

# PANTEX ENVIRONMENTAL RESTORATION

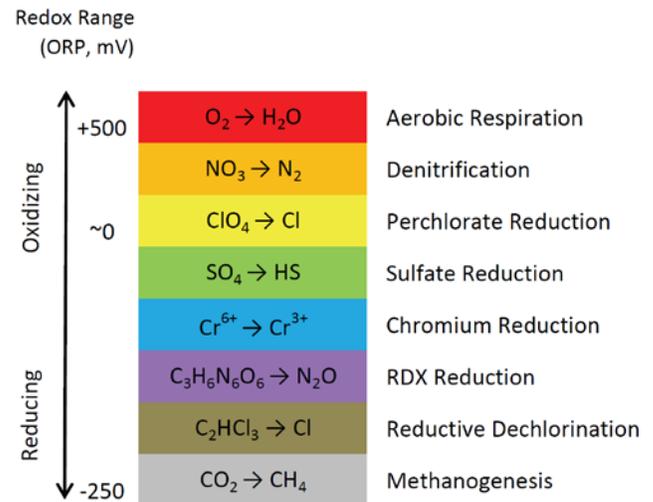


## *Extension of Southeast In Situ Groundwater Bioremediation System*

A Record of Decision (ROD) was issued in 2008 with concurrence of the Environmental Protection Agency (EPA) and Texas Commission on Environmental Quality (TCEQ) to address cleanup of the legacy contamination at the Pantex Plant. The primary focus of cleanup efforts required by the ROD is the perched groundwater contaminated by decades of industrial process wastewater discharges to onsite ditches and playas. The Selected Remedy for perched groundwater is a combination of extraction and treatment in areas with greater than 15 feet of saturation and in situ treatment in the thinner areas.

The in situ treatment portion of the cleanup includes two in situ bioremediation systems (ISBs); one in Zone 11 and one in the southeast quadrant of the site, on the Texas Tech property used as a security buffer south of the Pantex Site.

ISB Systems are established by injecting a food source (e.g., emulsified soybean oil) into formation. As the naturally occurring microbes feed and multiply, oxygen is removed from the injected area and deep reducing conditions are established for treatment of the contaminants. The figure below shows the reducing conditions required to breakdown various contaminants. Pantex monitors the treatment zone to evaluate the health of the microbes so injection frequencies and volume of food source can be adjusted and downgradient wells to evaluate the effectiveness of treatment.



Since issuance of the ROD, Pantex has operated and maintained the remedial action systems and monitored the perched groundwater for progress and indication of unexpected conditions. As the effectiveness of these systems were evaluated, the plume of high explosive compounds in the perched groundwater continued to move to the southeast.

In 2008, approximately 2.5 sections of land (i.e. 1,526 acres) was purchased from former Pantex neighbors in the mile-wide corridor east of FM 2373 and north of Highway 60. Purchase of this property provides Pantex with ready access for perched groundwater monitoring and remedial action as needed. To better understand the plume movement, monitoring well PTX06-1182 was installed in 2016 in the portion of this purchased property furthest to the southeast, just 500 feet north of Highway 60 (see Figure 1).

PTX06-1182 encountered approximately 7 feet of water and test results indicate that RDX is present at a concentration about 20 times greater than the groundwater protection standard (GWPS). Another high explosive compound of interest (4, amino-dinitrotoluene [DNT4A]) is also present across this area.

This finding led to the decision in 2017 to install three more monitoring wells downgradient of PTX06-1182. PTX06-1184, PTX06-1185, and PTX06-1186 were installed closer to Highway 60; the closest within 100 feet of the southern property boundary. Perched groundwater thickness in these wells ranges from a few inches to 6.5 feet. The well closest to Highway 60 (PTX06-1186) exhibits RDX at a concentration just above the GWPS of 2 ppb. The well to the southwest (PTX06-1184) exhibits RDX at a fraction of the GWPS and the well to the southeast indicates that the hotspot of the RDX plume is advancing on the southern property boundary with a concentration about 325 times the GWPS.

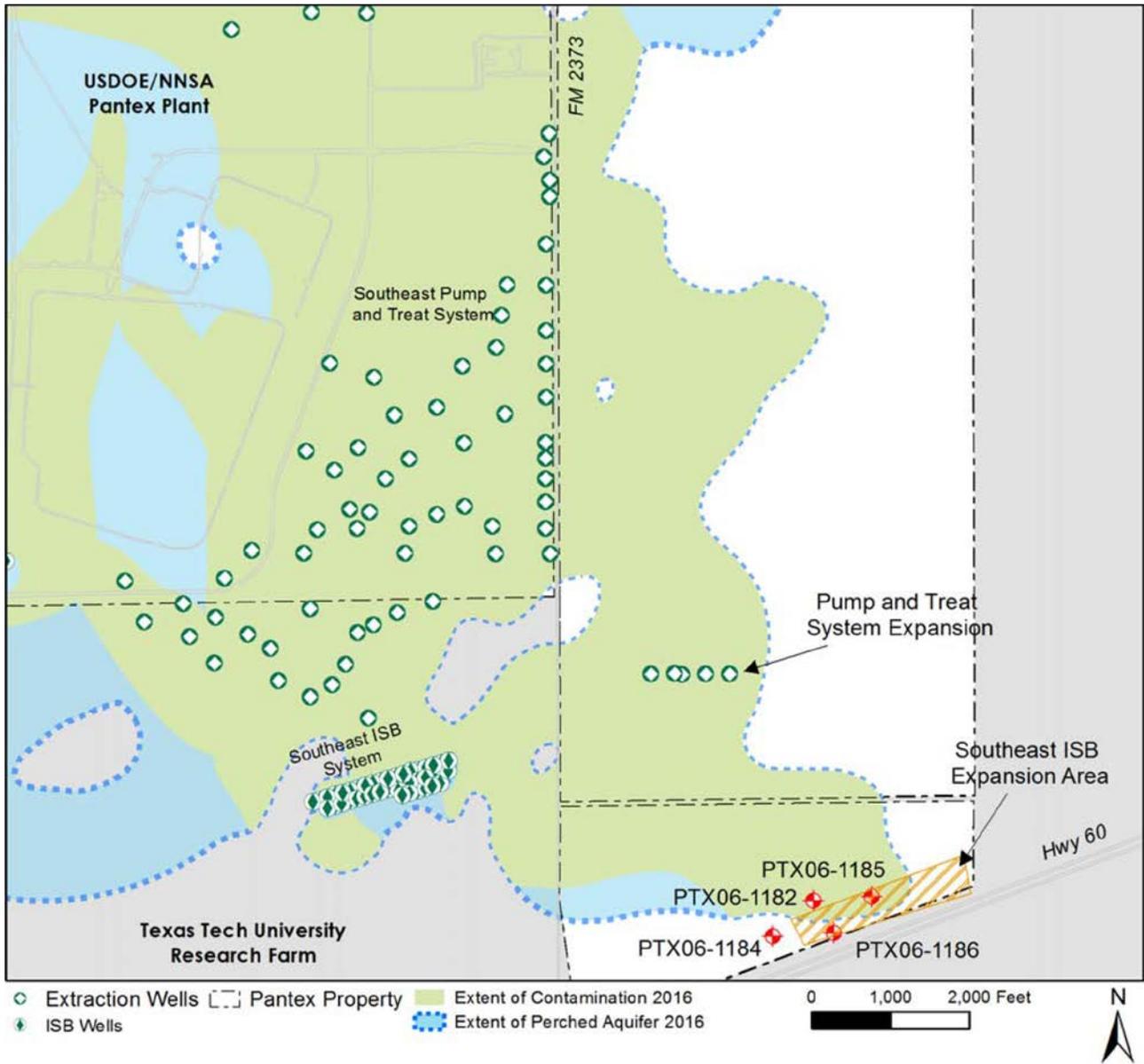
Confirmation that the RDX plume has moved to the southern property boundary, requires action. Pantex will begin drilling injection wells in September 2017 to extend the Southeast ISB System to the area just north of Highway 60 on the purchased property east of FM 2373. Supporting infrastructure such as the equipment pad, electrical service, and water supply from the Southeast Pump and Treat System (see Figure 2) is projected to be in place by summer 2018, followed by the first injection of amendment.

Implementation of this treatment technology in the original part of the SE ISB System demonstrates that the treatment is robust and effective for high explosives such as RDX and DNT4A.

It is expected to take several years to treat the contaminant plumes as perched groundwater moves through this new ISB System. Pantex will continue to operate this action and provide results in progress reports that can be found at [pantex.energy.gov](http://pantex.energy.gov).

This action is one of several positive steps Pantex is taking to protect the public and Ogallala Aquifer.

Figure 1



New Southeast Wells and Approximate Location of Southeast ISB Extension

Figure 2

