Air Force Real Property Agency

Integrity - Service - Excellence

Kelly Restoration Advisory Board

May 10, 2011

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Port San Antonio
Main Board Room
907 Billy Mitchell Blvd.
San Antonio, TX 78226
6:30 - 8:30 p.m.

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Welcome and Overview

- 6:30 – 6:35 Welcome and Overview
- 6:35 – 6:40 RAB Membership
- 6:40 – 6:45 Administrative Items
- 6:45 – 7:30 Environmental Update
- 7:30 – 8:00 Performance Based Remediation Contracts
- 8:00 – 8:15 Public Comment Period
- 8:15 – 8:20 Suggested Agenda Items for next RAB
- 8:20 – 8:30 RAB Member Retirement: Mark Weegar
- 8:30 Adjournment

Kelly RAB Membership

Ms. Beverly Abbott
Community Co-Chair

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Kelly RAB Membership

- **Introduce New Member: Ivan Jaime**
- **RAB Member Roll Call**

Administrative Items

Mr. Jose Martinez
Facilitator

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Administrative Items

- Review previous action items and status
- 10/12/10 transcript approval

Environmental Update

Mr. Paul Carroll
BRAC Environmental Coordinator

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Environmental Update

- **Environmental Update**
  - **Former Kelly's Whole Base Transfer Ceremony**
  - **Semi-Annual Compliance Plan Report**
  - **Site S-1 Electrical Resistance Heating**
  - **Overview of Land Use Controls**
- **Performance Based Remediation Contracts**

Kelly Whole Base Transfer Ceremony

Mr. Paul Carroll
BRAC Environmental Coordinator

Kelly Whole Base Deed Signing

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Kelly Whole Base Deed Signing
30 September 2010

- The Kelly Whole Base Transfer was the Spotlight feature in the 2010 AFRPA Annual Report

AFRPA Annual Report
May 2011

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Kelly Whole Base Transfer Ceremony

- In Dec 2010 the Air Force, together with the Port San Antonio, celebrated the final property transfer of former Kelly AFB
- Since base closure in 2001, 1,887 acres have been transferred to Port San Antonio
- More than 70 organizations have established a presence at the Port, including Boeing, Pratt & Whitney, and Lockheed Martin
- Under AFRPA management, the Air Force leases approximately 200 add acres from the Port, including Building 171, which now houses 11 Air Force Agencies and 3,000 personnel contributing to significant cost savings

Ms. Beverly Abbott,
RAB Community Co-Chair

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Semiannual Compliance Plan Report

July-December 2010

Mr. Paul Carroll
BRAC Environmental Coordinator

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Activities Covered in the Report

- Compliance Monitoring at Zones 2, 3, 4, and 5
- Long Term Monitoring / Sampling included
  - Basewide Samples – 297 wells
  - Permeable Reactive Barrier (PRB) Samples – 128 wells
  - Recovery Well Samples – 31 wells
  - RCRA Well Samples – 16 wells
- Groundwater Sampling at RCRA Sites (Site E-3 and Site S-8) performed in July 2010
- Sampling and reporting activities were in accordance with the requirements of the renewed Hazardous Waste Permit issued by TCEQ in April 2009

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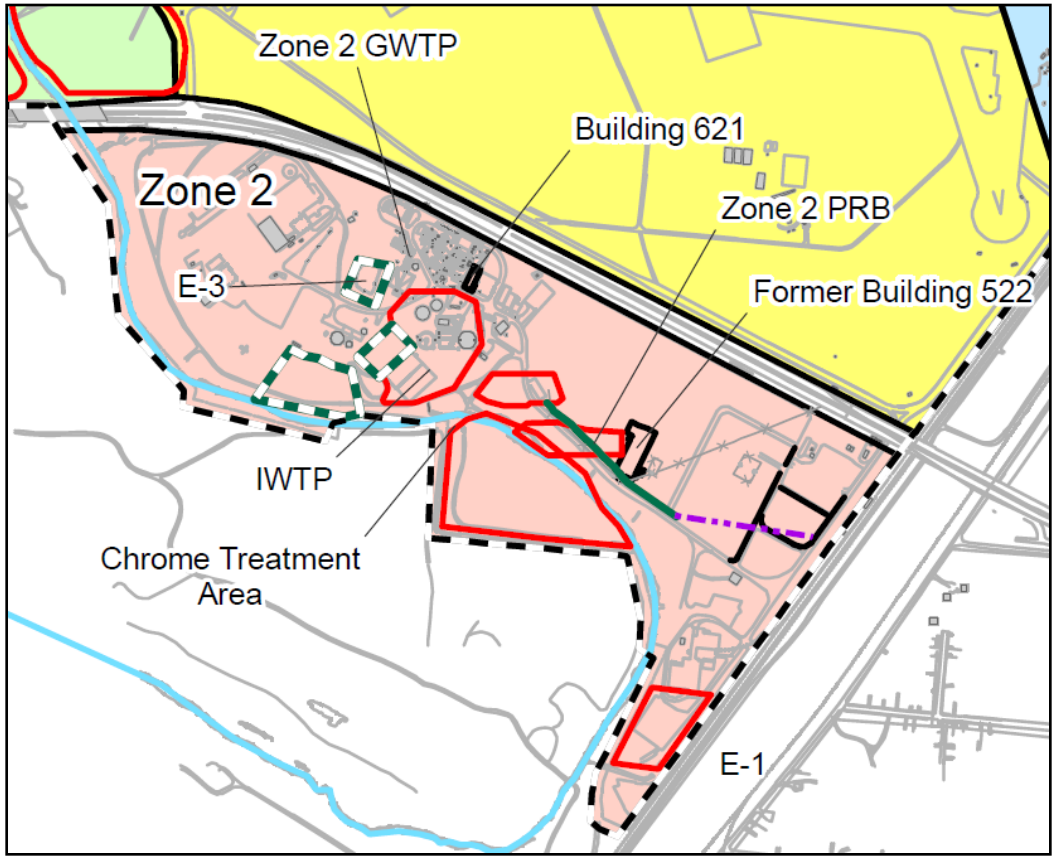
Active IRP or RCRA Sites – Zone 2

- RCRA Site E-3
- 600 Area Waste Management Area (WMA)
  - Building 621
  - Chrome Treatment Site
- 300 Area WMA
  - Zone 2 PRB
  - Building 522
- IRP Site E-1



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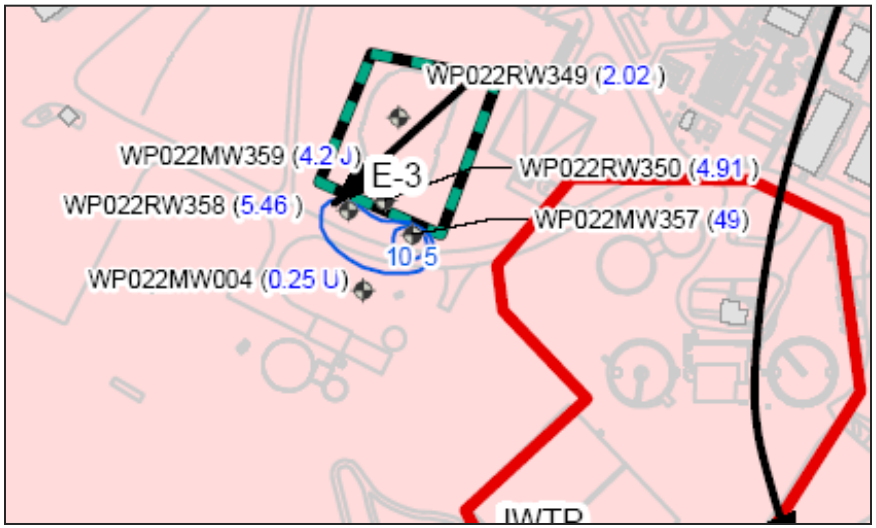
Site E-3

- Groundwater recovery system currently consisting of three recovery wells

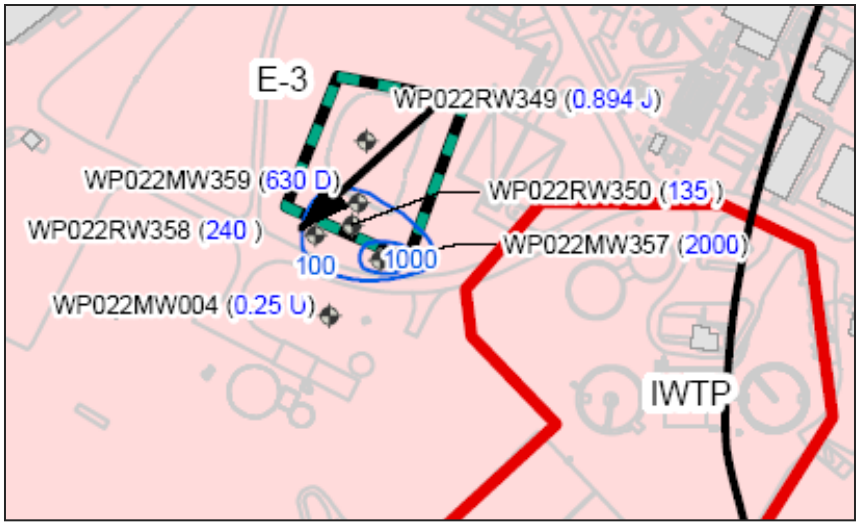
- Contaminants that exceeded the Compliance Plan Limits in July 2010 included benzene, chlorobenzene, cis 1,2-Dichoroethene (DCE), and vinyl chloride.

Benzene and Chlorobenzene Isoconcentration Maps, Site E-3



Benzene

Chlorobenzene



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600 Area Waste Management Area

- Includes Building 621 vegetable oil injection (VOI) site and hexavalent chromium treatment site.
- A PCE plume that initially originated in the vicinity of Building 621 is present in central portion of the WMA. Treatment includes:
  - Vegetable oil injection at Building 621 in February 2006
  - Five vertical groundwater recovery wells in the southern portion of the WMA; two of these wells were installed in 2009 to supplement the existing recovery network.
- Hexavalent chromium area represents a mixed hexavalent and trivalent chromium plume. Treatment to reduce hexavalent chromium to trivalent chromium includes bioremediation injections in 2004 & 2008
- Contaminants that exceeded the Compliance Plan Limits in July 2010 included PCE and total chromium.

PCE and Chromium Isoconcentration Maps 600 Area Waste Management Area

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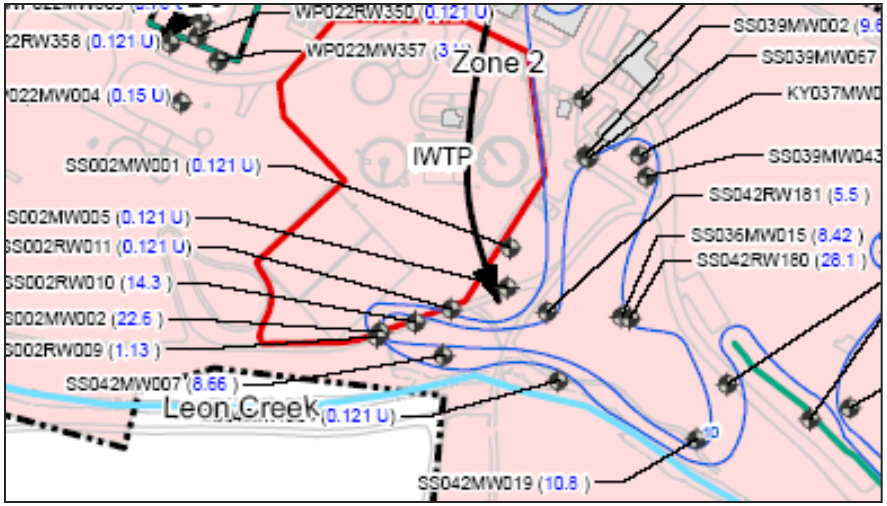
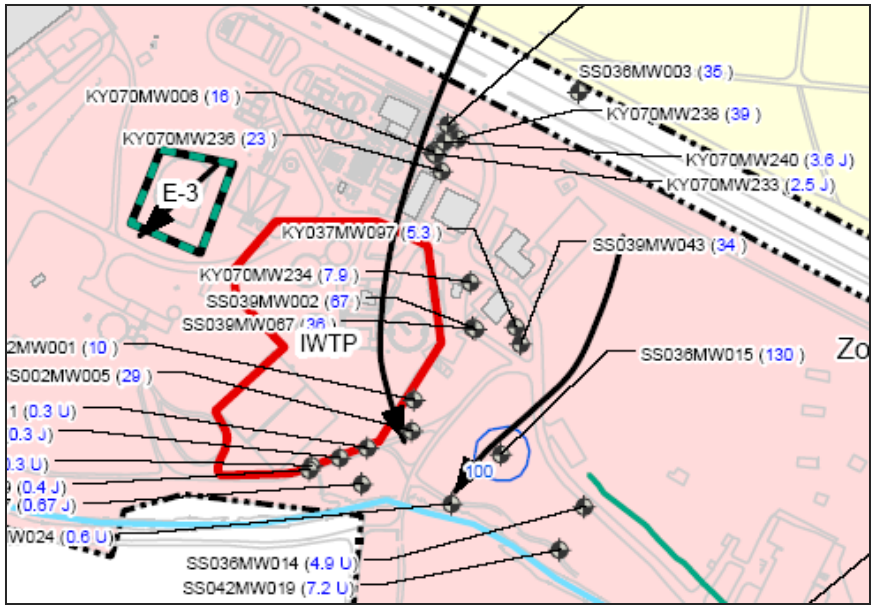


PCE

Chromium (total)



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Zone 2 Portion of the 300 Area Waste Management Area

- **Represents the downgradient, southern end of a plume that originates in the northern portion of Zone 3.**

- **Current remedies include:**
  - **Vegetable oil injection at former Building 522**
  - **Zone 2 Permeable Reactive Barrier (PRB) and associated slurry wall**
  - **Groundwater pump and treat from one vertical recovery well**

- **Contaminants that exceeded the Compliance Plan Limits in July 2010 include Perchloroethene (PCE) and Trichloroethene (TCE).**

PCE and TCE Isoconcentration Maps, Zone 2 Portion of 300 Area WMA

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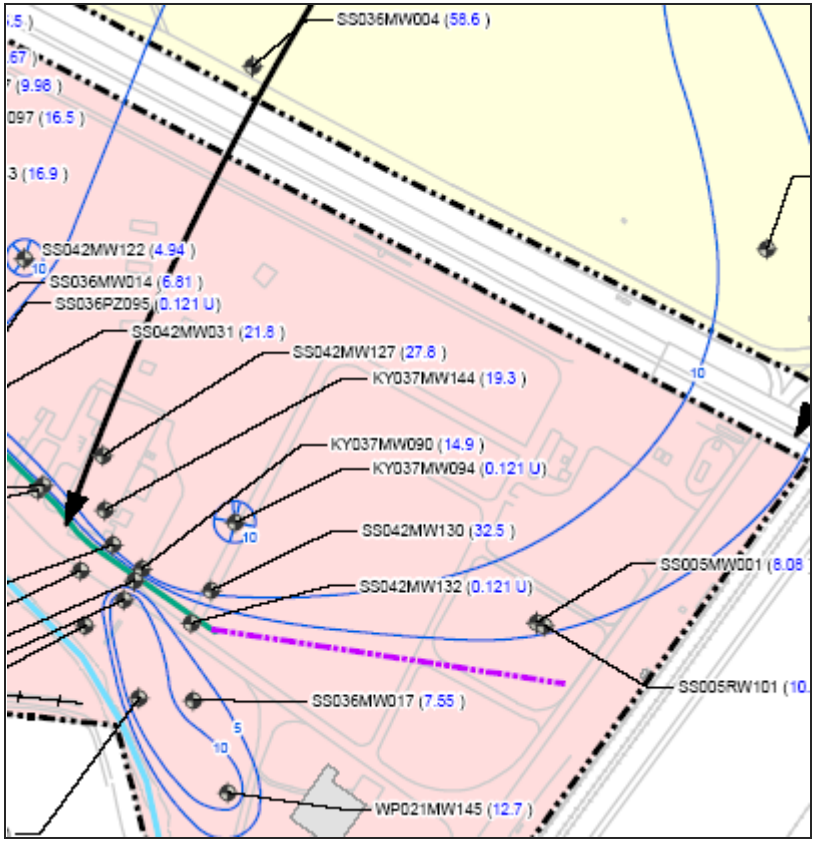
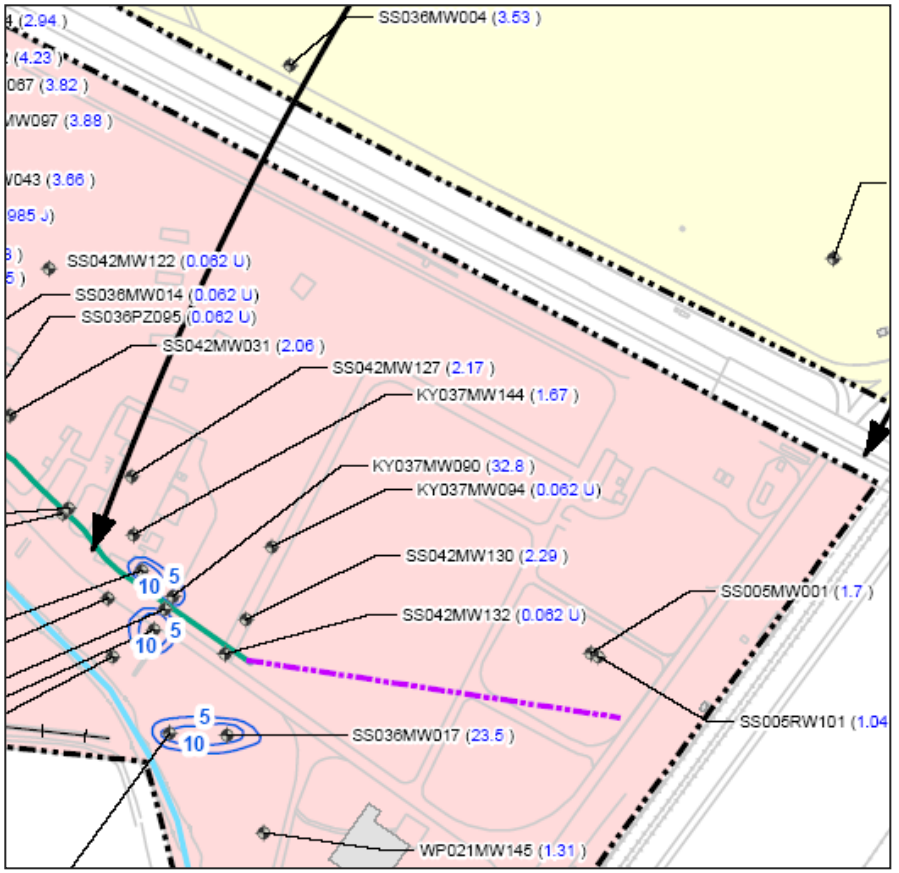


PCE

TCE



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Site E-1

- Former evaporation pit
- Groundwater recovery system currently consisting of a groundwater recovery trench with four standpipes
- Contaminants that exceeded the Compliance Plan Limits in July 2010 included PCE, TCE, 1,2-DCA, cis 1,2-DCE, vinyl chloride, benzene, and chlorobenzene.

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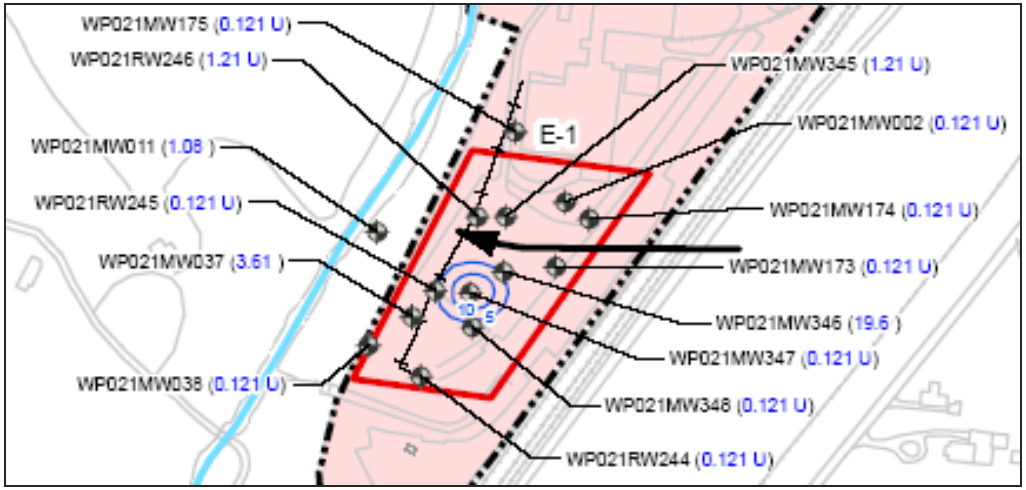
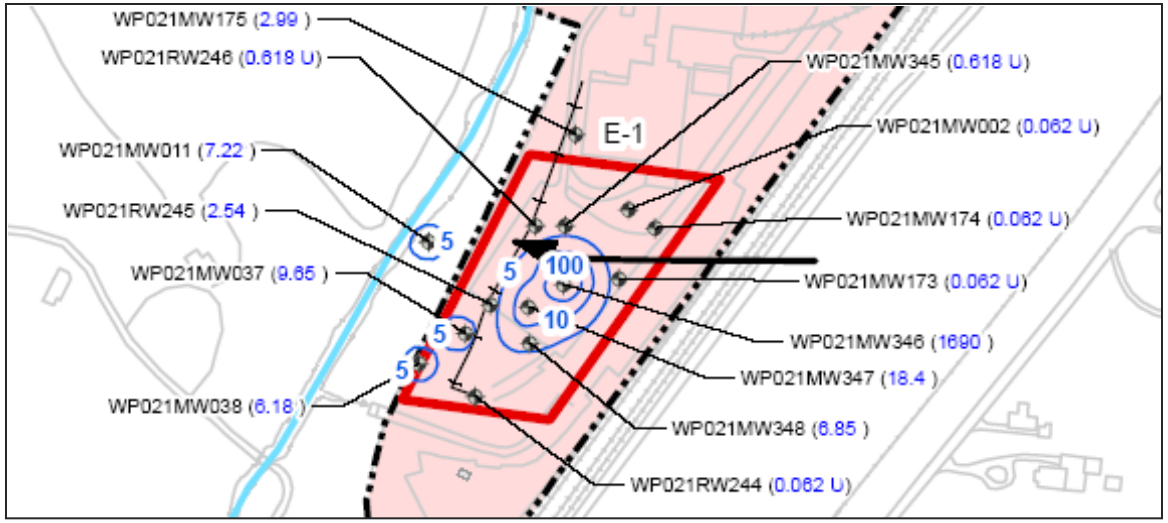
PCE and TCE Isoconcentration Maps, Site E-1



PCE

TCE



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Findings and Conclusions Zone 2 Sites

- **Site E-3**
  - **The groundwater recovery system for this site consists of two recovery wells within the boundaries of the former excavation area, and a third outside the footprint. Areas where groundwater exceeds the GWPSs are within the capture zone of the recovery system wells.**
- **600 Area WMA**
  - **Lower PCE concentrations remain throughout the center of the 600 Area WMA. Data indicate complete capture by the existing recovery system. TCE concentrations dropped below Compliance Plan limits in 2010.**
- **300 Area WMA**
  - **The Iron Filing wall is working as intended to cut off PCE from further downgradient migration. PCE and vinyl chloride downgradient from the PRB continue to decrease in concentrations.**

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Findings and Conclusions Zone 2 Sites (Continued)

- **Site E-1**
  - **The majority of the contamination at this site is located upgradient of the recovery trench, which is operating as intended.**
  - **Three smaller, isolated plumes located downgradient of the recovery trench appear to be stable and not moving. The presence of cis 1,2-DCE concentrations suggest that the TCE plumes are naturally attenuating.**
  - **Light non-aqueous phase liquid (LNAPL) was not identified in well WP021MW345 in 2010, while it had been observed for the previous five years.**

Active RCRA or IRP Sites – Zone 3

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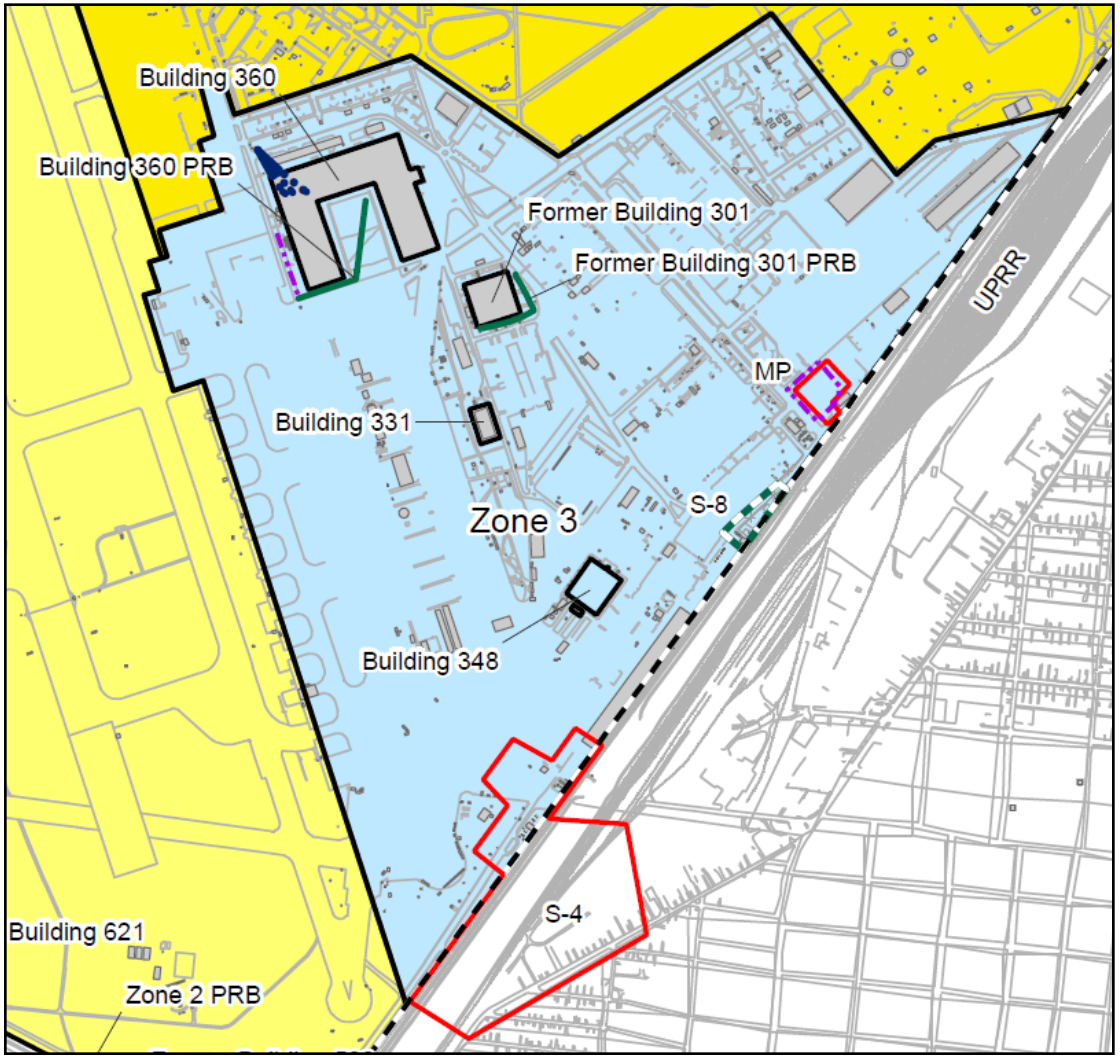
- **RCRA Site S-8**
- **300 Area WMA**
  - **Building 360**
  - **Building 301**
  - **Building 331**
  - **Site MP**
- **Site S-4**



PCE and TCE Isoconcentration Maps Zone 3

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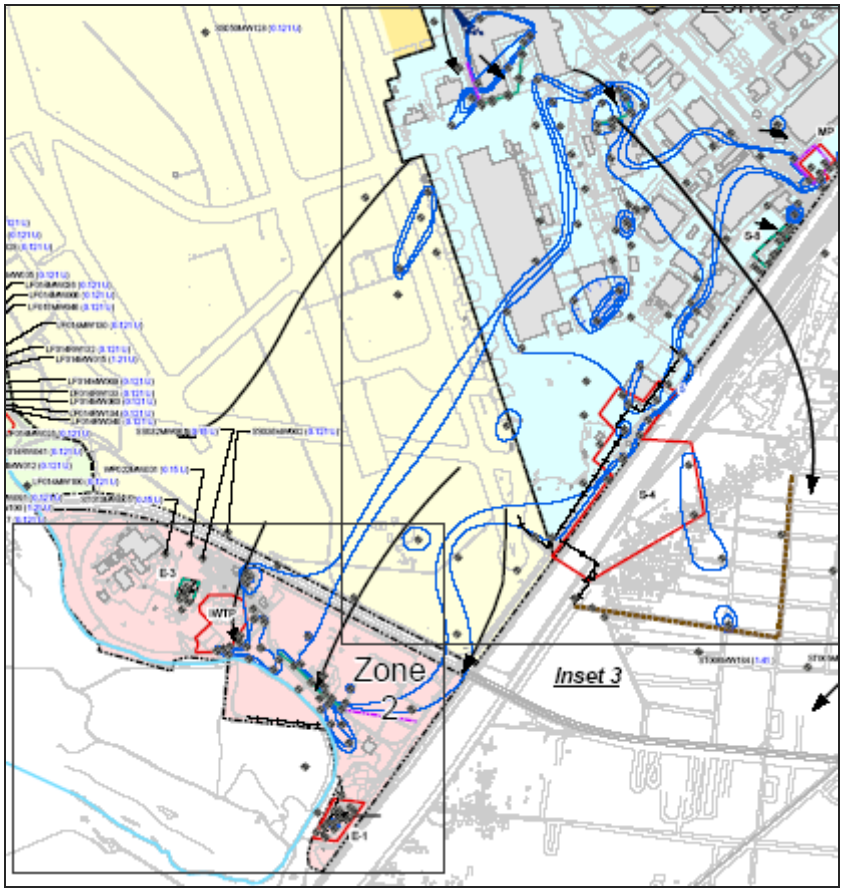
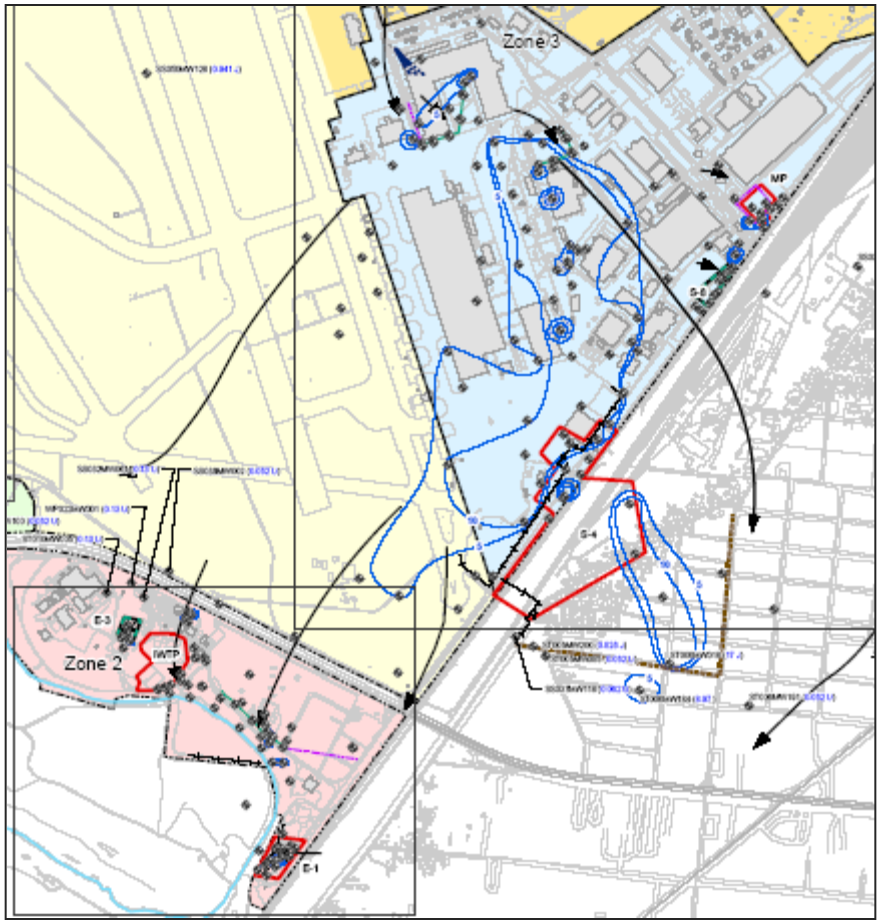


PCE

TCE



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Site S-8

- Former UST facility and location of the “green worm” parts cleaning operation.
- Soil vapor extraction system operated from 2000 through 2001, when the system was converted to a biovent system. In 2010 the system was converted back to an SVE system.
- Groundwater recovery system currently consisting of four recovery wells.
- Contaminants that exceeded the Compliance Plan Limits in July 2010 included benzene, chorobenzene, PCE, TCE, cis 1,2-DCE, vinyl chloride, and arsenic.

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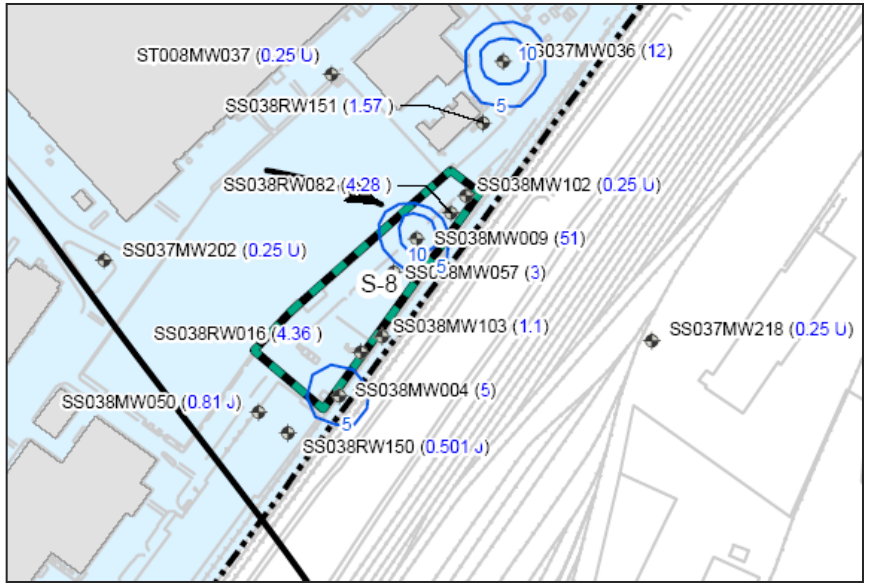
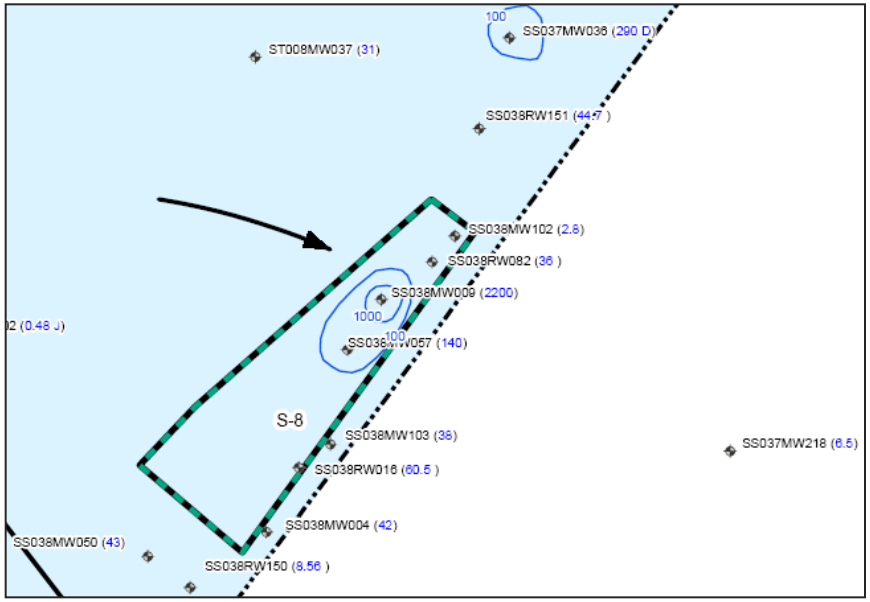
Benzene and Chlorobenzene Isoconcentration Maps, Site S-8



Benzene

Chlorobenzene



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Building 360

- Contaminant sources from historic chemical storage and usage include the northwest corner of the building and the basement area in the western wing of the building.

- Current remedies include:
  - PRB and associated slurry wall – installed in 2003
  - Vegetable oil injections – performed in 2006 and 2008
  - Soil Vapor Extraction system with 3 horizontal wells – installed in 2008

- Contaminants that exceeded the Compliance Plan Limits in 2010 included PCE, TCE, cis 1,2-DCE, and vinyl chloride.

PCE and TCE Isoconcentration Maps Building 360

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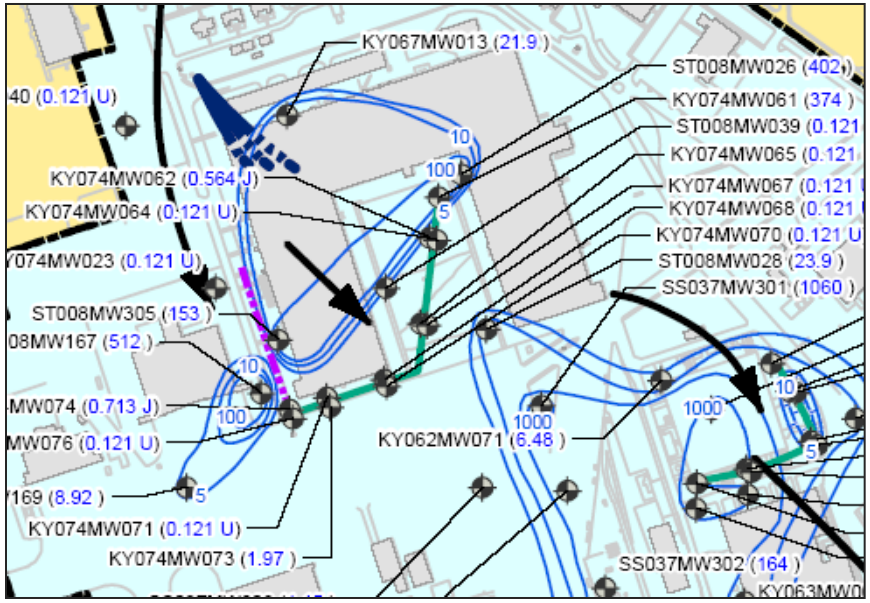
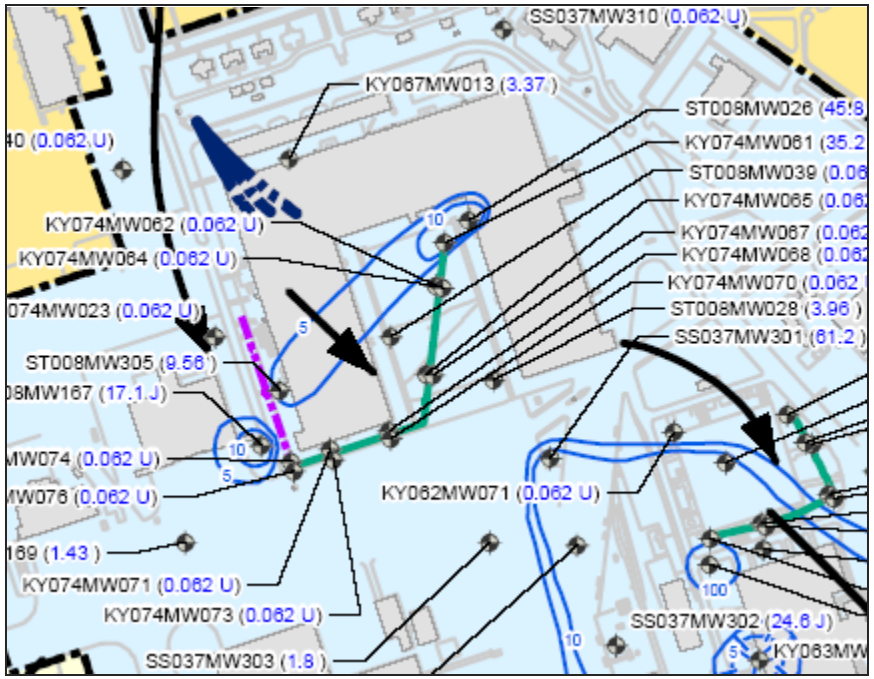


PCE

TCE



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Building 301

- **Current remedies include:**
  - **Permeable Reactive Barrier – installed in 2003**
  - **Electrical Resistance Heating system operated in 2008-2009 to treat soil**

- **Contaminants that exceeded the Compliance Plan Limits in 2010 included PCE, TCE, cis 1,2-DCE, and vinyl chloride.**

PCE and TCE Isoconcentration Maps, Building 301

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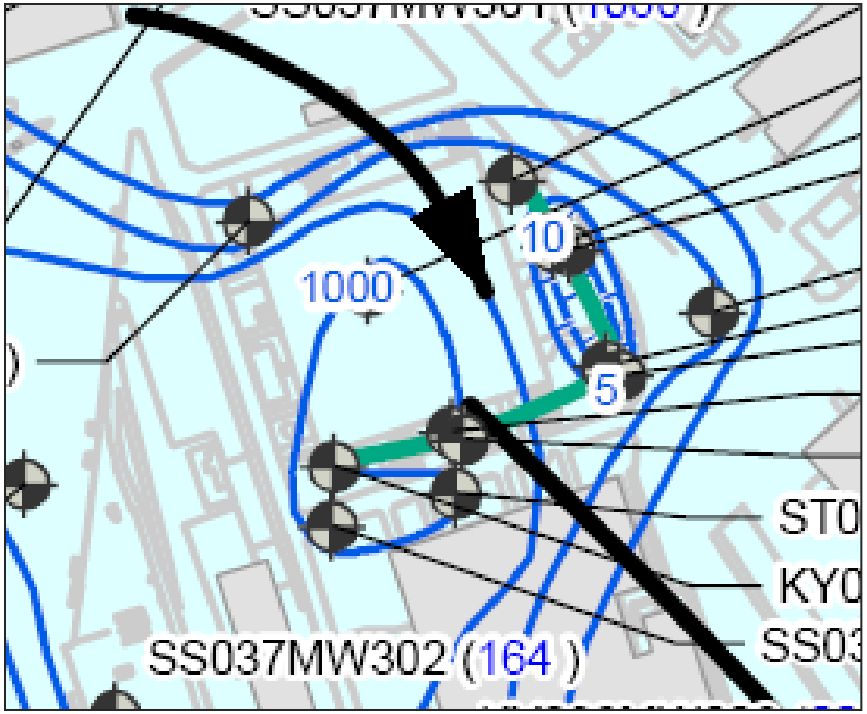
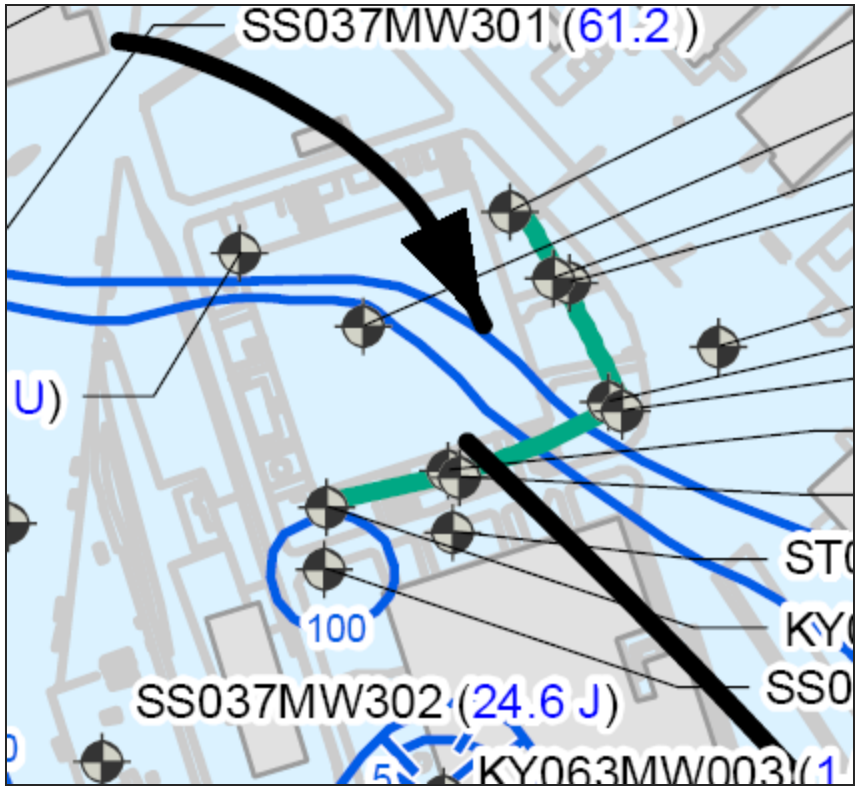


PCE

TCE



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IRP Site MP

- Location of two former shop buildings, Buildings 258 and 259, that served as a maintenance depot for aircraft. In the late 1950's, Building 259 was modified into a plating shop.
- Soil excavation (source removal) occurred in 2009
- Current remedies include:
  - Enhanced bioremediation
  - Groundwater pump and treat from downgradient vertical recovery wells
- Contaminants that exceeded the Compliance Plan Limits in 2010 included PCE, TCE, cis 1,2-DCE, and vinyl chloride.

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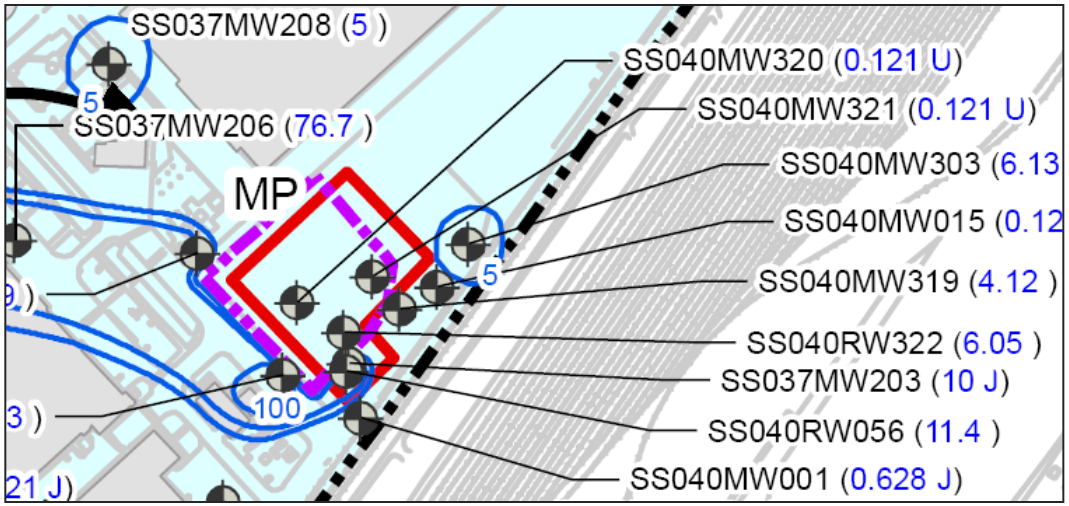
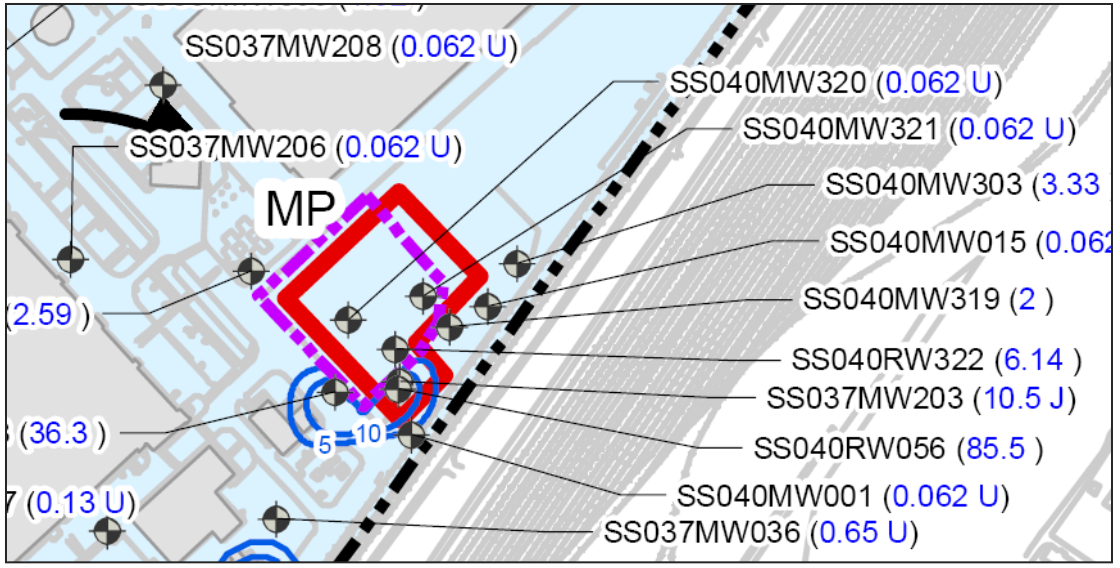
PCE and TCE Isoconcentration Maps, Site MP



PCE

TCE



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IRP Site S-4

- Site S-4 contamination is from abandoned fuel distribution lines and UST facilities
- Current remedies include:
  - Groundwater recovery from on-base and off-base recovery trenches and vertical recovery wells
  - Off-base low permeability barrier with monitored natural attenuation
- Contaminants that exceeded the Compliance Plan Limits in 2010 included PCE, TCE, cis 1,2-DCE, vinyl chloride, benzene, and arsenic.

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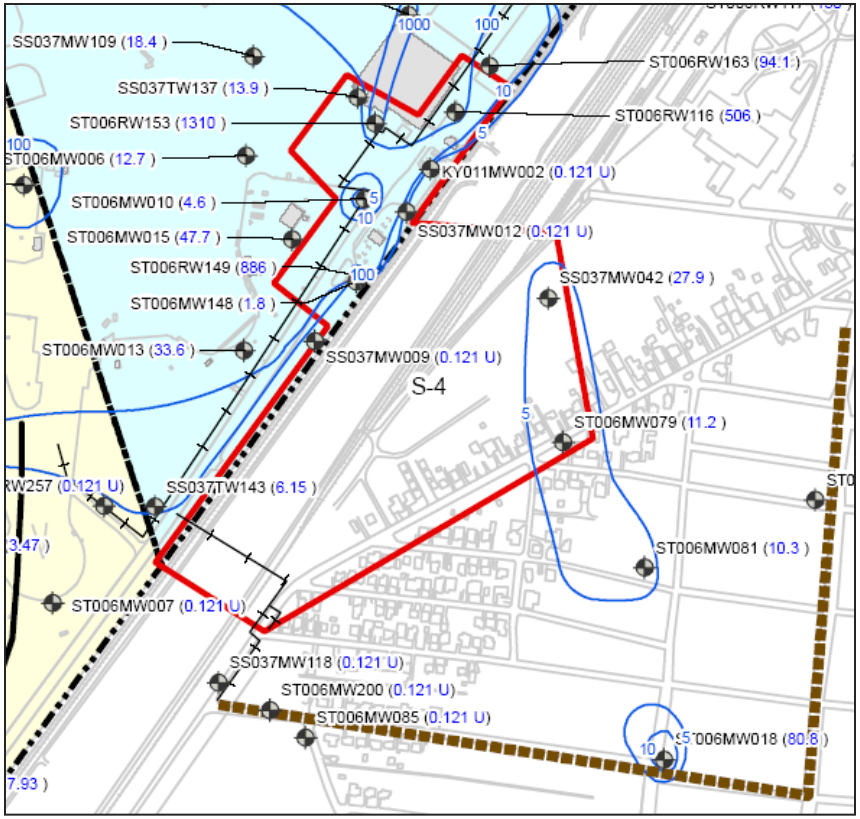
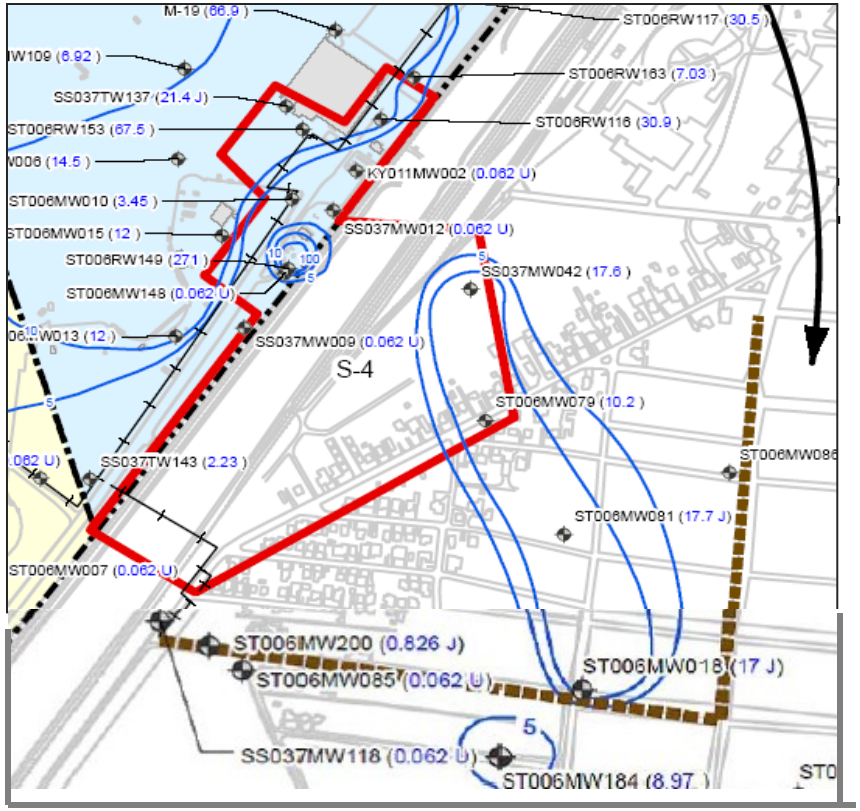
PCE and TCE Isoconcentration Maps, Site S-4



PCE



TCE

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Findings and Conclusions Zone 3 Sites

- **Site S-8**
  - **Isolated PCE, TCE, and cis 1,2-DCE plumes are present in the northern portion of the site. These plumes are not associated with the zone-wide PCE and TCE plumes.**
  - **An isolated chlorobenzene plume exists north of Site S-8.**
  - **Two new recovery wells were installed at Site S-8 to provide complete plume capture.**

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Findings and Conclusions Zone 3 Sites

- **Building 360**
  - **The vegetable oil injection performed in 2008 appears to have been effective in enhancing reductive dechlorination of the plume located upgradient of the PRB.**
  - **The PRB is operating as intended.**

- **Building 301**
  - **Higher PCE concentrations in the immediate vicinity of the ERH system are believed to be a temporary, localized effect resulting from operation of the ERH system.**
  - **Groundwater appears to be moving parallel to the eastern wing wall of the PRB, instead of perpendicular and through the wall.**

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Findings and Conclusions Zone 3 Sites (Continued)

- **Building 331**
  - **Vegetable oil injections were performed in November 2009 that included 10 times the volume of substrate material compared to previous injections. Quarterly performance sampling shows significant reductions in PCE and cis 1,2-DCE concentrations.**

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Findings and Conclusions Zone 3 Sites (Continued)

- **Site MP**
  - **VOC concentrations inside the slurry wall are an order of magnitude lower than 2008 data.**
  - **VOC concentrations were not detected in samples from POC wells again in 2010 suggesting that the current combined remedy is effective.**
- **Site S-4**
  - **Groundwater recovery system and off-base monitored natural attenuation appear to be effective remedies.**

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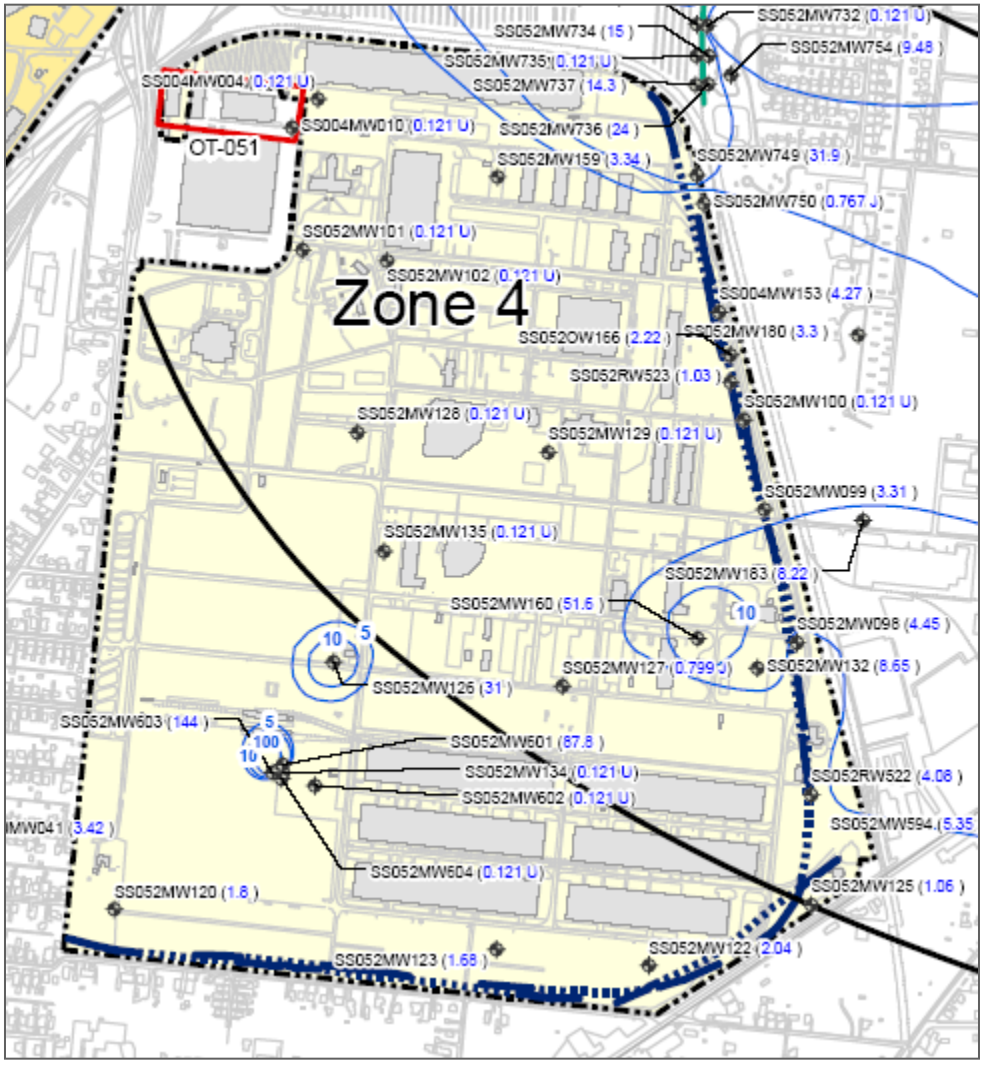
Active IRP Sites – Zone 4

- East Kelly WMA
  - Site OT-051
  - East Bank Area
  - South Bank Area
- Zone 4 Groundwater (SS052)



Active IRP Sites – Zone 4

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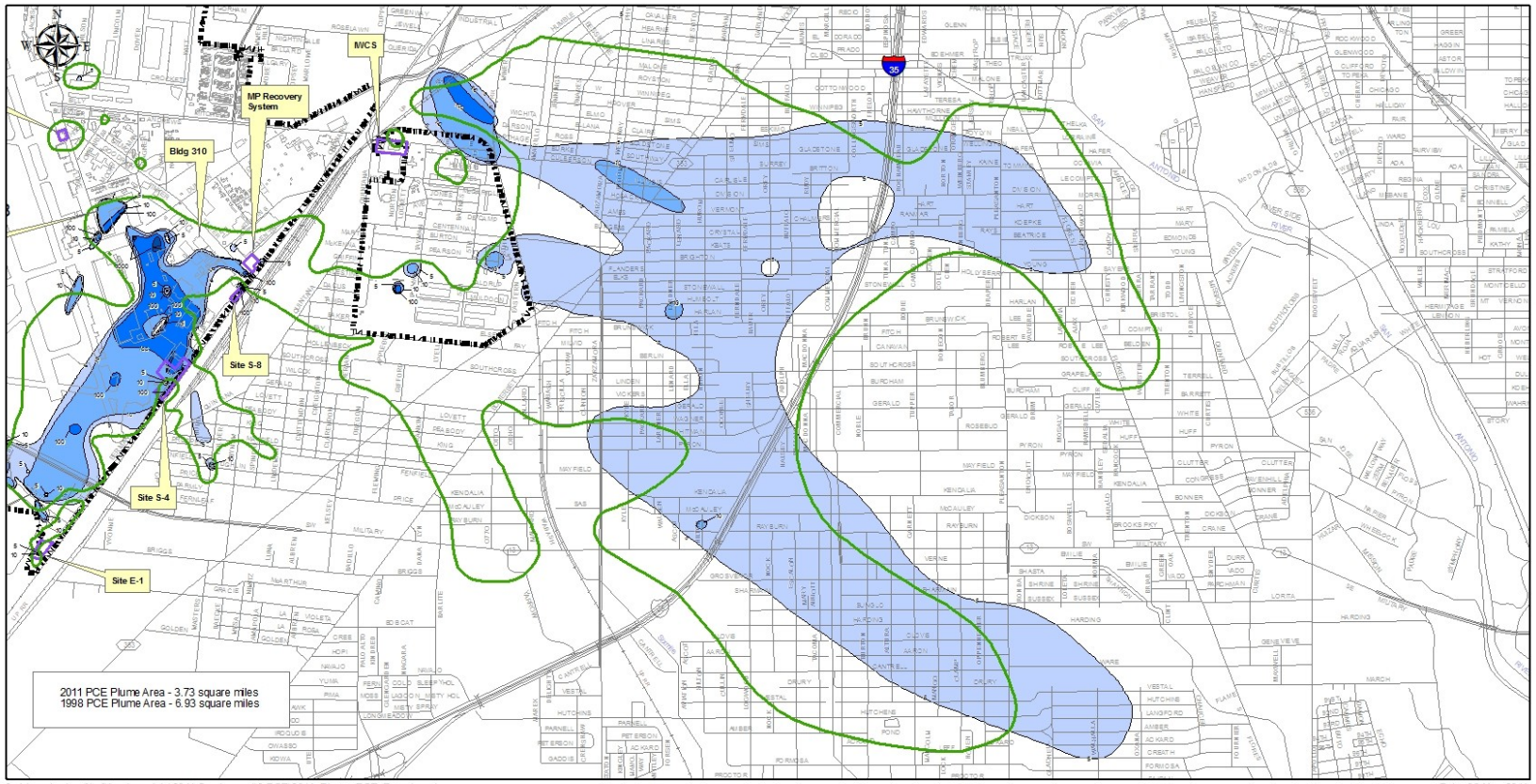

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2011 PCE Basewide Compliance Plan - Zone 4
(2010 Sample Well Data)

Source: Semiannual Compliance Plan Report, December 2010.

Active IRP Sites – Zone 4

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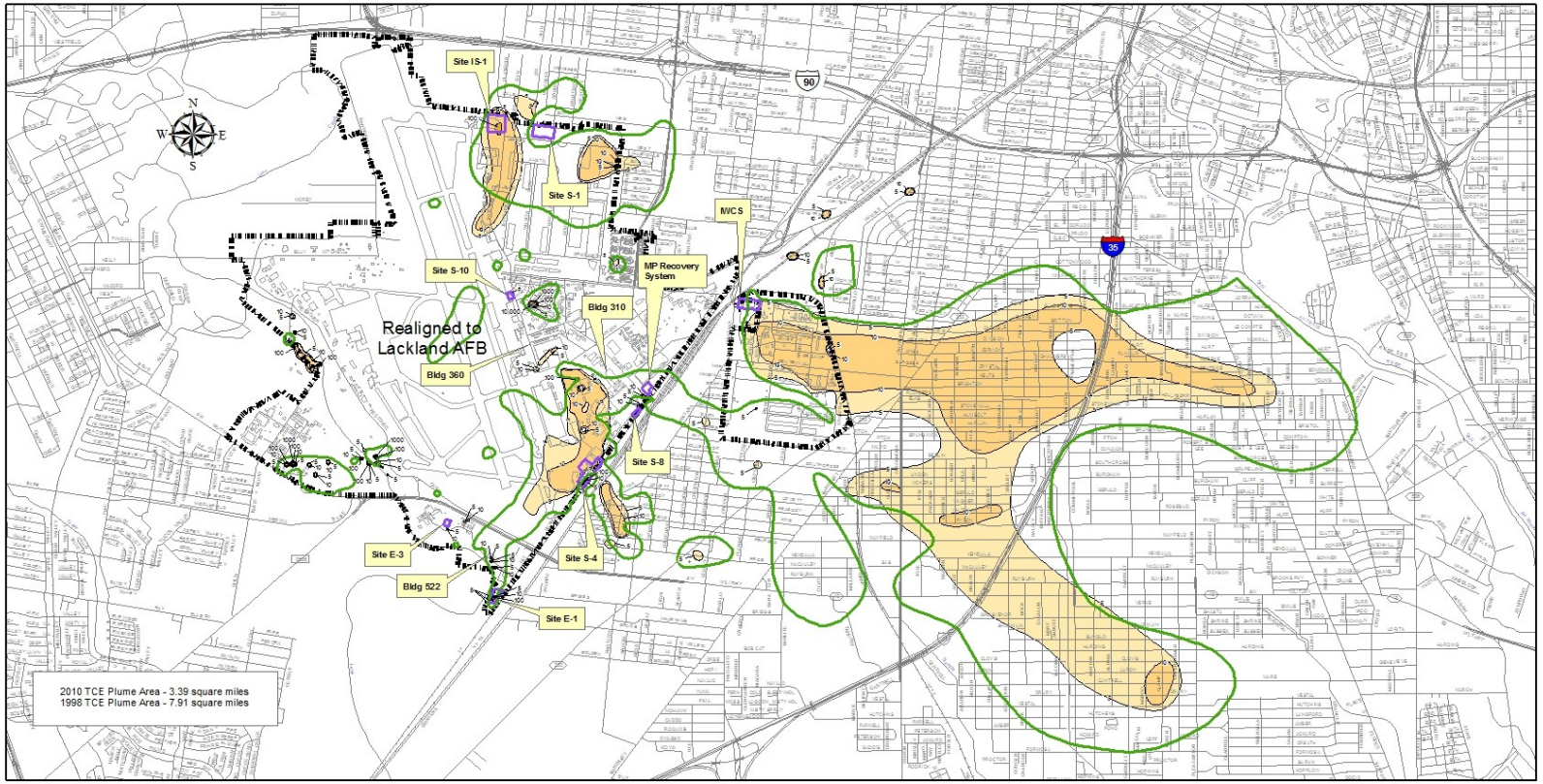

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2011 TCE Basewide Compliance Plan
(2010 Sample Well Data)

Source: Semiannual Compliance Plan Report, December 2010.

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Findings and Conclusions Zone 4 Sites

- **East Kelly WMA**
  - **PCE and TCE in shallow groundwater above GWPS. Plumes on base and off base show long-term decreasing concentration trends, suggesting that natural attenuation is occurring.**
- **OT-051**
  - **TCE and VC continue to decrease through natural degradation/reductive dechlorination**
- **East and South Bank Areas**
  - **Overlapping horizontal well remediation systems for TCE and PCE in groundwater**
  - **South Bank system operation discontinued due to no plumes moving in that direction; East Bank system operating and capturing majority of upgradient plume.**

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Findings and Conclusions Zone 4 Sites

East Kelly WMA

- **Site OT-51**
  - Natural degradation of TCE directly associated with OT-51 is nearly complete. Trend graph shows overall continued decrease in vinyl chloride over past years, suggesting reductive dechlorination is continuing to occur.
- **East Bank and South Bank Recovery Systems**
  - Only East Bank recovery system has been operating. Concentrations are similar both upgradient and downgradient of system.
- **Union Pacific Railroad (UPRR) PRB**
  - Based on 2010 gauging data, groundwater is flowing southeast through the PRB in an oblique direction. Transect monitoring indicate the wall is not completely effective, and may show contaminant migration around the southern end of the PRB.
- **Commercial Street PRB**
  - Transect monitoring data indicate that the two wall segments are generally effective at reducing contaminant concentrations.

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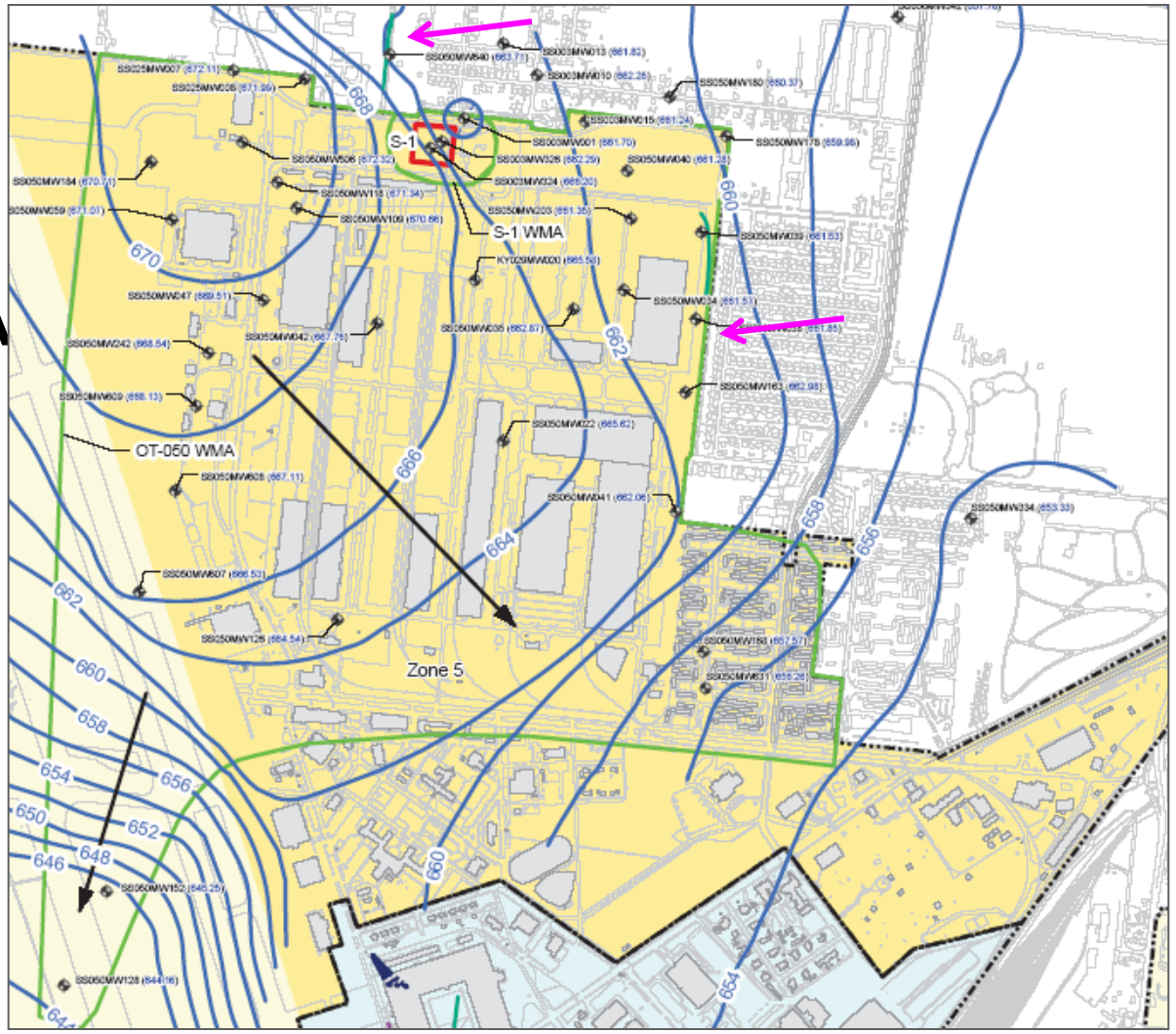
Active IRP Sites – Zone 5

- S-1 WMA
  - Site S-1
- OT-50 North WMA
- Plume D WMA



Active IRP Sites – Zone 5

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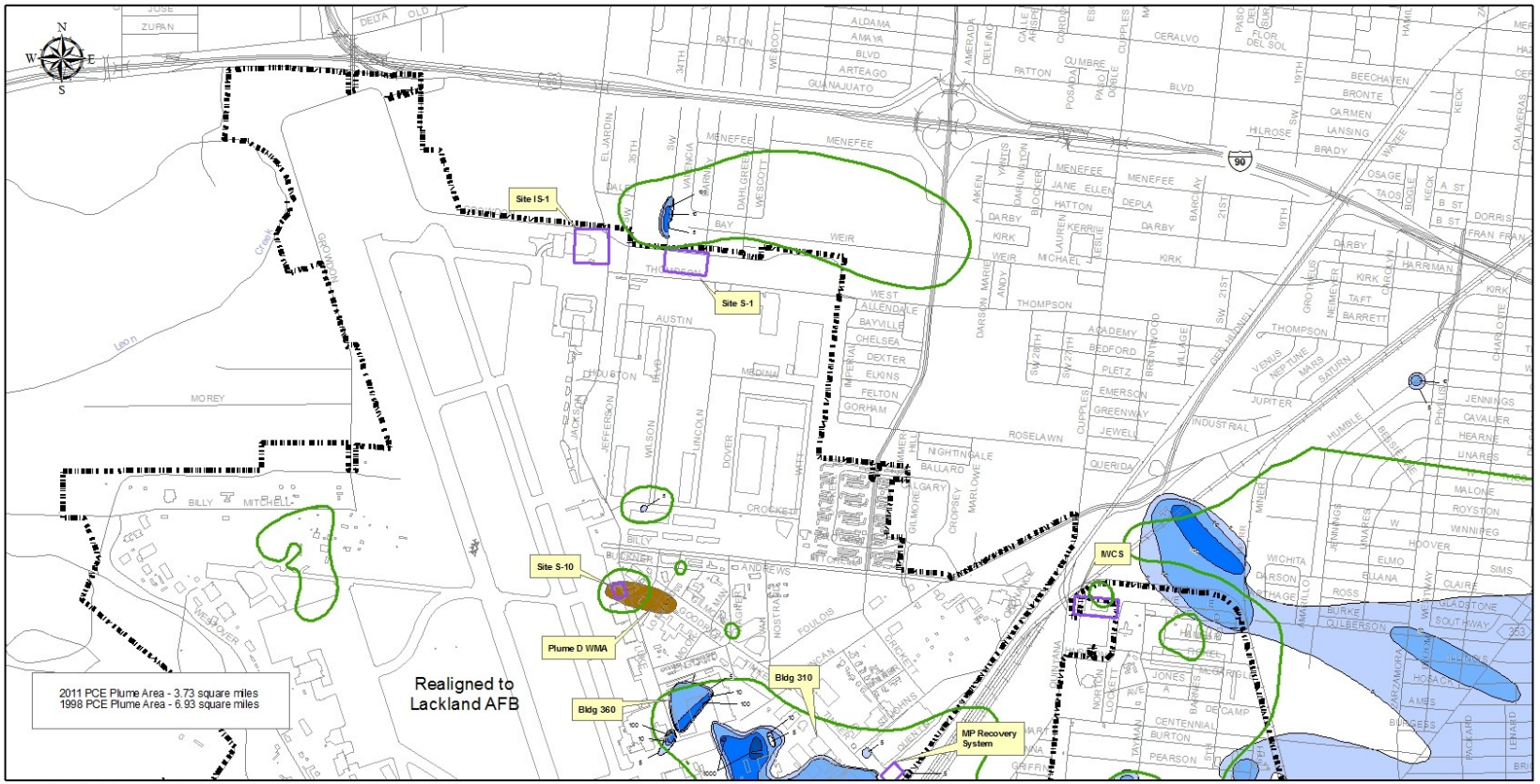

2011 PCE Basewide Compliance Plan - Zone 5
(2010 Sample Well Data)

Source: Semiannual Compliance Plan Report, December 2010.

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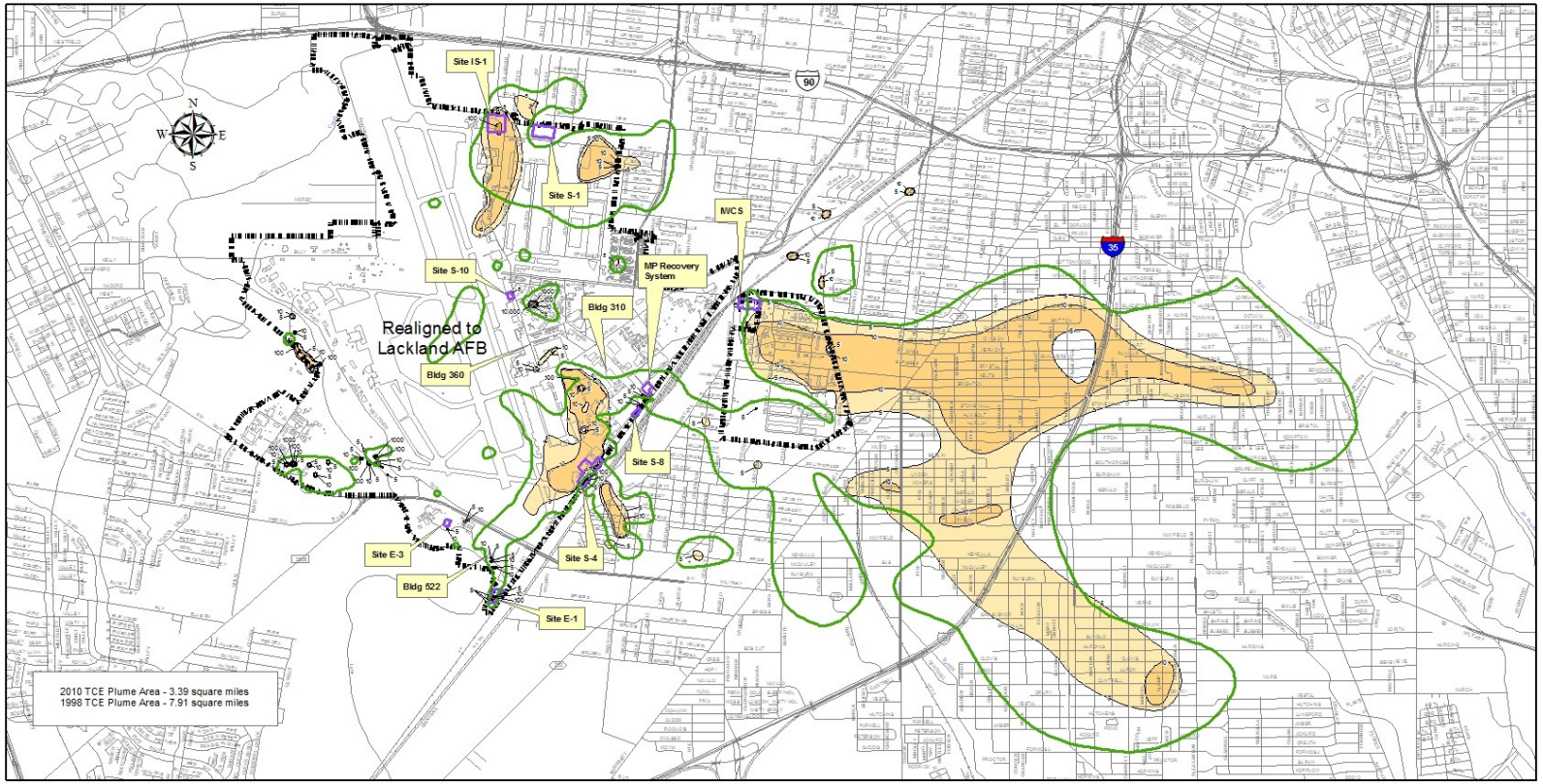
Active IRP Sites – Zone 5



Air Force Real Property Agency

2011 TCE Basewide Compliance Plan
(2010 Sample Well Data)

Source: Semiannual Compliance Plan Report, December 2010.

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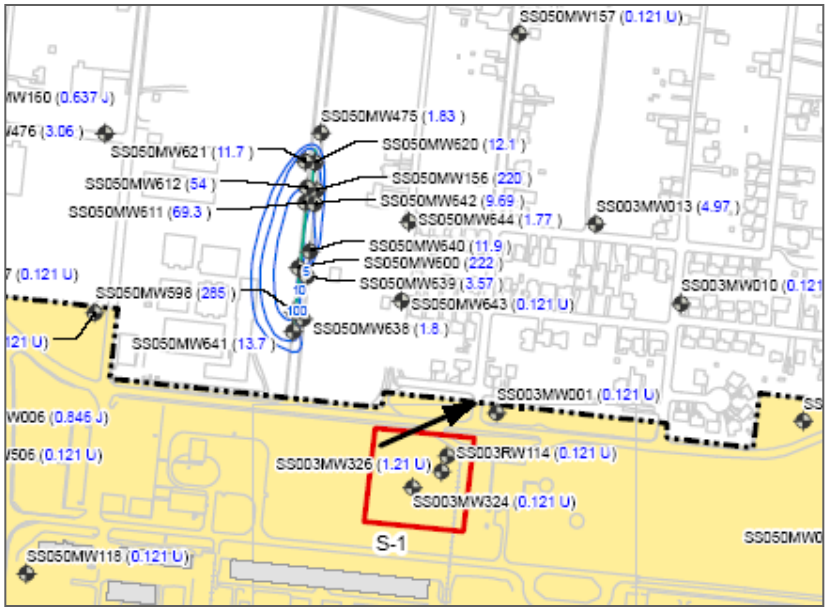
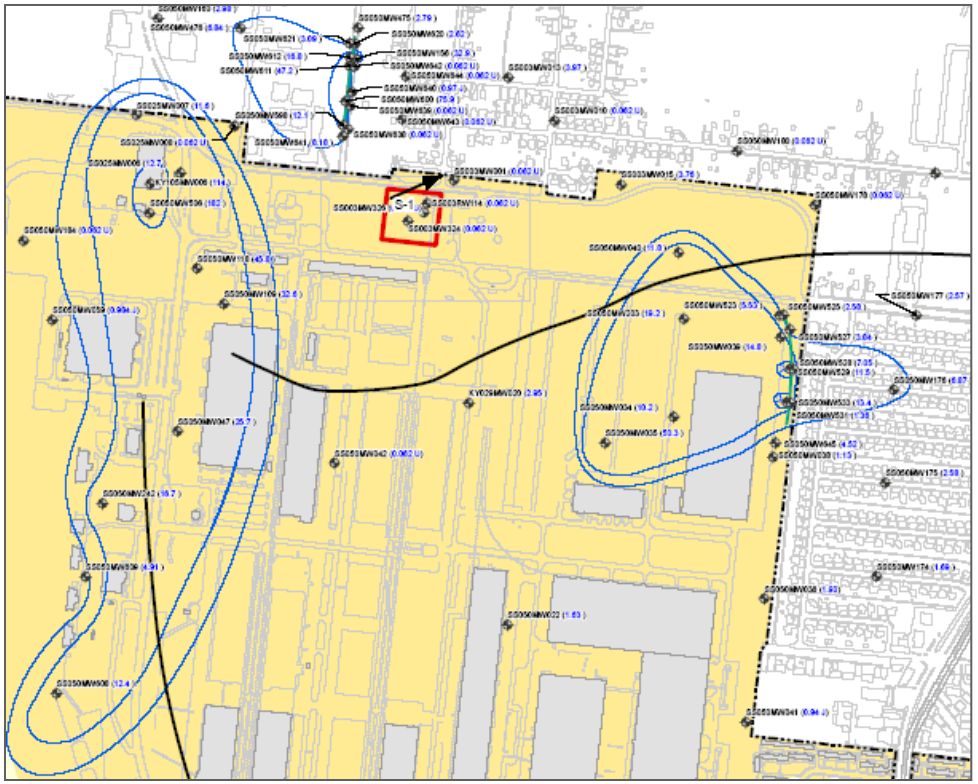
PCE and TCE Isoconcentration Maps, Zone 5



PCE

TCE



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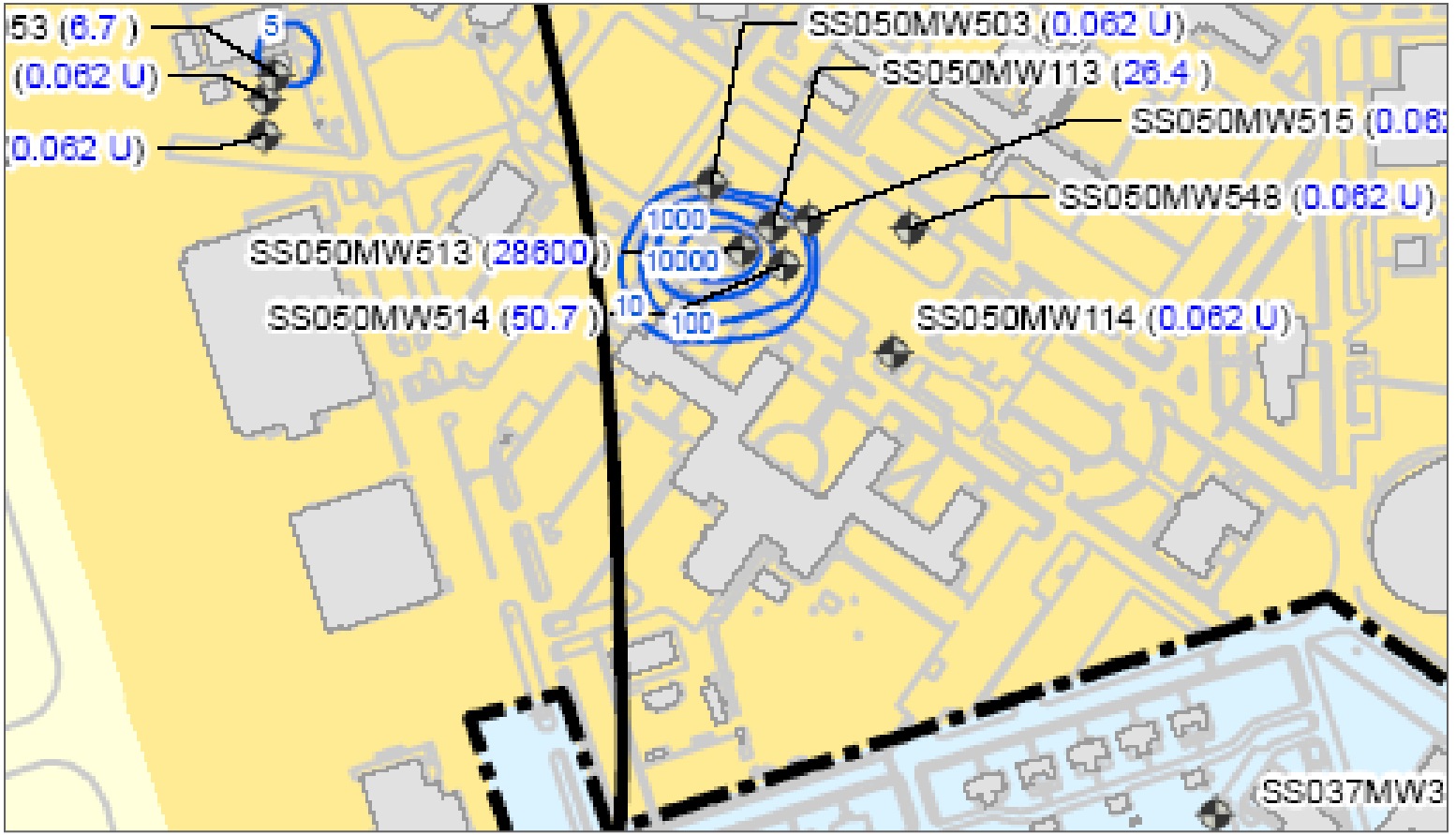
TCE
Isoconcentration Map, Plume D



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Findings and Conclusions Zone 5 Sites

- **S-1 WMA**
  - Site S-1 has been undergoing treatment through Electrical Resistance Heating (ERH).
  - Groundwater extraction and SVE have been shut down during this process.
  - Arsenic, benzene, and chlorobenzene plume within site is stable and appear not to be migrating.
- **OT-50 North WMA**
  - 2008 HRC© injection at Bldg 1533 PRB appears to have been effective to enhance degradation of TCE and reducing the size of the plume. **Plume D WMA**
- Plume D consists of a PCE/TCE plume in central Zone 5.
  - Reductive dechlorination of contaminants appears to be occurring and decreasing concentrations in 2010 suggest injected substrate in 2008 was effective.

Site S-1 (SS003)
Electrical Resistance Heating Remedial Action

Mr. Paul Carroll
BRAC Environmental Coordinator

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Site S-1 (SS003) ERH Timeline

- JUL 2010 — Construction of ERH System completed; Start up activities commenced
- JUL 2010 — Baseline Sampling conducted
- OCT/ NOV 2010 — Injected steam into gravelly areas to supplement heating
- DEC 2010 — Reached maximum site temperatures; replaced electrodes that had failed
- MAR 2011 — 60% Groundwater Sampling conducted
- APR 2011 — Repaired damaged drip system
- MAY 2011 — Mass removed to date:
  - 120 pounds Chlorobenzene
  - 89 pounds 1,2-Dichlorobenzene
  - 17 pounds 1,4-Dichlorobenzene
  - 3 pounds Benzene
  - >765 pounds of TPH

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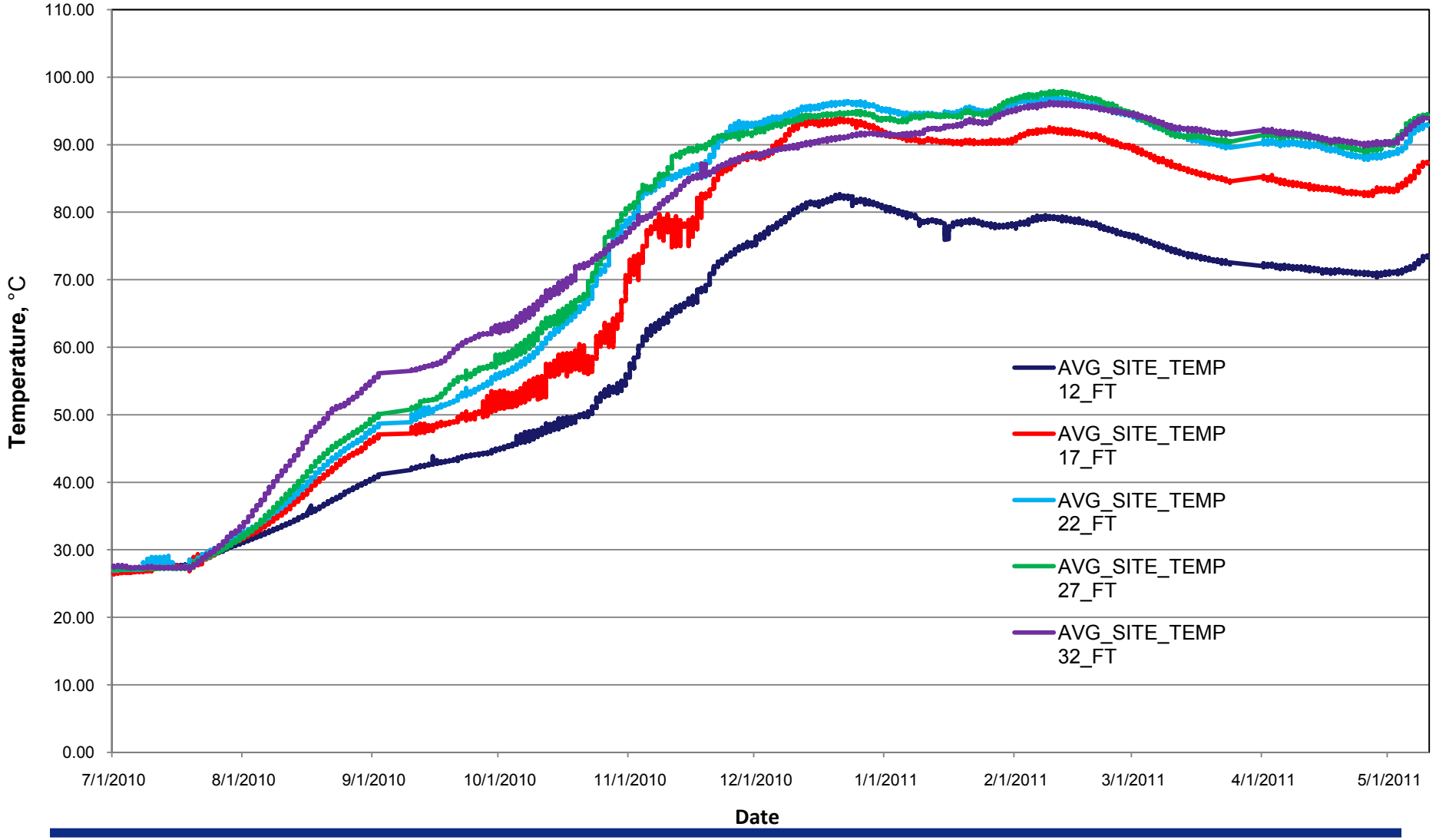
Site S-1 (SS003) Temperature (TC Average)



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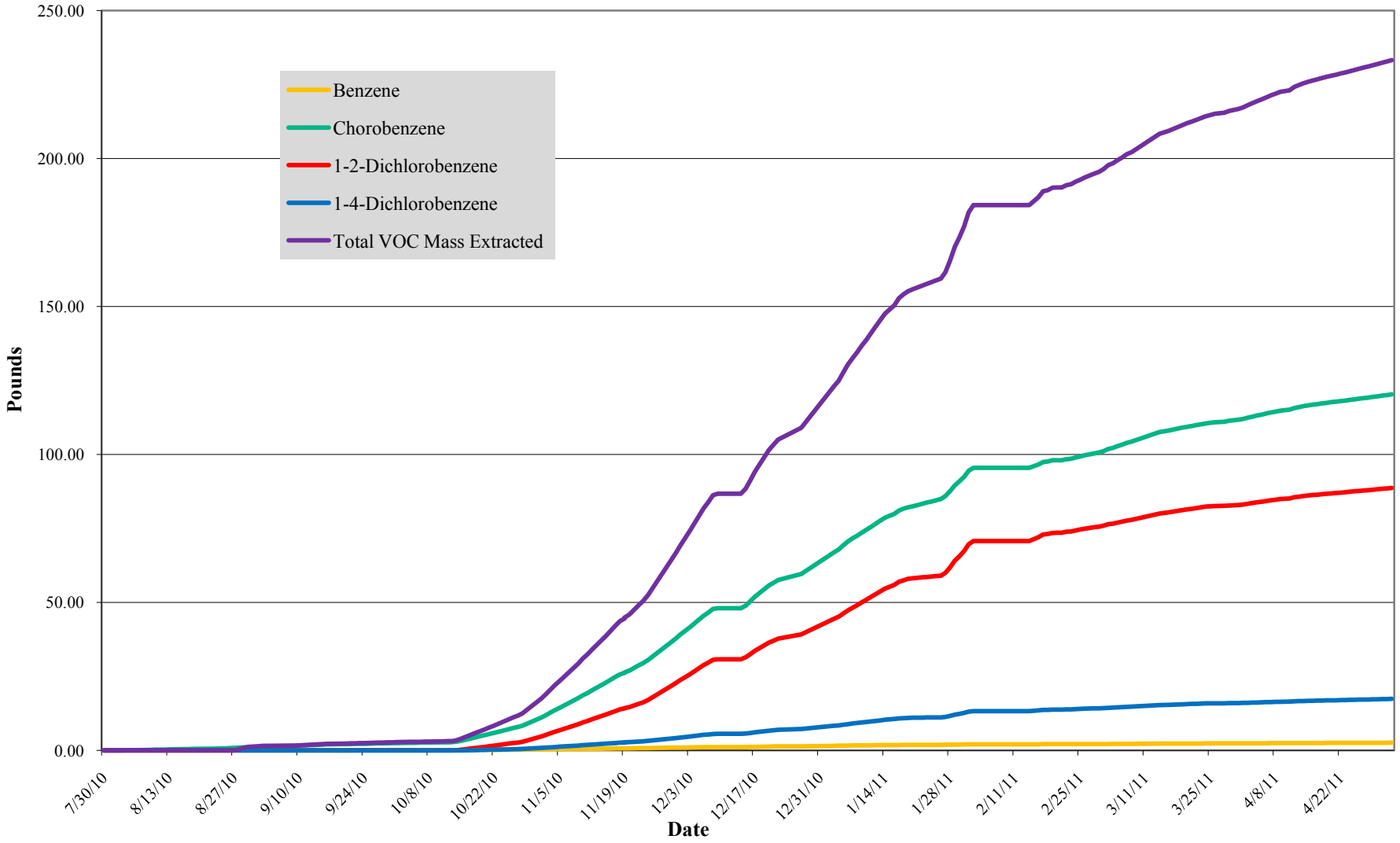
Site S-1 (SS003), VOC Mass Removal by Contaminant



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Site S-1 Current Status

- Gravel areas (northernmost area / portion of southern area) present challenges to ERH operation
- Areas with gravel / clay mixture in subsurface require constant tweaks to find optimal moisture content and a balance between the three phases of power
- Removal rate is lower than projected in design resulting in longer run time to achieve total mass removal goals
- Contaminant mass in the subsurface is being re-calculated due to possible variability in the design calculation and actual mass
- System is being evaluated to determine if continued operation is beneficial

Overview of Land Use Controls

Mr. Paul Carroll
BRAC Environmental Coordinator

Land Use Control Evaluation

- Draft Final Land Use Controls (LUCs) Evaluation Memorandum and 5 Attachments submitted to EPA (TCEQ copied) on 12 April 2011

- LUC Memo objectives:
  - Evaluate if LUCs could be reduced for seven sites previously closed under RRS 2 for industrial use
  - One site, LOC-00058-01, was already deed recorded to allow for residential use and included only for clarification

Land Use Control Evaluation

- Evaluation process:
  1. Review closure letters and deed recordation documentation
  2. Compare maximum concentrations left in place per the deed to residential RRS 2 Compliance Limits
  3. If there is an exceedance above the residential RRS 2 Compliance Limit based on what is recorded in the deed, review investigation or closure reports to identify other means of closure under RRS 2 for residential land use (e.g., SPLP, soil attenuation modeling, number of exceedances, etc)

Land Use Control Evaluation

- Air Force recommends reducing the LUC for five sites to allow residential land use:
  - LOC-00078-01 – Building 78 Entomology Storage Area
  - OWS-0050-01 – Building 50 SWMU (OWS and leach field)
  - OWS-0050-03 – Building 52 OWS
  - OWS-0070-01 – Building 70 SWMU (OWS, grit trap, service lines)
  - WRW-00050-01 – Building 50 Wash Rack

Performance Based Remediation (PBR) Contracts

Mr. Paul Carroll
BRAC Environmental Coordinator

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Performance-Based Remediation (PBR) Contracts

AFRPAs BRAC Master Plan

Goals:

- Continue to achieve property transfer
- Validate environmental cost
- Early resolution of environmental program

Vision Accomplished:

- BRAC property transfer
- Aggressive environmental remediation

Apply BMP Vision

Integrated BRAC Master Plan "one program"

1-Return Asset Value

2- Property Transfer

3- Early Resolution of Environmental Program

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PBR Contracts

- PBR focuses on results rather than methods
- Competitive atmosphere provides AF with best and brightest solutions to achieve site closure
  - Innovative solutions
  - Accelerated site closure
  - Reduced cost-to-complete
- One contractor focused on entire installation
  - Provides consistency with regulators
  - Streamlines contract management
  - Lowers overhead for the Air Force

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PBR Contracts AFRPA Experience

Former Reese AFB, TX

- Awarded 10-year PBR contract in 2004
- Goal to obtain OPS status and to achieve regulatory closure of all impacted sites by 2014
- PBR Contract has an estimated savings of over $20 Million to the Air Force
- Regulatory closure of all contaminated soil sites was completed within 3 years of initiating the contract
- Aggressive programs were initiated at three groundwater plumes to accelerate remediation and regulatory closure
- Two plumes have reached the remediation goals and are in a three year monitoring period required by the TCEQ Permit

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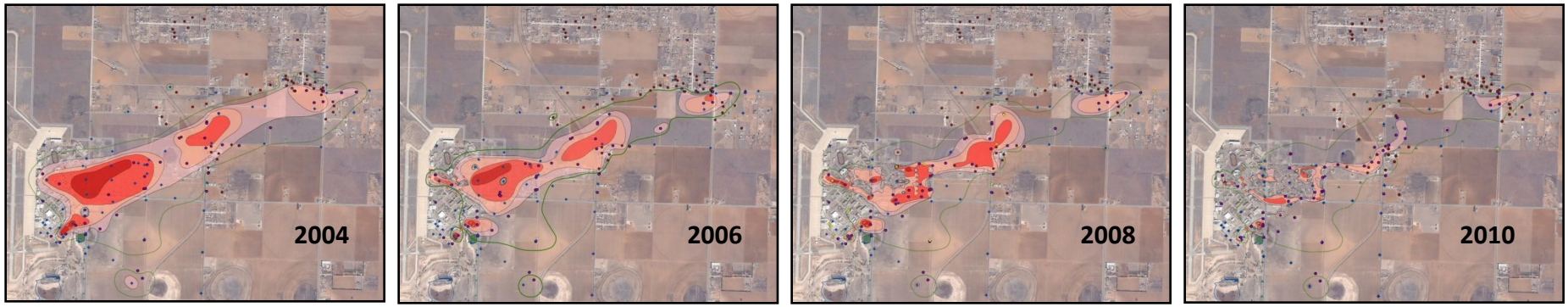
PBR Contracts AFRPA Experience

- Largest Plume, originally over 3 miles long, has significantly decreased in size and contaminant mass has been reduced over 80% since optimization activities began.
- At the current rate of contaminant mass removal, AFRPA anticipates reaching the regulatory limit (<5 µg/l) for TCE) by 2014, more than 20 years earlier than originally planned.

Progress of Plume Remediation



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PBR Contracts AFRPA Experience

Former Chanute AFB, IL.

- Awarded 9-year PBR contract in 2009
- Goal to obtain OPS status and to achieve regulatory closure of all impacted sites by 2016
- Addresses requirements at 47 remaining sites
- Anticipated cost savings of 20% to the Air Force
- Since Award, the PBC contractor has produced Feasibility Studies and Records of Decision for 23 Sites
- Contract employs innovative cleanup technologies such as Poplar Trees to capture and clean landfill leachate; new better performing Composite Landfill Cap material
- Remedial actions are scheduled to begin this fall on seven Sites, and remaining sites next spring

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PBR Contracts
AFRPA Experience

April 2009

August 2009

Chanute AFB Poplar Trees

August 2010

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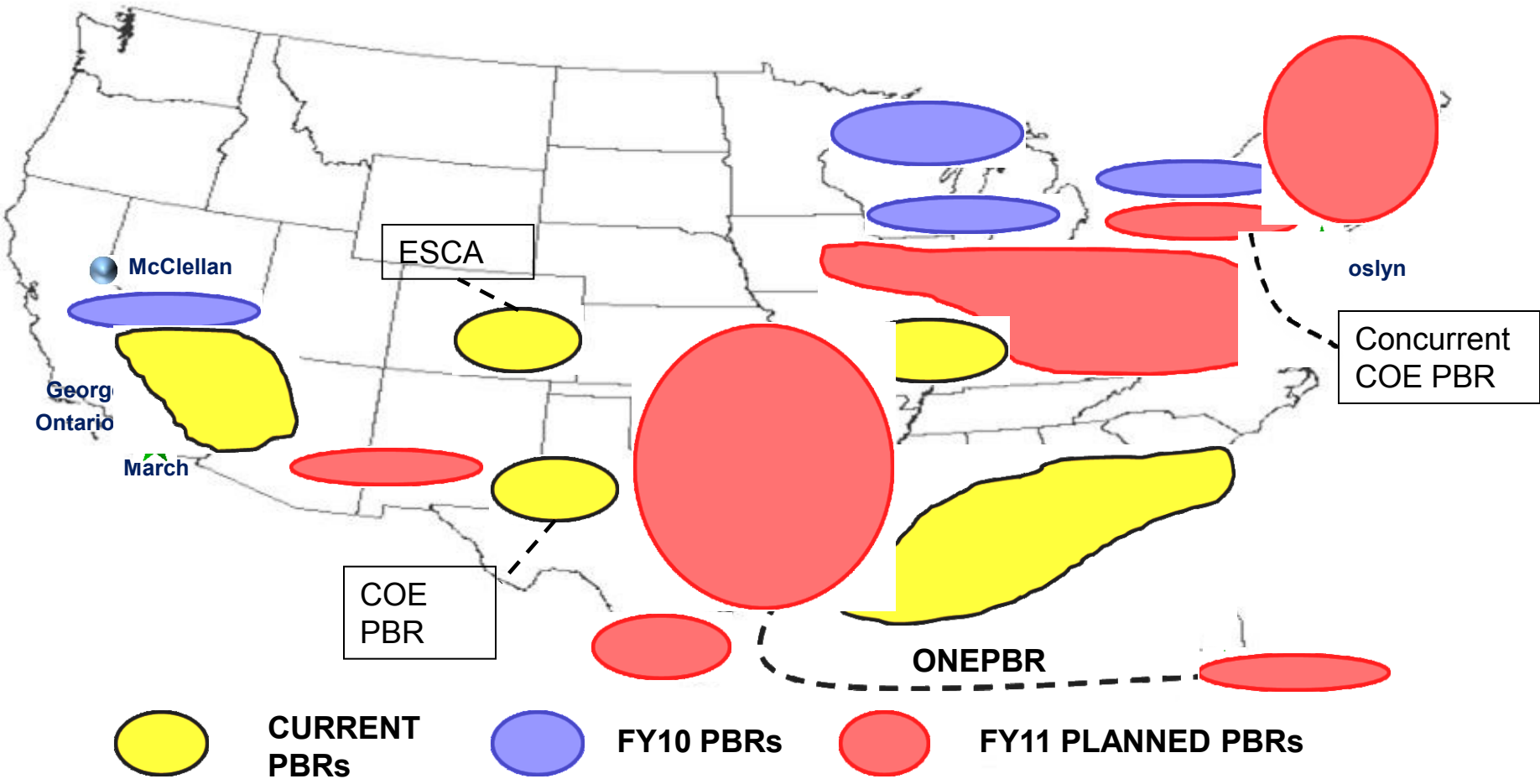
PBR Contracts
AFRPA BRAC Locations



PBR Contracts
AFRPA Experience

Questions?

Public Comment Period

Mr. Jose Martinez
Facilitator

Suggested Agenda Items for next RAB Meeting

Mr. Paul Carroll
BRAC Environmental Coordinator

RAB Member Retirement: Mr. Mark Weegar

Mr. Paul Carroll
BRAC Environmental Coordinator

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For More Information

- **Contact AFRPA Public Affairs:**
  - **Public Information Line: 210-925-0956**
  - **Fax: 210-395-9527**
  - **Email: afrpa.pa@us.af.mil**

- **Documents are available electronically or on hard copy:**
  - **Administrative Record Site: https://afrpaar.lackland.af.mil/ar/docsearch.aspx**

  - **San Antonio Central Library**
  - **Government Documents Section (6th Floor)**
  - **600 North Soledad, San Antonio, TX 78205**

Meeting Adjournment

Backup Slides

cis 1,2-DCE and VC Isoconcentration Maps, Site S-4

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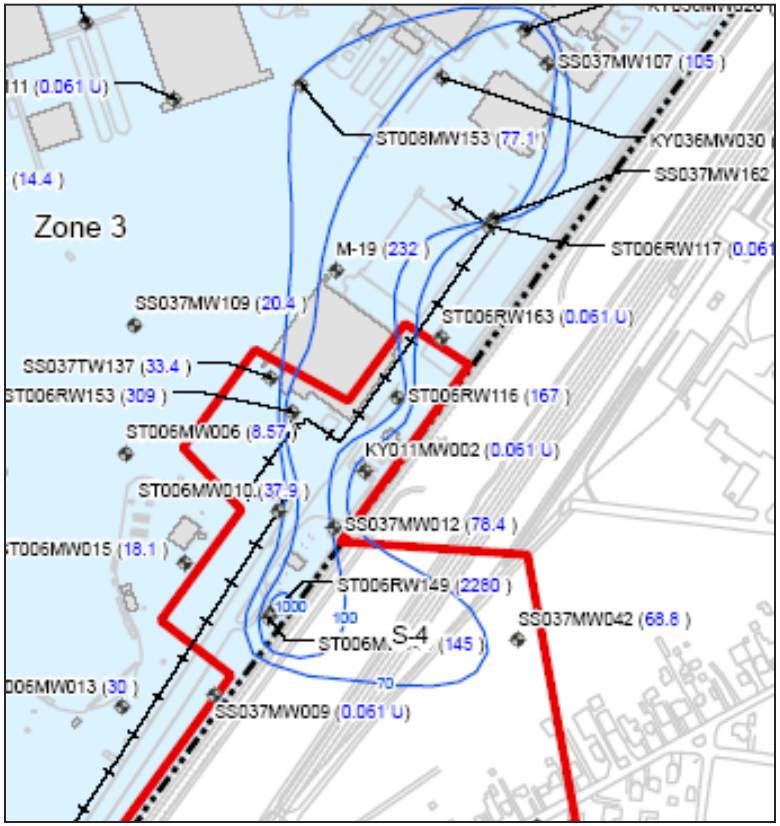
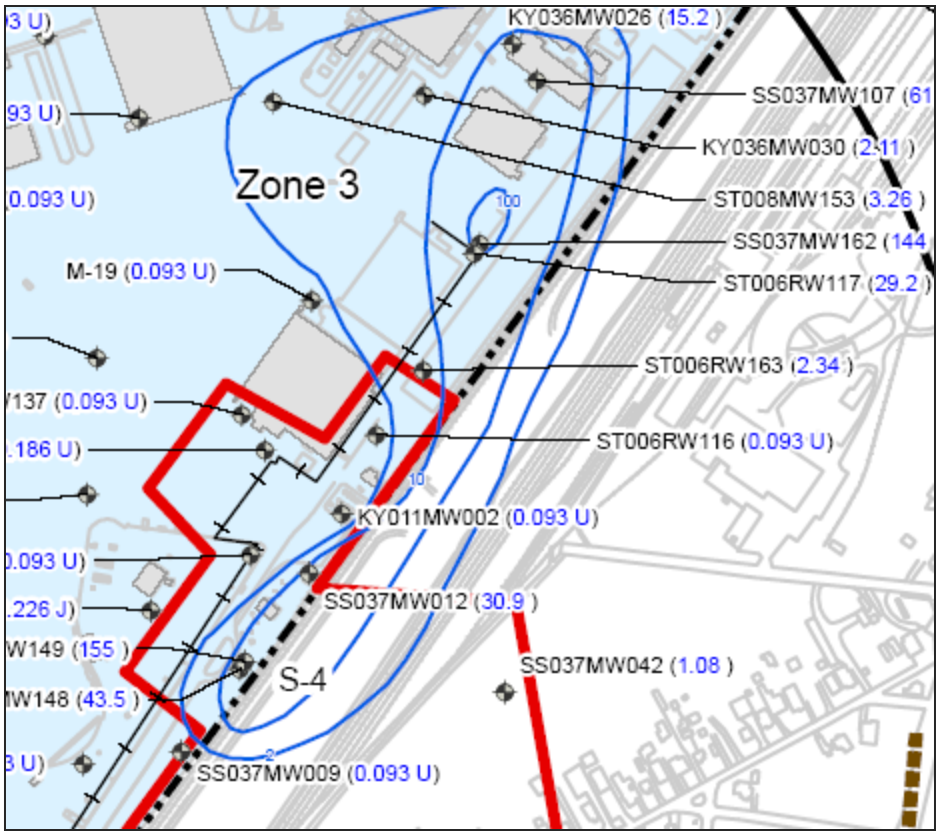


cis 1-2, DCE

VC



cis 1,2-DCE and VC Isoconcentration Maps, Building 301

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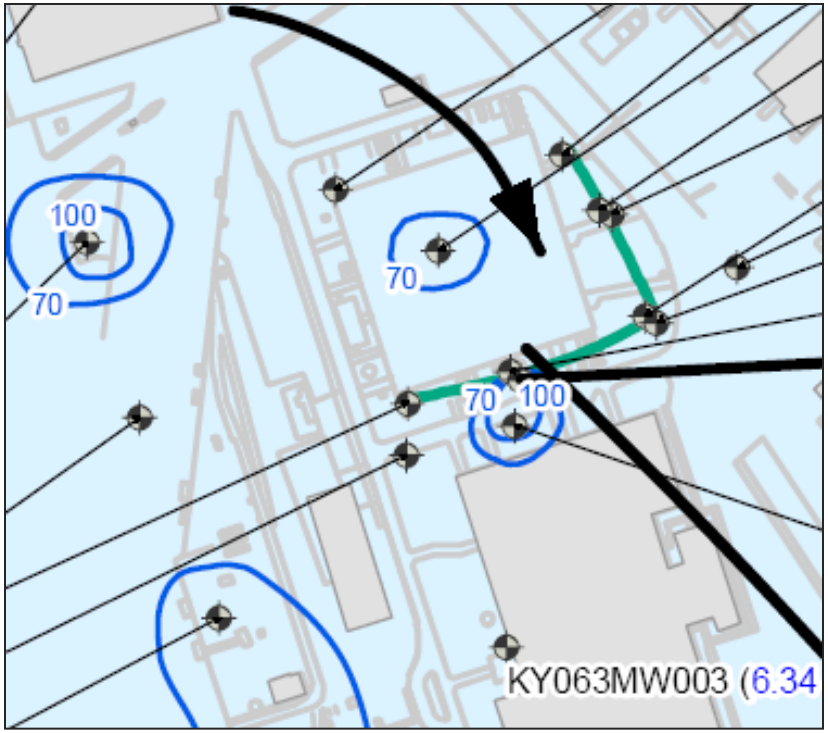
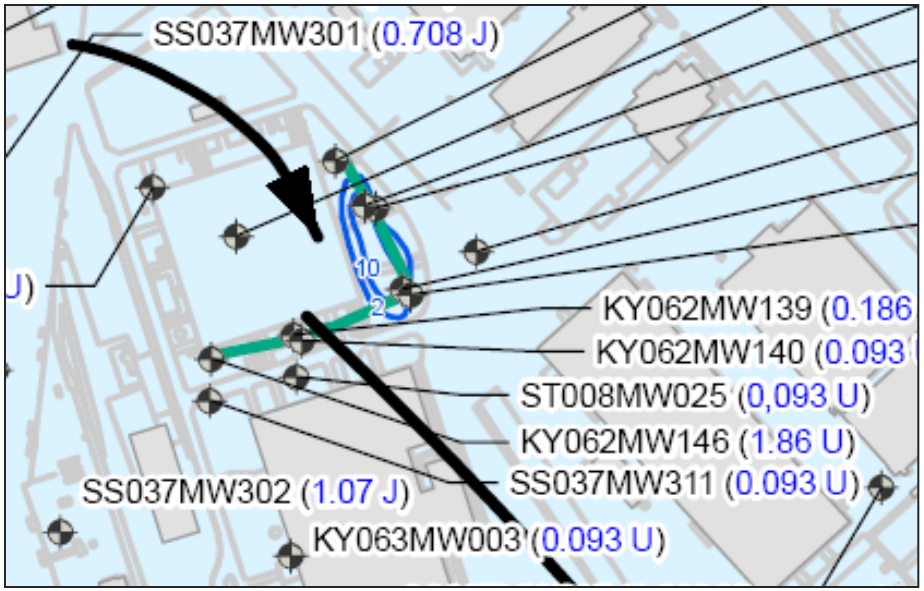
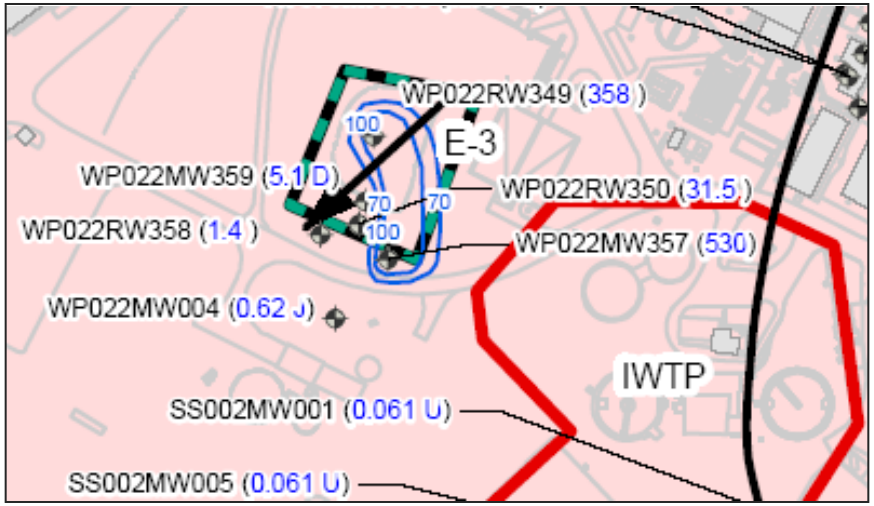


cis 1,2-DCE

VC

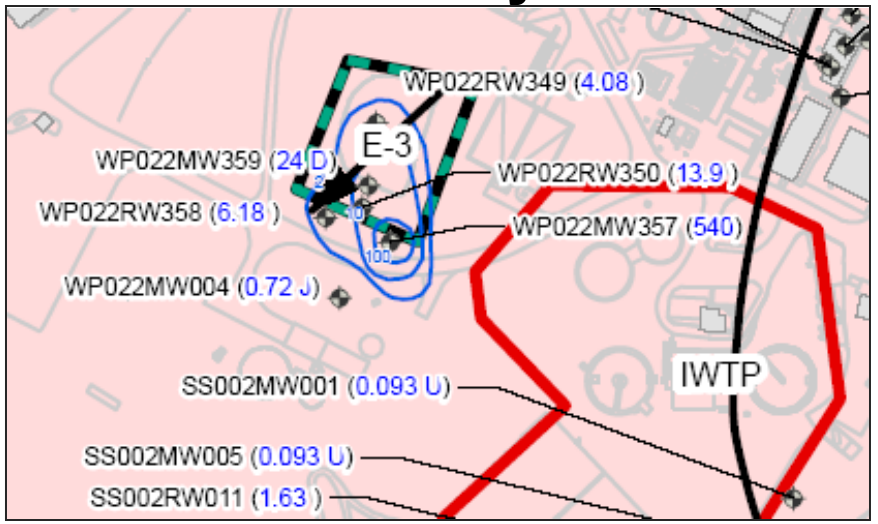


cis 1,2-DCE and Vinyl Chloride Isoconcentration Maps, Site E-3



cis 1,2-DCE

Vinyl Chloride



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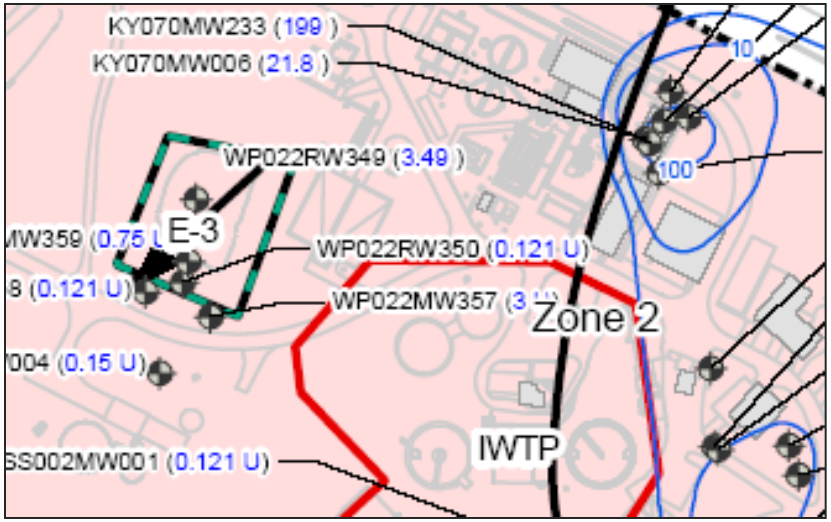
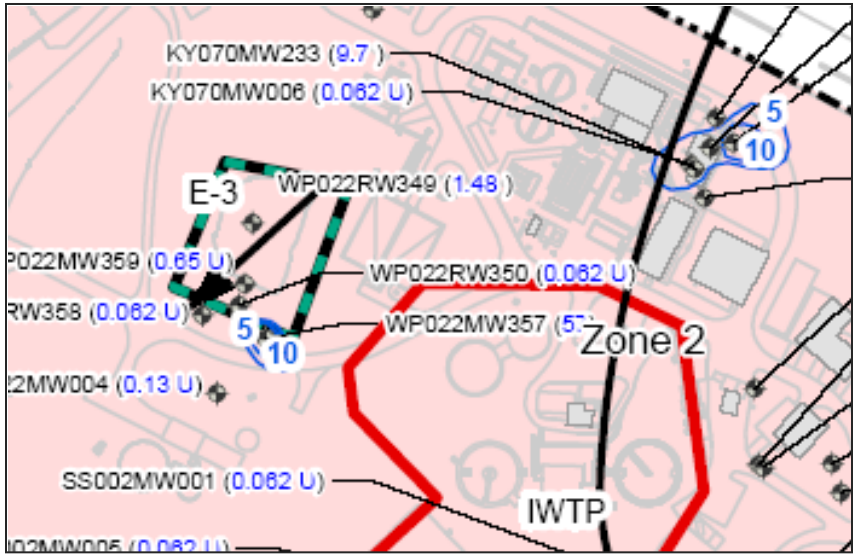
PCE and TCE Isoconcentration Maps, Site E-3



PCE

TCE



Chromium Isoconcentration Map 600 Area Waste Management Area

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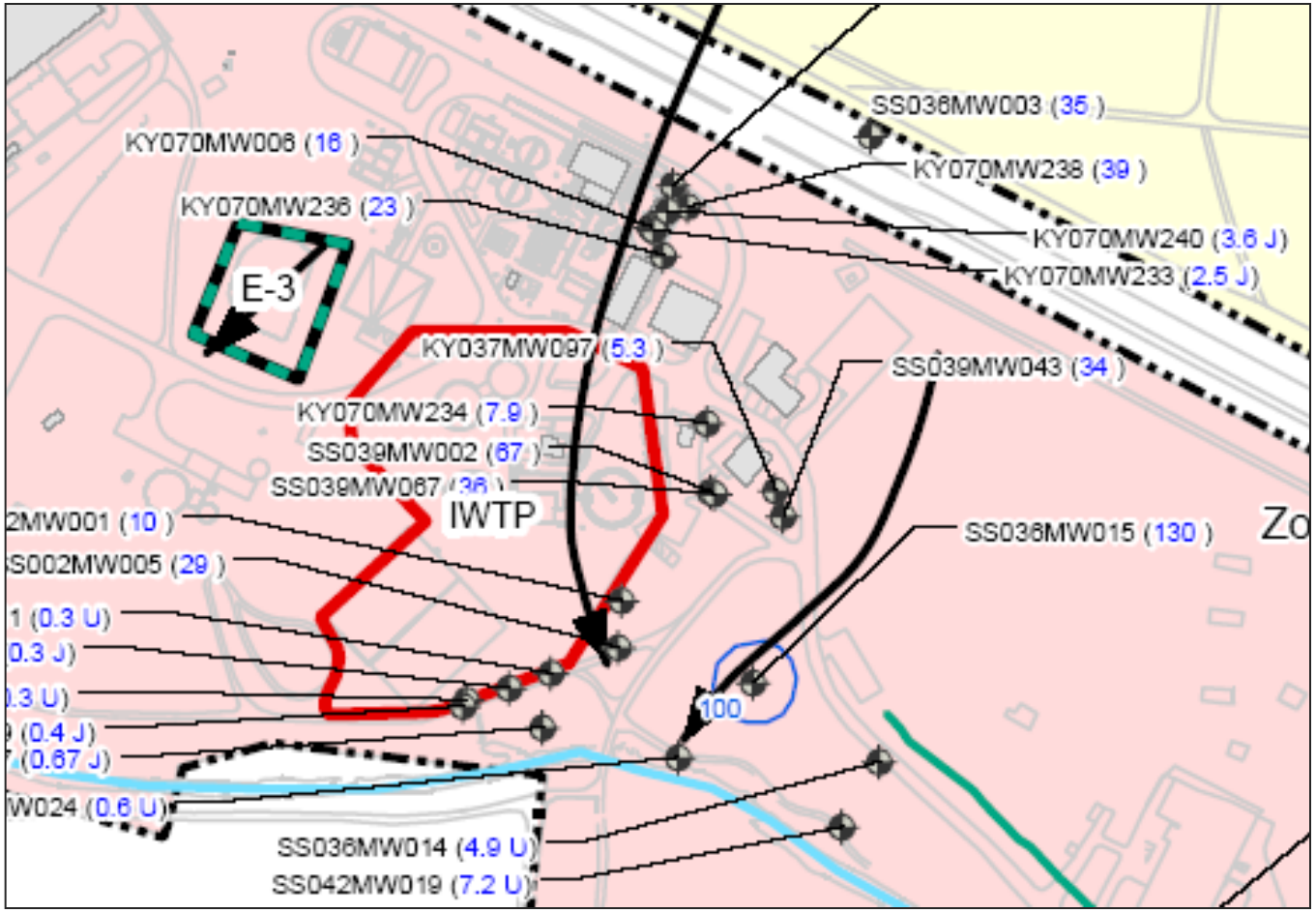
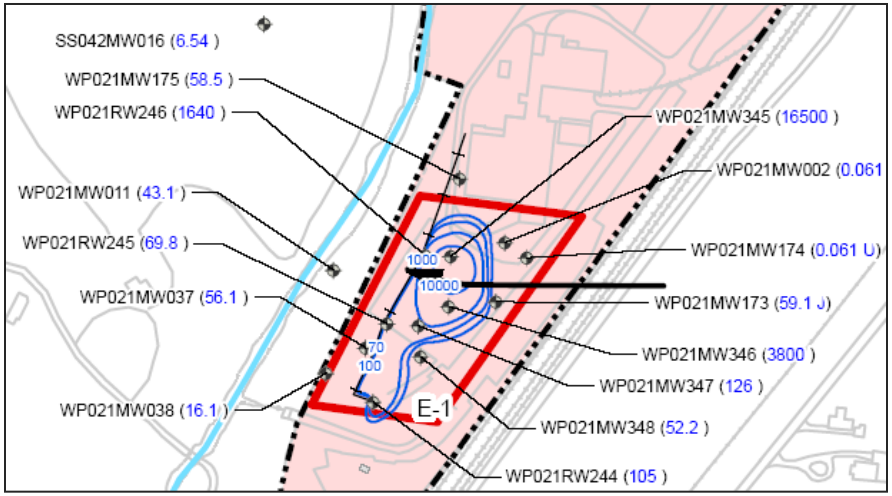


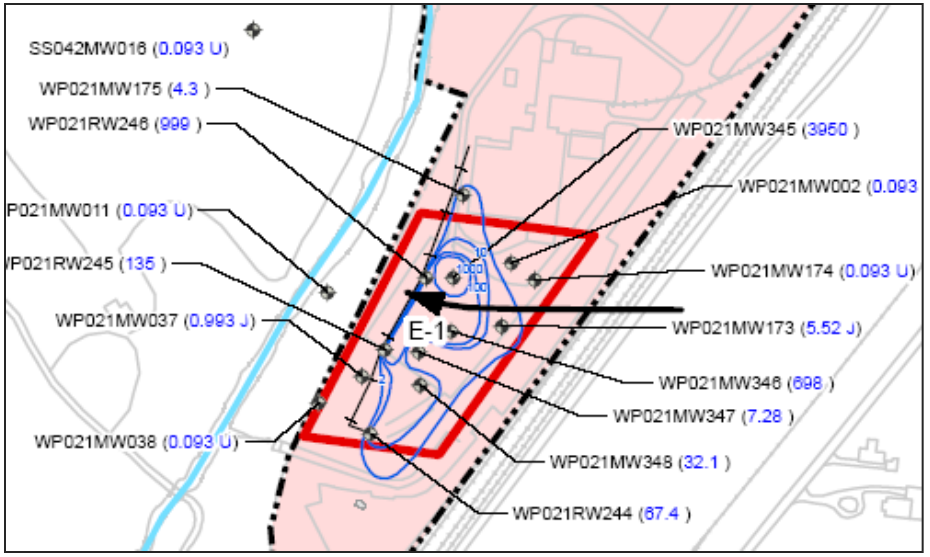
Chromium (total)

cis 1,2-DCE and VC Isoconcentration Maps, Site E-1



cis 1,2-DCE

Vinyl Chloride



Benzene and Chlorobenzene Isoconcentration Maps, Site E-1

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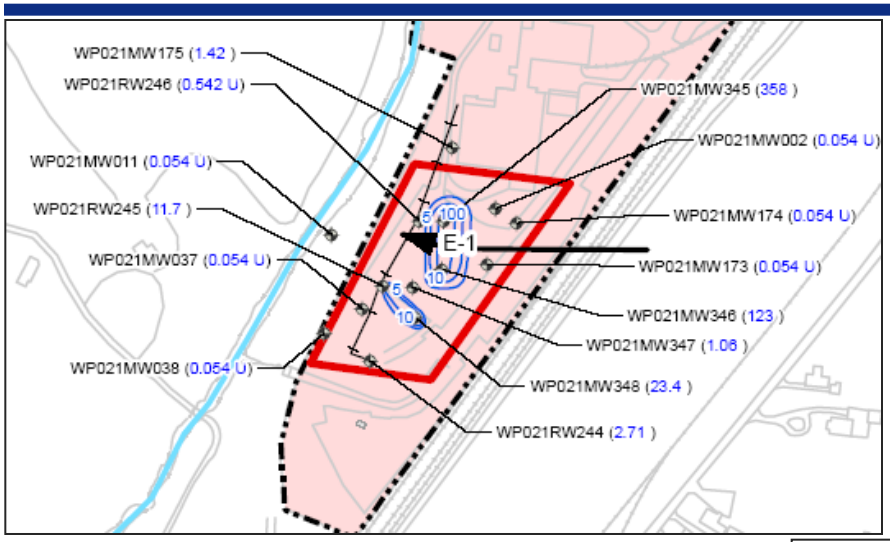
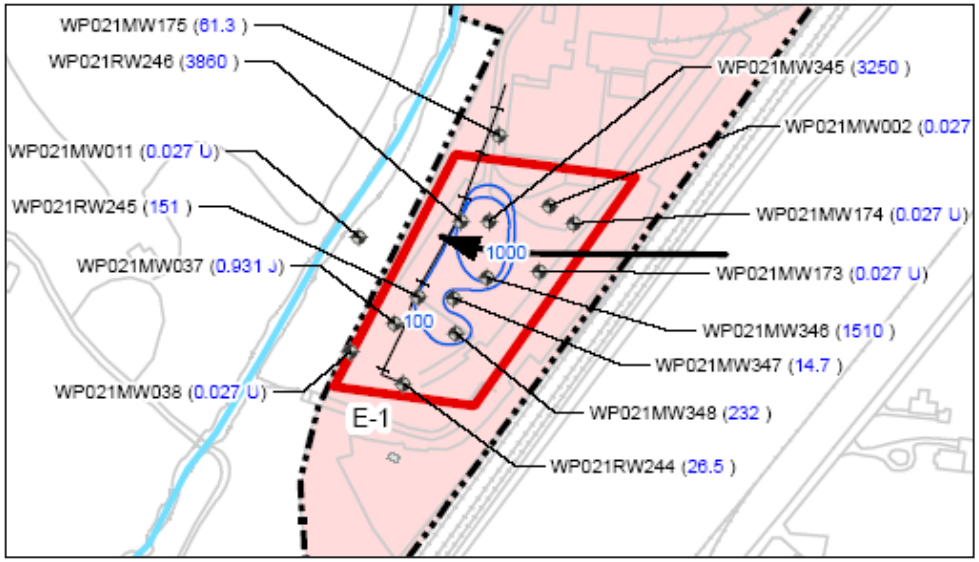


Benzene

Chlorobenzene



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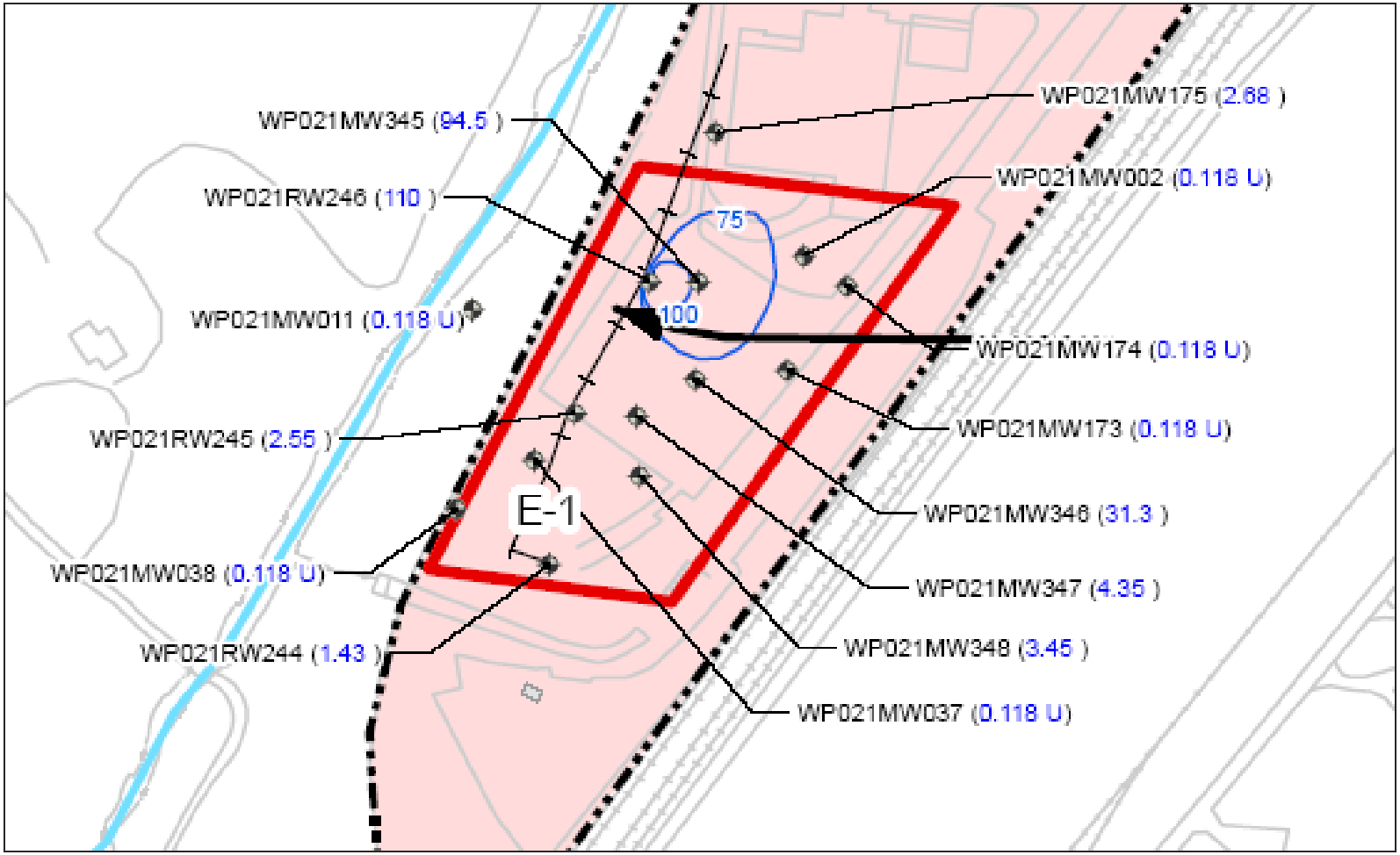
1,4-Dichlorobenzene Isoconcentration Map, Site E-1



1,4-Dichlorobenzene

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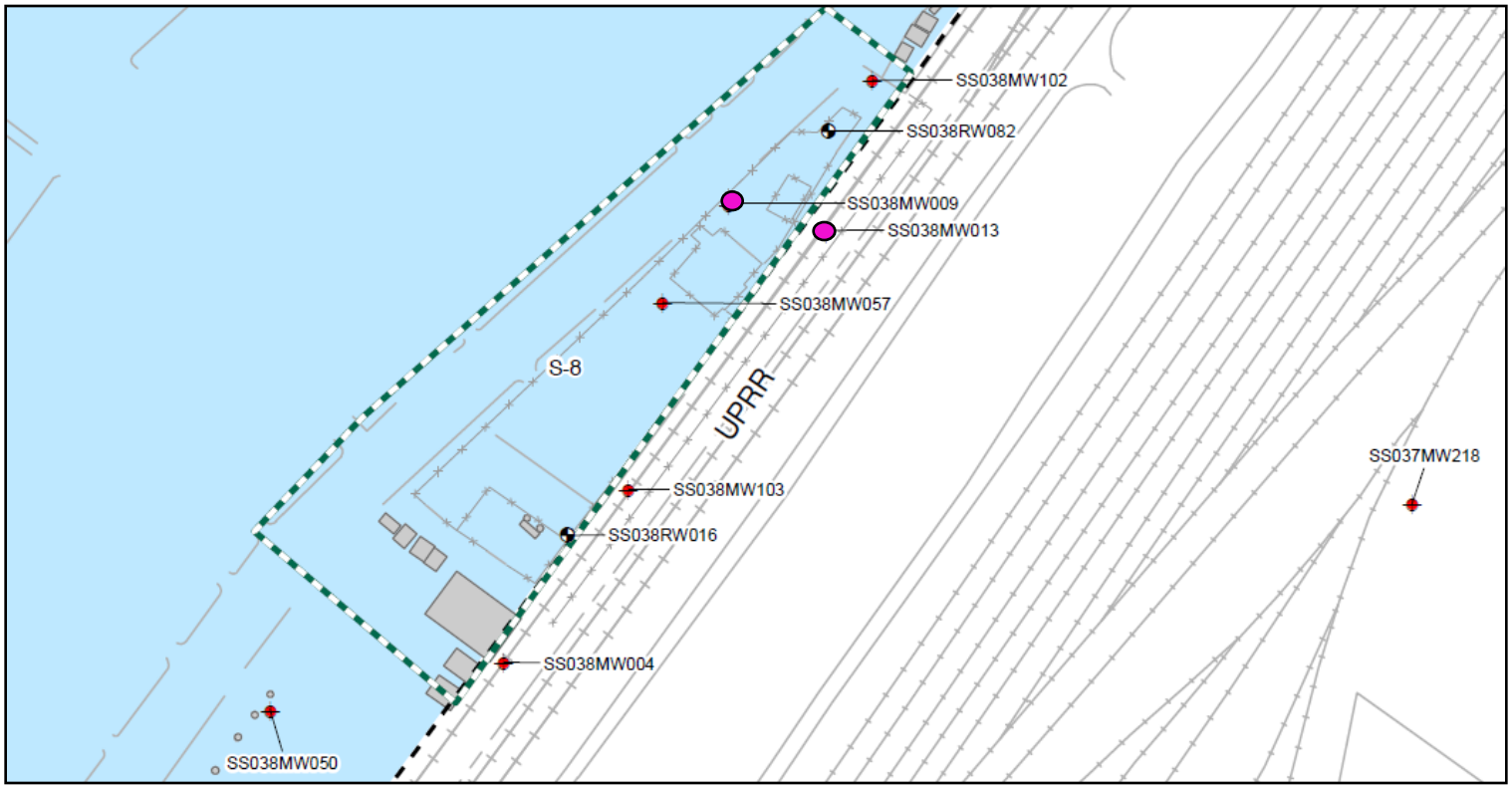
Site S-8 LNAPL

- Light Non-Aqueous Phase Liquid (LNAPL) in two on-site wells in Jul/Aug 2010
- Manual removal of LNAPL has reduced the volume of LNAPL to minimal amounts in each well.



PCE and TCE Isoconcentration Maps
Site S-8

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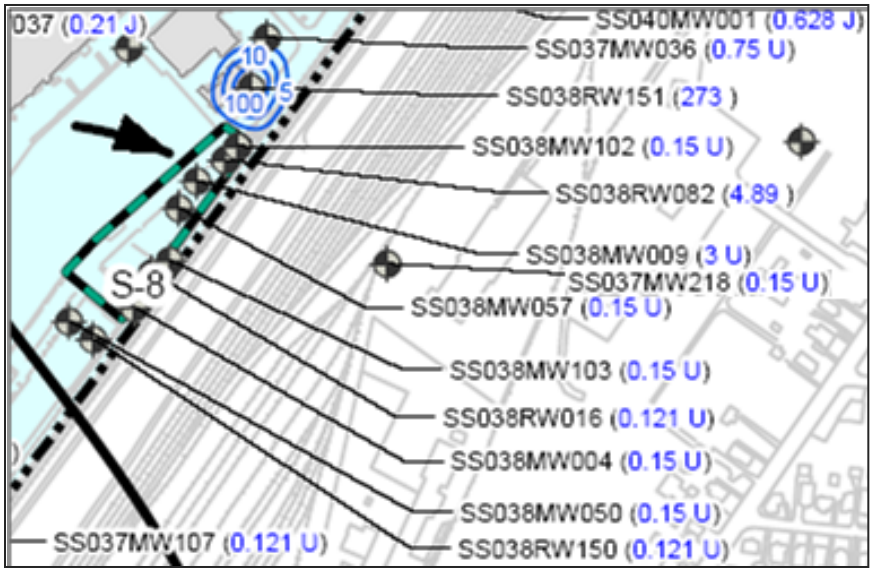
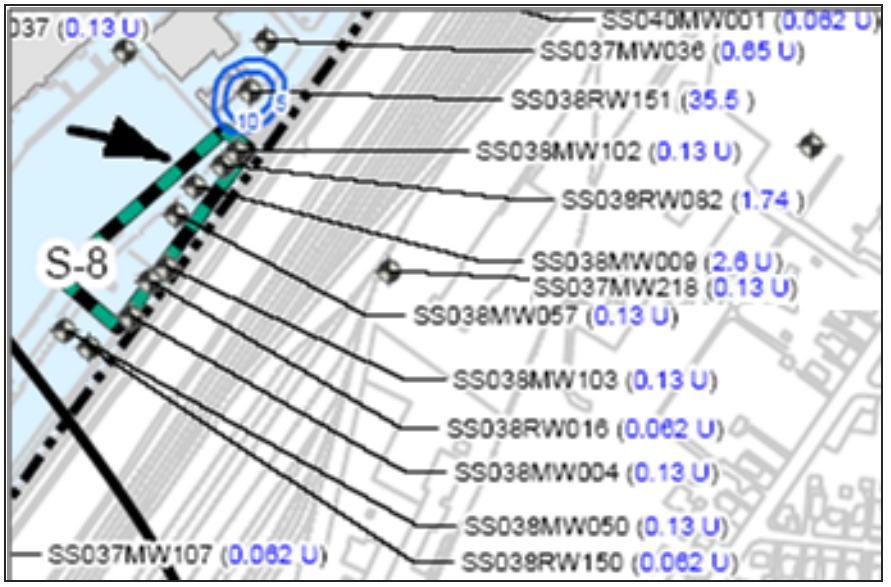


PCE

TCE



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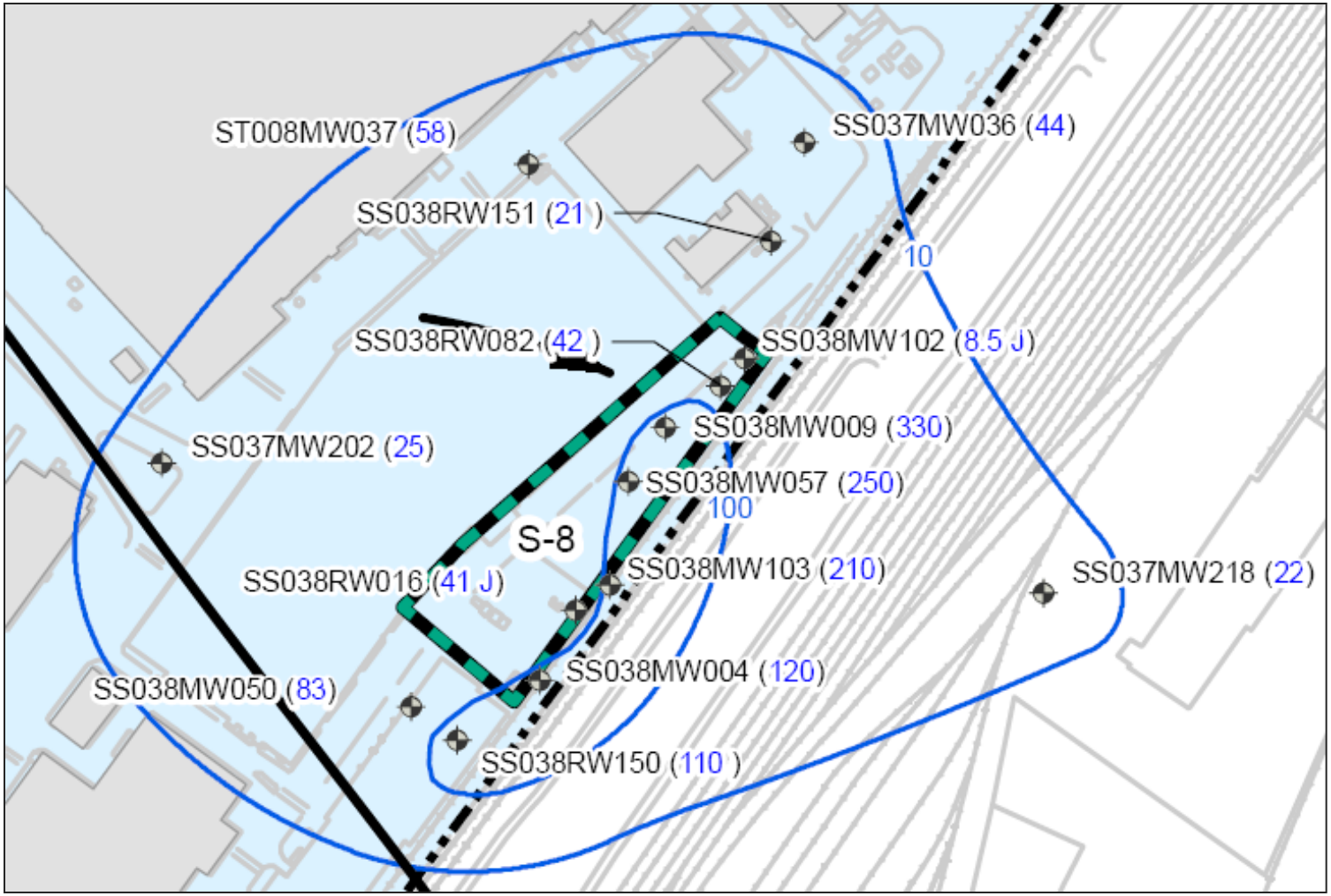
Arsenic Isoconcentration Map
Site S-8



cis 1,2-DCE and Vinyl Chloride Isoconcentration Maps, Building 360

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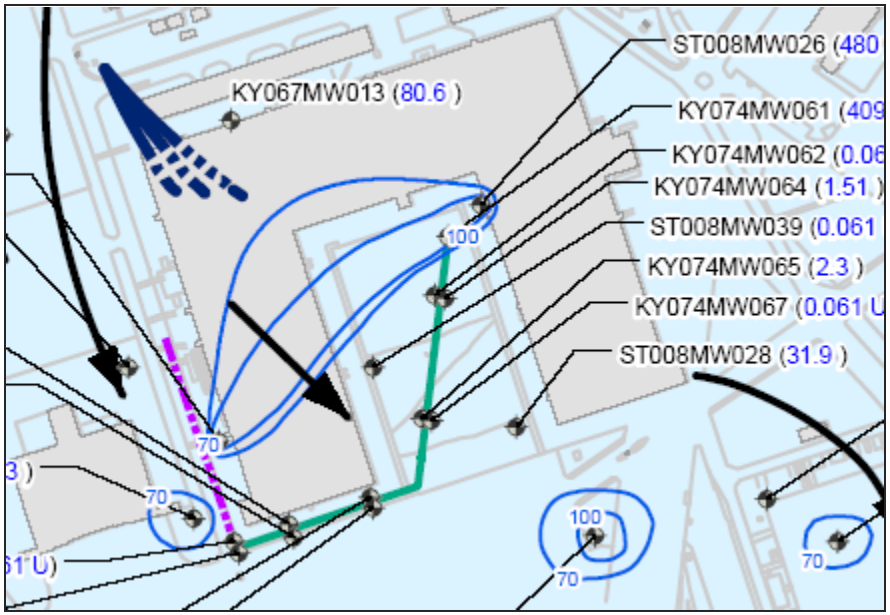
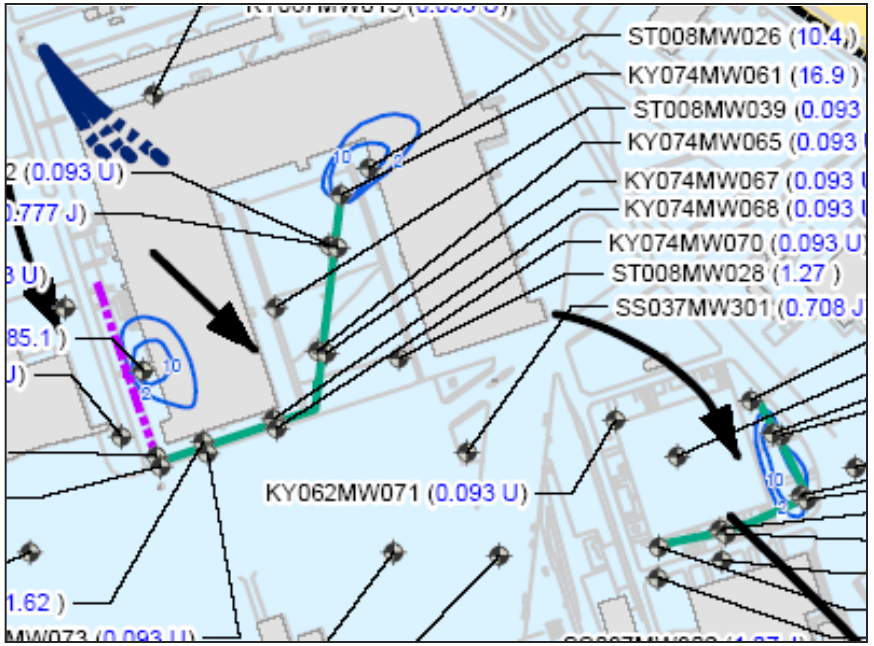
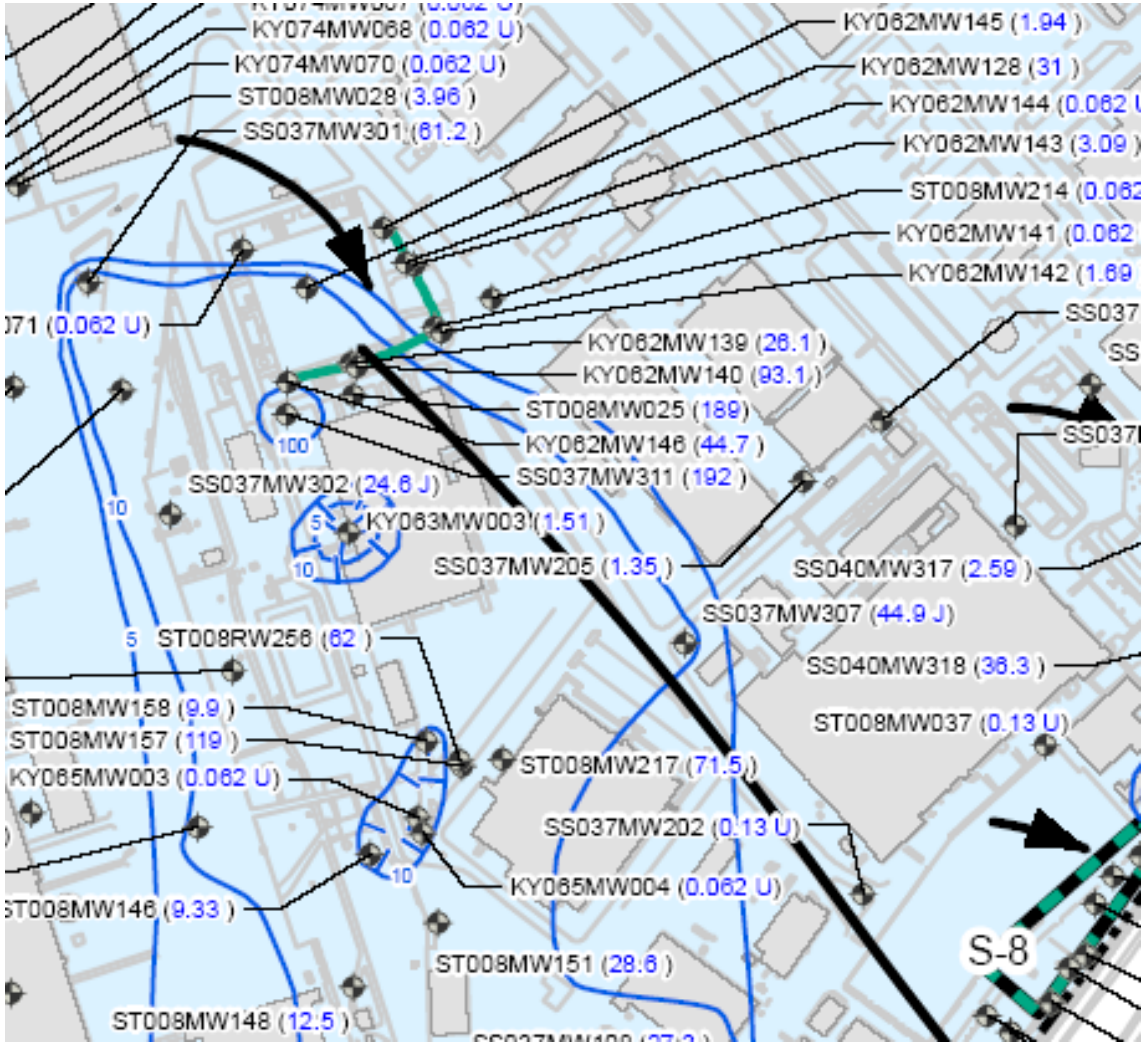


cis 1,2-DCE

Vinyl Chloride



TCE
Isoconcentration Map, Building 301



TCE

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Arsenic Isoconcentration Map, Site S-4