

Fort Detrick, Maryland

Off-Post Private Well Investigation and
Associated Activities



Final Results Presentation
Restoration Advisory Board
6 August 2014
Shelly Morris, ARCADIS

Imagine the result

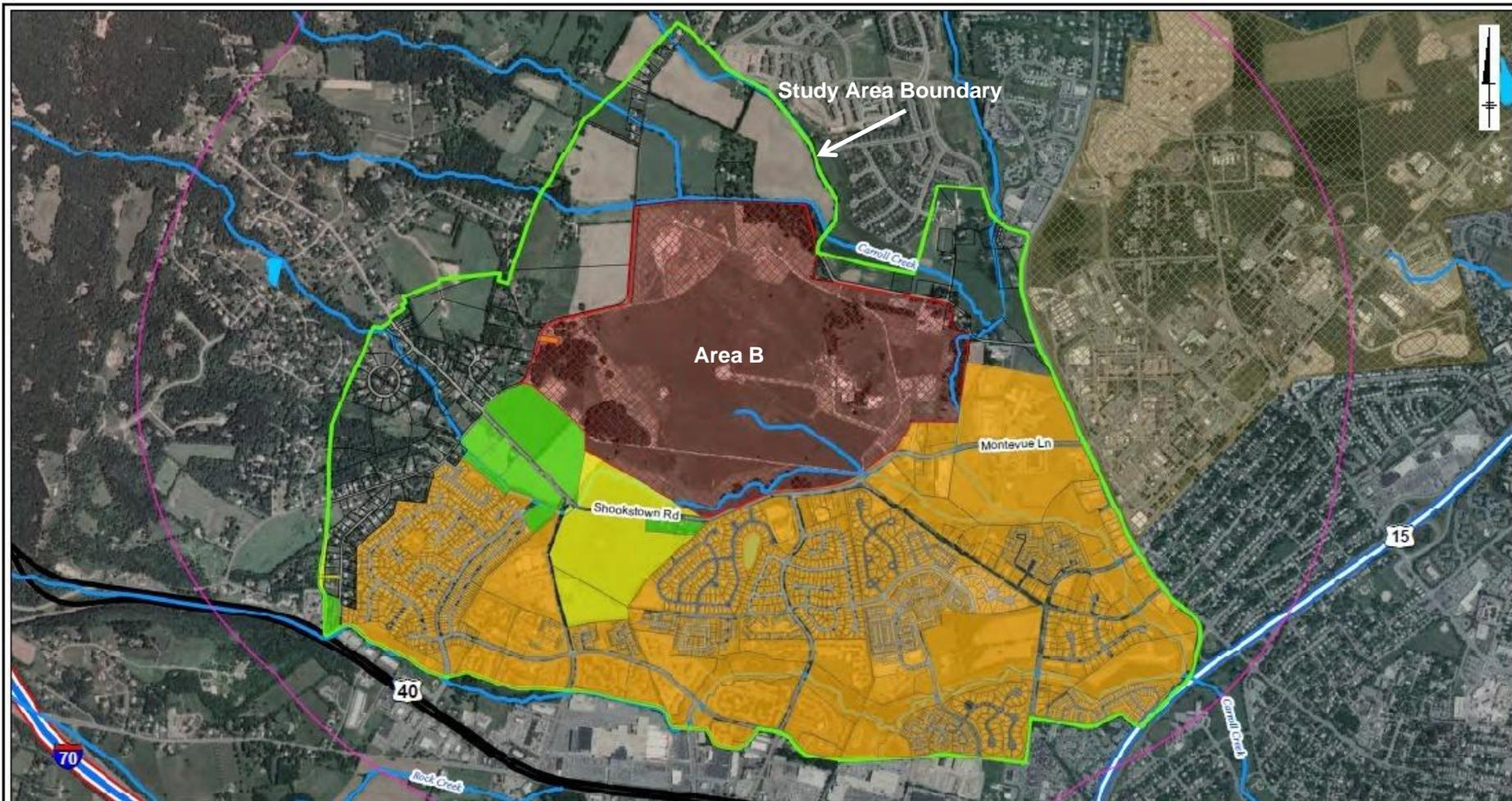
Off-Post Private Well Investigation Study Basis

- To document known and potentially unknown drinking-water wells in use surrounding Fort Detrick's Area B in a comprehensive report.
- To expand Fort Detrick's current drinking-water well sampling program and to compile all data into a comprehensive data set.
- To further verify that the volatile organic compounds emanating from Area B have not affected drinking-water wells in the surrounding community.

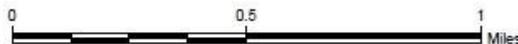
Off-Post Private Well Investigation Study Area

- Approximately 1,368 acres surrounding Area B.
- Approximately 2,522 parcels identified in the Study Area.
 - Approximately 149 parcels outside of public water service area.

Study Area



Legend		
Investigation Boundary	Surface Water	Public Water Service Record
Area B - 1-Mile Radius	Lake or Pond	NPS - No Planned Service
Fort Detrick Boundaries	Streams	W-1 - Connected
Area A Boundary	Roadways	W-3 DEV - 1-3 Years
Area B Boundary	Interstate Hwy	W-4 DEV - 4-6 Years
	US Hwy	W-5 DEV - 7-10 Years
	Major Road	Planned Service 11-20 Years



Fort Detrick
Frederick, MD

**Off-Post Private Well Investigation
Study Area**

INTERNATIONAL, INC.

FIGURE
1

Off-Post Private Well Investigation

Status of Project Activities

- Identify/verify drinking water wells through research Sept-Oct 2012
- Public Outreach (Mailings, Newspaper, Public Meeting) Sept-Oct 2012
- Private Well Survey: 135 Residences Visited November 2012
- Certified Letters (Third Mailing) January 2013
- Private Well Sampling: 93 Wells/91 Properties Nov 2012 – May 2013
- Reporting Results July 2013
- Final Results RAB Meeting Presentation August 2014

Off-Post Private Well Investigation Summary of Sampling Results

- No VOC detections at or near federal drinking water standards
- No VOCs detected in 66 of 93 wells sampled
- A total of 27 wells with very low level VOC detections
 - 26 wells with 1 VOC detected
 - 1 well with 2 VOCs detected
- One very low level detection of TCE (0.1 ppb)
- One very low level detection of PCE (0.1 ppb)

Off-Post Private Well Investigation Summary of Sampling Results

Chemical	Description/Use	Number of Detections	Range of Detections (ppb)	Drinking Water Standard (ppb) ^a
TCE	Solvent	1	0.1 J	5
PCE	Solvent	1	0.1 J	5
Chloroform	Found in chlorinated drinking water as a disinfectant byproduct, solvent	8	0.1J-0.3 J	70 ^b
MTBE	Gasoline additive	14	0.1J-0.4 J	12 ^c
1,2-Dichlorobenzene	Paint and insecticide additive, solvent	1	0.9	600
2-Butanone	Car exhaust component, cleaning agent, solvent	1	2.7 J	4,900
Benzene	Gasoline component	1	0.3 J	5
Styrene	Car exhaust component, plastics component	1	0.4 J	100

No VOCs Detected in 66 wells

ppb: parts per billion = µg/L

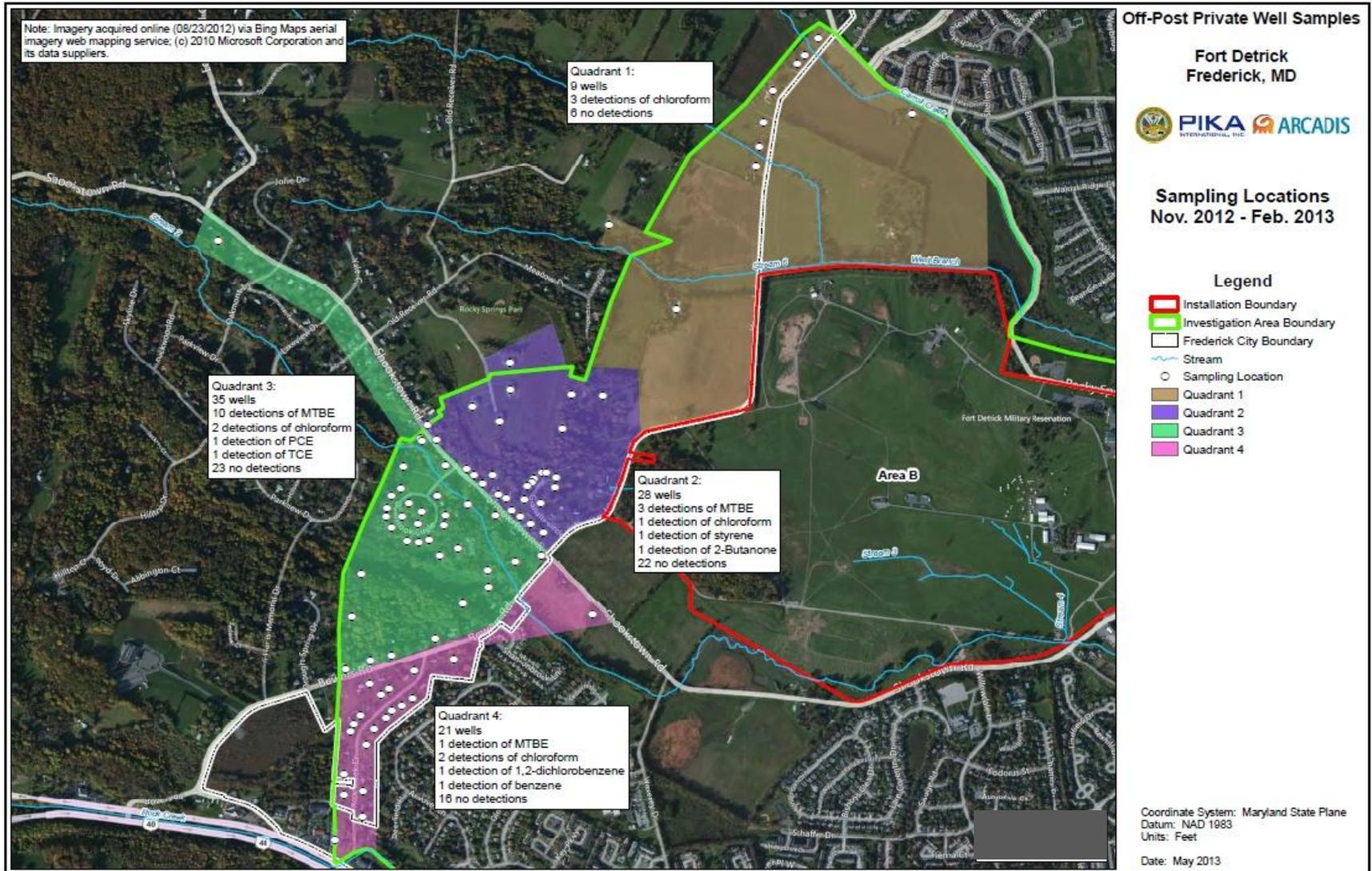
J: estimated concentration, near/at laboratory detection limits below reporting limits

^a Drinking Water Standard: US Environmental Protection Agency (USEPA) Maximum Contaminant Level

^b Drinking Water Standard for Chloroform: Maximum Contaminant Level Goal (MCLG)

^c Drinking Water Standard for MTBE: USEPA Risk Based Limit (RBC)

Off-Post Private Well Investigation Summary of Sampling Results



Off-Post Private Well Investigation Summary of Sampling Results

- Detections unlikely associated with Area B groundwater based on:
- Groundwater flow direction (eastward away from private wells sampled)
 - Private wells topographically “higher” than Area B and hydraulically upgradient
 - Distribution of detections across study area and in relation to Area B.
 - All VOCs detected, except chloroform and MtBE, had single detections.
 - Chloroform and MtBE (gasoline additive) are common chemical in the environment. Given wide distribution & low concentrations, no single point source believed
 - Four of the VOCs detected in drinking water wells (styrene, 2-butanone, 1,2-dichlorobenzene, and MtBE) have been infrequently detected (less than three detections) in Area B groundwater

Off-Post Private Well Investigation Summary of Sampling Results

- The well with the low level PCE detection was added to the groundwater tracer study conducted between April 2013 and January 2014. No dye was detected in this well.
- The property owner with the low level TCE detection did not respond to the Right of Entry request and therefore could not be added to the groundwater tracer study.
- Both wells are located southwest of Area B.
- Groundwater was found to move eastward towards Carroll Creek, consistent with past investigations
- Based on concentrations detected, no immediate public health concern indicated.