Welcome

Restoration Advisory Board (RAB) Meeting

Robins Air Force Base (AFB)

September 12, 2024

Welcome and Program Introduction

Dr. Linda Smyth
Community Co-Chair

Acronyms and Abbreviations

- AFFF – Aqueous Fire Fighting Foam
- CAP – Corrective Action Plan
- CEJST – Climate and Economic Justice Screening Tool
- CIP – Community Involvement Plan
- COC – Contaminant of Concern
- CRP – Community Relations Plan
- CSIA – Compound Specific Isotope Analysis
- CSM – Conceptual Site Model
- DoD – Department of Defense
- DPT – Direct Push Technology
- EAB – Environmental Advisory Board
- EJ – Environmental Justice
- EJSCREEN – Environmental Justice Screening Tool

Acronyms and Abbreviations

- ERP – Environmental Restoration Program
- HPT – Hydraulic Profiling Tool
- IWTP – Industrial Wastewater Treatment Plant
- µg/L – micrograms per liter
- MiHpt – Membrane Interface Probe with Hydraulic Profiling Tool
- MIP – Membrane Interface Probe
- NAPL – Non-aqueous phase liquid
- PA – Preliminary Assessment
- PFAS – Per- and Polyfluoroalkyl Substances
- PFM – Passive Flux Meter
- PFOA – Perfluorooctanoic acid
- PFOS – Perfluorooctane Sulfonate
- PID – Photoionization Detector
- RAB – Restoration Advisory Board

Acronyms and Abbreviations

- RI – Remedial Investigation
- RL – Remediation Level
- SI – Site Inspection
- SRS – Sustainment and Restoration Services
- SSI – Supplemental Site Investigation
- SWMU – Solid Waste Management Unit
- USEPA – United States Environmental Protection Agency
- VAS – Vertical Aquifer Sampling
- WWTP – Wastewater Treatment Plant
- XSD – Halogen Specific Detector

Development of Community Involvement Plan (CIP)

Tammy Hebeler
Senior Principal
Geosyntec Consultants, Inc.

September 12, 2024

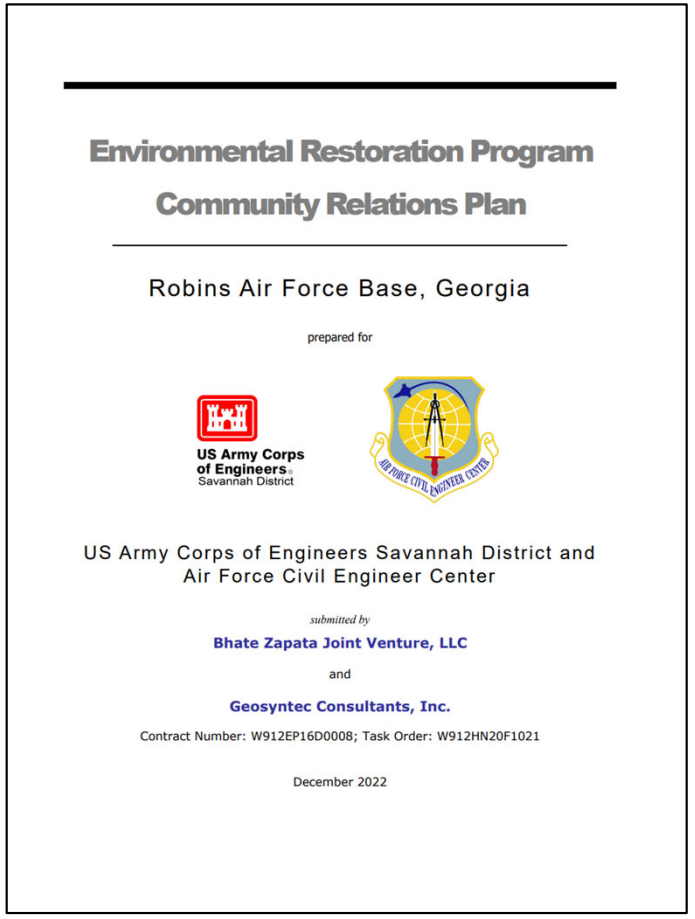
Agenda

- Purpose
- What is a Community Involvement Plan (CIP)?
- CIP Contents
- Path Forward

Purpose

- **Installations with environmental restoration programs shall have a community involvement program**
  - **Documented in a CIP**

- **Robins AFB has a Community Relations Plan (CRP) that will be transformed into a CIP**



Environmental Restoration Program

Community Relations Plan

Robins Air Force Base, Georgia

prepared for

US Army Corps of Engineers
Savannah District

AIR FORCE CIVIL ENGINEER CENTER

US Army Corps of Engineers Savannah District and
Air Force Civil Engineer Center

submitted by

Bhate Zapata Joint Venture, LLC

and

Geosyntec Consultants, Inc.

Contract Number: W912EP16D0008; Task Order: W912HN20F1021

December 2022

What is a CIP?

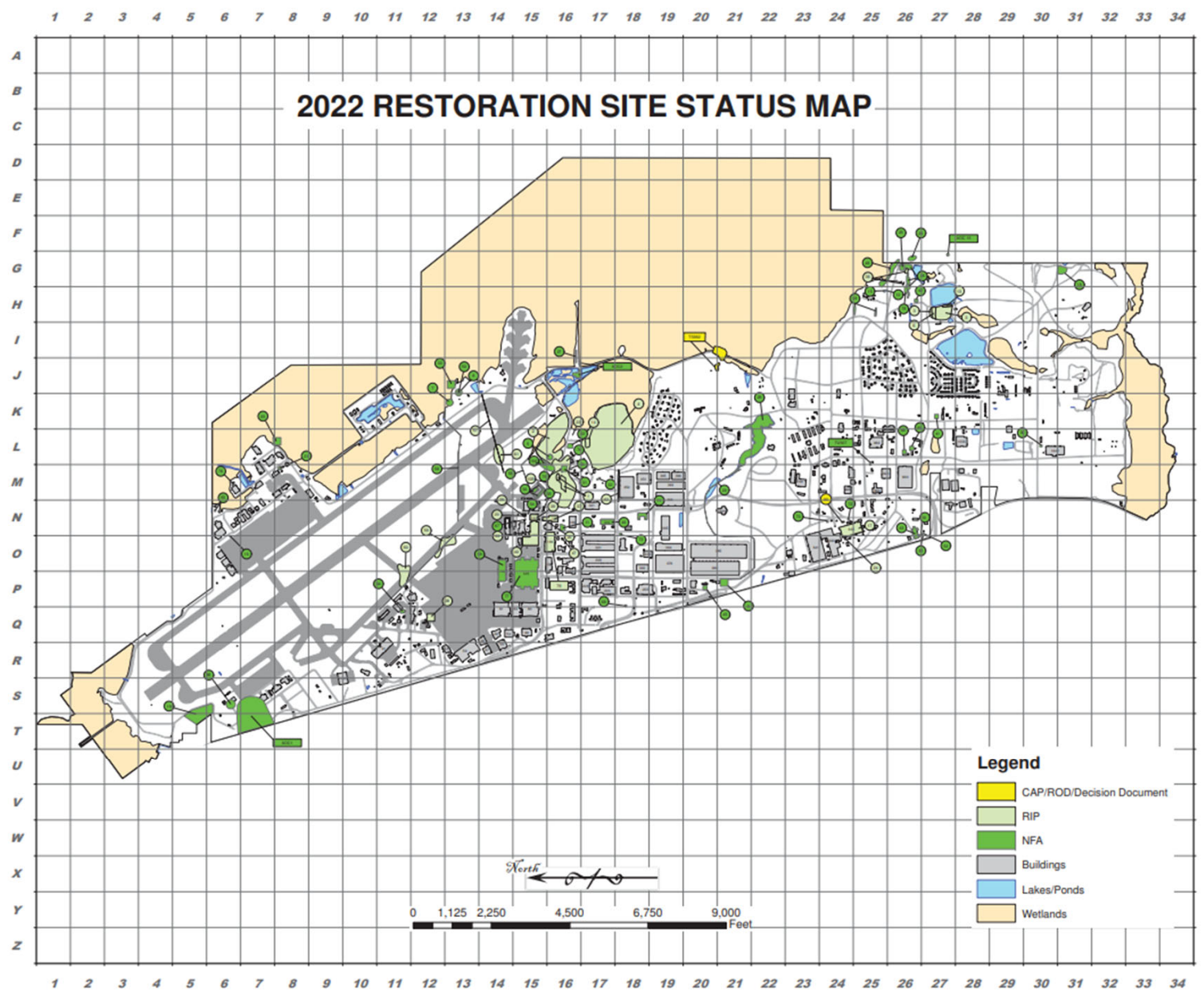
- **Definition: CIP outlines methods to engage community in restoration process**
- **Components**
  - **Community strategies**
  - **Public participation activities**
  - **Feedback mechanisms**
- **Importance**
  - **Builds trust and transparency**
  - **Ensures diverse perspectives are considered**
  - **Enhance outcomes through community involvement**

CIP Contents

- Introduction
- Installation Background
- Environmental Restoration Program (ERP)
  - Site Status
- Community Background
  - Environmental Justice (EJ)
- Community Engagement Program
  - Activities

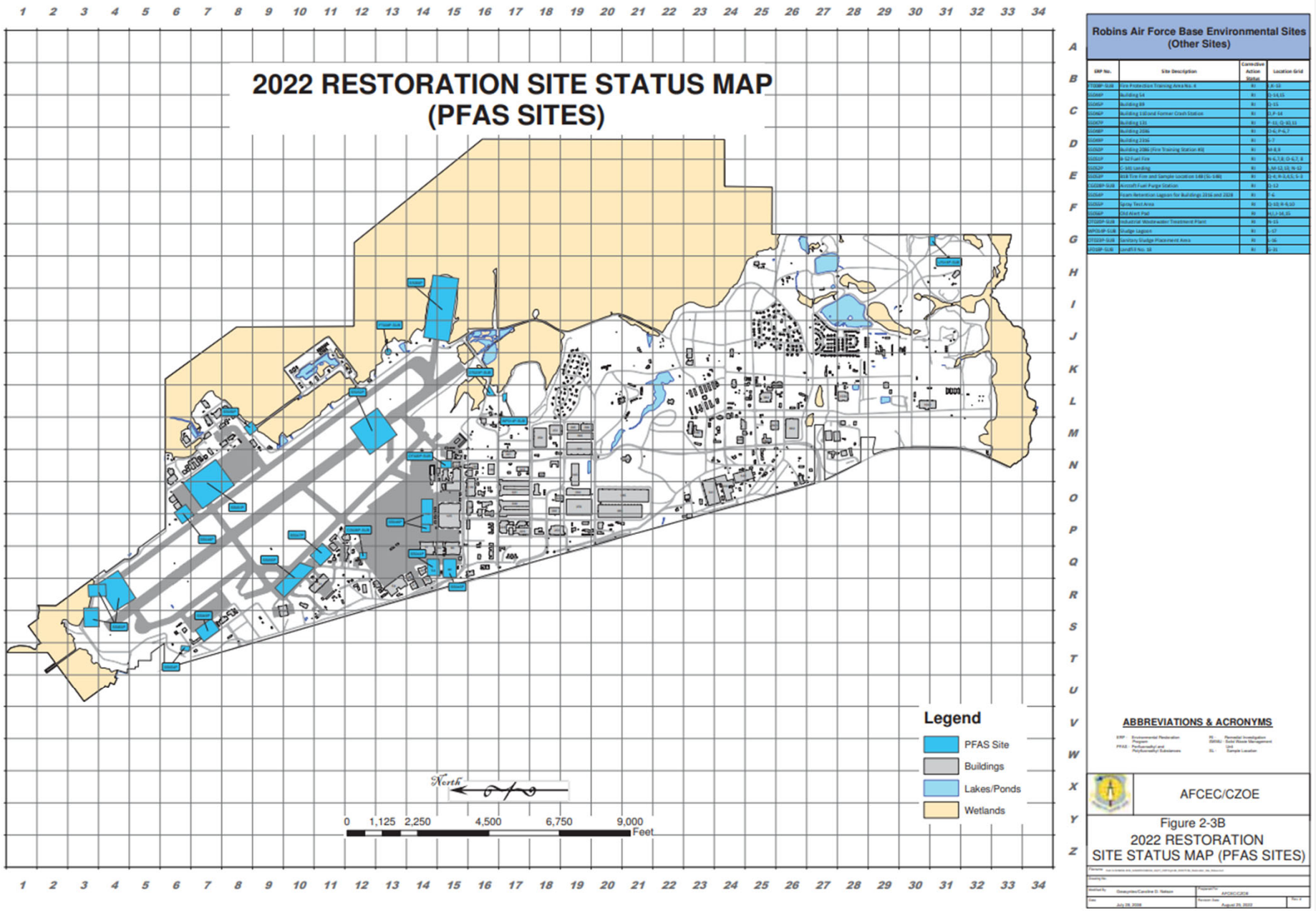
CIP Contents

ERP – Site Status



CIP Contents

ERP – Site Status



CIP Contents

Community Background – EJ

- **Executive Order 12898 –** ***Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations***
  - **Purpose: Focus federal attention on environmental and human health effects of federal actions on minority and low-income populations with goal of achieving environmental protection for all communities**

- **Environmental justice is defined as** ***the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies***
  - **Per Air Force guidance, environmental justice shall be considered when planning public outreach efforts, preparing public notices, and supporting public meetings and Restoration Advisory Boards (RABs)**

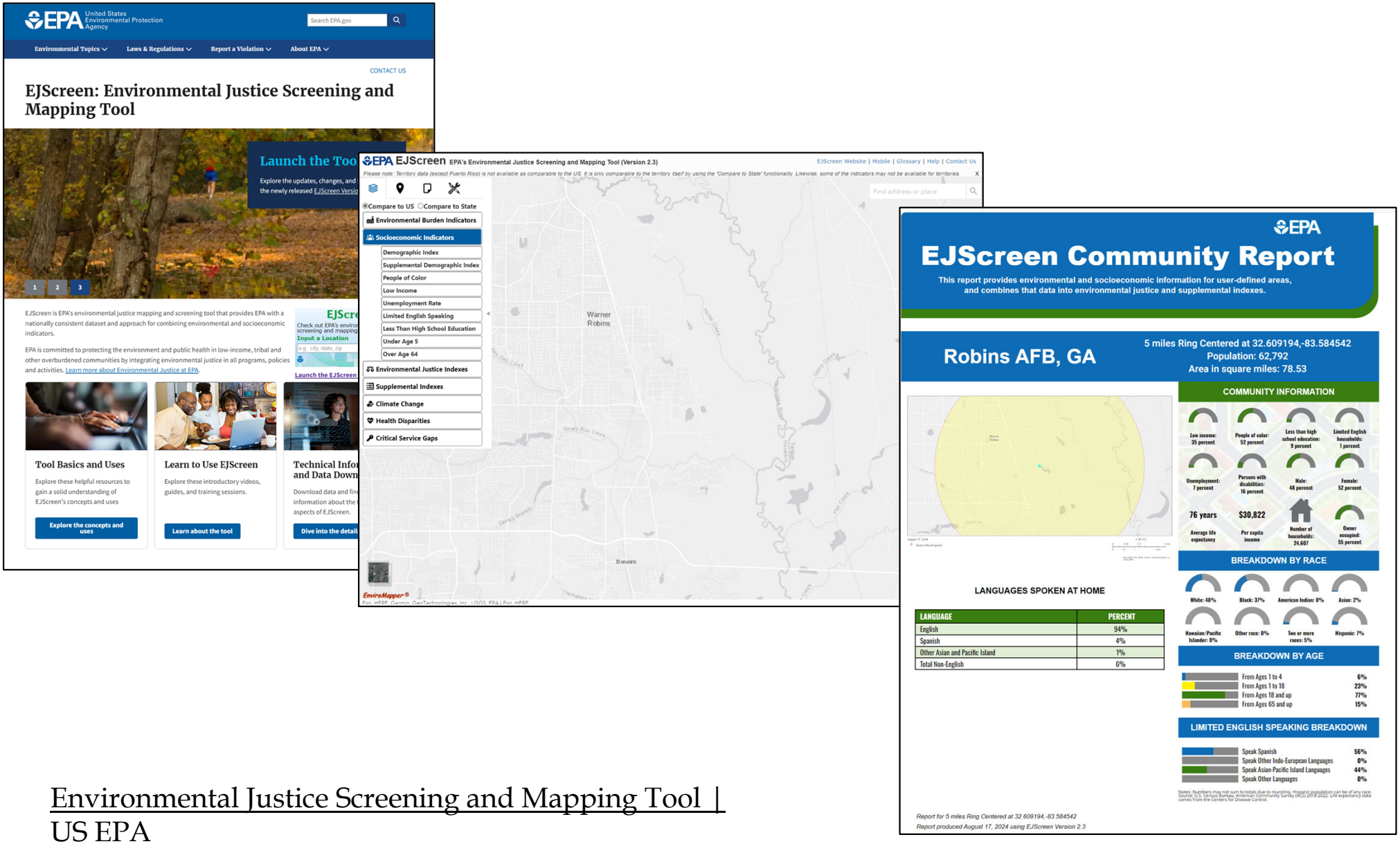
CIP Contents

Community Background – EJ

- **EJ Tools**
  - **United States Environmental Protection Agency (USEPA) Environmental Justice Screening Tool (EJSCREEN)**
    - Screen for environmental and demographic indicators that demonstrate disproportionate impacts to minority and low-income communities
    - Provides climate change, health, and service gap indicators (wildfire risk, drought, floodplain, heart disease, food deserts, etc.)
  - **Climate and Economic Justice Screening Tool (CEJST)**
    - Define and map disadvantaged communities
    - Department of Defense (DoD) preferred tool for consistent government-wide identification of environmental justice concerns
    - Highlights disadvantaged census tracts across 50 states, the District of Columbia, and the United States territories

CIP Contents

Community Background – EJ



Environmental Justice Screening and Mapping Tool | US EPA

CIP Contents

Community Background – EJ

Climate and Economic Justice Screening Tool

Explore the map | Methodology & data | About | Contact

Explore the map

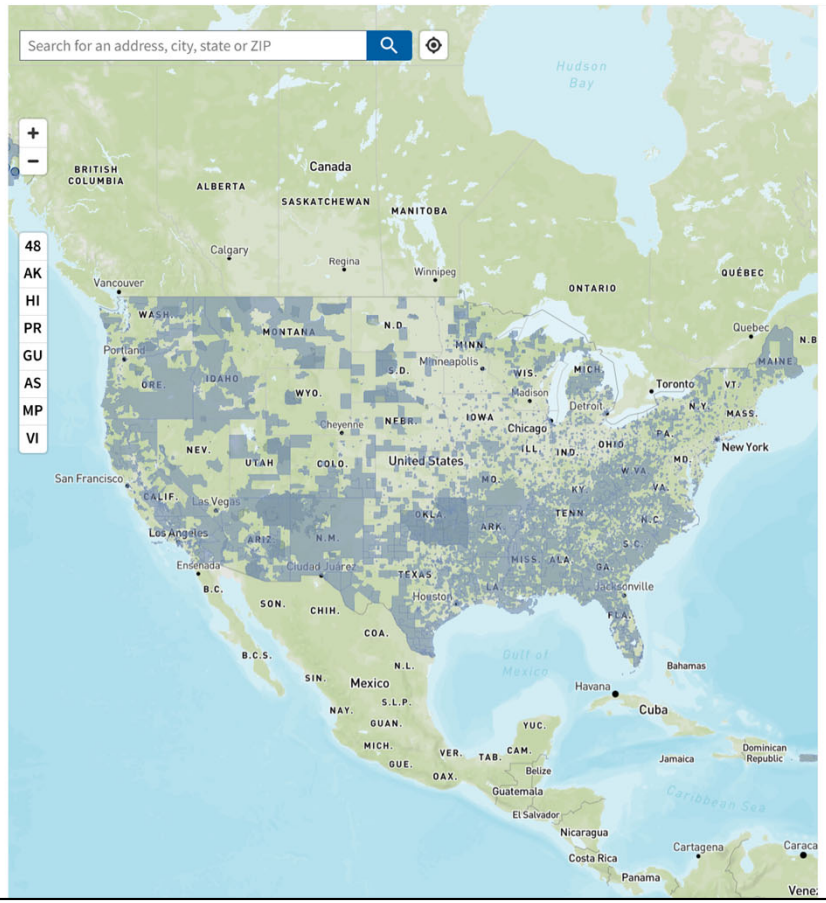
Share data sources with CEQ

Census tracts that are overburdened and underserved are highlighted as being disadvantaged on the map. Federally Recognized Tribes, including Alaska Native Villages, are also considered disadvantaged communities.

Zooming in and selecting shows information about each census tract.

Get the data

Download the data with documentation and shapefile from the downloads page.



How to use the map:

Zoom in +, search, or locate yourself and select to see information about any census tract.

Things to know:

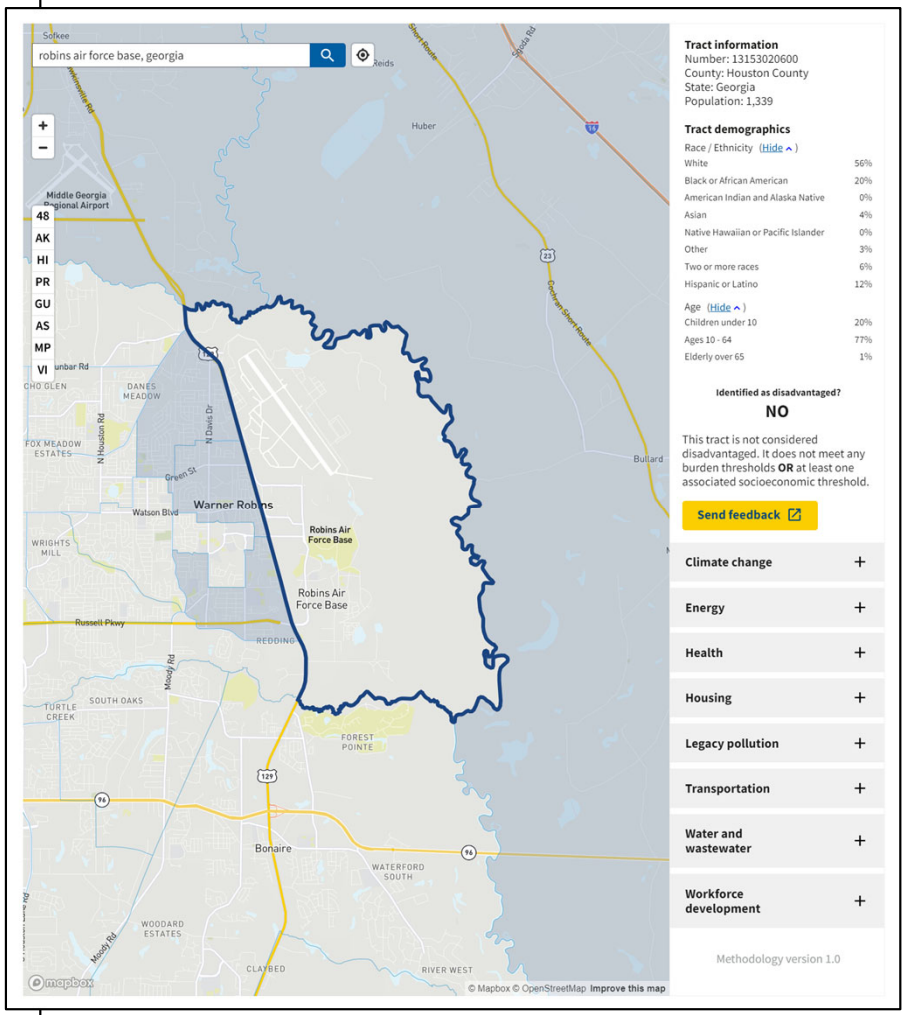
The tool uses census tracts. Census tracts are a small unit of geography. They generally have populations of between 1,200 - 8,000 people.

Communities that are disadvantaged live in tracts that experience burdens. These tracts are highlighted on the map.

The tool ranks most of the burdens using percentiles. Percentiles show how much burden each tract experiences when compared to other tracts.

Thresholds, or cutoffs, are used to determine if communities in a tract are disadvantaged. Certain burdens use percentages or a simple yes/no ✓.

Land within the boundaries of Federally Recognized Tribes and point locations for Alaska Native Villages are highlighted on the map. These

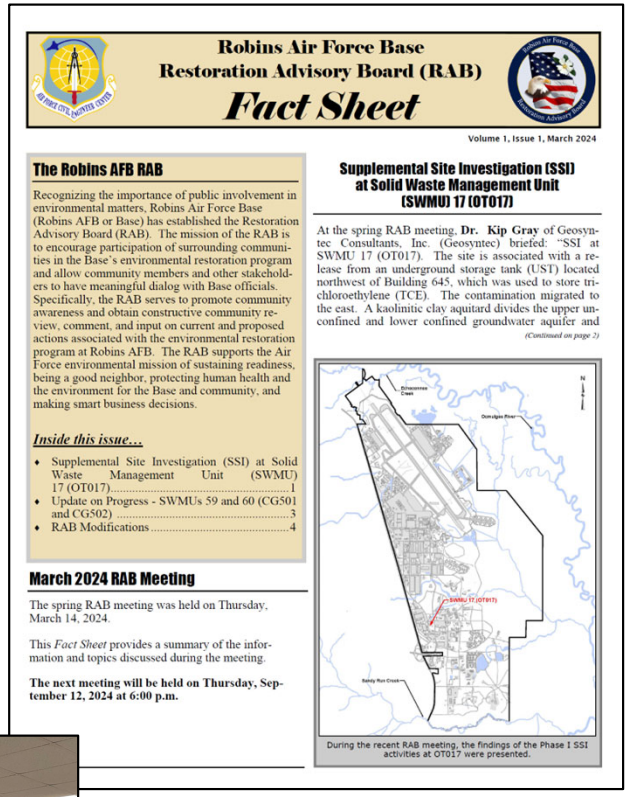


Explore the map - Climate & Economic Justice Screening Tool (geoplatform.gov)

CIP Contents

Community Engagement Program – Activities

- CIP
- RAB Meetings
  - Minutes
  - Fact Sheets
- Community Interviews
- Website



Robins Air Force Base
Restoration Advisory Board (RAB)
Fact Sheet

Volume 1, Issue 1, March 2024

The Robins AFB RAB

Recognizing the importance of public involvement in environmental matters, Robins Air Force Base (Robins AFB or Base) has established the Restoration Advisory Board (RAB). The mission of the RAB is to encourage participation of surrounding communities in the Base's environmental restoration program and allow community members and other stakeholders to have meaningful dialog with Base officials. Specifically, the RAB serves to promote community awareness and obtain constructive community review, comment, and input on current and proposed actions associated with the environmental restoration program at Robins AFB. The RAB supports the Air Force environmental mission of sustaining readiness, being a good neighbor, protecting human health and the environment for the Base and community, and making smart business decisions.

Inside this issue…

- Supplemental Site Investigation (SSI) at Solid Waste Management Unit (SWMU) 17 (OT017) 1
- Update on Progress - SWMUs 59 and 60 (CG501 and CG502) 3
- RAB Modifications 4

March 2024 RAB Meeting

The spring RAB meeting was held on Thursday, March 14, 2024.

This *Fact Sheet* provides a summary of the information and topics discussed during the meeting.

The next meeting will be held on Thursday, September 12, 2024 at 6:00 p.m.

Supplemental Site Investigation (SSI) at Solid Waste Management Unit (SWMU) 17 (OT017)

At the spring RAB meeting, **Dr. Kip Gray** of Geosyntec Consultants, Inc. (Geosyntec) briefed: "SSI at SWMU 17 (OT017). The site is associated with a release from an underground storage tank (UST) located northwest of Building 645, which was used to store trichloroethylene (TCE). The contamination migrated to the east. A kaolinitic clay aquitard divides the upper unconfined and lower confined groundwater aquifer and

(Continued on page 2)

During the recent RAB meeting, the findings of the Phase I SSI activities at OT017 were presented.

Path Forward

- Prepare CIP
- Brief community at RAB when complete
- Implement CIP

Discussion

Progress Update: Remedial Investigation of Per- and Polyfluoroalkyl Substances (PFAS)

James Griffin, PG, CHMM
Sustainment and Restoration Services (SRS)

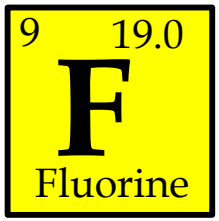
September 12, 2024

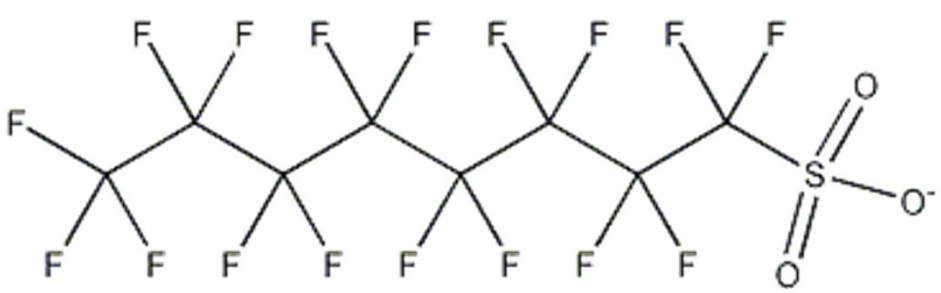
Overview

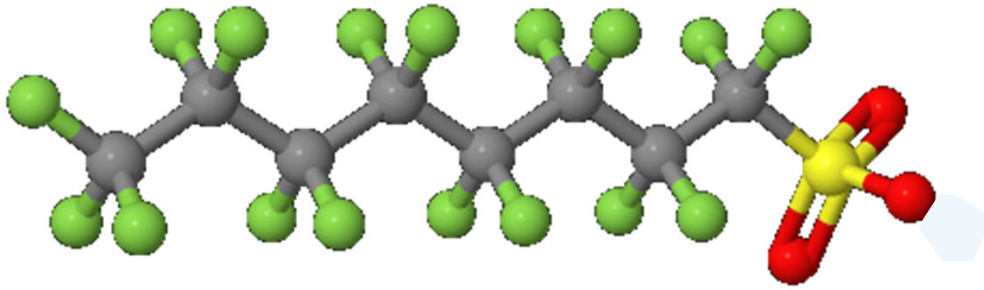
- **Background**
- **Robins AFB Remedial Investigation (ongoing and upcoming work)**

Background – Characteristics

- **Per- and Polyfluoroalkyl Substances (PFAS)**
  - **Family of synthetic organic compounds that contain multiple fluorine atoms**







Conder et al. (2008)

Example molecular structures for perfluorooctane sulfonate (PFOS)

Background – Characteristics

- **PFAS**
  - **Man-made group of chemicals used in industry and consumer products since the 1940s**
  - **Several thousand individual compounds**
  - **Unique surface-active properties, non-reactive, and stable**
  - **Best known and studied compounds are perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA)**
  - **Found in:**
    - Stain and water repellants used on carpets, upholstery, clothing, etc. (i.e., GoreTex)
    - Cleaning products
    - Non-stick cookware
    - Paints, varnishes, sealants
    - Certain shampoo, dental floss, cosmetics
    - Grease-resistant paper, fast food containers/wrappers, microwave popcorn bags, pizza boxes, candy wrapper

US EPA; EPA.gov; March 16, 2023

Background – Potential Sources

- Sites with very high probability of screening or risk-based criteria exceedances
  - Aircraft maintenance facilities
  - Fire-fighting training areas
  - Petrochemical/chemical plants
  - Chrome plating facilities
  - Textile/carpet manufacturers
  - Wastewater Treatment Plants (WWTPs) and sewage sludge land application areas
  - Landfills

Background – Robins AFB Drinking Water

- 2016, 2020, and 2023 – Samples collected from all six (6) active Robins AFB drinking water wells
- All results below detection limits
- No impacts to Robins AFB drinking water
- Drinking water obtained from Blufftown aquifer (>100 feet deep)

Background
Robins AFB Investigation Status

- **Preliminary Assessment (PA) completed in May 2015**
- **Site Inspection (SI)**
  - **Fieldwork – March to April 2017**
  - **Soil and shallow groundwater sampled at 30 AFFF areas**
  - **Final Report – June 2018**
- **Remedial Investigation (RI)**
  - **Contract awarded August 2022 to perform RI at 19 Environmental Restoration Program (ERP) sites identified in SI***

*30 Aqueous Fire Fighting Foam (AFFF) areas identified in the SI were combined to establish the 19 ERP sites

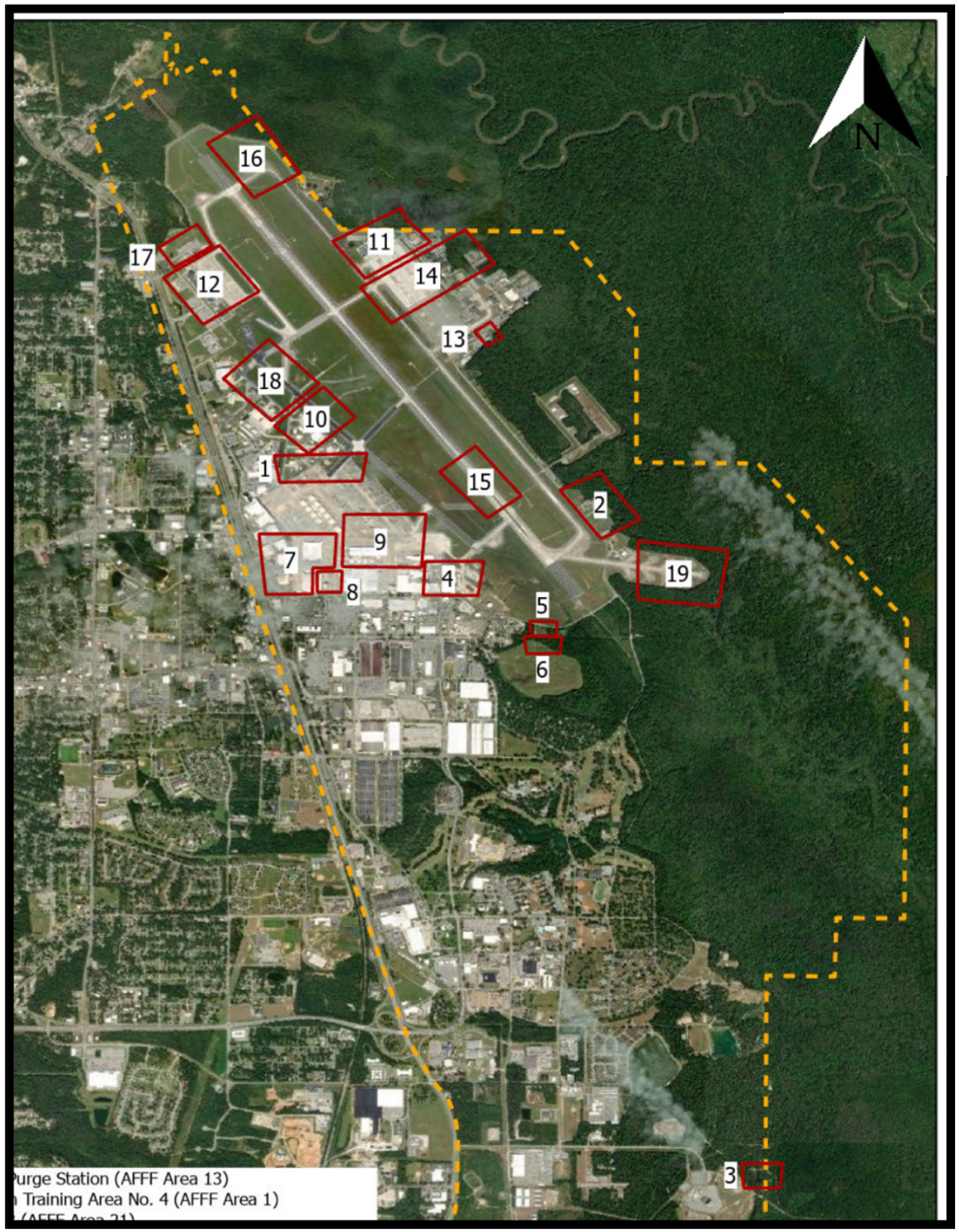
Robins AFB Remedial Investigation

- **Purpose**
  - **Site characterization to delineate nature and extent of PFAS contamination at Robins AFB**
    - Vertical and lateral extent of PFAS in soil, groundwater, sediment, and surface water
    - Residual soil contamination within unsaturated source zones
  - **Update and/or develop a Conceptual Site Model (CSM) to understand:**
    - Geologic and hydrogeologic conditions at each site
    - Migratory pathways
    - Comingling or interaction with legacy contamination

Robins AFB Remedial Investigation

- **ERP sites under remedial investigation originate from various AFFF release types**
  - **Crash/fire response**
  - **Fire Dept training activities**
  - **Releases from hangar systems**
  - **Disposal sites**
  - **Industrial Wastewater Treatment Plant (IWTP)**

Robins AFB Remedial Investigation



ERP Sites

1. CG028P-SUB – Aircraft Fuel Purge Station (AFFF Area 13)
2. FT008P-SUB – Fire Protection Training Area No. 4 (AFFF Area 1)
3. LF018P-SUB – Landfill No. 18 (AFFF Area 21)
4. OT020P-SUB – Industrial Waste Treatment Plant (AFFF Area 17)
5. OT023P-SUB – Sanitary Sludge Placement Area (AFFF Area 20)
6. WP014P-SUB – Sludge Lagoon (AFFF Area 19)
7. SS044P – Building 54 (AFFF Area 2)
8. SS045P – Building 89 (AFFF Area 3)
9. SS046P – Building 110 and Former Crash Station (AFFF Areas 4 & 9)
10. SS047P – Building 131 (AFFF Area 5)
11. SS048P – Building 2036 (AFFF Area 6)
12. SS049P – Building 2316 (AFFF Area 7)
13. SS050P – Building 2086 (Fire Training Station #3; AFFF Area 8)
14. SS051P – B-52 Fuel Fire (AFFF Area 10)
15. SS052P – C-141 Landing (AFFF Area 11)
16. SS053P – B1B Tire Fire and Sample Location 14B (AFFF Area 12, 29, & 30)
17. SS054P – Foam Retention Lagoon for B2316 and 2328 (AFFF Area 14)
18. SS055P – Spray Test Area (AFFF Area 15)
19. SS056P – Old Alert Pad (AFFF Area 16)

Robins AFB Remedial Investigation

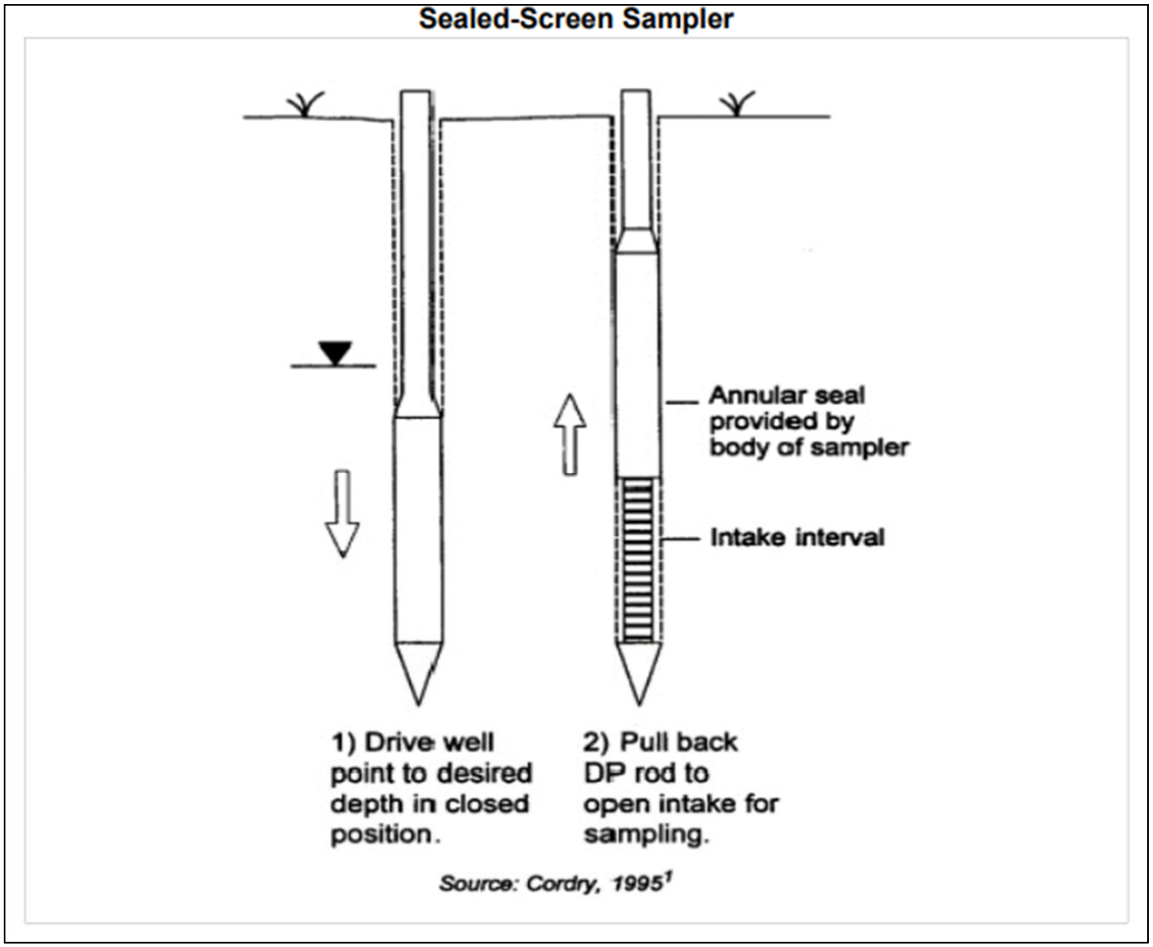
Ongoing Work

- **Source Area Soil and Groundwater Grab Sampling**
- **Soil samples collected with direct push technology (DPT) drill rig**
  - Samples collected at various intervals in boring
  - Used to delineate source area vertically and horizontally
- **Groundwater grab samples collected at saturated zone concurrent with soil boring**
  - Provides a snapshot of groundwater concentrations to help identify permanent well locations

Robins AFB Remedial Investigation

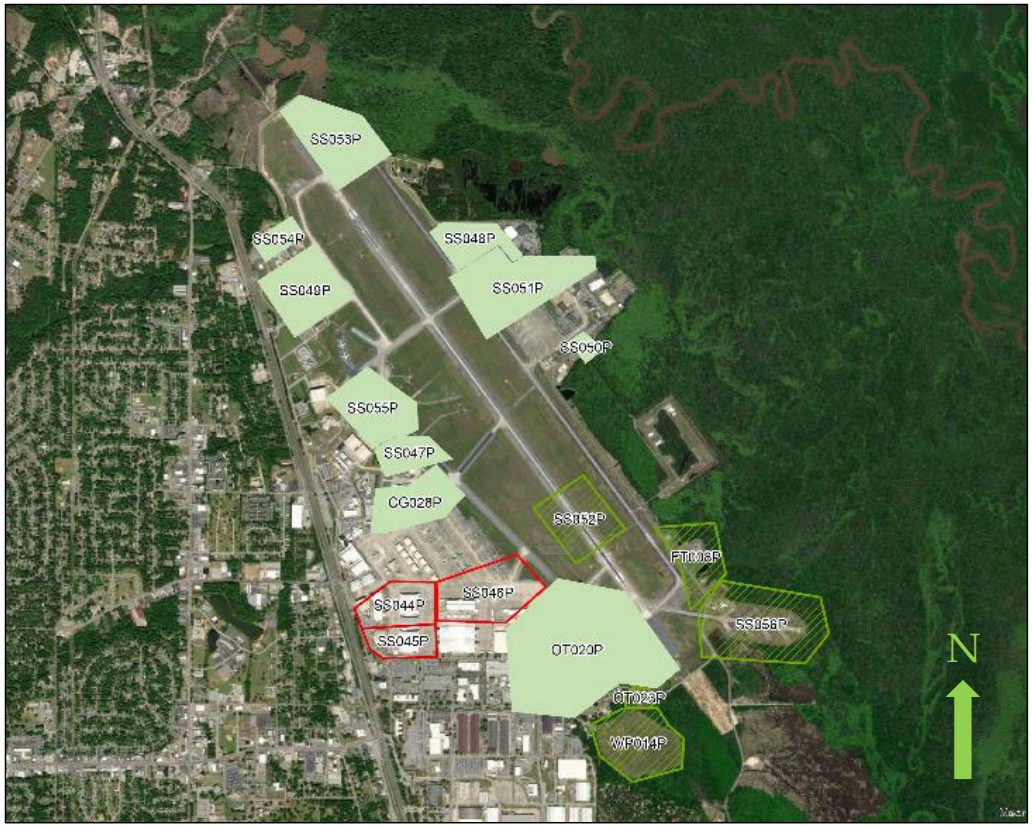
Ongoing Work

- Vertical Aquifer Sampling (VAS)
- Boring is advanced to desired depth
- Groundwater grab sample is collected using specialized sampling equipment
- Boring is continued to next depth; process is repeated
- Provides a vertical picture of groundwater contamination



Robins AFB Remedial Investigation
Completed Work

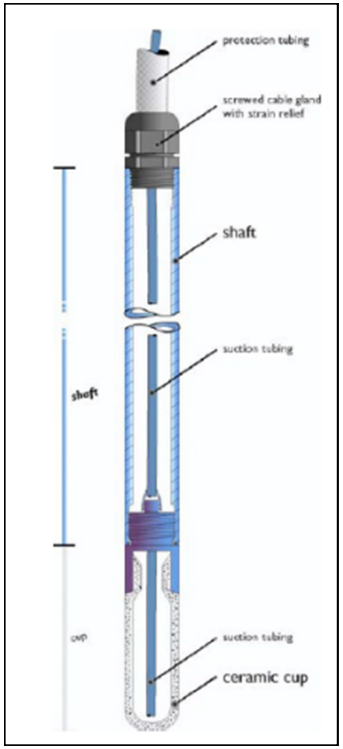
- Borings Completed
  - ≈ 470 (63%)
- Samples Collected
  - > 1,500 (soil and groundwater)
- Baseline Groundwater Sampling
  - ≈ 80 existing monitoring wells
- Surface Water and Sediment Sampling
  - 15 locations



Green shaded = DPT complete
Green with hatching = DPT in progress
Red outlined = DPT not started

Robins AFB Remedial Investigation

Upcoming Work



- VAS data (groundwater) evaluation
- Permanent monitoring well installation and sampling
- Porewater sampling with lysimeters (soil to groundwater)
- Surface water and sediment sampling (round two)

Robins AFB Remedial Investigation
Timeline

- Contract Award – August 2022
- Planning Documents/Review – March 2023
- Field Preparations – May 2023
- Field Work/Data Collection – September 2023 to August 2025
- Report Preparation – August 2025

Discussion

Supplementary Site Investigation (SSI) at Solid Waste Management Unit (SWMU) 57 (OT041)

Kip Gray, PhD
Senior Professional
Geosyntec Consultants, Inc.

September 12, 2024

Agenda

- Overview of SWMU 57
- SSI Approach
- Key Findings
  - Membrane Interface Probe with Hydraulic Profiling Tool (MiHpt)
  - Analytical Data
  - Conceptual Site Model (CSM) Refinement
- Path Forward

Overview of SWMU 57

Final RLs for SWMU 57 Groundwater COCs

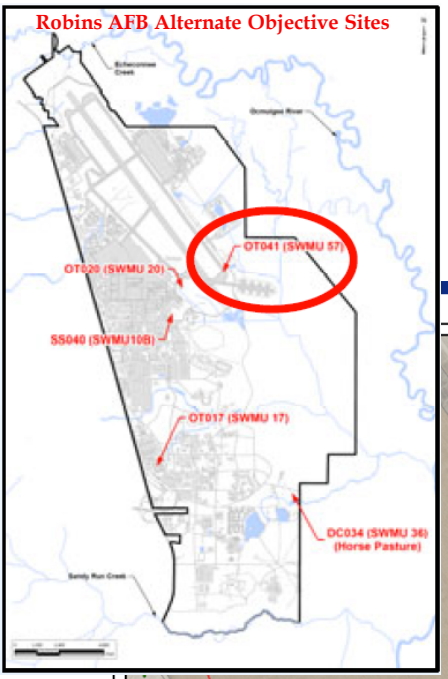
COC	Final RL (µg/L)
Benzene	**5**
1,3,5-Trimethylbenzene	12
Naphthalene	6.5
Chlorobenzene	**100**
1,2,4-Trichlorobenzene	**70**
1,2-Dichlorobenzene	**600**
1,3-Dichlorobenzene	5.5
1,4-Dichlorobenzene	**75**

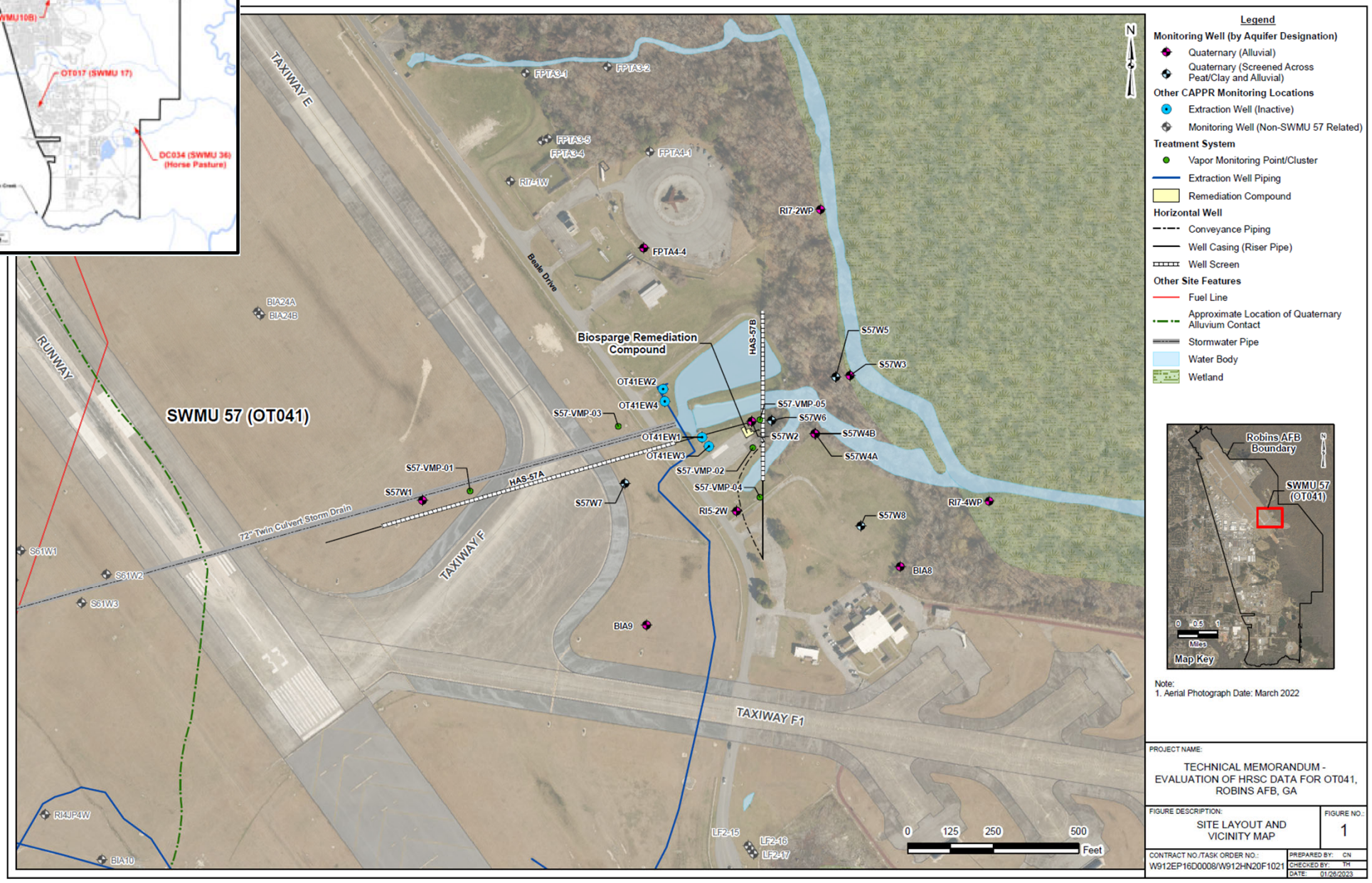
Source: CAP [Cape, 2013]
COC – Contaminants of Concern
RL – Remediation Level
ug/L – microgram per liter

- **Contamination identified during 1995 Flightline Investigation in vicinity of culvert system**
  - **Additional contamination identified south of culvert system in 2014**
- **Current Corrective Action Plan (CAP) objectives**
  - **Reduce potential sources of GW contamination**
  - **Reduce COCs in groundwater to values less than RLs**
  - **Minimize migration of groundwater contaminants**
- **Selected remedies**
  - **Pump and Treat (2002-2014)**
  - **Horizontal Biosparge System (Initiated 2014*)**

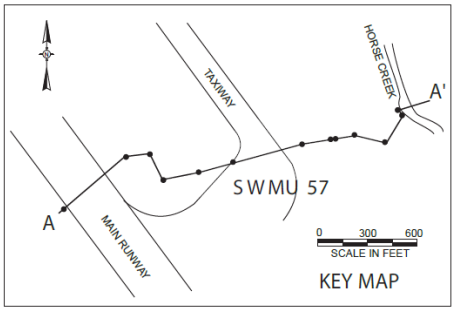
*System currently shut down for rebound study during SSI

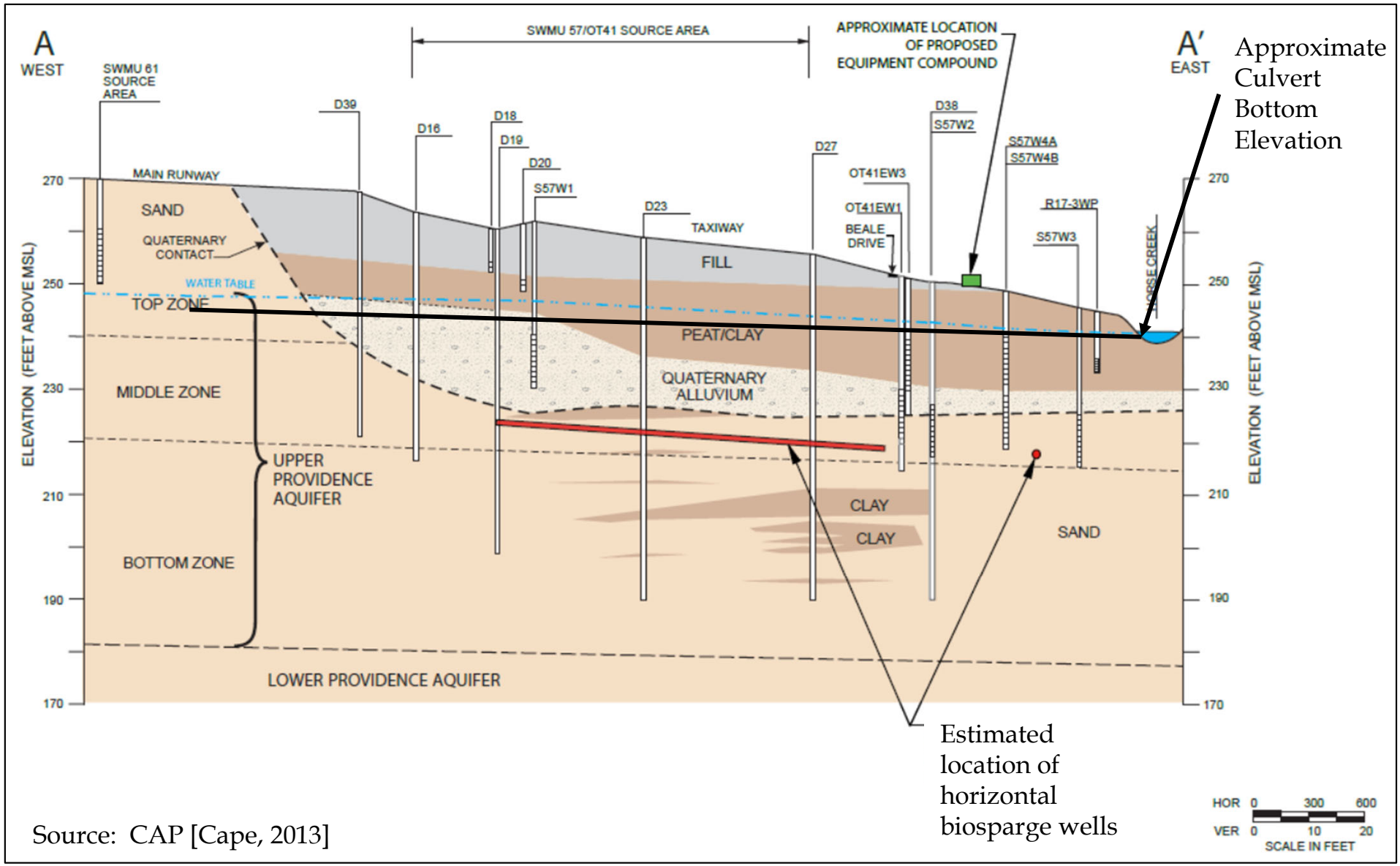
Overview of SWMU 57



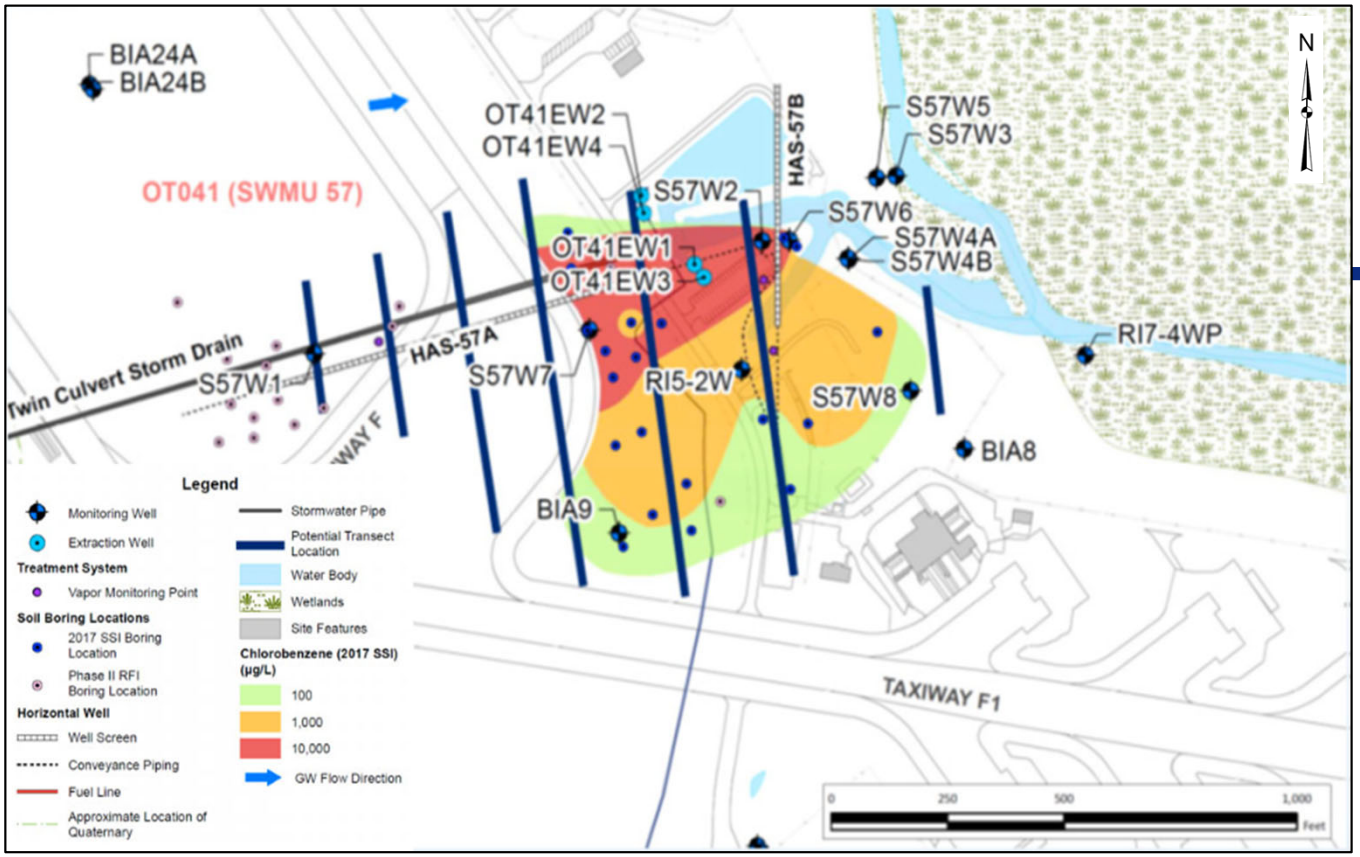


Overview of SWMU 57





Source: CAP [Cape, 2013]

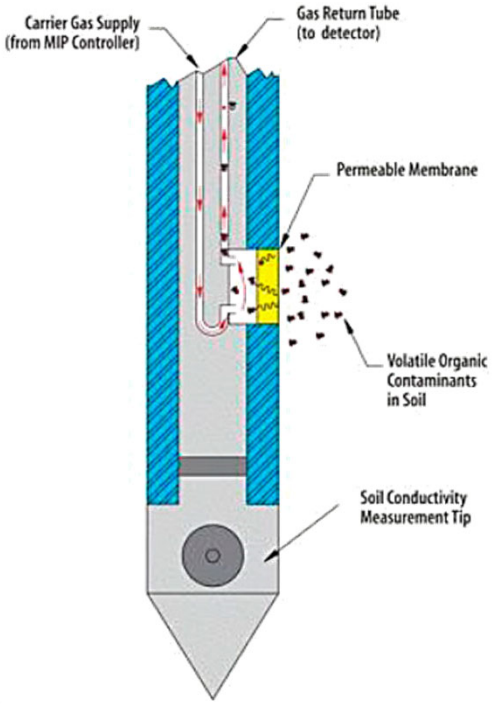


SSI Approach

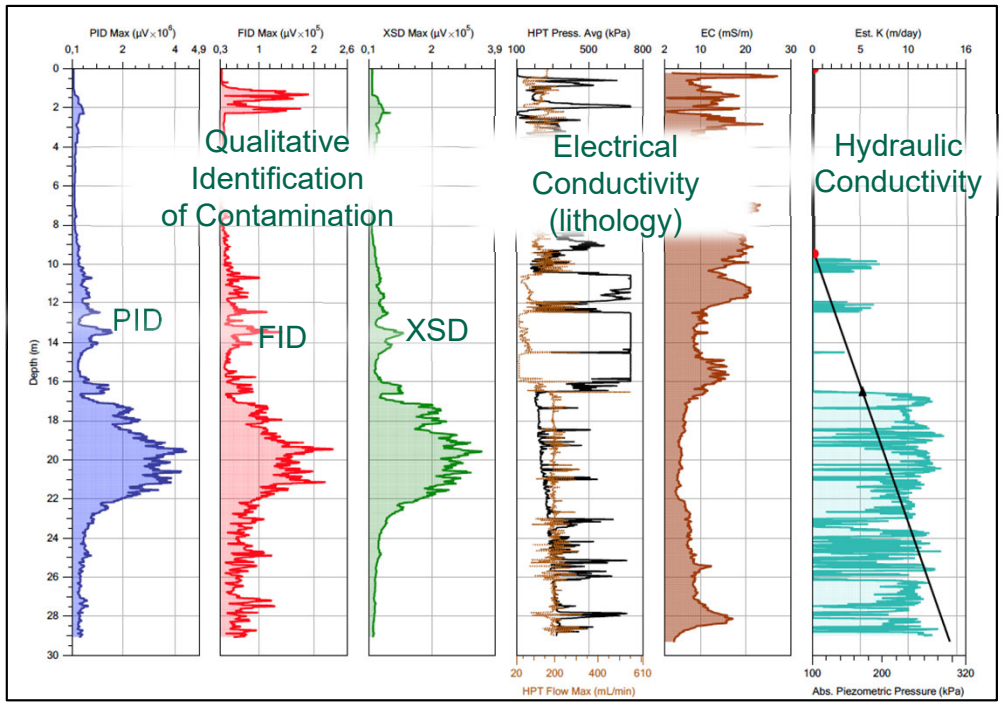
- Source of contamination
- Distribution of contamination within peat/clay layer and under Taxiway F
- Bioremediation effectiveness at treating contaminant mass
- Geochemical conditions that may stimulate or hinder degradation of site contaminants

SSI Approach

- **Membrane Interface Probe (MIP) can detect presence of dissolved contaminants and provide qualitative identification**
- **Hydraulic Profiling Tool (HPT) provides information on hydrogeology and can identify areas of contaminant transport and storage**

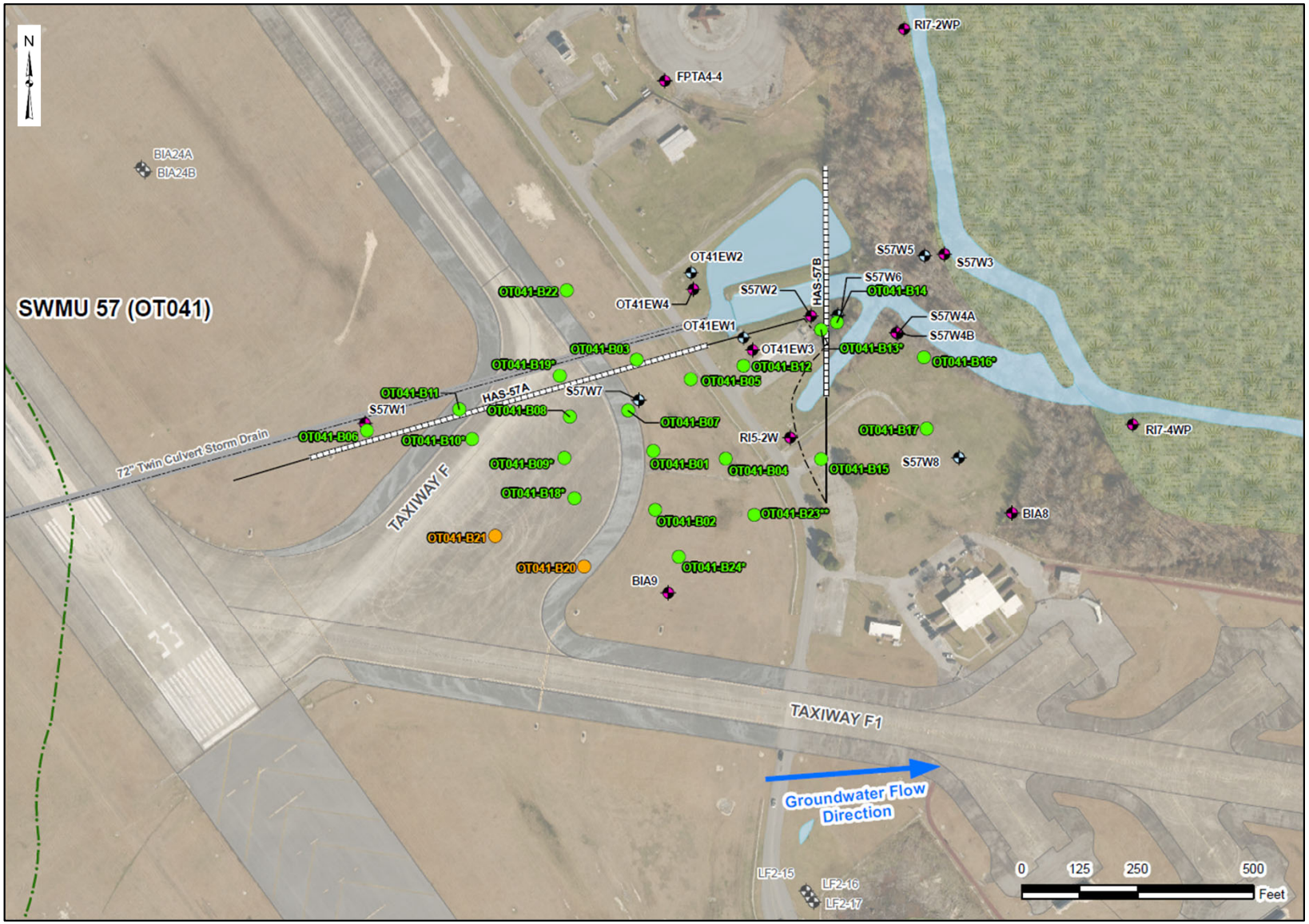


MIP



Typical MIP-HPT data

SSI Approach



Legend

Monitoring Well (by Aquifer Designation)

- Quaternary (Alluvial)
- Quaternary (Screened Across Peat/Clay and Alluvial)

Other CAPPR Monitoring Locations

- Monitoring Well (Non-SWMU 57 Related)

Horizontal Well

- Conveyance Piping
- Well Casing (Riser Pipe)
- Well Screen
- Approximate Location of Quaternary Alluvium Contact
- Stormwater Pipe
- Water Body
- Wetland
- SSI Boring Location
- SSI Boring Location (Not Completed)

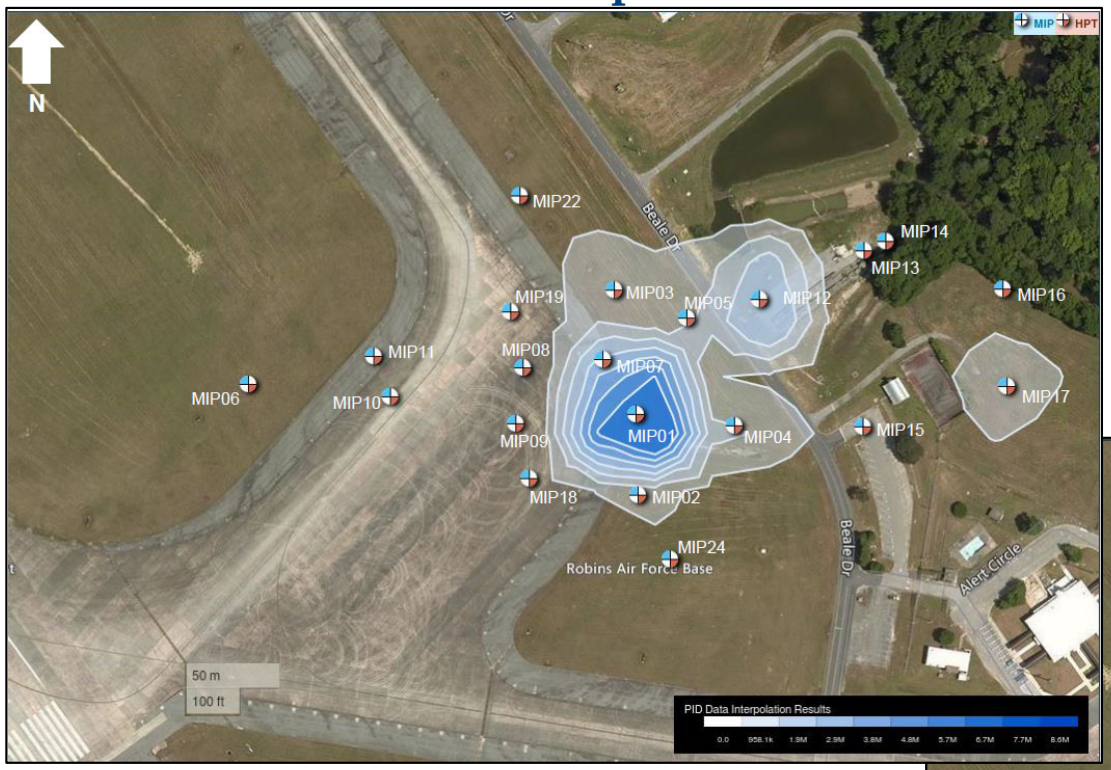
Notes:
1. Aerial Photograph Date: March 2022
2. The boring locations surveyed on 7 June 2022 by Donaldson, Garrett & Associates, Inc.

Acronyms:
MiHpt - Membrane Interface Probe & Hydraulic Profiling Tool
* - MiHpt Data Only
** - No MiHpt Completed
SSI - Supplemental Site Investigation

Key Findings

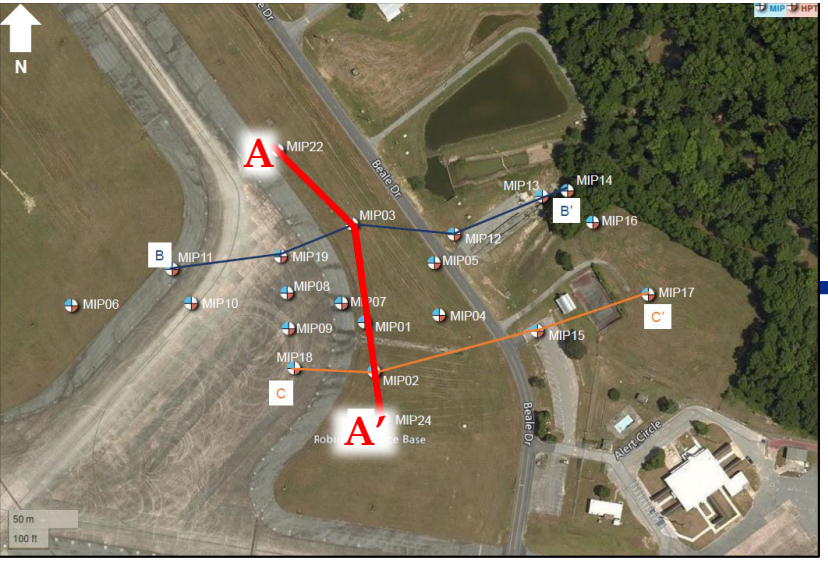
MiHpt Data

PID Data Interpolation



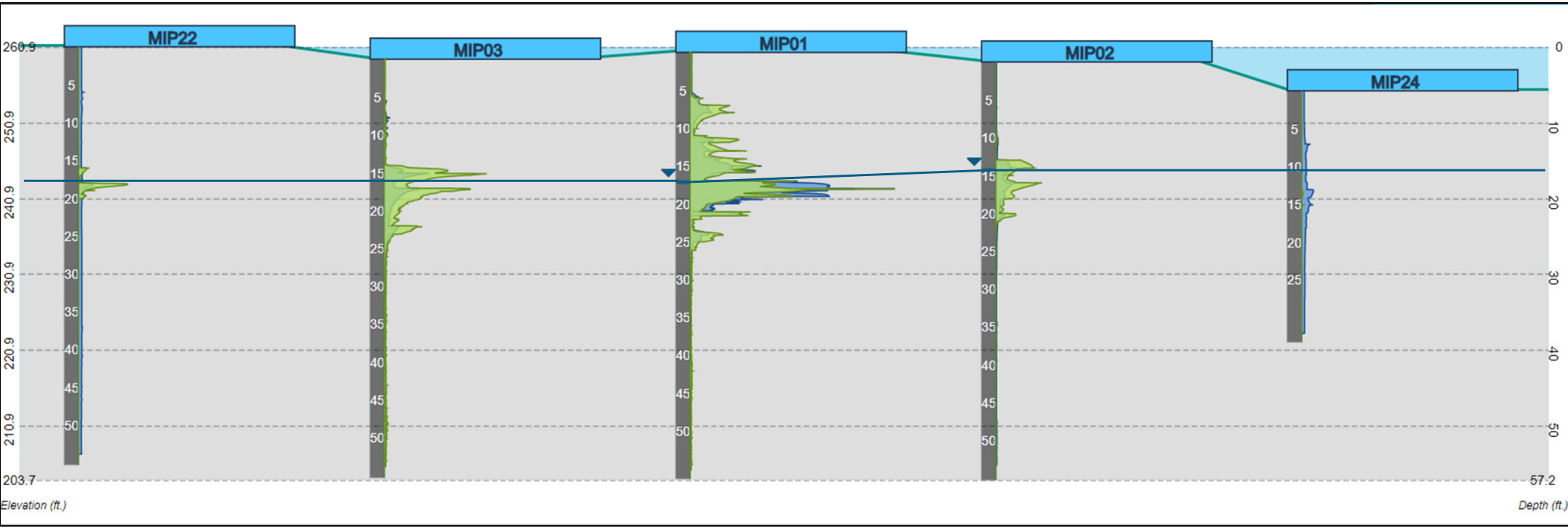
XSD Data Interpolation

PID – Photoionization Detector
XSD – Halogen Specific Detector



Key Findings

MiHpt Data

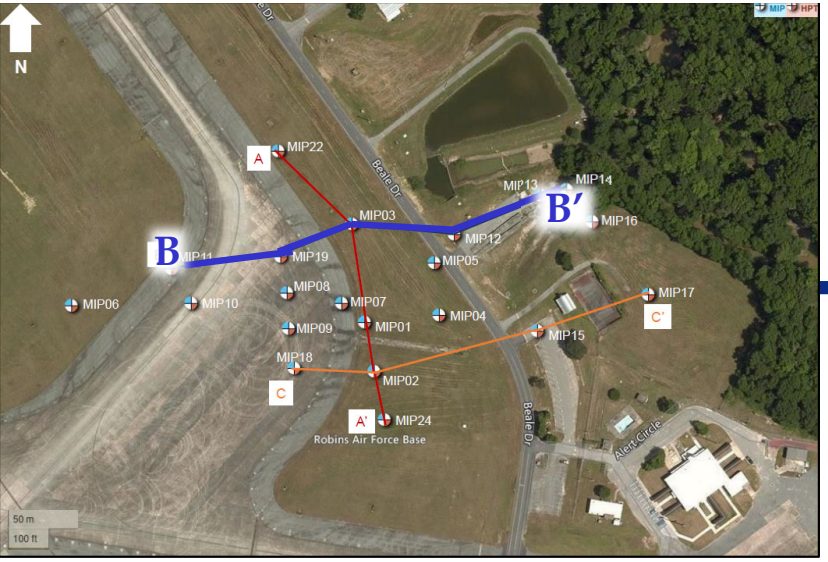


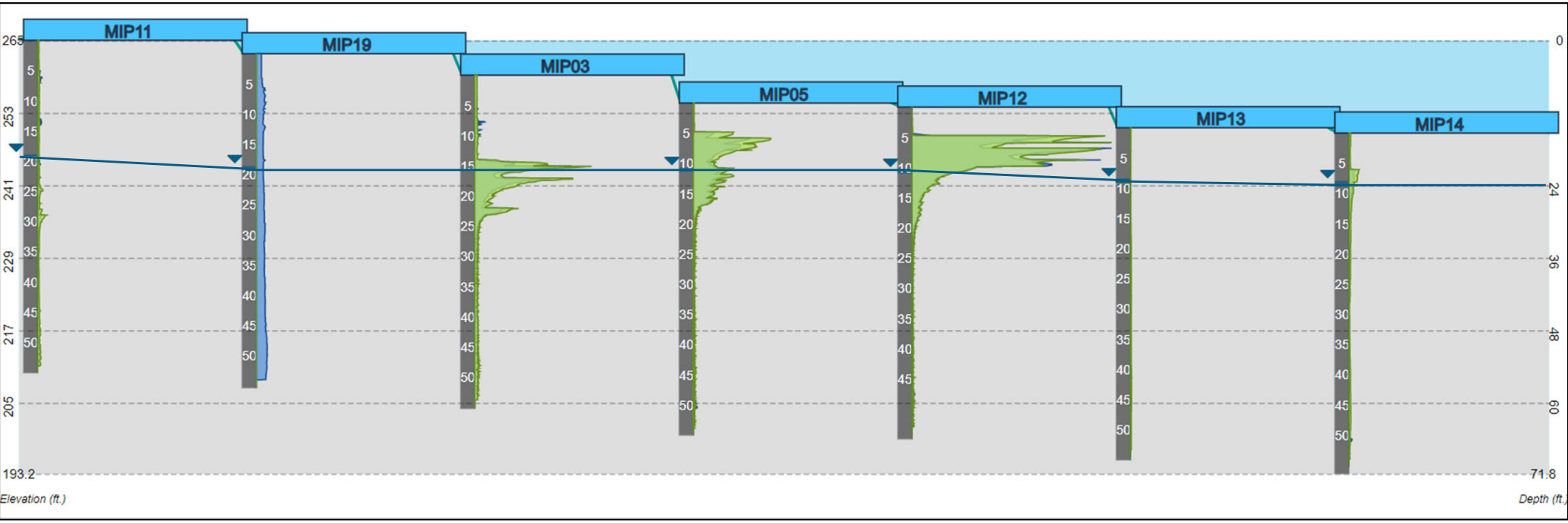
Cross Section A-A′ – COC Response (PID and XSD)

Blue = PID
Green = XSD

Key Findings

MiHpt Data



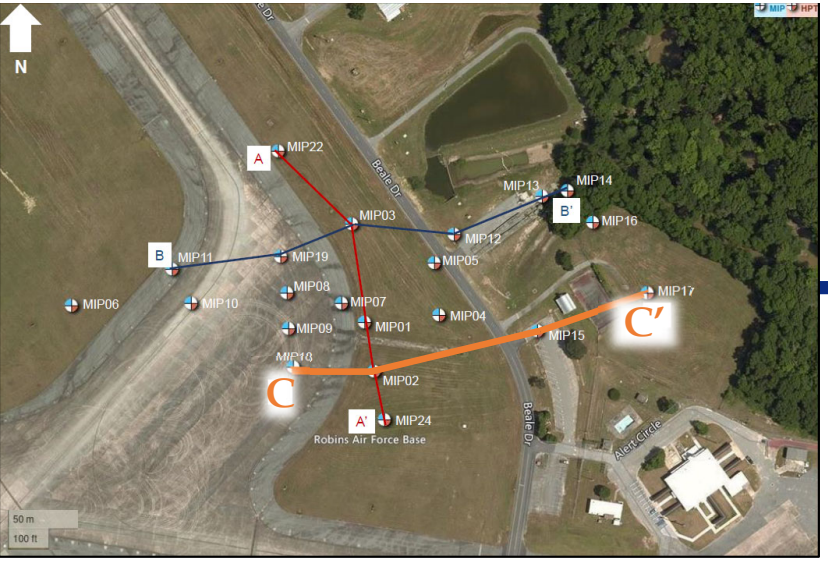


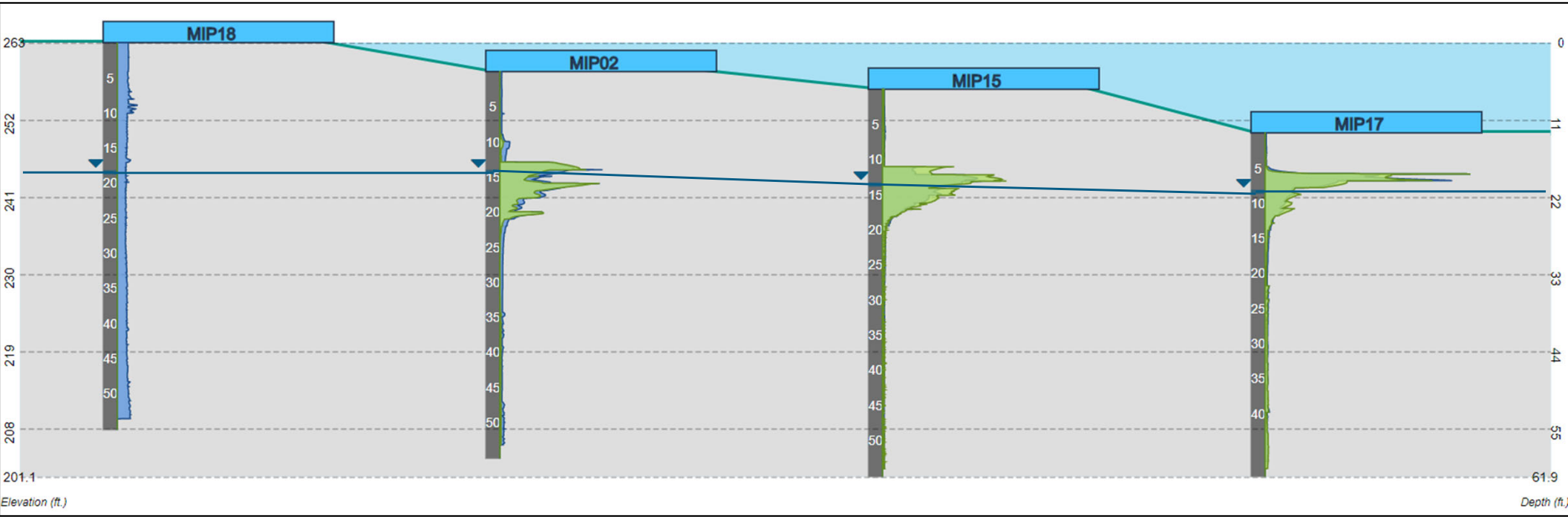
Cross Section B-B′ – COC Response (PID and XSD)

Blue = PID
Green = XSD

Key Findings

MiHpt Data



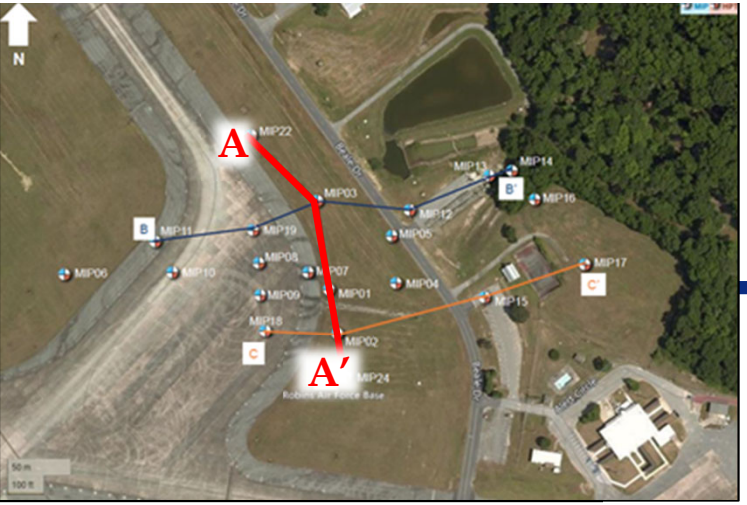


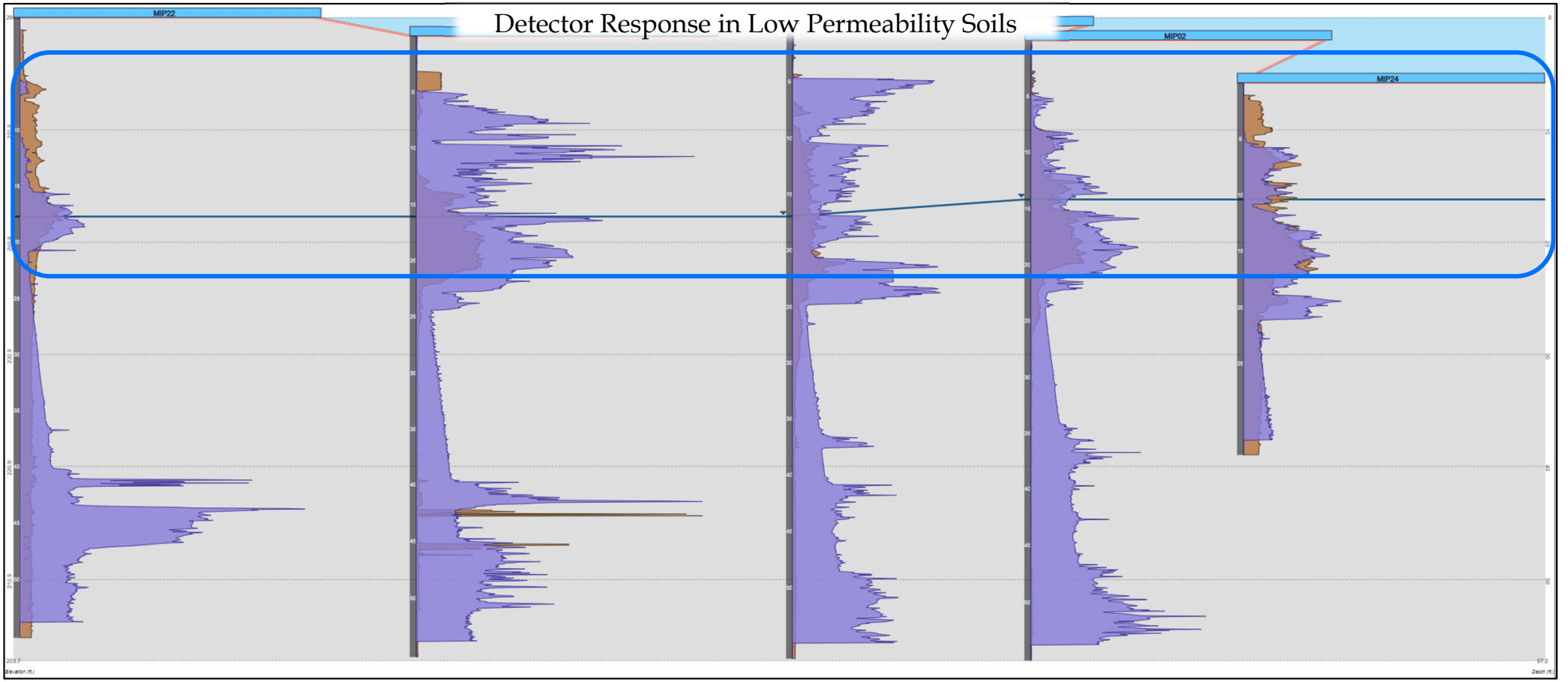
Cross Section C-C′ – COC Response (PID and XSD)

Blue = PID
Green = XSD

Key Findings

MiHpt Data

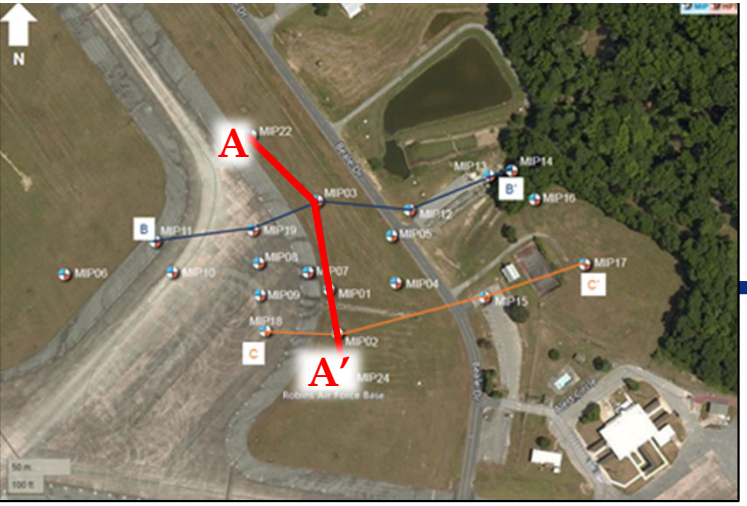




Cross Section A-A′ – COC Response in Low Permeability Zone

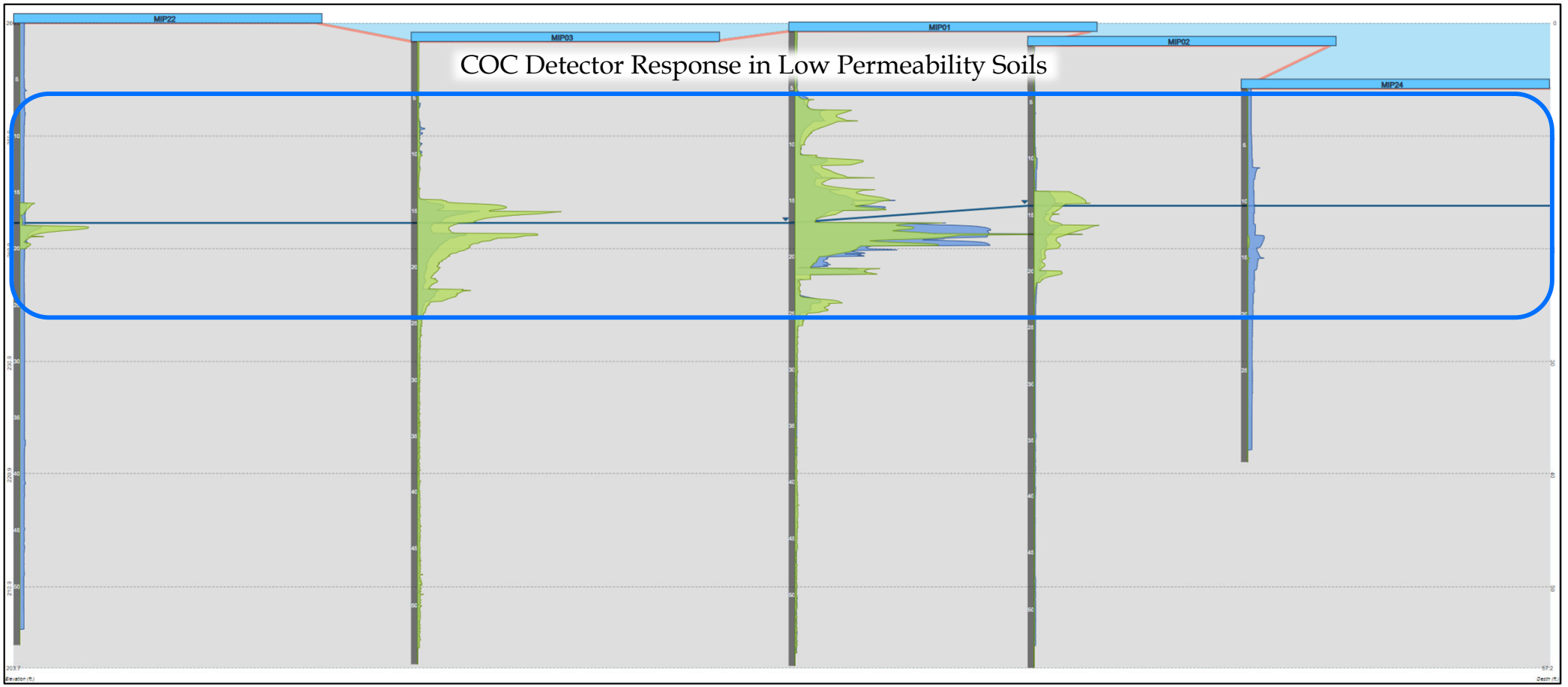
Brown = Electrical Conductivity

Lavender = Pressure



Key Findings

MiHpt Data



Cross Section A-A′ – COC Response in Low Permeability Zone

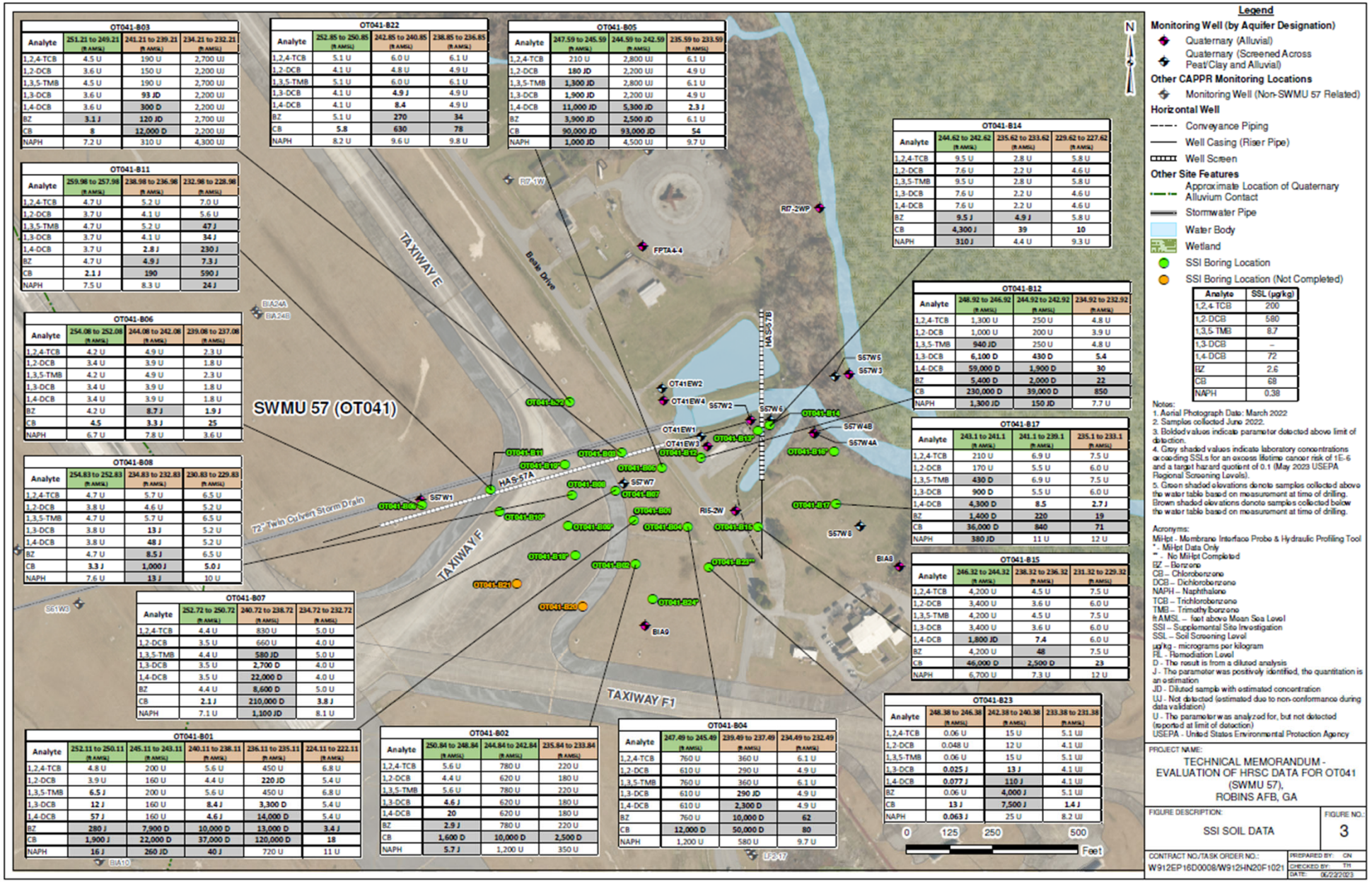
Blue = PID
Green = XSD

Sample **above** water table at time of drilling

Sample **below** water table at time of drilling

Key Findings

Analytical Data



OT041-B03

Analyte	251.21 to 249.21 (ft AMSL)	241.21 to 239.21 (ft AMSL)	234.21 to 232.21 (ft AMSL)
1,2,4-TCB	4.5 U	190 U	2,700 UJ
1,2-DCB	3.6 U	150 U	2,200 UJ
1,3,5-TMB	4.5 U	190 U	2,700 UJ
1,3-DCB	3.6 U	93 JD	2,200 UJ
1,4-DCB	3.6 U	300 D	2,200 UJ
BZ	3.1 J	120 JD	2,700 UJ
CB	8	12,000 D	2,200 UJ
NAPH	7.2 U	310 U	4,300 UJ

OT041-B22

Analyte	252.85 to 250.85 (ft AMSL)	242.85 to 240.85 (ft AMSL)	238.85 to 236.85 (ft AMSL)
1,2,4-TCB	5.1 U	6.0 U	6.1 U
1,2-DCB	4.1 U	4.8 U	4.9 U
1,3,5-TMB	5.1 U	6.0 U	6.1 U
1,3-DCB	4.1 U	4.9 J	4.9 U
1,4-DCB	4.1 U	8.4	4.9 U
BZ	5.1 U	270	34
CB	5.8	630	78
NAPH	8.2 U	9.6 U	9.8 U

OT041-B05

Analyte	247.59 to 245.59 (ft AMSL)	244.59 to 242.59 (ft AMSL)	235.59 to 233.59 (ft AMSL)
1,2,4-TCB	210 U	2,800 UJ	6.1 U
1,2-DCB	180 JD	2,200 UJ	4.9 U
1,3,5-TMB	1,300 JD	2,800 UJ	6.1 U
1,3-DCB	1,900 JD	2,200 UJ	4.9 U
1,4-DCB	11,000 JD	5,300 JD	2.3 J
BZ	3,900 JD	2,500 JD	6.1 U
CB	90,000 JD	93,000 JD	54
NAPH	1,000 JD	4,500 UJ	9.7 U

OT041-B14

Analyte	244.62 to 242.62 (ft AMSL)	235.62 to 233.62 (ft AMSL)	229.62 to 227.62 (ft AMSL)
1,2,4-TCB	9.5 U	2.8 U	5.8 U
1,2-DCB	7.6 U	2.2 U	4.6 U
1,3,5-TMB	9.5 U	2.8 U	5.8 U
1,3-DCB	7.6 U	2.2 U	4.6 U
1,4-DCB	7.6 U	2.2 U	4.6 U
BZ	9.5 J	4.9 J	5.8 U
CB	4,300 J	39	10
NAPH	310 J	4.4 U	9.3 U

OT041-B11

Analyte	259.98 to 257.98 (ft AMSL)	238.98 to 236.98 (ft AMSL)	232.98 to 228.98 (ft AMSL)
1,2,4-TCB	4.7 U	5.2 U	7.0 U
1,2-DCB	3.7 U	4.1 U	5.6 U
1,3,5-TMB	4.7 U	5.2 U	47 J
1,3-DCB	3.7 U	4.1 U	34 J
1,4-DCB	3.7 U	2.8 J	230 J
BZ	4.7 U	4.9 J	7.3 J
CB	2.1 J	190	590 J
NAPH	7.5 U	8.3 U	24 J

OT041-B12

Analyte	248.92 to 246.92 (ft AMSL)	244.92 to 242.92 (ft AMSL)	234.92 to 232.92 (ft AMSL)
1,2,4-TCB	1,300 U	250 U	4.8 U
1,2-DCB	1,000 U	200 U	3.9 U
1,3,5-TMB	940 JD	250 U	4.8 U
1,3-DCB	6,100 D	430 D	5.4
1,4-DCB	59,000 D	1,900 D	30
BZ	5,400 D	2,000 D	22
CB	230,000 D	39,000 D	850
NAPH	1,300 JD	150 JD	7.7 U

OT041-B06

Analyte	254.08 to 252.08 (ft AMSL)	244.08 to 242.08 (ft AMSL)	239.08 to 237.08 (ft AMSL)
1,2,4-TCB	4.2 U	4.9 U	2.3 U
1,2-DCB	3.4 U	3.9 U	1.8 U
1,3,5-TMB	4.2 U	4.9 U	2.3 U
1,3-DCB	3.4 U	3.9 U	1.8 U
1,4-DCB	3.4 U	3.9 U	1.8 U
BZ	4.2 U	8.7 J	1.9 J
CB	4.5	3.3 J	25
NAPH	6.7 U	7.8 U	3.6 U

OT041-B17

Analyte	243.1 to 241.1 (ft AMSL)	241.1 to 239.1 (ft AMSL)	235.1 to 233.1 (ft AMSL)
1,2,4-TCB	210 U	6.9 U	7.5 U
1,2-DCB	170 U	5.5 U	6.0 U
1,3,5-TMB	430 D	6.9 U	7.5 U
1,3-DCB	900 D	5.5 U	6.0 U
1,4-DCB	4,300 D	8.5	2.7 J
BZ	1,400 D	220	19
CB	36,000 D	840	71
NAPH	380 JD	11 U	12 U

OT041-B08

Analyte	254.83 to 252.83 (ft AMSL)	234.83 to 232.83 (ft AMSL)	230.83 to 229.83 (ft AMSL)
1,2,4-TCB	4.7 U	5.7 U	6.5 U
1,2-DCB	3.8 U	4.6 U	5.2 U
1,3,5-TMB	4.7 U	5.7 U	6.5 U
1,3-DCB	3.8 U	13 J	5.2 U
1,4-DCB	3.8 U	48 J	5.2 U
BZ	4.7 U	8.5 J	6.5 U
CB	3.3 J	1,000 J	5.0 J
NAPH	7.6 U	13 J	10 U

OT041-B15

Analyte	246.32 to 244.32 (ft AMSL)	238.32 to 236.32 (ft AMSL)	231.32 to 229.32 (ft AMSL)
1,2,4-TCB	4,200 U	4.5 U	7.5 U
1,2-DCB	3,400 U	3.6 U	6.0 U
1,3,5-TMB	4,200 U	4.5 U	7.5 U
1,3-DCB	3,400 U	3.6 U	6.0 U
1,4-DCB	1,800 JD	7.4	6.0 U
BZ	4,200 U	48	7.5 U
CB	46,000 D	2,500 D	23
NAPH	6,700 U	7.3 U	12 U

OT041-B07

Analyte	252.72 to 250.72 (ft AMSL)	240.72 to 238.72 (ft AMSL)	234.72 to 232.72 (ft AMSL)
1,2,4-TCB	4.4 U	830 U	5.0 U
1,2-DCB	3.5 U	660 U	4.0 U
1,3,5-TMB	4.4 U	580 JD	5.0 U
1,3-DCB	3.5 U	2,700 D	4.0 U
1,4-DCB	3.5 U	22,000 D	4.0 U
BZ	4.4 U	8,600 D	5.0 U
CB	2.1 J	210,000 D	3.8 J
NAPH	7.1 U	1,100 JD	8.1 U

OT041-B23

Analyte	248.38 to 246.38 (ft AMSL)	242.38 to 240.38 (ft AMSL)	233.38 to 231.38 (ft AMSL)
1,2,4-TCB	0.06 U	15 U	5.1 UJ
1,2-DCB	0.048 U	12 U	4.1 UJ
1,3,5-TMB	0.06 U	15 U	5.1 UJ
1,3-DCB	0.025 J	13 J	4.1 UJ
1,4-DCB	0.077 J	110 J	4.1 UJ
BZ	0.06 U	4,000 J	5.1 UJ
CB	13 J	7,500 J	1.4 J
NAPH	0.063 J	25 U	8.2 UJ

OT041-B01

Analyte	252.11 to 250.11 (ft AMSL)	245.11 to 243.11 (ft AMSL)	240.11 to 238.11 (ft AMSL)	236.11 to 235.11 (ft AMSL)	224.11 to 222.11 (ft AMSL)
1,2,4-TCB	4.8 U	200 U	5.6 U	450 U	6.8 U
1,2-DCB	3.9 U	160 U	4.4 U	220 JD	5.4 U
1,3,5-TMB	6.5 J	200 U	5.6 U	450 U	6.8 U
1,3-DCB	12 J	160 U	8.4 J	3,300 D	5.4 U
1,4-DCB	57 J	160 U	4.6 J	14,000 D	5.4 U
BZ	280 J	7,900 D	10,000 D	13,000 D	3.4 J
CB	1,900 J	22,000 D	37,000 D	120,000 D	18
NAPH	16 J	260 JD	40 J	720 U	11 U

OT041-B02

Analyte	250.84 to 248.84 (ft AMSL)	244.84 to 242.84 (ft AMSL)	235.84 to 233.84 (ft AMSL)
1,2,4-TCB	5.6 U	780 U	220 U
1,2-DCB	4.4 U	620 U	180 U
1,3,5-TMB	5.6 U	780 U	220 U
1,3-DCB	4.6 J	620 U	180 U
1,4-DCB	20	620 U	180 U
BZ	2.9 J	780 U	220 U
CB	1,600 D	10,000 D	2,500 D
NAPH	5.7 J	1,200 U	350 U

OT041-B04

Analyte	247.49 to 245.49 (ft AMSL)	239.49 to 237.49 (ft AMSL)	234.49 to 232.49 (ft AMSL)
1,2,4-TCB	760 U	360 U	6.1 U
1,2-DCB	610 U	290 U	4.9 U
1,3,5-TMB	760 U	360 U	6.1 U
1,3-DCB	610 U	290 JD	4.9 U
1,4-DCB	610 U	2,300 D	4.9 U
BZ	760 U	10,000 D	62
CB	12,000 D	50,000 D	80
NAPH	1,200 U	580 U	9.7 U

Legend

Monitoring Well (by Aquifer Designation)
- Quaternary (Alluvial)
- Quaternary (Screened Across Peat/Clay and Alluvial)

Other CAPPR Monitoring Locations
- Monitoring Well (Non-SWMU 57 Related)

Horizontal Well
- Conveyance Piping
- Well Casing (Riser Pipe)
- Well Screen

Other Site Features
- Approximate Location of Quaternary Alluvium Contact
- Stormwater Pipe
- Water Body
- Wetland
- SSI Boring Location
- SSI Boring Location (Not Completed)

Analyte	SSL (µg/kg)
1,2,4-TCB	200
1,2-DCB	580
1,3,5-TMB	8.7
1,3-DCB	–
1,4-DCB	72
BZ	2.6
CB	68
NAPH	0.38

Notes:
1. Aerial Photograph Date: March 2022
2. Samples collected June 2022.
3. Bolded values indicate parameter detected above limit of detection.
4. Gray shaded values indicate laboratory concentrations exceeding SSLs for an excess lifetime cancer risk of 1E-6 and a target hazard quotient of 0.1 (May 2023 USEPA Regional Screening Levels).
5. Green shaded elevations denote samples collected above the water table based on measurement at time of drilling. Brown shaded elevations denote samples collected below the water table based on measurement at time of drilling.

Acronyms:
MiHpt - Membrane Interface Probe & Hydraulic Profiling Tool
"-" - MiHpt Data Only
"" - No MiHpt Completed
BZ – Benzene
CB – Chlorobenzene
DCB – Dichlorobenzene
NAPH – Naphthalene
TCB – Trichlorobenzene
TMB – Trimethylbenzene
ft AMSL – feet above Mean Sea Level
SSI – Supplemental Site Investigation
SSL – Soil Screening Level
µg/kg - micrograms per kilogram
RL - Remediation Level
D - The result is from a diluted analysis
J - The parameter was positively identified, the quantitation is an estimation
JD - Diluted sample with estimated concentration
UJ - Not detected (estimated due to non-conformance during data validation)
U - The parameter was analyzed for, but not detected (reported at limit of detection)
USEPA - United States Environmental Protection Agency

PROJECT NAME:
TECHNICAL MEMORANDUM - EVALUATION OF HRSC DATA FOR OT041 (SWMU 57), ROBINS AFB, GA

FIGURE DESCRIPTION: SSI SOIL DATA

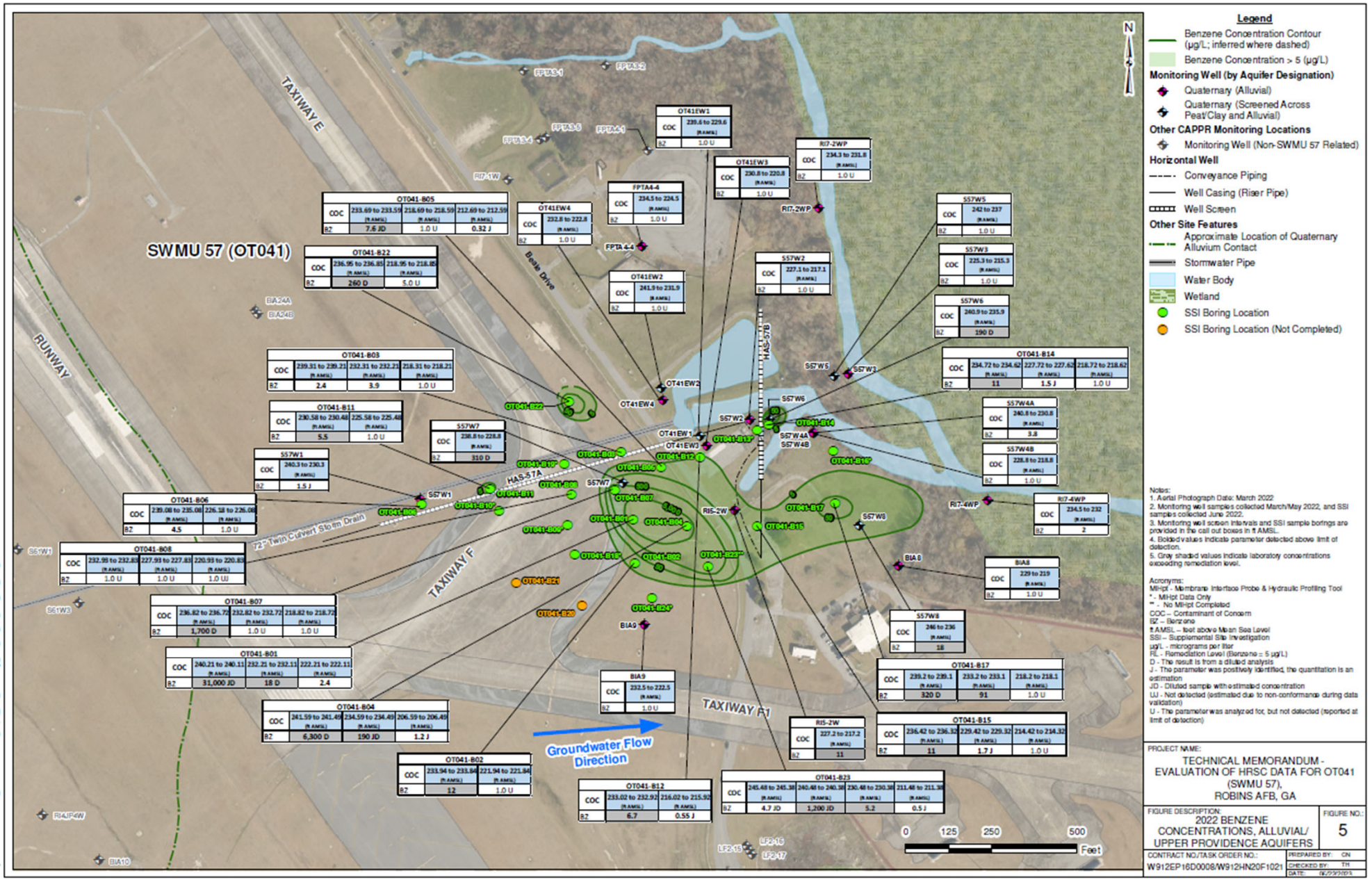
FIGURE NO.: 3

CONTRACT NO./TASK ORDER NO.: W912EP16D0008/W912HN20F1021

PREPARED BY: CN
CHECKED BY: TH
DATE: 06/22/2023

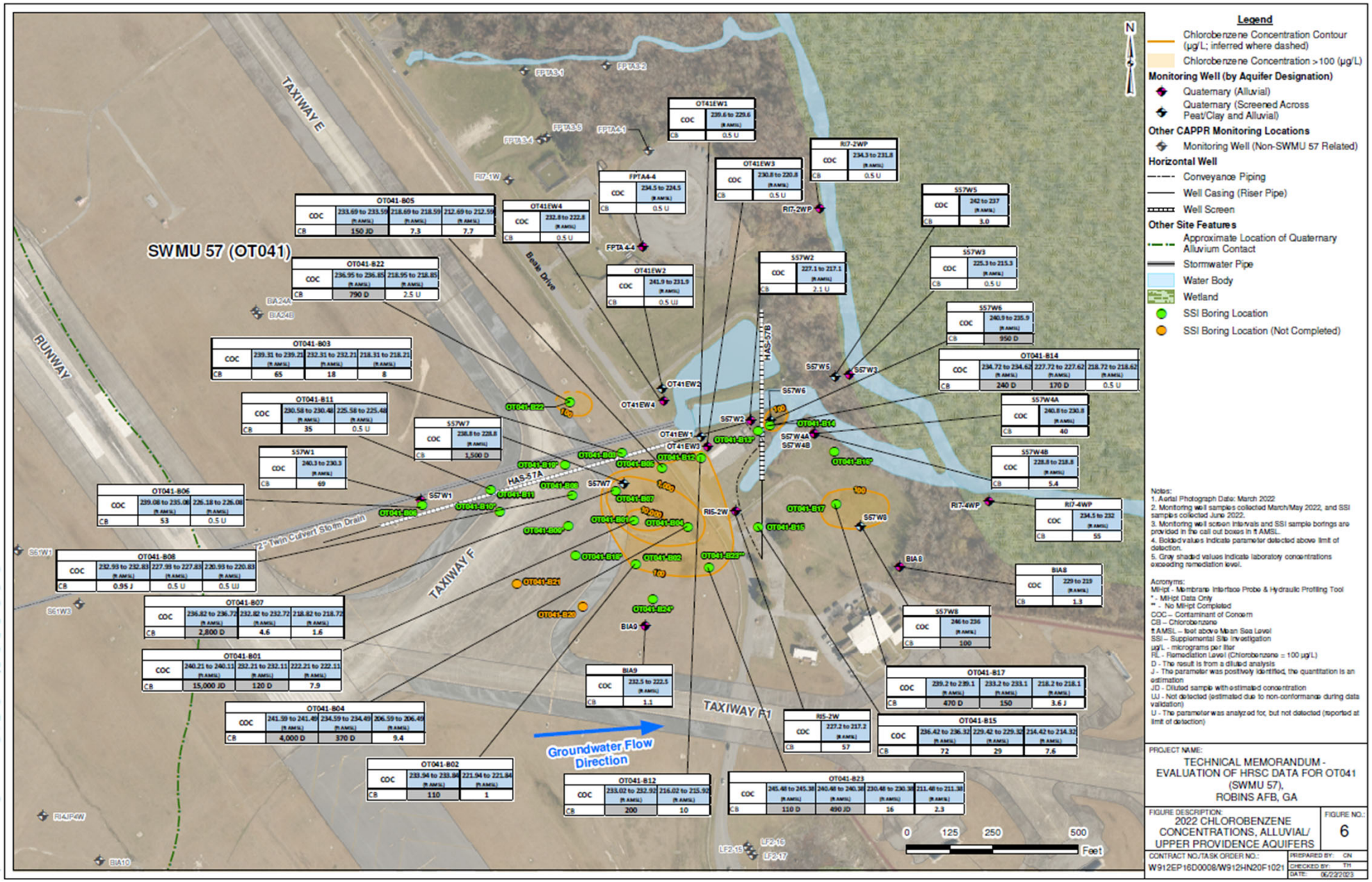
Key Findings

Analytical Data (Benzene in Groundwater)



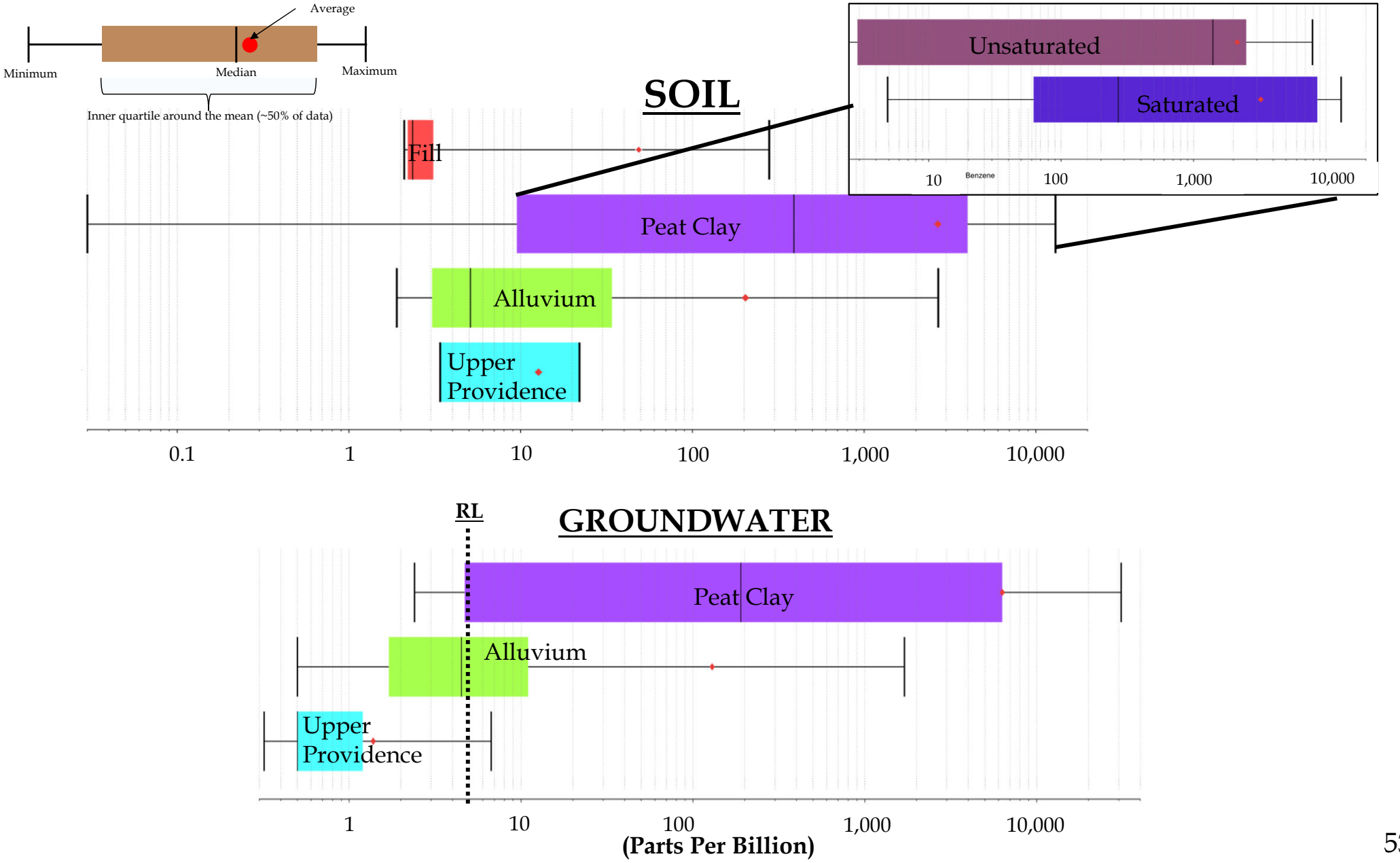
Key Findings

Analytical Data (Chlorobenzene in Groundwater)



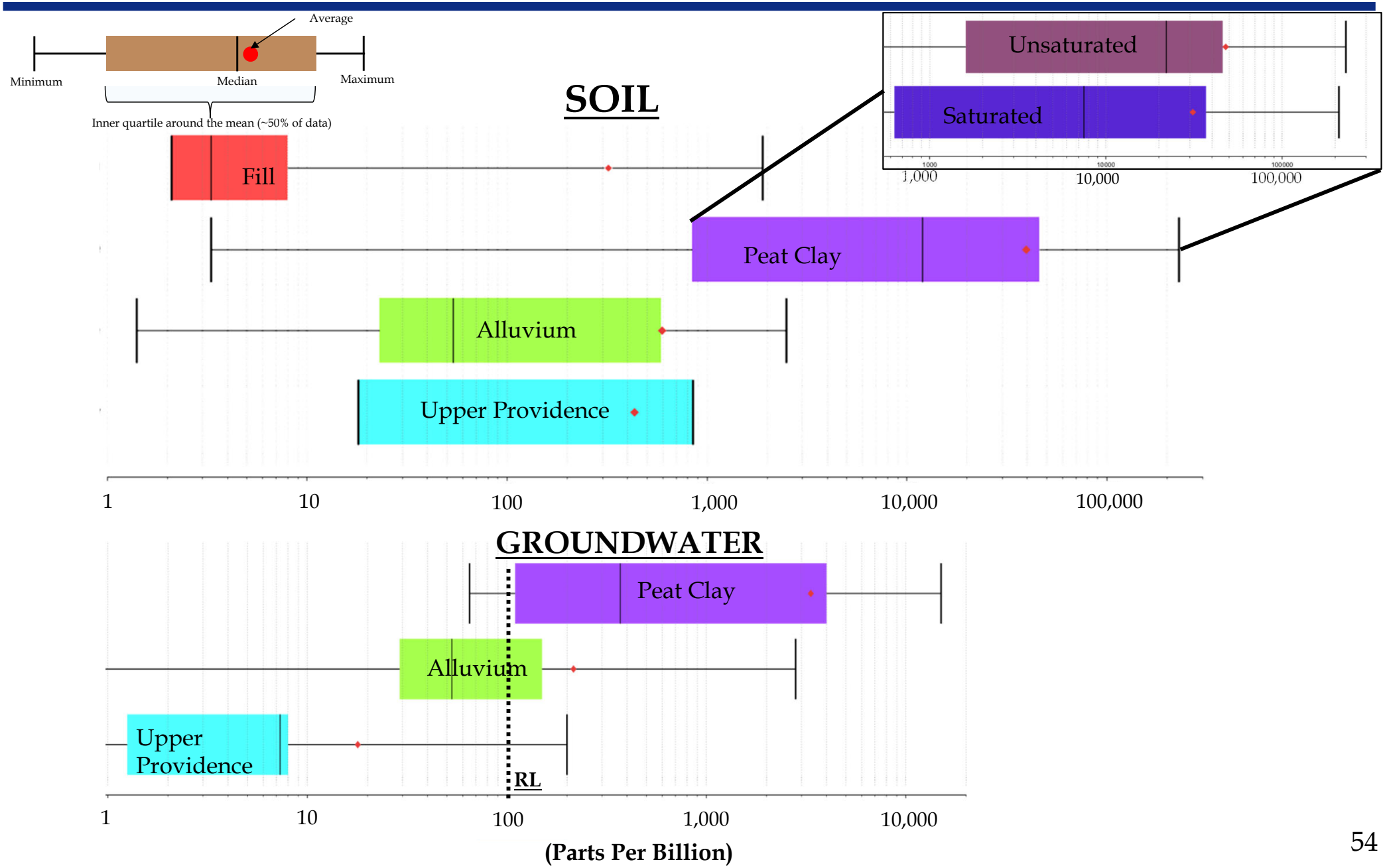
Key Findings

Analytical Data (Benzene)



Key Findings

Analytical Data (Chlorobenzene)



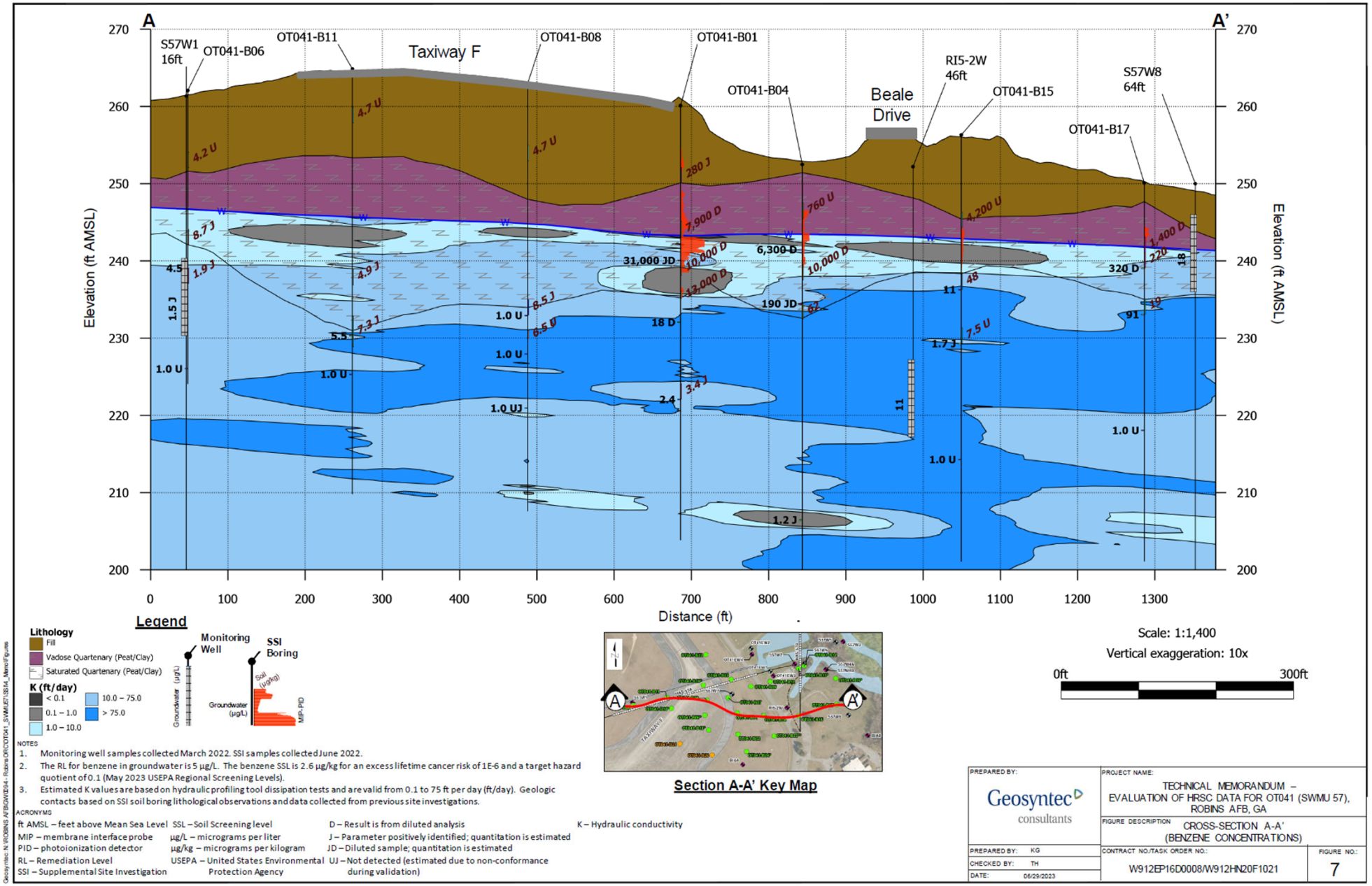
Key Findings

- **COCs in groundwater and soil are collocated and highest concentrations are in peat/clay**

- **No indication that non-aqueous phase liquid (NAPL) is present**
  - **No visual indication**
  - **COC concentrations are below site-specific NAPL indicator levels**

Key Findings

CSM Refinement (Benzene)



NOTES

1. Monitoring well samples collected March 2022. SSI samples collected June 2022.
2. The RL for benzene in groundwater is 5 µg/L. The benzene SSL is 2.6 µg/kg for an excess lifetime cancer risk of 1E-6 and a target hazard quotient of 0.1 (May 2023 USEPA Regional Screening Levels).
3. Estimated K values are based on hydraulic profiling tool dissipation tests and are valid from 0.1 to 75 ft per day (ft/day). Geologic contacts based on SSI soil boring lithological observations and data collected from previous site investigations.

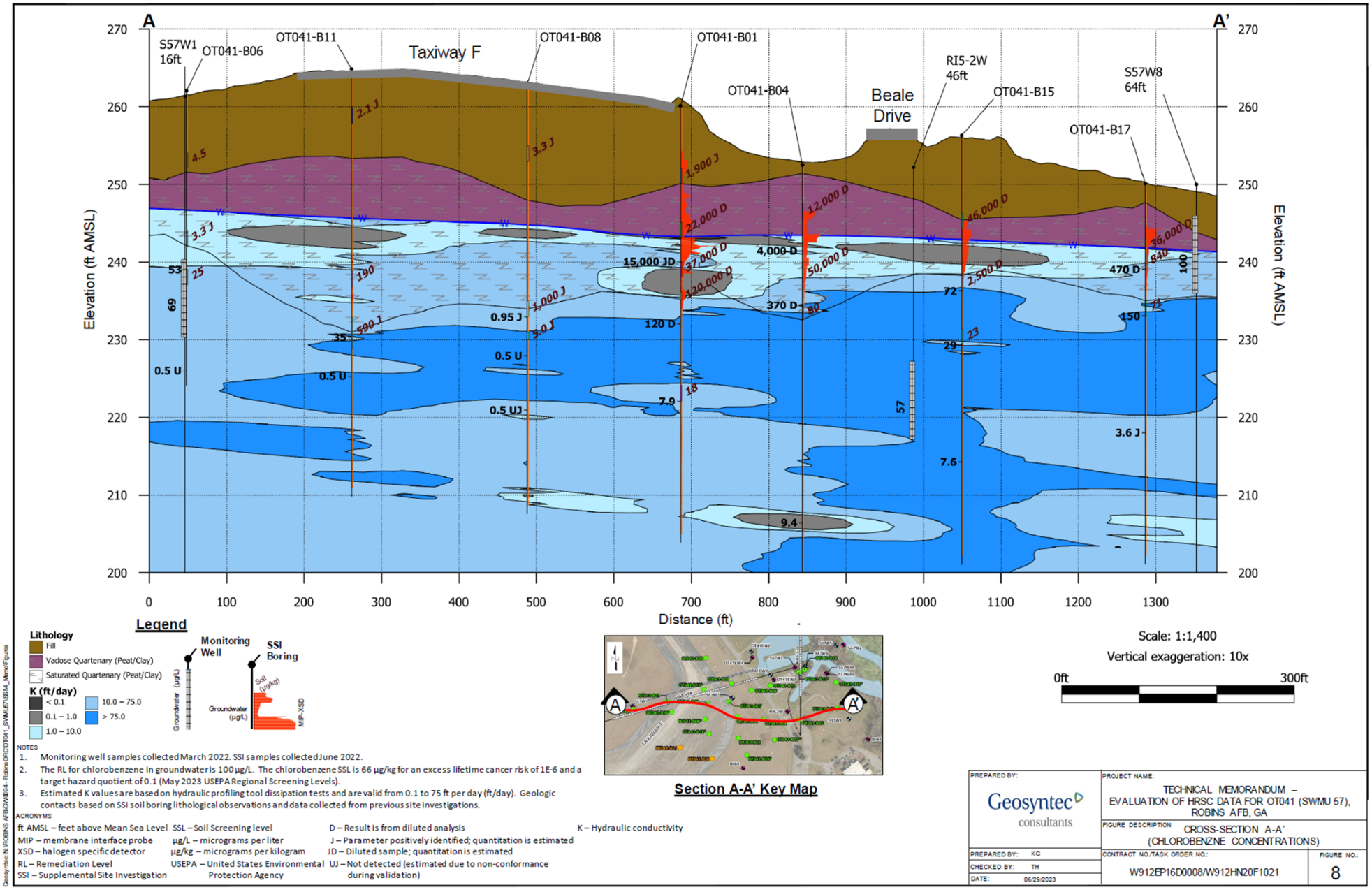
ACRONYMS

ft AMSL – feet above Mean Sea Level
MIP – membrane interface probe
PID – photoionization detector
RL – Remediation Level
SSI – Supplemental Site Investigation
SSL – Soil Screening level
µg/L – micrograms per liter
µg/kg – micrograms per kilogram
USEPA – United States Environmental Protection Agency
D – Result is from diluted analysis
J – Parameter positively identified; quantitation is estimated
JD – Diluted sample; quantitation is estimated
UJ – Not detected (estimated due to non-conformance during validation)
K – Hydraulic conductivity

PREPARED BY: Geosyntec consultants	PROJECT NAME: TECHNICAL MEMORANDUM – EVALUATION OF HRSC DATA FOR OT041 (SWMU 57), ROBINS AFB, GA
	FIGURE DESCRIPTION: CROSS-SECTION A-A' (BENZENE CONCENTRATIONS)
PREPARED BY: KG CHECKED BY: TH DATE: 06/29/2023	CONTRACT NO./TASK ORDER NO.: W912EP16D0008/W912HN20F1021
	FIGURE NO.: 7

Key Findings

CSM Refinement (Chlorobenzene)



NOTES

1. Monitoring well samples collected March 2022. SSI samples collected June 2022.
2. The RL for chlorobenzene in groundwater is 100 µg/L. The chlorobenzene SSL is 66 µg/kg for an excess lifetime cancer risk of 1E-6 and a target hazard quotient of 0.1 (May 2023 USEPA Regional Screening Levels).
3. Estimated K values are based on hydraulic profiling tool dissipation tests and are valid from 0.1 to 75 ft per day (ft/day). Geologic contacts based on SSI soil boring lithological observations and data collected from previous site investigations.

ACRONYMS

ft AMSL – feet above Mean Sea Level
MIP – membrane interface probe
XSD – halogen specific detector
RL – Remediation Level
SSI – Supplemental Site Investigation
SSL – Soil Screening level
µg/L – micrograms per liter
µg/kg – micrograms per kilogram
USEPA – United States Environmental Protection Agency
D – Result is from diluted analysis
J – Parameter positively identified; quantitation is estimated
JD – Diluted sample; quantitation is estimated
UJ – Not detected (estimated due to non-conformance during validation)
K – Hydraulic conductivity

PREPARED BY: Geosyntec consultants	PROJECT NAME: TECHNICAL MEMORANDUM – EVALUATION OF HRSC DATA FOR OT041 (SWMU 57), ROBINS AFB, GA		
	FIGURE DESCRIPTION: CROSS-SECTION A-A' (CHLOROBENZNE CONCENTRATIONS)		
PREPARED BY: KG CHECKED BY: TH DATE: 06/29/2023	CONTRACT NO./TASK ORDER NO.: W912EP16D0008/W912HN20F1021	FIGURE NO.: 8	

Path Forward

- Groundwater plume and CSM refinement
  - Monitoring well installation
- Source identification and natural attenuation evaluation
  - Compound Specific Isotope Analysis (CSIA)
- Contaminant mobility/storage assessment
  - Passive Flux Meter (PFM) deployment in peat/clay

Discussion

New Business
and
Program Closing

Dr. Linda Smyth
RAB Community Co-chair

Next RAB Meeting

Thursday, March 13, 2025

Please…

Complete the meeting evaluation and feedback form and return to sign-in table or leave at seat

Leave your name tag at the sign-in table or seat for the next meeting

Thank you!