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PANTEXAS DETERRENCE

Environmental Projects: Public Meeting

November 12, 2026

Martin Amos

Environmental Projects Department Manager

Presentation Highlights

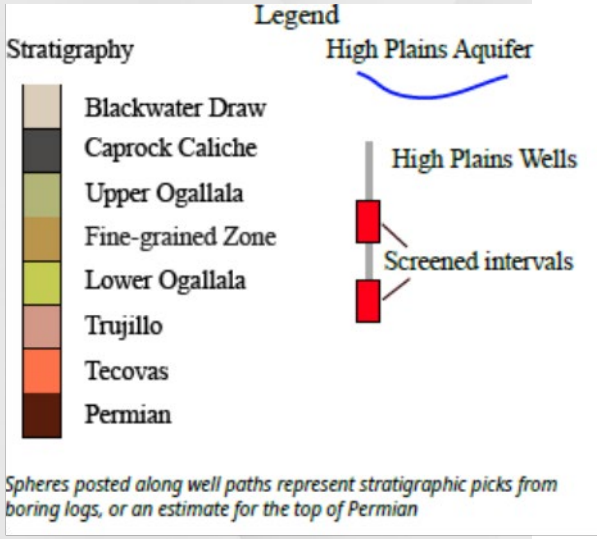
Pantex Overview

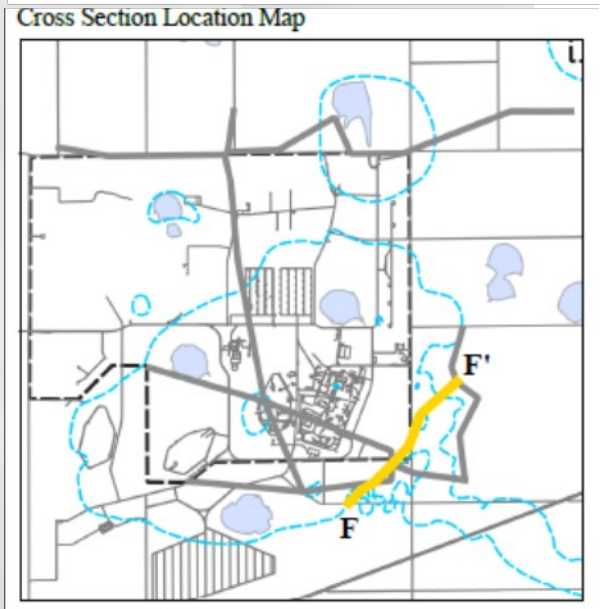
Remedial Action Status at Pantex

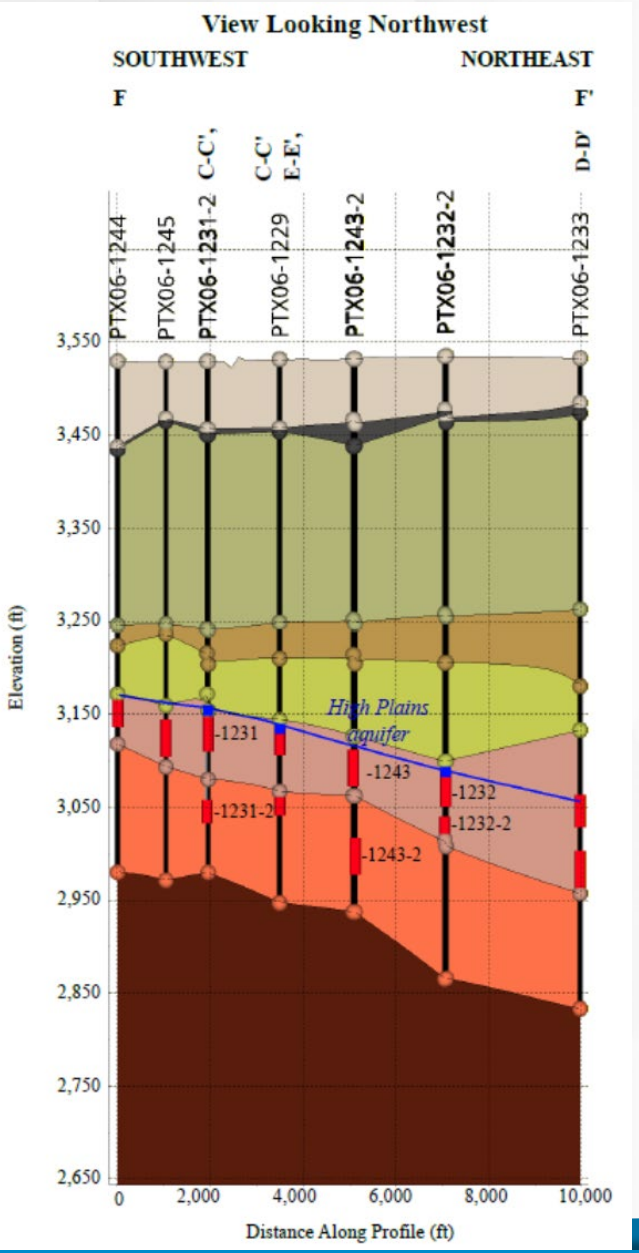
- High Plains Aquifer Terminology
- Cleanup Actions and Accomplishments for 2025
  - Current Status
  - Pump and Treat Systems
  - *In Situ* Bioremediation Systems
  - High Plains Aquifer Detection Monitoring
  - High Plains Aquifer Investigation/Early Action
- Emerging Contaminants – Per- and Polyfluoroalkyl Substances (PFAS)
- Five-Year Review (FYR)
  - 3rd FYR – Findings and Conclusions
- Land Transfer and Covenant Deferral Request

Switch from Ogallala to High Plains Aquifer Terminology

- High Plains Aquifer includes the groundwater in the Lower Ogallala and Dockum Formations
- Most waters in the current investigation occur beneath the Ogallala Formation, in the Dockum Group
- The Dockum Group includes the Trujillo and Tecovas Formations
- High Plains Aquifer terminology will be used in this presentation and in all future materials produced by Pantex



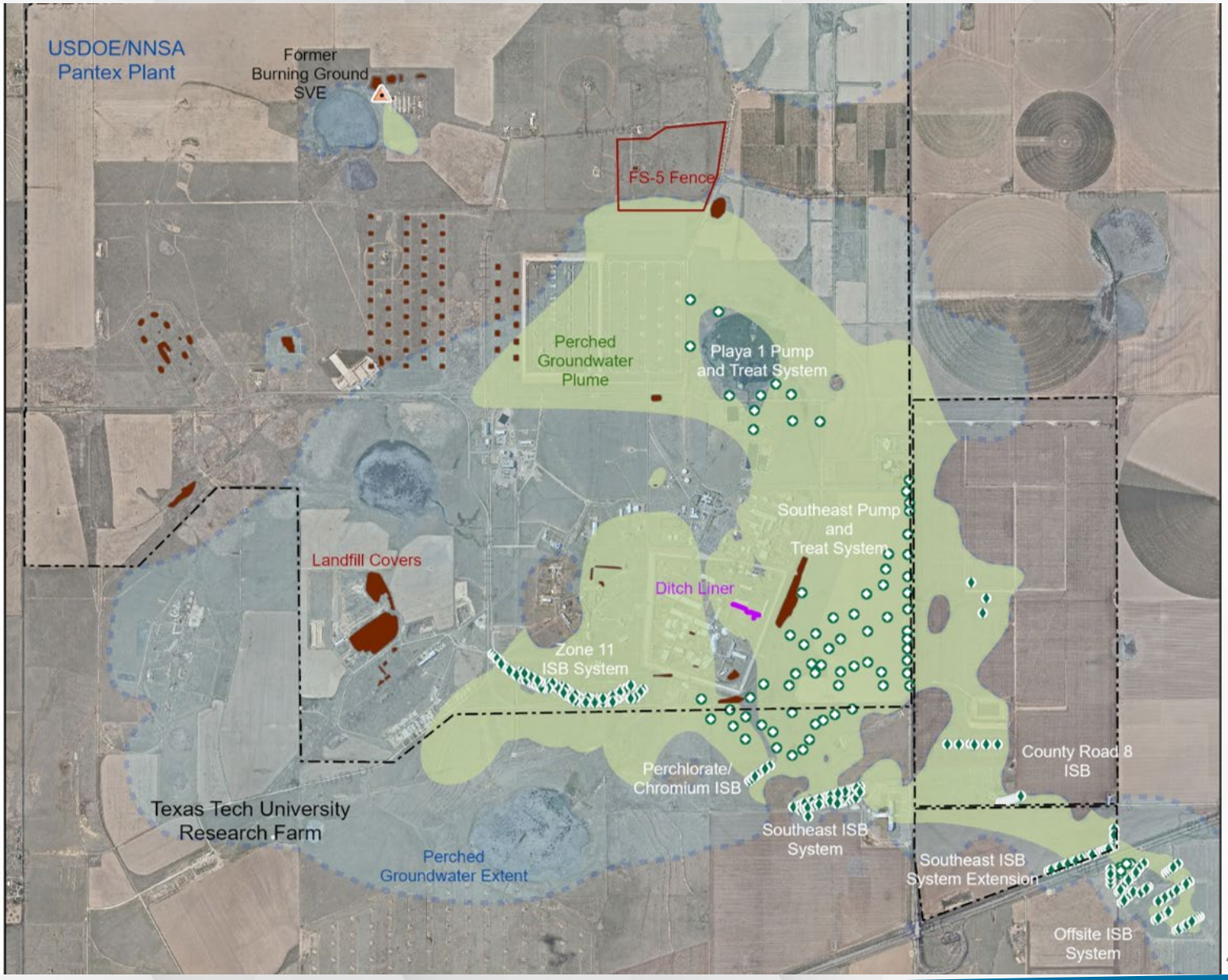




Current Cleanup Actions



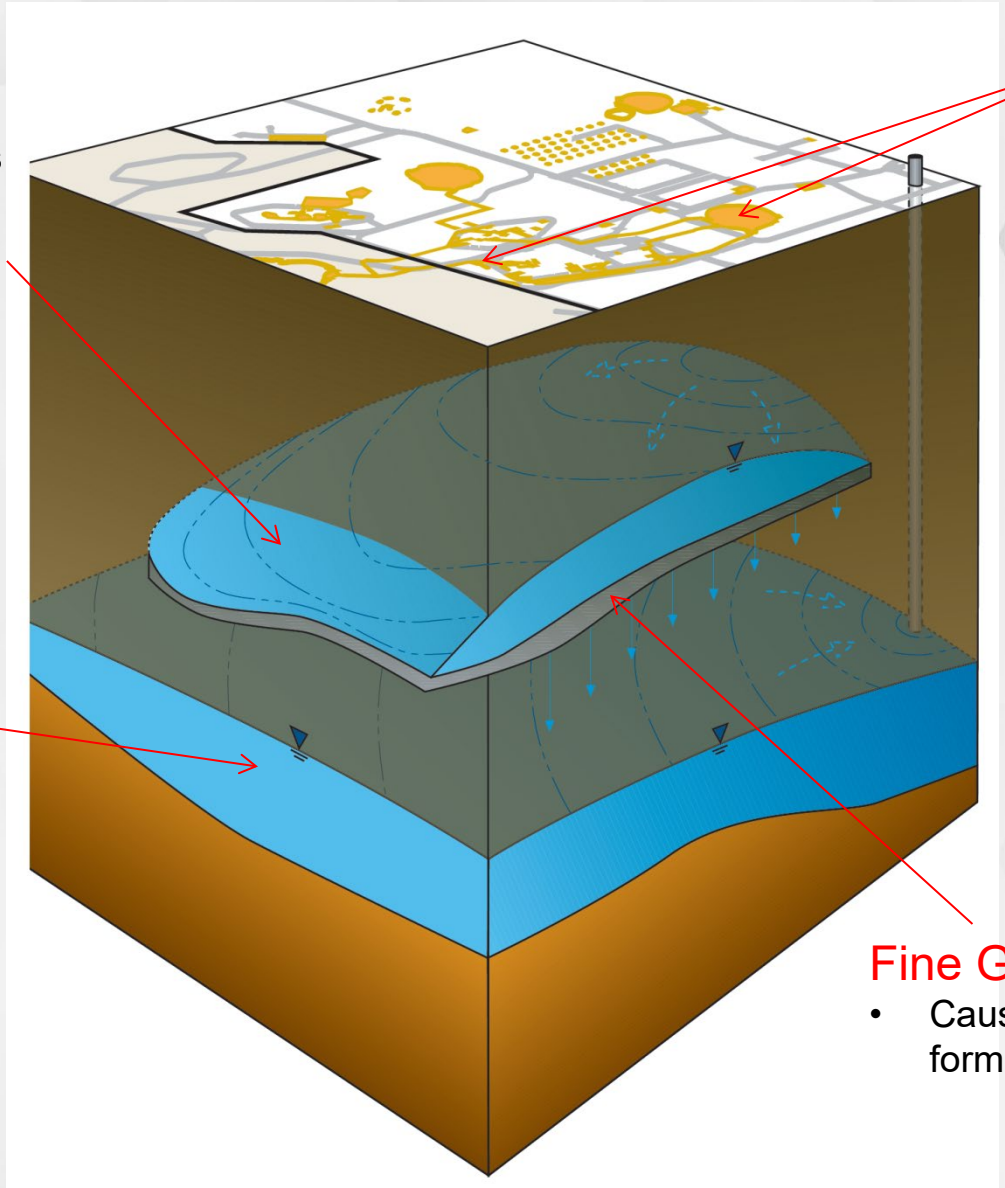
Pantex Plant Remedial Action Systems



Groundwater Flow at Pantex

Perched Aquifer

- Depth: 200-300 ft bgs
- Saturated thickness: <1 to 75 ft (avg 15 -20')



Playas/Ditches

- Past discharges of legacy wastes expanded our perched aquifer and contributed high explosives, solvents, perchlorate and chromium to perched groundwater

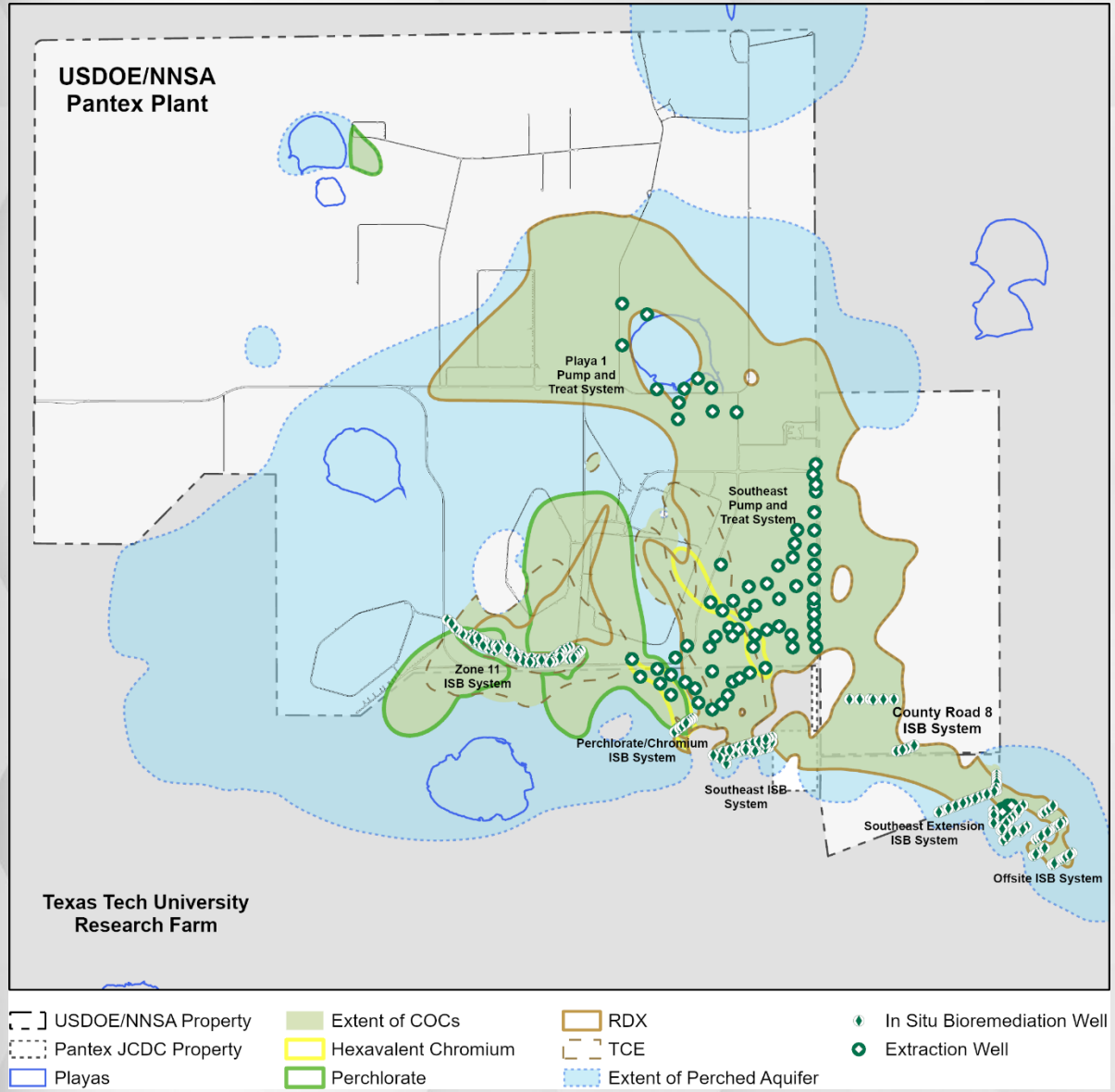
High Plains Aquifer

- Regional drinking water resource
- Depth: 400-500 ft bgs
- Saturated thickness: 100-400 ft
- Occurs 100-200 ft beneath perched aquifer

Fine Grained Zone (FGZ)

- Causes perched water to form

Groundwater Plumes at Pantex

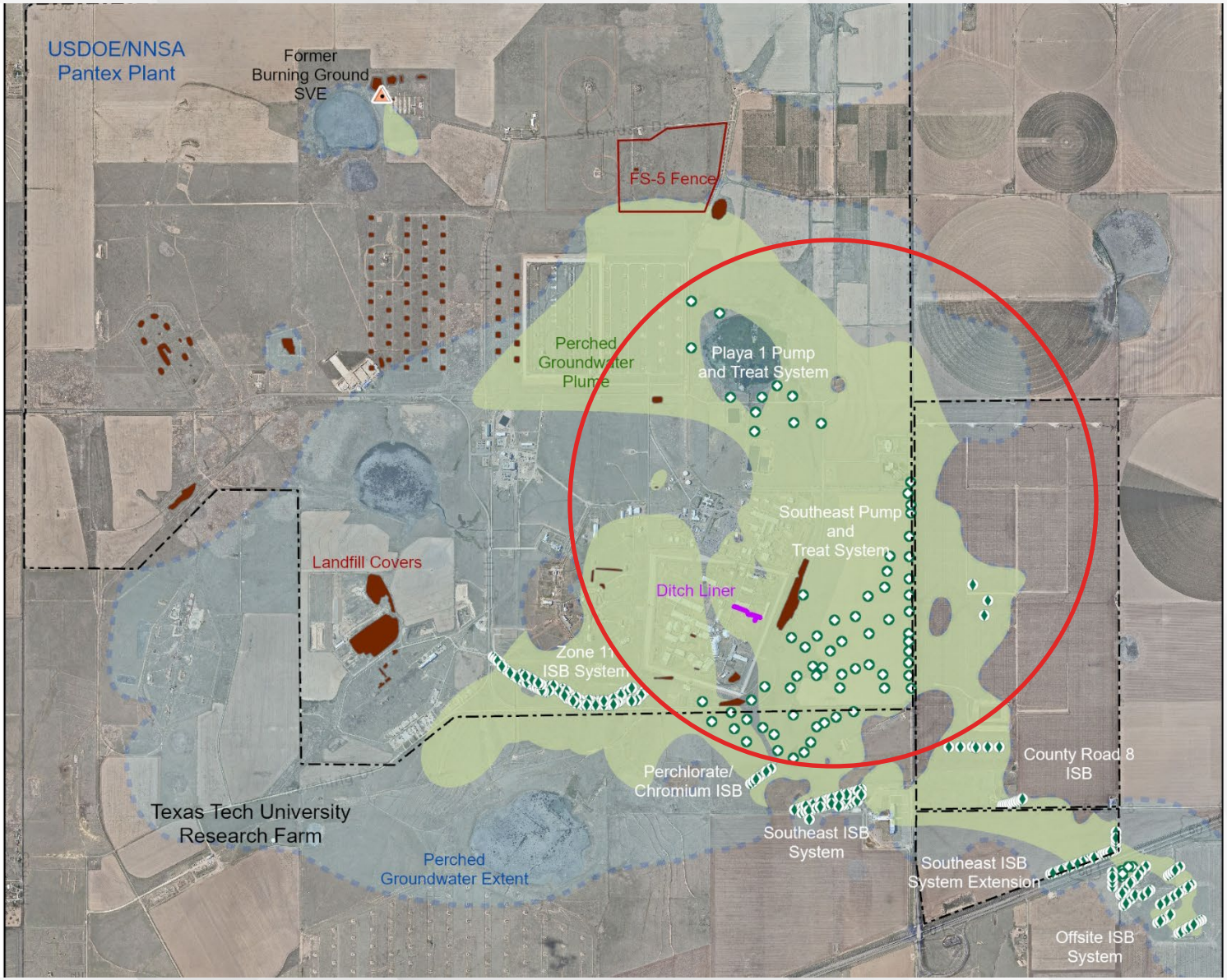


- Perched Groundwater Extent as of Dec 2025
- Main contaminants:
  - High explosives (RDX)
  - Metals (Cr^{6+})
  - Solvents (TCE)
  - Perchlorate
- Mainly contained within DOE controlled boundaries
  - One area of migration offsite requiring action

Pump and Treat Systems



Pantex Plant Remedial Action Systems



Pump and Treat Systems

- **2025 Accomplishments:**
  - 131.9 Mgal treated
  - Beneficially used 70% of treated water
  - 402 lbs of contaminants removed

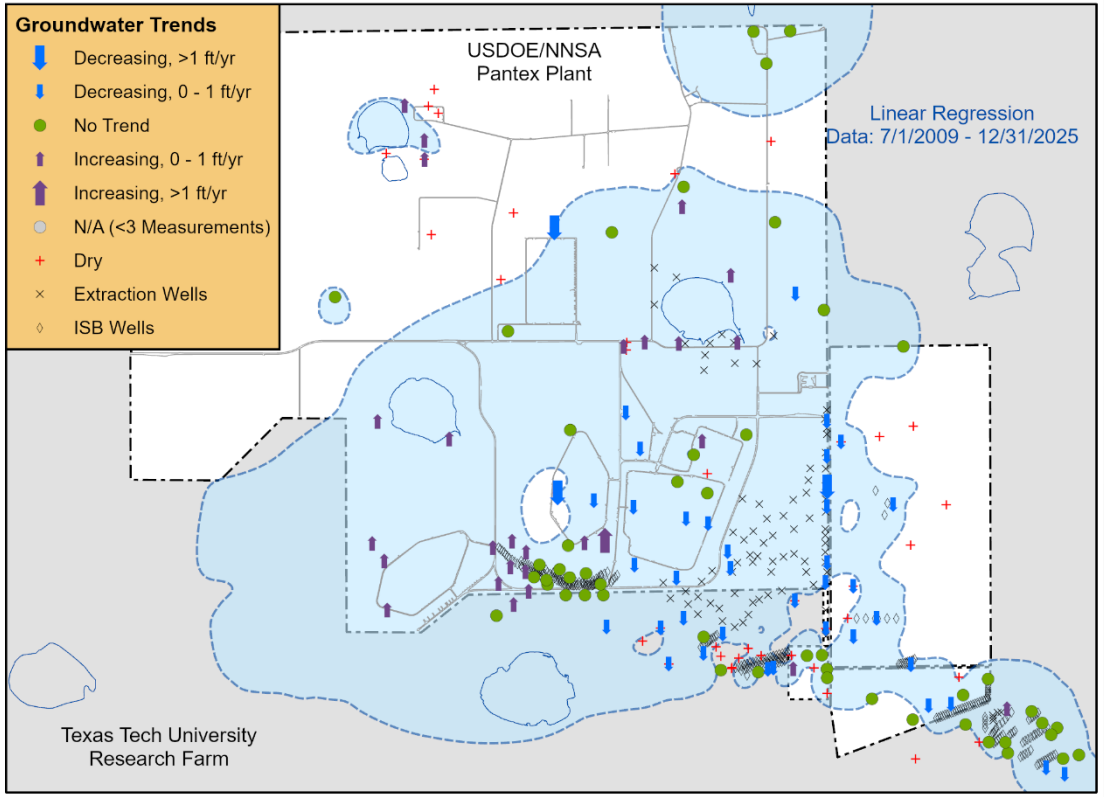
Challenges:

- Limited water outlet options due to the subsurface irrigation system and Playa 2 injection wellfield needing repairs through 2025/2026:
  - Resolution: Utilize the Pivot Irrigation system, repaired Playa 2 Injection Wellfield Oct. 2026; working through subsurface irrigation system repairs
- Aging control systems at SEPTS and P1PTS
  - Resolution: Ongoing construction to replace SCADA systems at pump and treat systems according to a phased design

Accomplishments

Since startup:

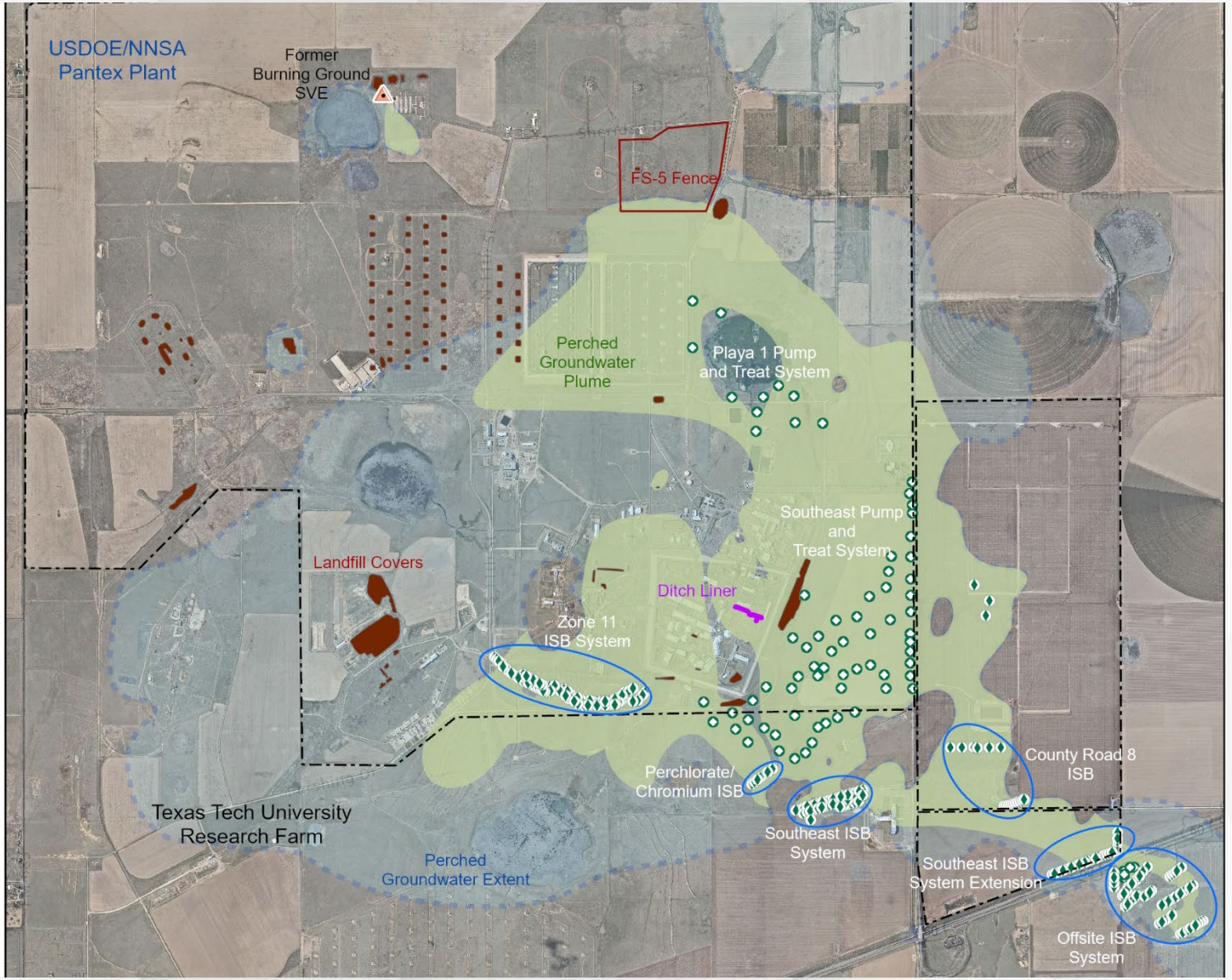
- 3.6 billion gallons treated
- 1.9 billion gallons beneficially used
- 17,996 lbs of contaminants removed



In Situ Bioremediation Systems



Pantex Plant Remedial Action Systems



Active In Situ Bioremediation (ISB) Systems

(1) PCR ISB:

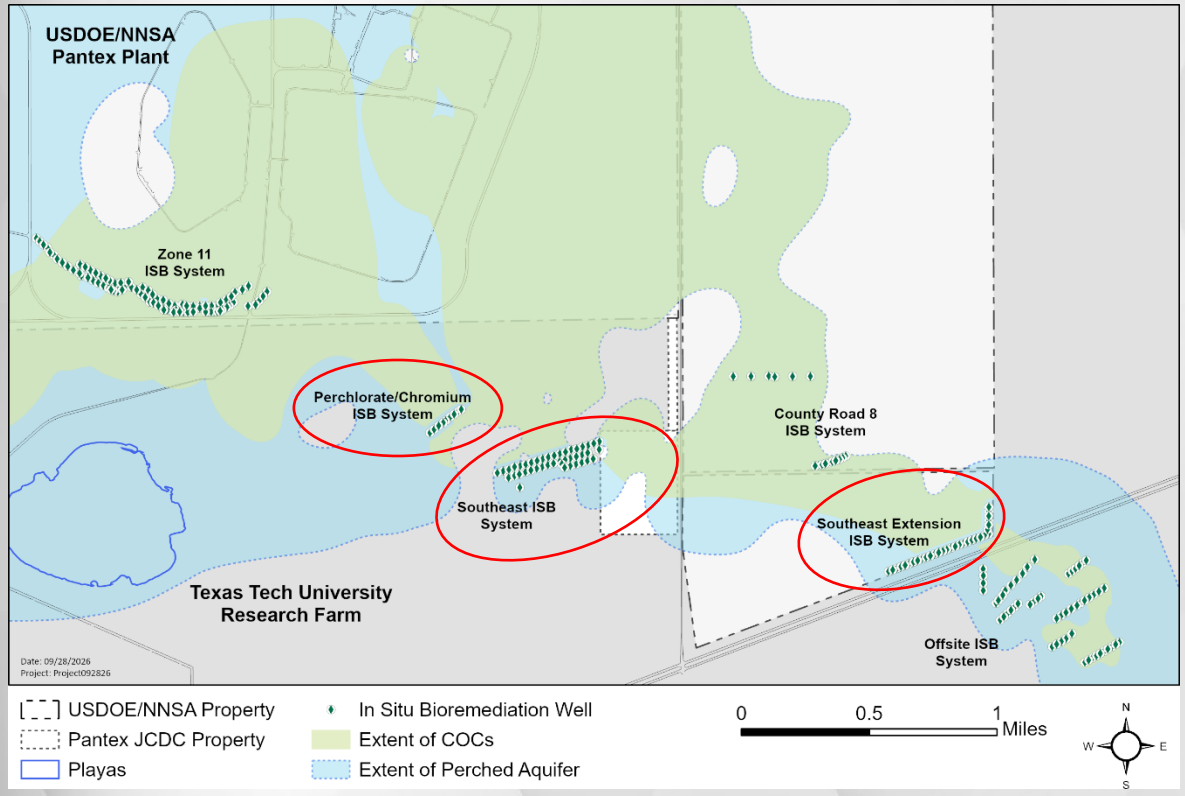
- Installed to treat the perchlorate and hexavalent chromium plumes that are moving towards the southeast

(2) Southeast ISB:

- High explosives reduced below groundwater protection standards (GWPS) at most wells
- Hexavalent chromium reduced in all wells

(3) Southeast Extension ISB:

- Continued reduction of HE expected in 2026 - indication of treatment continues in Offsite Treatment System wells throughout the system



2025 Accomplishments:

- PCR ISB
  - Completed second injection event in 2025
- Southeast ISB
  - Completed an injection event in 2025
  - Injected newly converted ISB well, PTX06-ISB171
- Southeast Extension ISB
  - Completed one injection event in 2025

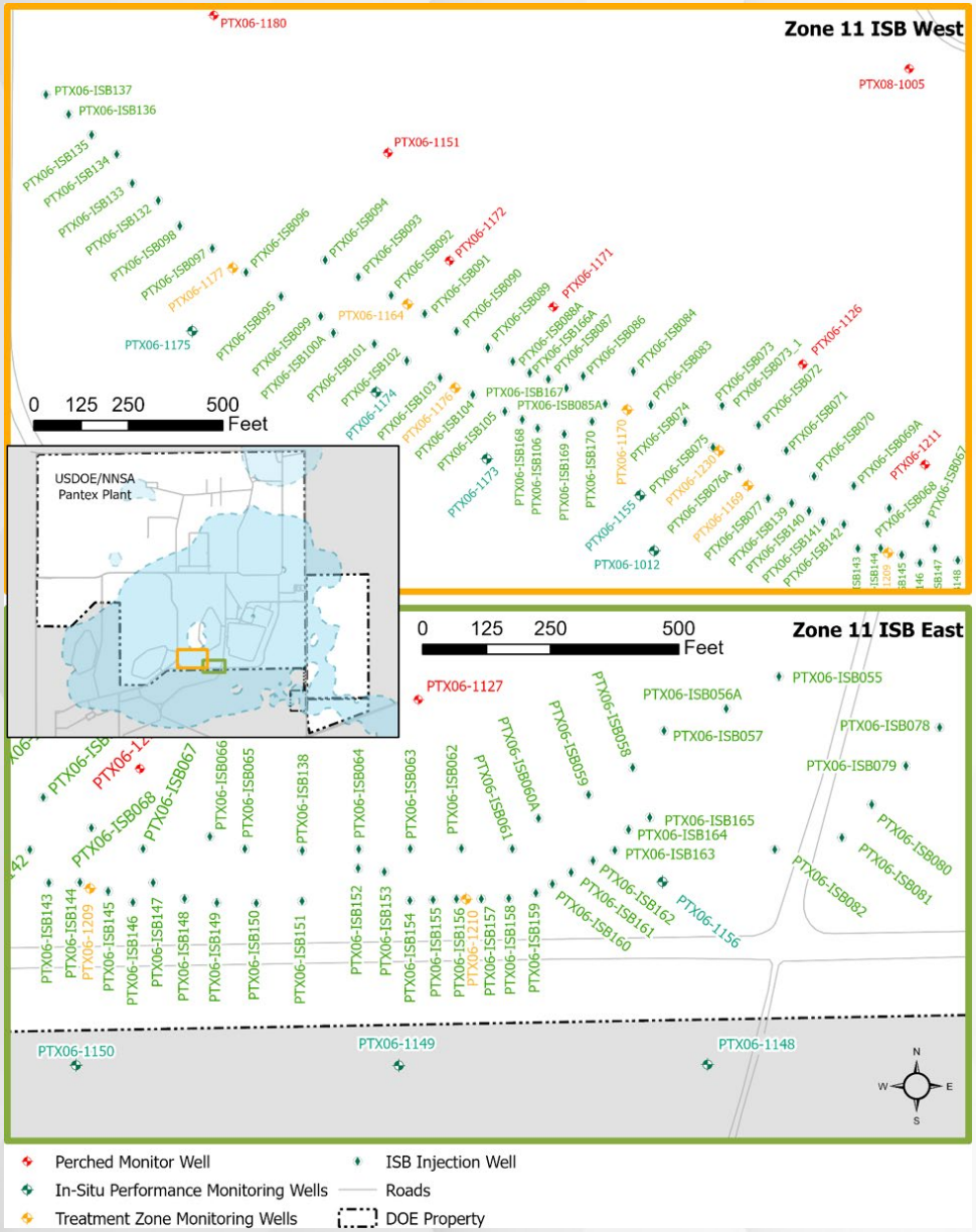
Active In Situ Bioremediation (ISB) Systems

(4) Zone 11 ISB:

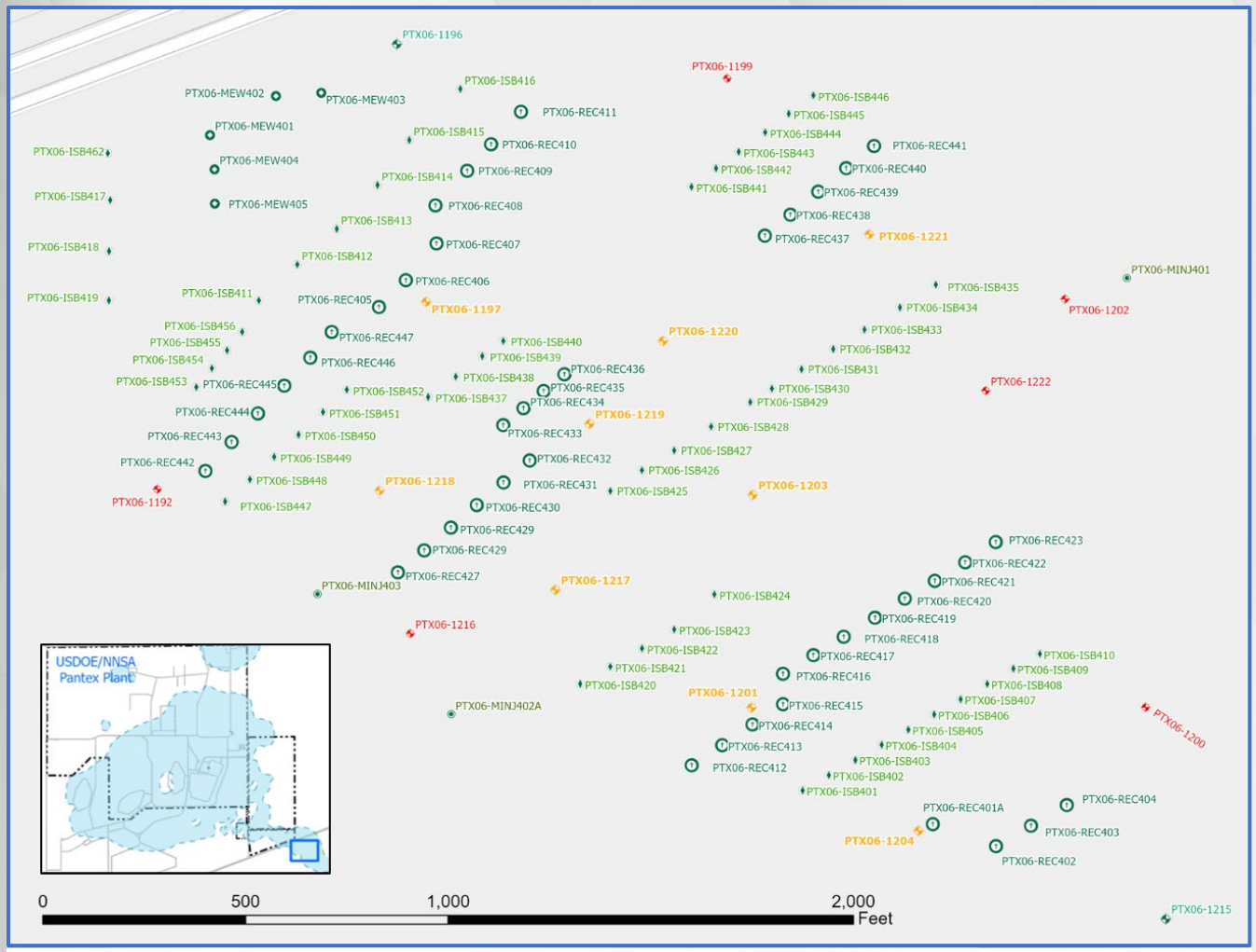
- Perchlorate and TCE reduced near or below groundwater protection standards (GWPS) at most wells

2025 Accomplishments:

- Zone 11 ISB
  - Completed one injection event on both sides of system (east and west)
  - Two new injection wells (PTX06-ISB164 and PTX06-ISB165) were installed in 2024
    - Injected in both 2024 and 2025 to extend the treatment zone further northeast to control the movement of the TCE plume in that area



Active In Situ Bioremediation (ISB) Systems



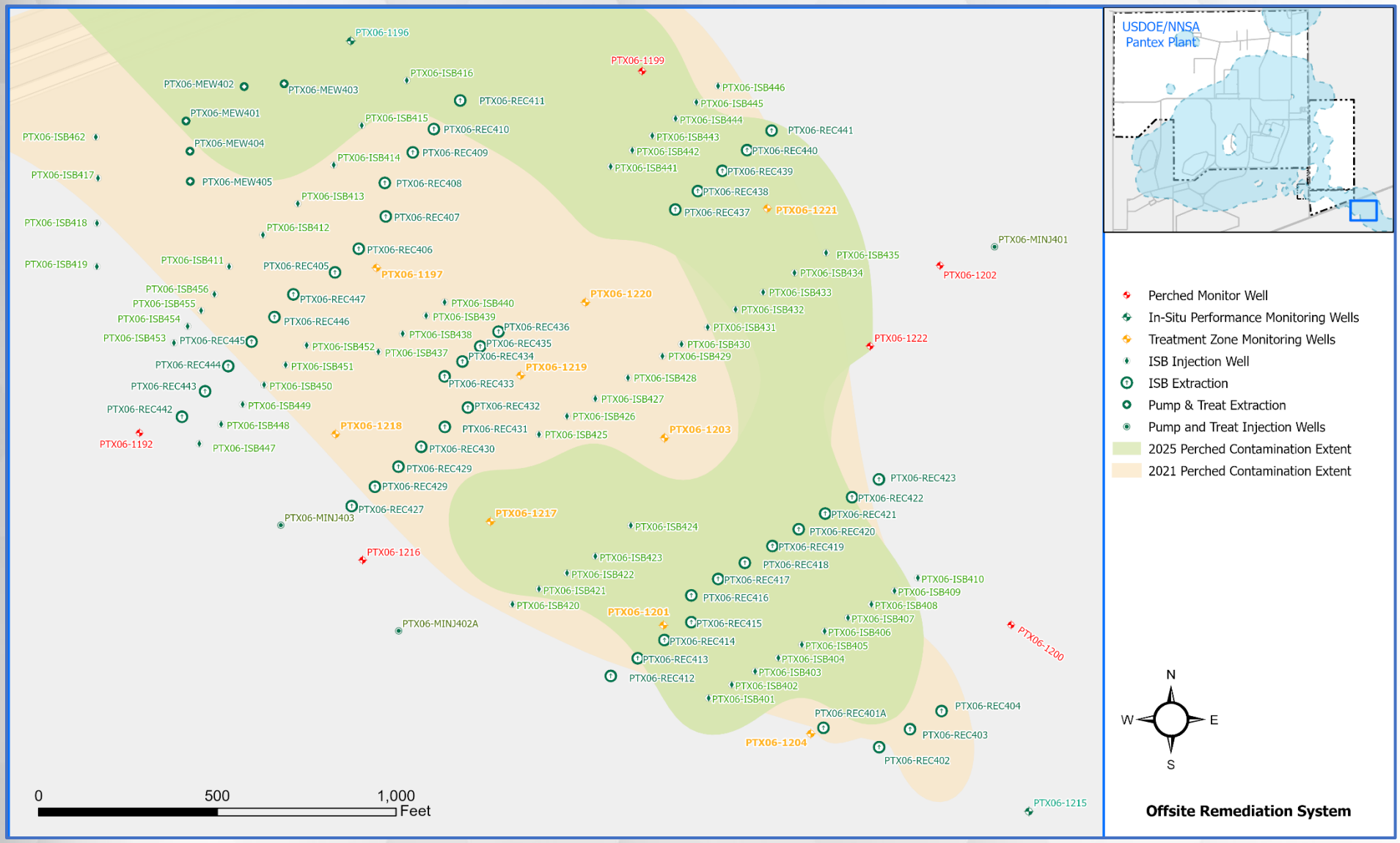
(5) Offsite ISB System

- Installed to treat the HE plume moving offsite, southeast of Highway 60

2025 Accomplishments

- Injection and well rehabilitation occurred twice in 2025
- Injected 49 wells the first round and 26 wells the second round
- Downgradient wells indicate that there are no COCs above GWPS
- System is controlling the growth of the plume
- Plume area is being treated effectively

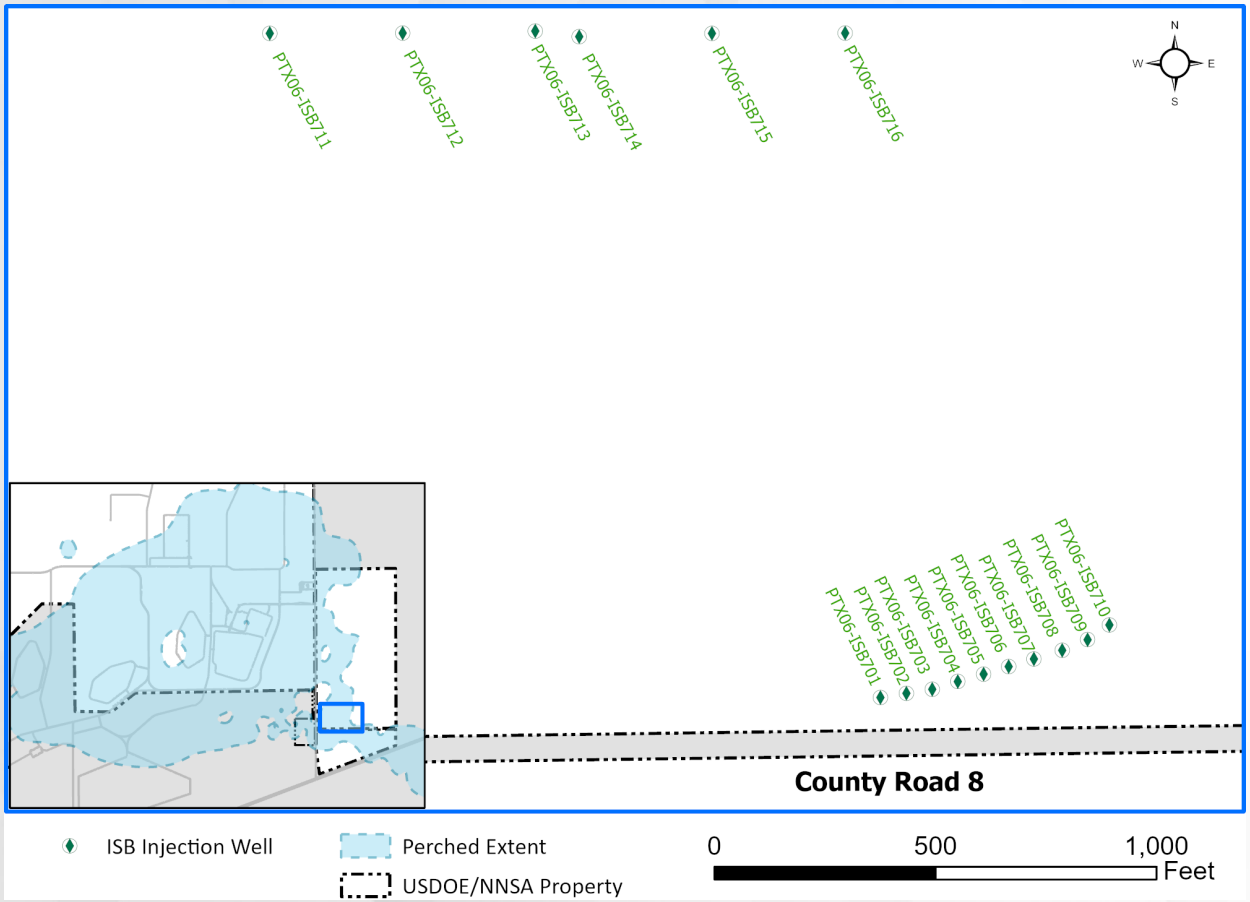
Offsite Remediation System Progress



Active In Situ Bioremediation (ISB) Systems

(6) County Road 8 ISB:

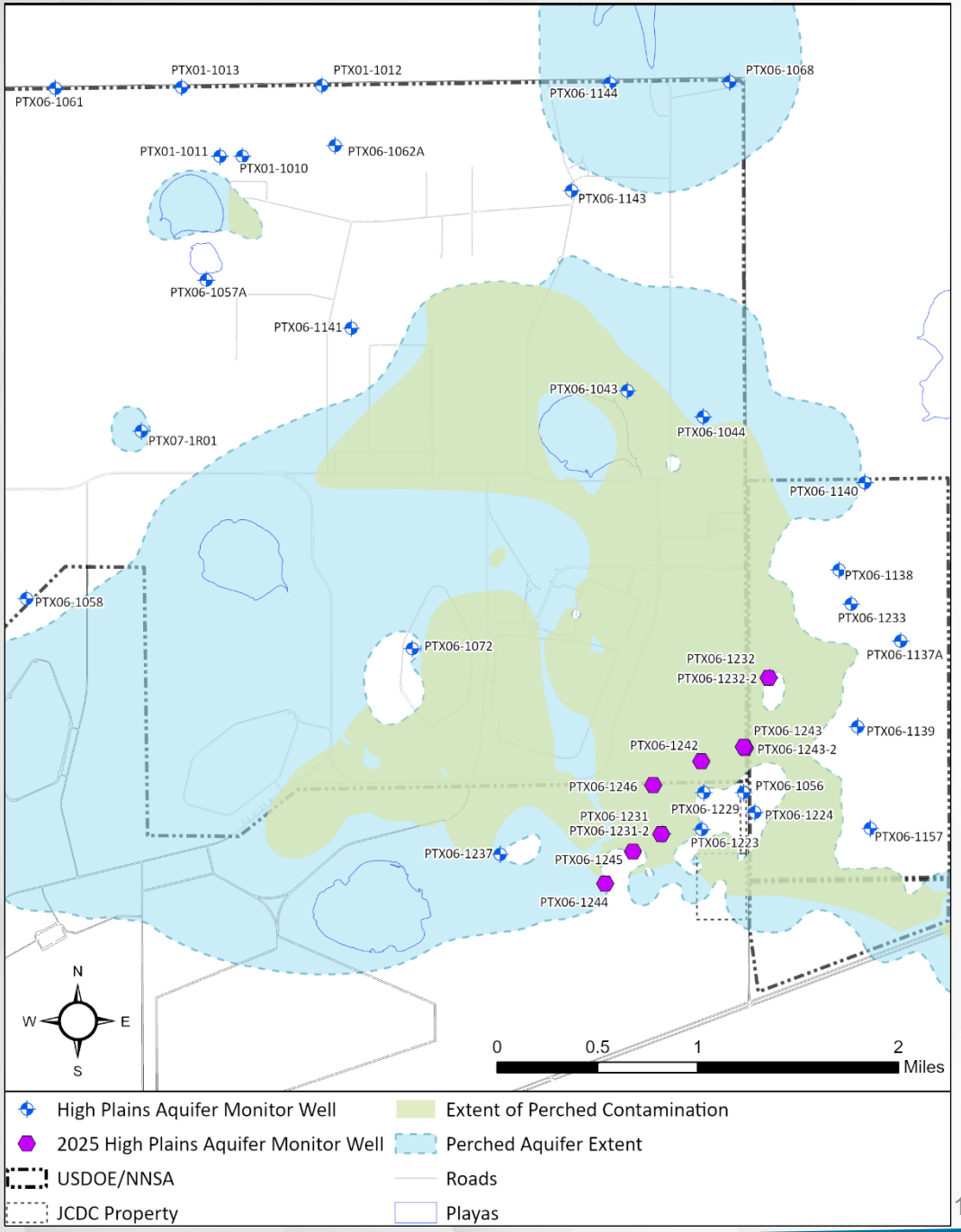
- Installed to address the heart of the HE plume east of FM 2373
  - Wells were installed in 2024
  - Supporting infrastructure was installed in 2025
- First injection event completed October 2026
- Two TZM wells will be drilled in the future, as funds allow



High Plains Aquifer Detection Monitoring

37 Wells Monitored in 2025:

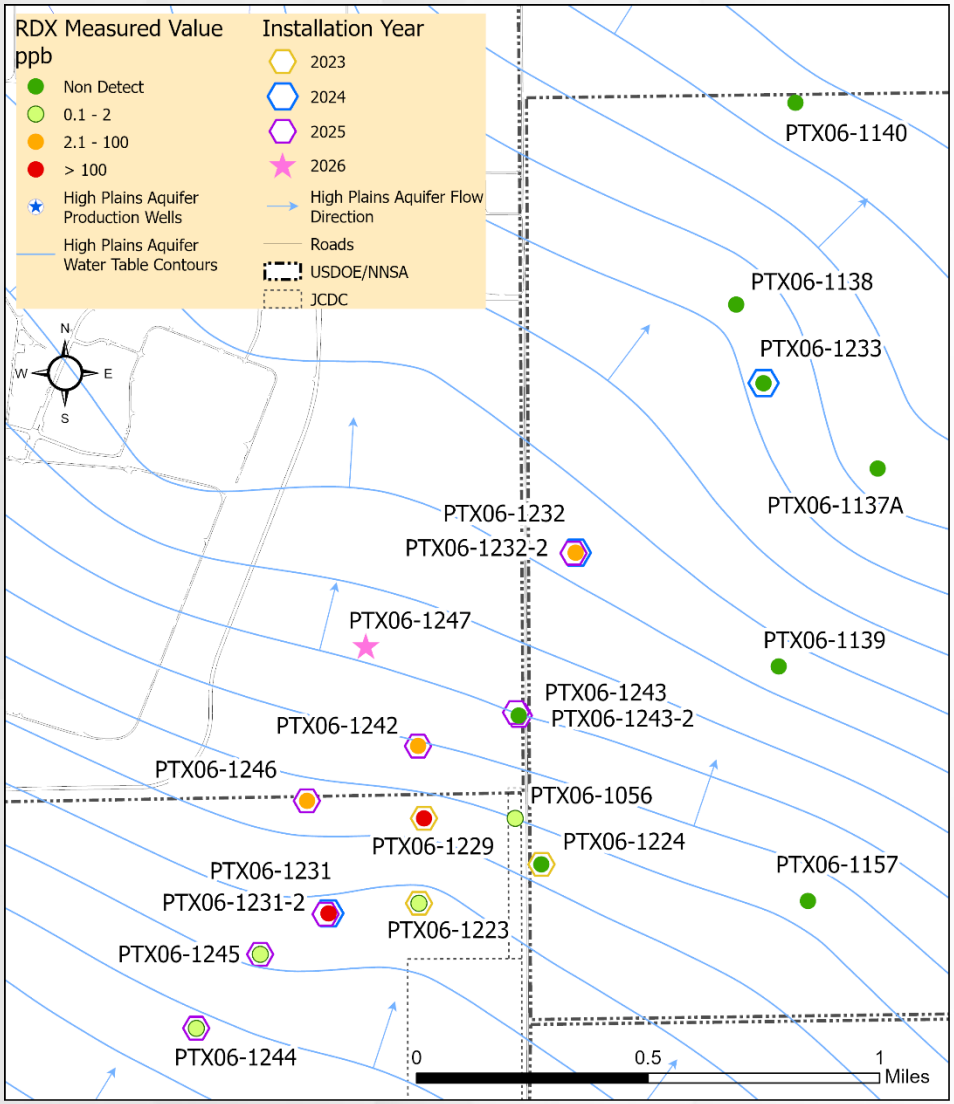
- 29 existing wells
- 8 High Plains Aquifer monitor wells drilled in 2025 (purple hexagons)
  - Help to further investigate vertical & horizontal extent of high explosives in the High Plains Aquifer
  - A preliminary round of sampling for these wells occurred early 2026 to gather information to guide the planned early actions
  - Full sampling also occurred in 2026



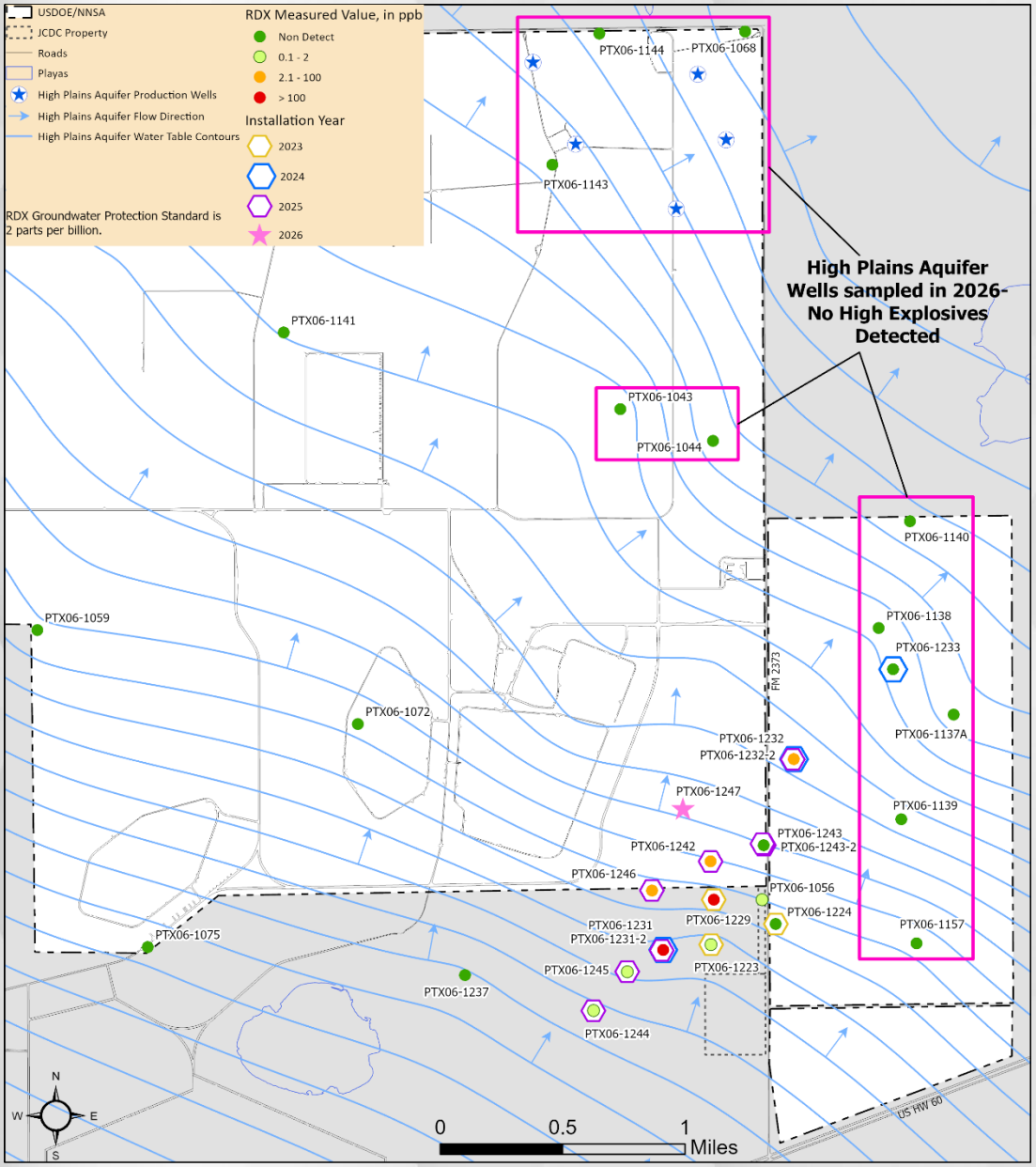
2025/2026 High Plains Aquifer Monitoring Results

Summary of 2026 HE Detections above GWPS at Newly Drilled High Plains Aquifer Wells			
Well ID	Analyte	Measured Value (µg/L)	GWPS (µg/L)
PTX06-1231-2	RDX	9.22	2
PTX06-1232-2	No detections near or above GWPS		
PTX06-1242	RDX	74.1	2
	DNT4A	4.47	1.2
PTX06-1243	No detections near or above GWPS		
PTX06-1243-2	No detections near or above GWPS		
PTX06-1244	No detections near or above GWPS		
PTX06-1245	No detections near or above GWPS		
PTX06-1246	RDX	63.5	2
	DNT4A	2.51	1.2

*GWPS for RDX = 2 ppb or µg/L



High Plains Aquifer Detection Monitoring



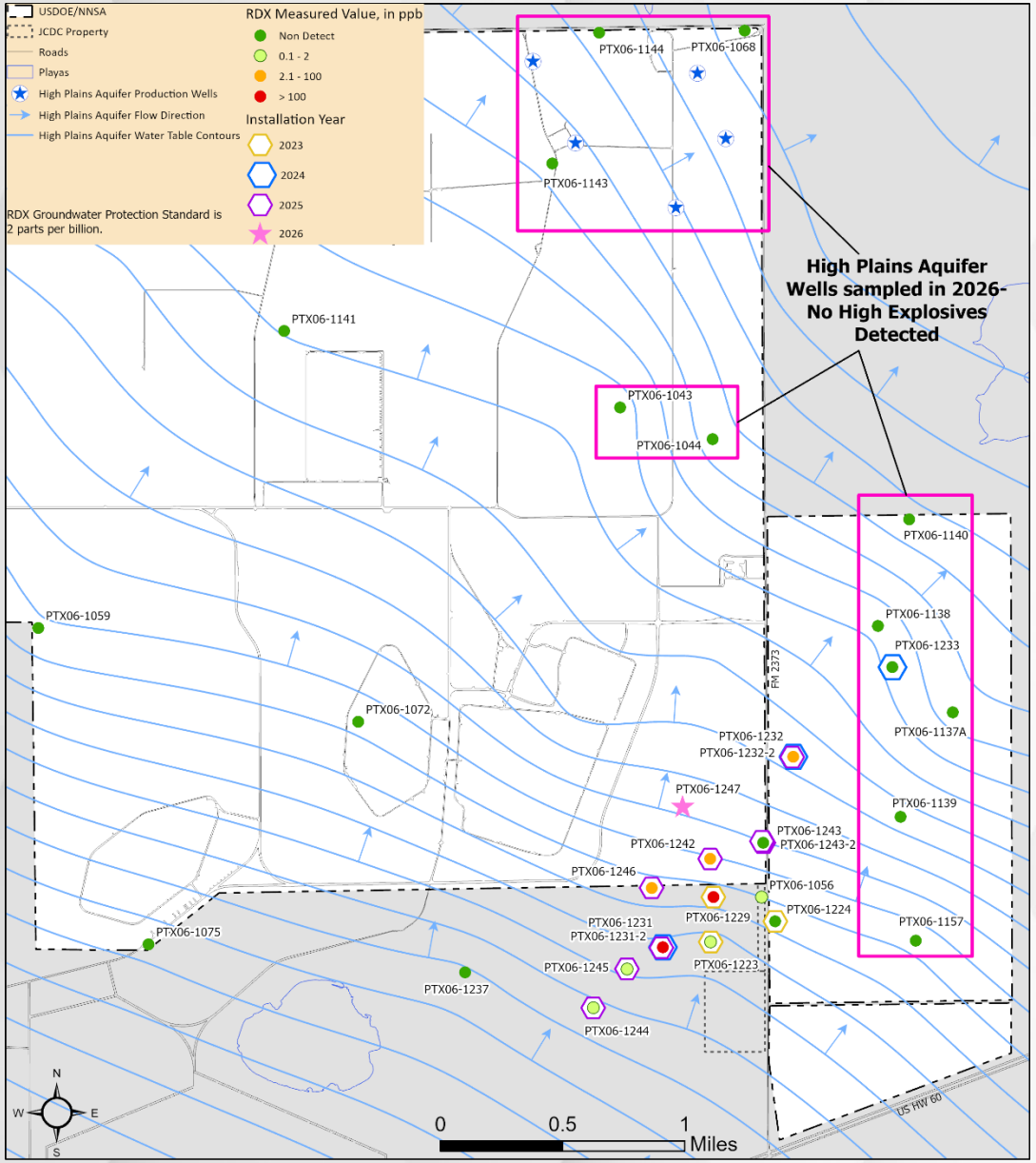
Evaluation of Nearby Wells:

- **There is no imminent threat to existing drinking, irrigation or livestock water wells in the High Plains Aquifer from these detections**
  - 2026 results from HPA monitoring wells to the north and east indicate no detections of high explosives
  - Monitor wells near the Pantex water supply wells indicate no detections of high explosives

High Plains Aquifer Investigation

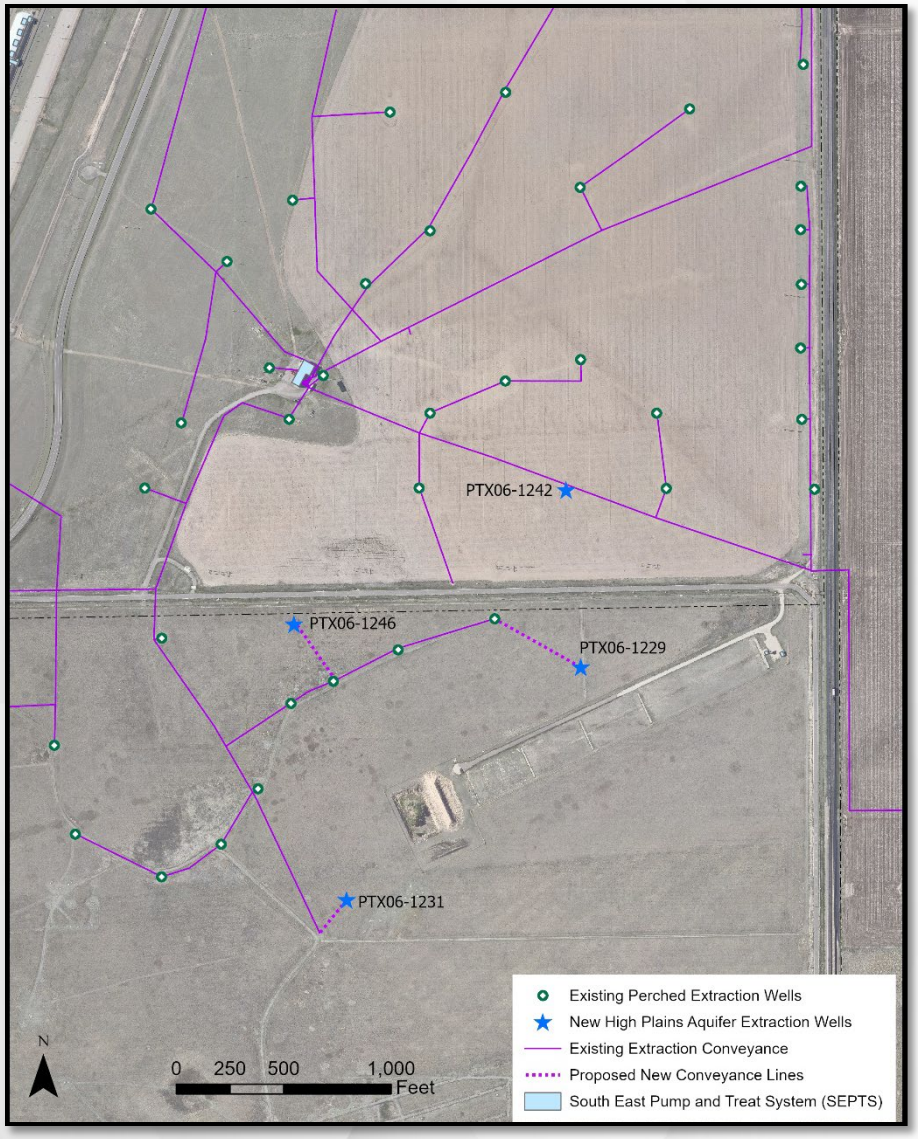
Pantex contracted for the development of a High Plains Aquifer Investigation workplan:

- This workplan is complete and Pantex is currently resolving comments from the TCEQ and EPA
- An Investigation Report is planned for submittal by April 2028
- One new High Plains Aquifer well (PTX06-1247, pink star on map) was installed in October 2026 to define the high explosive plume to the north of the investigation area
  - Sampling results will be available in early 2027



High Plains Aquifer Early Action

- As an early action, Pantex intends to connect wells PTX06-1229, PTX06-1231, PTX06-1242, and PTX06-1246 into the SEPTS
  - Action will stabilize plume movement from areas of higher concentration
- Pantex has prepared an Engineering Evaluation/Cost Analysis for this action
  - This document will be provided for public comment in late November 2026
  - Public comment period will be announced in the Amarillo Globe Newspaper and Panhandle Herald
  - Once public input is considered and coordination with TCEQ and EPA is complete, Pantex plans to design the early action in 2027 and begin work to install the early action in 2028



Per- and polyfluoroalkyl Substances (PFAS)

PFAS is an emerging contaminant

- **Common uses of PFAS include firefighting foams, non-stick cookware, waterproof gear and clothing, and grease-resistant packaging for fast food**
- **Known as forever chemicals, regulatory agencies are concerned with health issues and are in the process of developing regulations**
- **Department of Energy (DOE) has developed a roadmap to address PFAS across the complex**
- **TCEQ and EPA have respectively released protection levels for PFAS**
  - *TCEQ - Texas Risk Reduction Protective Concentration Levels (PCLs)*
  - *EPA - drinking water Maximum Contaminant Levels (MCLs)*

Following guidance from the DOE PFAS Strategic Roadmap: DOE Commitments to Action 2022 – 2025

Per- and polyfluoroalkyl Substances (PFAS)

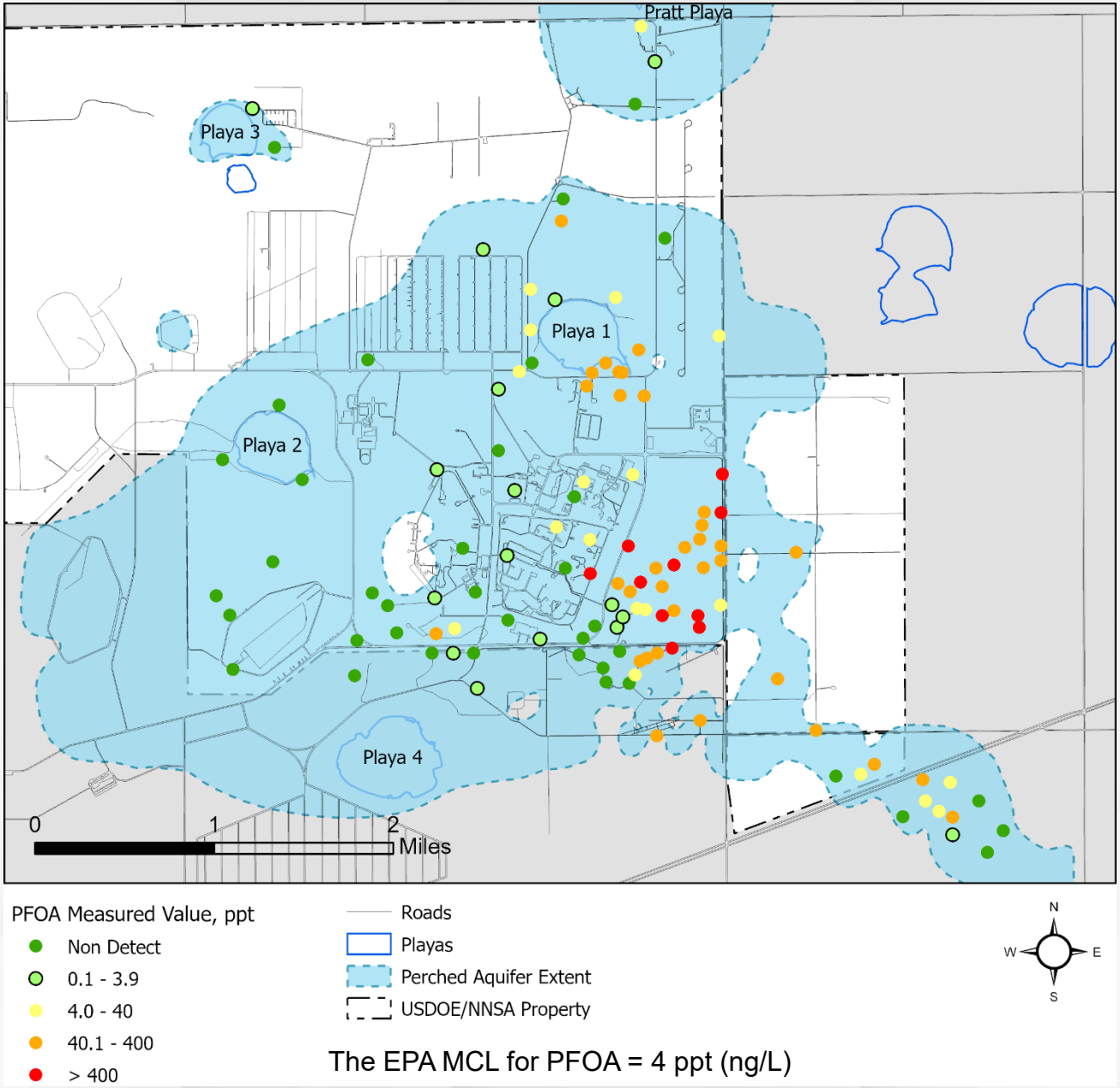
Pantex began preliminary investigation on the presence of PFAS in the perched groundwater:

- Have detected PFAS in extraction well fields for both pump and treat systems; both systems treat PFAS to below PCLs and MCLs
- Completed sampling for PFAS across perched groundwater monitoring network in 2025
- Pantex has completed a workplan for the investigation of the nature and extent of PFAS in soils and the perched aquifer
  - Workplan will be implemented as funding allows

Pantex is investigating PFAS in the High Plains Aquifer to support evaluation of cleanup alternatives:

- Based on data collected in perched groundwater and our understanding of movement of perched groundwater to the High Plains Aquifer, we have added PFAS to the High Plains Aquifer investigation
- Data are being collected in 2026 and 2027 for the investigation

PFOA in the Perched Aquifer:



The EPA MCL for PFOA = 4 ppt (ng/L)

3rd Five-Year Review

- **The most recent FYR final report was submitted to TCEQ and EPA in September 2023**
  - EPA and TCEQ concurred with the report in September 2023
  - Identified actions to take before the next Five-Year Review
- **3rd Five Year Review Action Tracking:**
  - Issues and Recommendations to Optimize Remedies:
    - Two issues for soil remedies
    - Six issues for groundwater remedies
    - One recommendation for soil remedies
    - Four recommendations for groundwater remedies
    - One recommendation for the LTM Network
- **Overall Conclusion**

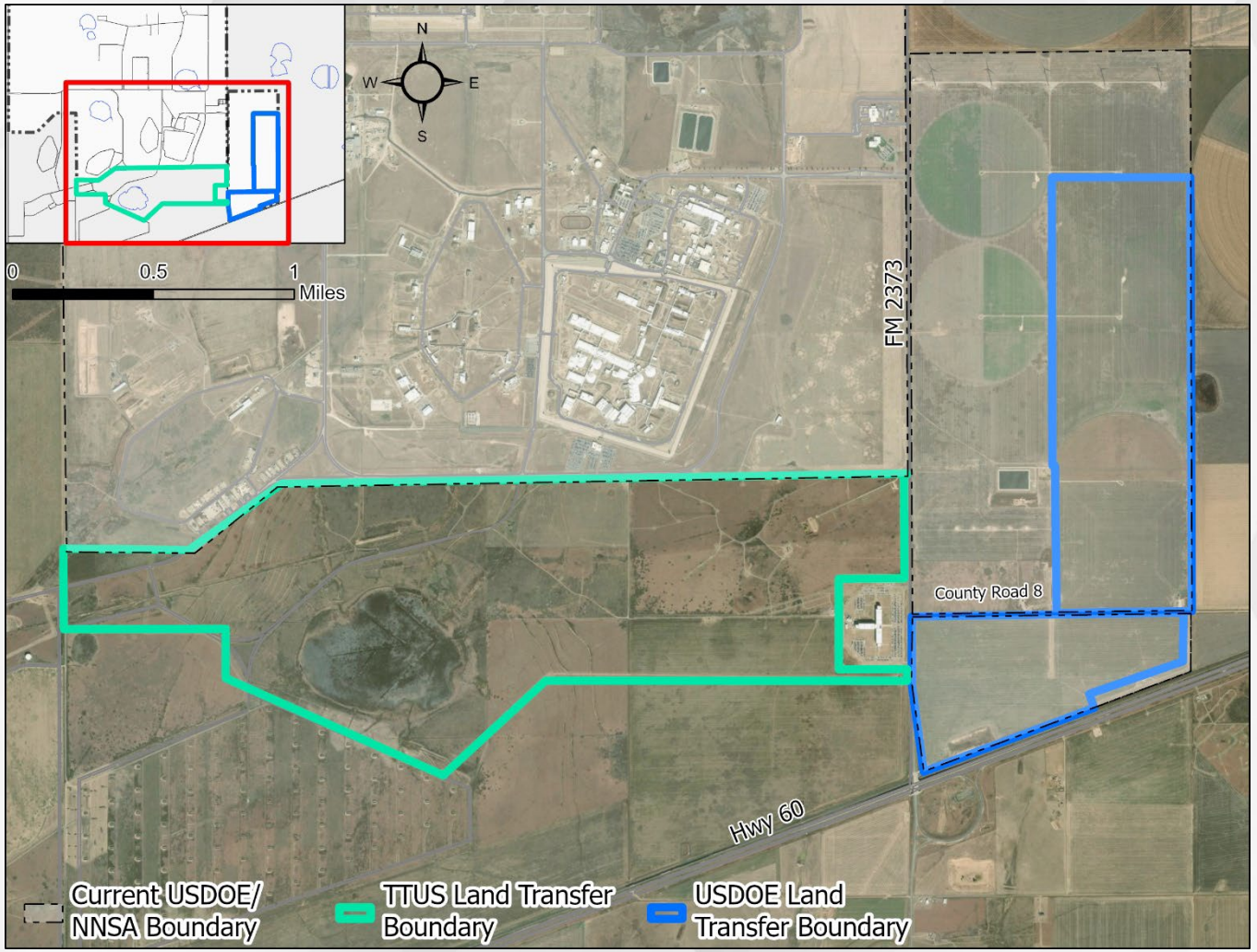
  The remedial actions are protective in the short-term; continued operation of Pump and Treat Systems and In Situ Bioremediation Systems are needed to achieve long-term protectiveness

*Pantex is currently sampling wells in preparation for the 4th Five-Year Review

3rd Five-Year Review

- **2025 Completed Actions from the 3rd Five-Year Review**
  - Addressed minor deficiencies in protective soil covers by preparing and implementing a work plan to fill holes on soil cover surfaces and investigate erosion around a culvert at landfill 5 (SWMU 56)
  - Pantex requested removal of PTX06-1153 as a point of compliance well in the application to renew HW-50284 so that the well can be injected
    - This well was converted to PTX06-ISB171 and was injected in 2025
    - This action will address the incomplete treatment of contaminants (HEs and Cr(VI)) downgradient of the west end of the Southeast ISB (at PTX06-1153)
  - Pantex incorporated 1,4-dioxane into the updated Pantex Plant Ogallala Aquifer and Perched Groundwater Contingency Plan (March 2025), with steps to take if concentrations increase at specific wells
  - Pantex evaluated pH monitoring at the ISB systems and concluded that excursions to low pH are rare to nonexistent and there is no need to add an alkaline amendment to increase pH at the ISB systems
  - Pantex has continued the preliminary High Plains Aquifer high explosive plume investigation and has completed the preparation of an investigation workplan
  - Pantex prepared a workplan to complete a PFAS site investigation (May 2026)

Land Transfer and Expected Changes



Pantex to Acquire Property from Texas Tech University System (TTUS) (green area)

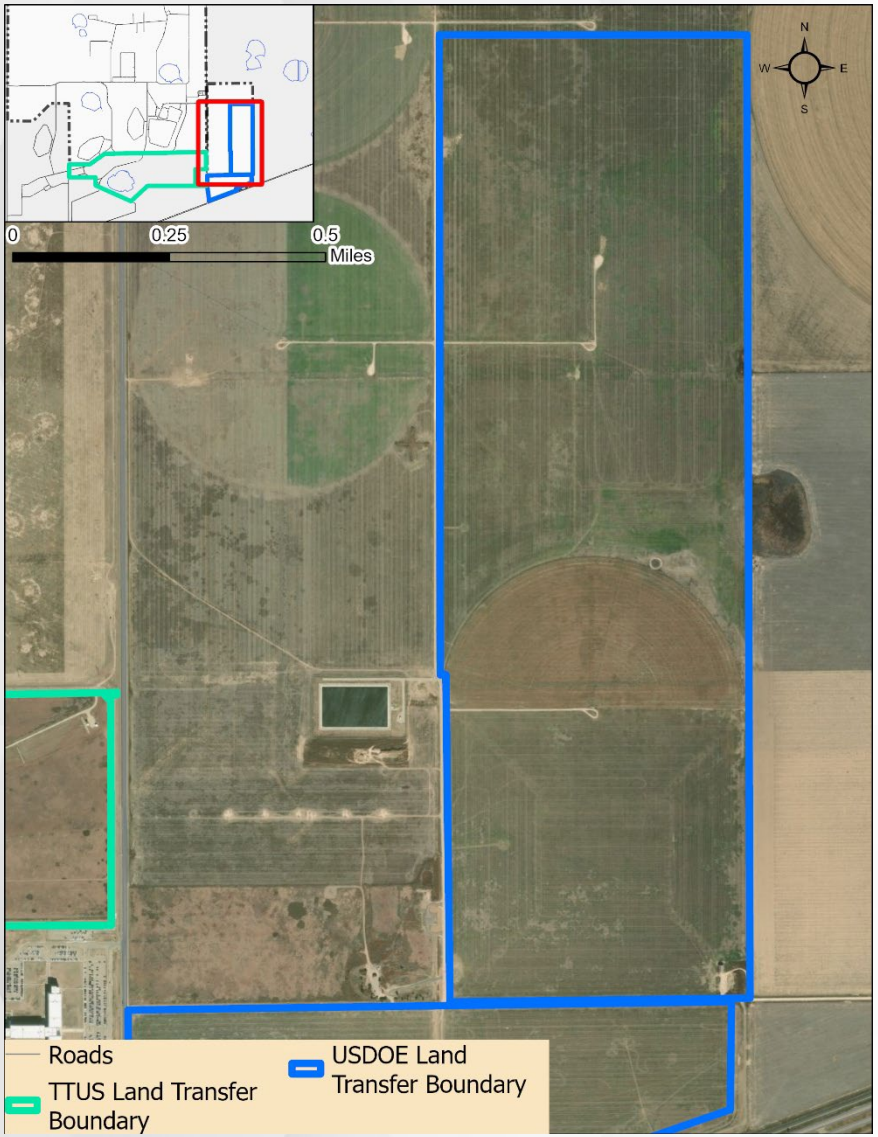
- Approximately 1278 acres along the south Pantex boundary would be acquired from TTUS

TTUS to Acquire a Portion of the NNSA Property East of FM 2373 (blue area)

- Approximately 713 acres to be transferred

Land Transfer and Expected Changes

- **Two and a half pivots have been shut down and are no longer used; closure under permit WQ0004397 (TLAP).**
  - Two and a half pivots (1, 2N, and 3) will be retained on NNSA land for continued use; future decisions regarding these areas will be shaped by how/when the data center develops
  - Pantex will continue to use the remaining pivots, the subsurface irrigation system, and other beneficial use options as water outlets
- **As the data center is constructed and operations begin, treated water from the Pantex pump and treat systems is planned to be used for cooling water.**
  - Minimum amount of 250,000 gals/day



Land Transfer and Expected Changes

Pantex has prepared a Covenant Deferral Request (CDR) pursuant to Section 120(h)(3)(C) of CERCLA

- **Provides detailed information on the remedial actions, potential impacts due to transfer, and steps that will be taken to ensure remedies continue without delay and to ensure protection of human health and the environment**
  - Current High Plains Aquifer and PFAS investigations and any possible remedial actions required are also considered in the request.
- **Pantex has been working closely with TCEQ and EPA to resolve comments**
- **Public comment period is anticipated in late 2026 – Notice of availability will be provided in local newspapers**
- **The final document is expected to be submitted to the EPA Region 6 Administrator and Texas Governor in early 2027 for concurrence**
- **The land transfer is expected to occur after Pantex gains concurrence on the CDR**

Land Transfer and Expected Changes

Covenant Deferral Request Considerations

- **Pantex Plant will gain land in this agreement, allowing for future growth of the Plant in support of the mission**
- **Continuation of long-term investigation and remediation is ensured through agreements, deed restrictions, and retention of land where remedial actions are installed**
- **Pantex will have a more consistent and stable outlet for pump and treat effluent so Pantex can better achieve its goals for cleanup of perched groundwater**
  - Supports more consistent operation of the Pump and Treat Systems
  - Supports minimizing discharge into Playa 1

Questions

Reports and slides can be found at:

http://pantex.energy.gov/mission/environment/environmental-cleanup-documents

Remediation Summary Booklet – available on our website

Fact Sheets – available here and on our website

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