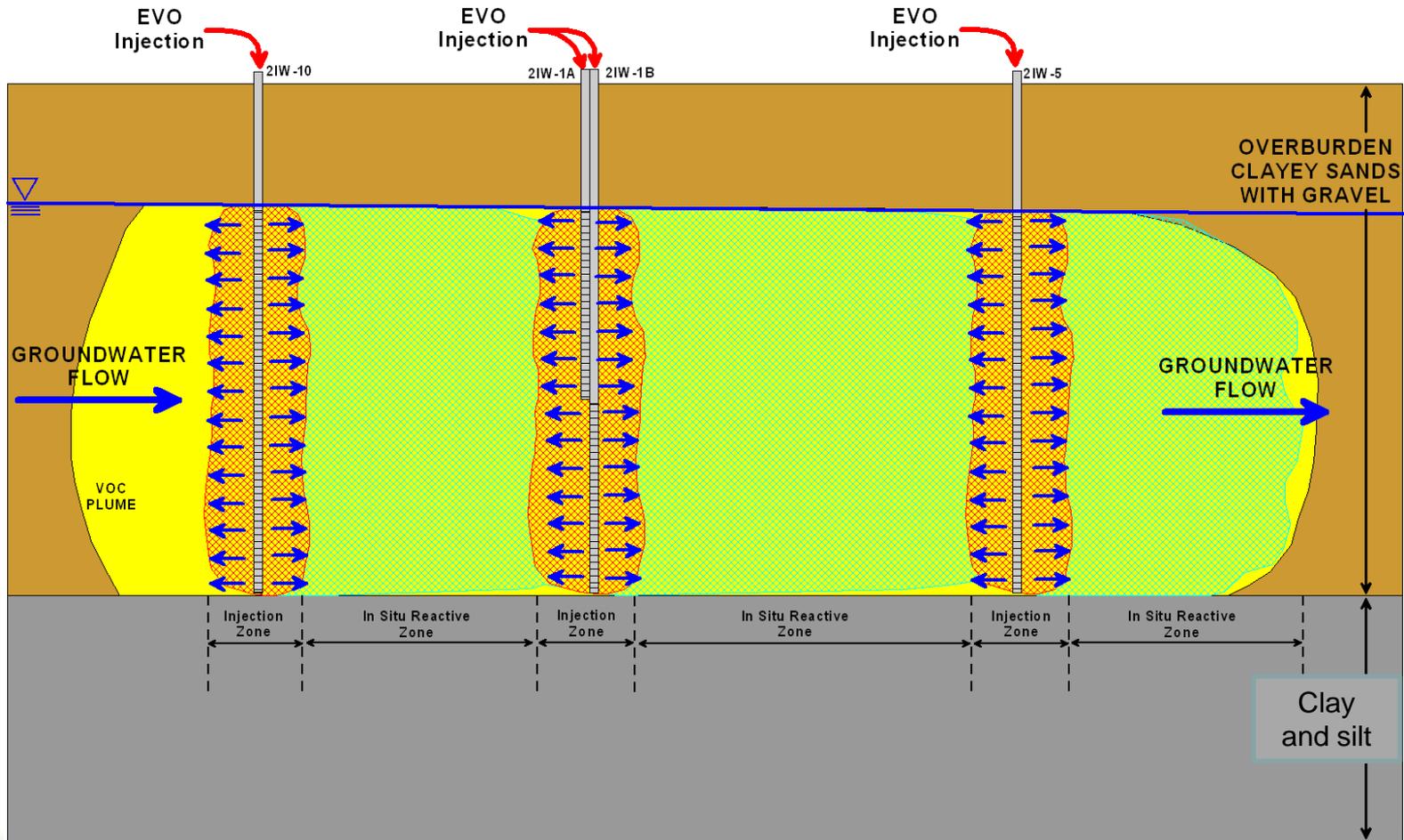
 Proposed EVO Injection line

 Groundwater Flow direction





Conceptual Design





Preferred Alternative



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- **Alternative 3 – Soil Excavation with Off-site Disposal, LUCs, and ERD with LTM of Groundwater**
 - Soil Excavation and LUCs
 - Excavate and dispose of approximately 700 tons of impacted soil.
 - Groundwater Treatment and LTM
 - Emulsified Vegetable Oil (EVO) injection.
 - LTM will demonstrate effectiveness of remedy.
 - Duration anticipated to be on the order of 10 years.





Questions/Comments?





Acronyms



ARAR	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DoD	Department of Defense
ERD	Enhanced Reductive Dechlorination
EVO	Emulsified Vegetable Oil
FS	Feasibility Study
LTM	Long Term Monitoring
LUC	Land Use Control
MCL	Maximum Contaminant Level
MDE	Maryland Department of the Environment
PP	Proposed Plan



Acronyms (Cont'd)



RA	Remedial Action
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
USEPA	U.S. Environmental Protection Agency



Glossary



Administrative Record: This is a collection of documents (including plans, correspondence and reports) generated during site investigation and remedial activities. Information in the Administrative Record is used to select the preferred remedial alternative and is available for public review.

Applicable or Relevant and Appropriate Requirements (ARARs): The requirements found in federal and State environmental statutes and regulations that a selected remedy must attain. These requirements may vary among sites according to the remedial actions selected.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): This federal law was passed in 1980 and is commonly referred to as the Superfund Program. It provides for liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous waste disposal sites that endanger public health and safety or the environment.

Feasibility Study (FS): This CERCLA document reviews the risks to humans and the environment at a site, and evaluates multiple remedial technologies for use at the site. Finally, it identifies the most feasible Response Actions.





Glossary (Cont'd)



Long Term Monitoring (LTM) – LTM is conducted to monitor the performance of the remedy over time. LTM includes groundwater sampling and reporting.

Land Use Controls (LUCs) – LUC are physical, legal, or administrative mechanisms that restrict use of or limit access to, real property, to manage risks to human health and the environment. Physical mechanisms encompass a variety of engineered remedies to contain or reduce contamination and/or physical barriers to limit access to real property, such as fences or signs.

Operation and Maintenance (O&M): Annual post-construction cost necessary to ensure the continued effectiveness of a Response Action.

Preferred Remedy– The MEC remediation approach that appears to best meet acceptance criteria; the remedial option proposed for implementation in the ROD.

Record of Decision (ROD): This legal document is signed by the Army and the USEPA and will be reviewed by the MDE for concurrence. It provides the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments, responses to comments, and the estimated cost of the remedy.





Glossary (Cont'd)



Remedial Investigation (RI): An investigation under CERCLA that involves sampling environmental media such as air, soil, and water to determine the nature and extent of contamination and human health and environmental risks that result from the contamination.

