PANTEX SEMIANNUAL PROGRESS REPORT

Remedial Action Progress

January to June 2025

In support of Hazardous Waste Permit #50284 and

Pantex Plant Interagency Agreement

December 2025

Pantex Plant

FM 2373 and U.S. Highway 60

P.O. Box 30030

Amarillo, TX 79120

Managed and Operated by
PANTEXAS DETERRENCE

UNCLASSIFIED

CERTIFICATION STATEMENT

January to June 2025 Remedial Action Progress Report
Pantex Plant, December 2025

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Martin Amos 12/18/2025

Martin Amos Date
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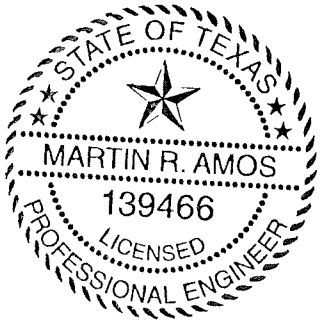
Remedial Action Progress Report
January to June 2025
in Support of Hazardous Waste Permit #50284
and Pantex Plant Interagency Agreement
for the Pantex Plant, Amarillo, Texas
December 2025

Prepared by
PanTeXas Deterrence, LLC
Management and Operating Contractor
for the
Pantex Plant
with the
U.S. Department of Energy
National Nuclear Security Administration

In accordance with 30 TAC §335.553 (g), this report has been prepared and sealed by an appropriately qualified licensed professional engineer or licensed professional geoscientist.



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APPENDICES

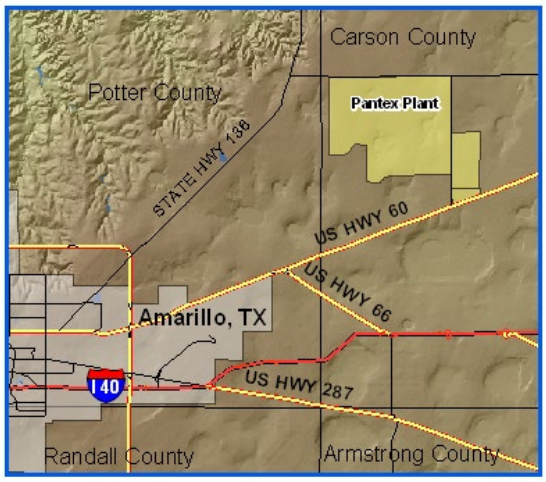
List of Acronyms

6:2FTSA	1h,1h,2h,2h-perfluorooctane sulfonic acid
µg/L	micrograms per liter
ATF	Bureau of Alcohol, Tobacco, Firearms, and Explosives
COC	contaminant of concern
Cr(VI)	hexavalent chromium
CR8	County Road 8
DCA12	1,2-dichloroethane
DCE	dichloroethene
DNT2A	2-amino-4,6-dinitrotoluene
DNT26	2,6-dinitrotoluene
DNT4A	4-amino-2,6-dinitrotoluene
DNX	hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
EE/CA	engineering evaluation/cost analysis
EPA	United States Environmental Protection Agency
ETA	Eurofins Test America
EVO	emulsified vegetable oil
GAC	granular activated carbon
GEL	General Engineering Laboratory
GWPS	groundwater protection standard
HE	high explosive
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ISB	*in situ* bioremediation
ISPM	*in situ* performance monitoring
lbs	pounds
MCL	Maximum Contaminant Level
Mgal	million gallons
mg/L	milligrams per liter
MNX	hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine
mV	millivolts
ORP	oxidation-reduction potential
P1PTS	Playa 1 Pump and Treat System
PCL	Protective Concentration Level
PCR	Perchlorate/Chromium
PFAS	per- and polyfluoroalkyl substances
PQL	practical quantitation limit
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
REC	recirculation well
SCADA	Supervisory Control and Data Acquisition
SEPTS	Southeast Pump and Treat System
SVE	soil vapor extraction
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality

TNB135	1,3,5-trinitrobenzene
TNT	2,4,6-trinitrotoluene
TNX	hexahydro-1,3,5-trinitroso-1,3,5-triazine
TZM	treatment zone monitoring

INTRODUCTION

The Pantex Plant, located in the Texas Panhandle 17 miles northeast of Amarillo, has implemented a response action to remediate perched groundwater and soils. Two types of systems have been installed for the groundwater response action: pump and treat systems in two areas and *in situ* bioremediation (ISB) systems in six areas, including the new County Road 8 (CR8) ISB that is currently being installed. A soil vapor extraction (SVE) system is closed, but groundwater monitoring will continue in the area to evaluate the long-term effectiveness of the SVE. This semiannual report addresses progress achieved through implementation of the remedial actions for the first semiannual period (January – June) of 2025.



This report provides an intermediate mid-year data summary for response action systems. More intensive data reporting is included in the annual progress report. The semiannual progress report addresses three of the five evaluations included in the annual progress report: response action effectiveness, uncertainty management, and early detection. The reports provide information required by Hazardous Waste Permit #50284 Compliance Plan Table VII (TCEQ, 2014) and the Pantex Interagency Agreement (EPA, 2008). Additionally, this report provides a summary of information collected to support the Ogallala Aquifer investigation.

Maps of the plumes, remedial action systems, sampling locations, and system wells are provided in Appendix A. Graphs of operation and flow rates for the pump and treat systems are provided in Appendix B. Graphs of important parameters for the ISB treatment zone and downgradient wells are provided in Appendix C.

RESPONSE ACTION EFFECTIVENESS

This semiannual progress report focuses on specific criteria for the pump and treat and ISB systems. System operation and mass removal evaluated in reference to established operational goals, as well as evaluation of effluent in reference to established cleanup standards in the Record of Decision (Pantex and Sapere Consulting, 2008) are reported for the pump and treat systems. For the ISB systems, this report evaluates geochemical conditions and availability of food source in the treatment zone and reduction of concentrations of contaminants of concern (COCs) in downgradient performance monitoring wells to evaluate whether the treatment zone is working effectively.

Pump and Treat Systems

The groundwater remedial action at the Pantex Plant includes two pump and treat systems: Southeast Pump and Treat System (SEPTS) and Playa 1 Pump and Treat System (P1PTS). The systems were designed to remove water from the perched aquifer to reduce saturated thickness and remove contaminant mass from the water before the effluent is beneficially used for irrigation, general Plant needs, and/or for amendment injections at the ISB systems. This reduction in saturated thickness reduces migration of contaminants both vertically and horizontally so that natural breakdown processes can occur over time. Reducing migration provides protection for the underlying High Plains Aquifer (also known as and referred to herein as the Ogallala Aquifer). In addition to release of water to beneficial use outlets, SEPTS has the capability to inject the treated water back into the perched aquifer when beneficial use is limited. P1PTS can release water to the pivot irrigation system directly or to the wastewater treatment facility (WWTF) storage lagoons, which can discharge to Playa 1 or a subsurface drip irrigation system. Operational priorities for the pump and treat systems emphasize beneficial use of water.

Pump and Treat System
First Half 2025 Operation

Playa 1 Pump and Treat System (P1PTS)	
Days Operated	96
% Operation Time	49%
Volume Water Treated (Mgal)	22.7
HE Mass Removal (lbs)	8.2
Beneficial Use of Water	100%
Southeast Pump and Treat System (SEPTS)	
Days Operated	180
% Operation Time	99%
Volume Water Treated (Mgal)	56.5
HE Mass Removal (lbs)	188.2
Chromium Mass Removal (lbs)	13.3
Perchlorate Mass Removal (lbs)	10.0
Beneficial Use of Water	67%

Operational goals were redeveloped in 2023 to emphasize the operation of SEPTS and reduce or shut down operation of P1PTS when water outlets are limited. Those goals were approved by the Texas Commission on Environmental Quality (TCEQ) and the Environmental Protection Agency (EPA) in 2023. The goals for different operational conditions are as follows:

1. Achieve 90% operation time and 90% design capacity flow at both systems when the irrigation systems can receive treated water. Treated water is also managed through injection to the Playa 2 area and ISBs.
2. If wellfield capacity cannot provide 90% design capacity flow, operate systems at highest flow possible using a combination of irrigation, ISB injection, and Playa 2 injection for treated water release. Maintain a minimum of 150 gpm flow at each system.
3. When the irrigation systems limit flow, operation of SEPTS is priority. Maintain 90% operation time and flow at SEPTS or highest flow possible. Operate P1PTS if minimum flow of 150 gpm can be achieved and there are available outlets for water release. All water outlets, including irrigation, ISB injection, Playa 2 injection and injection well near SEPTS will be used. Release to Playa 1 in accordance with permit limits may be used if needed.

Operate P1PTS for a few days monthly or quarterly to maintain operability, if the system must be shut down to operate SEPTS at the highest rate possible.

A minimum flow rate of 150 gpm in each system is required to avoid the creation of channels in the granular activated carbon (GAC) vessels, which could compromise treatment effectiveness as the water could bypass most of the GAC, preventing contaminant sorption.

The treated water outlet priorities are as follows:

Beneficial Use

- ISB injection
- Subsurface and pivot irrigation
- Other beneficial use via the dedicated outlet port

Other Outlets

- Reinjection via the Playa 2 wells
- Reinjection via wells near SEPTS
- Release to Playa 1 via the WWTF (limited to permitted amounts)

The subsurface drip irrigation system was not utilized during the first half of 2025. Operation of the subsurface system is currently on hold given the need to repair and upgrade the communications and control system. During periods the drip irrigation system is unavailable, Pantex continues to release WWTF water to Playa 1 as approved in TCEQ wastewater Permit WQ0002296000. However, the permit restricts the amount of water that can be released to the playa, so pump and treat throughput is reduced if other outlets are not available for use. Pivot irrigation on the property east of FM 2373 provides additional beneficial use of the treatment system water and operates under TLAP Permit WQ0004397000.

As repairs continued at the WWTF lagoons, that facility was not accepting treated effluent for a majority of the reporting period. Pantex was able to manage treated effluent by utilizing the pivot irrigation system, ISB injections, and reinjection into the perched aquifer. Additionally, operation and flow at P1PTS was adjusted to prioritize the operation of SEPTS when water outlets were limited. During the reporting period, 76% of the total treated water from both systems was beneficially used; 74% of that water was sent to the pivot irrigation system, and 2% was sent to the ISB systems. The other 24% of treated effluent was sent to Playa 1 via the WWTF (9%) during times it was accepting water or injected back into the perched aquifer via PTX06-INJ-10 near SEPTS (15%). When reinjection is necessary, the Playa 2 injection wells are preferred, but those wells were not utilized during this reporting period due to radio communication failures. A contract has been issued to repair communications, and work is expected to begin in February 2026.

Together the systems treated about 76.7 million gallons (Mgal) during the first six months of 2025. Water outlets were restricted for a considerable portion of the reporting period, and there were also factors limiting wellfield capacity. In January, P1PTS was shut down for lack of water outlets; for the rest of the period, SEPTS and P1PTS operated with constraints. SEPTS operated at the

maximum capacity of the wellfield, considering decreased well yields due to dewatering effects and wells needing repairs. P1PTS operated as water outlet capacity allowed (in conformance with operational condition 3).

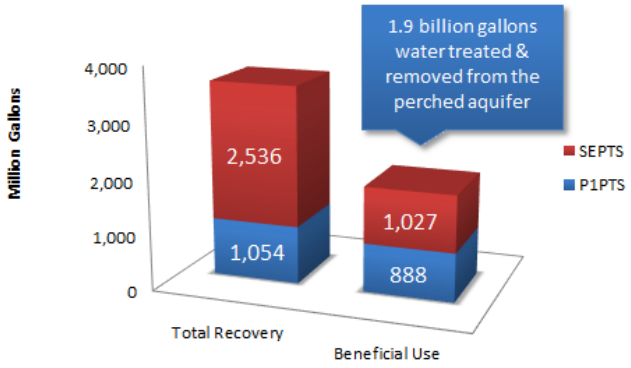


Figure 1. System Recovery and Use

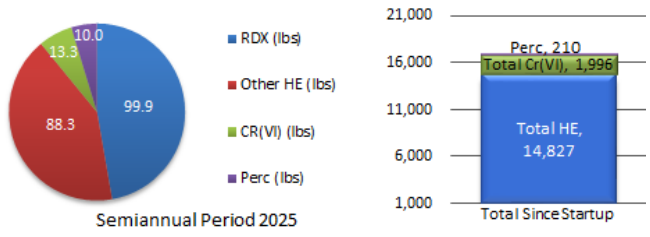


Figure 2. SEPTS Mass Removal

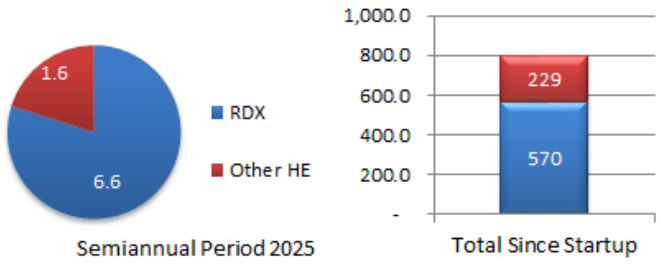


Figure 3. P1PTS Mass Removal

The total recovery and treatment from both systems since startup has been calculated at about 3.6 billion gallons. Because SEPTS was originally designed to inject treated water, all of the treated water prior to 2005 was injected. However, a significant volume of treated water has been used beneficially since 2005, with a total of over 1.9 billion gallons of treated water beneficially used since startup of the subsurface irrigation system. The recovery and beneficial use totals are presented in Figure 1.

Overall, the systems have removed over 17,832 pounds (lbs) of high explosives (HEs), chromium, and perchlorate contaminants from perched groundwater since operations began. As discussed in the *2023 Annual Progress Report* (Pantex, 2024), Pantex began investigating the presence of per- and polyfluoroalkyl substances (PFAS) in the perched groundwater pump and treat systems. Due to very low concentrations of PFAS at both systems, mass removal is only calculated to be approximately one pound per year at each system; therefore, PFAS is not tracked in the mass removal totals.

Evaluation of effluent data from SEPTS and P1PTS indicates that all COCs were treated to levels below the groundwater protection standard (GWPS). Detected PFAS are treated below current Texas Risk Reduction Protective Concentration Levels (PCLs) or newly promulgated drinking water Maximum Contaminant Levels (MCLs). One detected PFAS, 1h,1h,2h,2h-perfluorooctane sulfonic acid (6:2FTSA), has no PCL or MCL available.

Graphs of monthly operation and throughput are included in Appendix B. Key points are discussed below.

Southeast Pump and Treat System

During the first six months of 2025, the SEPTS was able to operate 99% of the time. The SEPTS was only shut down during a small period of time for GAC exchanges, other maintenance, and a short power outage. Because of water intake limitations at the WWTF and communication failures at the Playa 2 injection wells, water outlet options were limited throughout the reporting period. The throughput for SEPTS was at 69% of design, below the operational goal of 90%, due to water outlet limitations (operational condition 3) and limited wellfield capacity. The SEPTS wellfield had three wells that were repaired in April 2025. Two additional wells were locked out for maintenance and repairs in April, and two other wells were taken offline throughout the reporting period due to failed pump motors. These wells are scheduled to be locked out for repairs in early 2026. An additional six wells experienced communication failures during the first half of 2025. The wellfield capacity was not the overall limiting factor on throughput. In January, the pivot irrigation system was unavailable as electrical failures were repaired and temperatures were below freezing. The water outlets were limited to PTX06-INJ-10 in the SEPTS wellfield and Playa 1 via the WWTF. PTX06-INJ-13, -14, and -15 (the Playa 2 injection wells) were not available for use due to a lack of radio communication, which will prevent their use until a replacement system is installed. In February the pivot system was operational and took the majority of the outlet flow, followed by PTX06-INJ-10, with a small amount of water directed to the ISB systems.

SEPTS primarily treats RDX and other HEs, hexavalent chromium [Cr(VI)], and perchlorate. Figure 2 provides mass removal information for RDX and HEs, Cr(VI), and perchlorate for the reporting period as well as totals since system startup.

Playa 1 Pump and Treat System

P1PTS operated at 35% of design capacity in accordance with operational goal 3 that prioritizes the operation of SEPTS when treated water outlets are limited. One well in the P1PTS wellfield was repaired in April 2025. After that repair, all wells were operating with no issues for the remainder of the semiannual period. P1PTS was shut off to enable SEPTS to operate in January and early February (operational condition 3b). For the remaining months, water was sent from P1PTS to the pivot irrigation system as water outlet capacity allowed (operational condition 3). P1PTS primarily treats RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine) and other HEs. Figure 3 provides mass removal information for RDX and HEs in the reporting period as well as totals since system startup. Concentrations near Playa 1 are much lower due to declining source concentrations resulting in reduced mass removal at P1PTS. However, operation of P1PTS is needed as reduction of the mound of water beneath Playa 1 reduces contaminant migration.

ISB Systems

Five ISB systems (Zone 11 ISB, Southeast ISB, Southeast ISB Extension, Offsite ISB, and the new Perchlorate/Chromium or PCR ISB) were operating at Pantex during the first half of 2025. Maps of these systems are provided in Appendix A. Construction of necessary infrastructure for operation of a sixth ISB System, the CR8 ISB, is currently underway, and the system is planned for injection in 2026. The systems are designed with closely spaced wells to set up a treatment zone in areas of the perched groundwater where pump and treat operation may not be as effective or where the area is sensitive to vertical migration of COCs to the Ogallala Aquifer. Amendment is injected into these systems to establish treatment zones where COCs are degraded. Monitoring wells are installed downgradient of the treatment zone to monitor whether the system is effectively degrading the COCs (see maps in Appendix A). The primary COCs at the Zone 11 ISB are trichloroethene (TCE) and perchlorate. The primary COCs at the Southeast ISB are RDX and Cr(VI). The primary COC at the Southeast ISB Extension and the Offsite ISB is RDX. The primary COCs at the PCR ISB are perchlorate and Cr(VI). The following discussion provides an understanding of the expected conditions at the ISB systems and downgradient concentrations of COCs. For the treatment zone wells, this report evaluates whether the conditions are present, including oxidation-reduction or "redox" potential (ORP) and the reduction of electron acceptors (e.g., dissolved oxygen and nitrate), to degrade the COCs in each area. The presence of reduced gases, such as methane, can also be an indication of deeper reducing conditions. The presence of a continued food source (total organic carbon) for the microbial reduction of COCs is also evaluated. Reducing conditions, with ORP below –50 millivolts (mV) to reduce RDX and TCE and near 0 mV to reduce Cr(VI) and perchlorate, are required to adequately reduce COCs. Figure 4 presents the redox ranges for the reduction of various COCs. Dissolved gases, ORP, nitrate, and TOC are evaluated in the ISB treatment zone performance wells to determine if the treatment zone is rebounding to baseline conditions, thus requiring amendment. Downgradient *in situ* performance monitoring (ISPM) wells are evaluated to determine if the ISB systems are effectively degrading the COCs and any breakdown products of the COCs and thereby cleaning up the aquifer. Graphs of data from sampled treatment zone wells and ISPM wells are included in Appendix C.

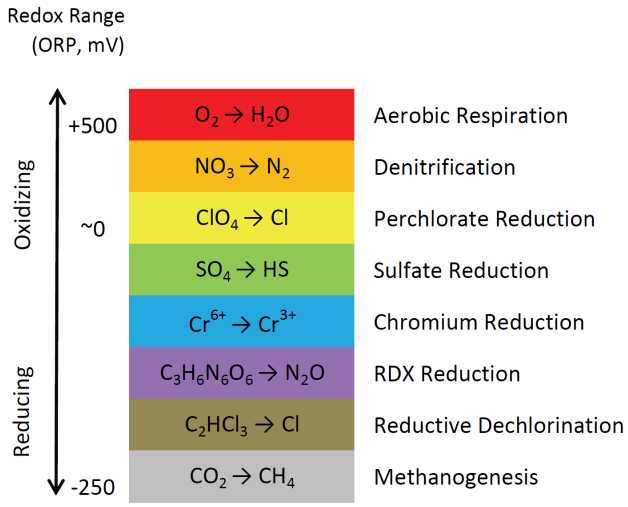


Figure 4. Redox Range for Reduction of COCs

ISB Injection Activities

Sampling of the ISB systems has been reduced to a semiannual frequency. New and complete data sets for each system will be assessed during the current semiannual period. All five active ISB systems were sampled completely and are discussed below. Table 1 summarizes the injection

activities for 2025. During the first semiannual period, well maintenance and injection activities commenced at the Southeast ISB Extension, Zone 11 ISB, and Offsite ISB. Each system is expected to complete at least one maintenance and injection event by the end of 2025. Actual (first half of 2025) and projected (second half) ISB system activities are shown in Table 1.

Table 1. ISB Systems Activities

Month (2025)	SE ISB	Zone 11 ISB	SE ISB EXT	Offsite ISB	PCR ISB
January					
February		Well Maintenance		Well Maintenance	
March		Well Maintenance		Well Maintenance/ **Sample**	**Sample**
April	**Sample**	Well Maintenance/ Injection/**Sample**	**Sample**	Well Maintenance/ Injection/**Sample**	
May	**Sample**	Well Maintenance/ Injection/**Sample**	Well Maintenance/ Injection/**Sample**	Injection	
June		Well Maintenance/ Injection	Well Maintenance/ Injection	Injection	
July	Well Maintenance	Well Maintenance/ Injection	Injection	Injection	Well Maintenance/ **Sample**
August	Well Maintenance/ **Sample**	Well Maintenance/ Injection			Well Maintenance/ Injection
September	Injection/Well Maintenance/ **Sample**	Injection		Injection/**Sample**	Injection
October	Injection	Injection/**Sample**	**Sample**	Injection/**Sample**	Injection
November	Injection	Injection/**Sample**	**Sample**	Injection	
December		Injection/**Sample**	**Sample**	Injection/**Sample**	

SE ISB = Southeast ISB
SE ISB EXT = Southeast ISB Extension
PCR ISB = Perchlorate/Chromium ISB

Southeast ISB Remedial Action Effectiveness

The Southeast ISB was installed in 2007. A map is presented in Appendix A. Nine injection events have been completed at this system for this reporting period, including a 2025 injection event which finished in early November. Well gauging data at the Southeast ISB continue to demonstrate declining water levels at the system; as a result, only 50% of the system was injected during the 2025 injection event. The inability to sample or inject into these wells is expected to persist with

continued upgradient removal of water by the SEPTS. Pantex injected the system with molasses in the 2025 injection event, though further injections may be limited or unnecessary as the area is dewatering.

Three injection wells and three downgradient ISPM wells were sampled at the Southeast ISB during the first 2025 semiannual period. Two ISPM wells (PTX06-1118 and PTX06-1123) have gone dry or did not have sufficient water to be sampled. Analytical data indicate that reducing conditions continue at the treatment zone in all sampled ISB wells. All three wells have > 100 milligrams per liter (mg/L) total organic carbon to allow continued treatment. Total organic carbon is expected to increase with the 2025 injection event. Downgradient wells indicate that complete treatment is occurring. Pantex converted one ISPM well, previously named PTX06-1153, to an ISB injection well now known as PTX06-ISB171 in 2025. This well historically indicated partial treatment, as the breakdown products of RDX were consistently present. The concentration of RDX and its breakdown products peaked in this well around 2020 and all were declining, but RDX concentrations were still above 100 micrograms per liter (ug/L) as noted in the *2024 Annual Progress Report*, Appendix E (Pantex, 2025a). Pantex injected this well during the 2nd semiannual period of 2025 to establish a focused treatment zone in this area. Future data should reflect changed conditions at this injected well.

Zone 11 ISB Remedial Action Effectiveness

Installation of the initial Zone 11 ISB remedial action was completed in 2009, and expansions to the northwest of PTX06-ISB083 was completed in early 2015 and 2019. Another expansion was completed in late 2021 to address the southeast moving TCE plume. A map of the Zone 11 ISB System is presented in Appendix A. Seventeen injection events have been completed at the time of this report including one that concluded in December 2025. Pantex has moved to the use of a more soluble carbon source, molasses, as studies conducted at the Zone 11 ISB in 2018 indicated that molasses distributed between widely-spaced injection wells at a much higher concentration than emulsified vegetable oil (EVO). More frequent injections are required for molasses and have been planned annually for the Zone 11 ISB to maintain reducing conditions. The latest expansion of a second row of wells on the south side of the system is closely spaced to allow injection of the longer lasting EVO; however, molasses was used as the primary amendment for the 2024 and 2025 Zone 11 injection events. Pantex will continue to evaluate the system to ensure appropriate timing of injections and use of the most effective amendment.

The Zone 11 ISB has a well-established treatment zone (with ORP below 0 mV and low dissolved oxygen) in the original portion of the system and the expansion areas, due to multiple injections or their placement downgradient of older injected portions of the system. Four injected wells, eight treatment zone monitoring (TZM) wells, and eight downgradient ISPM wells were sampled in the Zone 11 ISB system in the first half of 2025.

Evaluation of data in the treatment zone indicates mild to strong reducing conditions in most wells. The TZM wells in the newest part of the system to the south have begun to demonstrate stronger reducing conditions indicating that the treatment zone is beginning to establish in that area.

- ORP ranged from -120.4 to 18.3 mV across the Zone 11 ISB and TZM wells.
- Nitrate has not been detected in any Zone 11 TZM wells since 2022, with only two detections in ISB wells during that period.
- Soluble metals (arsenic and manganese) were above background in all treatment zone wells and methane was measured in all wells, indicating that reducing conditions are well established.
- TCE continues to be reduced to cis-1,2-dichloroethene (DCE), vinyl chloride, and ethene.
    - TCE concentrations were below the GWPS in ten of twelve monitored wells inside of the treatment zone.
    - cis-1,2-DCE was present at concentrations below the GWPS in ten of twelve sampled monitor wells in the treatment zone. Other DCE isomers were present at concentrations below their GWPSs.
    - Vinyl chloride was detected in eight sampled wells inside the treatment zone.
    - Ethene, the completely dechlorinated end product, was detected in three wells in the treatment zone. As a simple hydrocarbon, it is readily consumed for food by many soil microbes, so even when it is being produced it is often not detected.
- Perchlorate was not detected in any well across the treatment zone.

Pantex evaluates performance at nine downgradient ISPM wells for the Zone 11 ISB to determine whether complete treatment has occurred after the water leaves the active treatment zone. Eight of nine ISPM wells were sampled during the first semiannual 2025 period. The ninth well, PTX06-1012, was sampled in July 2025 and is included in the following discussion.

Of the nine sampled ISPM wells, eight exhibit perchlorate concentrations below the GWPS. PTX06-1149 had a concentration of perchlorate that is above the GWPS. Pantex will continue to closely monitor this well in the next progress reports.

TCE concentrations are at or below the GWPS in six of nine ISPM wells. The first breakdown product of TCE, cis-1,2-DCE, was below the GWPS in seven downgradient wells. Vinyl chloride was detected in six wells; in two wells it exceeded its GWPS, PTX06-1156 (5 ug/L) and PTX06-1175 (34 ug/L). Ethene was not detected in any ISPM well and is likely consumed by soil microbes on the way to these wells. These variations in concentration are likely due to the dynamic state of the system as the treatment zone has been established, extended multiple times, and its effects work their way downgradient.

Data indicate that due to treatment, concentrations of TCE and its breakdown products meet the GWPS across much of the system. Three downgradient wells, PTX06-1148, 1149, and 1150, were not heavily impacted by TCE until hydraulic gradients were affected by the removal of water from the pump and treat systems. As water from certain areas of Zone 11 and the Zone 11 ISB began moving to the southeast, higher concentrations of TCE moved through the center and eastern side of the ISB. Pantex recognized the issue and installed a new 2nd row of wells in those impacted areas in 2021. TCE concentrations peaked at these three wells in early 2024 and are now declining, indicating the extra row of injection wells is impacting the plume. Current data from these three wells indicate TCE remains above GWPS. Based on trends, TCE is expected to meet GWPS in the

next 1-2 years in all three wells. PTX06- 1149 is also showing a decline in perchlorate, while perchlorate in PTX06-1148 and PTX06-1150 is below the GWPS.

Pantex has also strengthened other areas of the ISB where wells that could no longer be injected were infilled with new wells, rather than replacing the old wells. This allows for more even distribution of the amendment through the pore space and affects areas previously not impacted by injections. Current data at new treatment zone wells demonstrates that stronger treatment is occurring and downgradient conditions have also improved.

Southeast ISB Extension Remedial Action Effectiveness

The Southeast ISB Extension was installed in 2017 as an extension of the chosen remedy for the southeast perched groundwater. Four additional wells were installed in late 2020 and an additional two in 2021 along the eastern property line in a north-south alignment to further encompass the plume (see map in Appendix A). These new wells were injected for the first time in April 2021, with the exception of PTX06-ISB331, which was injected in August 2022. Two TZM wells were also installed in late 2021; a third was installed in late 2025 (after the current reporting period). Overall, nine injection events have been completed at this system, with the most recent injection finishing in July 2025. Due to the success with distribution of a more soluble carbon (molasses), Pantex began injection at the Southeast ISB Extension using only soluble carbon (molasses), as recommended in the *Fourth Quarter 2018 Progress Report* (Pantex, 2019). Pantex plans to continue injection at this system using only molasses to ensure adequate distribution and treatment. Because this system has not been treated with EVO, injections have been scheduled approximately every twelve months.

Two ISB wells, two TZM wells, and two downgradient ISPM wells were sampled during the first semiannual period of 2025. Treatment zone data indicates very strong reducing conditions are present for treatment of HEs. ORP was between -326.8 mV and -99.8 mV and nitrate was either not detected or detected at very low levels in sampled wells. Total organic carbon results indicate that a sufficient food source is available for continued reducing conditions at the wells. Soluble metals concentrations, particularly arsenic and manganese, were elevated, indicating that reducing conditions continue.

Downgradient ISPM wells demonstrated complete treatment of RDX breakdown products during this reporting period. RDX itself is below the GWPS in one of the wells sampled and only slightly above GWPS in the other well, having declined from 33.5 ug/L in 2021 to 3.5 ug/L in June 2025. TOC has slightly increased in downgradient wells since beginning of sampling in 2018. Treatment at these wells is expected to continue as the system is injected in 2025.

Offsite ISB System Remedial Action Effectiveness

The first phase of well installations for the Offsite ISB system, which focused on treatment at the leading edge of the plume, was completed in 2020. Infrastructure to support an injection event was completed in June 2021, with first injection of molasses completed in October 2021. Three new ISB wells were installed on the neighboring property in late 2021 and were injected in 2022. The system was further expanded in 2022 with nineteen new ISB wells, which were injected for the first

time in 2023. The last phase of wells was installed in summer 2023, but not injected until spring 2024. Based on the use of molasses, injections are planned every six months at differing parts of the system. Injection plans will follow the schedule that was designed using fate and transport and optimization modeling. Portions of the plume will take time to establish treatment due to the distance downgradient of rows of injection wells and the timing of when injections started.

All water used in the injection process must be withdrawn from beneath the offsite property, so downgradient ISB extraction wells were installed. These wells were installed in rows parallel to the injection wells, providing coverage for the entire plume. The extraction wells pull the amendment downgradient of the injection wells, providing an expanded zone for COC treatment.

Four ISB extraction wells (labeled REC wells due to the recirculation they provide) and nine TZM wells were sampled to evaluate the treatment zone during the first semiannual period of 2025.

- The baseline data from 2022 showed ORP ranging from 19 to 281 mV. As of the end of June 2025, conditions became more reducing as zones of treatment continued to spread through the system.
    - ORP ranged from -64 to +50 mV in TZM wells.
    - ORP ranged from -107 to -74 mV in REC wells.
- Treatment zone data demonstrates a general increase in concentrations of arsenic and manganese and a reduction of nitrate.
- TOC has increased in most TZM wells and is above 20 mg/L in all but one of them, indicating that an effective treatment zone is established or underway. Total organic carbon was also above 20 mg/L at each sampled REC well.
- RDX concentrations have decreased at the TZM wells over the short life of the system, with the highest result of 50 ug/L at PTX06-1201, two other wells with detections above the GWPS, and the remaining six TZM wells were below GWPS or RDX was not detected. Concentrations of HEs remain low in the REC wells at the leading edge of the plume.

One ISPM well is sampled to evaluate the remedial action effectiveness downgradient of the system. Concentrations at PTX06-1215 indicate that all HEs remain below the GWPS indicating that the system continues to arrest downgradient movement of the plume.

Perchlorate/Chromium ISB Remedial Effectiveness

The PCR ISB is located northwest of the Southeast ISB on TTU property. Newly installed in 2024, the system consists of ten ISB injection wells and two TZM wells. The purpose of the system is to treat the perchlorate and Cr(VI) plumes that are outside the influence of the SEPTS system as they move towards the southeast. The PCR ISB was injected for the first time in 2024, using molasses. A second injection event is currently underway. The system is scheduled to be injected every three years with EVO after the 2025 event is complete.

The two TZM wells were sampled during the first semiannual period of 2025. Total organic carbon is abundant at PTX06-1225 and has begun to appear at PTX06-1226A. That same trend is observed for the increase in soluble metals (arsenic and manganese) at each well, indicating that treatment

conditions are beginning to establish in both wells, although more drastically at PTX06-1225. Perchlorate and Cr(VI) are below GWPS in both wells indicating that those plumes are being appropriately treated by the system.

Ogallala Investigation

Environmental investigation and cleanup at Pantex has a primary goal of preventing contamination of the Ogallala Aquifer. The region southeast and south of the plant called for particular concern because the perched aquifer flows this direction, carrying contaminants with it, and there are local areas where the regional fine-grained zone that perches groundwater thins and becomes coarser and more permeable. The SEPTS and the Southeast ISB System were both installed to reduce the risk associated with the possibility of perched groundwater migrating through these areas into the drinking water aquifer.

One Ogallala monitoring well (PTX06-1056) continues to demonstrate detections of legacy 4-amino-2,6-dinitrotoluene (DNT4A), a breakdown product of 2,4,6-trinitrotoluene (TNT), first detected in April 2014. Increasing detections of DNT4A above GWPS and detection of other HEs prompted Pantex to plan expansion of the Ogallala well network to evaluate potential sources and extent of the contamination, in accordance with the *Pantex Plant Ogallala Aquifer and Perched Groundwater Contingency Plan* (Pantex, 2025b). As a first step, three wells were constructed in 2023: PTX06-1223 (southwest of 1056), -1224 (south of 1056), and -1229 (west of 1056). DNT4A, RDX, and hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX) have all been detected at PTX06-1223 since it was first sampled in 2023, but none of these compounds have exceeded their GWPSs. Only one sample from PTX06-1224 had a detection of an HE compound (RDX at less than 0.04 ug/L in March 2024). Semiannual 2025 results for PTX06-1223 and PTX06-1224 are presented in Table 2.

Table 2. Semiannual 2025 HE results for PTX06-1223 and PTX06-1224

Analyte	DNT2A	DNT4A	RDX	TNX
GWPS	1.2	1.2	2	2
PTX06-1223	<0.105	0.601	1.08	0.213
PTX06-1224	<0.105	<0.105	<0.105	<0.105

Data unit = µg/L

PTX06-1229 was found to have over 300 ug/L of RDX when first sampled in 2023 and 2024. HEs detected above their GWPS in samples collected from either screen of PTX06-1229 include DNT4A (<6 ug/L), RDX, and TNX (<22 ug/L). Other compounds detected include 2-amino-4,6-dinitrotoluene (DNT2A), 2,6-dinitrotoluene (DNT26), 1,3,5-trinitrobenzene (TNB135), octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine (DNX), and hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX) at levels below their GWPSs; MNX and DNX are transient degradation products of RDX and, together with TNX, demonstrate that active biodegradation of RDX is taking place. Active biodegradation is known to occur in the perched groundwater and could occur in the Ogallala Aquifer as well.

PTX06-1229 was installed with two screened intervals. The original sampling was conducted for the upper screened interval where impact from vertical movement of perched groundwater would be the greatest; however, two samples collected in the lower screened interval indicated that RDX concentrations were similar to concentrations in the upper screened interval. Because of the consistency in the data for the upper and lower screened intervals, Pantex conducted testing in the well to determine if the flow through the screens was horizontal or vertical. The study indicated that >0.4 gal/min of vertical flow occurs from the top screened interval to the lower screened interval. Pantex installed a packer in February 2025 that seals off the upper screened interval while still allowing for samples to be obtained from the lower screened interval.

So far, RDX concentrations in PTX06-1229 seem to be on a downward trend: one sample in 2023 had 307 ug/L RDX, while 24 samples collected in 2024 averaged 291 ug/L (although samples from earlier in the year had higher concentrations than 307 ug/L), and one sample collected from the upper screen in July 2025 had 242 ug/L. With the casing open (using a diverter to only partially block the movement of water in the blank casing between the screens, rather than a packer which fully blocks the casing) eight samples from the lower screen collected in 2024 averaged 308 ug/L RDX. With the packer in place for several months beforehand, a sample and duplicate collected from the lower screened interval in June 2025 had 200 and 210 ug/L RDX. Thus, it appears that concentrations in the upper screened interval of the aquifer (within the Dockum Group at this well) may be declining, and it is possible that the lower screened interval of the aquifer has less RDX in groundwater. Further work will be required to verify whether the lower aquifer interval is contaminated. Semiannual 2025 sampling results for PTX06-1229-2 (lower screened interval) and results from July 2025 in the upper sampling interval (PTX06-1229) are presented in Table 3.

Table 3. Semiannual 2025 PTX06-1229 Interval Sampling

Analyte	DNT2A	DNT4A	DNX	HMX	MNX	RDX	TNX
GWPS	1.2	1.2	2	360	2	2	2
PTX06-1229	0.607	3.4	0.0424	9.08	0.13	242	13.4
PTX06-1229-2	0.475	3.4	<0.106	9.78	<0.106	210	15.5

Data that exceeds GWPS is in red font
Data unit = µg/L

Fate and transport modeling was utilized in 2024 to plan new drilling locations and to evaluate potential sources for the detections at PTX06-1229. Based on the evaluation of potential plume movement, Pantex installed three wells in 2024-2025, PTX06-1231, PTX06-1232, and PTX06-1233, to evaluate further source areas and downgradient movement of the plume found in PTX06-1229. These three wells were drilled in areas where perched groundwater was absent to avoid potential cross-contamination from impacted perched groundwater. Two of the wells were installed with a single screened interval in the top of the aquifer; PTX06-1233 was installed with two screened intervals, after a review of data from multi-screened wells in that area indicated no vertical flow.

PTX06-1231 was drilled in a suspected source location upgradient of PTX06-1229. Sampling results indicate detections of the same compounds as PTX06-1229, other than TNB135, with the additional finding of TCE just below its GWPS in January 2025. It has more RDX (862 ug/L), DNT4A (11 ug/L), and DNT2A (2.7 ug/L) than PTX06-1229 and comparable amounts of TNX (20 ug/L). Other detected COCs are below their GWPSs (DNT26, HMX, DNX, MNX, and 1,2-dichloroethane [DCA12]). CR(VI) was detected at a higher concentration than PTX06-1229, but less than GWPS.

PTX06-1232 is downgradient of PTX06-1229, east of FM 2373. It has detections of DNT4A, HMX, RDX, TNX, and DCA12. Only RDX exceeds its GWPS, with concentrations of 22 and 27 ug/L detected so far in two sampling events. This is consistent with its interpreted position in the distal part of a plume centered near PTX06-1231 and extending through PTX06-1229 to this position.

Although installation of the wells was completed by January 2025, Pantex has been continuing well development at PTX06-1233. This well continues to exhibit issues with a white cloudiness observed in video and samples collected from the well, particularly at a deeper level in the second screened interval. Pantex collected a sample for HEs only (which are less affected by turbidity than many classes of COCs) in the upper interval of PTX06-1233. Sample results for the upper screened interval at PTX06-1233 indicate that RDX and other HEs are defined, and the downgradient extent of the plume does not reach this well because all measured concentrations are below the GWPS. Sampling of the deeper screened interval of PTX06-1233 will occur at a later date, once Pantex is satisfied with the well development. Table 4 shows the semiannual 2025 sampling results from the wells installed in 2024/early 2025.

Table 4. Semiannual 2025 Results for PTX06-1231, -1232, and -1233

Analyte	DNT2A	DNT4A	DNX	HMX	MNX	RDX	TNX
GWPS	1.2	1.2	2	360	2	2	2
PTX06-1231	2.68	11.1	0.222	18.9	0.932	862	20.2
PTX06-1232	<0.104	0.532	<0.104	0.138	<0.104	27.1	0.192
PTX06-1233	<0.101	<0.101	<0.101	<0.101	<0.101	0.090	<0.101

Data that exceeds GWPS is in red font
Data unit = µg/L

Pantex continues to install new wells in order to investigate the nature and extent of the newly discovered plume in the Ogallala Aquifer, both horizontally and vertically. Pantex is constructing eight new Ogallala wells in 2025 and is developing an investigation work plan, in accordance with a recommendation provided in the *Third Five-Year Review* (HGL and Pantex, 2023). The investigation work plan is planned for completion in March 2026. The wells being installed are shown on the Ogallala well location map at the end of Appendix A. The wells are being sited to fulfill the following purposes:

- PTX06-1243, 1244, 1245: Clarify the structure of the plume along its suspected axis, both upgradient of PTX06-1231 (to find the plume head) and between PTX06-1229 and 1232.
- PTX06-1242, 1246: Define the plume's northwestern flank, which is not currently understood.
- PTX06-1231-2, 1232-2, 1243-2: These are being screened in the lower Dockum Group (Tecovas Formation) as separate wells to clarify the physical and chemical hydrology of the plume in the vertical direction.

Additionally, Pantex is currently taking steps to set up an early action remediation strategy for the Ogallala Aquifer that includes connecting higher concentration wells PTX06-1229, PTX06-1231, and PTX06-1243 into the SEPTS. Pantex has contracted for the preparation of an Engineering Evaluation/Cost Analysis (EE/CA) for this early action. The EE/CA is expected to be completed in February 2026 and will be made available to the public after review by TCEQ and EPA.

Uncertainty Management and Early Detection

Uncertainty management and early detection wells are evaluated to determine if there are unexpected conditions in areas where previous groundwater contamination has not been detected or confirmed (Ogallala and perched aquifers), or in previous plume locations where concentrations have fallen below GWPS, background, and the practical quantitation limit (PQL) (e.g., perched wells at the Burning Ground and Old Sewage Treatment Plant areas). Wells evaluated in the semiannual report are provided in Appendix A, with the wells depicted as Group 1 Uncertainty Management/Early Detection wells. Detections in Ogallala wells involved in the HE Ogallala Aquifer investigation are discussed in the Ogallala Investigation section of this report.

Review of the uncertainty management/early detection data collected during the first semiannual period of 2025 indicates unexpected conditions at one Ogallala Aquifer well, PTX01-1010. Detections at PTX01-1010 are below the respective PQL and GWPS.

PTX01-1010 is an Ogallala monitoring well that is located in the Burning Ground SVE area. This well was first flagged in the uncertainty management/early detection data during third quarter 2024 when sampling results demonstrated that TCE was detected at 0.67 µg/L, below the GWPS (5 µg/L) and the PQL (1 µg/L). As a precaution, Pantex initiated a resampling event to validate this detection, though the contingency plan does not require resampling when the detection is less than the PQL. The resampling event occurred during fourth quarter 2024, and the sample was split and sent to two separate labs, General Engineering Laboratory (GEL) and Eurofins Test America (ETA). Both TCE verification samples support the initial detection results; GEL reported 0.52 µg/L and ETA reported 0.638 µg/L. During the first semiannual period of 2025, sampling results indicated that TCE is still present in this well (detected at 0.58 µg/L) but remains below the PQL and GWPS as seen in Table 5. In accordance with the requirements established in the *Pantex Plant Ogallala Aquifer and Perched Groundwater Contingency Plan* (Pantex, 2025b), Pantex will continue to monitor this well and evaluate the data.

Table 5. Summary of TCE Detections at PTX01-1010

Analyte	Sample Date	Measured Value ETA (µg/L)	Measured Value GEL (µg/L)	PQL (µg/L)	GWPS (µg/L)
TCE	8/27/2024	0.67	NA	1	5
	10/23/2024	0.638	0.52	2.5/1	5
	3/17/2025	NA	0.58	1	5

NA- No analysis performed

Well Inspections and Repairs

As recommended in the *First Five-Year Review* (Pantex, 2013), the *Well Maintenance Plan for USDOE/NNSA Pantex Plant Groundwater Remedial Action Projects* (Pantex, 2020) was completed in October 2013 and implemented in January 2014. This plan formalized the well surveillance and inspection process already in place and incorporated analytical and empirical data collected over time to develop a well maintenance schedule.

In accordance with the Well Maintenance Plan, Pantex performed the following well maintenance activities during the first half of 2025:

- Forty-six well videos to evaluate the wells' installation or condition and determine if re-development or other maintenance was required. The effectiveness of rehabilitation was also confirmed through well videos.
- Pump service (i.e., removal and installation of the pump and tubing bundles) at five locations to prepare for special sampling, change-outs of pump and tubing bundles, lengthening of sampling depths, and/or the replacement of pumps.
- Extraction well service at five wells to support repair and maintenance of pump and treat extraction wells.
- Miscellaneous maintenance including adding drop tubes to pumps and the installation and maintenance of the well packer at PTX06-1229.

Aside from the water conditions at PTX06-1233 discussed in the Ogallala Investigation section of this report, no unexpected well conditions were noted during inspections and maintenance in the first half of 2025.

Other Unexpected Conditions

Pantex routinely evaluates data received from the laboratory to determine if it presents off-trend, all-time high, or new detection conclusions that may require further sampling or evaluation. Through the well maintenance program, Pantex also inspects wells at least every five years to ensure they are not silting in and to evaluate whether each well remains in contact with the formation.

Recently, Pantex was informed that changes in regulations at the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) led to the discontinuation of the production of standards for RDX breakdown products, MNX, DNX, and TNX. Contracted labs are currently not able to spike LCS/MS/MSD samples on batches for MNX, DNX or TNX, and have stated that they have enough intermediate solution to maintain calibration and continuing calibration verification for approximately nine months. Once the stock solution runs out, Pantex will not be able to fully verify the analyses for those compounds; therefore, no analytical reporting will occur for the RDX breakdowns. Pantex expects to continue receiving analytical results into the first half of 2026 and reporting of these analytes will discontinue once the standards are depleted. To ensure we can obtain data from the new Ogallala wells to support the investigation, some programs (e.g., pump and treat system samples for RDX breakdowns) will be discontinued to help prolong the time period for analyzing samples from monitor wells. Pantex is looking into different ways to obtain these standards, but there is no current time projection for resolution of this issue. No other unexpected conditions were noted in the first half of 2025.

Schedule Update

Pantex provided a detailed schedule of upcoming work in the *2024 Annual Progress Report* (Pantex, 2025a). An update of the activities scheduled to be started or completed before December 2025 is provided below.

Items that were completed are presented below.

- Pantex completed the installation of infrastructure at the CR8 ISB in October 2025.
- Pantex contracted for the repair of a culvert at Landfill 5 to address erosion in that area. This work was completed in October 2025.
- Pantex contracted for the conversion of six pump and treat extraction wells into ISB injection wells that are to be tied in with the CR8 ISB. These wells were previously PTX06-EW-83-88 and are now known as PTX06-ISB711-716. This work was completed in October 2025.
- Well maintenance was completed at the Southeast ISB Extension, Southeast ISB, Zone 11 ISB, Offsite ISB and PCR ISB by September 2025.
- Pantex completed injections at the Southeast ISB Extension in July 2025.
- ISB injection operations were completed at the Southeast ISB in October 2025.
- ISB injection operations were completed at the PCR ISB in October 2025.
- The spring injection event at the Offsite ISB completed in July 2025.

Items that are in progress are listed below.

- The fall injection event for the Offsite ISB was started in September 2025. This event is expected to be complete in December 2025.
- Pantex is currently carrying out the scope for the construction of Phase 1 and 2 of the supervisory control and data acquisition (SCADA) replacement at SEPTS. Future phases will continue under the awarded contract allowing for quick turn around and installation to complete the project as funding becomes available. This work was delayed in October 2025 due to the temporary lapse in government funds, and work is expected to resume in February 2026.

- Pantex prepared a scope of work to repair radio communication from SEPTS to the Playa 2 injection wells. This work was delayed in October 2025 due to the temporary lapse in government funds. Work is expected to begin in early 2026.
- Pantex issued a scope of work to continue the Ogallala Investigation. This plan includes drilling, fate and transport modeling support, and completion of reporting. Drilling, pump tests, and completion of well development is scheduled for completion in January 2026, and a completed work plan is scheduled for completion in March 2026.
- Injection operations at the Zone 11 ISB commenced in April 2025 and will complete in December 2025.
- Pantex prepared a 2025 landfill maintenance scope. This work commenced in spring 2025 and every item has been completed with the exception of two items that are anticipated to complete in January 2026:
    - Placement and seeding of a soil cover at Landfill 3
    - Placement and seeding of a soil cover at AOC 11-35
- Pantex contracted for the completion of an investigation work plan for evaluation of PFAS in soils and groundwater. The work plan is scheduled for completion in March 2026.
- Pantex is preparing an EE/CA for the implementation of an early remedial action for the Ogallala Aquifer that includes connecting wells PTX06-1229 and PTX06-1231 to the SEPTS. The EE/CA is contracted for completion in February 2026.
- Pantex started the annual Landfill Cover/Ditch Liner maintenance inspections in November 2025 and inspections are scheduled to be complete in December.

Conclusions and Recommendations for Change

The remedial actions continue to operate and meet short-term expectations for cleanup of the perched groundwater in areas under the influence of the remediation systems. Perched water levels are declining, mass is being removed or reduced, and institutional controls provide protection from use of impacted groundwater while the remedial actions continue to operate to meet long-term goals. Pantex has extended treatment systems to areas that were not under the influence of existing remediation systems to improve performance of the remedial action over time. Pantex has completed projects to provide new injection and irrigation capabilities for management of treated water to allow consistent operation of the pump and treat systems.

The SEPTS continued to remove COC mass and water from critical areas in the perched aquifer; thus, decreasing head that drives vertical and lateral movement of perched groundwater. P1PTS operated approximately 49% of the first six months of 2025 in accordance with the pump and treat operation goals that prioritize the operation of the SEPTS when water outlets are limited.

Downgradient wells at the Zone 11 ISB are demonstrating treatment. Most downgradient wells meet or are near the GWPS for the primary contaminants and breakdown products. Pantex changed the injection strategy at the Z11 ISB in 2019 to attempt better distribution of amendment between wells and provide better treatment of TCE and perchlorate. Data indicates injection of a more soluble carbon source (molasses) improved amendment distribution and reducing conditions in

areas where wells are widely spaced. Pantex will continue to evaluate the data and make appropriate recommendations for treatment in the upcoming progress reports.

Monitoring results for areas downgradient of the Southeast ISB system continue to demonstrate that treatment has been generally effective. COC concentrations meet the GWPS at the Southeast ISB at two downgradient wells, with a third dry well having previously met GWPS. One downgradient well at the Southeast ISB (PTX06-1153) was converted into an ISB injection well as previously recommended and the well was removed as a Point of Compliance well from HW-50284 so the well could be treated. This well is now called PTX06-ISB171 and was injected during the 2025 injection event to treat RDX more aggressively in that area. Additional limited injection was carried out at the Southeast ISB in summer 2025. Further recommendations will be made based on evaluation of data over time.

The Southeast ISB Extension was installed at the Pantex fence line to arrest the continued movement of COCs to offsite properties. The system has been operating and is being evaluated for its effectiveness at the offsite property. The Southeast ISB Extension is demonstrating treatment below the GWPS at downgradient monitoring wells.

Pantex continues progress toward cleanup of the offsite southeast lobe of perched groundwater. The Offsite ISB was designed to address HE contamination found beneath neighboring properties. Installation of infrastructure for Phase 1 and 2 of the Offsite ISB completed in 2021, with semi-annual injections occurring afterward. Installation of all phases was completed in September 2023. As injections continue at the system, concentrations of HEs are trending downward in sampled REC wells, including those at the leading edge of the plume. The final downgradient monitoring well data for the system demonstrates that all HEs remain below the GWPS, indicating the system is arresting downgradient plume movement as expected.

The PCR ISB system began operation in 2024 and two injection events have occurred. Results from two TZM wells indicate that treatment conditions are developing. Perchlorate and Cr(VI) are below GWPS in the TZM wells indicating the system is effectively treating the plume.

Pantex was recently made aware that the production of standards for the breakdown products of RDX have been discontinued in response to a change in ATF regulations. Due to limited stock of the standards, analysis for the RDX breakdown products will no longer be conducted. To ensure that the new Ogallala wells can be sampled at least twice to support the investigation, Pantex is planning to discontinue some sampling (e.g., pump and treat system sampling) to preserve the standards as long as possible. Pantex is currently working to determine solutions that will allow for the continuation of the analyses for these compounds; however, the time frame for resolution of this issue is unclear. Pantex will provide updates on progress towards a solution in future reporting.

The groundwater remedies are considered protective for the short-term, as untreated perched groundwater usage is controlled to prevent human contact and monitoring data continue to indicate that the remedial actions remain generally protective of the Ogallala Aquifer. Additional investigation of the area of the Ogallala Aquifer near PTX06-1056 began in 2023 with installation of three new monitoring wells. Due to the presence of RDX at a much higher concentration in newly

installed PTX06-1229, Pantex continued the expansion of the Ogallala Investigation well network by installing three wells in 2024/early 2025. Results from those wells provided more information at the plume source and the extent of contamination appears to be defined by one of those wells. Pantex continues to evaluate the detections at the new wells and install additional wells to further evaluate nature and extent of the detections. Pantex plans to release an Ogallala Investigation Work Plan in March 2026 that will detail the final steps to be taken to complete investigation of nature and extent of plumes in the Ogallala Aquifer. Although a few wells indicate an impact to the Ogallala Aquifer, the wells affected by HEs are distant from Pantex or neighboring water supply wells. Samples collected at other Ogallala wells near the boundary of Pantex do not exhibit the presence of HEs indicating there is no present impact to Pantex or neighboring water resources. Pantex will continue monitoring wells in accordance with the *Sampling and Analysis Plan* (Pantex, 2025c) and provide results in future reporting.

To address the large mass of HEs in source area wells, Pantex is preparing an EE/CA for the implementation of an early remedial action to control downgradient movement of the plume while the investigation, remedy selection, and installation of a permanent remedy continues. This action includes the connection of three Ogallala wells to the SEPTS that are anticipated to stabilize plume movement from areas of higher concentration. The EE/CA will be made available to the public in spring 2026 after regulatory agencies have completed reviewing the document.

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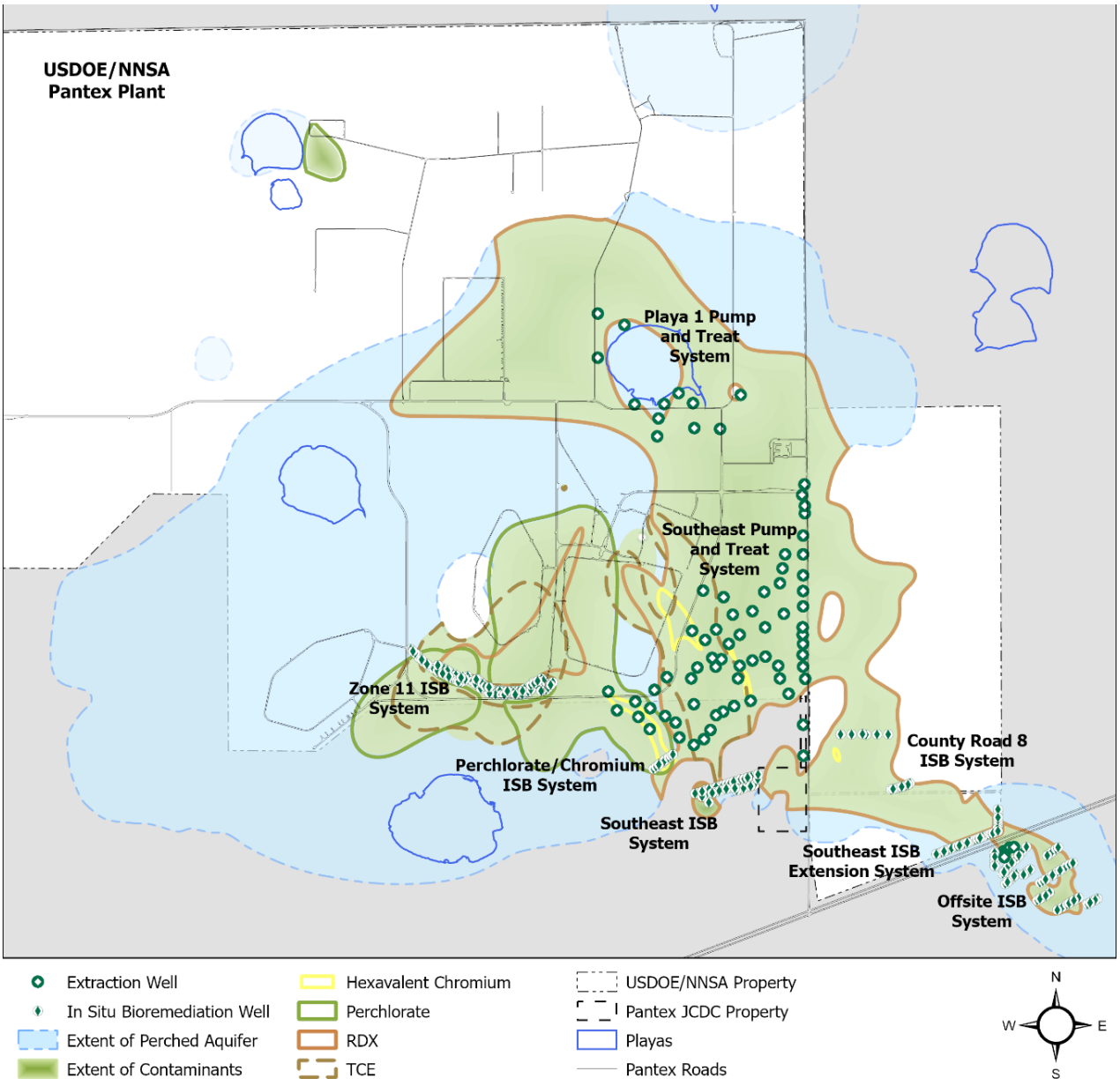
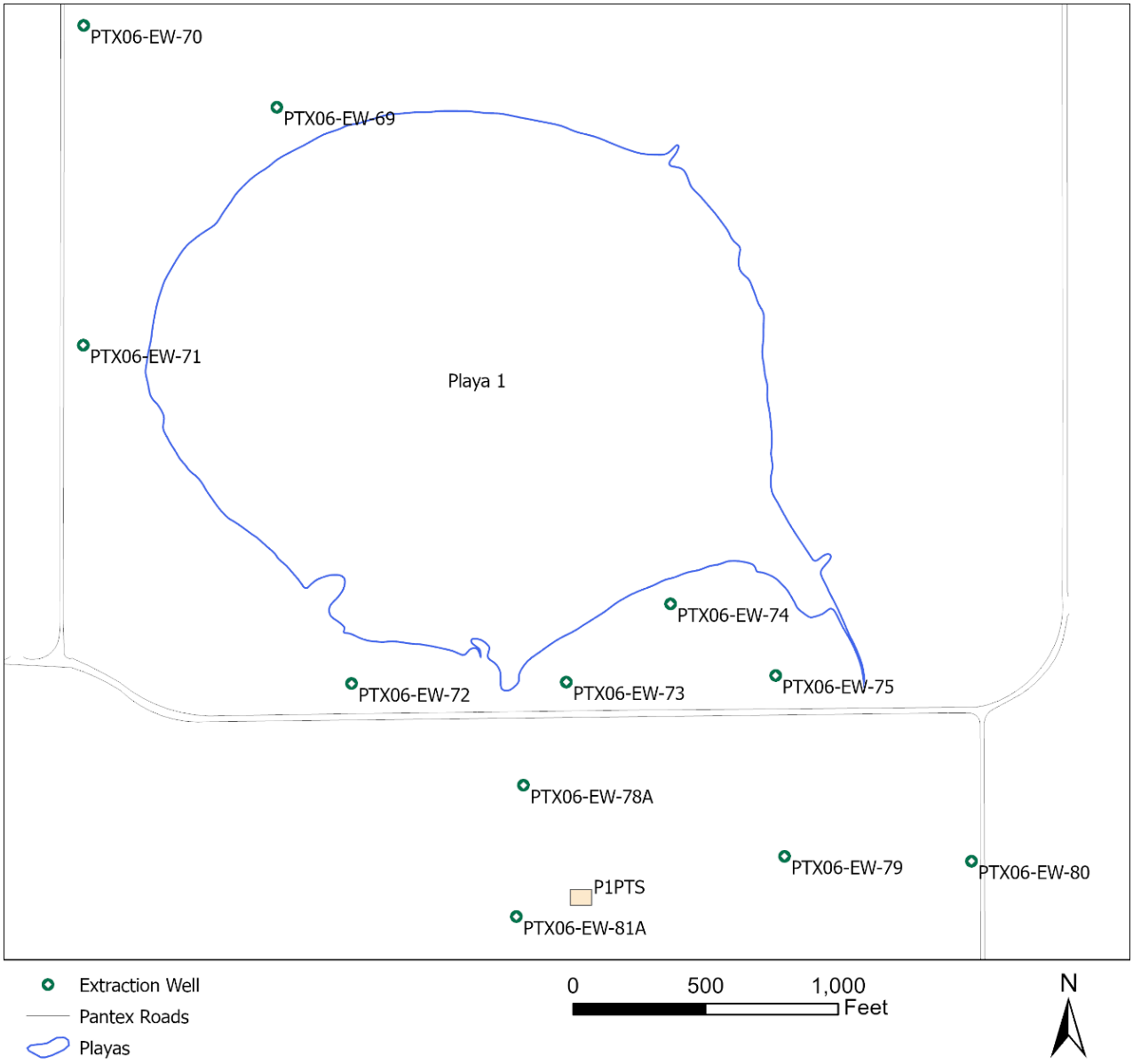
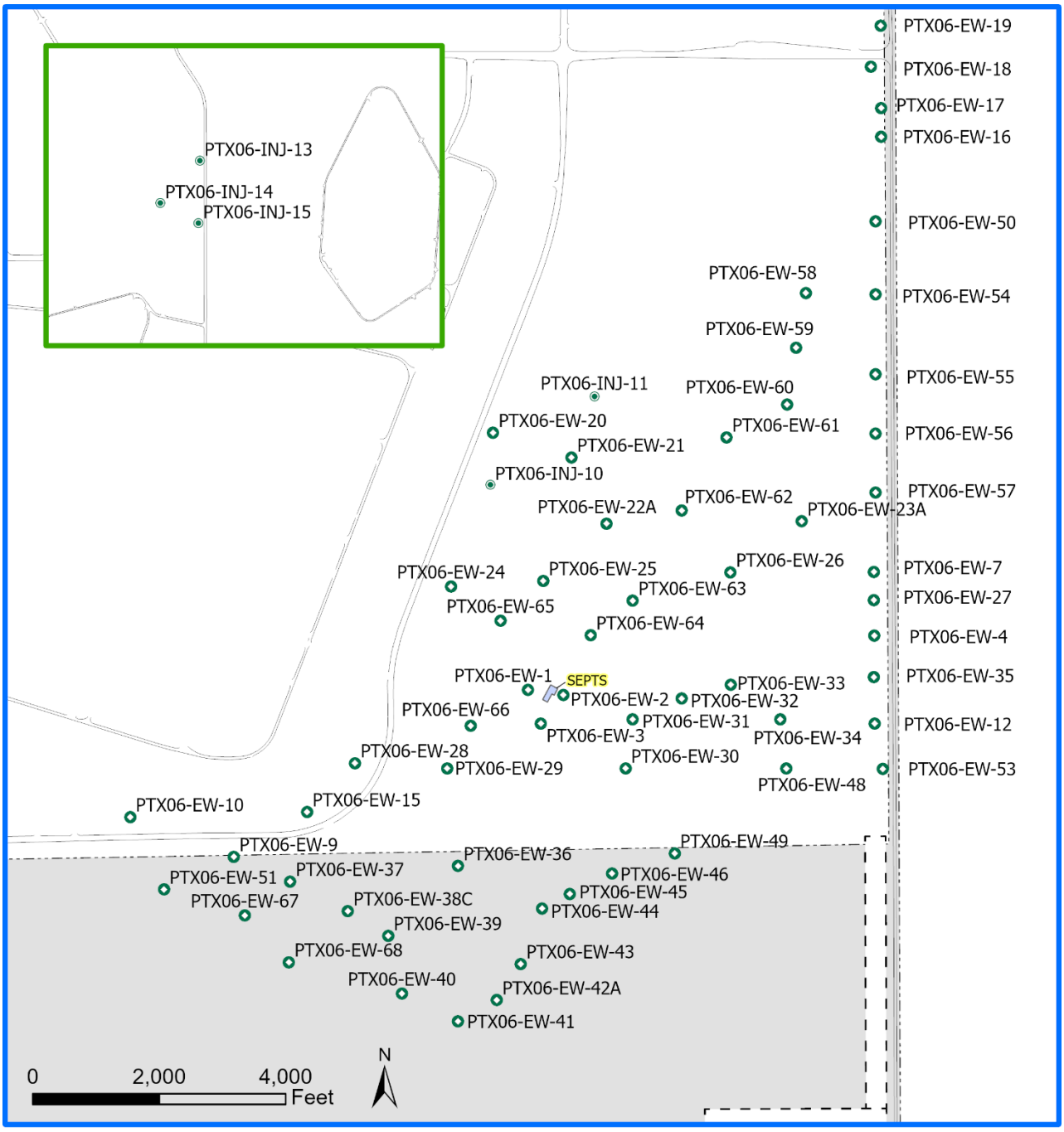
Appendix A
Maps



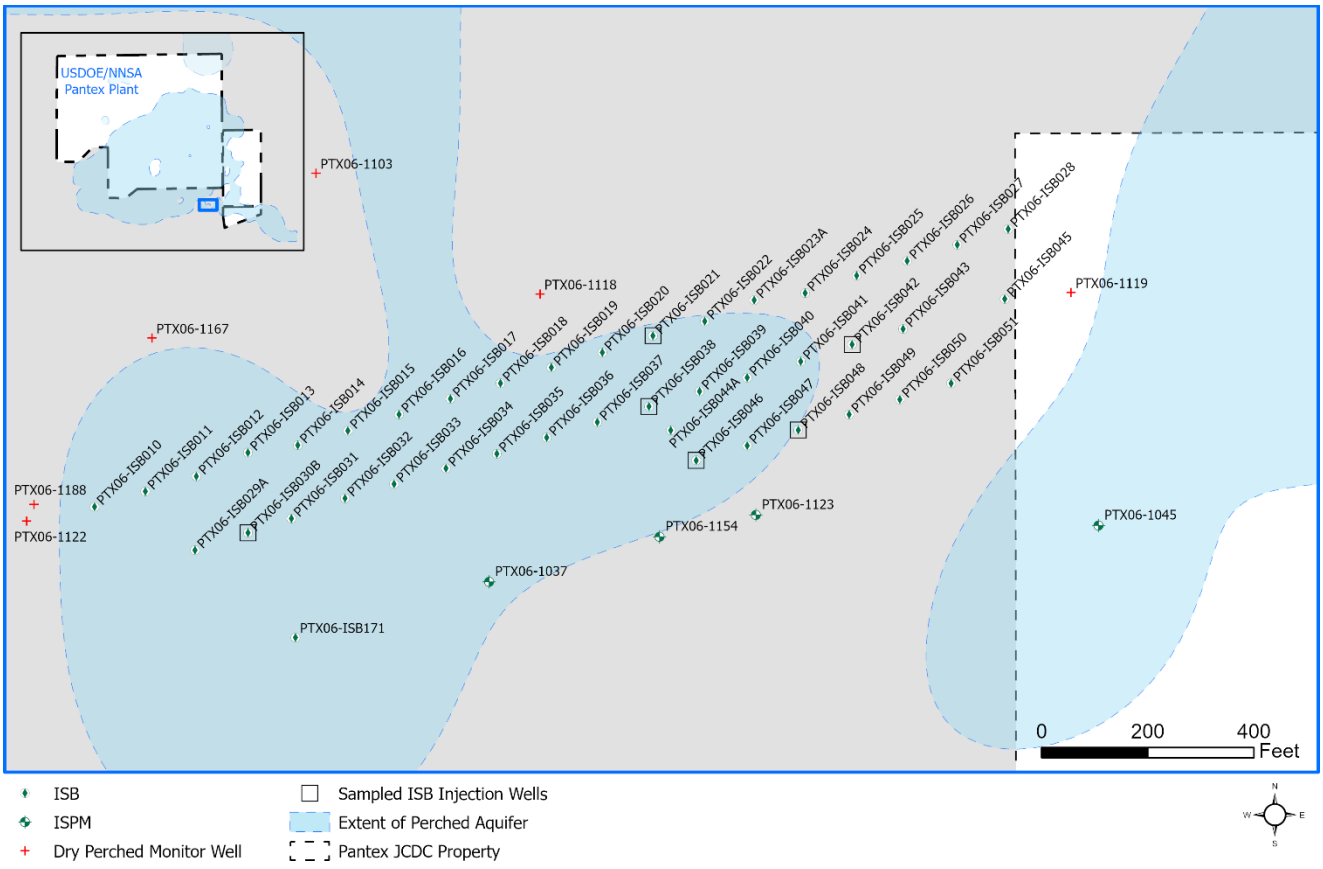
Extent of Perched Groundwater and Contaminant Plumes



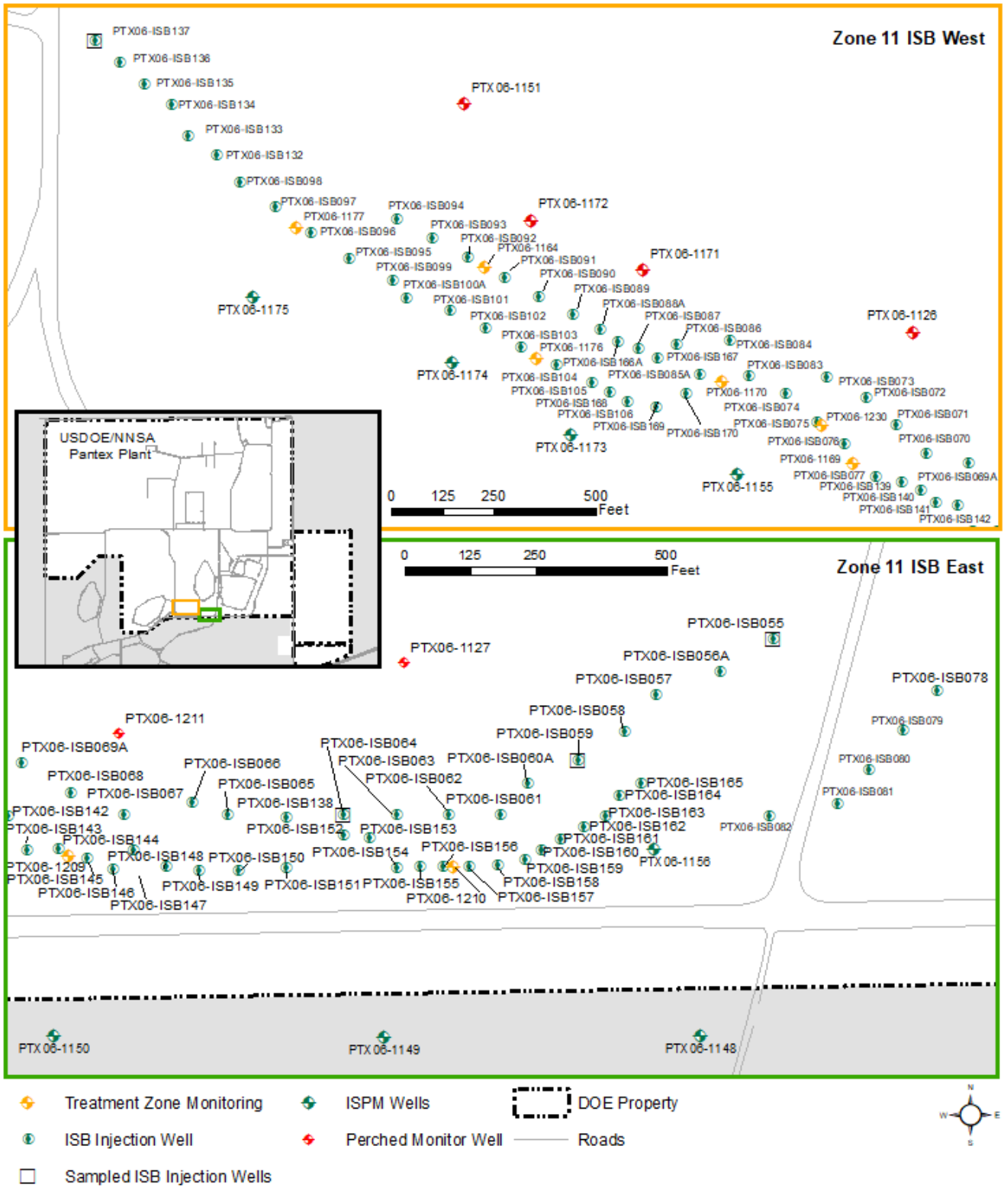
Playa 1 Pump and Treat System Wells



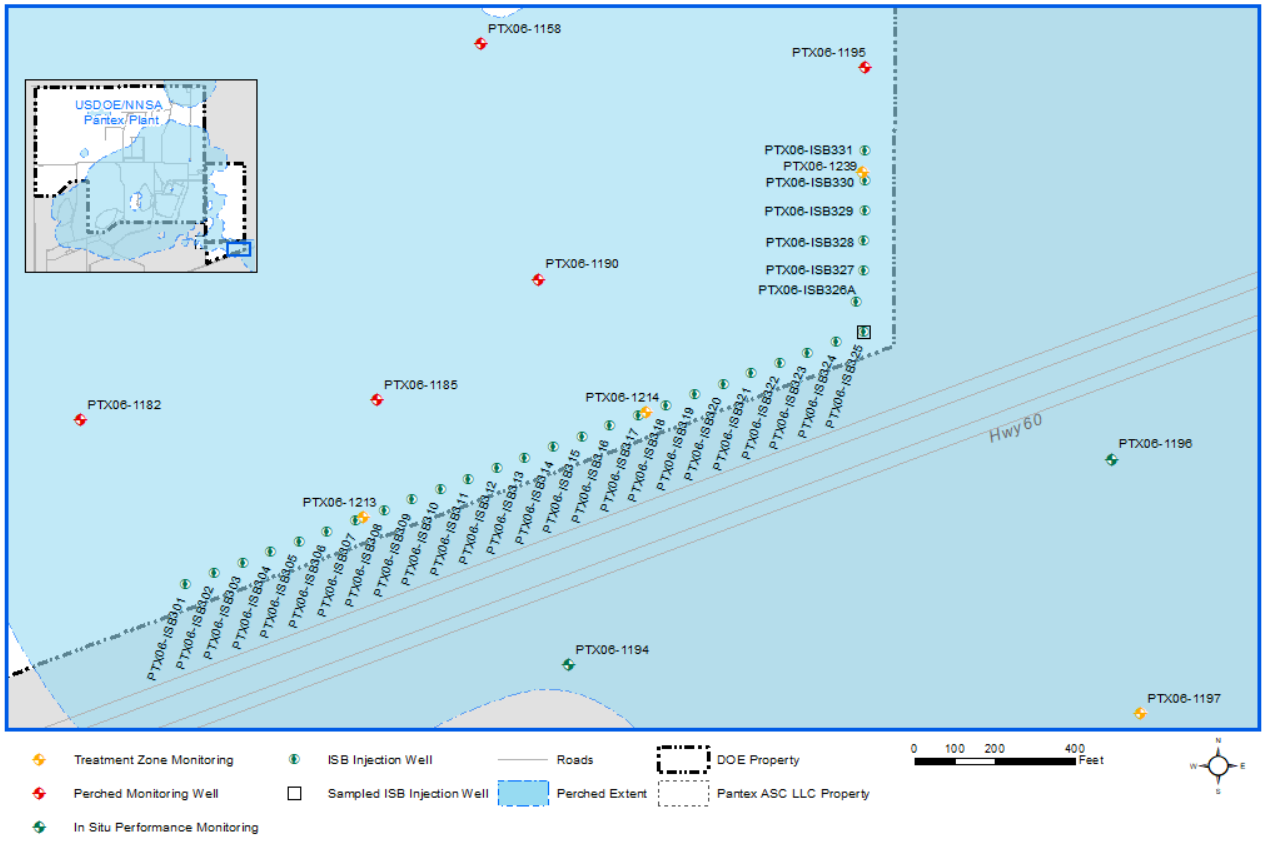
Southeast Pump and Treat System Wells



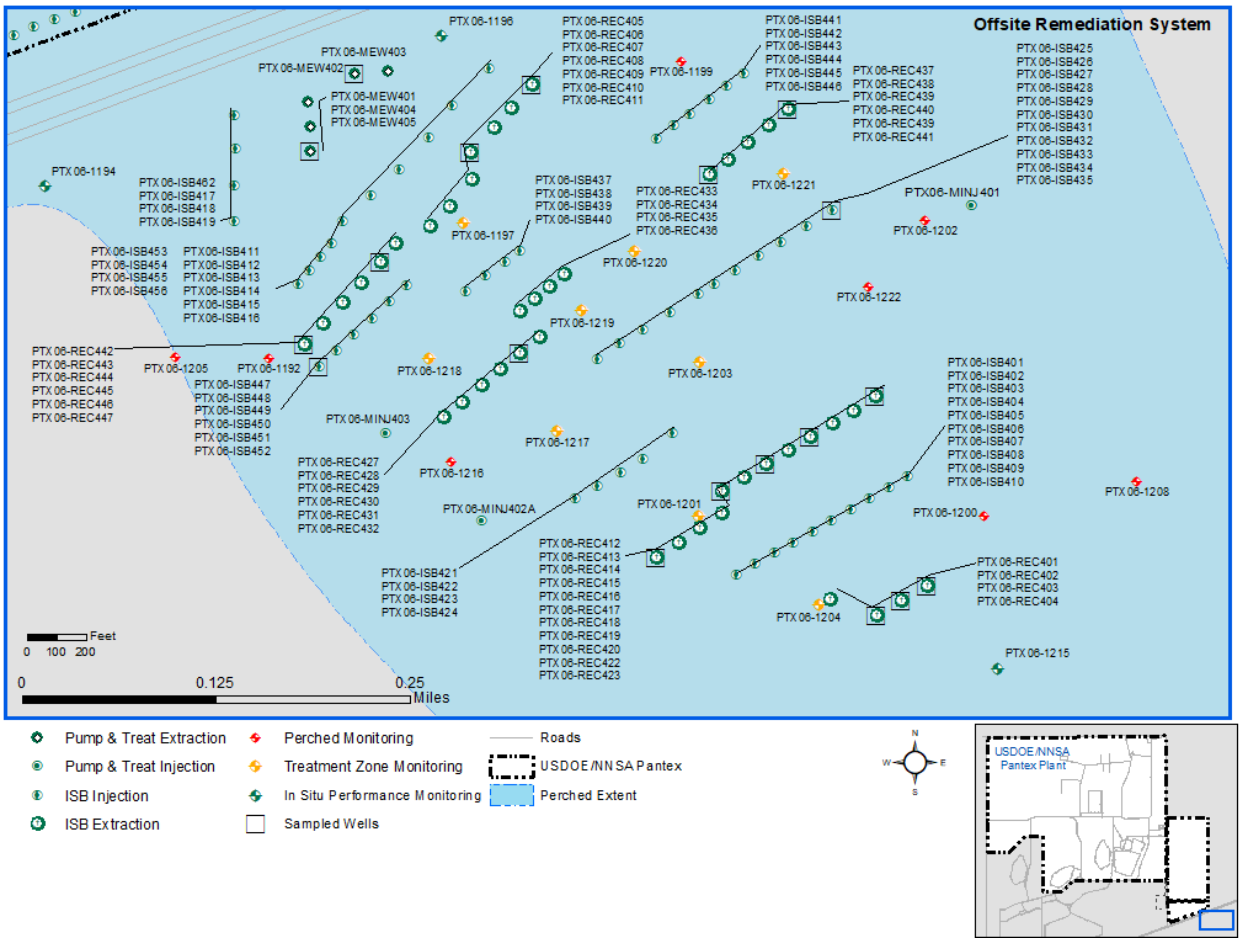
Southeast ISB Wells and Sampling Locations



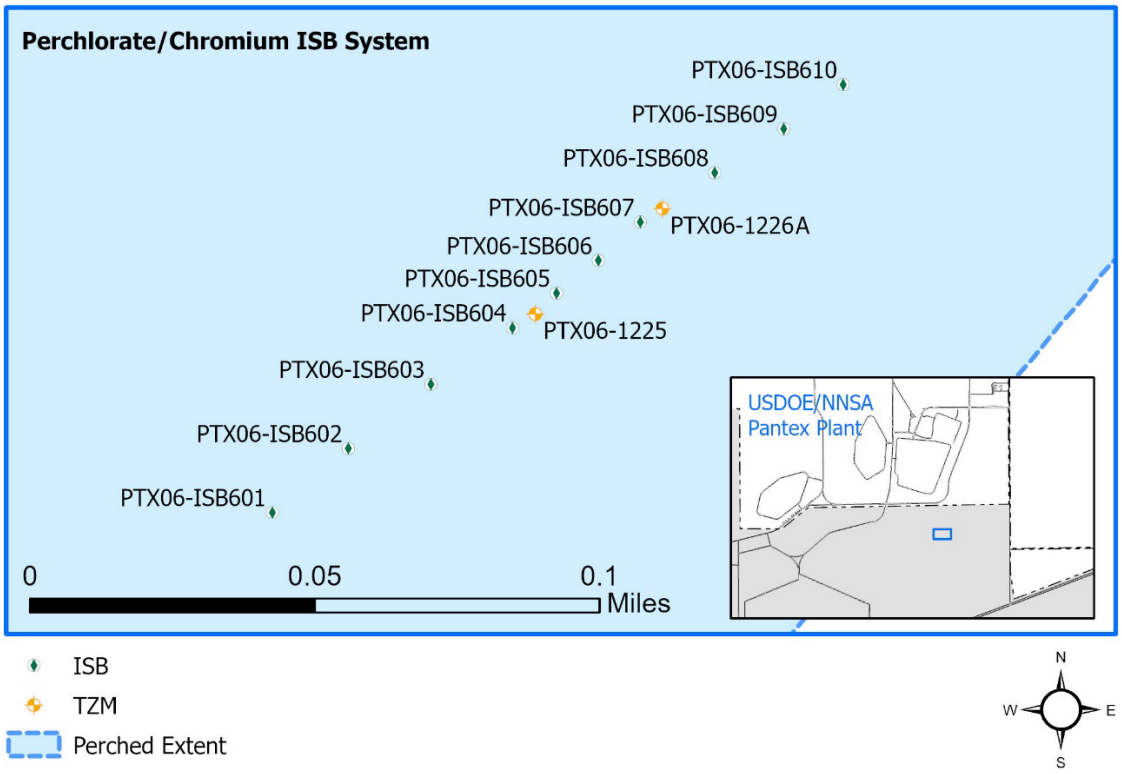
Zone 11 ISB Wells and Sampling Locations



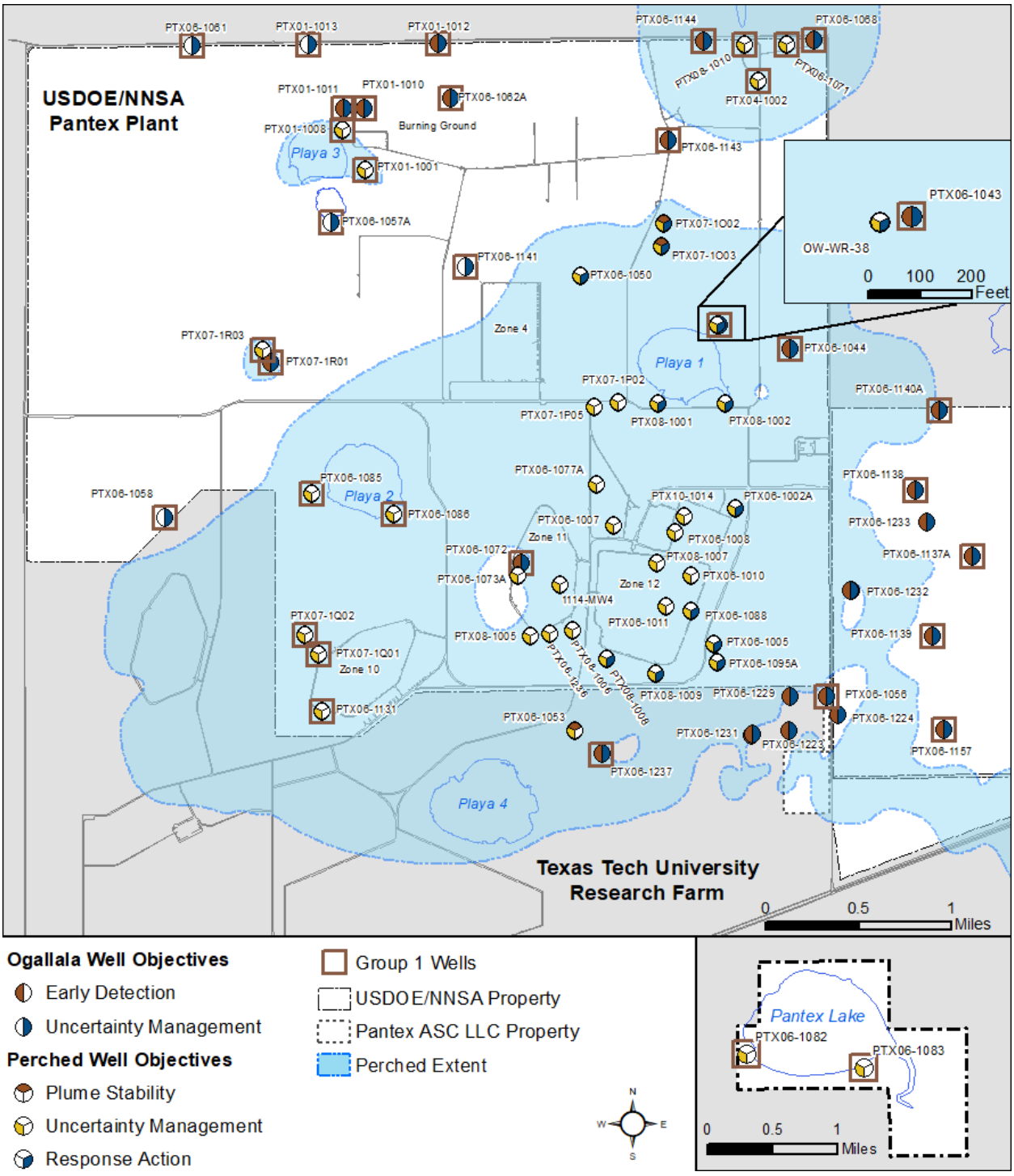
Southeast ISB Extension Wells and Sampling Locations



Offsite ISB Wells and Sampling Locations



Perchlorate/Chromium ISB System Wells



Ogallala Well Objectives

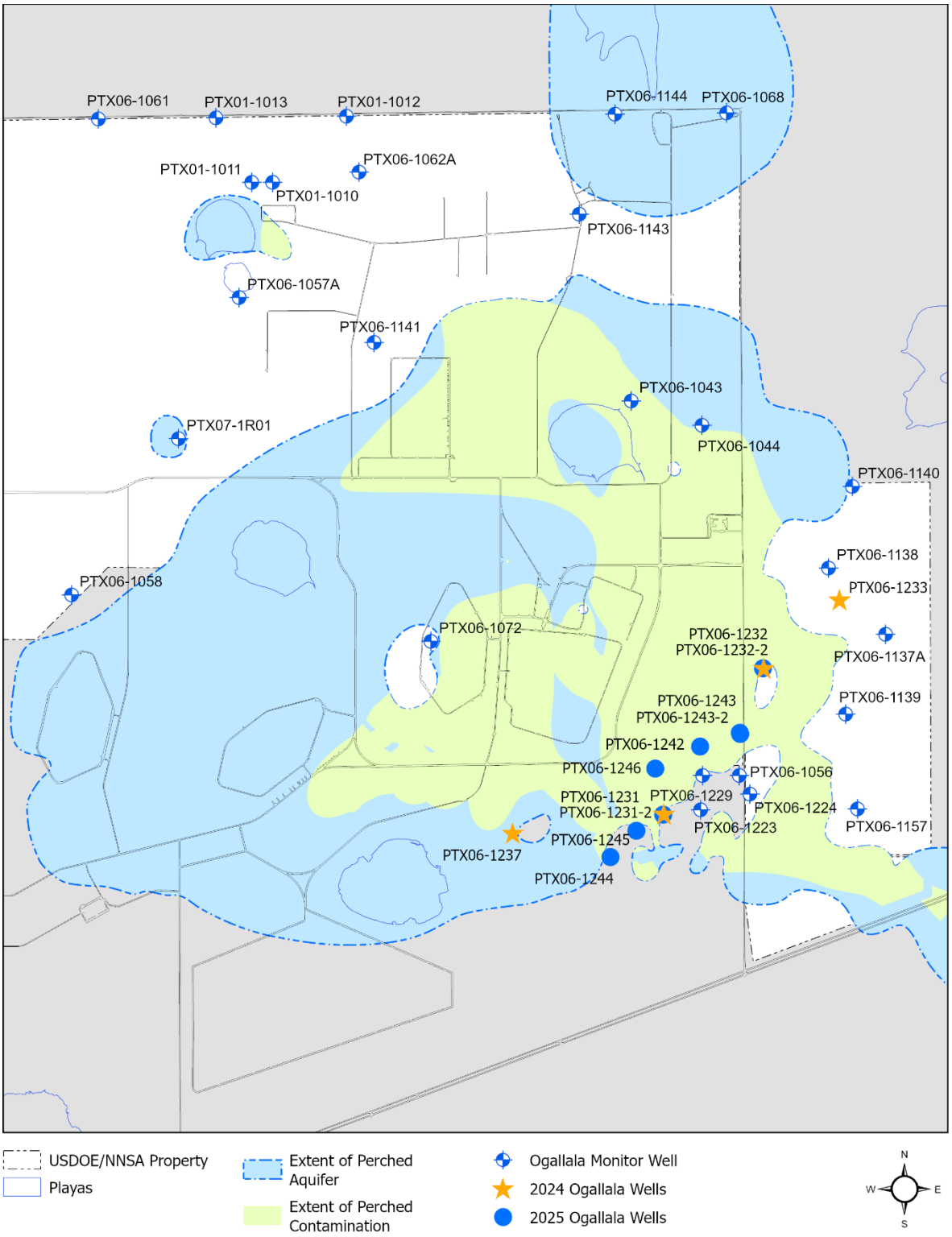
- Early Detection
- Uncertainty Management

Perched Well Objectives

- Plume Stability
- Uncertainty Management
- Response Action

- Group 1 Wells
- USDOE/NNSA Property
- Pantex ASC LLC Property
- Perched Extent

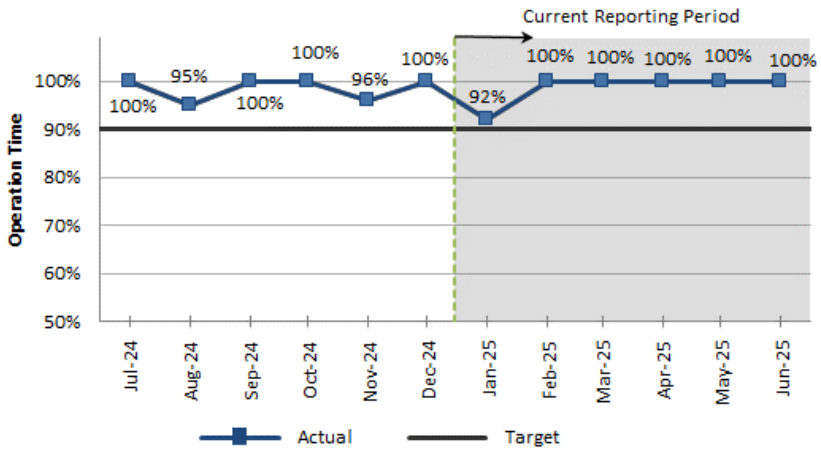
Uncertainty Management and Early Detection Wells Evaluated in the Semiannual Progress Report



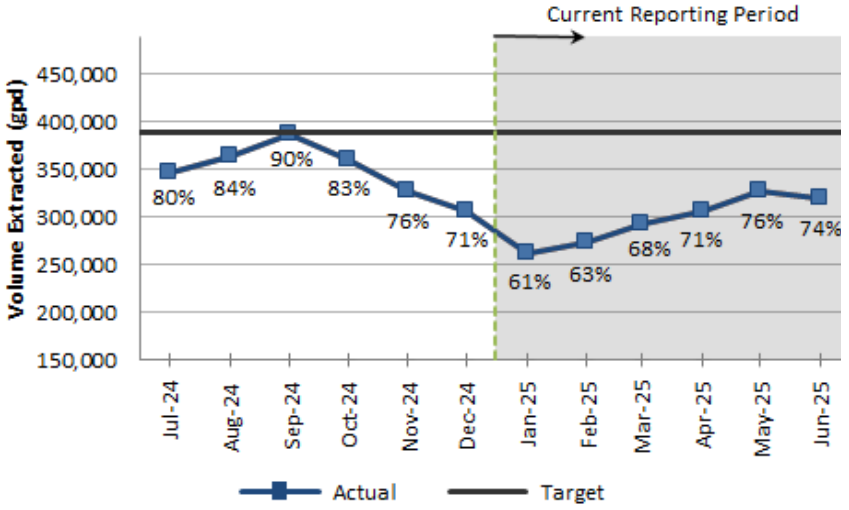
Location of Ogallala Wells Installed in 2024/2025

Appendix B
Pump and Treat System Graphs

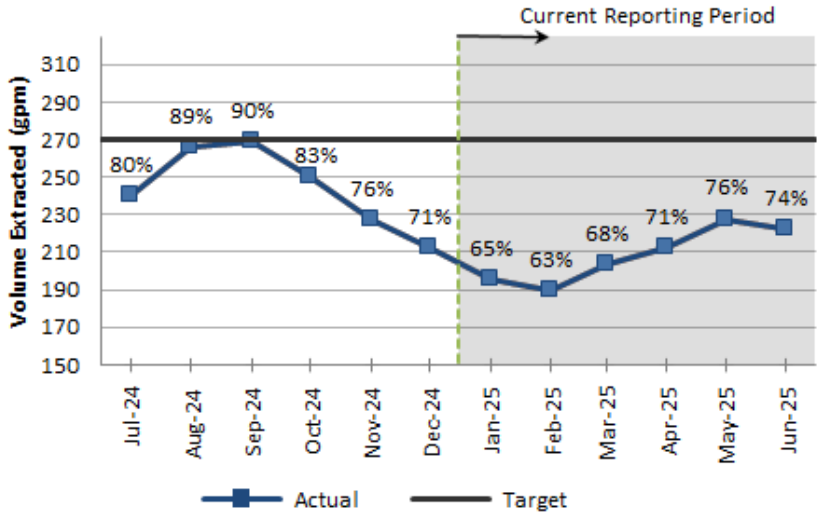
Southeast Pump and Treat System Graphs



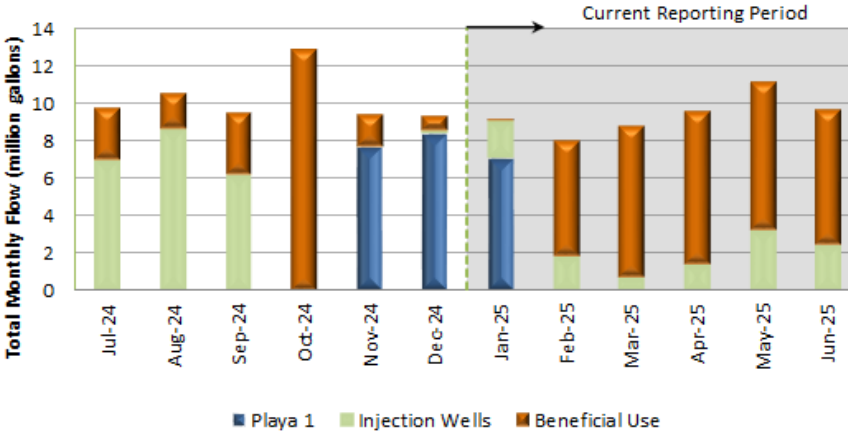
SEPTS Operation Time vs Target



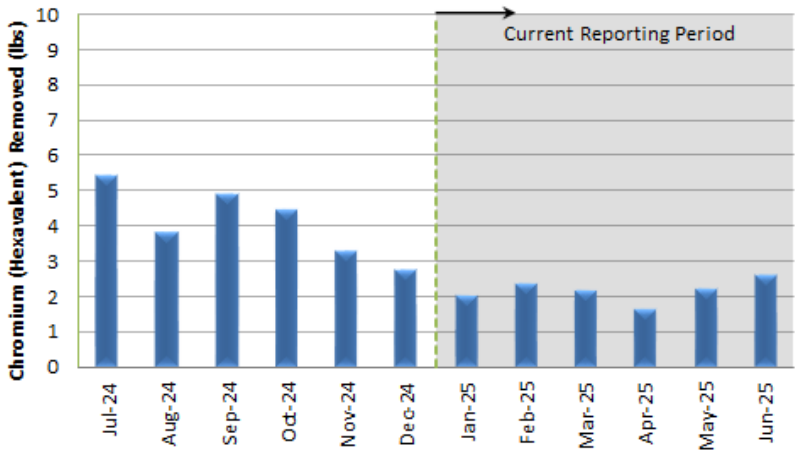
SEPTS GPD and % Capacity



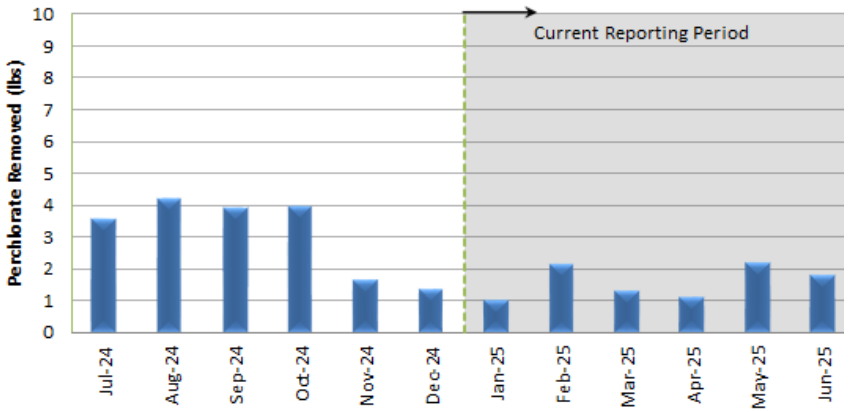
SEPTS Average GPM and % Capacity



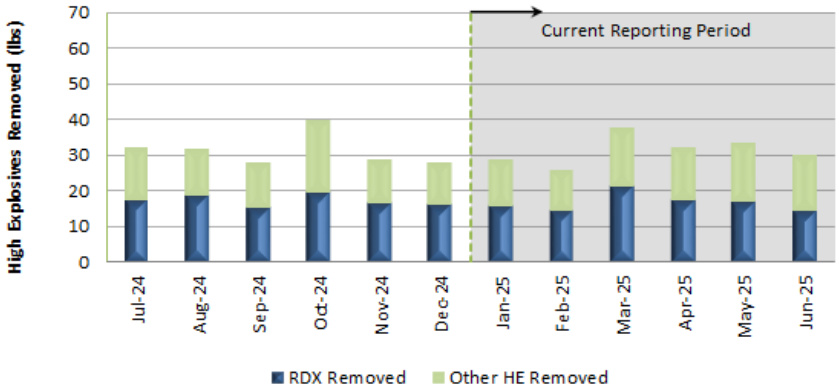
SEPTS Monthly Total Flow



SEPTS Chromium Removal by Month

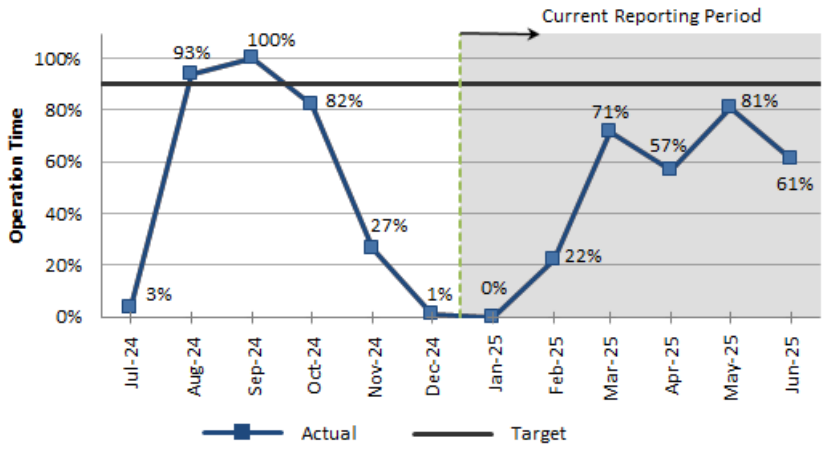


SEPTS Perchlorate Removal by Month

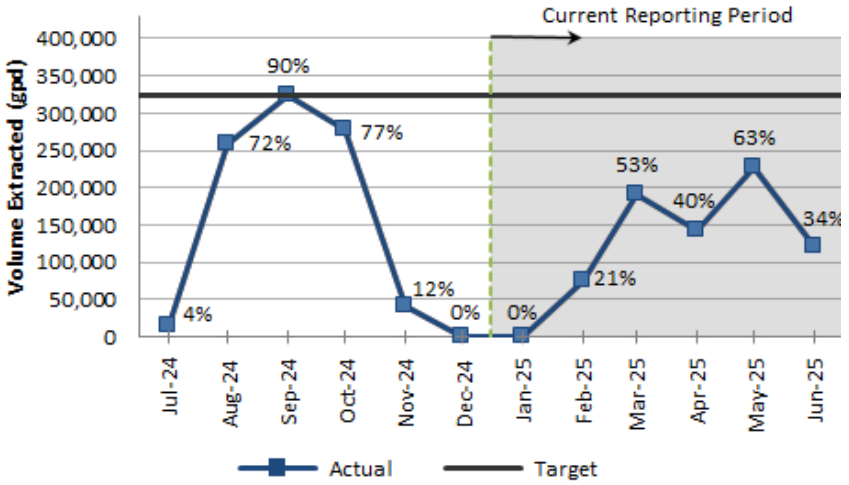


SEPTS HE Removal by Month

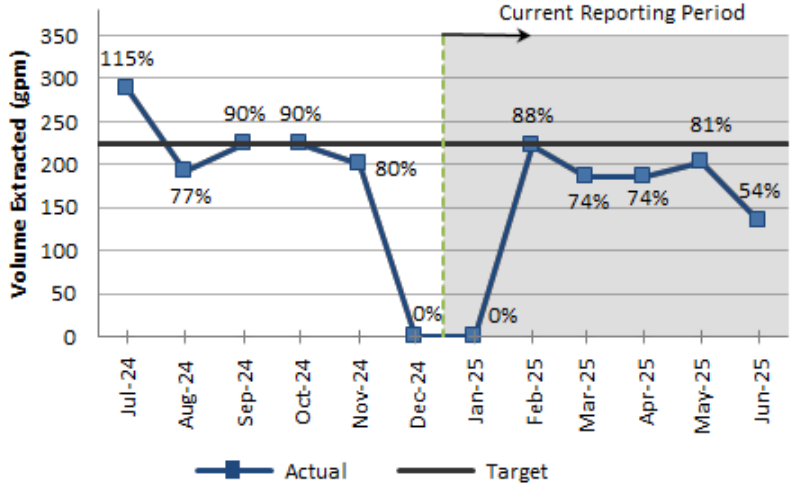
Playa 1 Pump and Treat System Graphs



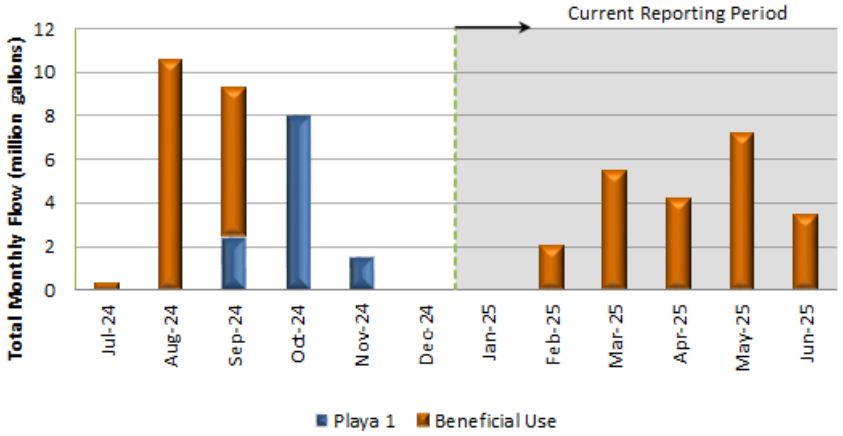
P1PTS Operational Time Vs Target



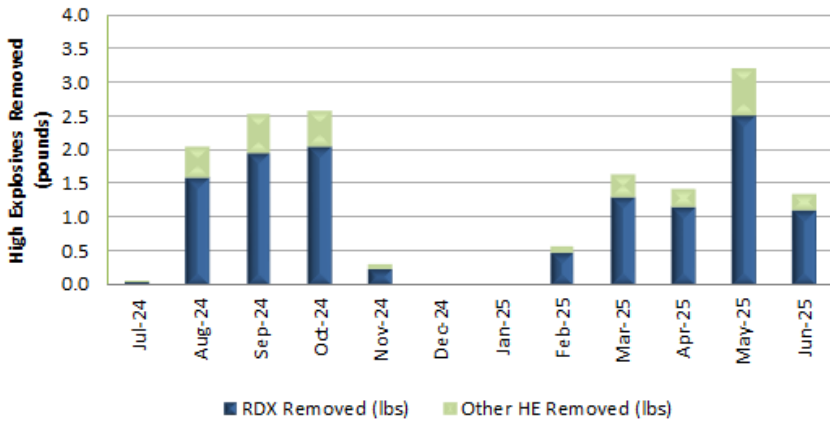
P1PTS Average GPD and % Capacity



P1PTS Average GPM and % Capacity



P1PTS Monthly System Total Flow



P1PTS HE Mass Removal by Month

Appendix B Glossary

Operation Time	Operation time represents the percentage of the total number of hours the system was actually operated vs. the total possible hours the system could have operated on a monthly basis.
GPM Extraction	The gallons per minute (GPM) extraction rate represents the extraction rate from the well field while the system was operating. This is a measurement of the well field's capability to support the overall system throughput goals. Low well field rates can occur due to inoperable wells or decline in saturated thickness that makes extraction difficult.
GPD Extraction	The gallons per day (GPD) extraction rate represents the system's ability to meet overall throughput goals, considering the well field extraction rate and the system's operational rate. This rate is affected by the ability to extract water from the well field and the system downtime.
Total Monthly Flow	Total monthly flow is the total volume of extracted water measured at the influent point of the pump and treat system. Individual well measurements and flow rates are provided in the annual progress report.

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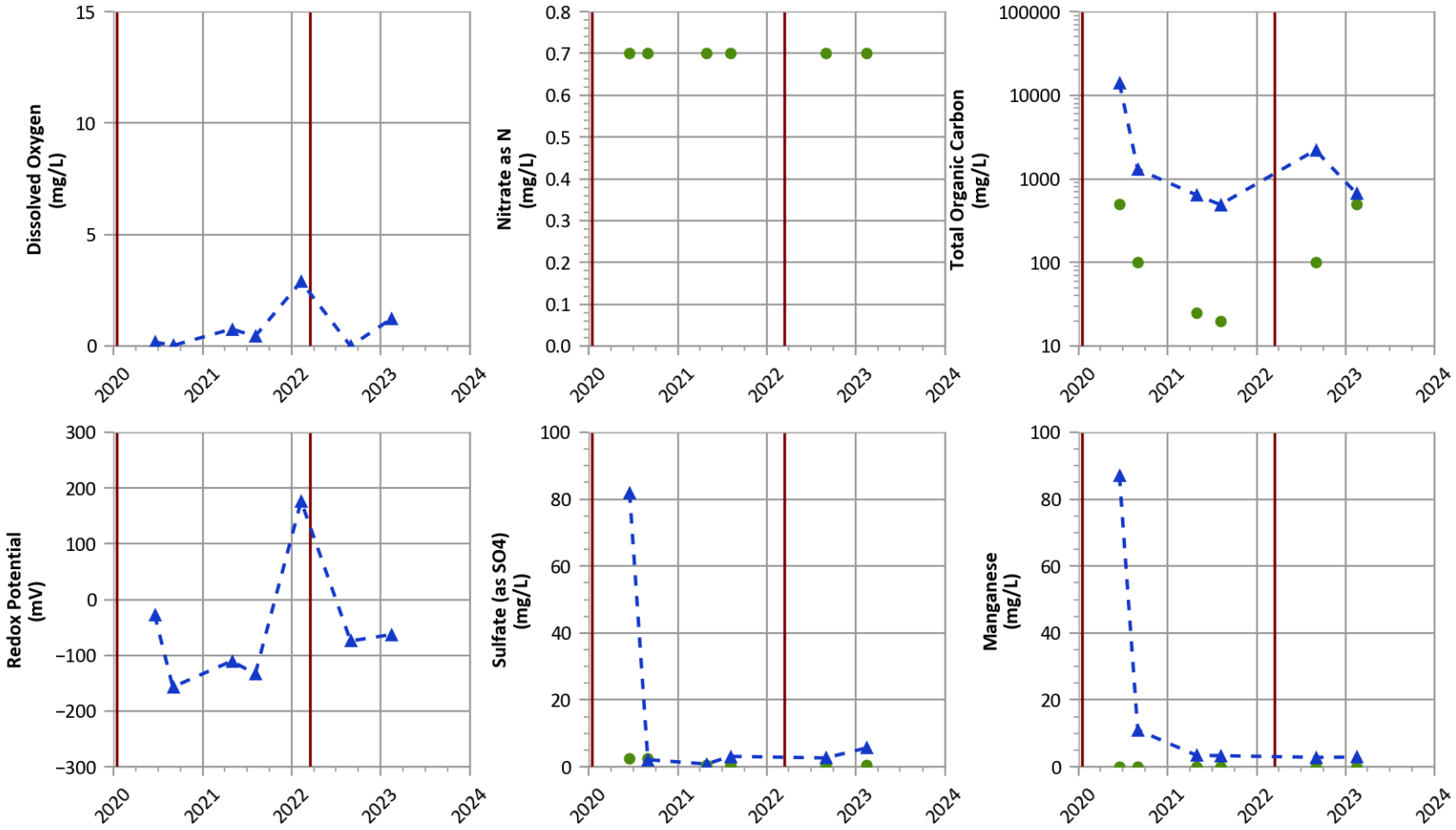
Appendix C
ISB Graphs

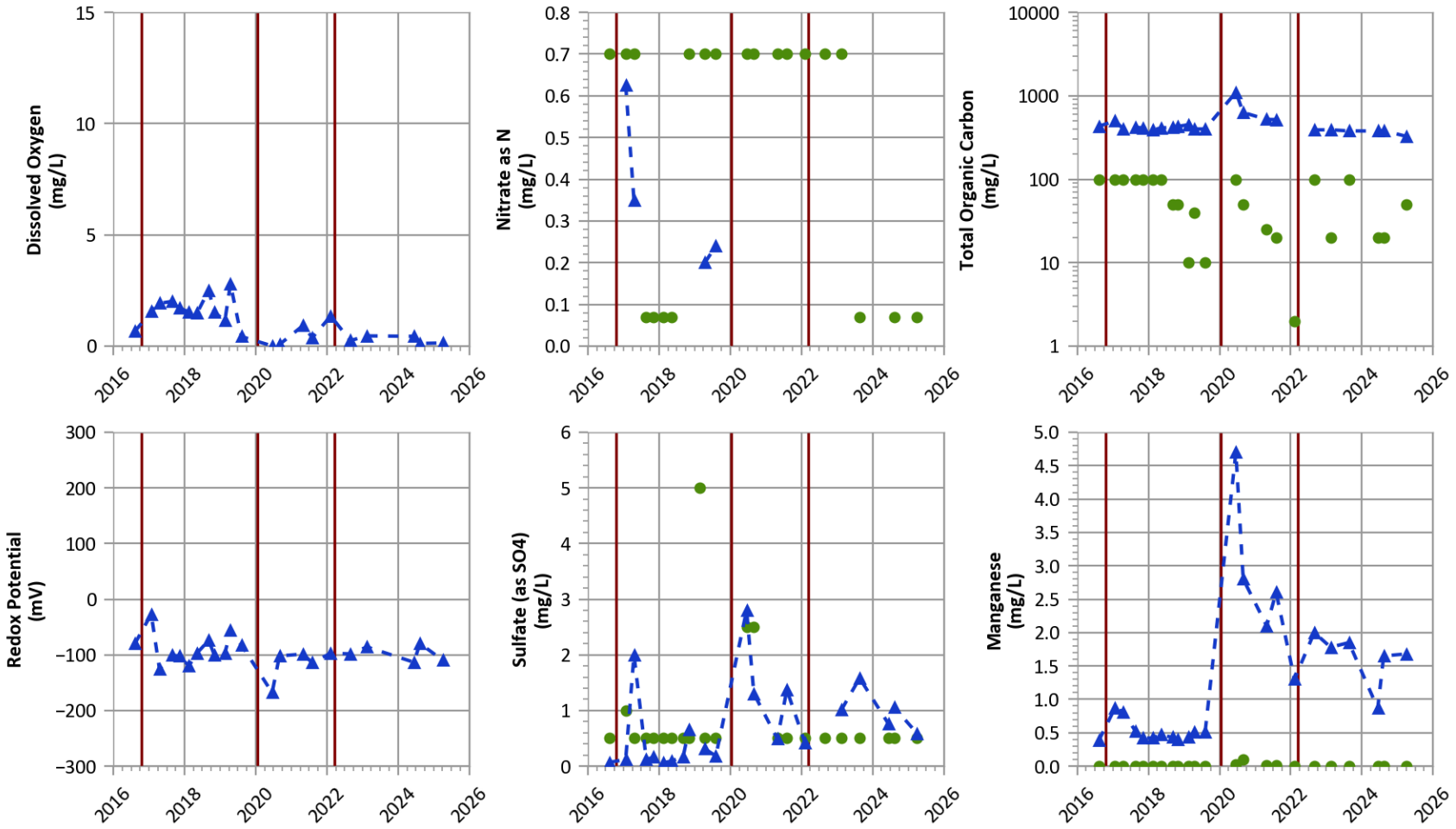
Southeast ISB Graphs

PTX06-ISB021 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

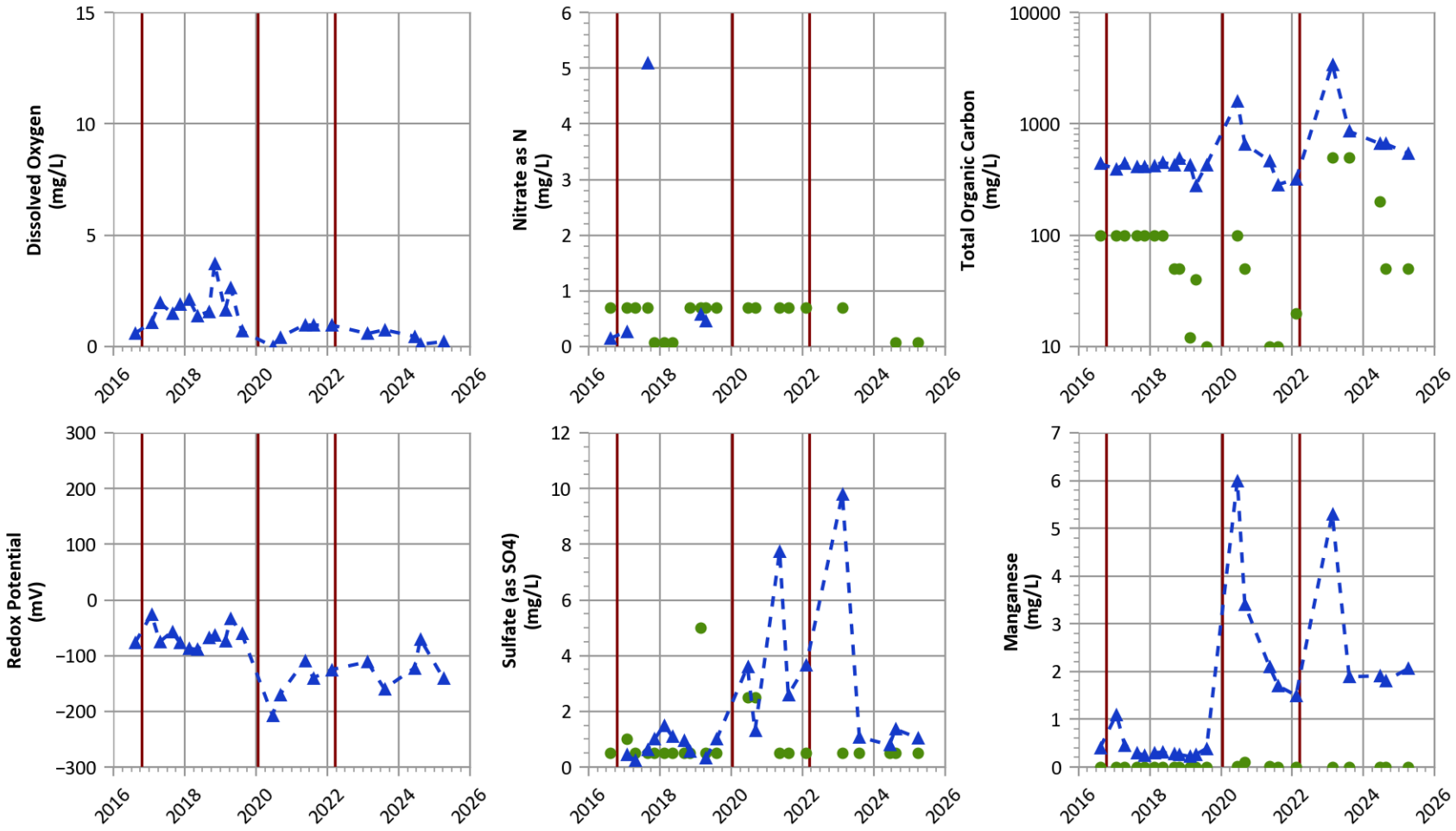
PTX06-ISB030B Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

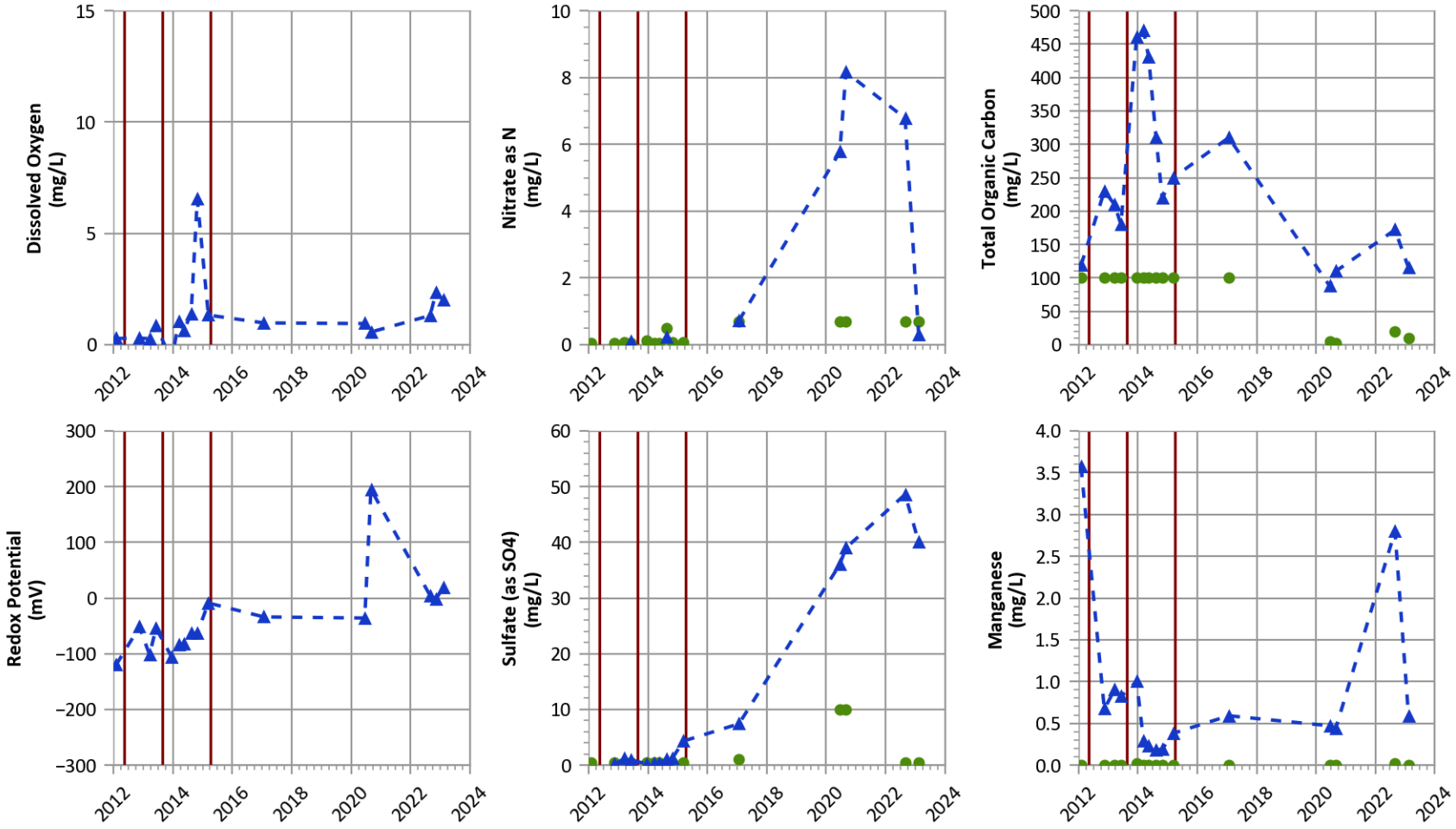
Well Location
Southeast ISB

PTX06-ISB038 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



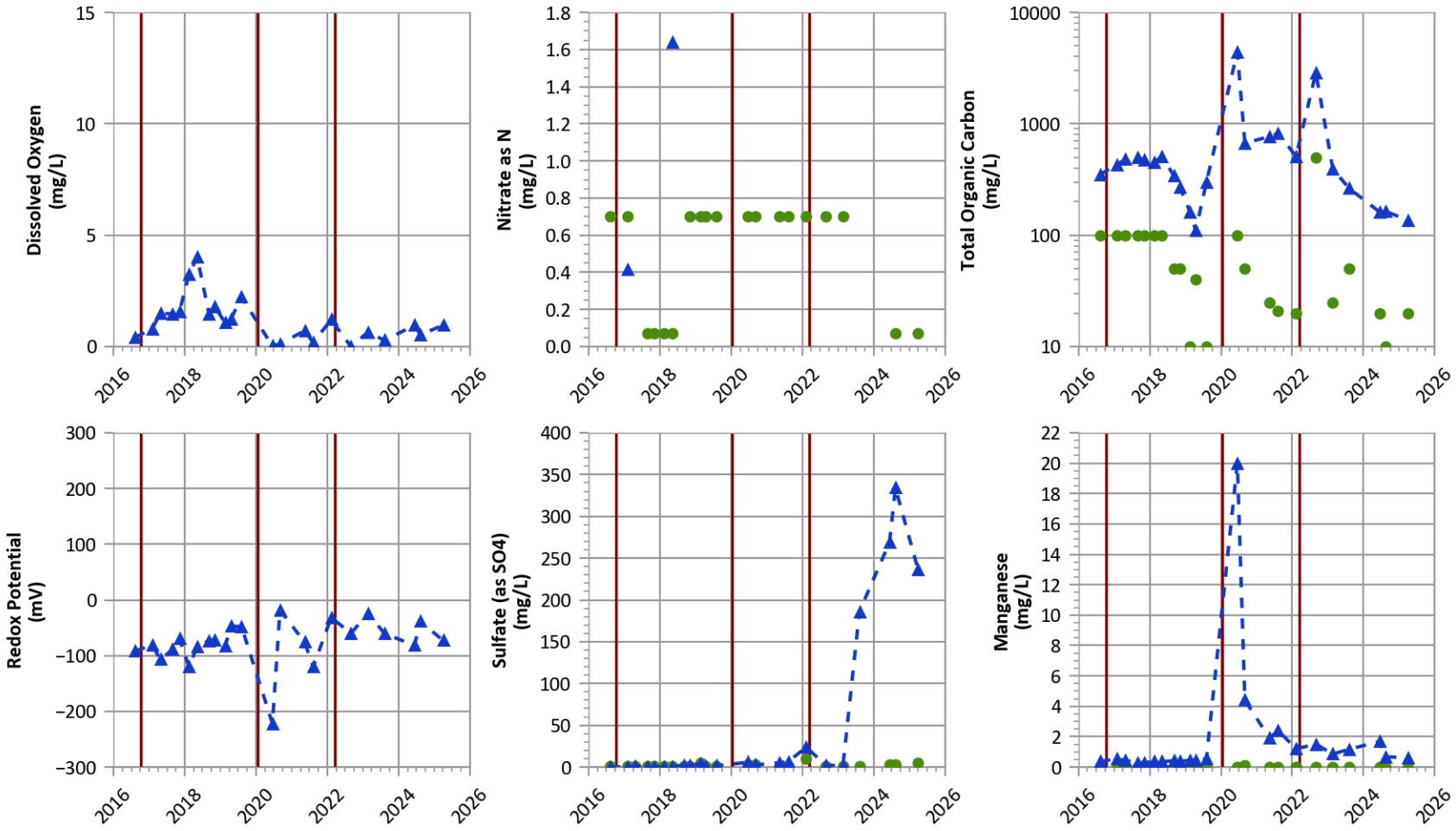
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-ISB042 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-ISB046 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

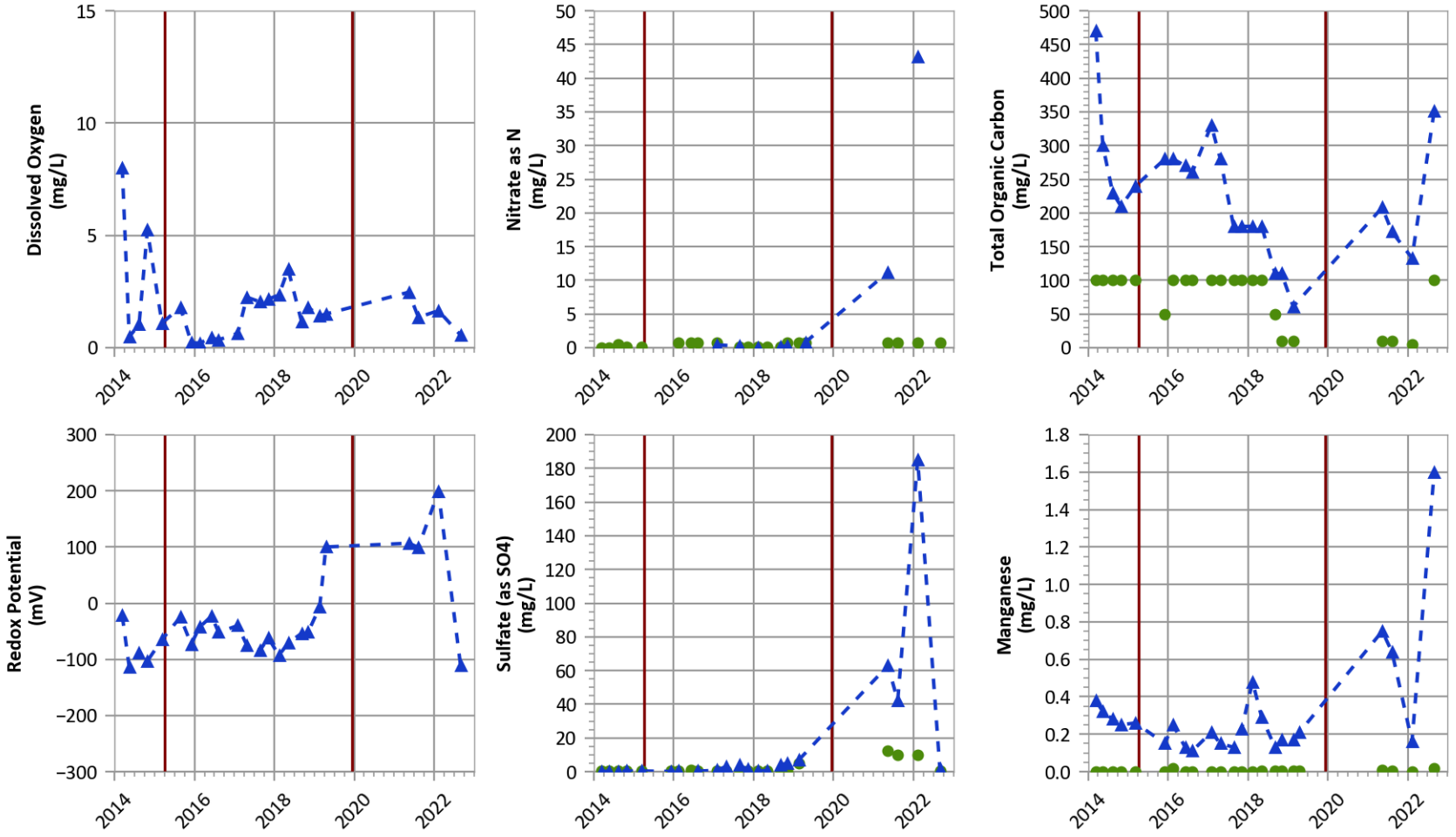


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend
Injection Dates

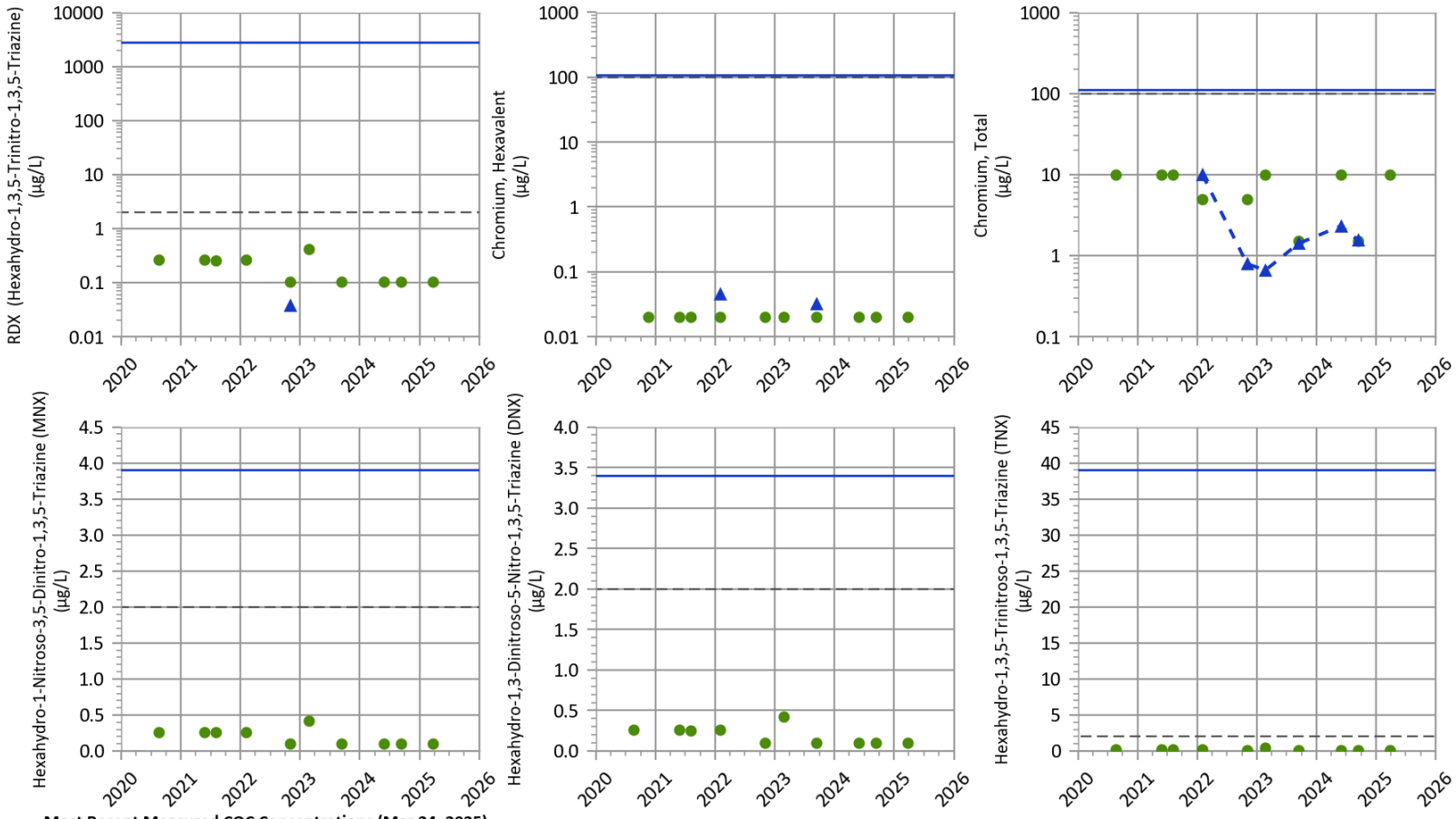
Well Location
Southeast ISB

PTX06-ISB048 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



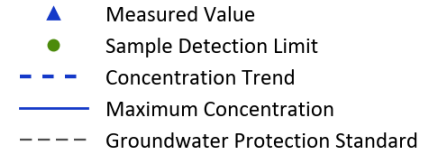
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-1037 Downgradient Performance Indicators
Southeast In Situ Bioremediation System
USDOE/NNSA Pantex Plant



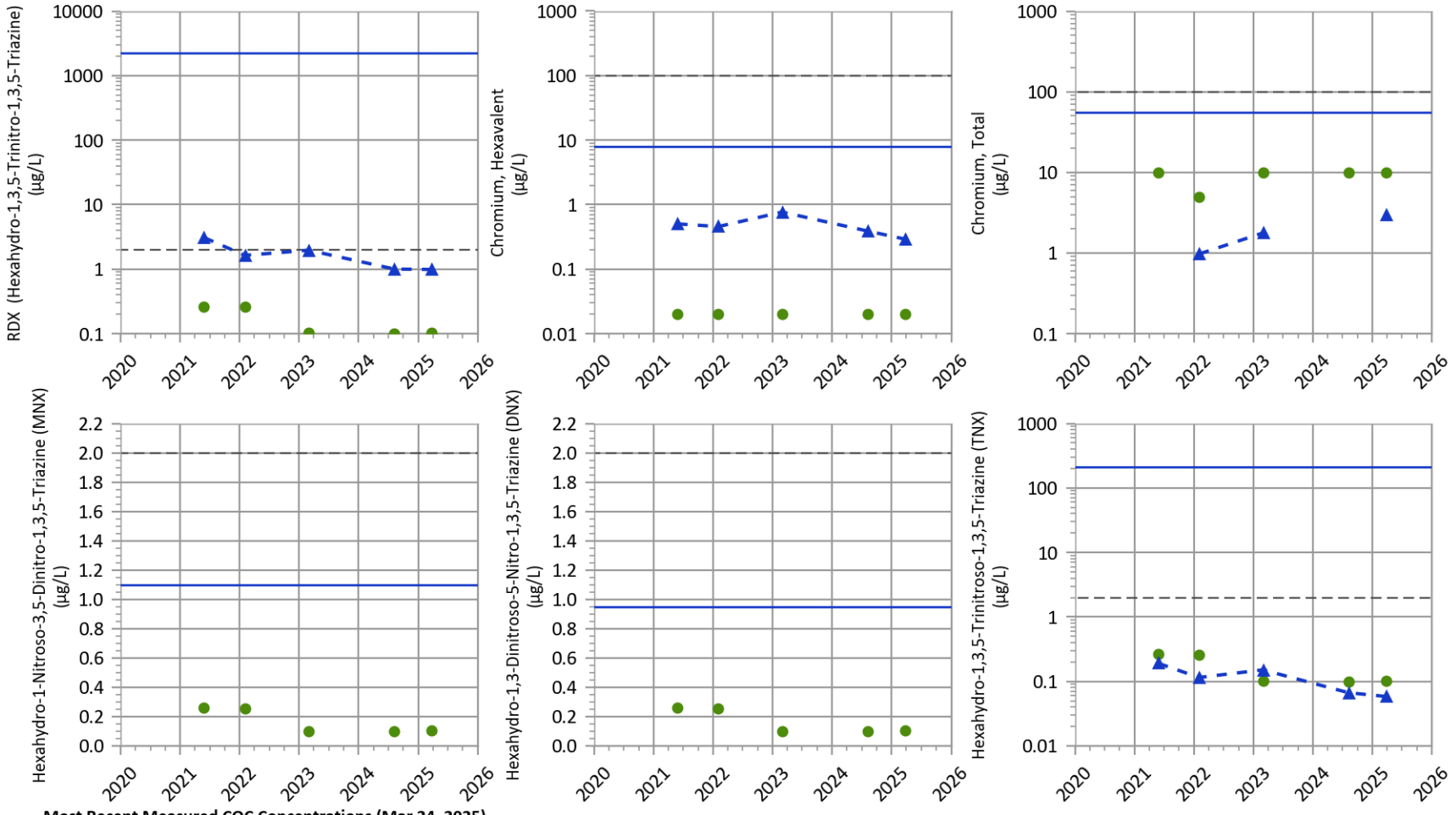
Most Recent Measured COC Concentrations (Mar 24, 2025)

COC	Concentration (µg/L)	GWPS (µg/L)
RDX	Non-Detect	2.0
MNX	Non-Detect	2.0
CR-6	Non-Detect	100.0
DNX	Non-Detect	2.0
CR	Non-Detect	100.0
TNX	Non-Detect	2.0



Well Location

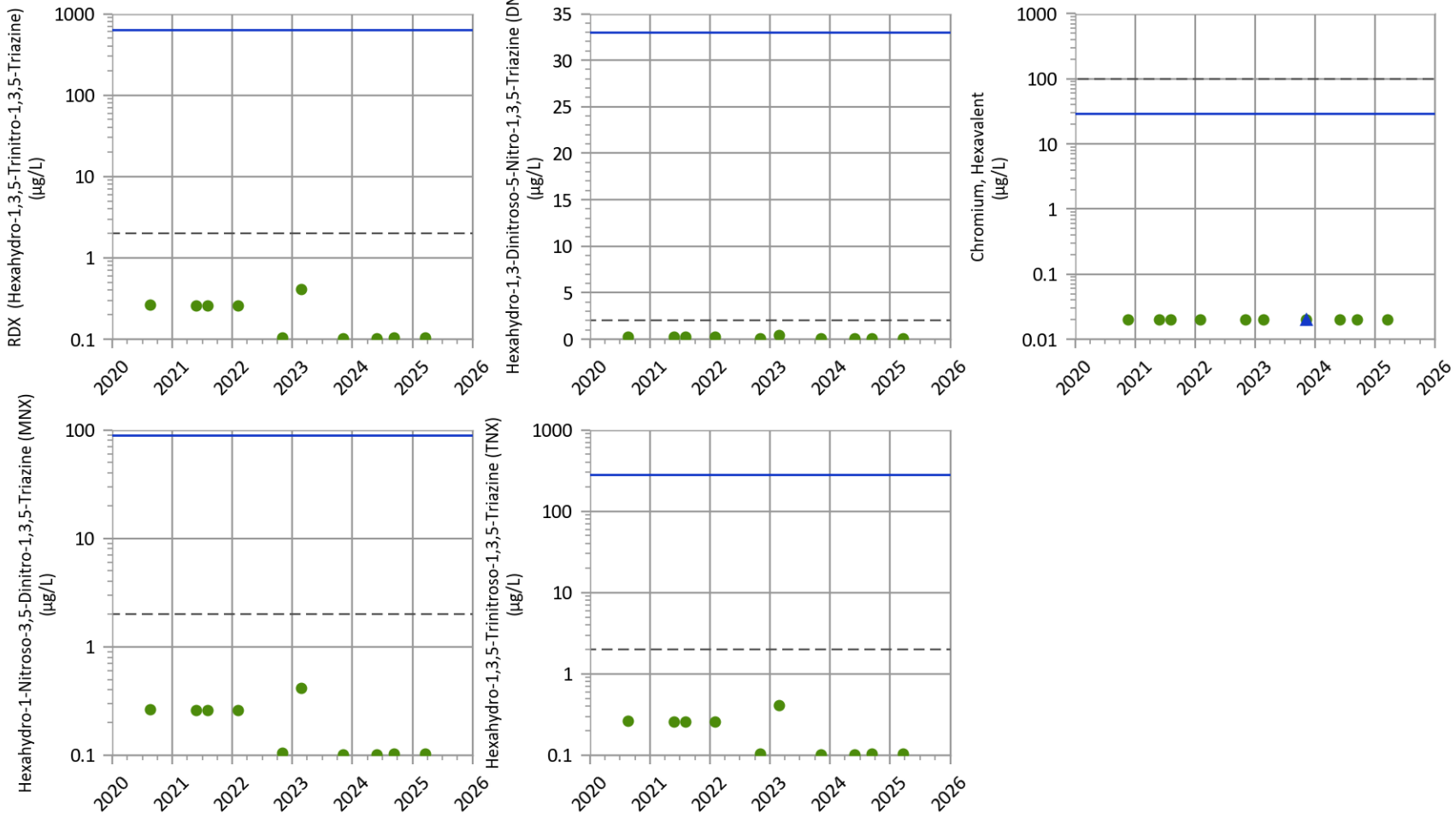
PTX06-1045 Downgradient Performance Indicators
Southeast In Situ Bioremediation System
USDOE/NNSA Pantex Plant



Most Recent Measured COC Concentrations (Mar 24, 2025)

COC	Concentration (µg/L)	GWPS (µg/L)
RDX	0.985	2.0
MNX	Non-Detect	2.0
CR-6	0.291	100.0
DNX	Non-Detect	2.0
CR	2.94	100.0
TNX	0.0584	2.0

PTX06-1154 Downgradient Performance Indicators
Southeast In Situ Bioremediation System
USDOE/NNSA Pantex Plant



Most Recent Measured COC Concentrations (Nov 07, 2023)

COC	Concentration (µg/L)	GWPS (µg/L)
RDX		
MNX	Non-Detect	2.0
DNX	Non-Detect	2.0
TNX	Non-Detect	2.0
CR-6	Non-Detect	2.0
PERC	Non-Detect	100.0

- Measured Value
- Sample Detection Limit
- Concentration Trend
- Maximum Concentration
- Groundwater Protection Standard

Well Location

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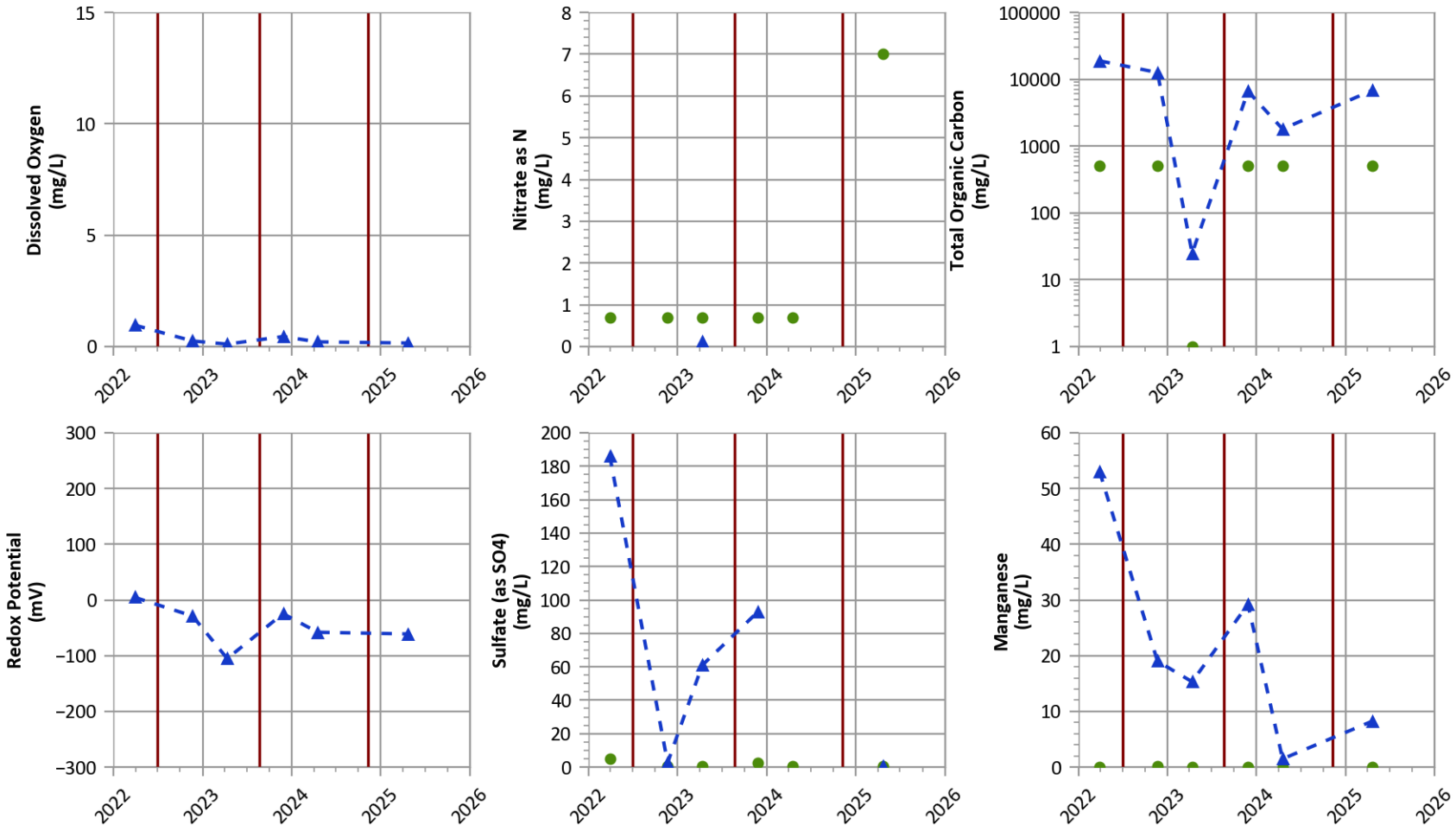
Zone 11 ISB Graphs

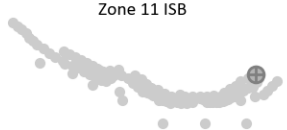
PTX06-ISB055 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



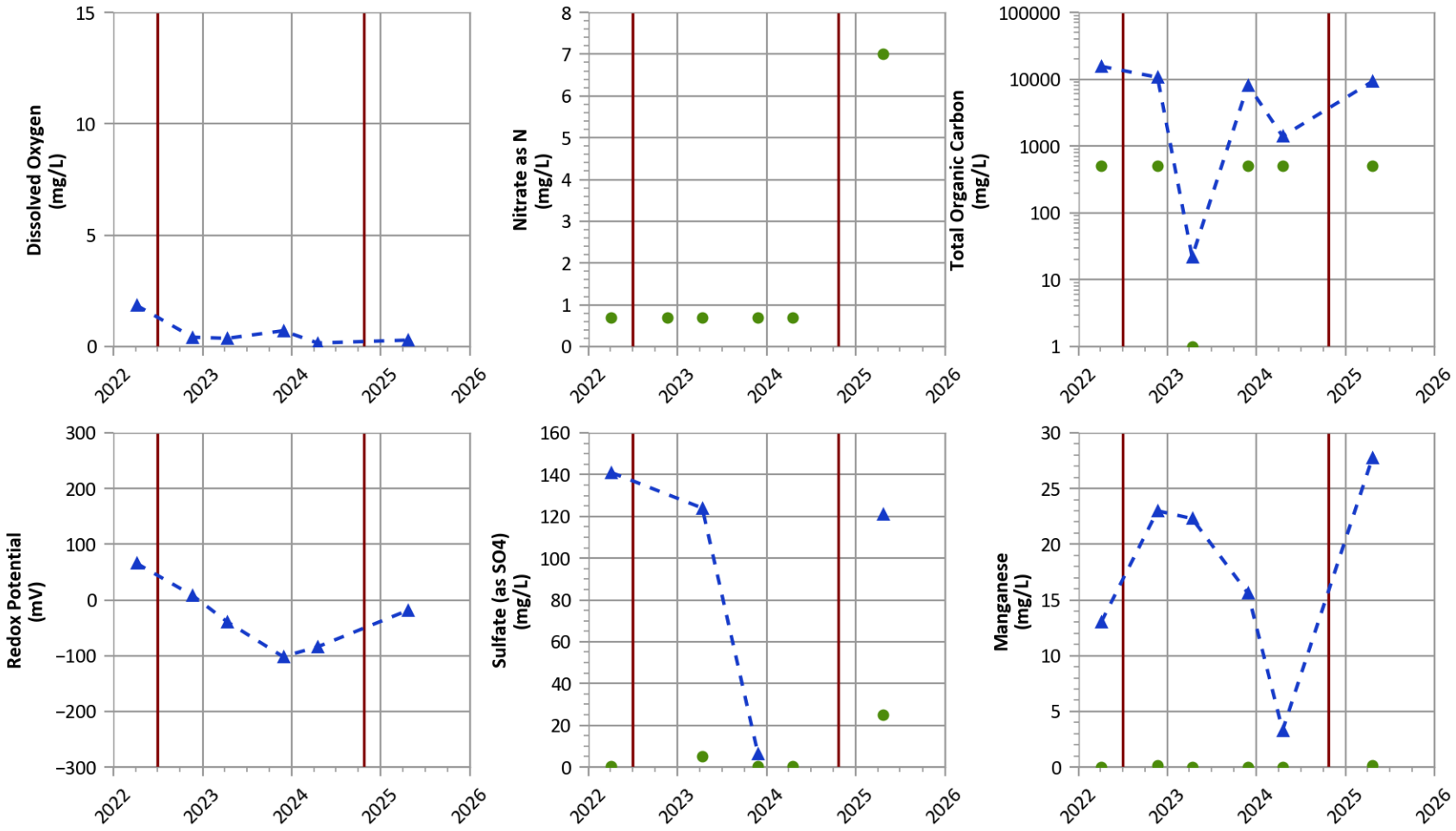
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend
Injection Dates

Well Location
Zone 11 ISB



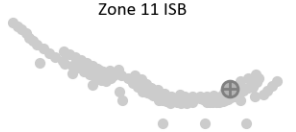
PTX06-ISB059 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



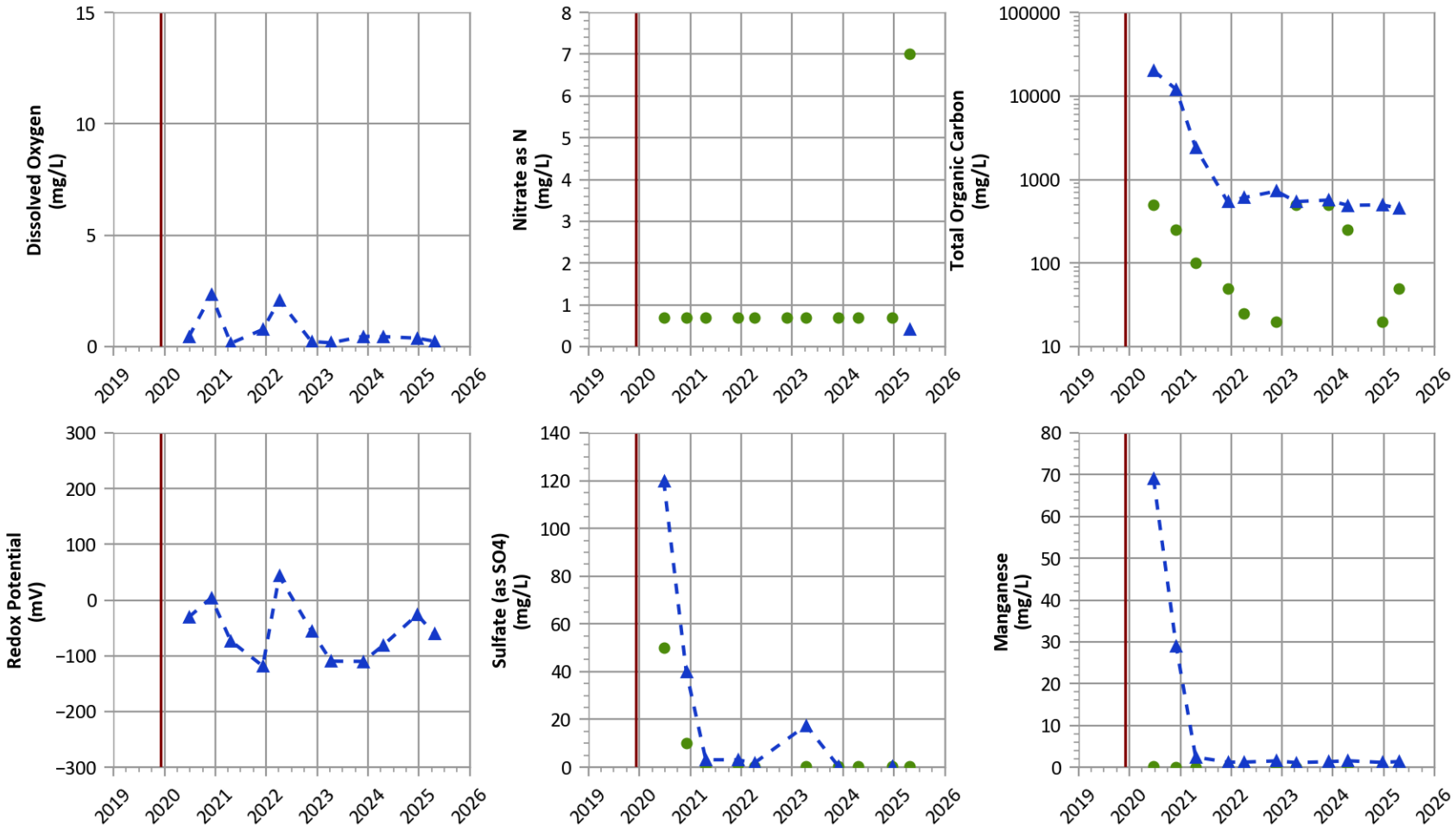
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend
Injection Dates

Well Location
Zone 11 ISB



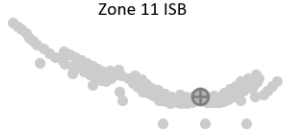
PTX06-ISB064 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



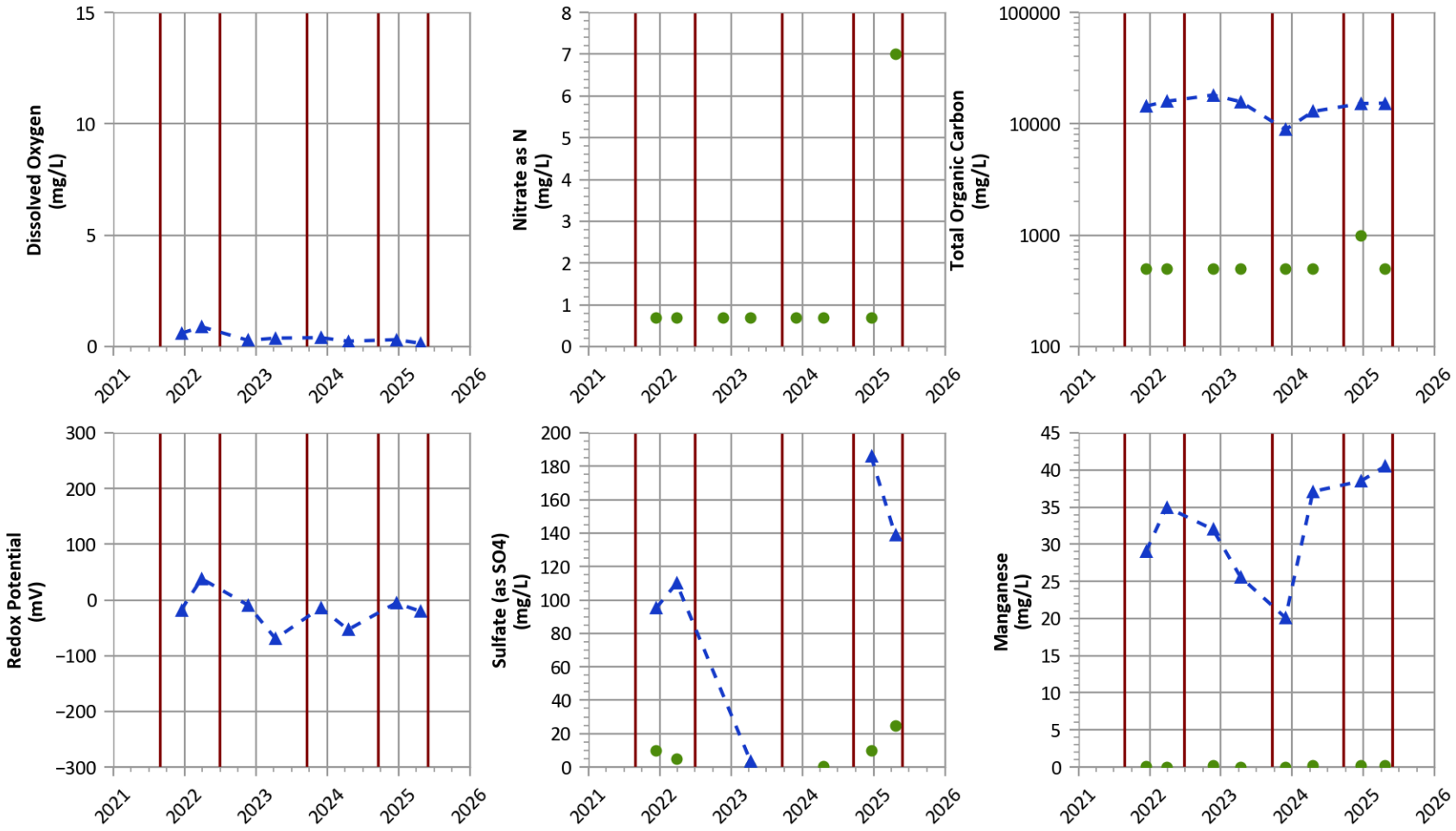
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend
Injection Dates

Well Location
Zone 11 ISB

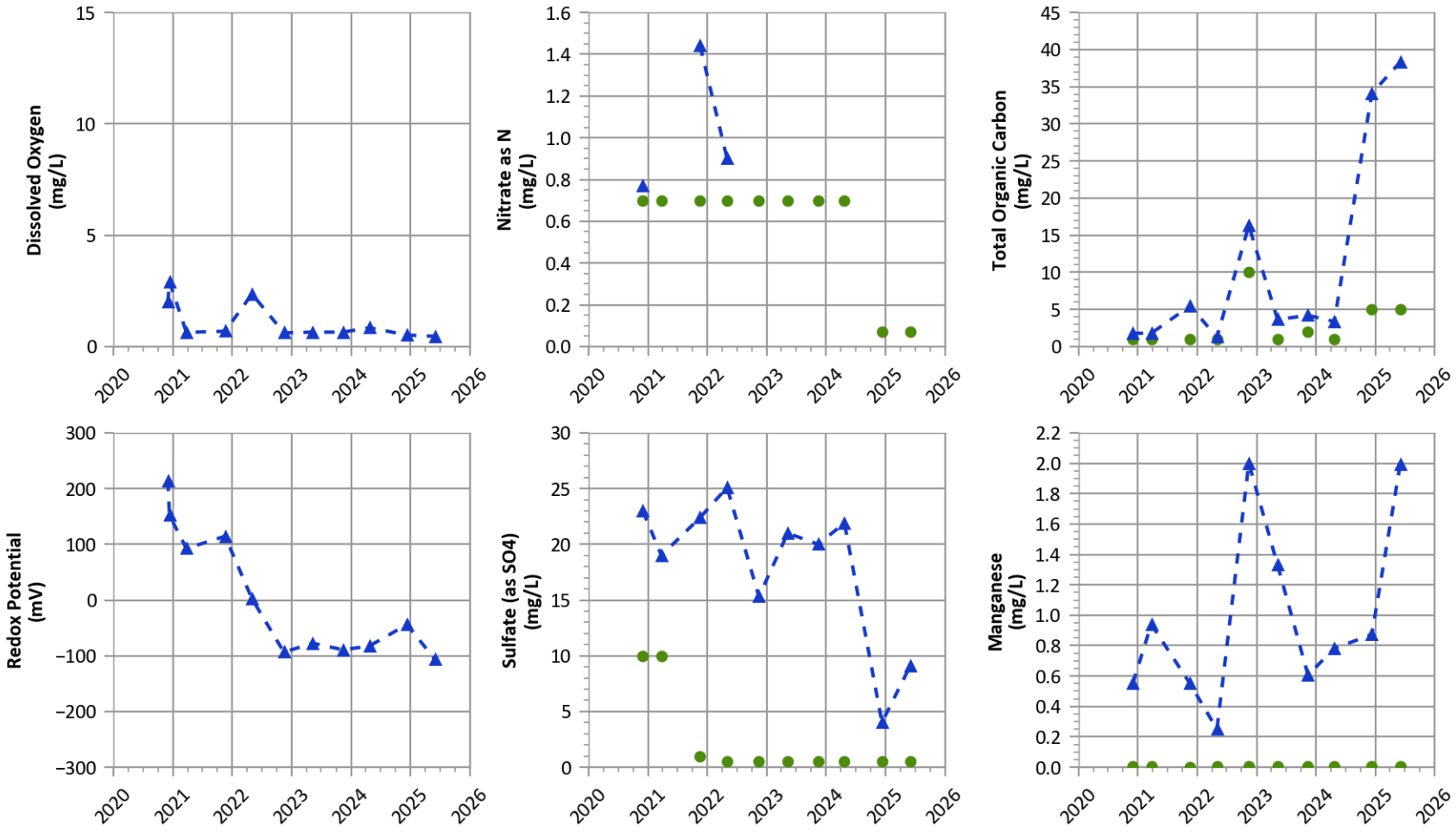


PTX06-ISB137 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

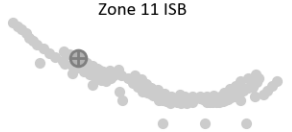
PTX06-1164 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



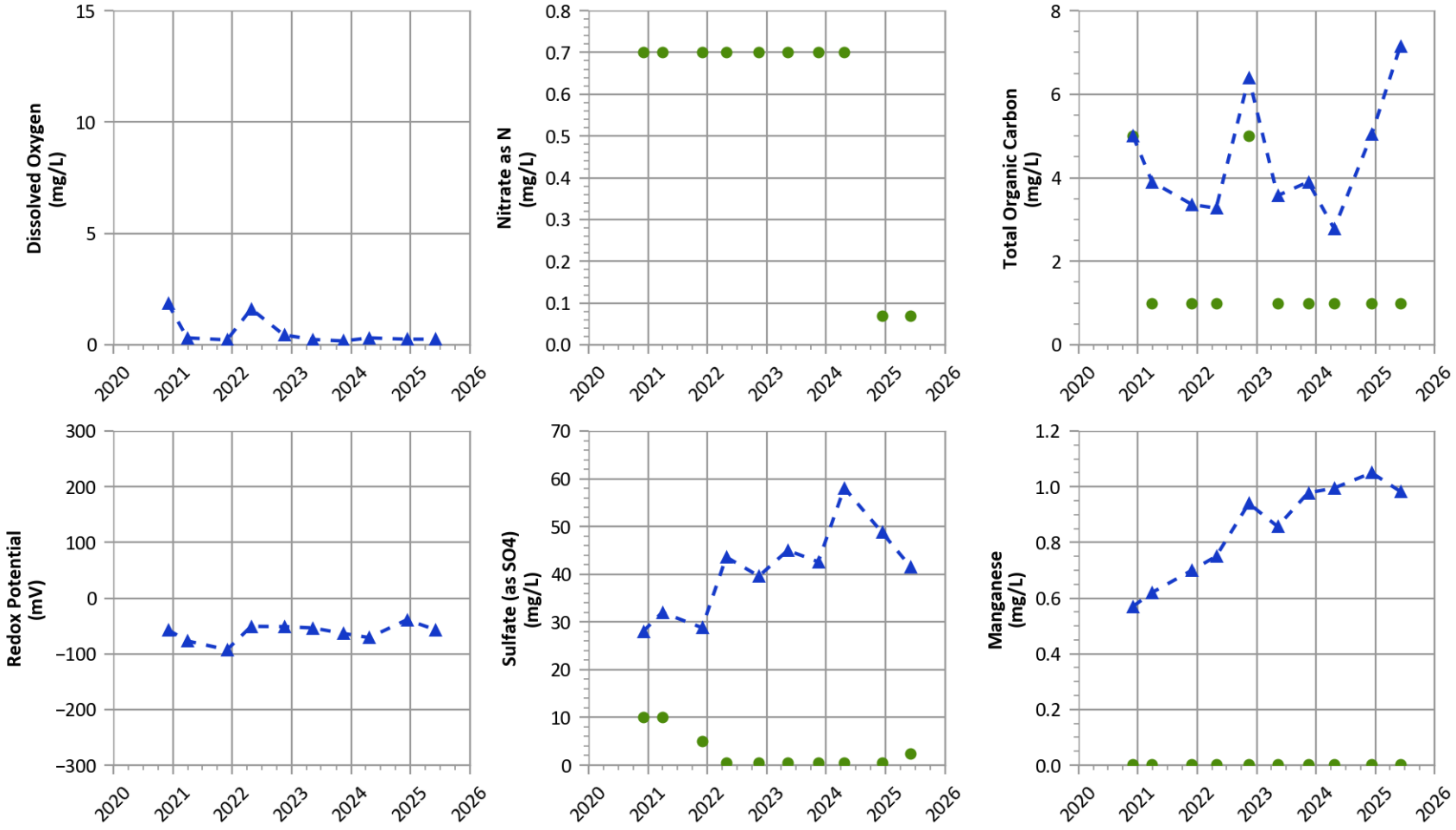
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend

Well Location
Zone 11 ISB

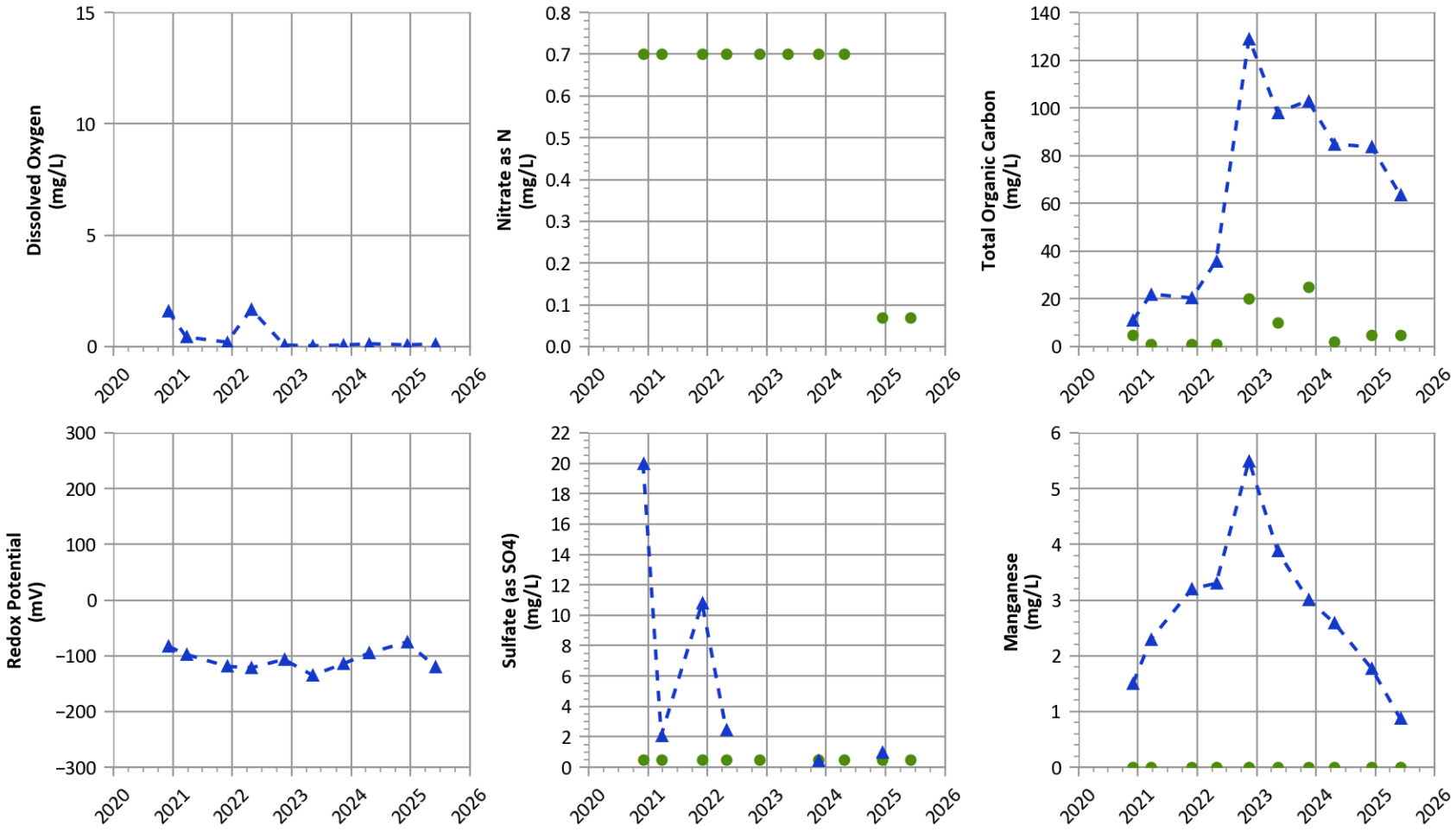


PTX06-1169 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

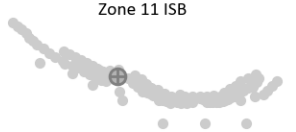
PTX06-1170 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



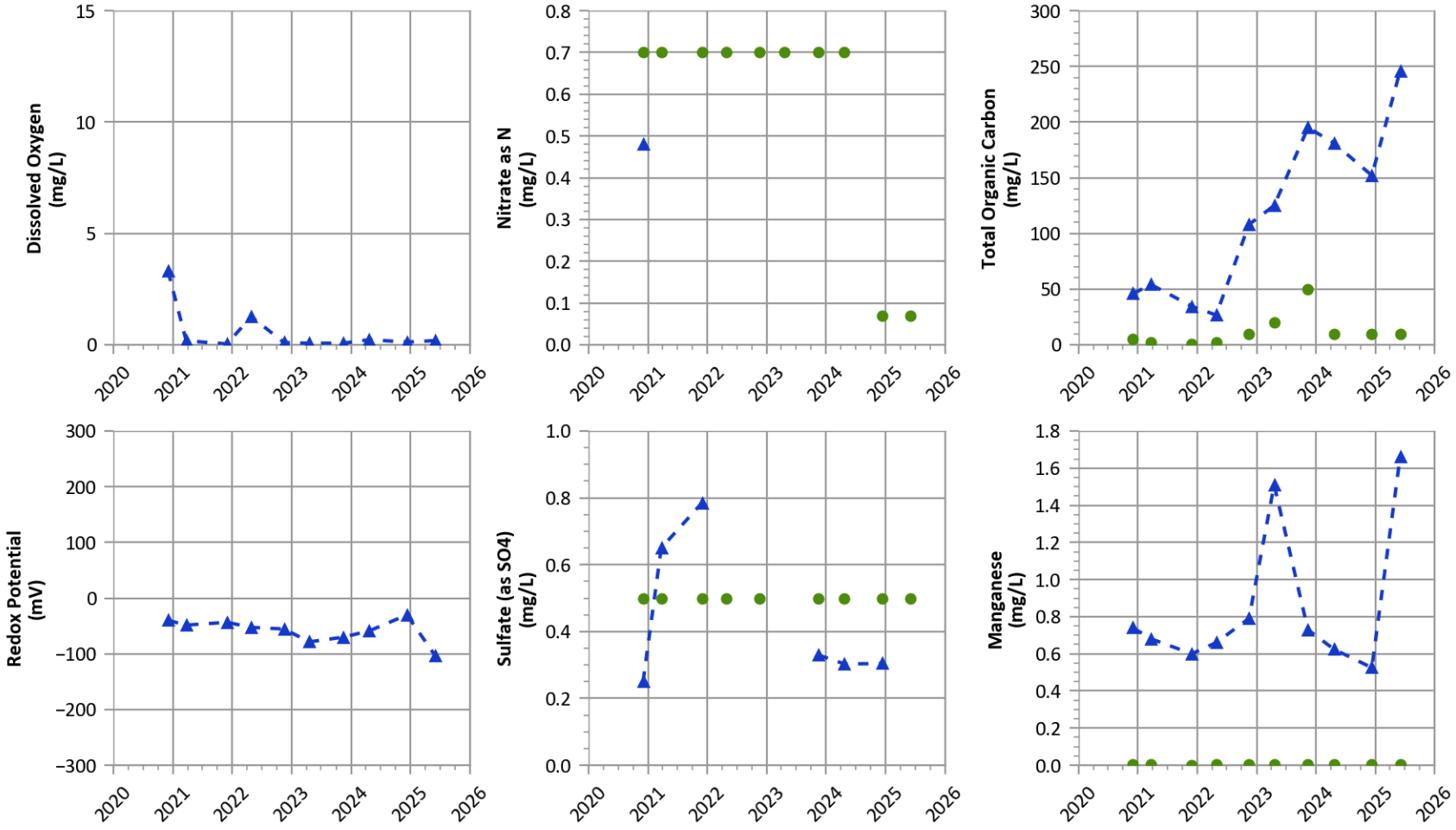
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

▲ Measured Value
● Sample Detection Limit
- - - Concentration Trend

Well Location
Zone 11 ISB



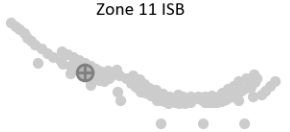
PTX06-1176 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



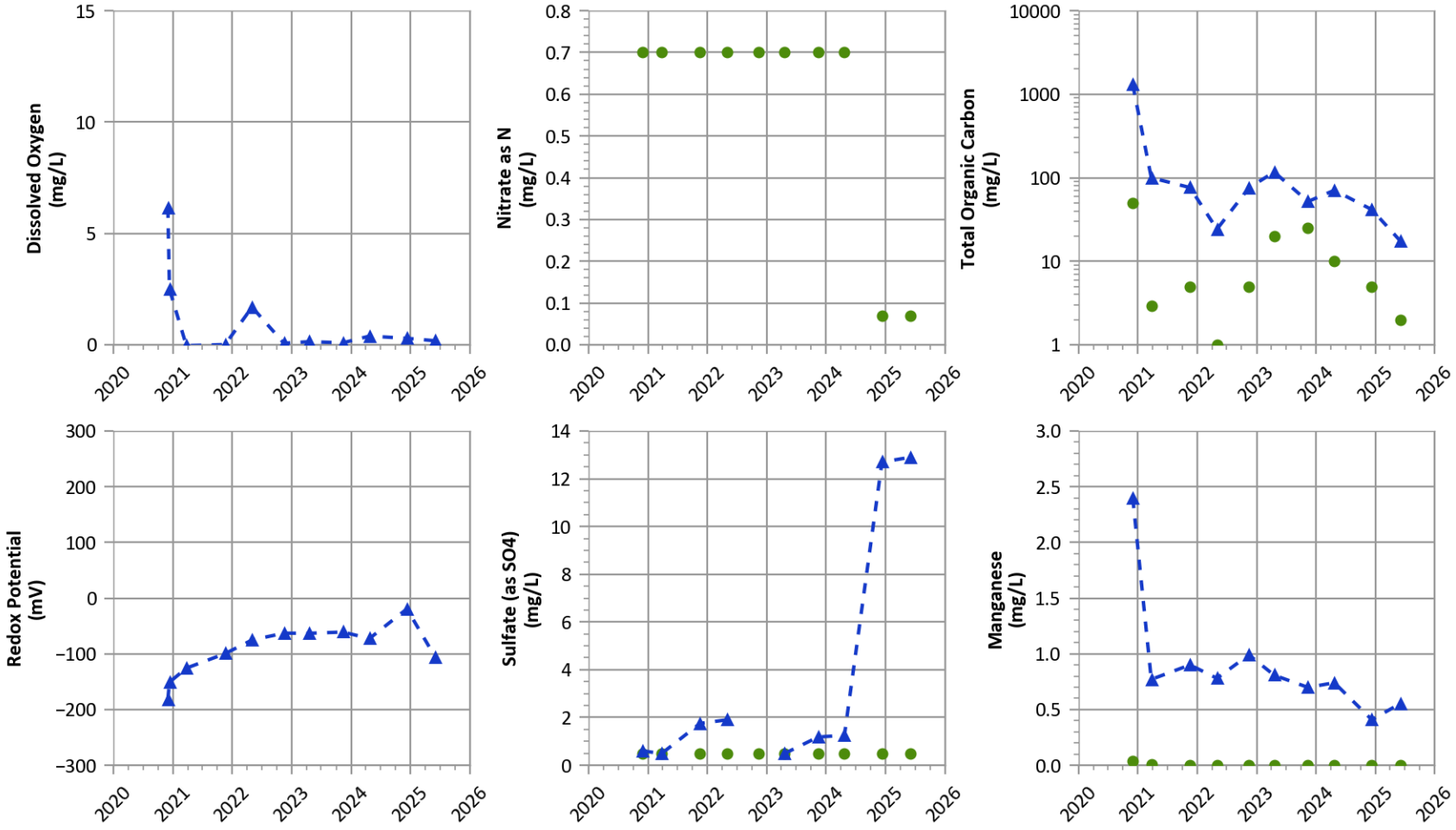
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend

Well Location
Zone 11 ISB

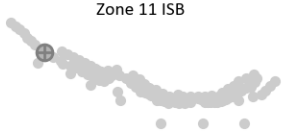


PTX06-1177 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

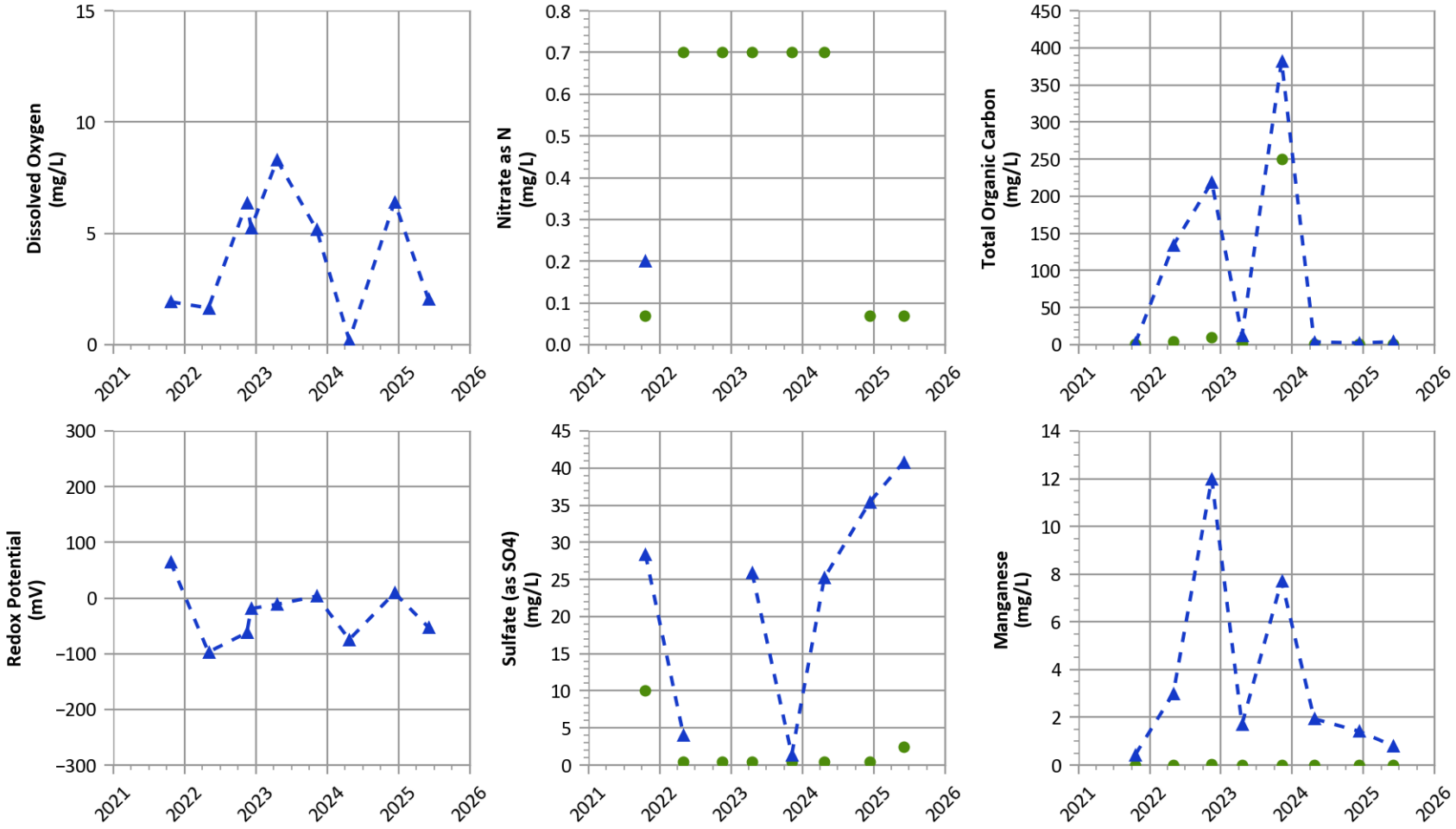


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Well Location
Zone 11 ISB

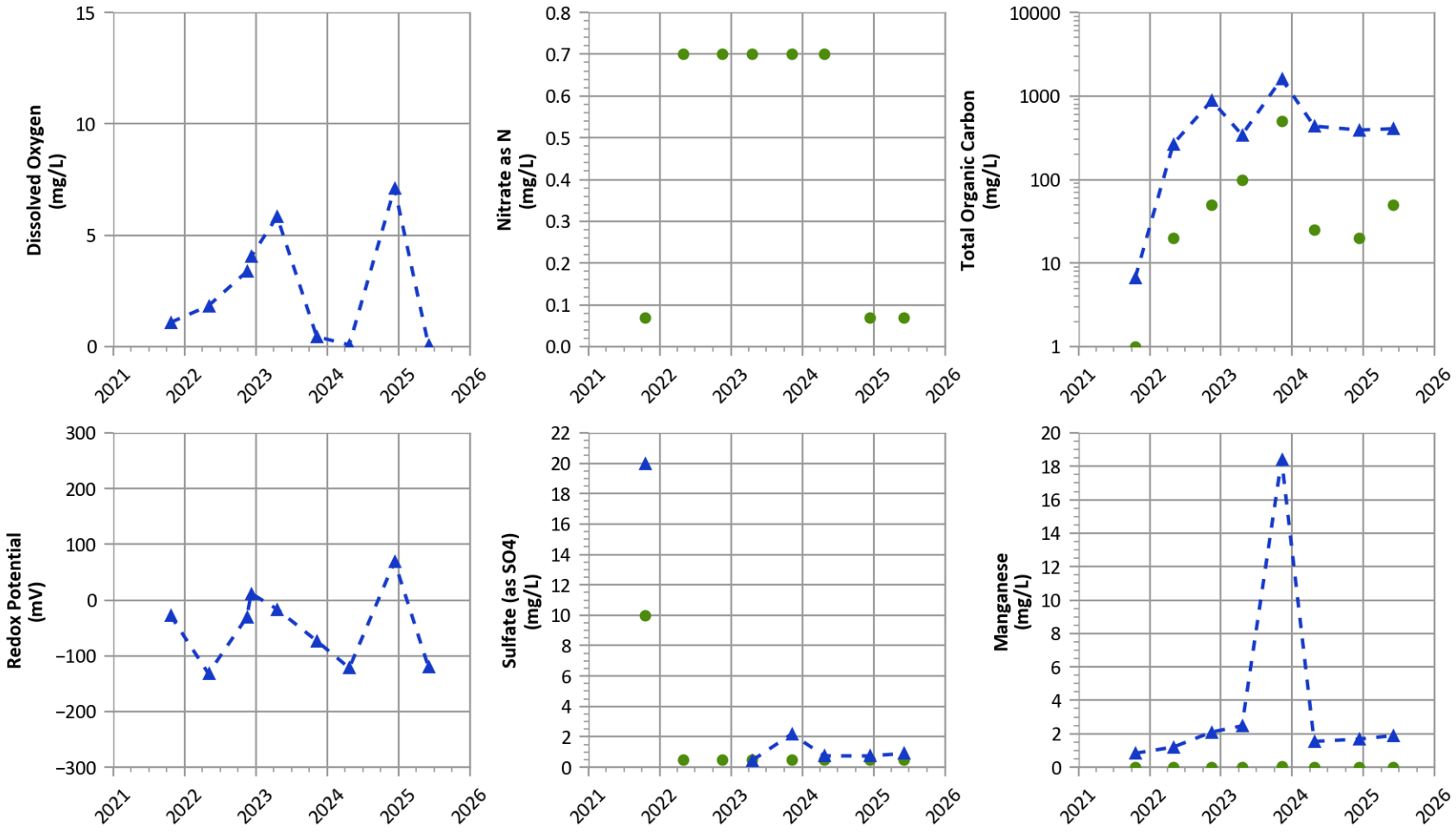


PTX06-1209 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

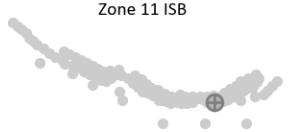
PTX06-1210 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



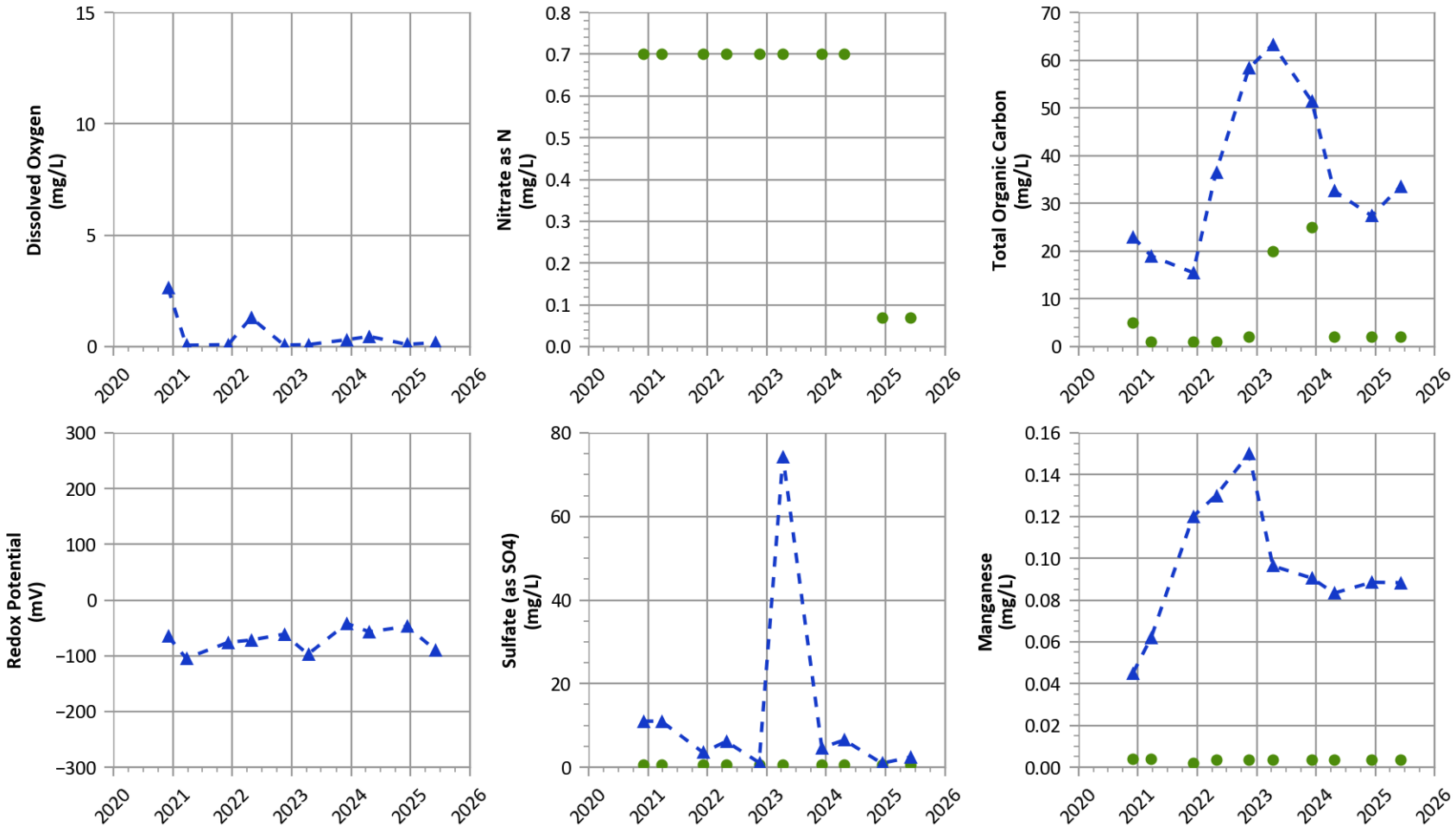
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend

Well Location
Zone 11 ISB



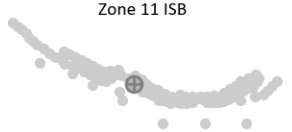
PTX06-1230 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



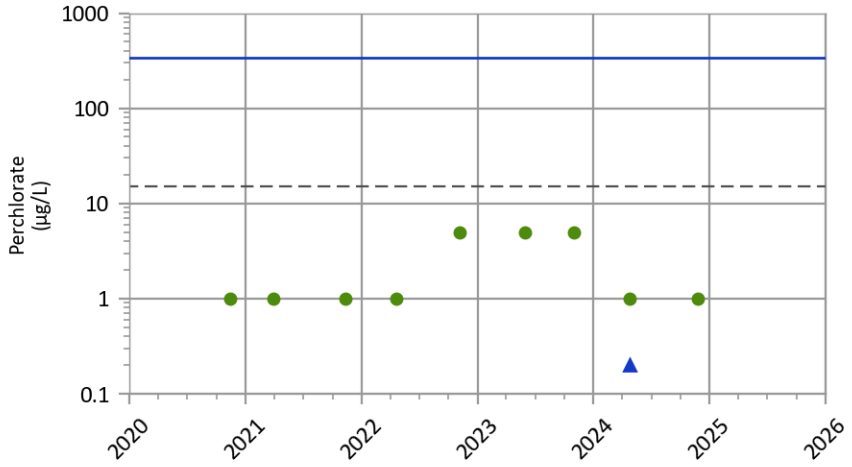
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

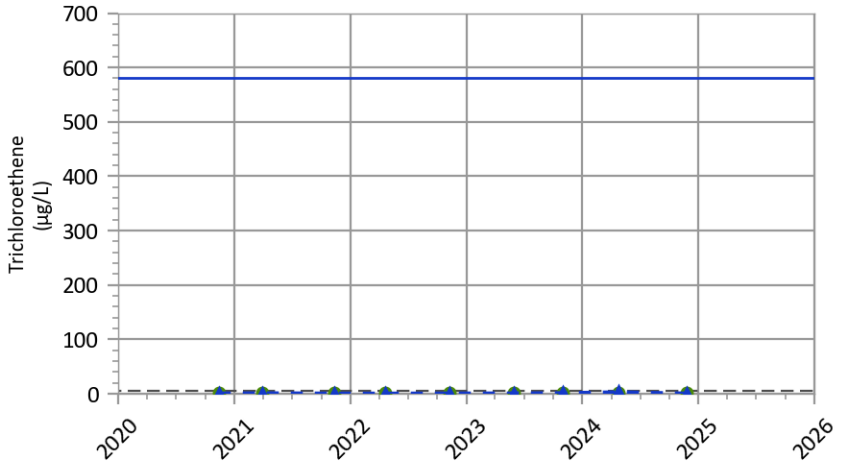
Measured Value
Sample Detection Limit
Concentration Trend

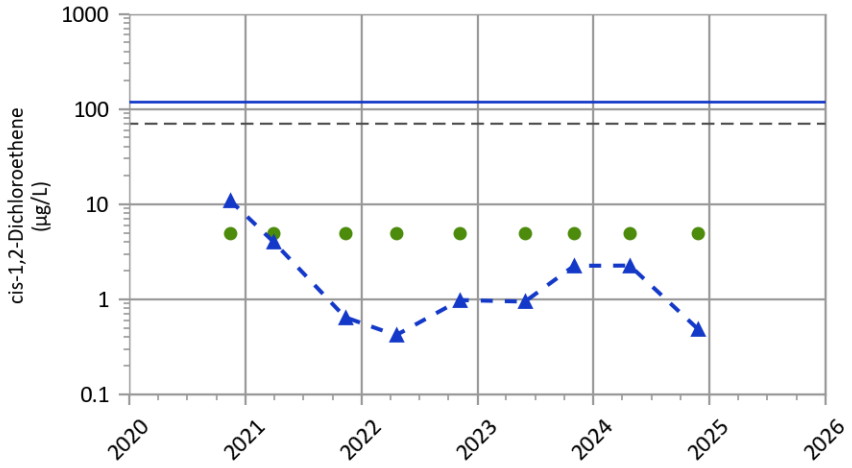
Well Location
Zone 11 ISB

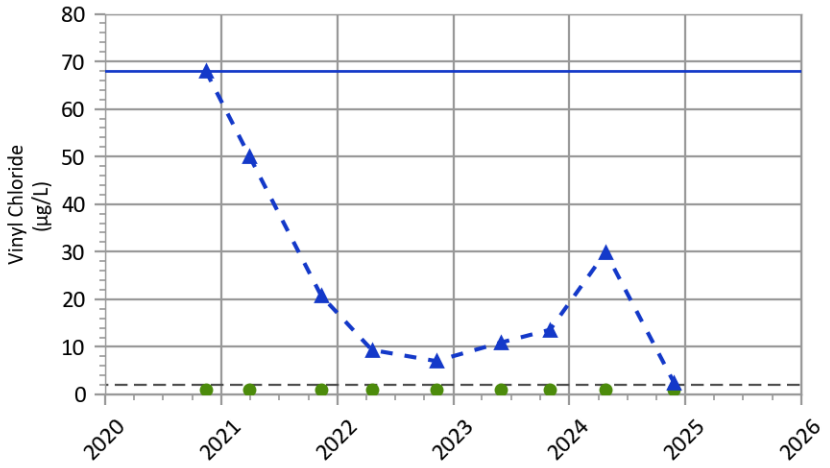


PTX06-1012 Downgradient Performance Indicators
Zone 11 In Situ Bioremediation System
USDOE/NNSA Pantex Plant



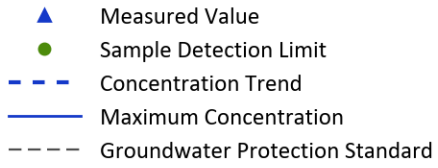




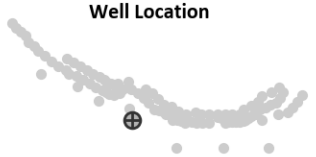


Most Recent Measured COC Concentrations (Nov 25, 2024)

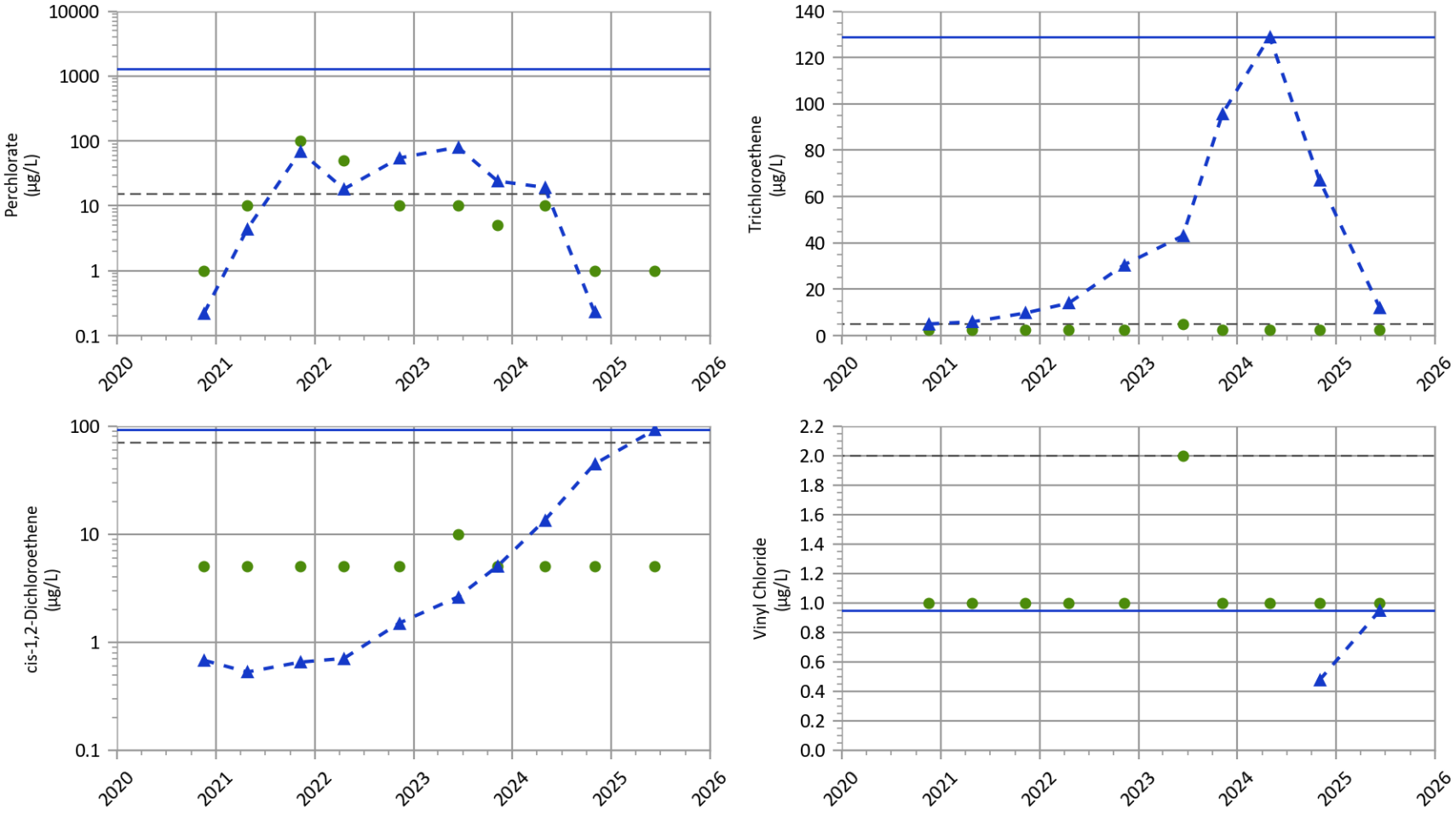
COC	Concentration (µg/L)	GWPS (µg/L)
PERC	Non-Detect	15.0
DCE12C	0.486	70.0
TCE	0.333	5.0
VC	2.52	2.0



Well Location

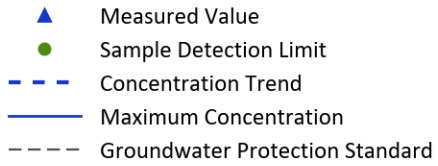


PTX06-1148 Downgradient Performance Indicators
Zone 11 In Situ Bioremediation System
USDOE/NNSA Pantex Plant

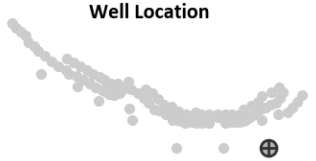


Most Recent Measured COC Concentrations (Jun 10, 2025)

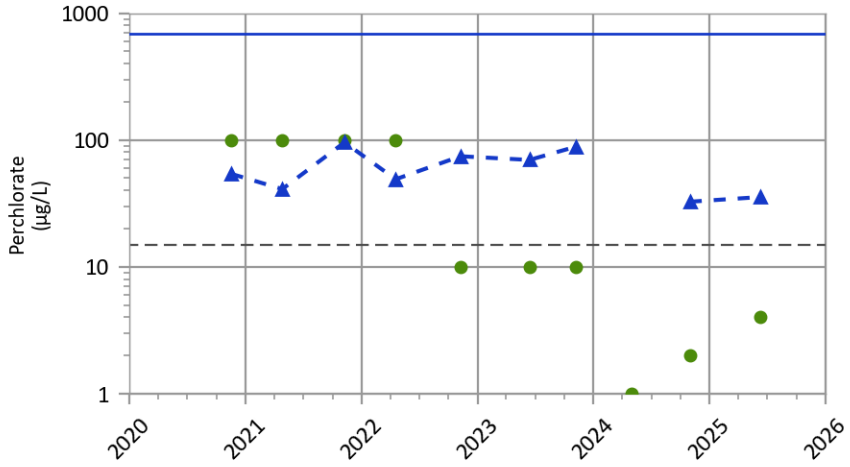
COC	Concentration (µg/L)	GWPS (µg/L)
PERC	Non-Detect	15.0
DCE12C	92.2	70.0
TCE	12.0	5.0
VC	0.948	2.0

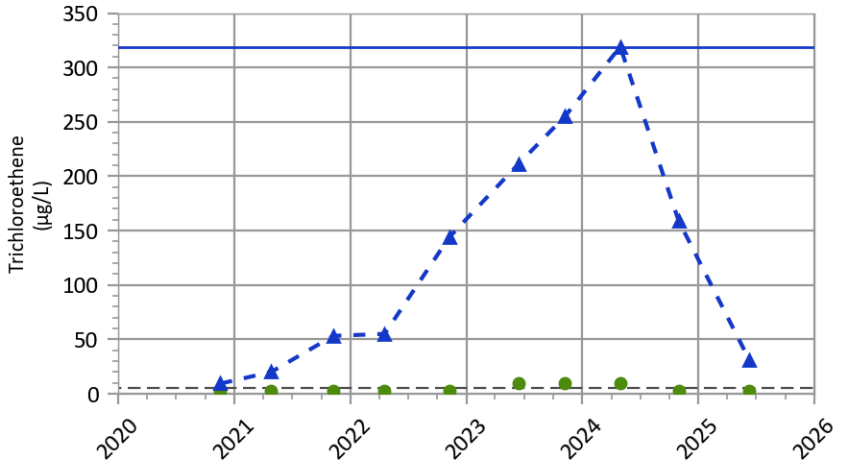


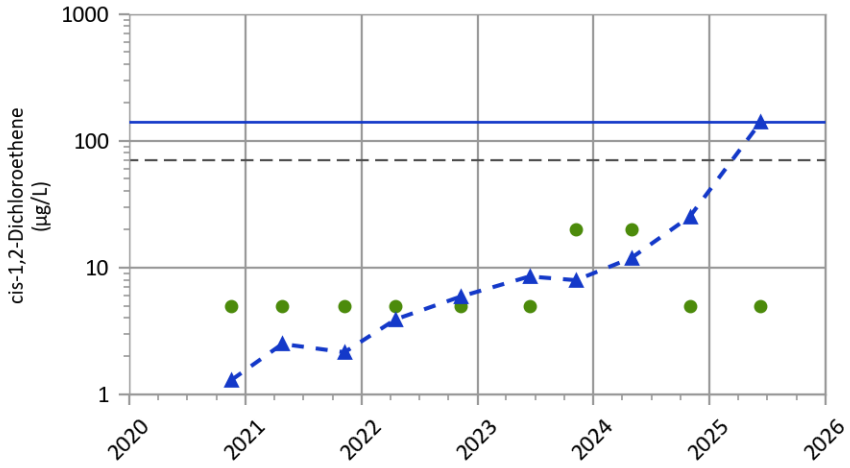
Well Location

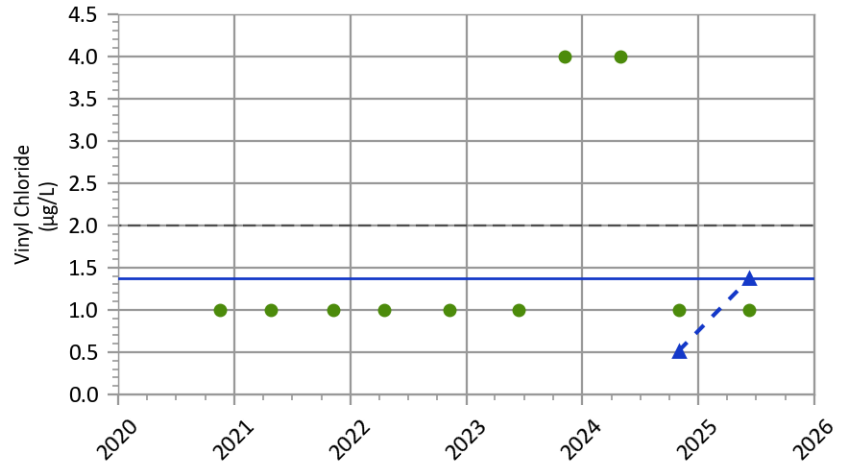


PTX06-1149 Downgradient Performance Indicators
Zone 11 In Situ Bioremediation System
USDOE/NNSA Pantex Plant



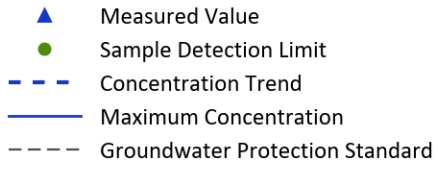




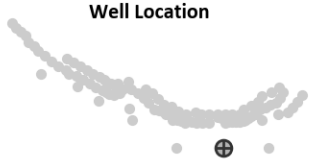


Most Recent Measured COC Concentrations (Jun 10, 2025)

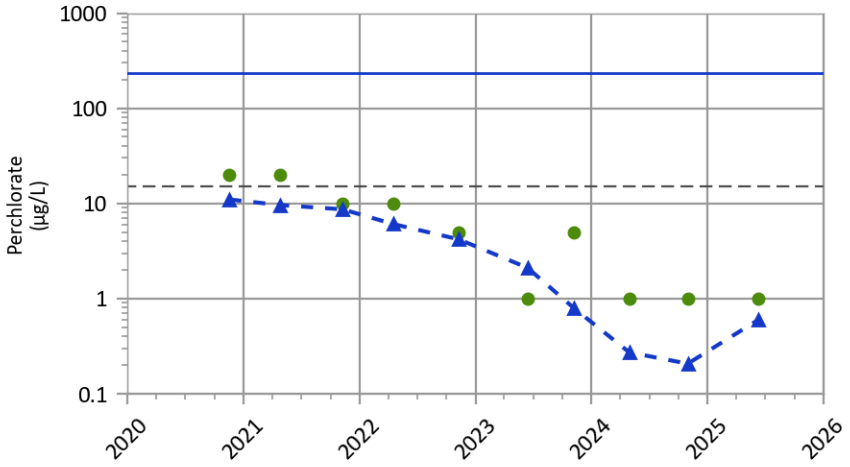
COC	Concentration (µg/L)	GWPS (µg/L)
PERC	35.5	15.0
DCE12C	140.0	70.0
TCE	30.8	5.0
VC	1.37	2.0

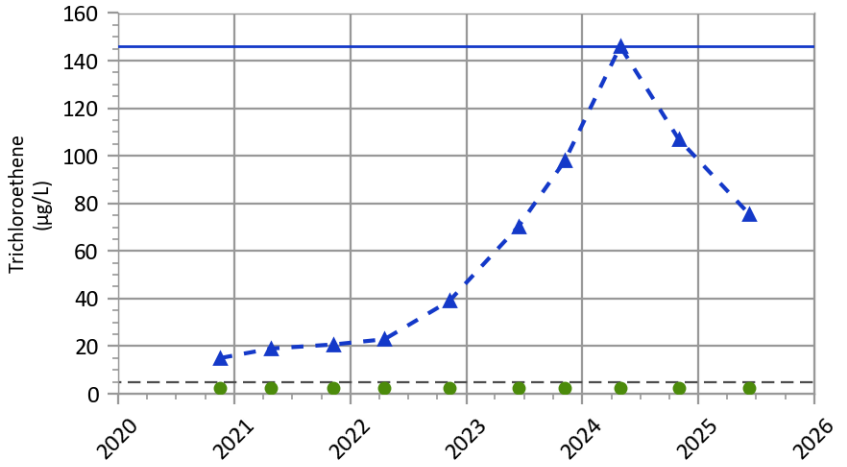


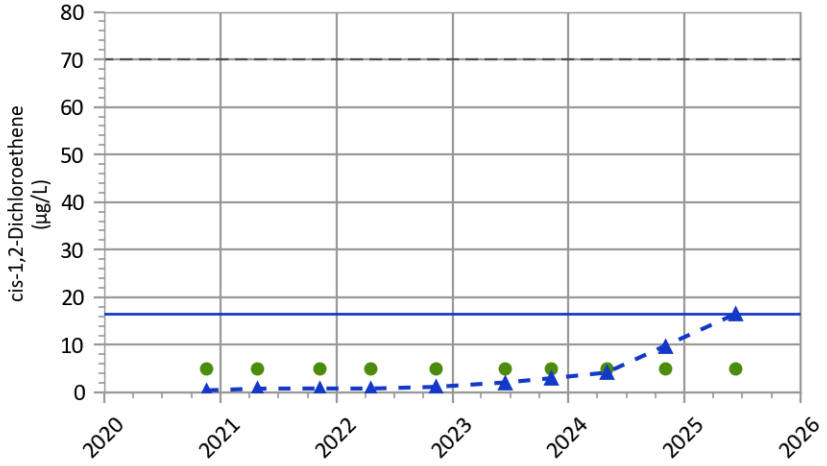
Well Location

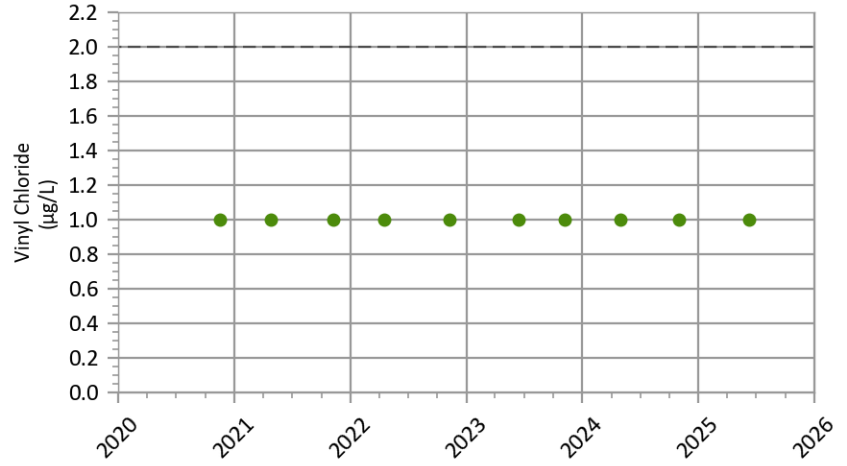


PTX06-1150 Downgradient Performance Indicators
Zone 11 In Situ Bioremediation System
USDOE/NNSA Pantex Plant



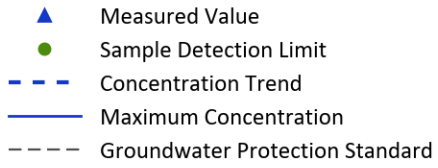


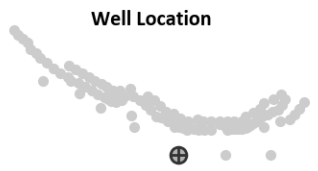




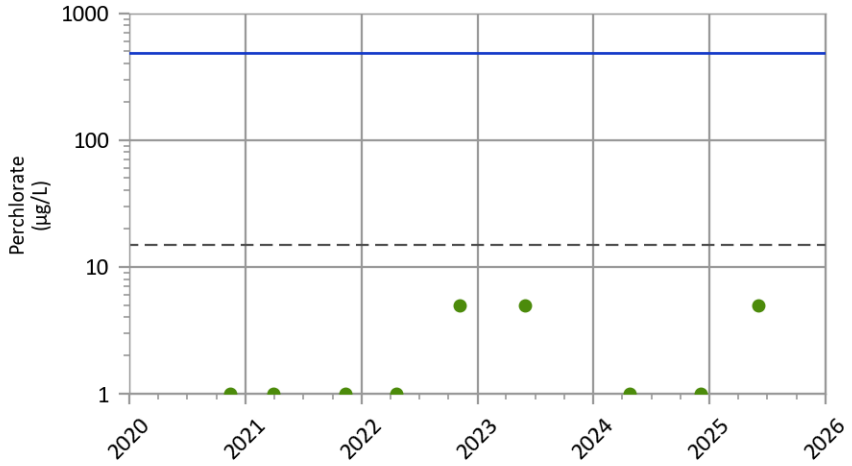
Most Recent Measured COC Concentrations (Jun 10, 2025)

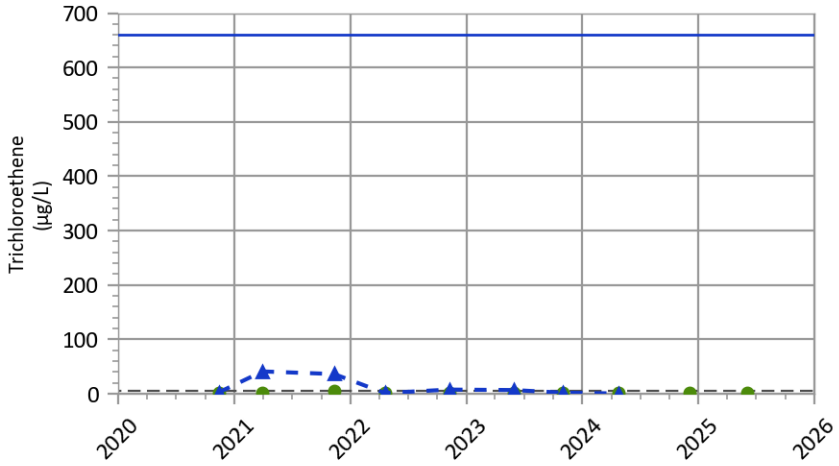
COC	Concentration (µg/L)	GWPS (µg/L)
PERC	0.6	15.0
DCE12C	16.5	70.0
TCE	75.4	5.0
VC	Non-Detect	2.0

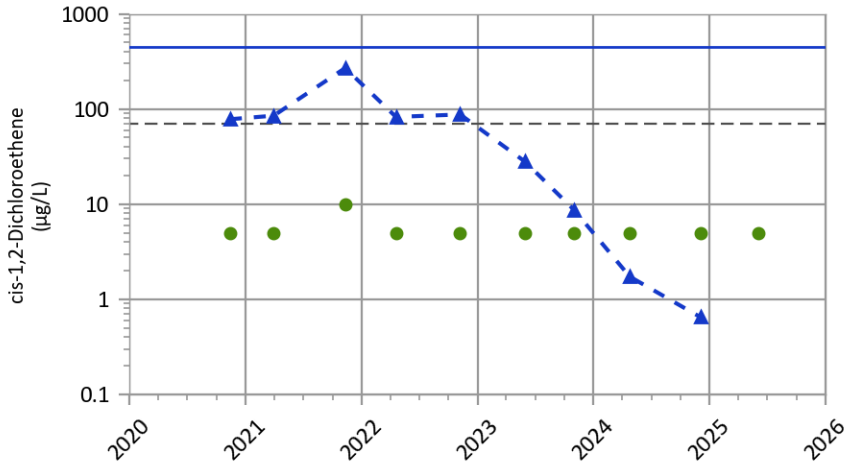


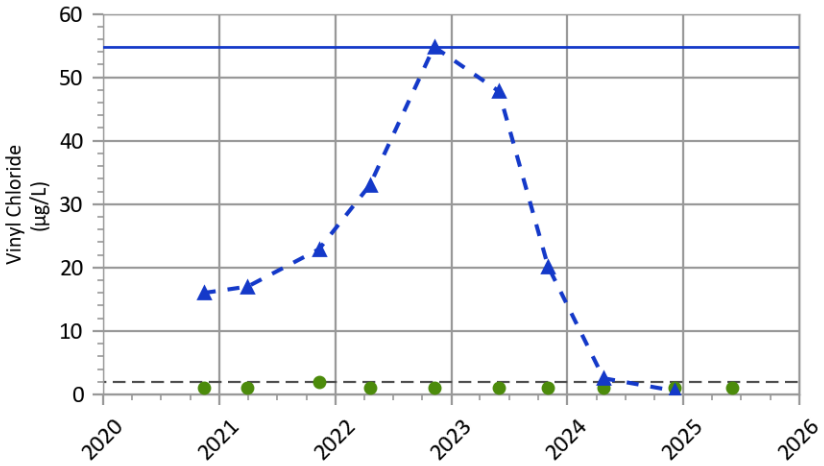


PTX06-1155 Downgradient Performance Indicators
Zone 11 In Situ Bioremediation System
USDOE/NNSA Pantex Plant



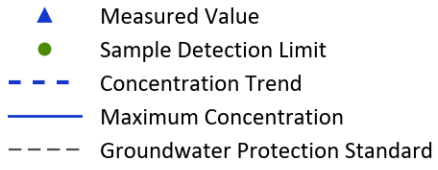




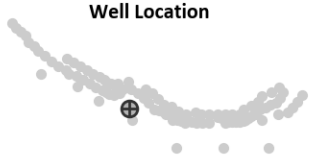


Most Recent Measured COC Concentrations (Dec 02, 2024)

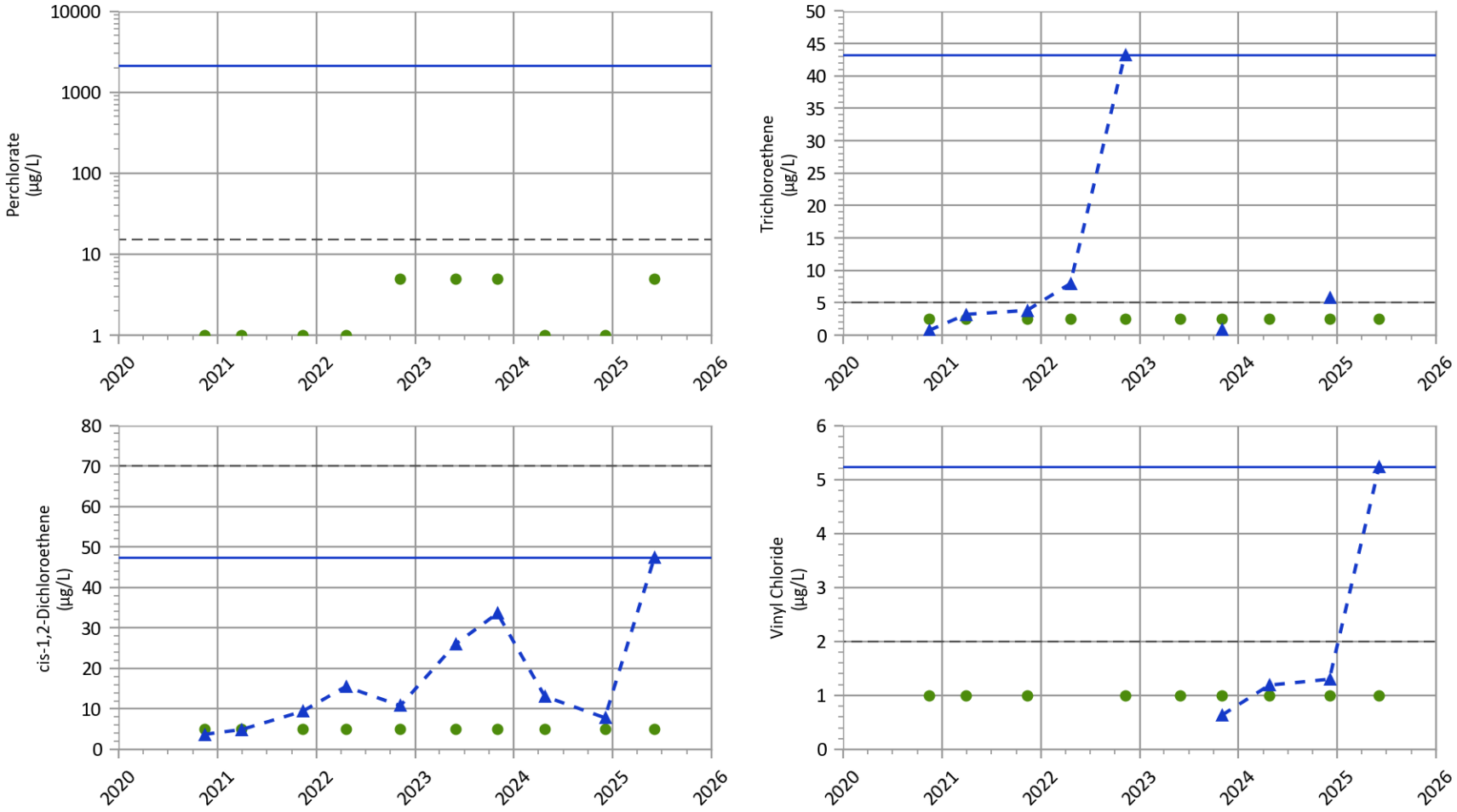
COC	Concentration (µg/L)	GWPS (µg/L)
PERC	Non-Detect	15.0
DCE12C	Non-Detect	70.0
TCE	Non-Detect	5.0
VC	Non-Detect	2.0



Well Location



PTX06-1156 Downgradient Performance Indicators
Zone 11 In Situ Bioremediation System
USDOE/NNSA Pantex Plant

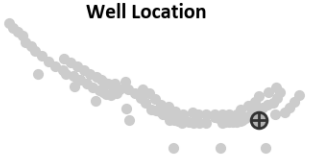


Most Recent Measured COC Concentrations (Jun 04, 2025)

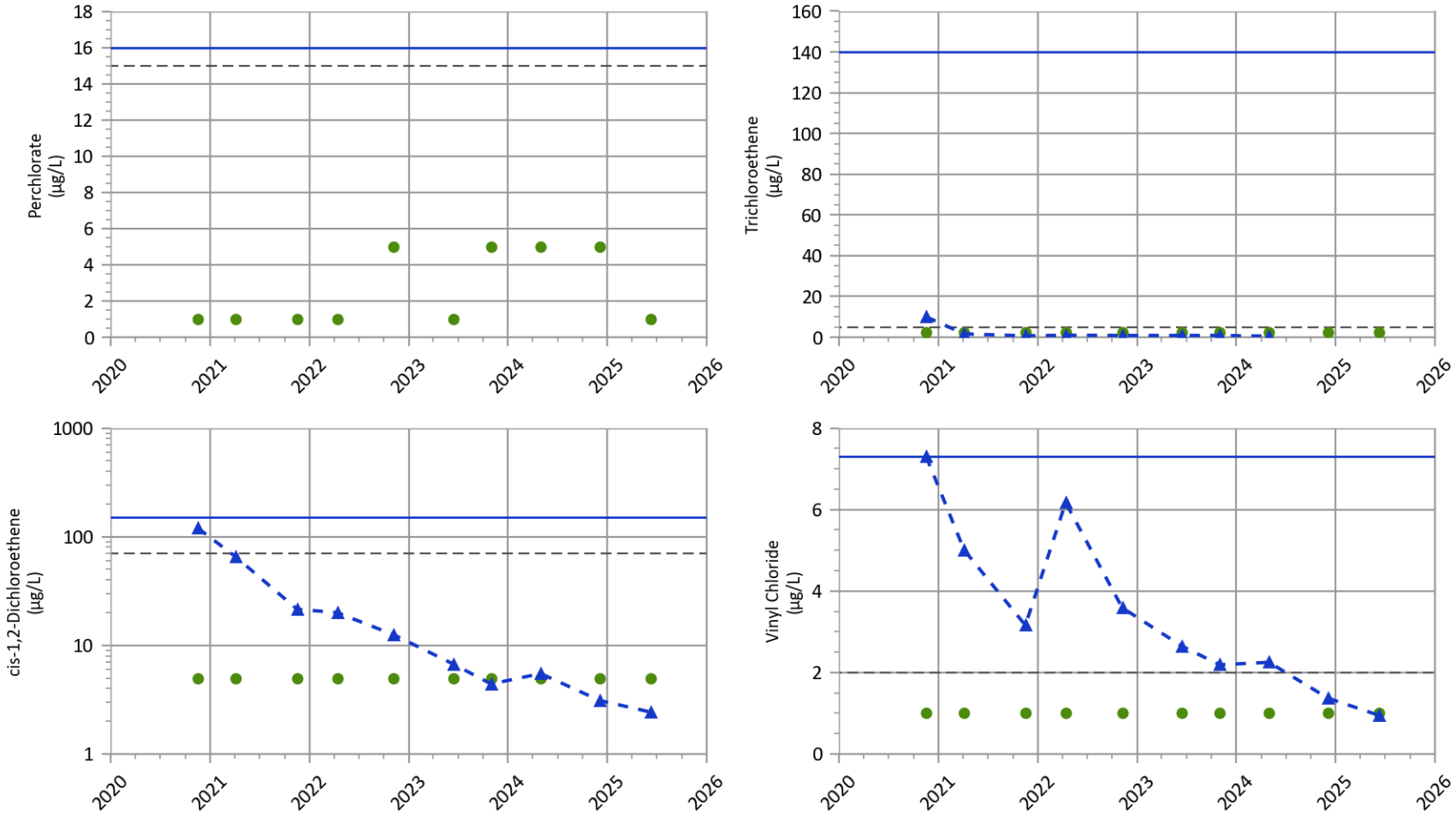
COC	Concentration (µg/L)	GWPS (µg/L)
PERC	Non-Detect	15.0
DCE12C	47.5	70.0
TCE	Non-Detect	5.0
VC	5.24	2.0

Measured Value
Sample Detection Limit
Concentration Trend
Maximum Concentration
Groundwater Protection Standard

Well Location



PTX06-1173 Downgradient Performance Indicators
Zone 11 In Situ Bioremediation System
USDOE/NNSA Pantex Plant

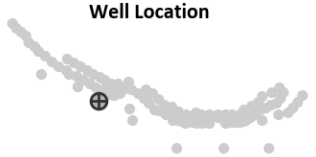


Most Recent Measured COC Concentrations (Jun 09, 2025)

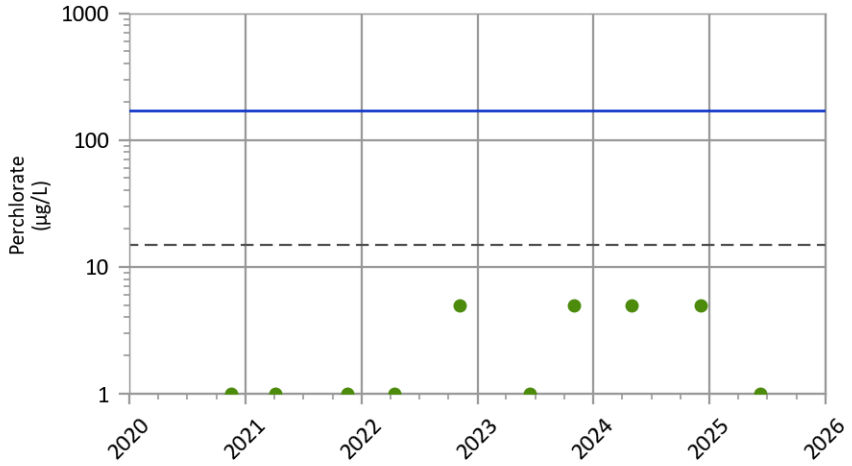
COC	Concentration (µg/L)	GWPS (µg/L)
PERC	Non-Detect	15.0
DCE12C	2.43	70.0
TCE	Non-Detect	5.0
VC	0.948	2.0

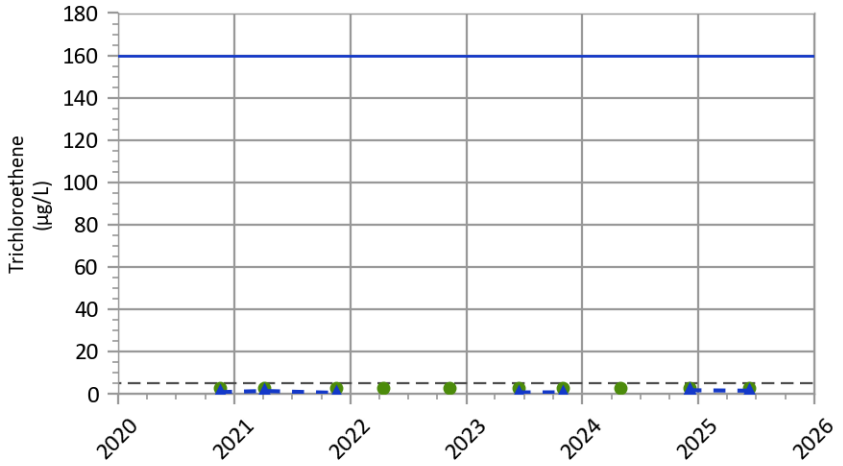
Measured Value
Sample Detection Limit
Concentration Trend
Maximum Concentration
Groundwater Protection Standard

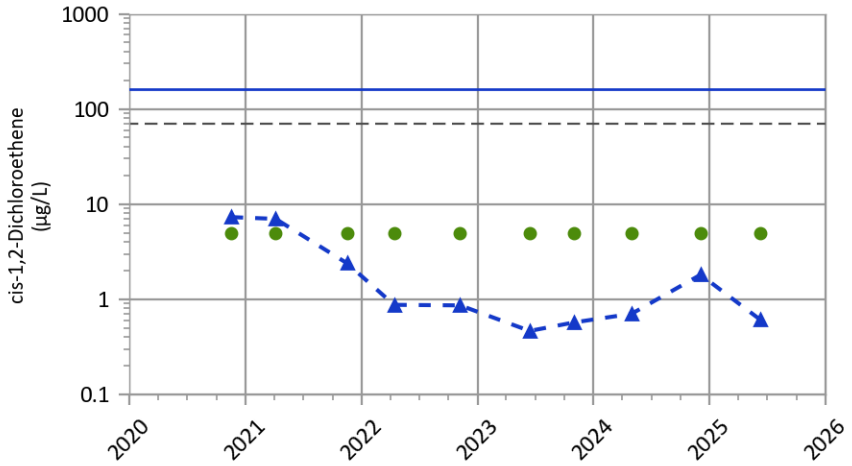
Well Location

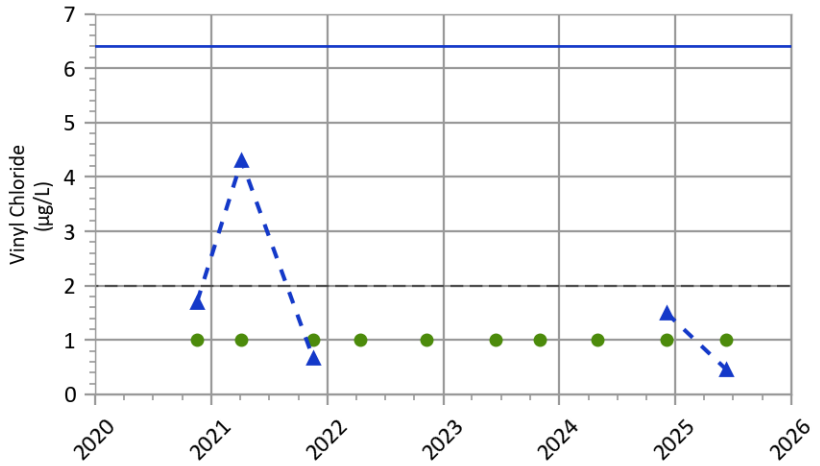


PTX06-1174 Downgradient Performance Indicators
Zone 11 In Situ Bioremediation System
USDOE/NNSA Pantex Plant



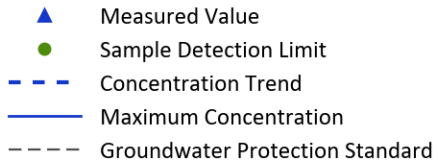


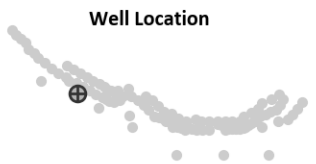




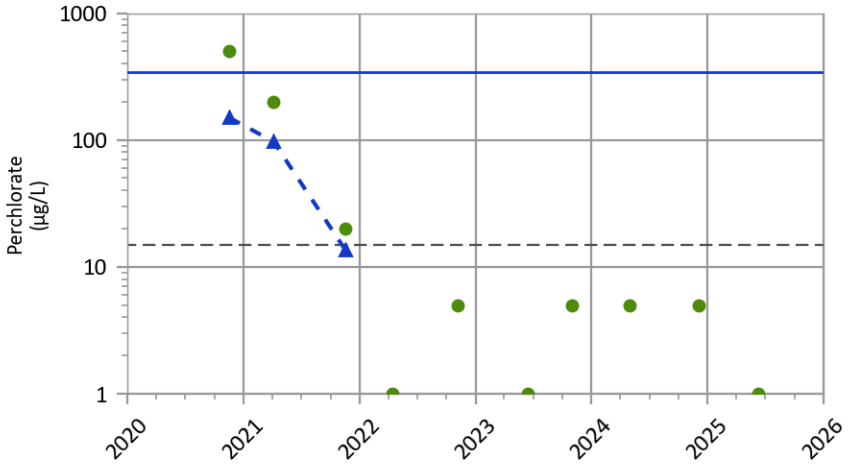
Most Recent Measured COC Concentrations (Jun 09, 2025)

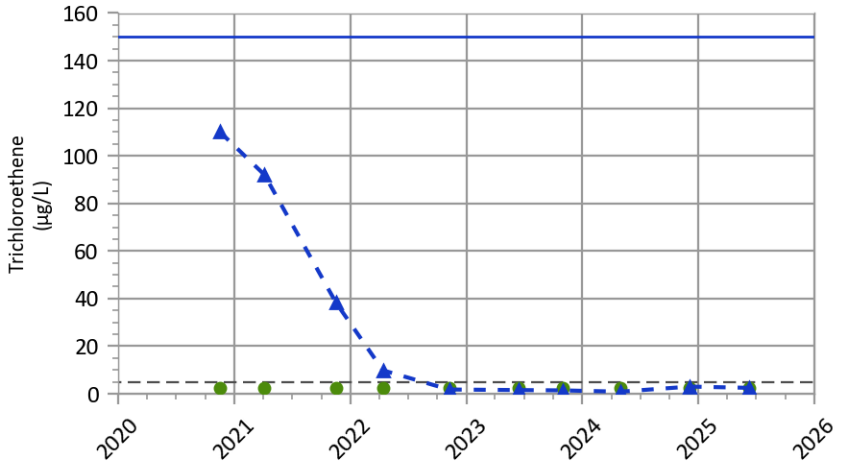
COC	Concentration (µg/L)	GWPS (µg/L)
PERC	Non-Detect	15.0
DCE12C	0.61	70.0
TCE	1.43	5.0
VC	0.461	2.0

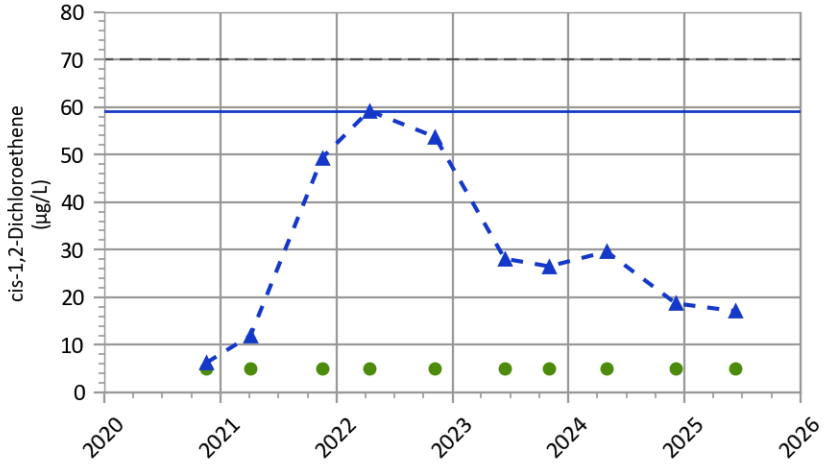


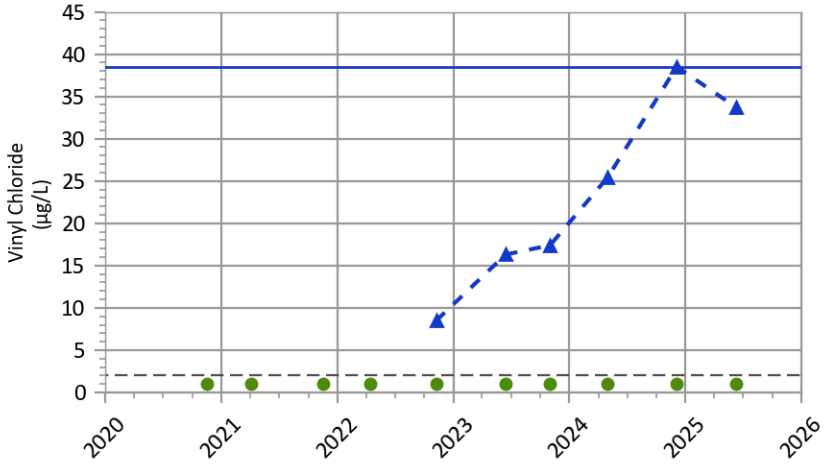


PTX06-1175 Downgradient Performance Indicators
Zone 11 In Situ Bioremediation System
USDOE/NNSA Pantex Plant



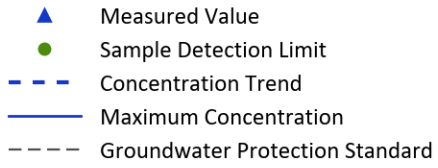


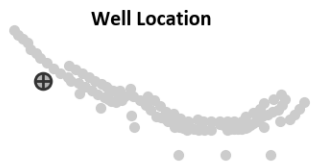




Most Recent Measured COC Concentrations (Jun 09, 2025)

COC	Concentration (µg/L)	GWPS (µg/L)
PERC	Non-Detect	15.0
DCE12C	17.1	70.0
TCE	2.47	5.0
VC	33.7	2.0





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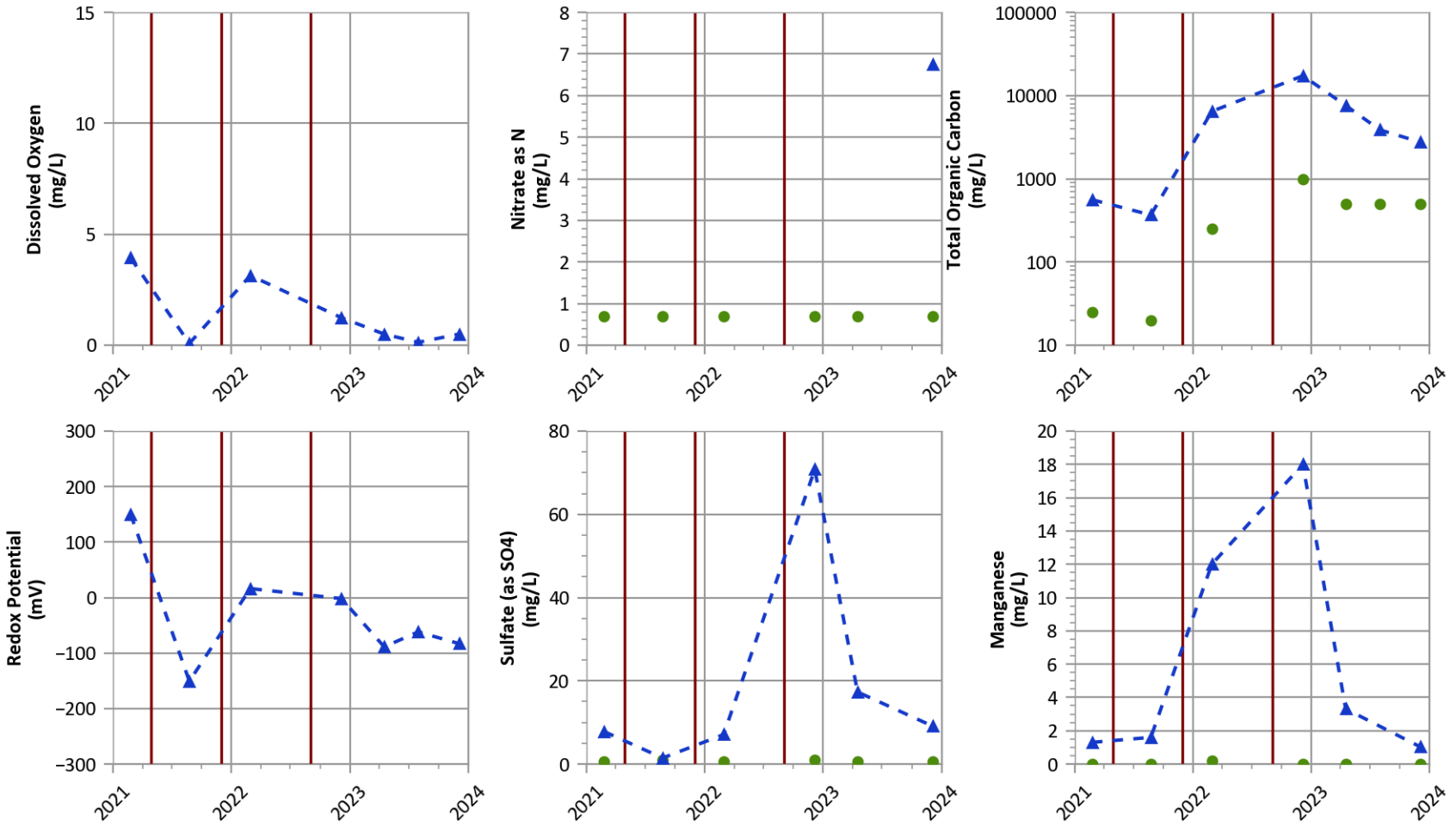
Southeast ISB Extension

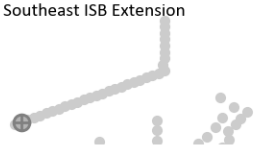
PTX06-ISB302 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



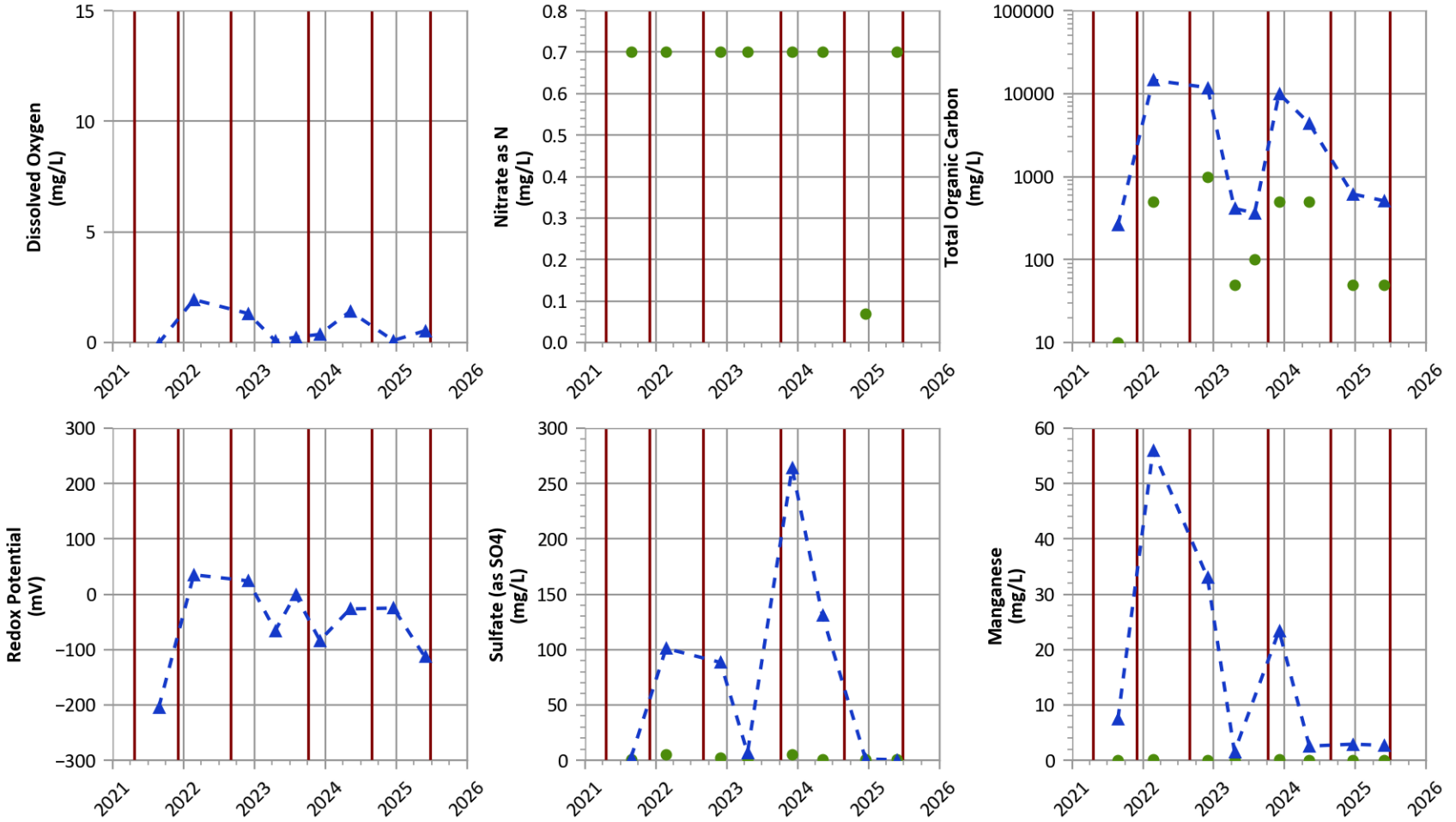
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend
Injection Dates

Well Location
Southeast ISB Extension



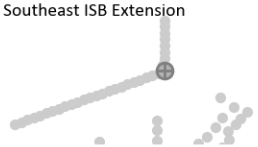
PTX06-ISB325 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



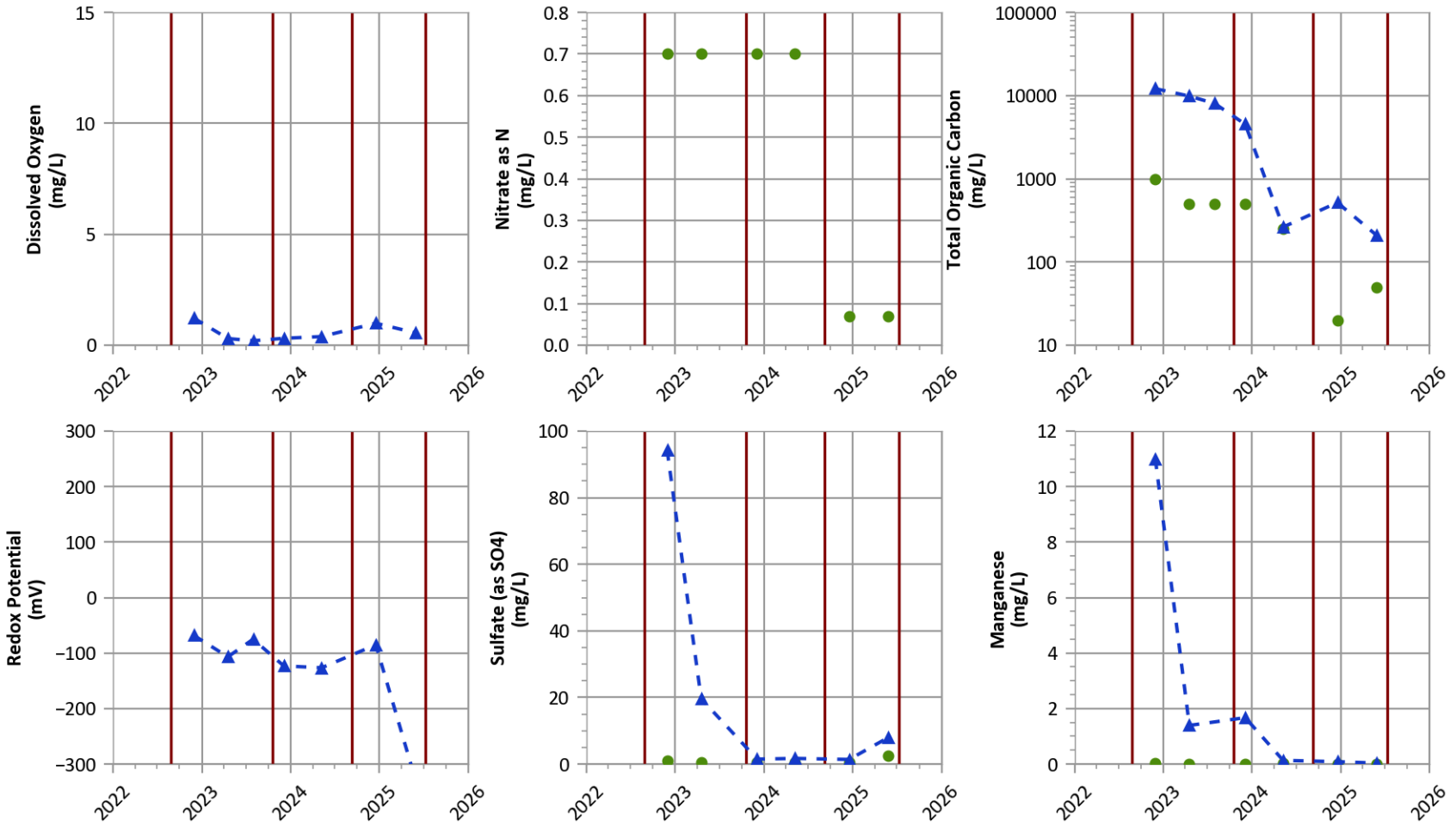
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend
Injection Dates

Well Location
Southeast ISB Extension



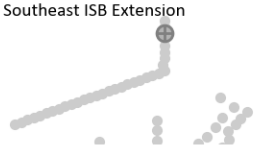
PTX06-ISB331 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



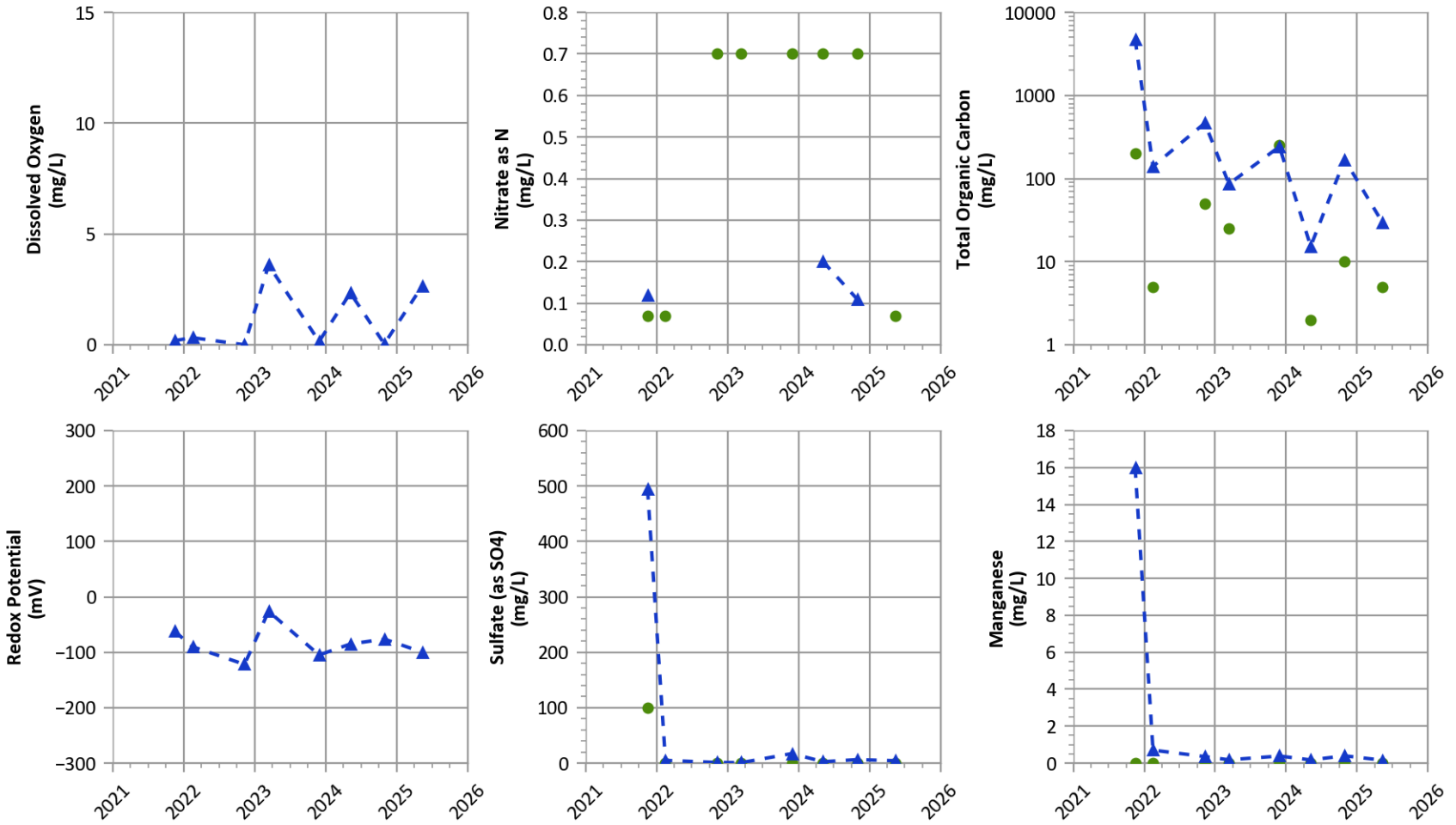
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend
Injection Dates

Well Location
Southeast ISB Extension

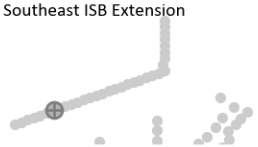


PTX06-1213 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

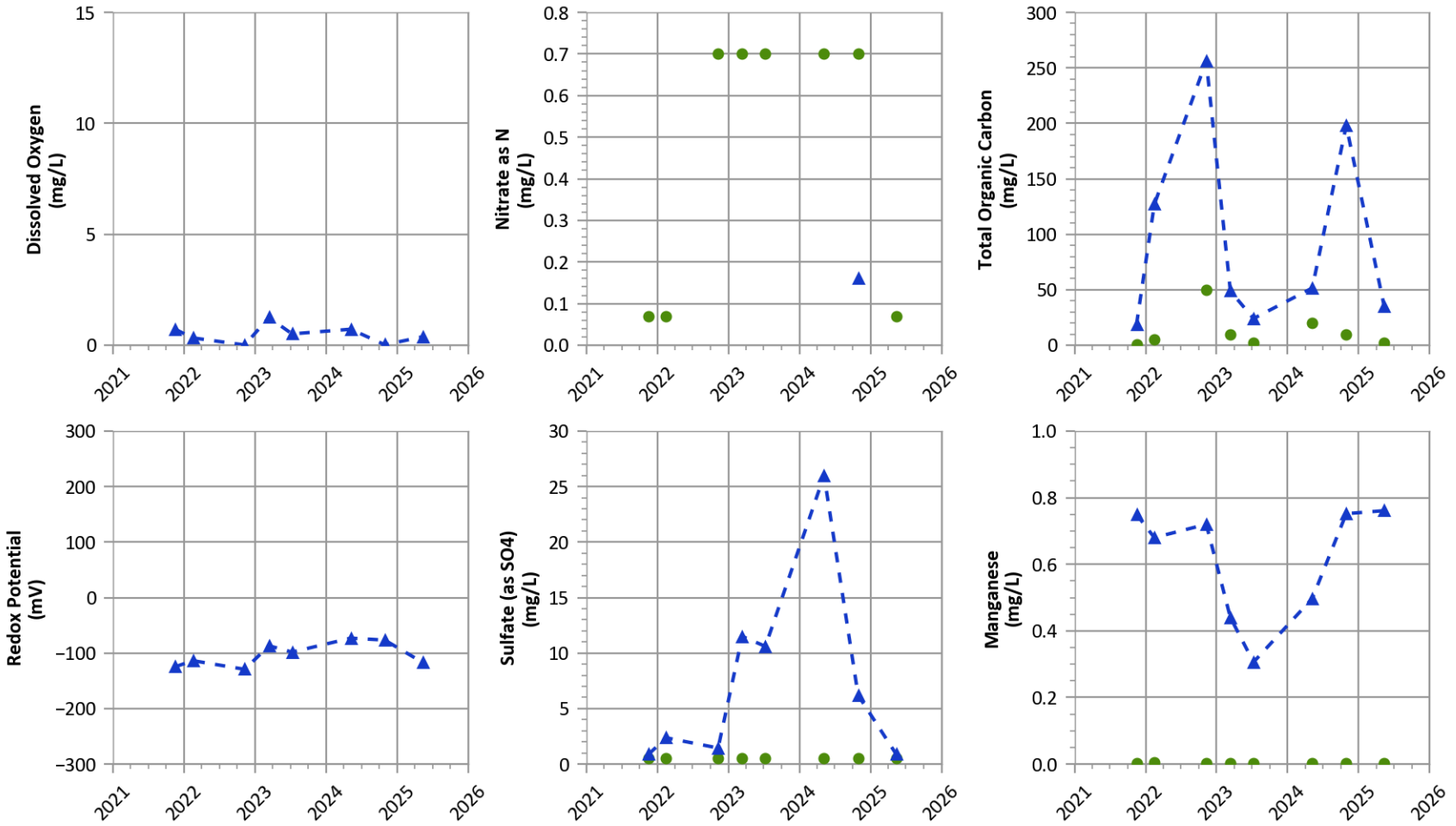


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Well Location
Southeast ISB Extension



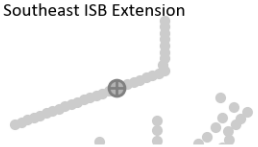
PTX06-1214 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



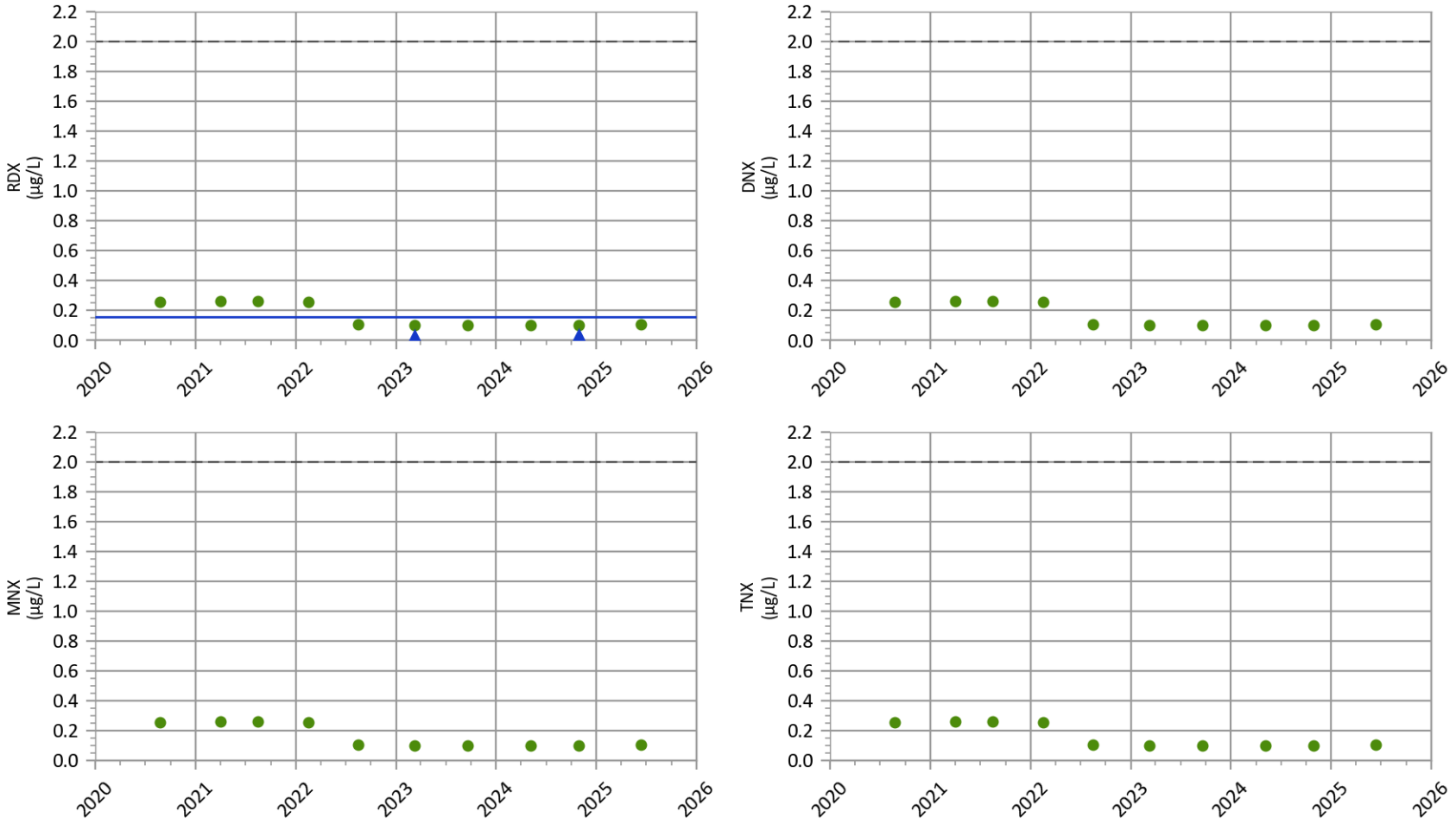
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend

Well Location
Southeast ISB Extension

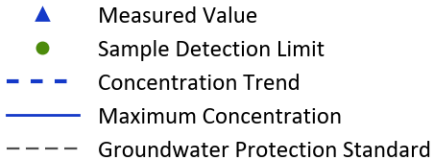


PTX06-1194 Downgradient Performance Indicators
Southeast Ext In Situ Bioremediation System
USDOE/NNSA Pantex Plant

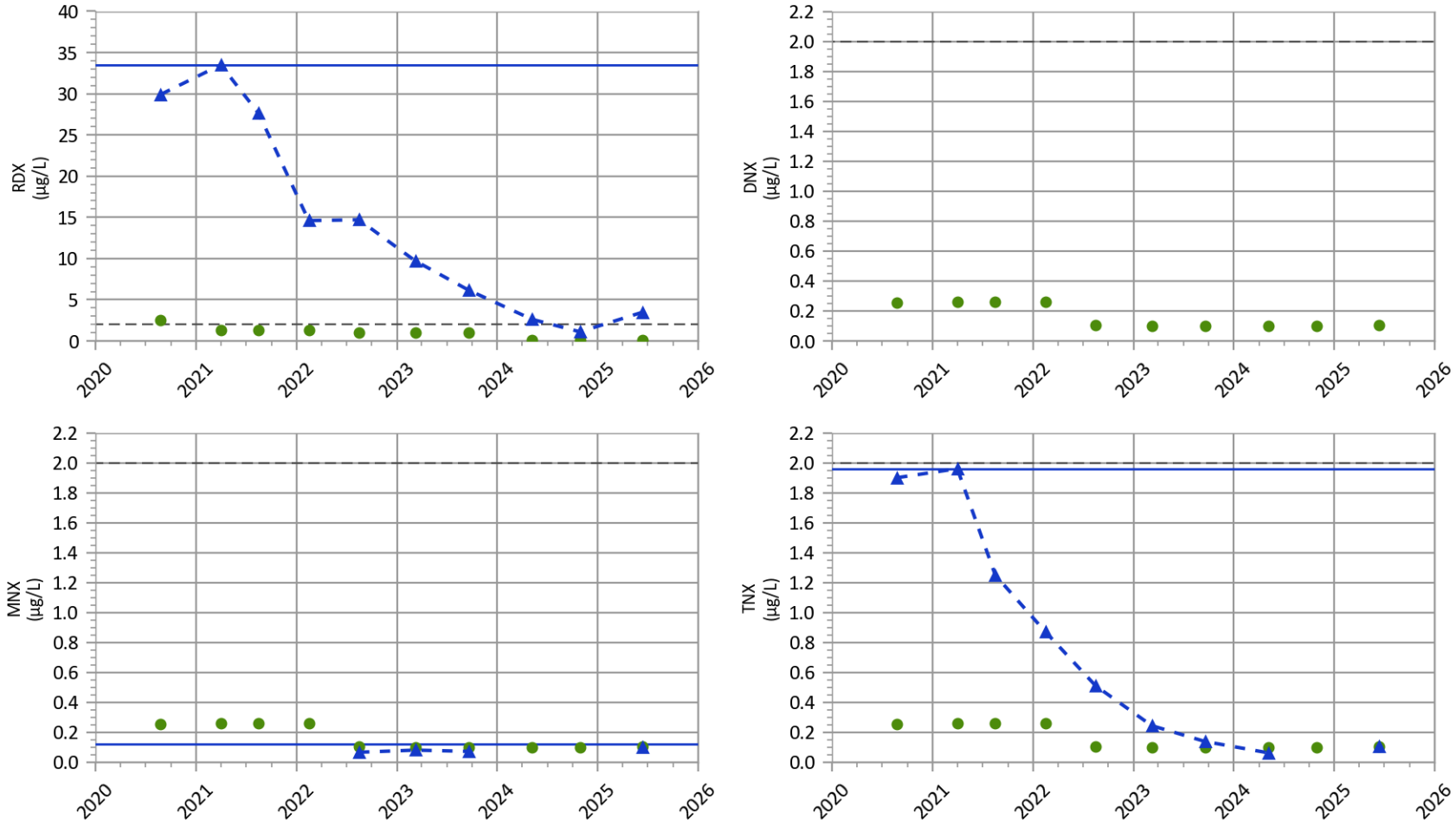


Most Recent Measured COC Concentrations (Jun 11, 2025)

COC	Concentration (µg/L)	GWPS (µg/L)
RDX	Non-Detect	2.0
MNX	Non-Detect	2.0
DNX	Non-Detect	2.0
TNX	Non-Detect	2.0



PTX06-1196 Downgradient Performance Indicators
Southeast Ext In Situ Bioremediation System
USDOE/NNSA Pantex Plant

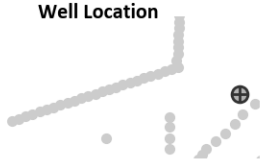


Most Recent Measured COC Concentrations (Jun 11, 2025)

COC	Concentration (µg/L)	GWPS (µg/L)
RDX	3.47	2.0
MNX	0.101	2.0
DNX	Non-Detect	2.0
TNX	0.107	2.0

Measured Value
Sample Detection Limit
Concentration Trend
Maximum Concentration
Groundwater Protection Standard

Well Location



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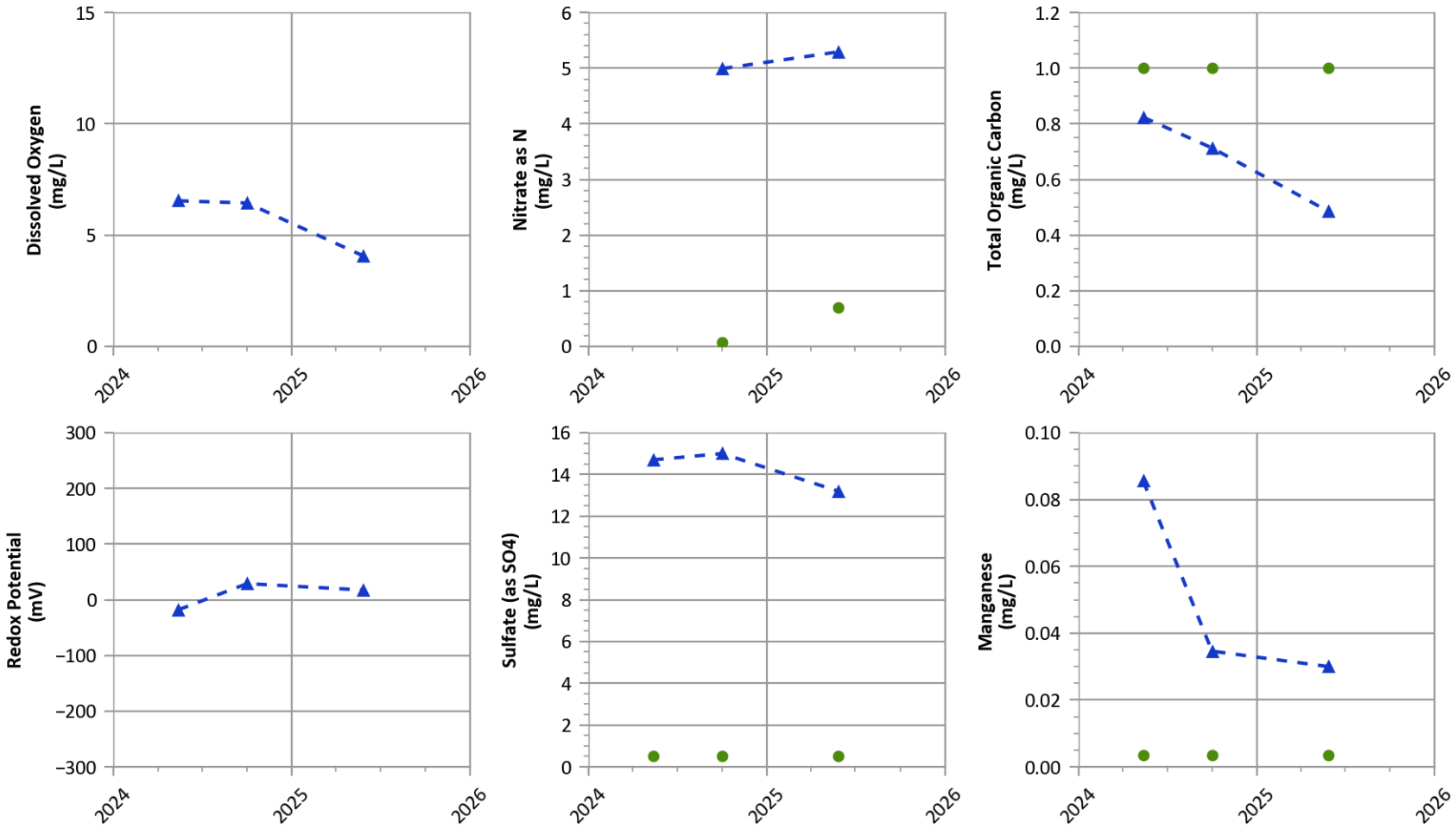
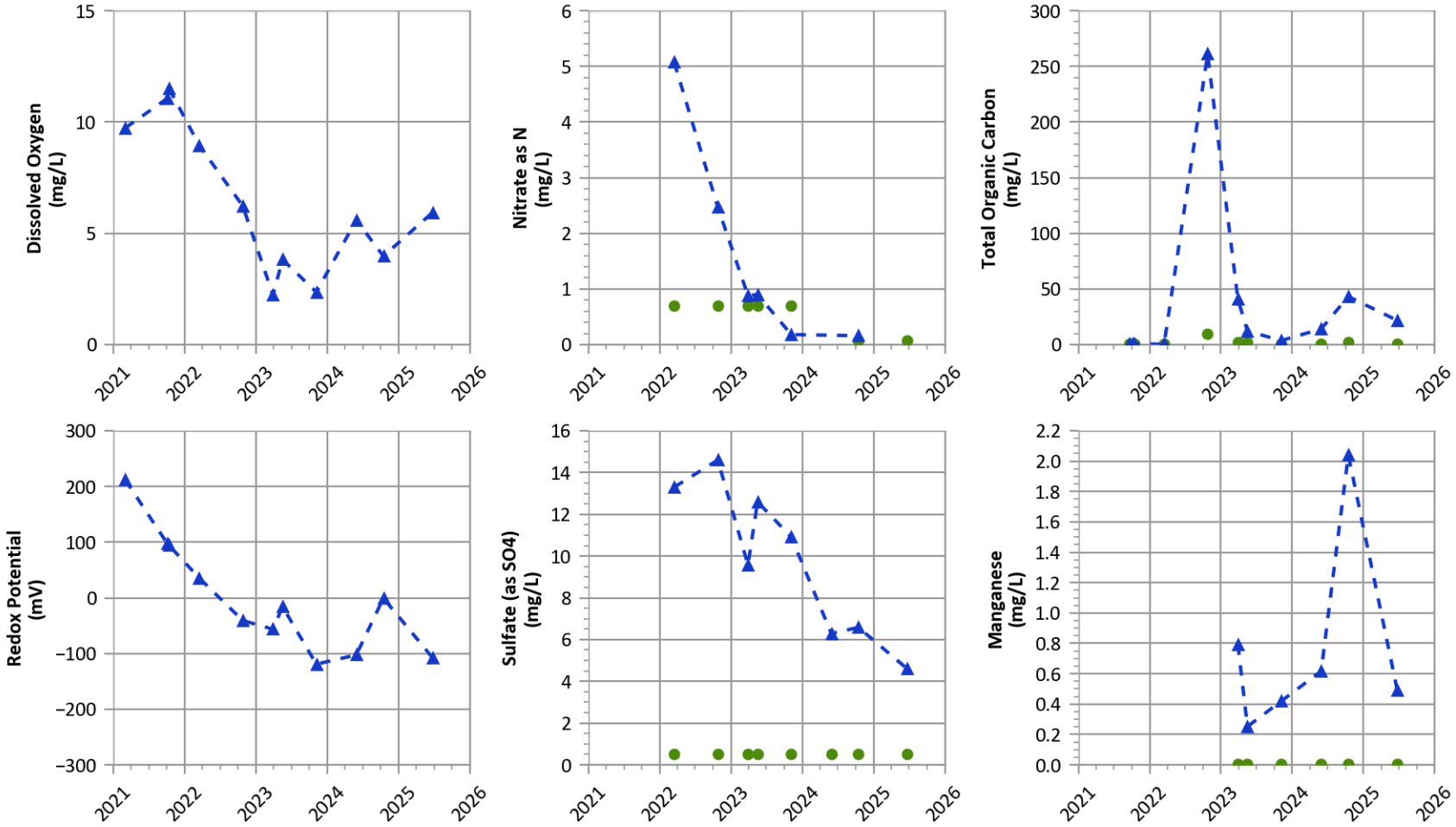
Offsite ISB

PTX06-ISB435 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



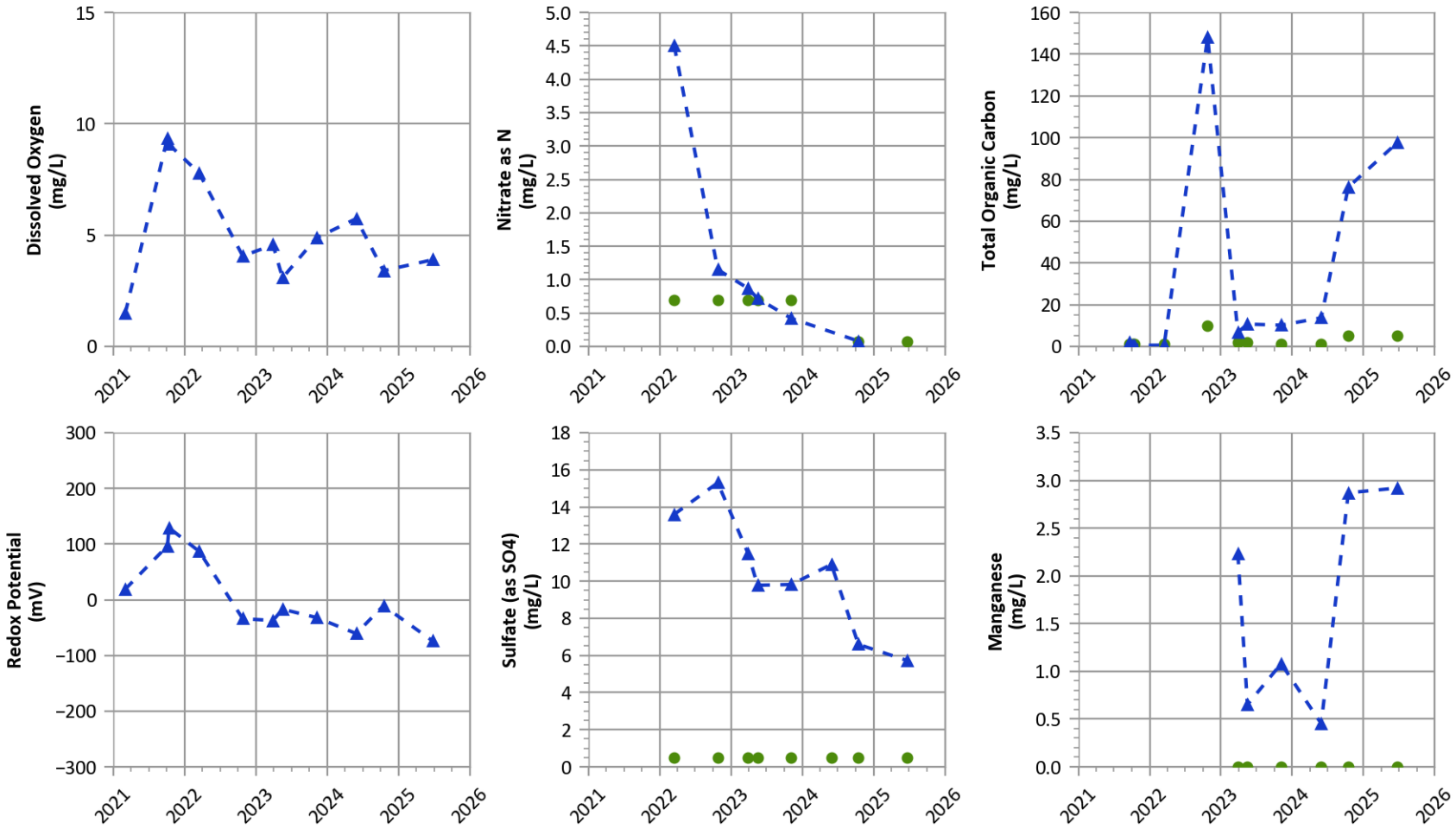
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-REC402 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



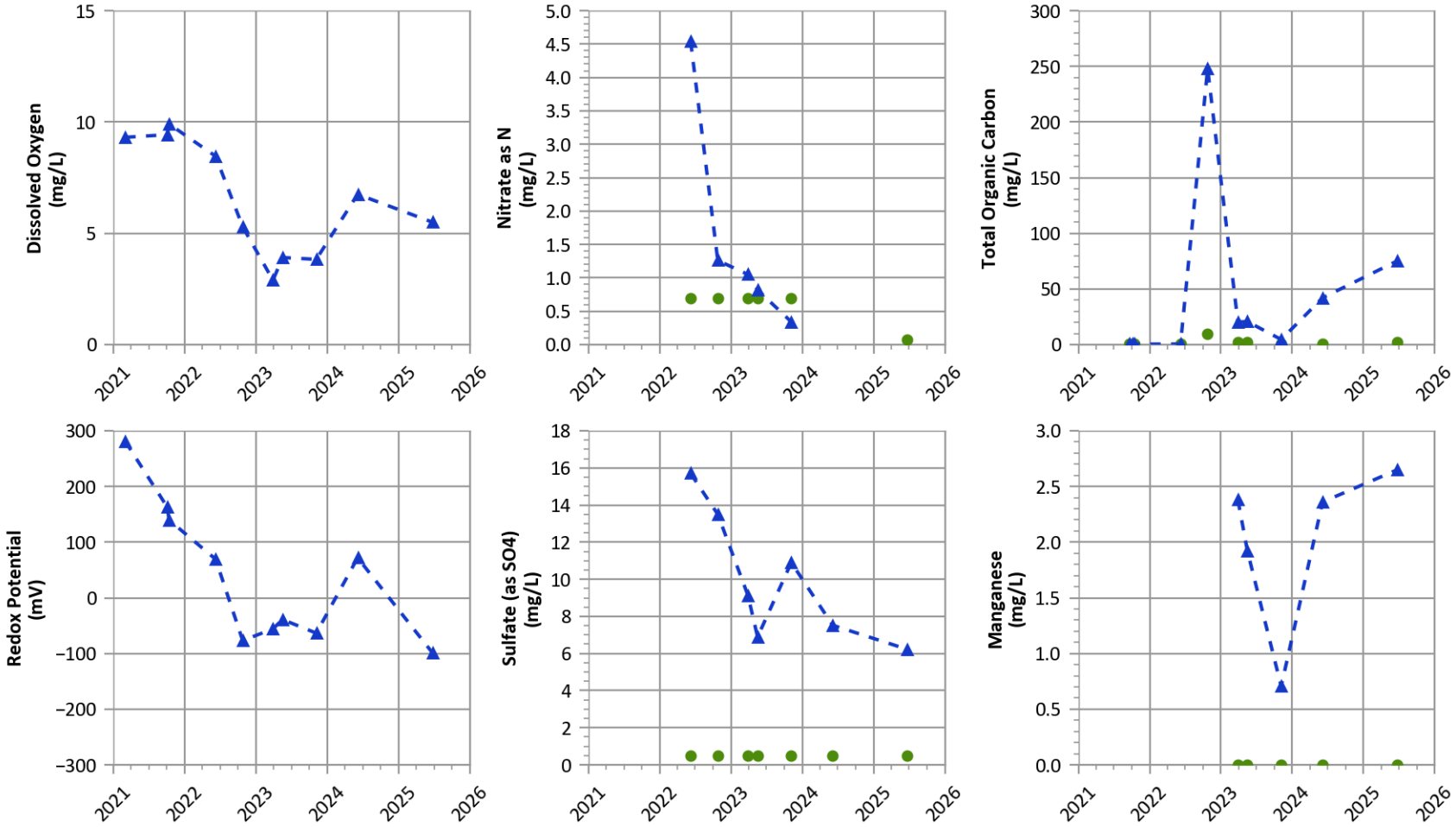
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-REC403 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



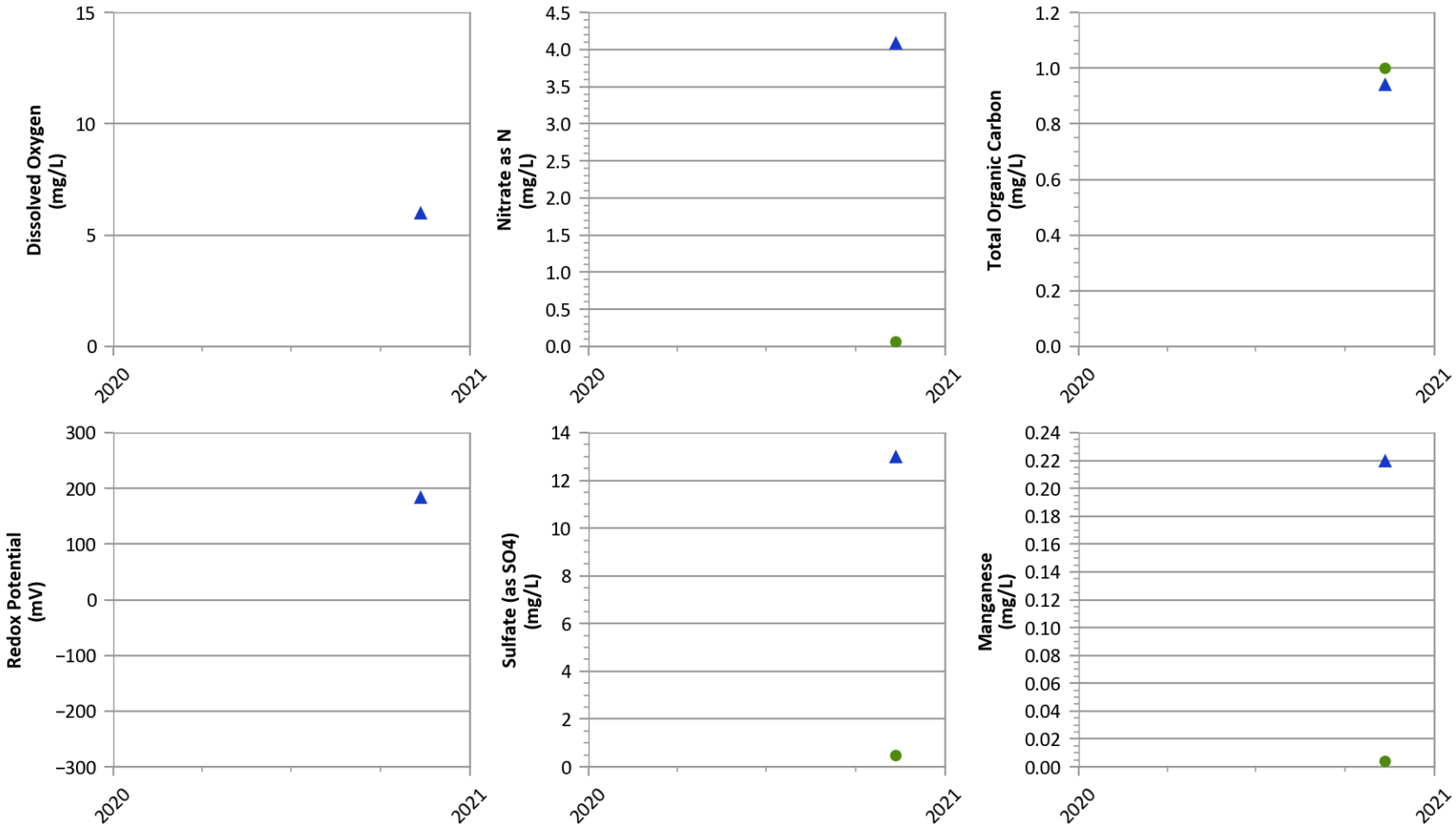
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-REC404 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-REC411 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

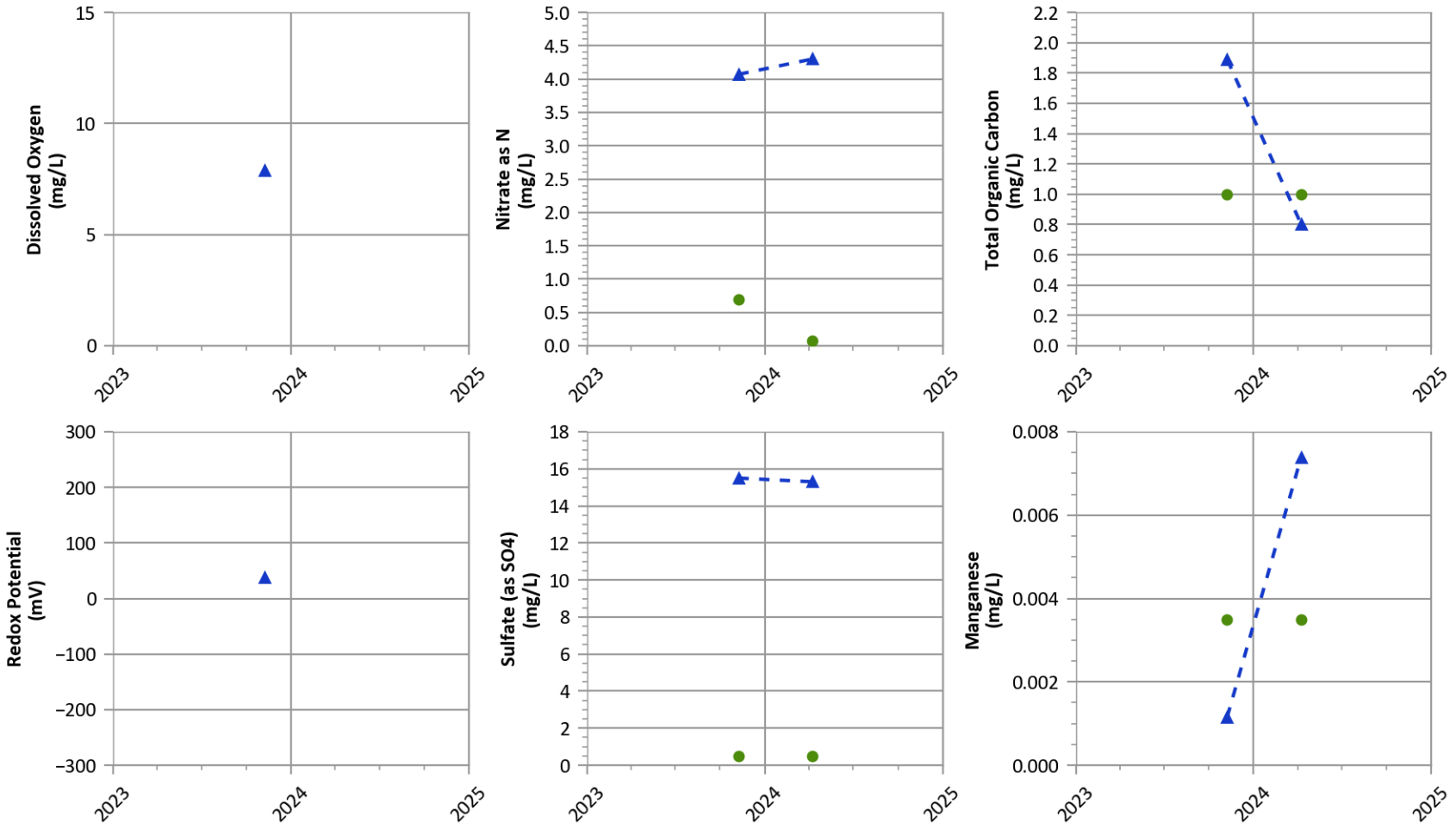


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

▲ Measured Value
● Sample Detection Limit
- - - Concentration Trend

Well Location
Offsite ISB

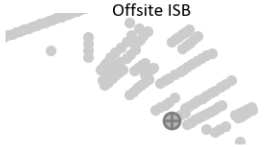
PTX06-REC412 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



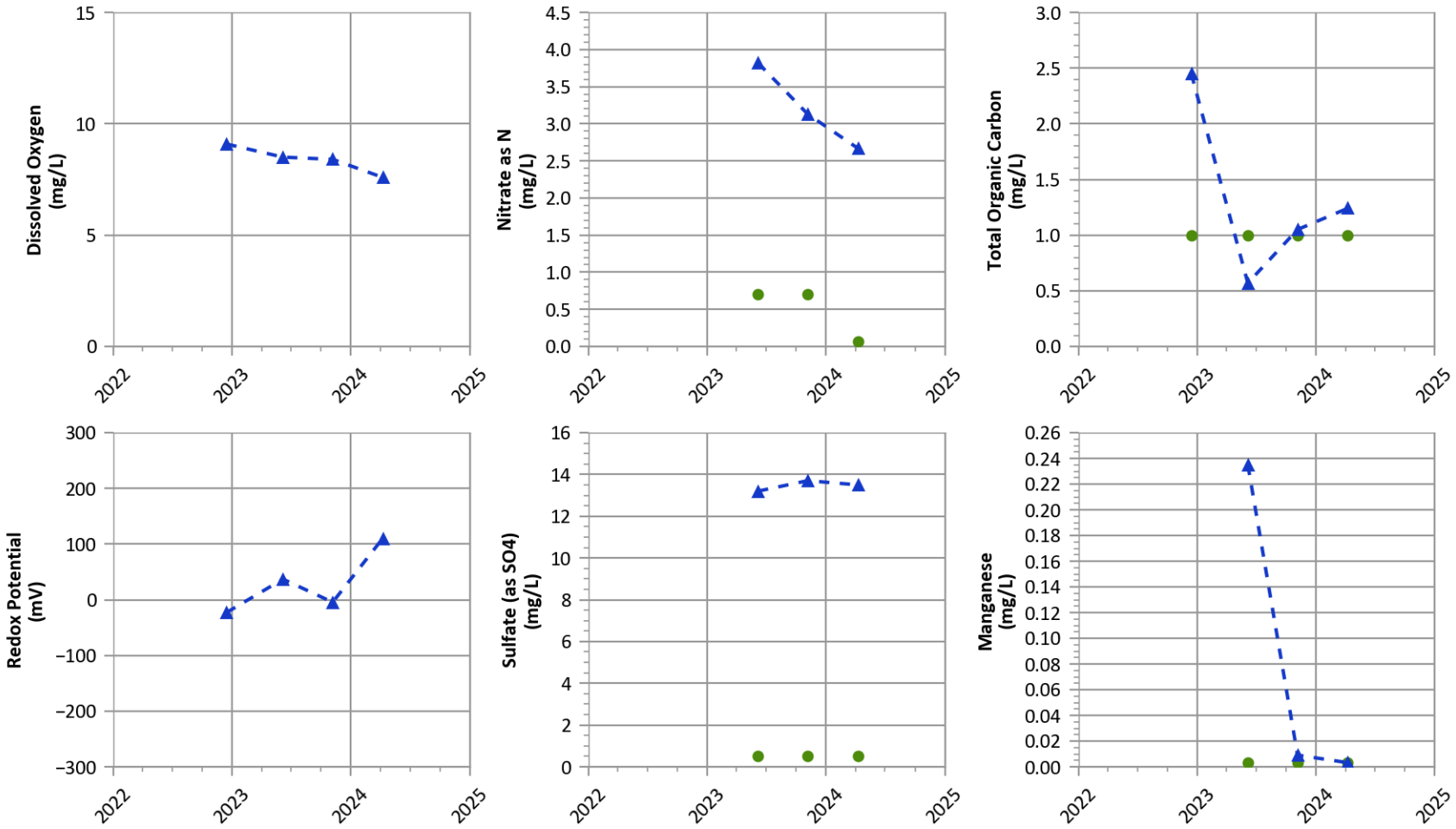
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend

Well Location
Offsite ISB



PTX06-REC416 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

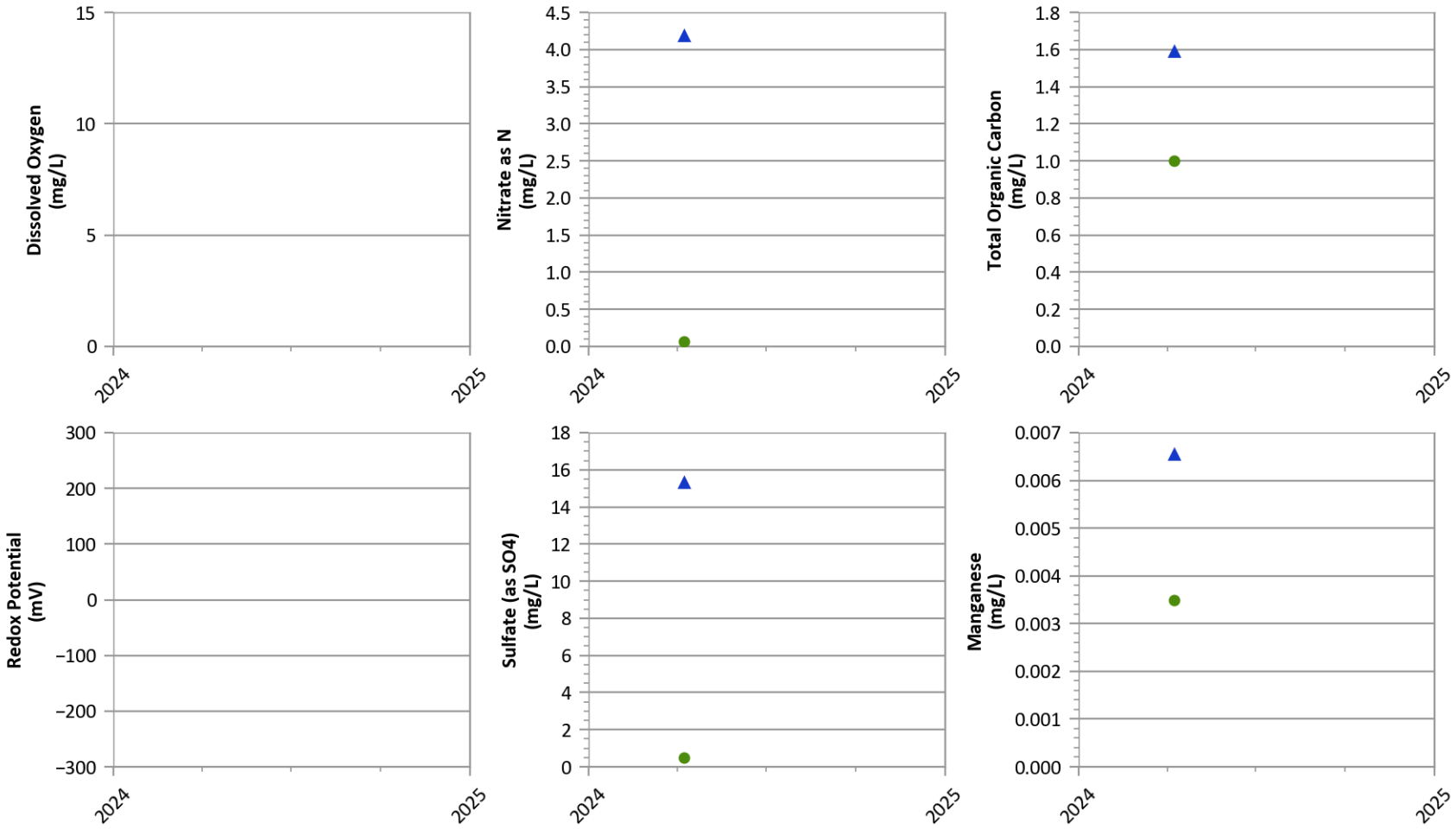


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend

Well Location
Offsite ISB

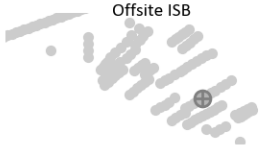
PTX06-REC420 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



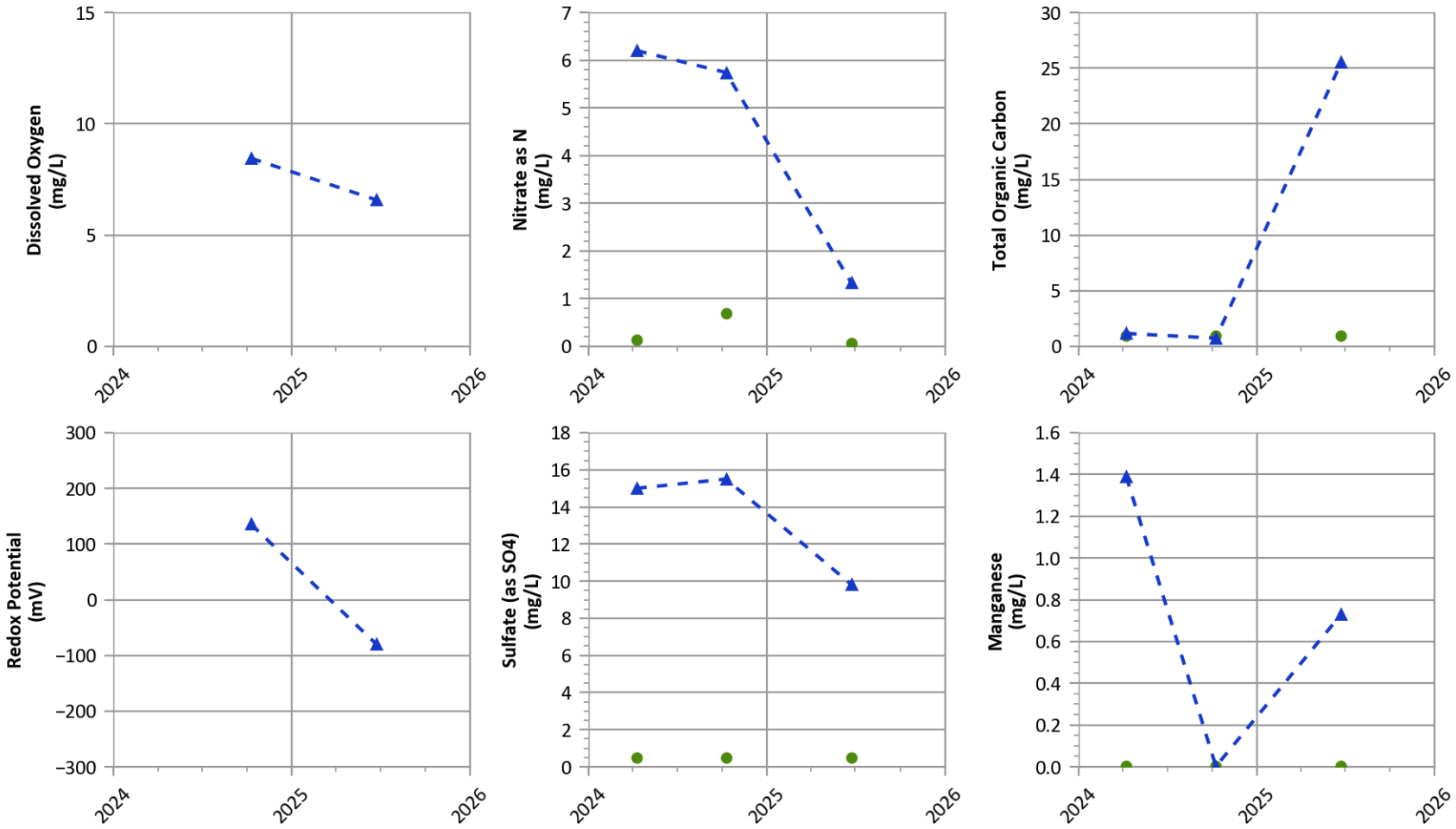
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

▲ Measured Value
● Sample Detection Limit
– – – Concentration Trend

Well Location
Offsite ISB

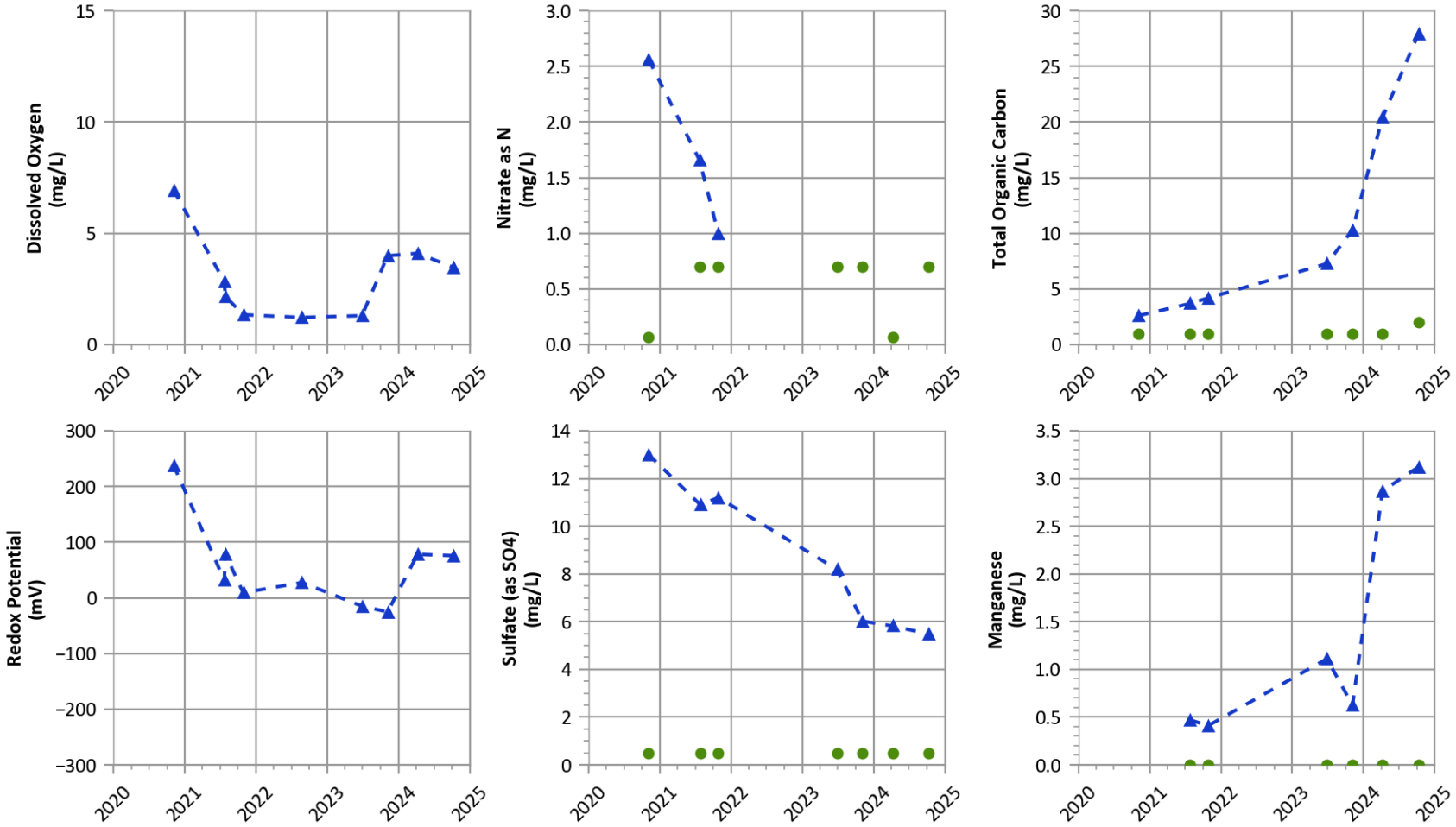


PTX06-REC423 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



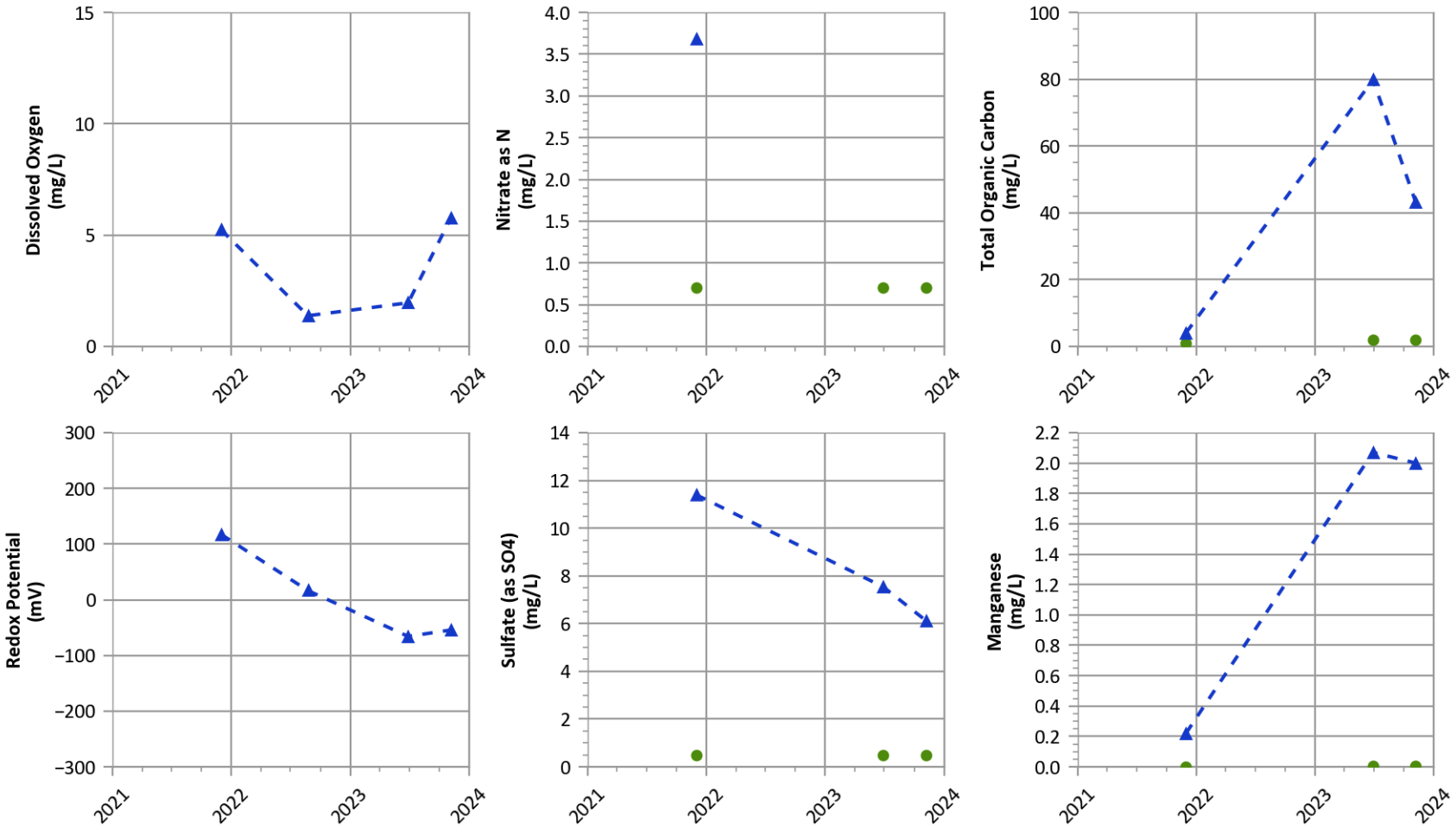
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-MEW402 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-MEW405 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

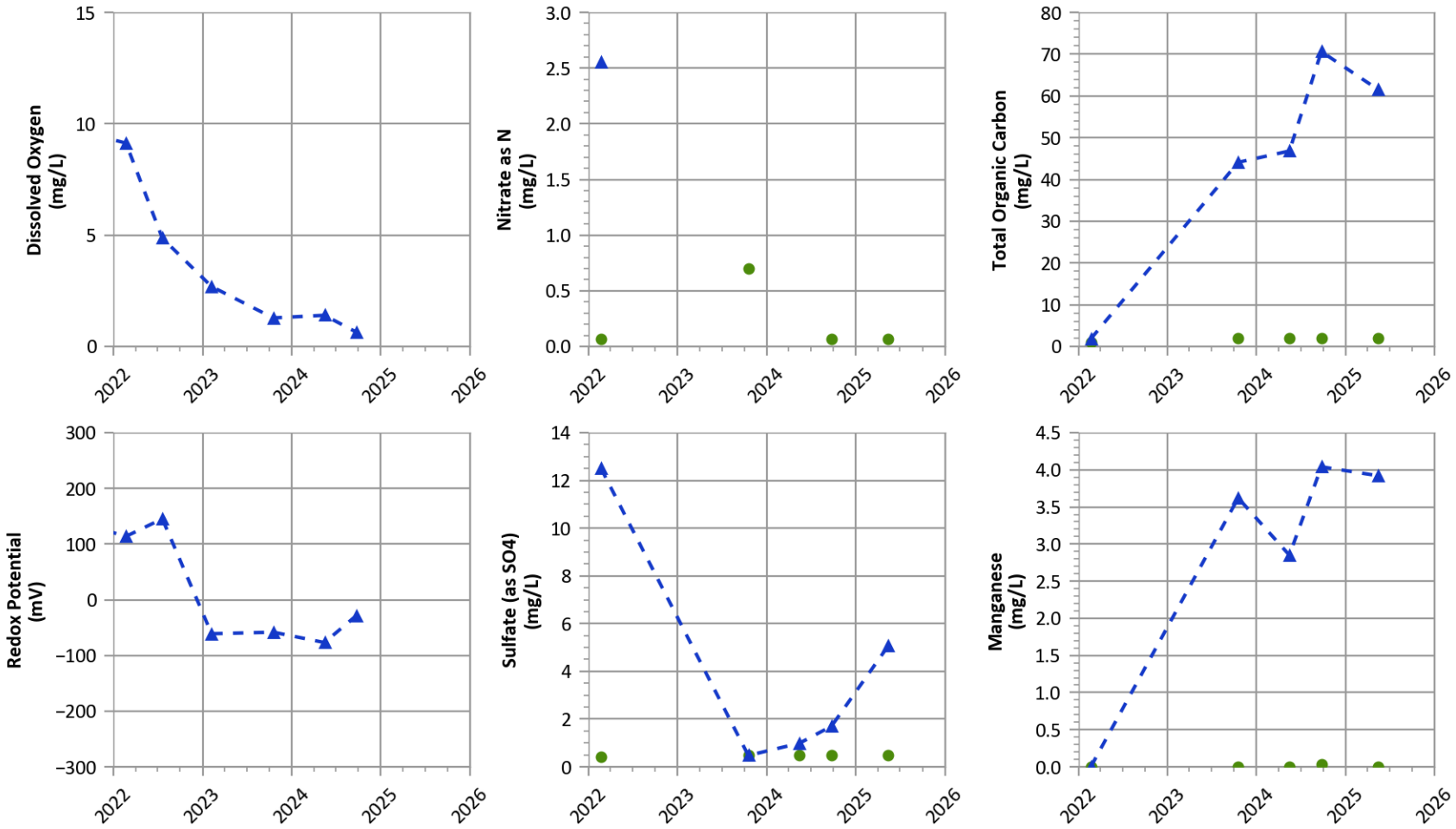


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

▲ Measured Value
● Sample Detection Limit
- - - Concentration Trend

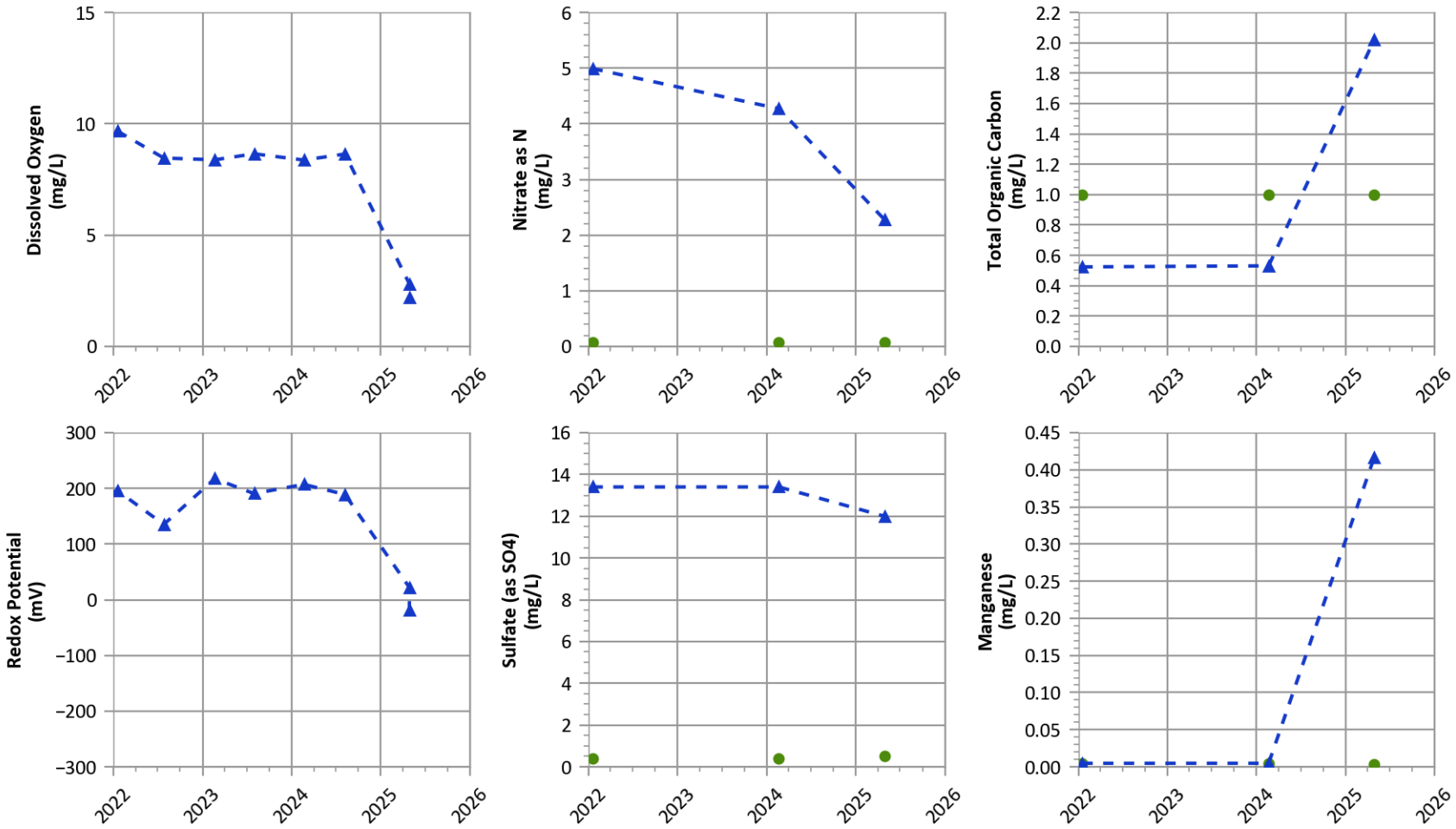
Well Location
Offsite ISB

PTX06-1197 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



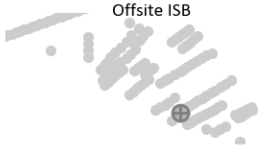
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-1201 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

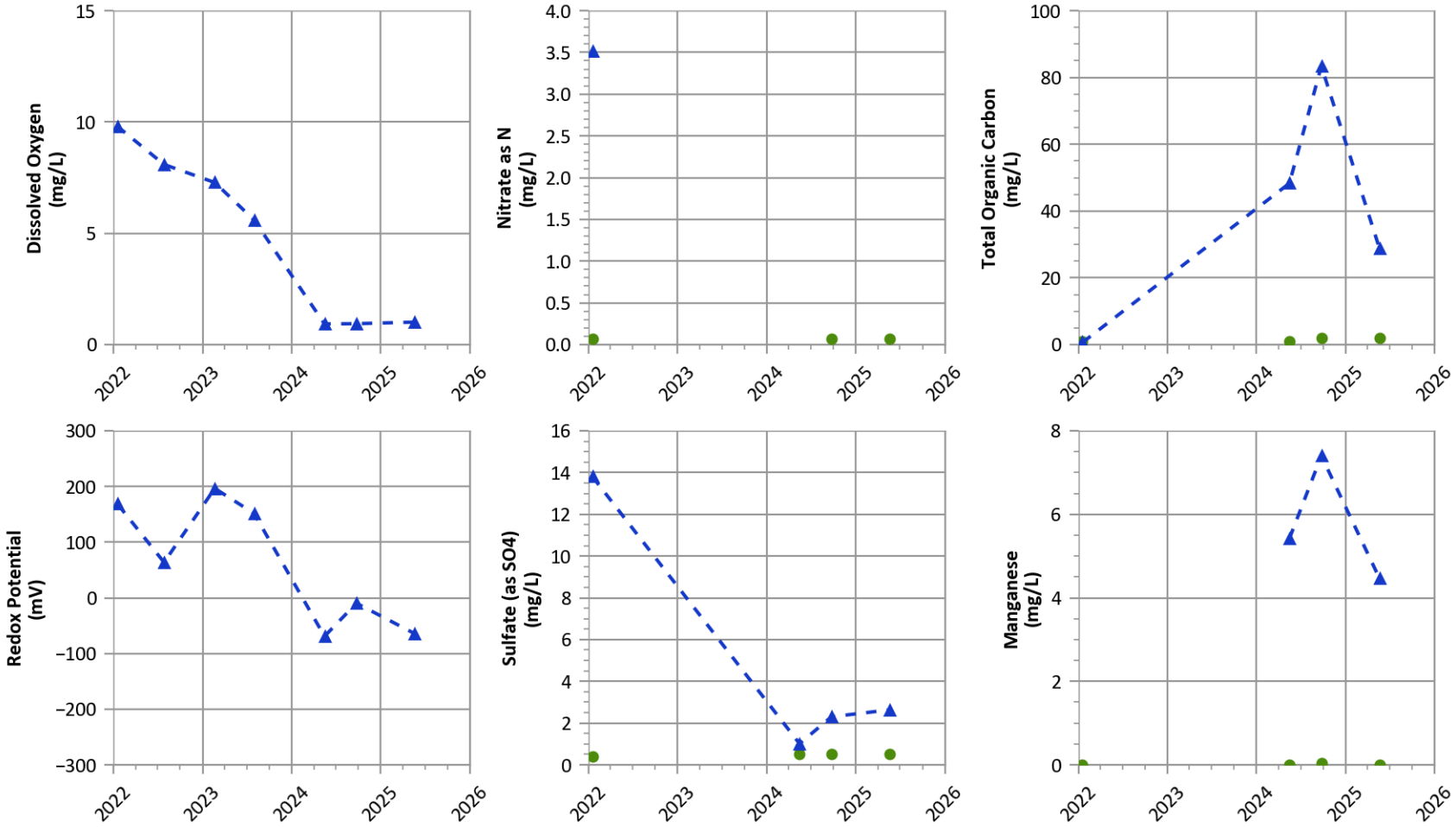


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Well Location
Offsite ISB

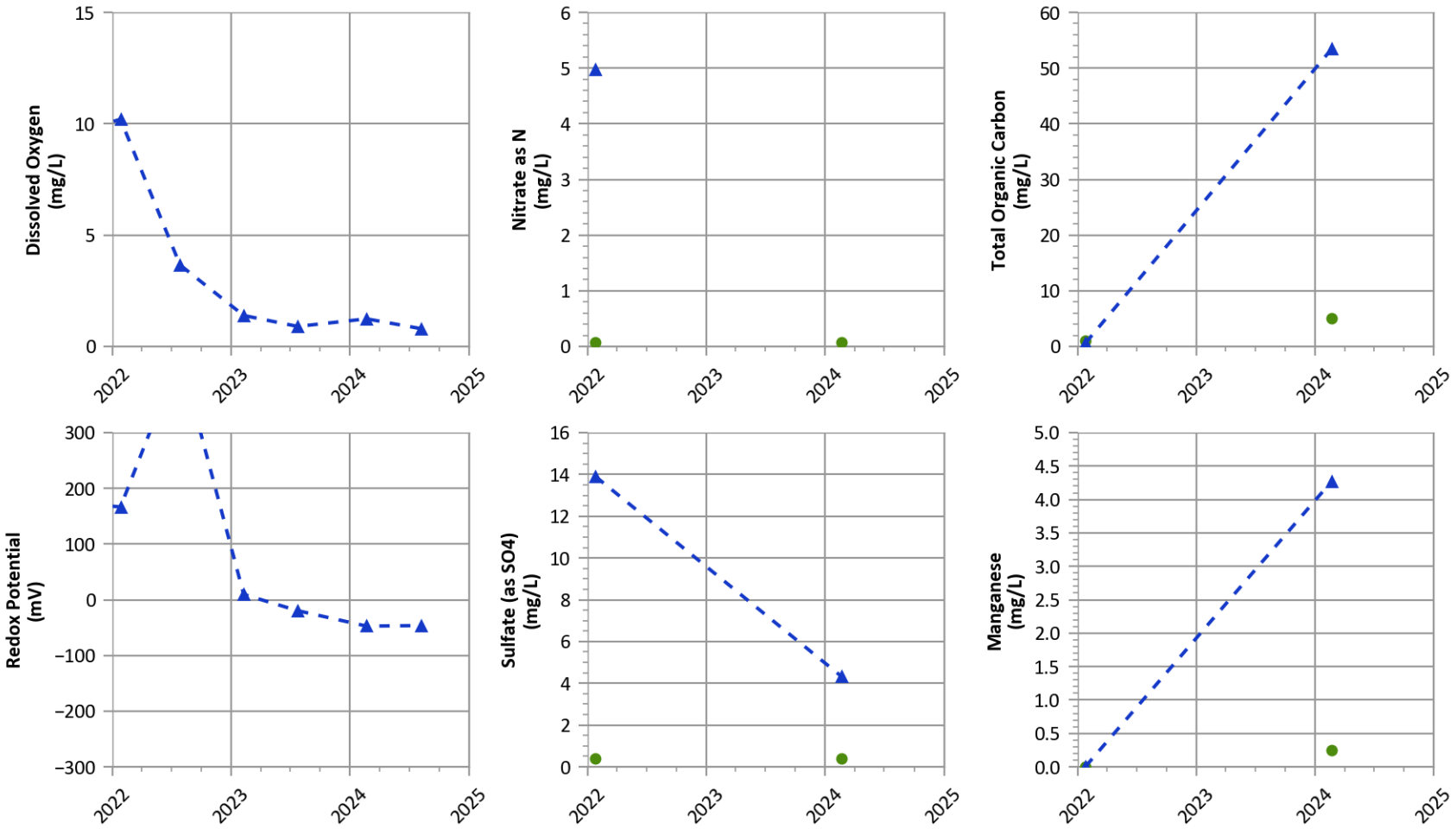


PTX06-1203 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



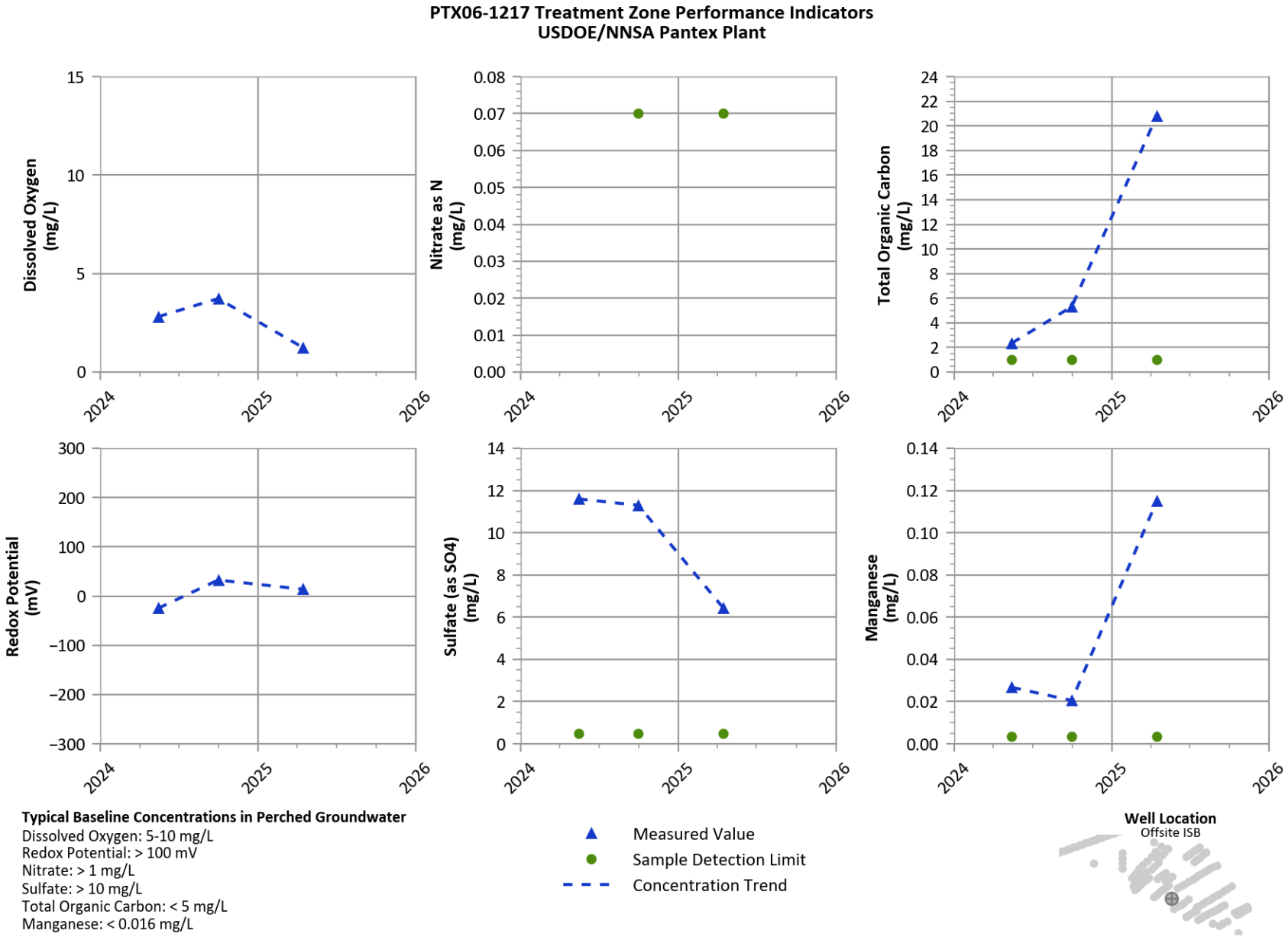
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-1204 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

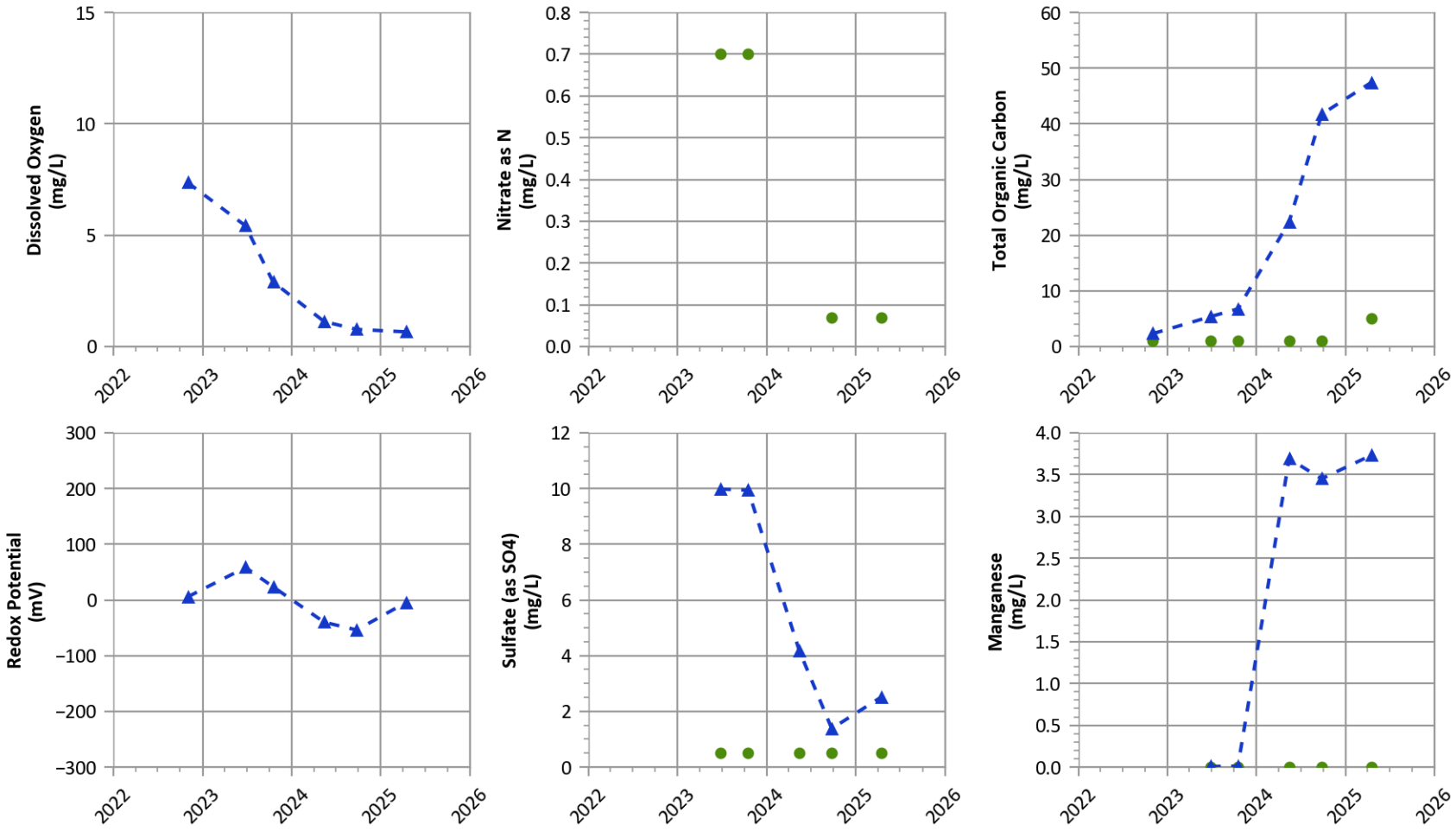


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Well Location
Offsite ISB


PTX06-1217 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant
Dissolved Oxygen (mg/L)
Nitrate as N (mg/L)
Total Organic Carbon (mg/L)
Redox Potential (mV)
Sulfate (as SO4) (mg/L)
Manganese (mg/L)
2024
2025
2026
Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L
Measured Value
Sample Detection Limit
Concentration Trend
Well Location
Offsite ISB

PTX06-1218 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

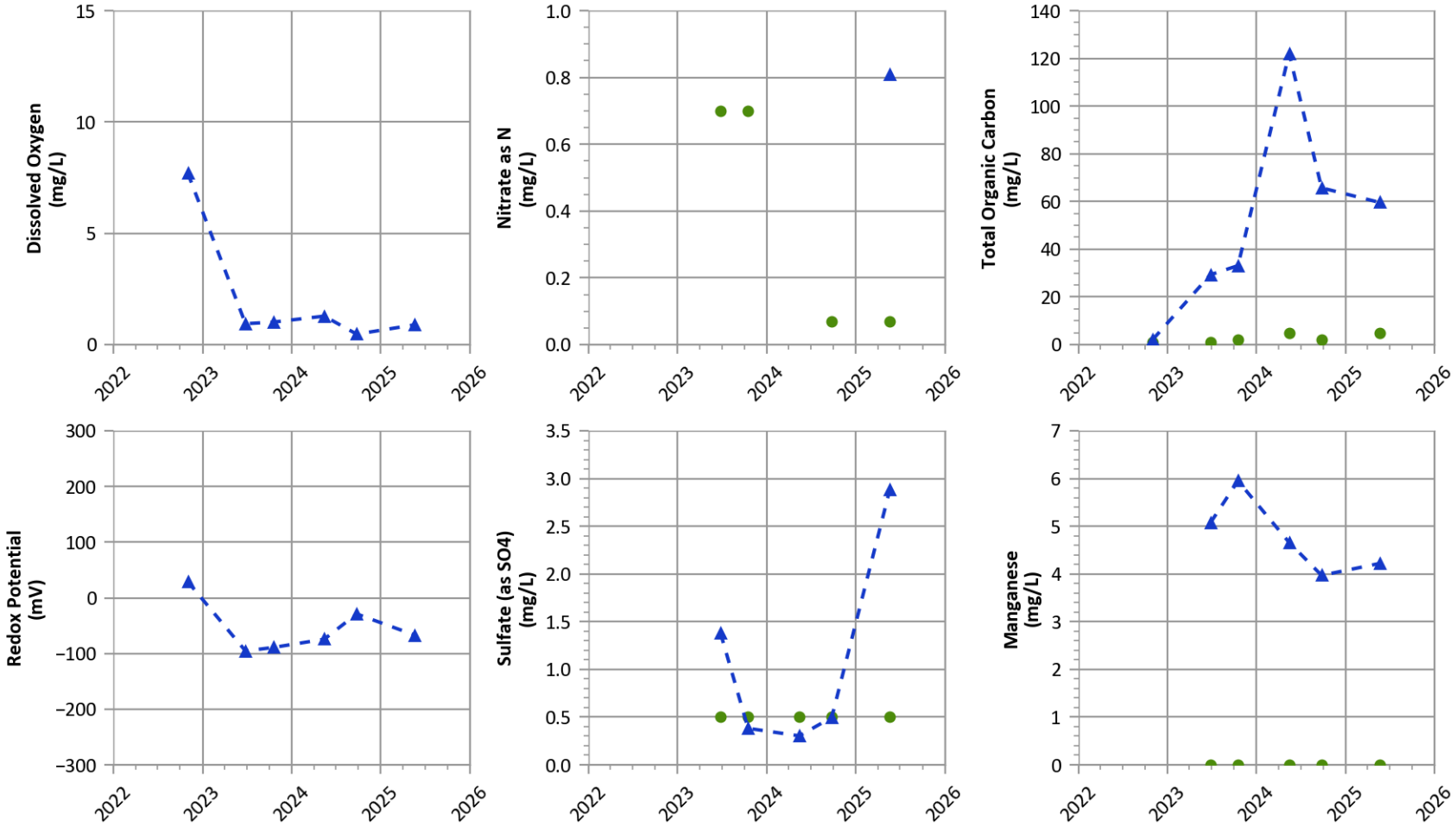


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend

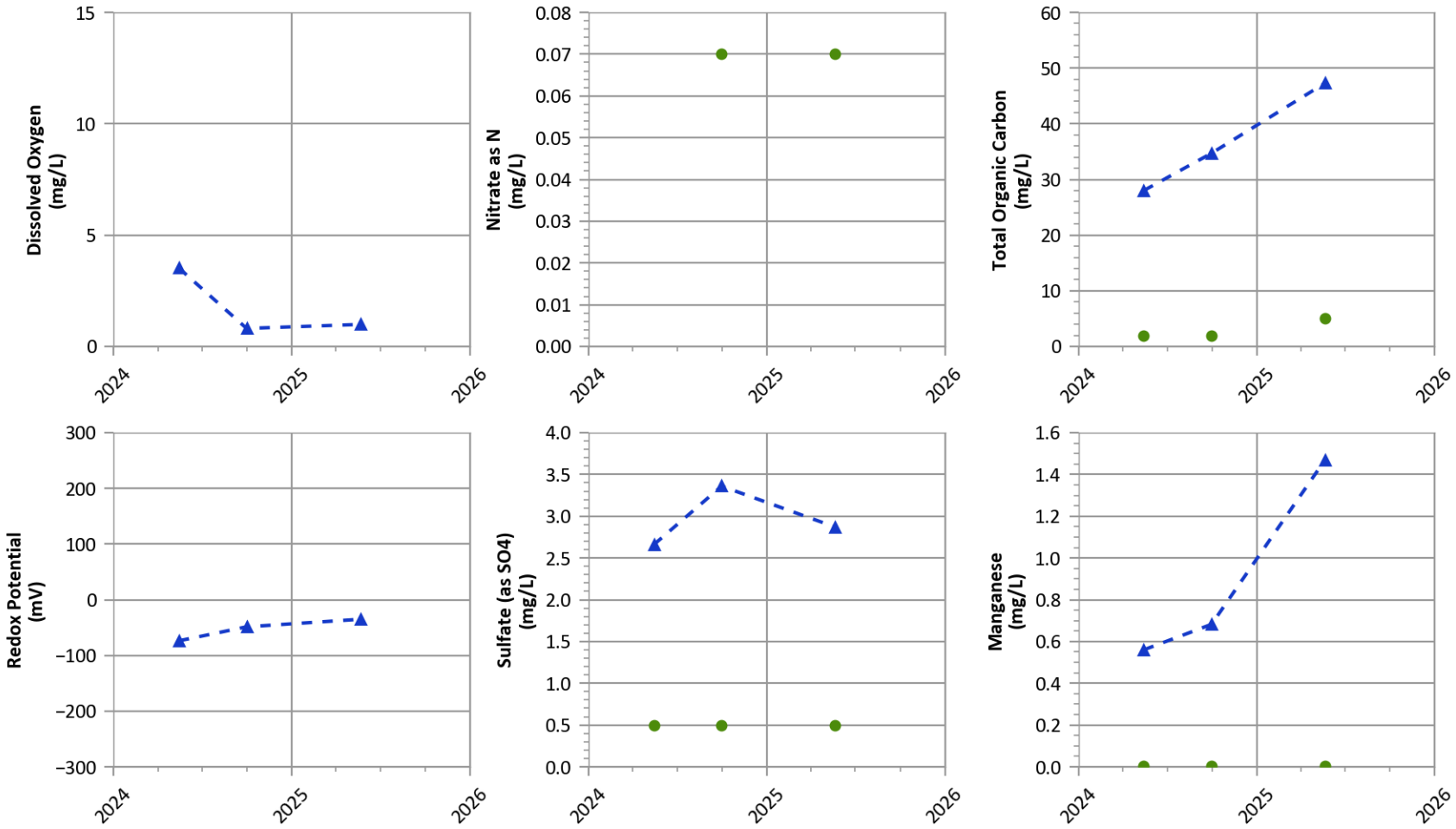
Well Location
Offsite ISB

PTX06-1219 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-1220 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

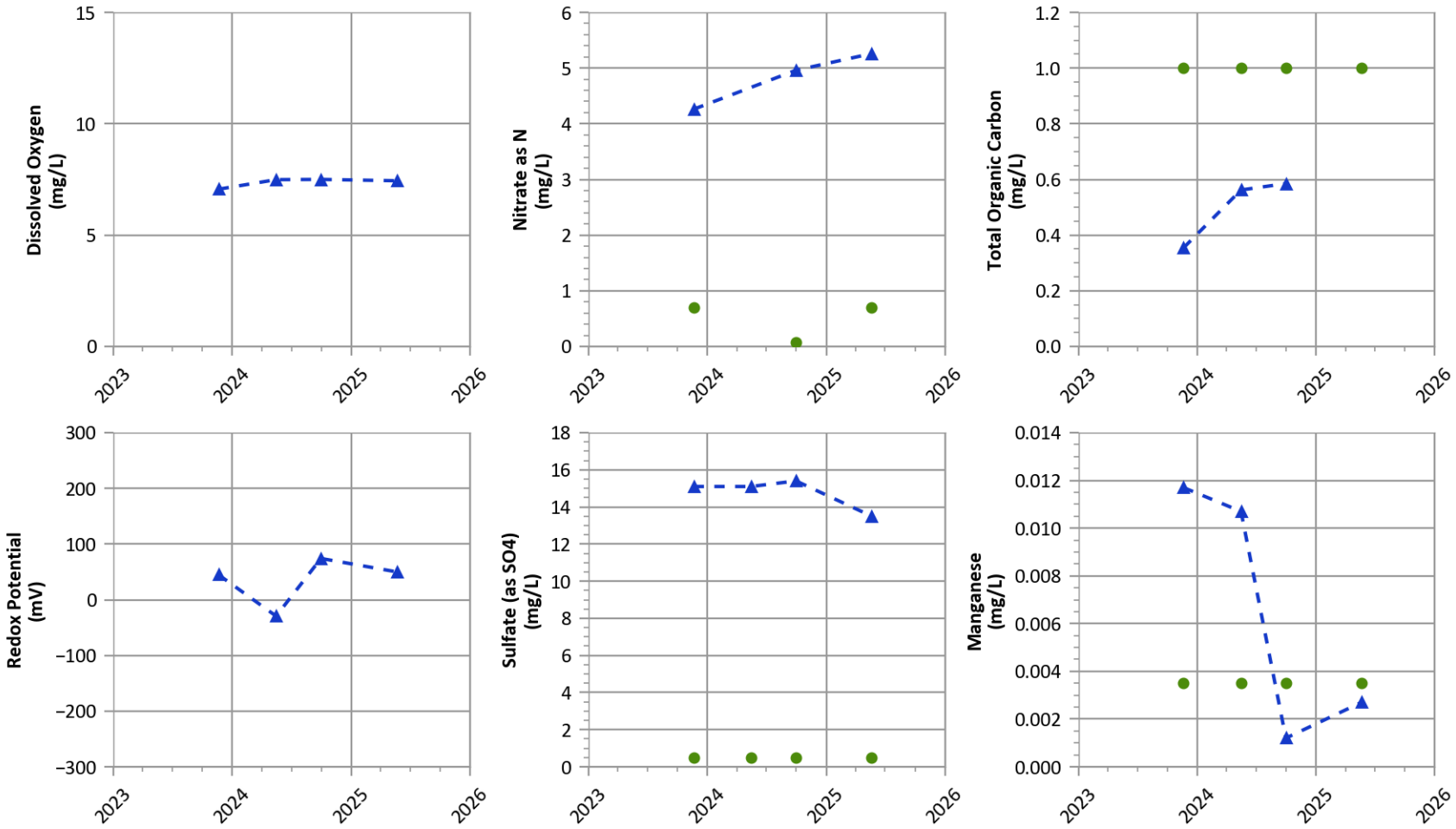


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend

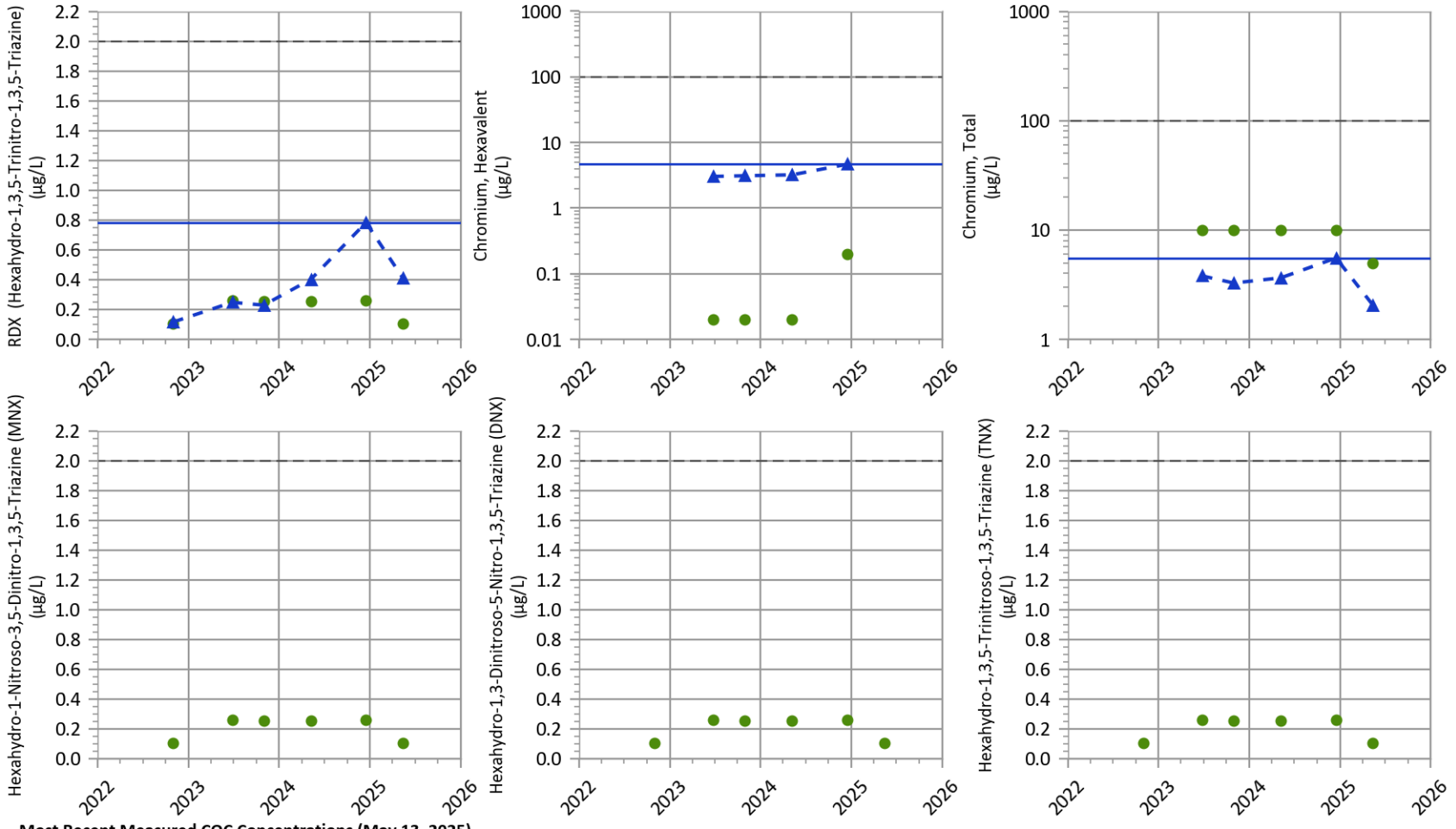
Well Location
Offsite ISB

PTX06-1221 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

PTX06-1215 Downgradient Performance Indicators
Offsite In Situ Bioremediation System
USDOE/NNSA Pantex Plant



Most Recent Measured COC Concentrations (May 13, 2025)

COC	Concentration (µg/L)	GWPS (µg/L)
RDX	0.412	2.0
MNX	Non-Detect	2.0
CR-6	4.664	100.0
DNX	Non-Detect	2.0
CR	2.06	100.0
TNX	Non-Detect	2.0

- Measured Value
- Sample Detection Limit
- Concentration Trend
- Maximum Concentration
- Groundwater Protection Standard

Well Location

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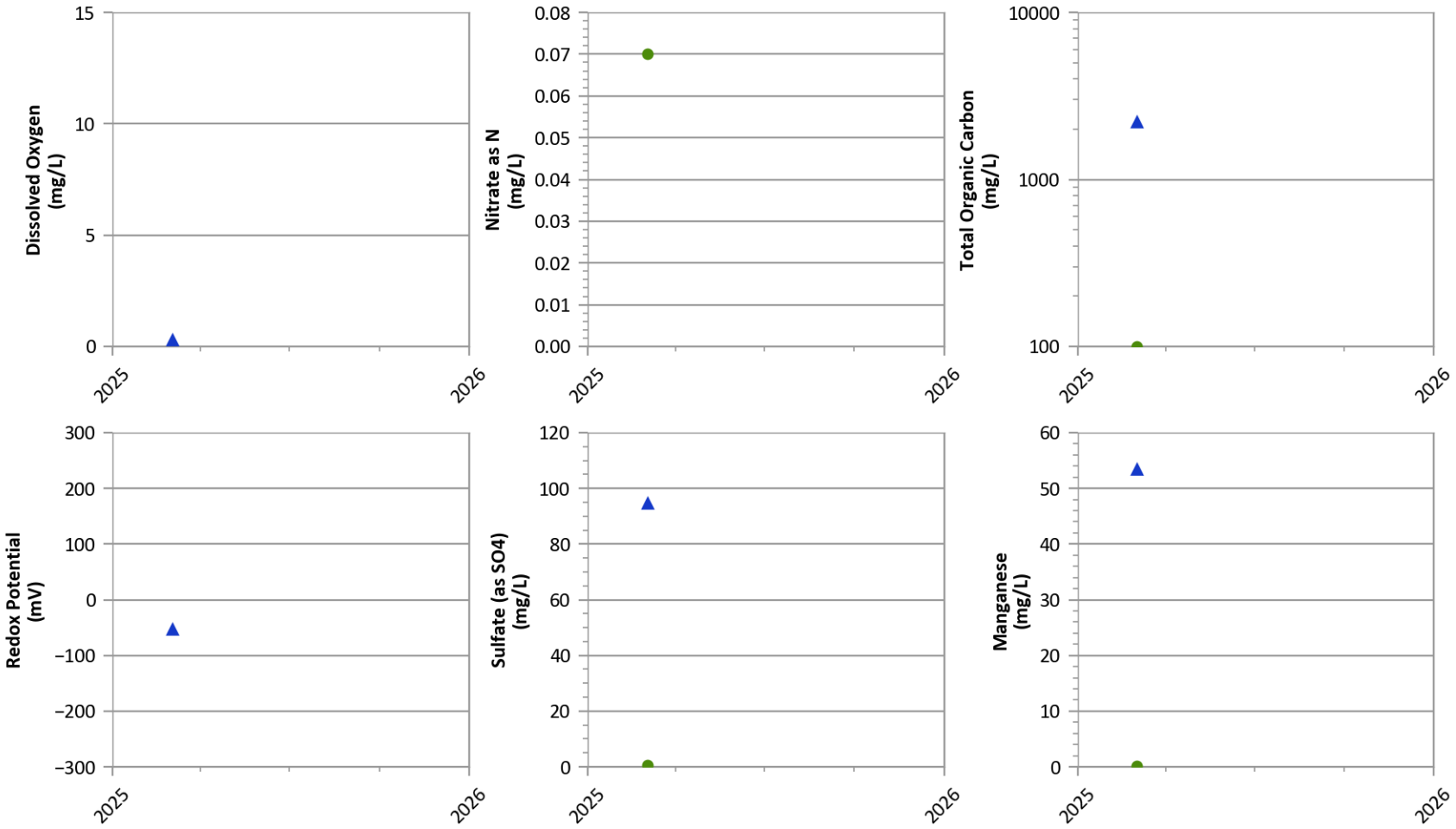
Perchlorate/Chromium ISB

PTX06-1225 Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant

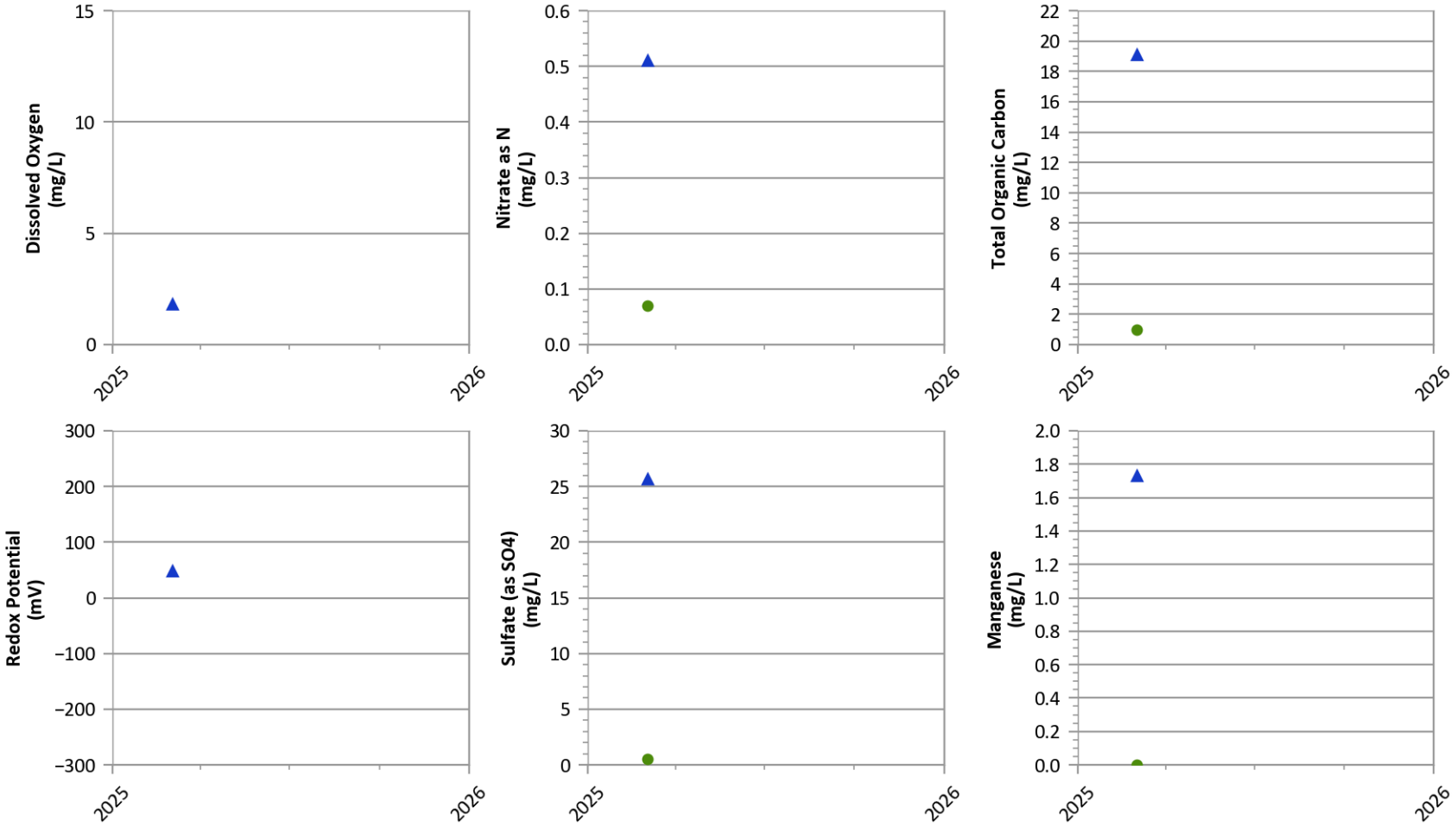


Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

Measured Value
Sample Detection Limit
Concentration Trend

Well Location
PCR ISB

PTX06-1226A Treatment Zone Performance Indicators
USDOE/NNSA Pantex Plant



Typical Baseline Concentrations in Perched Groundwater
Dissolved Oxygen: 5-10 mg/L
Redox Potential: > 100 mV
Nitrate: > 1 mg/L
Sulfate: > 10 mg/L
Total Organic Carbon: < 5 mg/L
Manganese: < 0.016 mg/L

▲ Measured Value
● Sample Detection Limit
– – – Concentration Trend

Well Location
PCR ISB