



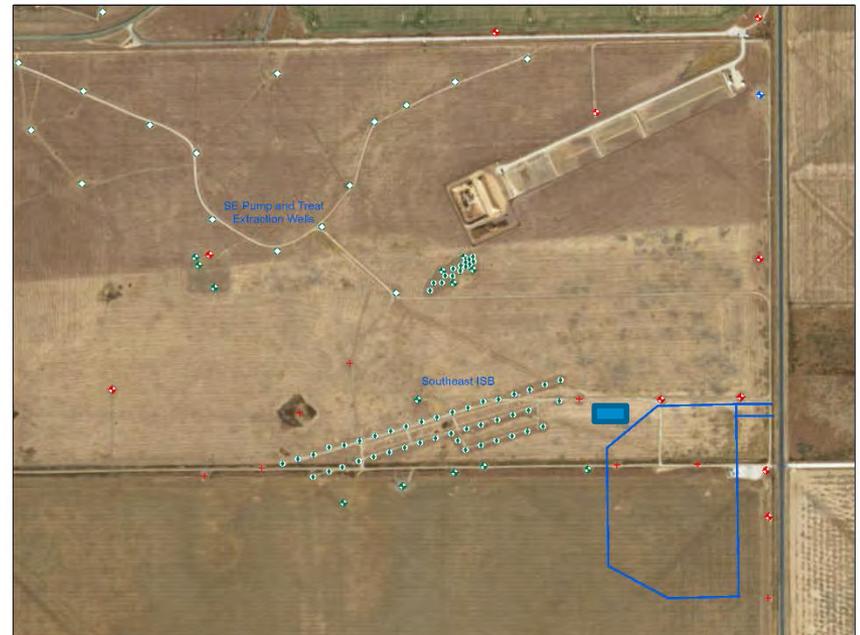
Long Term Stewardship Public Meeting

Tony Biggs

Manager of Environmental Projects
Consolidated Nuclear Security, LLC

Pantex Status

Administrative Support Complex



Environmental Cleanup Progress

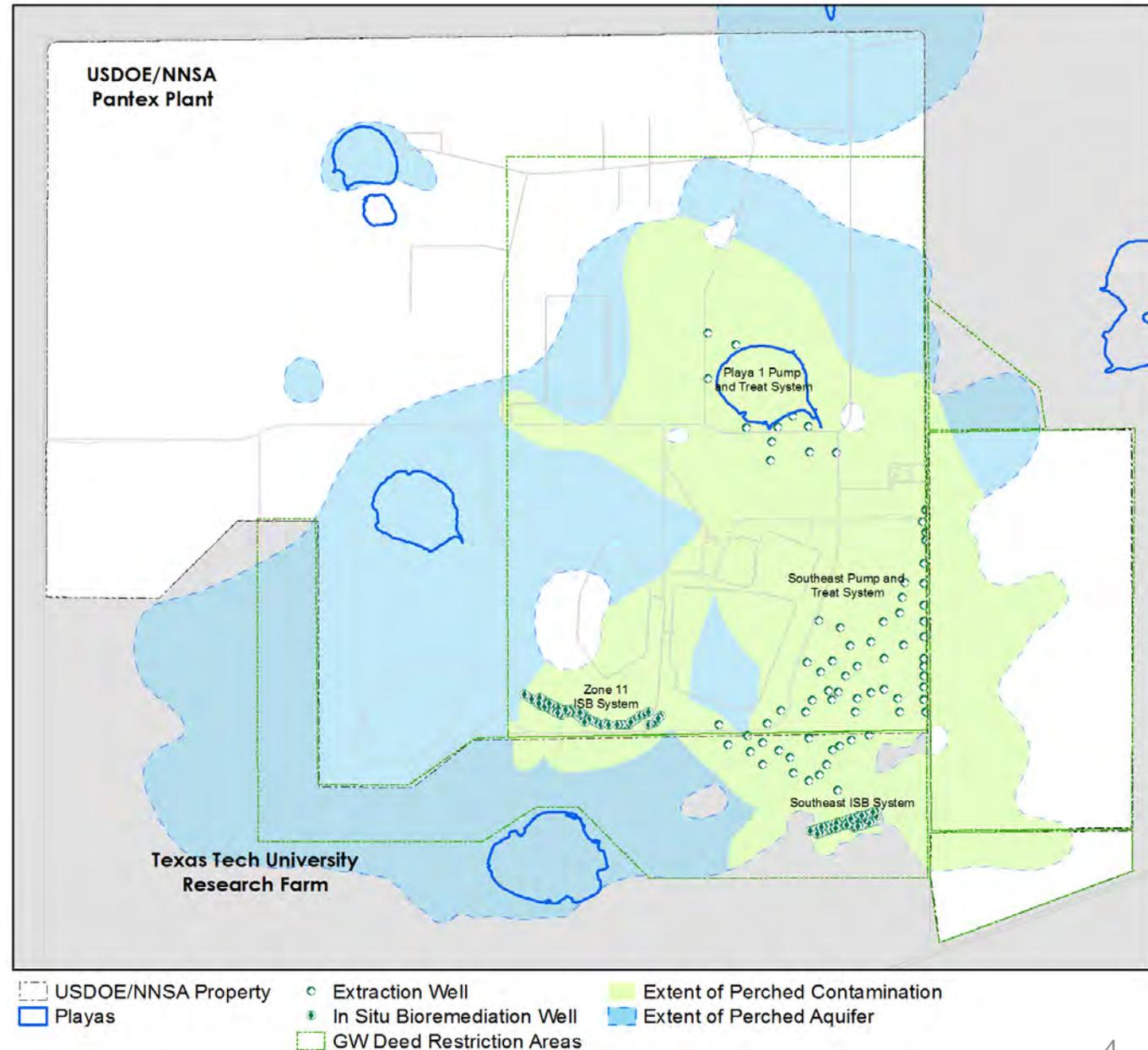
- Groundwater Remedies
 - Pump and Treat
 - In Situ Bioremediation
- Soil Vapor Extraction

Reporting completed since July 2015

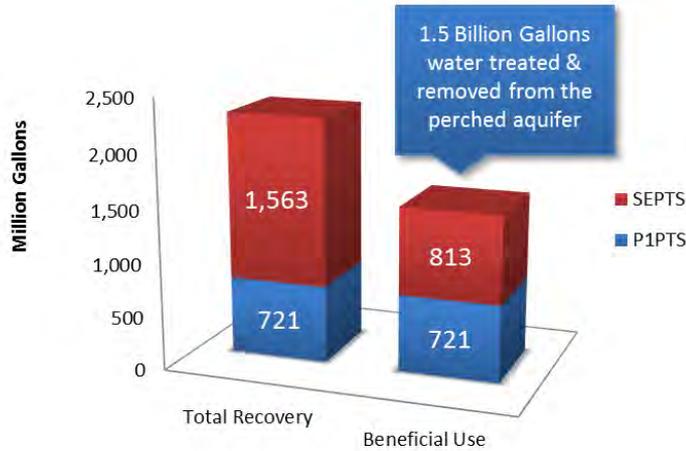
- Quarterly Progress Reports (3rd Quarter 2015 – 2nd Quarter 2016)
- 2015 Annual Report

Groundwater Remedial Actions

- Remove water
- Remove contaminant mass

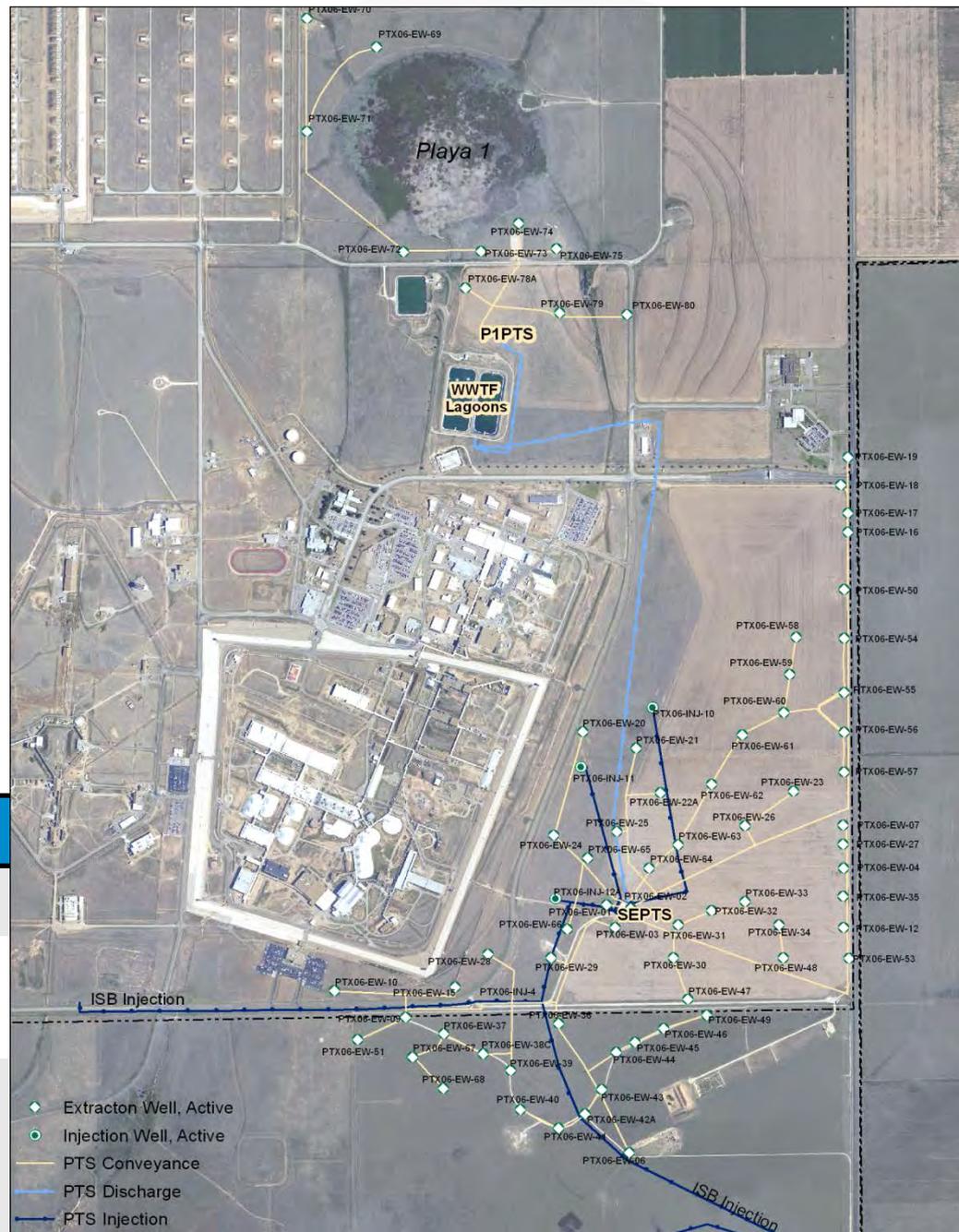


Pump and Treat Progress



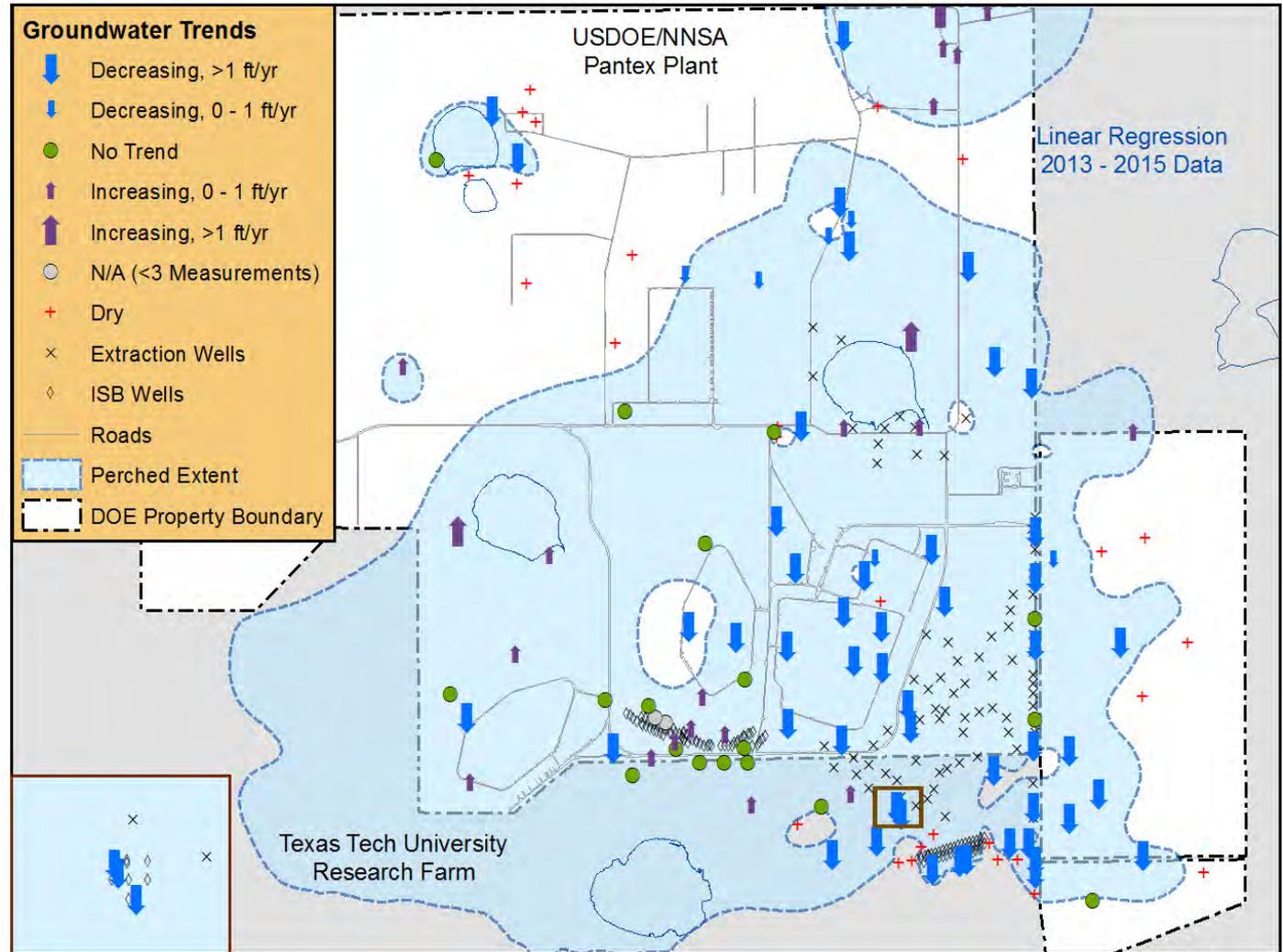
Total Recovery Since Startup

P1PTS & SEPTS	2015-2016 Total
Water Treated	>201 Mgal
Mass Removed (Cr+6, HE)	769 lbs
% Treated Water Beneficially Reused	99%

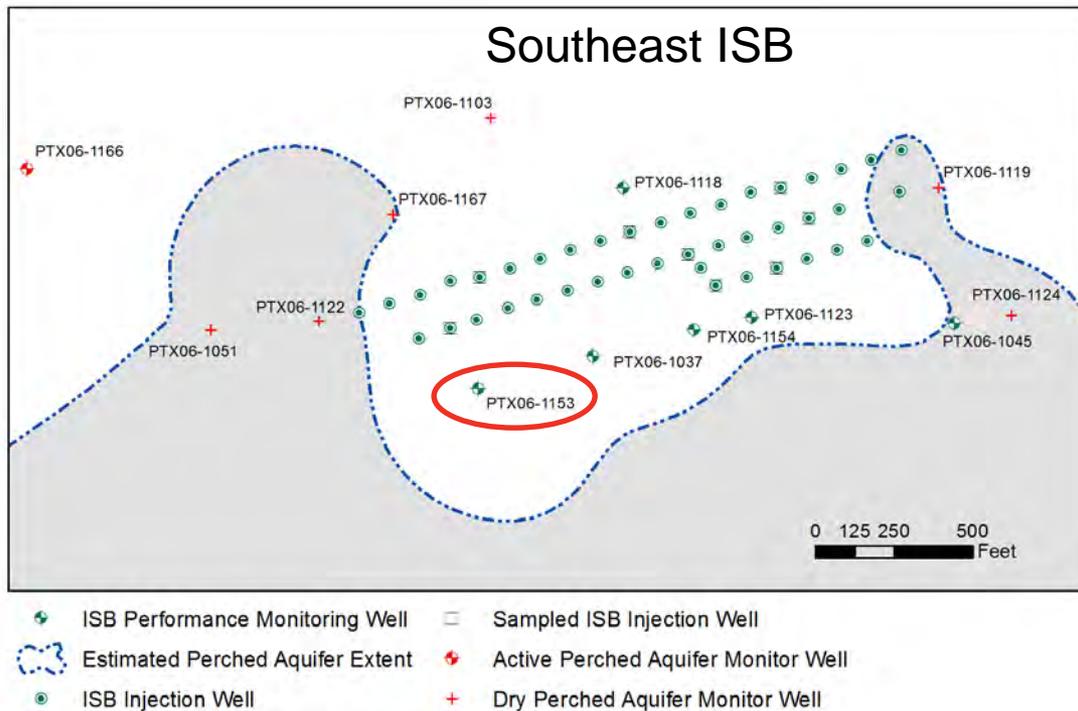


Pump and Treat Progress

Water levels declining



In-Situ Bioremediation Progress



System Treats:

- High Explosives
- Hexavalent Chromium
- 42 Injection Wells
- Water Levels Declining
 - 50% wells injected
 - PTX06-1123 no longer sampled (almost dry)

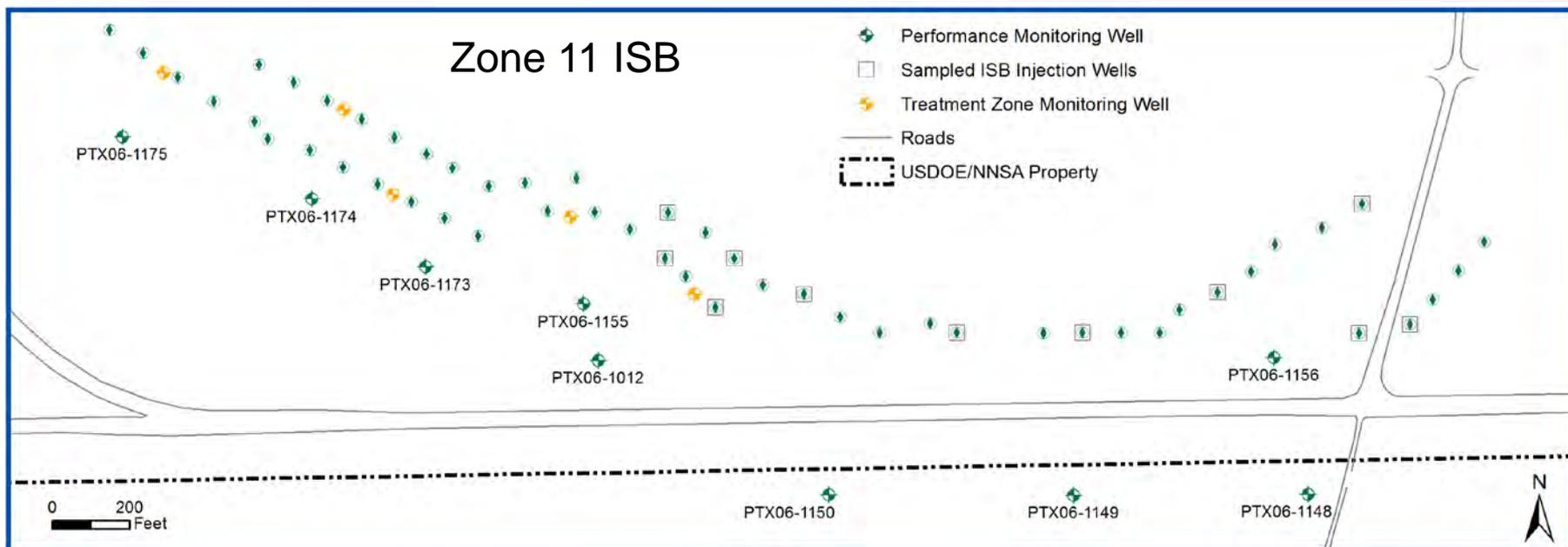
Criteria	Performance
HE Concentrations	< GWPS except at PTX06-1153
Cr+6 Concentrations	< GWPS except at PTX06-1153

Passive Flux Meter Deployment

Fluxmeters deployed to determine if water and contamination is continuing to flux into the southeast area



In-Situ Bioremediation Progress



System Treats:

- TCE
- Perchlorate
- 52 Injection Wells

Criteria	Performance*
TCE Concentrations	< GWPS at 4 of 6 wells
Perchlorate Concentrations	< GWPS at 4 of 6 wells
TCE Breakdowns	<GWPS at 4 of 6 wells

*New performance wells (1173, 1174, and 1175) not considered

In-Situ Bioremediation Progress

2015 Injection and Bioaugmentation Event

- Southeast ISB complete May 2015
- Zone 11 completed in November 2015
 - Bioaugmented original wells on western side to address break-down products of TCE
 - Monitoring conducted in January 2016 indicate:
 - DHC are present
 - DHC counts are low
 - Not fully treating TCE yet – DHC counts must grow

Burning Grounds SVE (Soil Vapor Extraction)



- System consists of a small catalytic oxidation (CatOx) treatment unit
- Extraction focuses on one well, SVE-S-20 near the source area

VOC Removal	lbs Removed
2015-2016	355
Since Startup	18,306

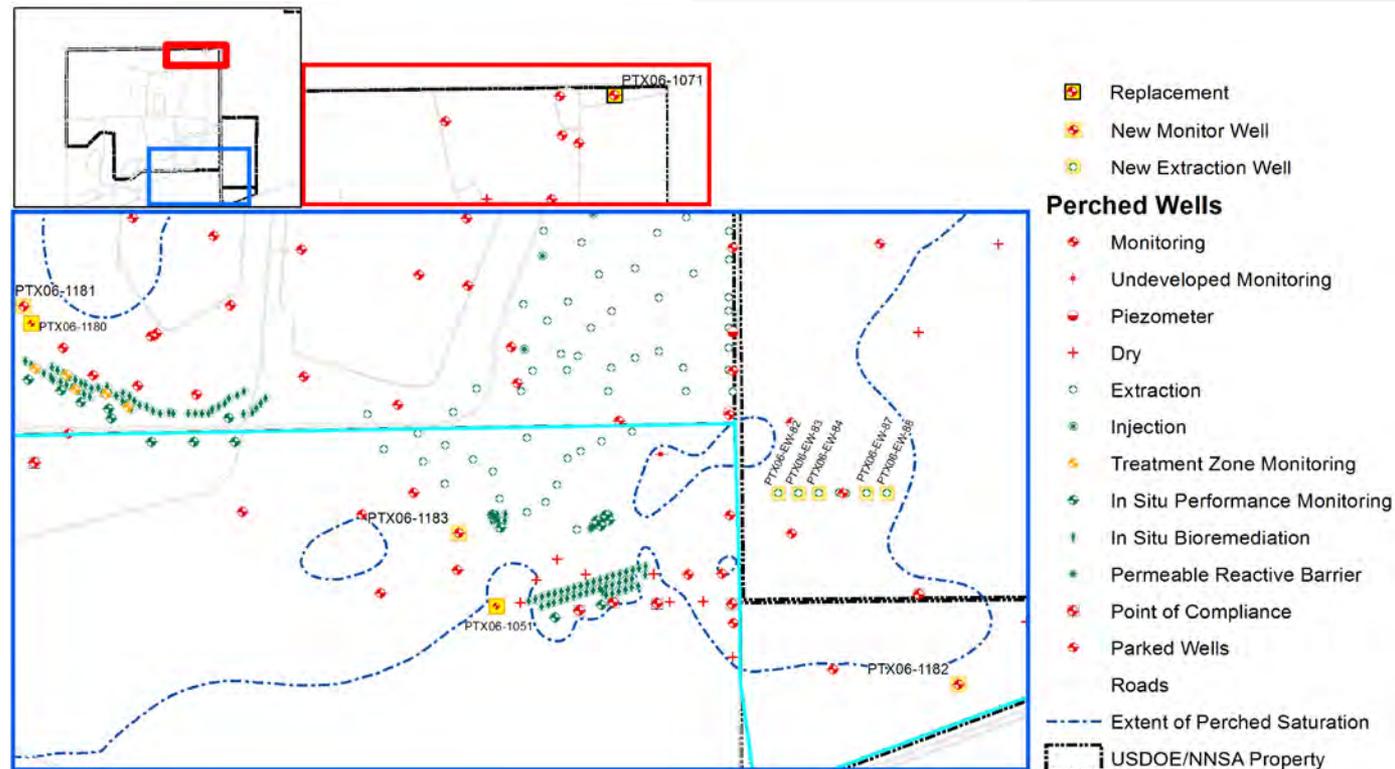
FY 16 Completed Actions

- **Pump Test East of FM 2373**

- Indicates that the SEPTS can be extended.
- Pantex gained funding to extend pump and treat operations to that area.
- Five new extraction wells installed

- **Drilled 6 new wells**

- Replaced PTX06-1051
- Replaced PTX06-1071
- New wells to track TCE plume at Zone 11, Cr+6 plume northwest of SE ISB, and evaluate extent of perched groundwater at the southeast lobe.



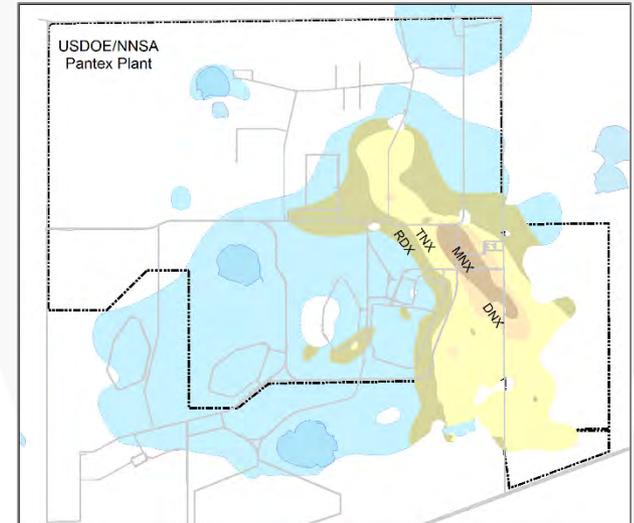
FY 16 Completed Actions

- **SEPTS Bulk Water Station Completed**
 - Water used in accordance with TLAP Permit for miscellaneous Plant projects
- **PTX06-EW-81 tied into P1PTS**
 - Additional well to fulfill operating throughput requirements when other wells are down
- **Landfill 3 Cover Upgrade – Design**
 - Address erosion on the side where Zone 12 ditch occurs



FY 17 Planned Actions

- **Landfill 3 Cover Upgrade Construction**
- **SEPTS Extension Design and Construction**
- **RDX Natural Attenuation Study**
- **Replacement of SWMU 5/5 and 2 Ditch Liner**
- **Chromium Background Study**
- **Kick-off of Second Five-Year Review**
- **ISB and Pump Treat Operation and Maintenance**
- **Continued Monitoring of Actions**
 - Further monitoring for bioaugmentation effectiveness



RDX Natural Attenuation



SWMU 5/5 and 2Ditch Liner

Monitoring Results

One aspect of groundwater monitoring is evaluation for unexpected conditions

- If an unexpected condition is identified, follow up actions and notifications are implemented as defined in the Contingency Plan
- The Contingency Plan was developed to specifically address potential issues with the Ogallala or perched aquifers
- Actions depend on how the results compare to the practical quantitation limit (PQL) or groundwater protection standard (GWPS)

Unexpected Conditions (cont'd)

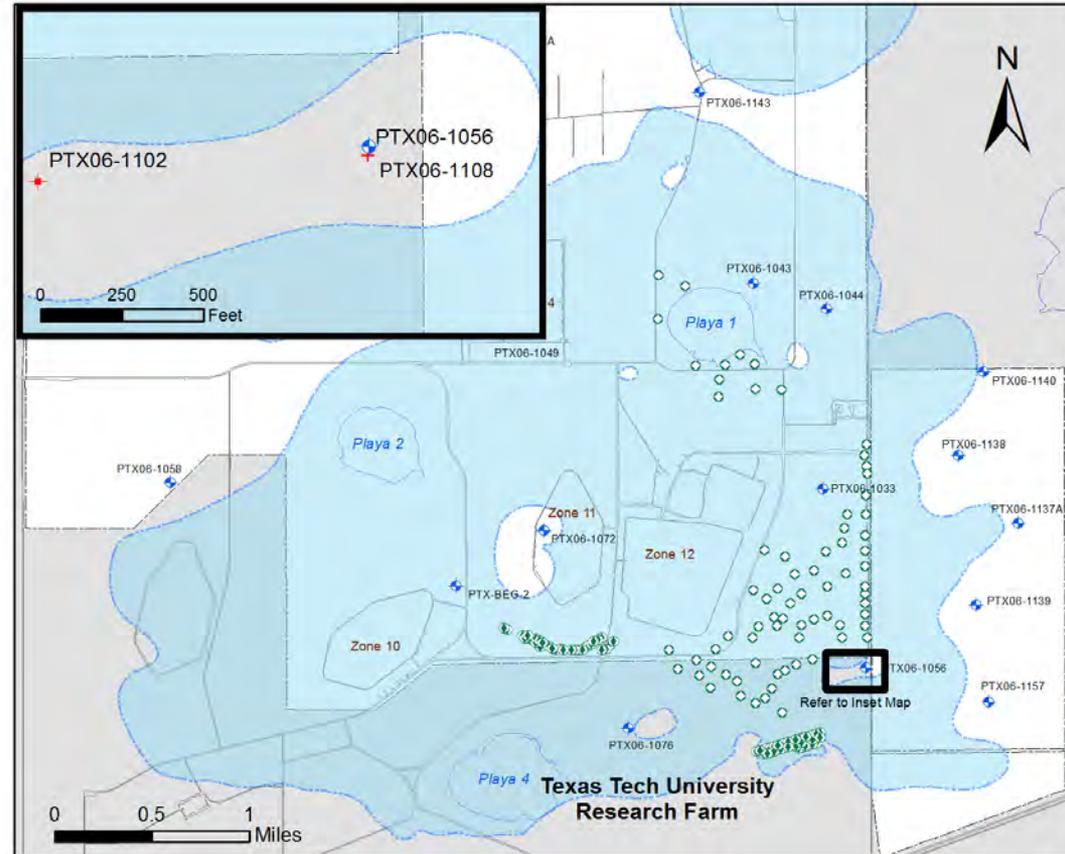
3rd Quarter 2015 – 2nd Quarter 2016

- Continued detects of boron slightly above background in a few wells
 - Likely result of variability in background
- Low-level detects of hexavalent chromium [Cr(VI)] continue in Ogallala monitoring wells
 - Levels were below GWPS (100 ppb)
 - Continue monitoring according to the Sampling and Analysis Plan and Contingency Plan to determine if concentrations persist or increase
 - Pantex evaluating Cr(VI) backgrounds
- Continued Detections of one HE, 4-amino-2,6-dinitrotoluene (DNT4A), and a VOC, 1,2-dichloroethane (DCA12), in Ogallala well PTX06-1056

Unexpected Conditions (cont'd)

Ogallala Well PTX06-1056 History of Detections and Actions

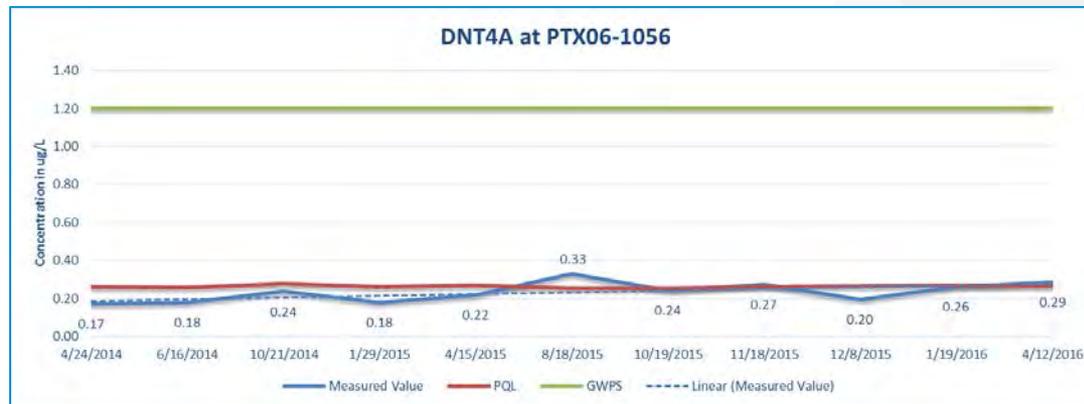
- 1st Detect of DNT4A April 2014, below the PQL & GWPS
- Conducted High Volume Purge August 2014— indicated localized impact
- Plugged nearby perched well PTX06-1108 November 2014 – well was drilled deep into FGZ
- 1st Detect of DCA12 August 2015



Unexpected Conditions (cont'd)

Ogallala Well PTX06-1056 FY 16 Results/Actions

- 4-amino-2,6-dinitrotoluene (DNT4A) continues to be detected at low concentrations
- Detections variable – slightly above/below PQL – all below cleanup levels
- 1,2-Dichloroethane (DCA12) continues to be detected below the PQL (1 ppb)
- Trends indicate a slight increasing trend for DNT4A and a decreasing trend for DCA12



4-amino-2,6-dinitrotoluene Concentration Trend

Unexpected Conditions (cont'd)

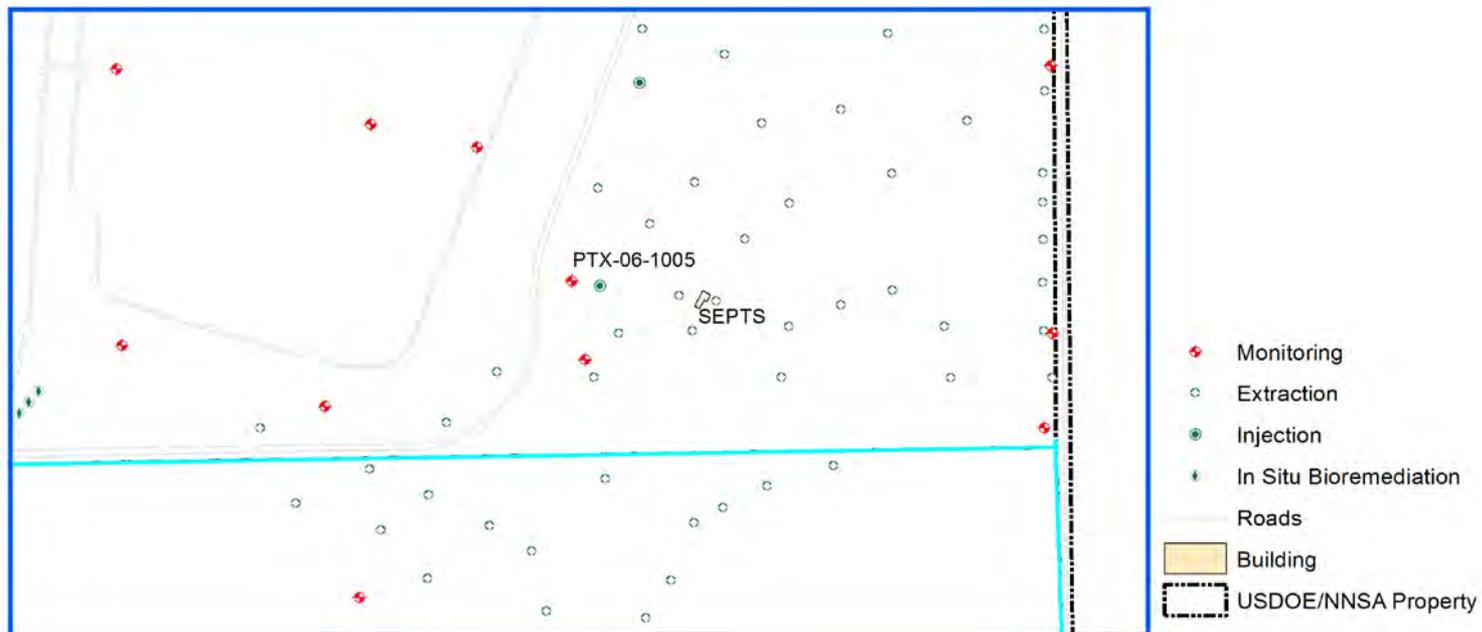
Ogallala Well PTX06-1056 FY 16 Actions

- 3rd Party Review Conclusions and Recommendations
 - Likely related to PTX06-1108 that was drilled deeply into the FGZ allowing contaminated water to short-circuit to the Ogallala – conclusion based on fate and transport modeling
 - No further investigation warranted unless concentrations increase above the cleanup standard
 - Continue monitoring as currently established
 - Consider further high-volume purge sampling if concentrations increase
- Cement Bond Log of PTX06-1056 Completed
 - Results indicate the concrete seal at the FGZ is competent

Unexpected Conditions (cont'd)

PTX06-1005 Unexpected Condition

- Detection of 1,4-dioxane at the cleanup level (7.7 ug/L)
- Resampled well to confirm results
- Well is on western edge of SEPTS extraction field
- 1,4-dioxane not treatable by current P&T methods
- Further monitoring of surrounding extraction wells will be added



Questions

Reports and slides can be found at:

<http://www.pantex.com/mission/Pages/Environmental-Cleanup-Documents.aspx>