



**Subject: Final Minutes, Quarterly Restoration Advisory Board (RAB) Meeting
Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: TJ Taylor Community Center, Karnack, TX

Date of Meeting: 12 March 2026, 2:00-3:00 PM Central Standard Time (CST)

Meeting Participants:

USACE:	Aaron Williams
USAEC:	Kelly Norwood
BRAC:	Kyle Russell
PB Environmental:	Kelsey Edwards, Michelle Schwartz, and Scott Beesinger
USEPA:	Mark Stead and Janetta Coats
RAB:	Present: Sharon Mulaney, Tom Walker, Richard LeTourneau, John Fortune
Public:	Michelle Clagg

An agenda for the RAB meeting and handouts (see list at end of meeting minutes) were provided for meeting attendees.

Welcome and Introduction

Ms. Kelsey Edwards with PB Environmental General Partnership Joint Venture (PB Environmental) called the RAB meeting to order 2:00 pm CST. The meeting began with a round of introductions from all attendees, including Ms. Kelly Norwood, who is the new Army Co-Chair on the RAB. Ms. Norwood explained the Army's role on the LHAAP project. Ms. Norwood added that the Army encourages everyone to continue attending and to visit the website (www.longhornaap.com). The Army is open to feedback, and Ms. Norwood requested that if there are ways that the team can improve upon the RAB practices, let the team know.

Opening Items

Ms. Edwards began by discussing whether the RAB members had any feedback regarding the quarterly RAB updates that are sent out. Ms. Janetta Coats from the EPA inquired whether the quarterly update was sent out to the public or to RAB members only. Ms. Edwards clarified that the quarterly RAB update is just submitted to the RAB.

Ms. Edwards encouraged all attendees to join the RAB, which she explained can be done by completing the application found on the website, www.longhornaap.com.

Ms. Edwards stated that the method of reviewing minutes, which was implemented after the November 2024 RAB meeting, has changed due to the reduced frequency of in-person meetings. Ms. Edwards stated that minutes would be sent out via email to RAB members to review and approve so that a year does not pass between the meetings and approval of the meeting minutes.

Ms. Edwards discussed the need to elect a new RAB co-chair. Mr. Richard LeTourneau motioned for Mr. John Fortune to serve as the Co-Chair. Mr. Tom Walker seconded. The motion passes, and Mr. Fortune was elected to serve as the LHAAP RAB Co-Chair.



Groundwater Treatment Plant (GWTP)

Ms. Edwards opened the discussion on the GWTP, which she stated has been in operation for many years. Dr. Michelle Schwartz from PB Environmental provided additional background, stating that the GWTP was selected as a remedy to address volatile organic compounds and perchlorate that were in groundwater at both sites LHAAP-18/24 (also known as the Burning Grounds) and LHAAP-17 (the Original Burning Grounds). Ms. Edwards described the general layout of the groundwater treatment plant and how it treats different contaminants. Mr. Beesinger from PB Environmental clarified that the metals pre-treatment system is currently being bypassed since concentrations of metals are below screening levels.

Ms. Edwards then discussed the state of the GWTP. She explained that on 20 March 2025, the GWTP sustained damage from a prescribed burn that was performed by the U.S. Fish and Wildlife Service. High winds spread the fire beyond the intended burn area, crossing the Harrison Bayou and surrounding roads. The fire caused damage to the valve box that controls the flow into the GWTP from both LHAAP-18/24 and LHAAP-17. The damaged box was excavated, and a new box was installed in November 2025.

Ms. Edwards discussed that additional repairs are needed for the GWTP before it can operate again.

Finally, Ms. Edwards discussed that surface water monitoring was still ongoing despite the GWTP not being in operation to evaluate whether contamination is reaching surface water. She stated that the data has not shown any increase in contaminants in surface water. She noted that the surface water sampling locations were dry during the 3rd Quarter 2025 sampling event.

LHAAP-16

Ms. Edwards discussed the status of site LHAAP-16, including previous remedial actions performed at LHAAP-16. LHAAP-16 is currently under Remedial Action – Operation (RA-O) with semiannual monitoring of groundwater. In-situ bioremediation and groundwater extraction was previously implemented as treatment for the site. Ms. Edwards stated that currently PB Environmental is creating an Explanation of Significant Differences (ESD) to extend the bio-barrier further to capture southward flow. Ms. Norwood explained that all sites previously had a Record of Decision (ROD) which states what the cleanup plan is for the individual site, and an ESD describes how we are changing something from the original ROD. Dr. Schwartz explained how bio-barriers work by injecting nutrients downgradient of the site to stimulate bacterial growth and create favorable conditions to encourage the microorganisms to break down the contaminants of concern.

LHAAP-50

Ms. Edwards then discussed the status of site LHAAP-50. LHAAP-50 is also currently in RA-O and previous remedial activities include monitored natural attenuation, excavation, and in-situ



bioremediation. Ms. Edwards explained that the site is now undergoing a Pre-Design Investigation (PDI) due to not fully knowing the extent of contamination in the southwestern portion of the site where the groundwater plume has not been delineated. Ms. Edwards defined what delineation means and explained that additional wells will be installed to identify where contamination is and allow us to make better decisions about additional treatment.

LHAAP-58

Ms. Edwards introduced the next site—LHAAP-58. This site is also in RA-O and previously had enhanced in-situ bioremediation (EISB), monitored natural attenuation, and land use controls. Like with LHAAP-16, the site is undergoing the process of an ESD for additional injections to encourage microbial growth. Since the RAB meeting, the USEPA has decided that the ESD process is not required, and that injections can occur under the existing ROD. Dr. Schwartz explained that EISB is similar to the bio-barrier by providing nutrients for microorganisms that break down the chemicals of concern. Dr. Schwartz explained that the injections have been very successful in the past, but that the microorganisms are slowing down and need a boost to encourage more remediation.

LHAAP-47

Mr. Aaron Williams from the U.S. Army Corps of Engineers presented site LHAAP-47 on behalf of the contractor HDR. Mr. Williams stated that LHAAP-47 was historically Plant 3 and was used for production of rocket motors and flares and other illumination devices. The site is about 275 acres. HDR is currently working on the remedial design. Once there is final design, we will put in a public notice. Mr. Fortune asked if this was the site that was going to use thermal remediation. Mr. Williams stated that it was.

Mr. Williams stated that an interim measure (plastic liner) was also implemented. Mr. Williams provided detail on different phases of the project, from thermal to excavation, showing where these remedial actions will be conducted at the site. Mr. Mark Stead with the U.S. EPA inquired about what happens to the contaminants when they volatilize in the soil and whether it goes through a soil vapor extraction well. Mr. Williams stated that a soil vapor extraction well would be used. Mr. Fortune asked if the thermal treatment would be done electrically. Aaron confirmed that was part of the design.

Next RAB Meeting Schedule and Closing Remarks

Before adjourning, Mr. LeTourneau asked about the acreage that has been transferred to U.S. Fish and Wildlife Service since 2024. Mr. Kyle Russell with Base Realignment and Closure (BRAC) said that he would investigate that. Mr. Russell later contacted Dr. Schwartz and stated that Longhorn makes up a total of 8,468 total acres and that, to date, the Army has transferred 7,279 acres to the U.S. Fish and Wildlife Service. Mr. Russell says that 173.1 acres are scheduled to transfer during Fiscal Year 2026.



Ms. Edwards then suggested that the next meeting is scheduled for March 2027 and asked if that worked for the RAB. Mr. Tom Walker motioned moving the meeting to March, and Ms. Sharon Mulaney seconded. The motion passes.

The next RAB meeting was scheduled for March 2027. A date will be provided closer to the time to ensure that it does not conflict with Spring Break.

Adjourn

Mr. Fortune motioned to adjourn the meeting. Mr. Walker seconded. Meeting adjourned, and RAB members met outside for a site tour.

Meeting adjourned at 3:00 pm CST

March 2026 Meeting Attachments and Handouts:

- Meeting Agenda
- Color Copy of PBJV Presentation Slides
- Fact Sheet
- Validated Data sheet



AGENDA

DATE: Thursday, March 12, 2026
TIME: 2:00 – 5:00 PM
PLACE: Karnack Community Center, Karnack, Texas

- 2:00 Welcome and Introduction**
- 2:15 Open Items**
- Ongoing Outreach/Website
 - RAB Administrative Issues
 - o Minutes (November 2024 RAB Meeting)
 - o Quarterly Updates
- 2:30 Defense Environmental Restoration Program (DERP) Update**
- Groundwater Treatment Plant Update
 - LHAAP-16 Update
 - LHAAP-50 Update
 - LHAAP-58 Update
 - LHAAP-47 Update
- 2:55 Next RAB Meeting Schedule and Closing Remarks**
- 3:00-5:00 LHAAP Site Visit**

This page intentionally left blank.



LONGHORN ARMY AMMUNITION PLANT (LHAAP)

Restoration Advisory Board
Quarterly Update

12 MARCH 2026

AGENDA

Welcome and Introduction

Open Items

- Ongoing Outreach/Website
- Restoration Advisory Board (RAB) Administrative Items
- Minutes (November 2024 RAB Meeting)

Defense Environmental Restoration Program (DERP) Update

- Groundwater Treatment Plant Update
- LHAAP-16
- LHAAP-50
- LHAAP-58
- LHAAP-47

Next RAB Meeting Schedule and Closing Remarks

THE ARMY WANTS YOU TO BE INFORMED AND INVOLVED

The Army is committed to protecting human health and the environment.

Key to that commitment is engaging the community and increasing public participation in environmental restoration at the LHAAP.

You are encouraged to:

- Attend RAB Meetings and/or become a member of the RAB.
- Visit the Longhorn environmental website, which is regularly updated, at <http://longhornaap.com/>.
- Make suggestions for improving communication – the Army welcomes and appreciates community feedback.

ADMINISTRATIVE ITEMS

RAB Membership Update

- Persons interested in being new members.

Minutes (November 2024 RAB Meeting)

Discuss quarterly RAB updates

LHAAP ENVIRONMENTAL CONTRACTORS

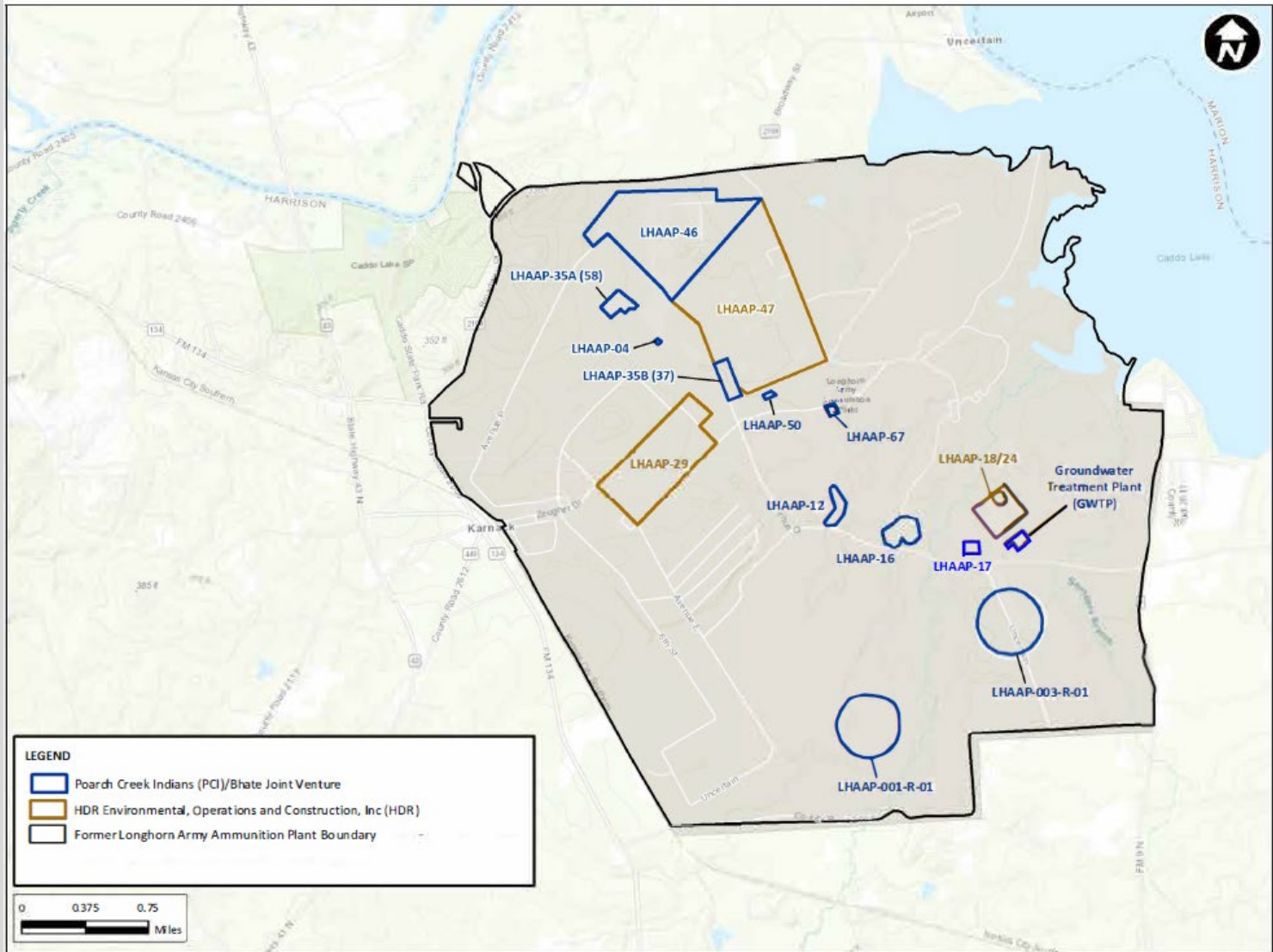
Poarch Creek Indians/Bhate Joint Venture (PB Environmental):

- LHAAP-04, LHAAP-12, LHAAP-16, LHAAP-17, LHAAP-35B (37), LHAAP-46, LHAAP-50, LHAAP-35A (58), LHAAP-67, LHAAP-001-R-01, LHAAP-003-R-01, and LHAAP-18/24 (interim remedy).

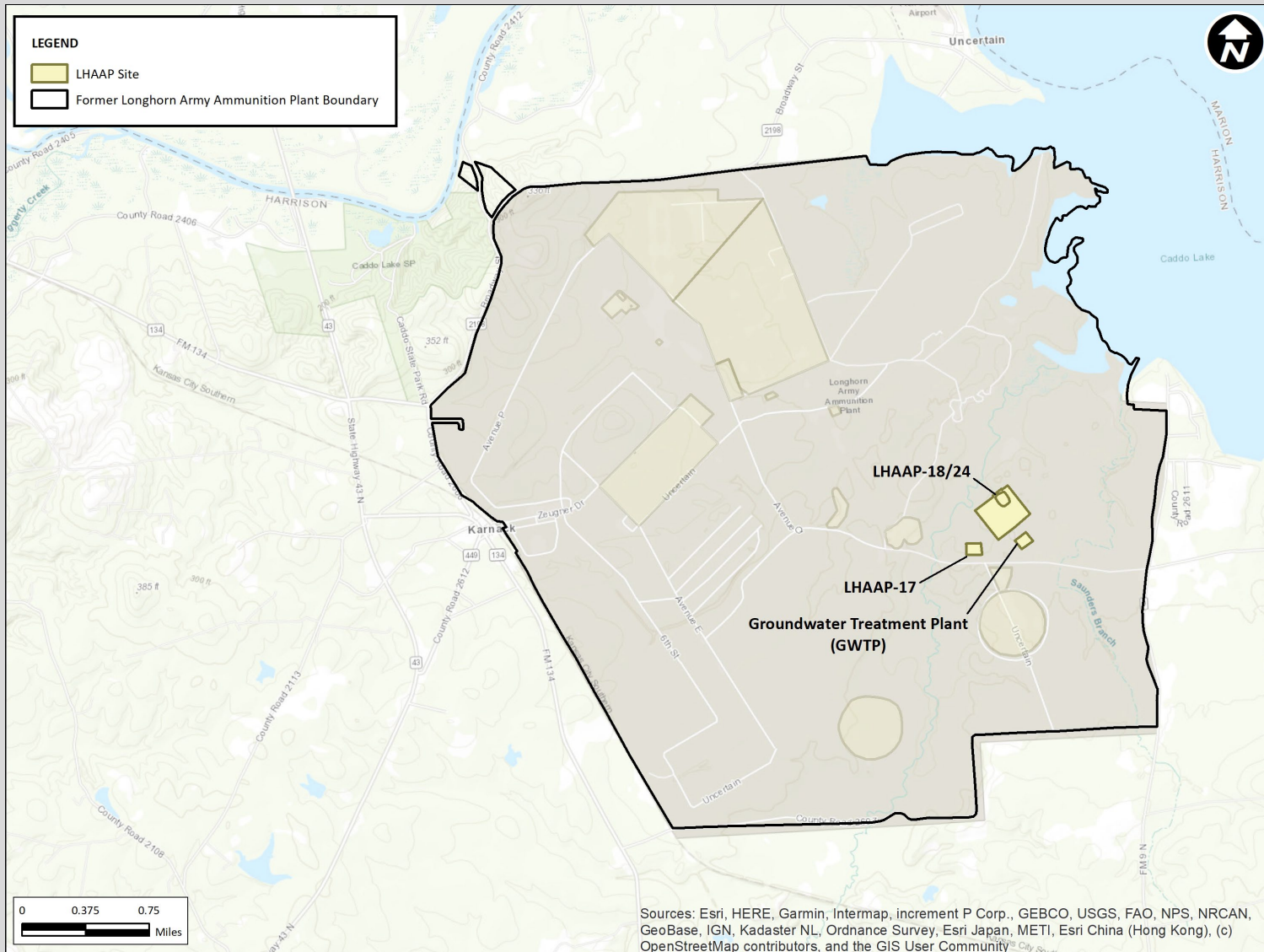
HDR Environmental, Operations and Construction, Inc (HDR)

- LHAAP-18/24, LHAAP-29, and LHAAP-47.

LHAAP SITE MAP



GROUNDWATER TREATMENT PLANT UPDATE



GROUNDWATER TREATMENT PLANT UPDATE

Groundwater Treatment Plant (GWTP) Design

- Metals treatment system
- Volatile organics treated via an air stripper
- Perchlorate treated via a Fluidized Bed Reactor (FBR): [Envirogen FBR Video](#)
- Ion exchange system

GWTP Operations (November 2024 – March 2026):

- 20 March 2025 - GWTP sustained damage from a prescribed burn performed by U.S. Fish and Wildlife Service (USFWS)
- 12 November 2025 – Valve box replacement complete
- 10 February 2026 – FBR pump and control valve repair complete
- 12 February 2026 – Replacement blower ordered
- GWTP not operational May 2025 to current

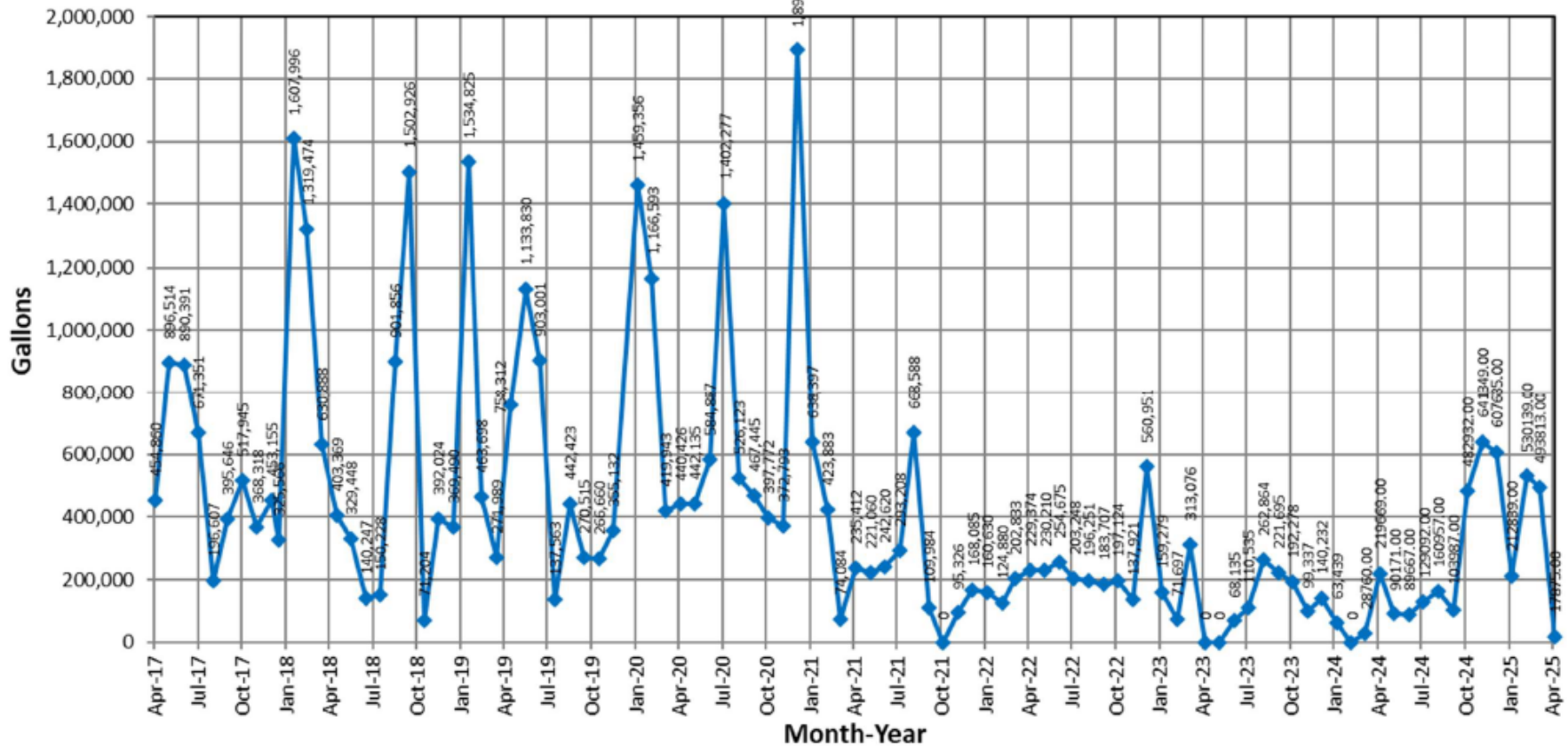
GWTP FIRE DAMAGE

- High winds spread the fire beyond the intended prescribed burn area, crossing Harrison Bayou and the surrounding roads, reaching the GWTP.
- The fire caused significant damage to the valve box at the periphery of the GWTP. The valve box contains three critical valves connected to the interceptor collection trenches (ICTs) wells at Site 18/24 and extraction wells at Site 17.
- Fire damage emanated from the valve box to the dual-walled piping feeding to/from the valves. As a result of fire damage to the valve box / valves / piping, the ICTs were shut down
- The damaged valve box was excavated, and a new valve box was installed in November 2025, allowing extracted groundwater from LHAAP sites 17 and 18/24 to be piped into the GWTP.

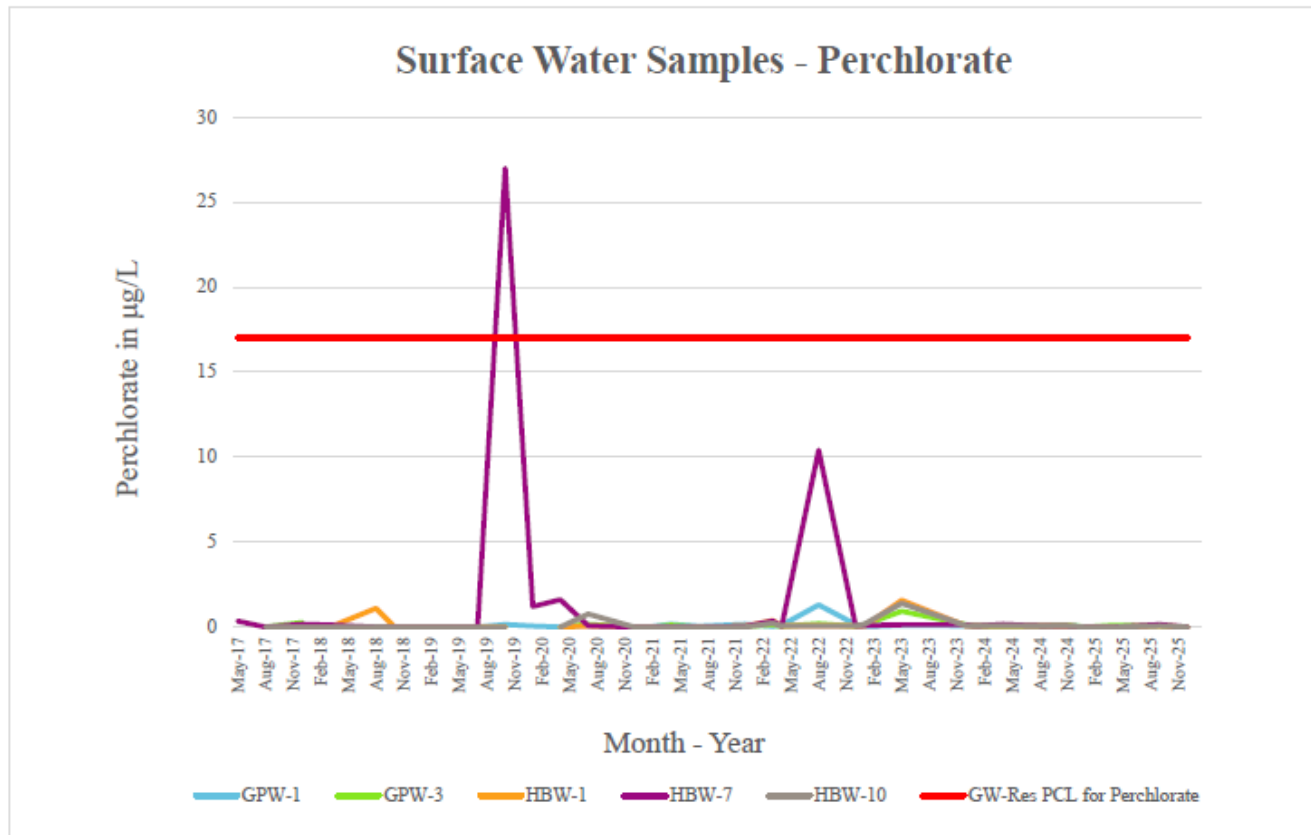


GROUNDWATER TREATMENT PLANT DISCHARGE UPDATE

Treated Groundwater Discharged Monthly from April 2017 through April 2025

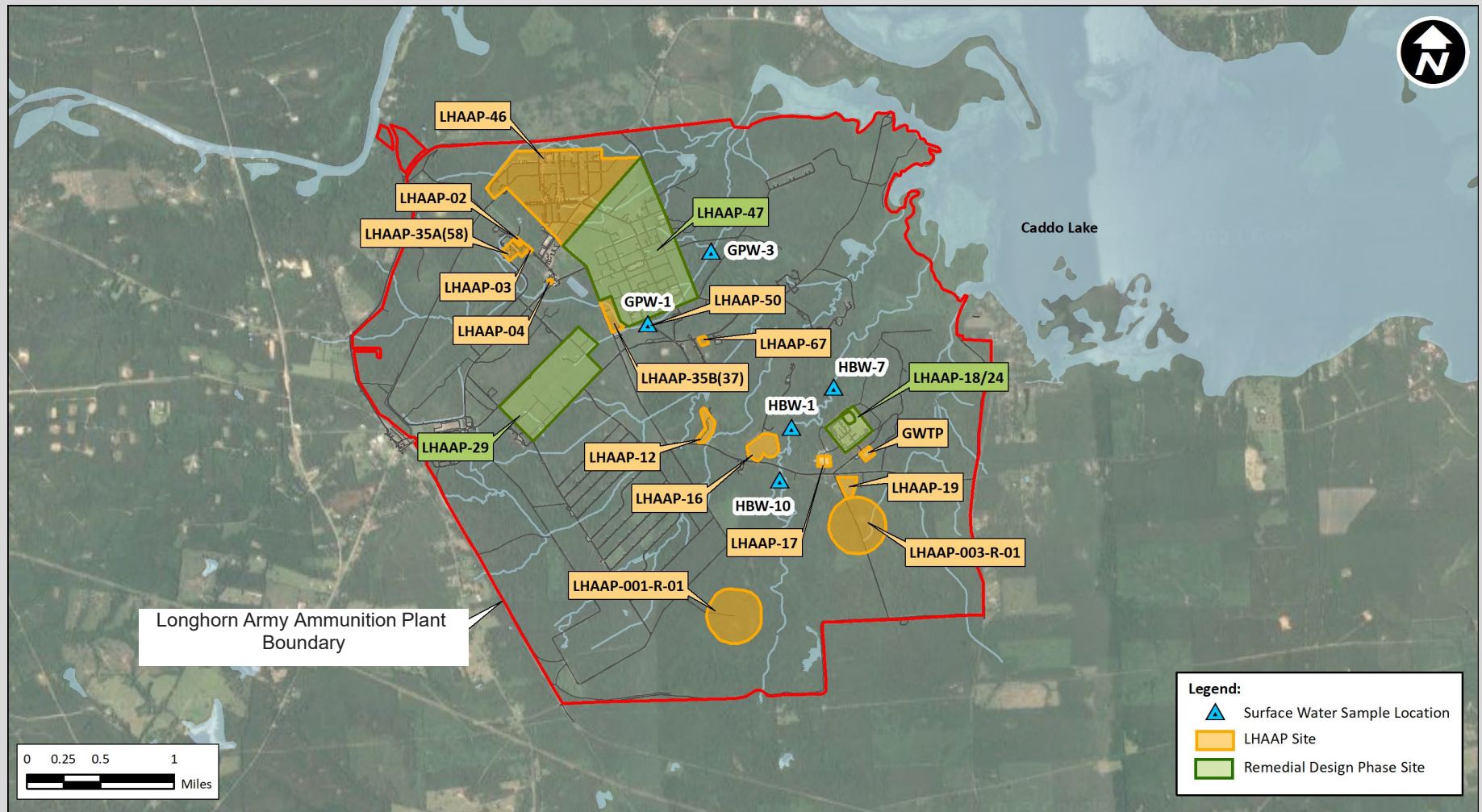


SURFACE WATER SAMPLE RESULTS



Note: Surface water at HBW-7 had a detection of 27 µg/L from a sample collected on 11 July 2019. Surface water at HBW-7 was resampled 19 days later (30 July 2019) with a detection of 1.2 J (estimated result) µg/L. GPW – Goose Prairie Creek sample location; HBW – Harrison Bayou sample location. GW Res – Groundwater residential limit; MSC – Medium Specific Concentration; PCL – Protective Concentration Level; µg/L – micrograms per liter. No surface water sampling was conducted in the 3rd Quarter 2023 or 2025 due to dry conditions.

SURFACE WATER SAMPLE LOCATIONS



[illegible]

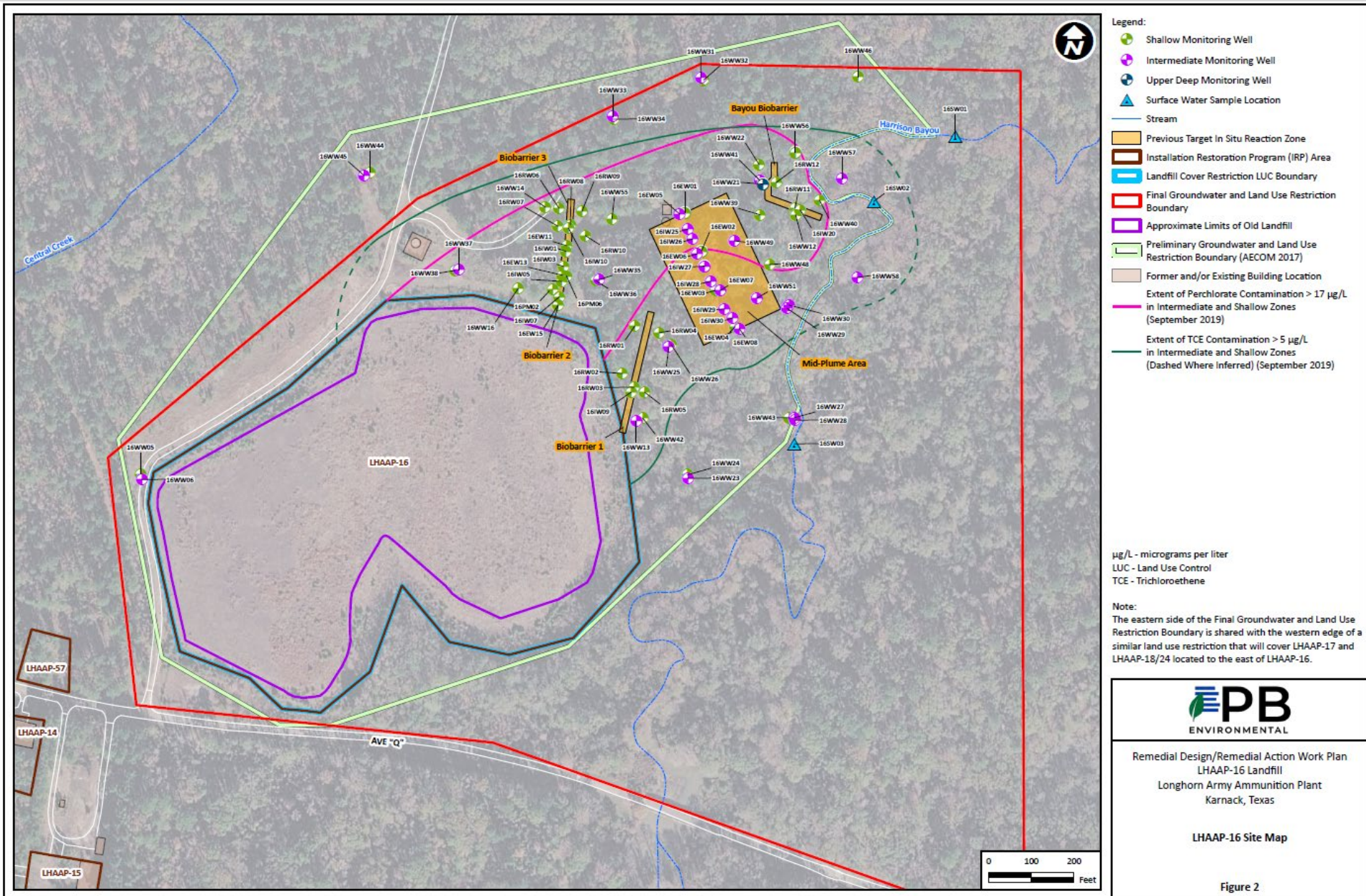
LHAAP-16 UPDATE

Background

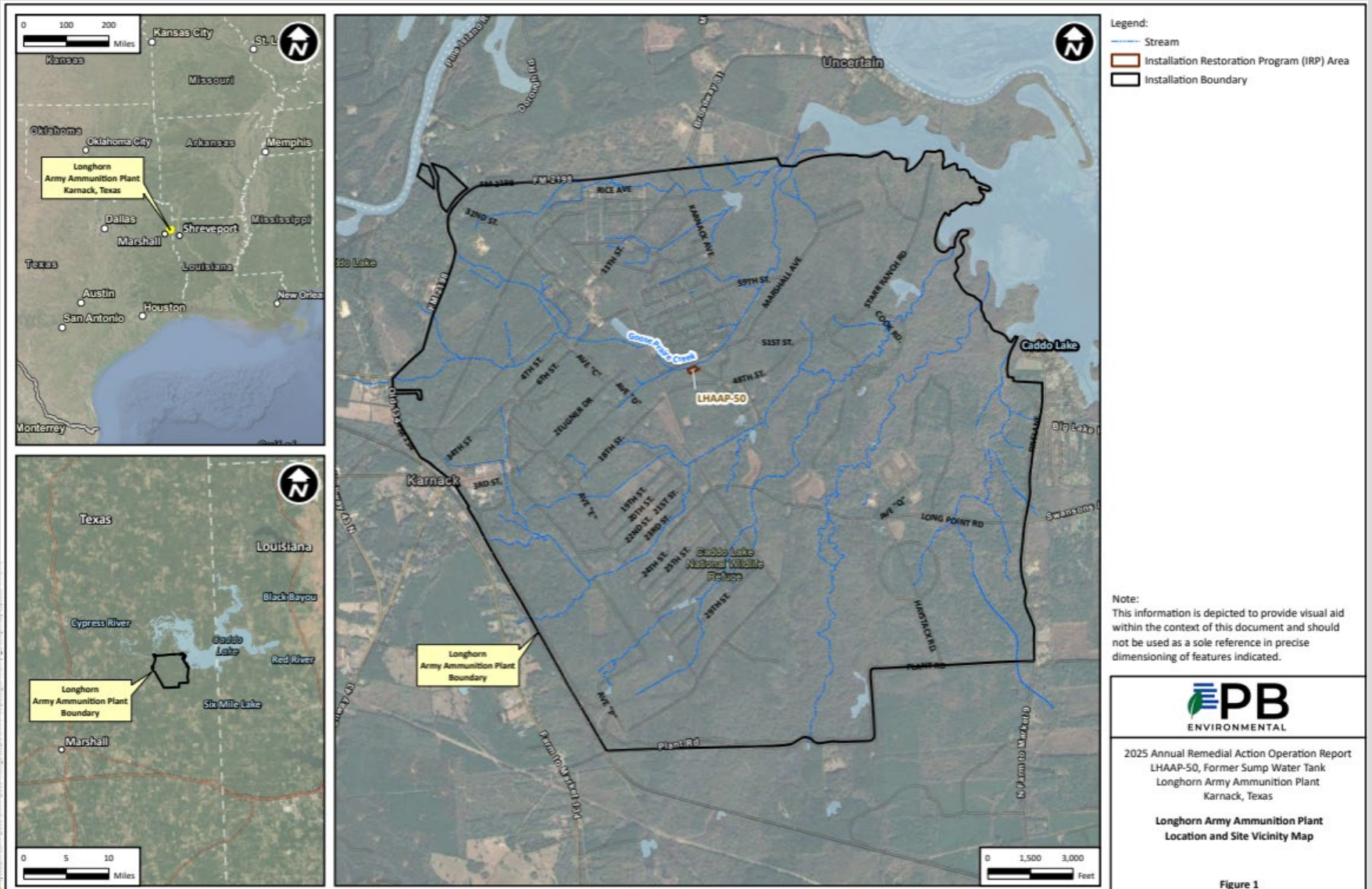
- Site is currently in Remedial Action – Operation (RA-O)
 - Semi-annual monitoring (January and July) for Contaminants of Concern (COCs) which include Trichloroethene (TCE), cis-1,2-dichloroethane (DCE), Vinyl Chloride (VC), and Perchlorate in Groundwater
 - Prior remedial activities include in-situ bioremediation (ISB) and groundwater extraction

Under the New Performance-Based Remediation (PBR) Contract

- A Contingency Explanation of Significant Differences (ESD), Remedial Design/Remedial Action Work Plan (RD/RAWP) and Remedial Action Construction Report (RACR) will be prepared to address an extension of the Bayou Bio Barrier to capture southward flow, perform delineation through compound-specific isotope analysis, and address contingency remedy ISB treatment for areas outside of active treatment
- Several new wells will be installed
 - Intermediate well between 16EW06 and 16EW07 for performance monitoring
 - Shallow well near 16WW30 for monitoring of groundwater flow
 - Three intermediate wells downgradient of 16WW57 and 16WW58 to define plume extent
 - Two shallow wells adjacent or east of 16WW57 and 16WW58 to verify presence of shallow saturated zone and presence or absence of COCs



LHAAP-50 UPDATE



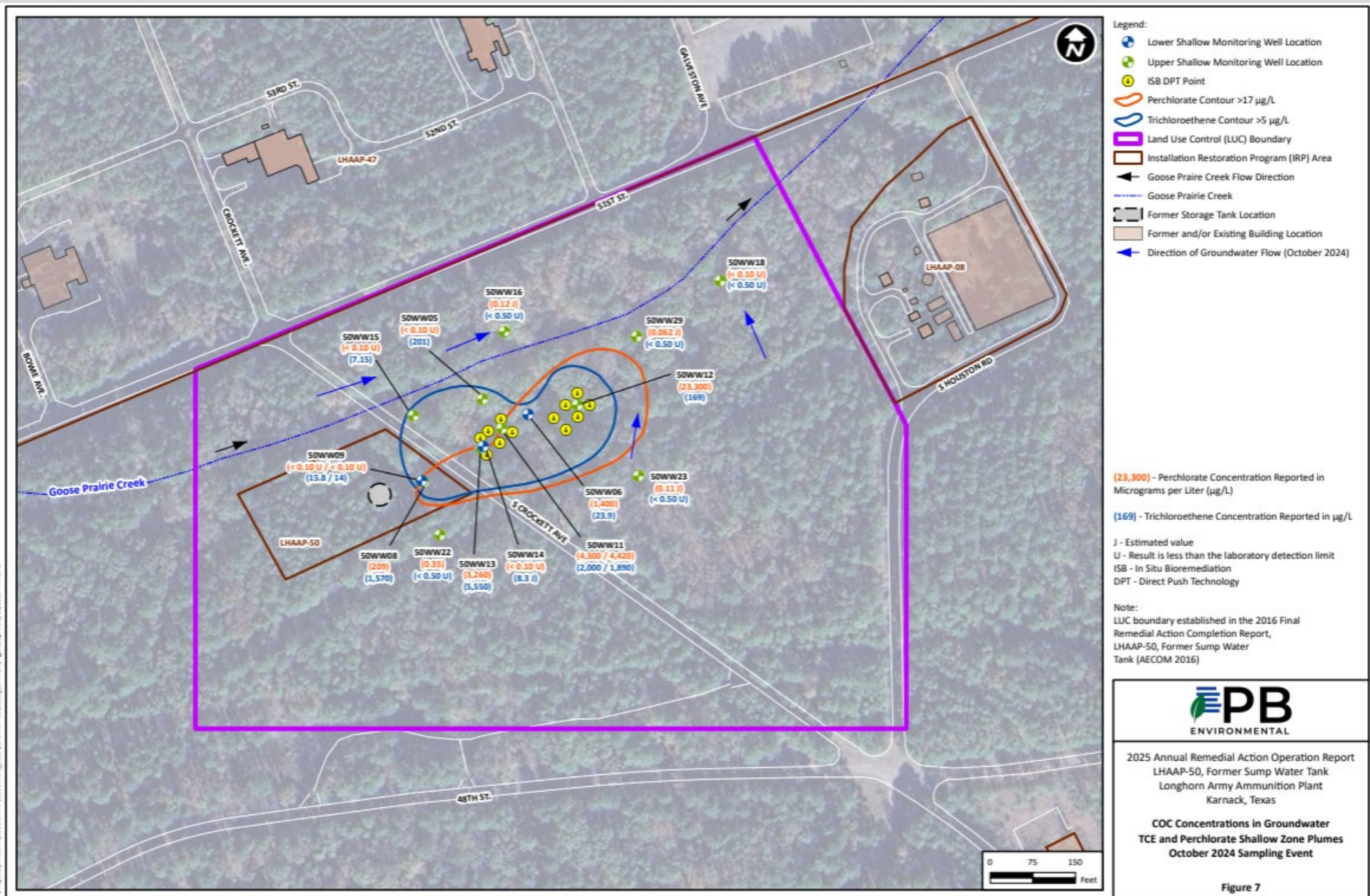
LHAAP-50 UPDATE

Background

- Site is currently in RA-O
 - Semi-annual monitoring (April and October) for COCs which include TCE, Tetrachloroethylene (PCE), 1,1-DCE, 1,2-Dichloroethane (DCA), cis-1,2-DCE, VC and Perchlorate in Groundwater
 - Prior remedial activities include monitored natural attenuation (MNA), excavation, and ISB

Under the New PBR Contract

- A Pre-Design Investigation Work Plan (PDI WP) will be prepared to investigate potential source of contamination in the vicinity of 50WW08 and 50WW12, followed by a Contingency RD/RAWP and RACR for additional Enhanced ISB (EISB) treatment
- Pending results from the PDI WP, an additional well upgradient of 50WW08 will be installed to better define the area upgradient of 50WW08



LHAAP-58 UPDATE

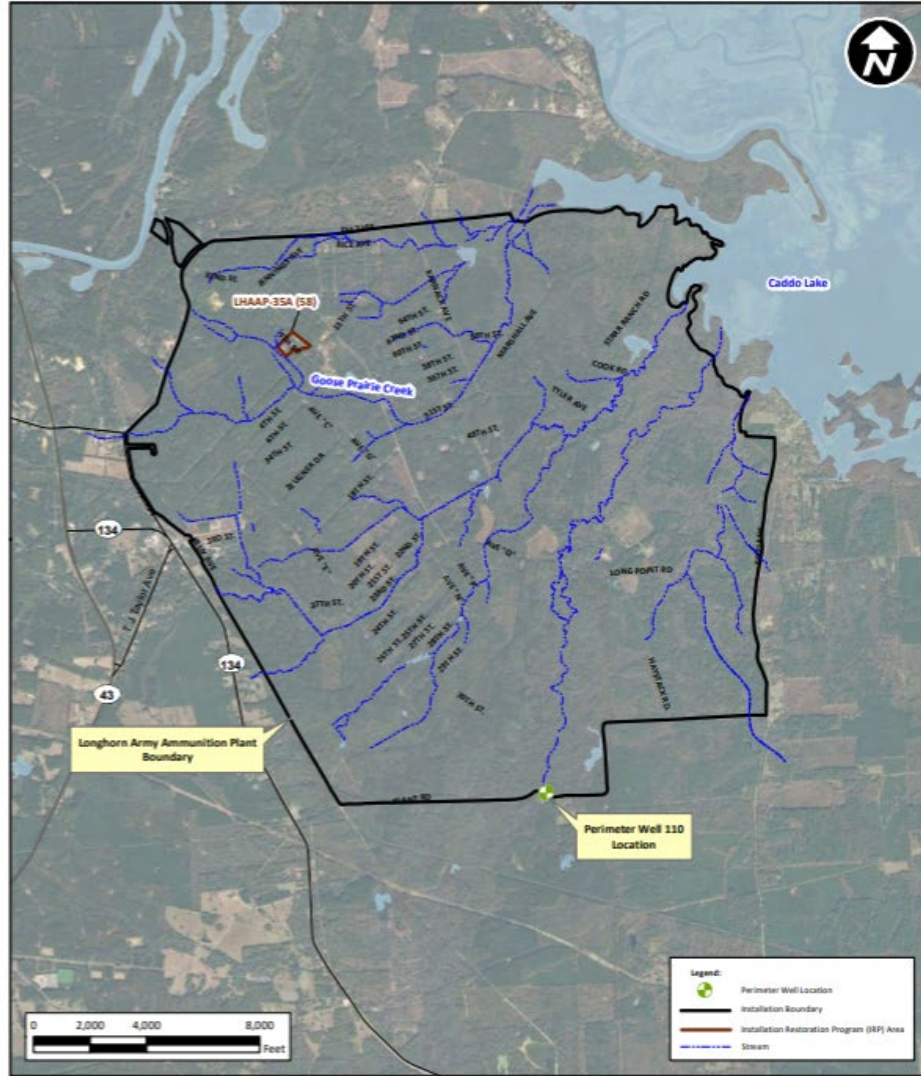
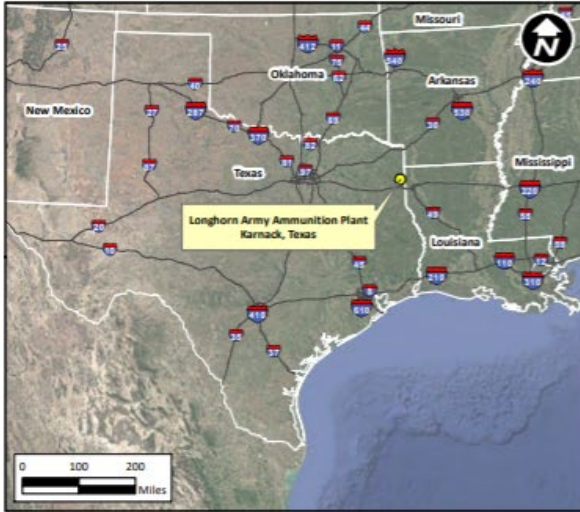


Figure 1

Longhorn Army Ammunition Plant
Location and Site Vicinity Map

2024 Remedial Action Operation Report
LHAAP-35A (58), Shop's Area
Longhorn Army Ammunition Plant
Karnack, Texas

PROJECT NO:	SCALE	DATE	DRAWING NO.
APCBH 0001.	As Shown	3/27/2025	MRM
0010.02			

PC**||**bhate

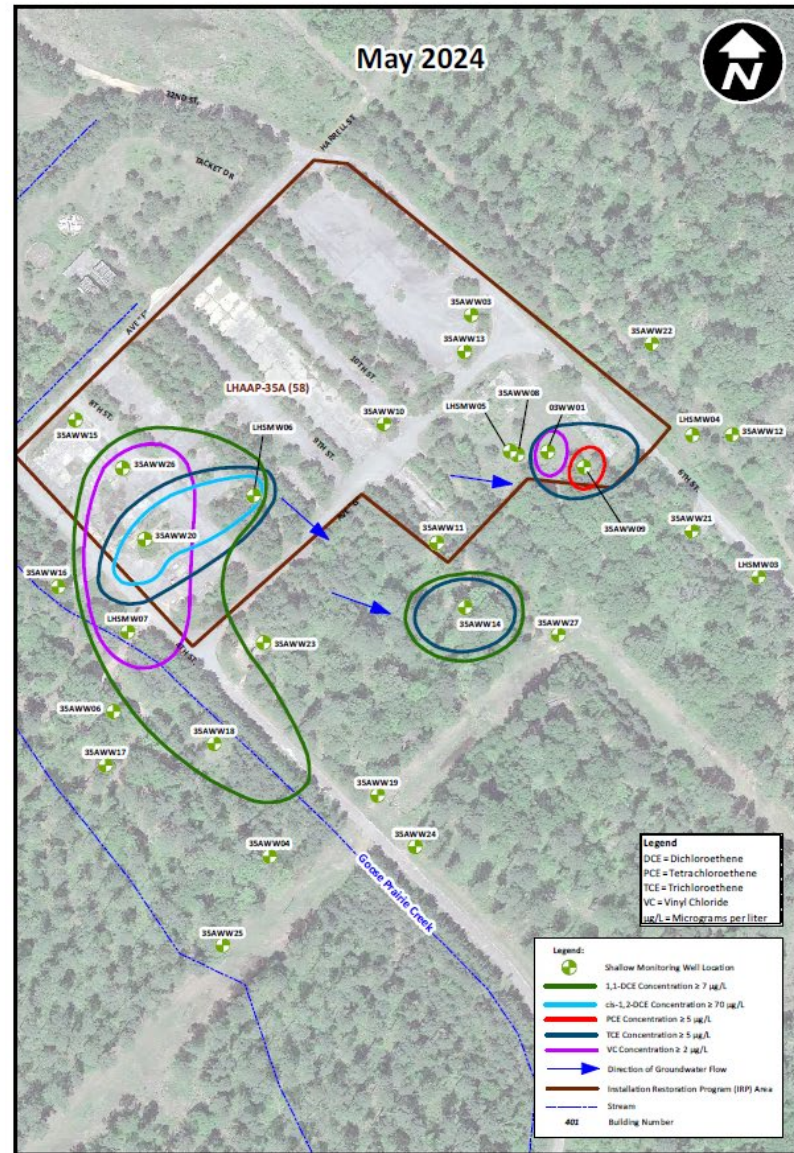
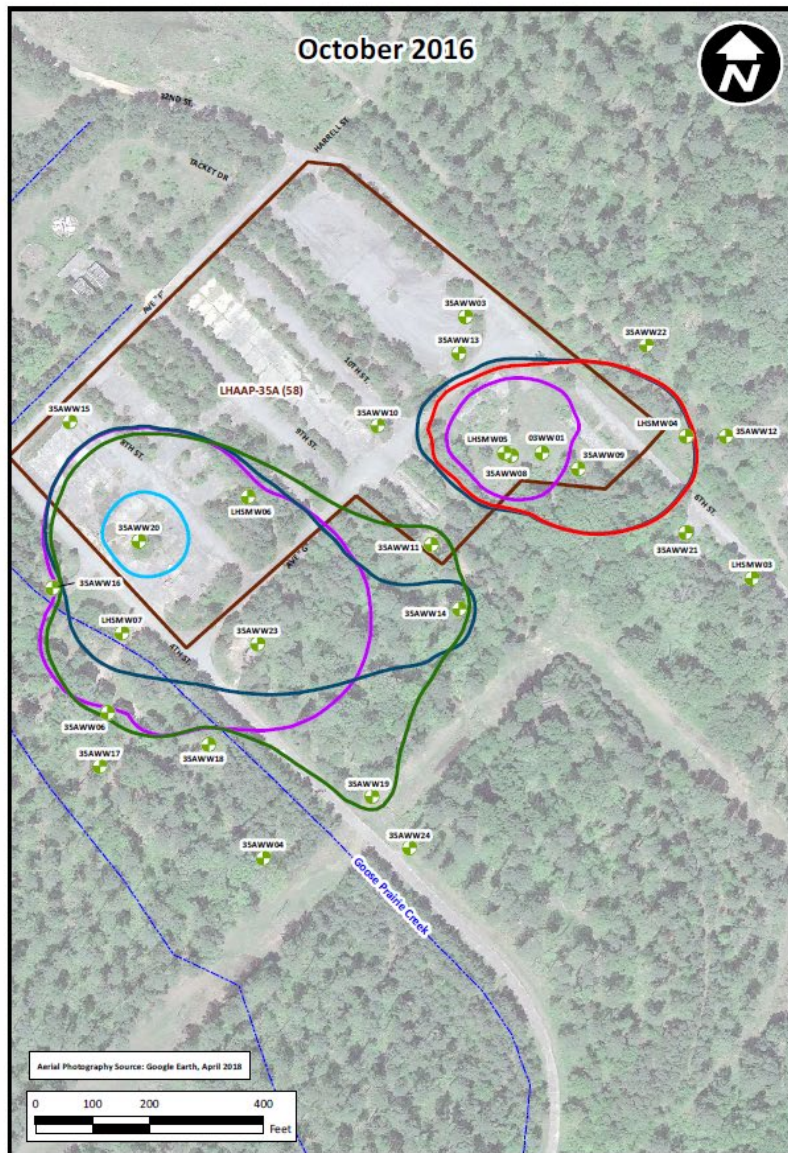
LHAAP-58 UPDATE

Background

- Site is currently in RA-O
 - Annual monitoring (June) for COCs which include TCE, PCE, 1,1-DCE, and VC in Groundwater
 - Prior remedial activities include EISB, MNA and land use controls

Under the New PBR Contract

- A RD/RAWP and RACR will be prepared to address EISB treatment in the vicinity of LHSMW06 and 35AWW09 due to aquifer conditions unfavorable for reductive dichlorination and COC concentrations exhibiting increasing trends



Lateral Extent of Plume Comparison
(October 2016 and May 2024)

Figure 8

2024 Remedial Action Operation Report

LHAAP-35A (58) Storage Area

Longhorn Army Ammunition Plant

Karnack, Texas

PROJECT NO.
JWPC-BH-0001-
0010.02

SCALE
As Shown

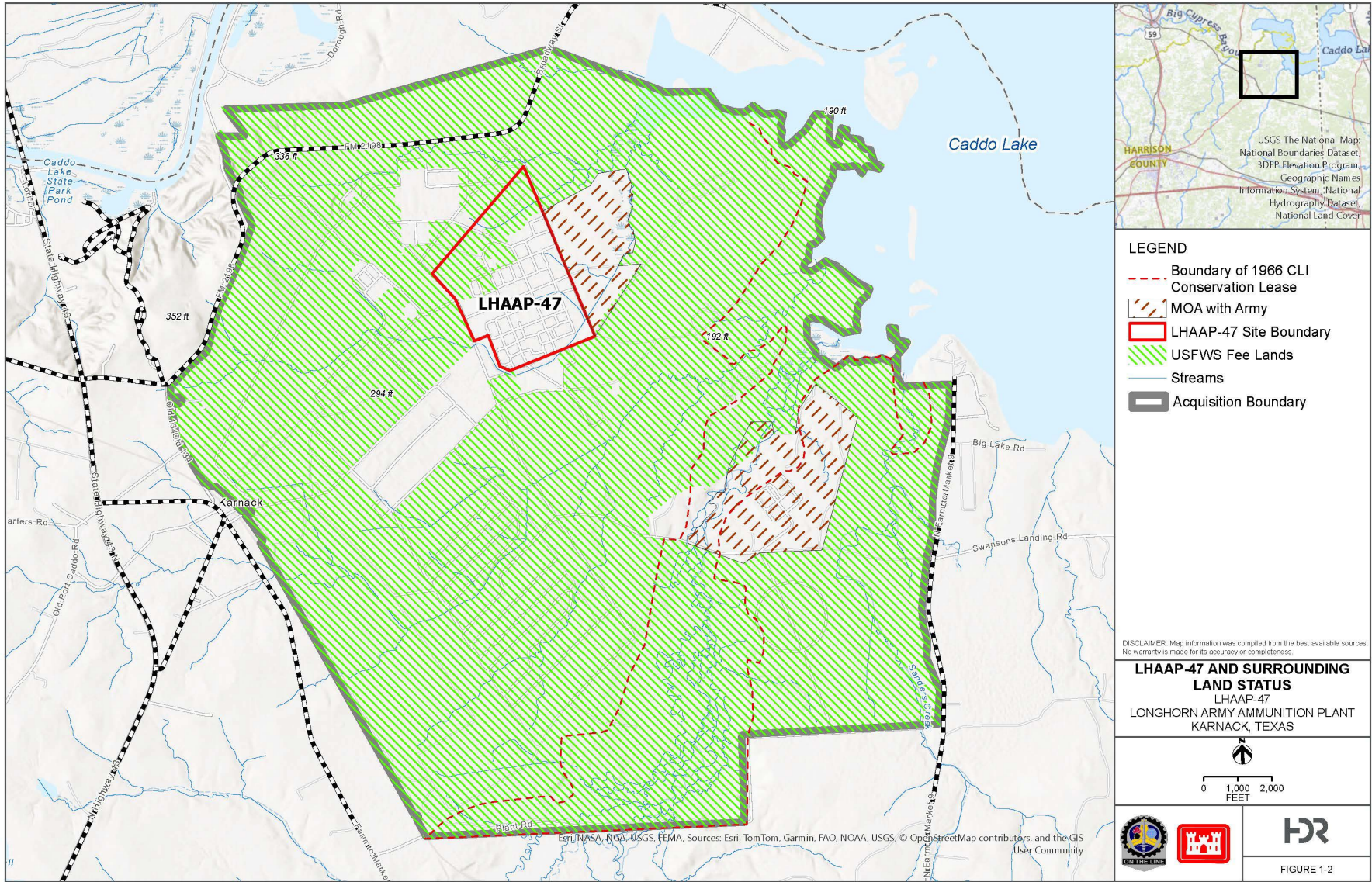
DATE
5/13/2025

REVISION #2

MRM

PCIBhate

LHAAP-47 UPDATE



LHAAP-47 UPDATE

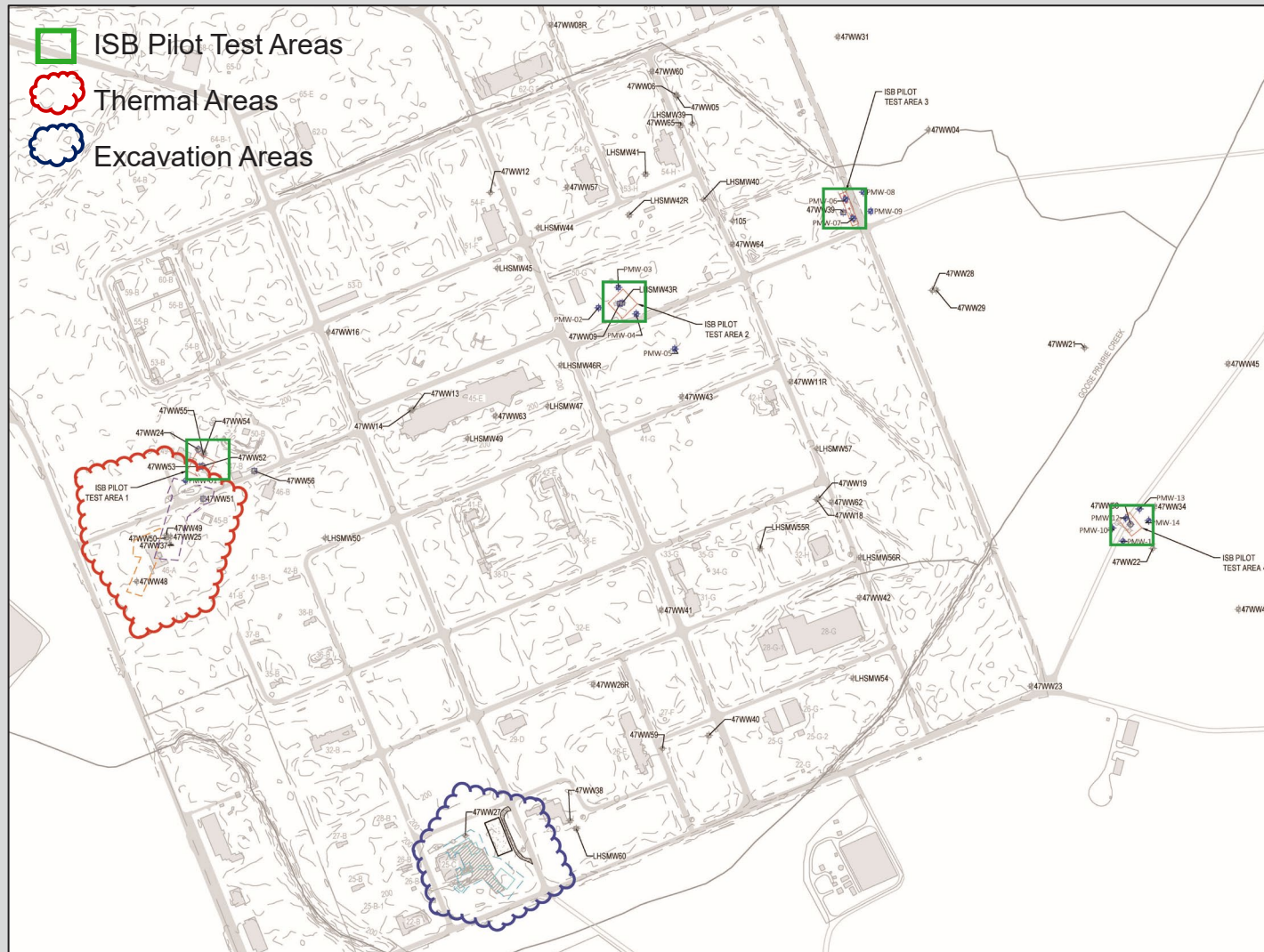
Background

- The Remedial Design is in progress
- 90% / 100% RD is anticipated for delivery in April / May 2026
- COCs: Perchlorate, TCE, 1,1-DCE, cis-1,2-DCE, trans-1,1-DCE, 1,2-DCA, VC, 2,4,6-trinitrotoluene (TNT), 2,4-dinitrotoluene (DNT), 2,6-DNT, semi-volatile organic compounds (SVOCs), and metals in groundwater; and perchlorate and TCE in soil
- Prior Remedial Activities: Plastic liner to prevent migration in soil
- Current Remedial Activities: None

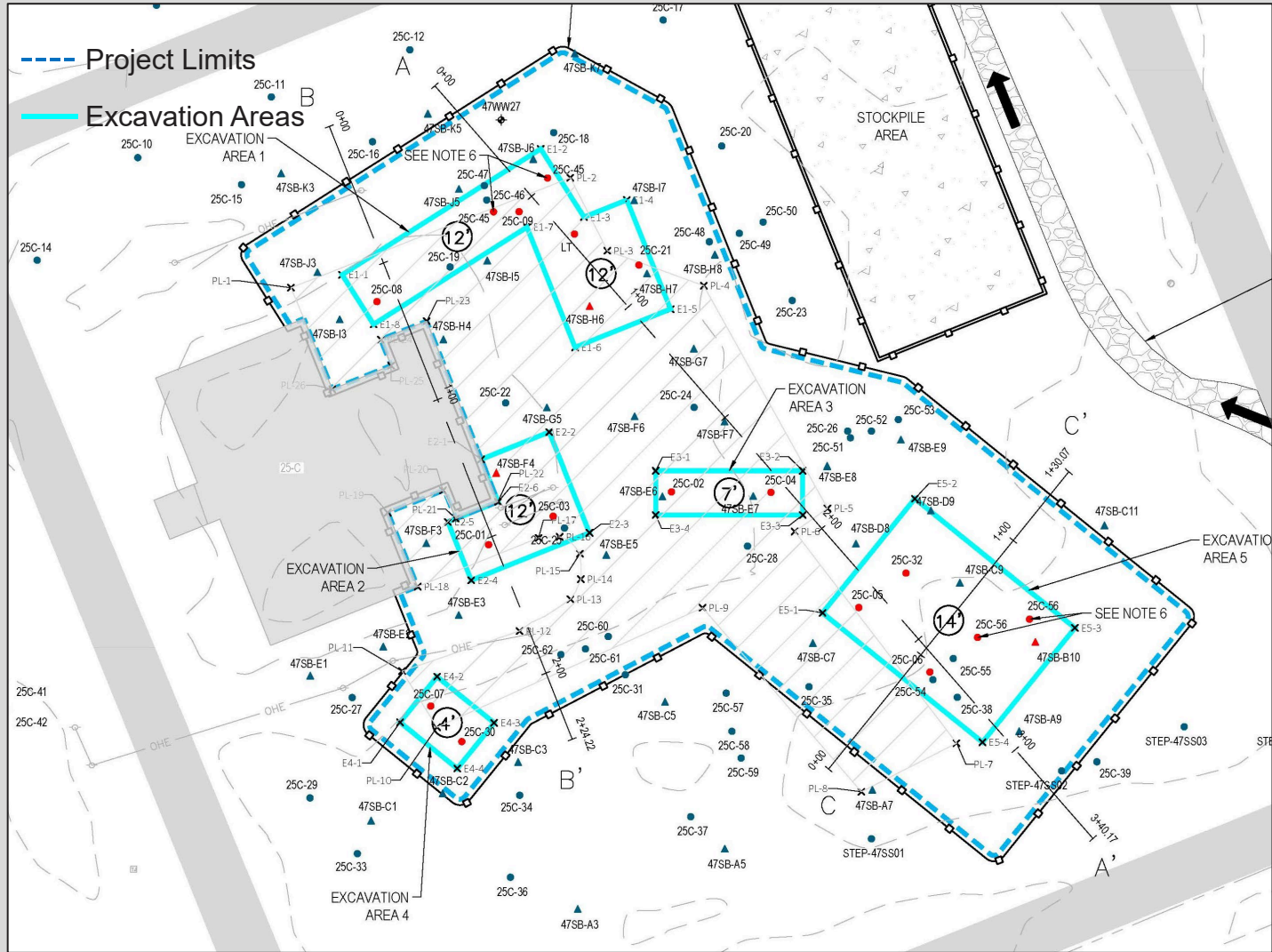
Project Status

- Planned Future Remedial Activities
 - Excavation and off-site disposal of perchlorate-impacted soil near Building 25C
 - Groundwater treatment to remove potential DNAPL utilizing in-situ thermal desorption (ISTD) near Building 46A
 - ISB of potential dense nonaqueous phase liquids (DNAPL) within targeted areas near Building 46A and the eastern Site boundary
 - Installation of biobarriers near Building 46A and the southern site boundary to treat perchlorate and VOCs
 - Land Use Controls (LUCs), MNA, and long-term monitoring (LTM)

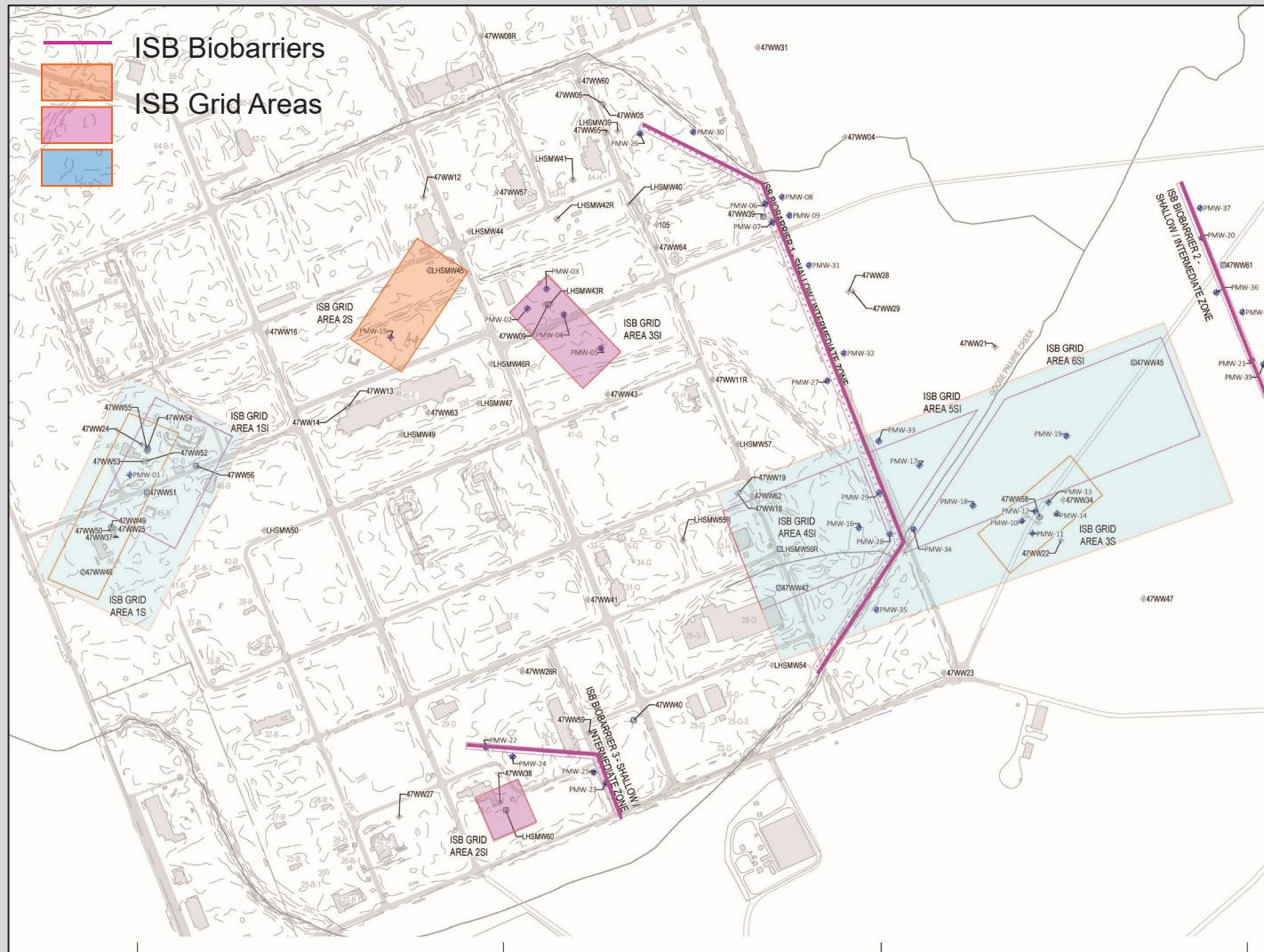
LHAAP-47 REMEDIAL DESIGN – PHASE I



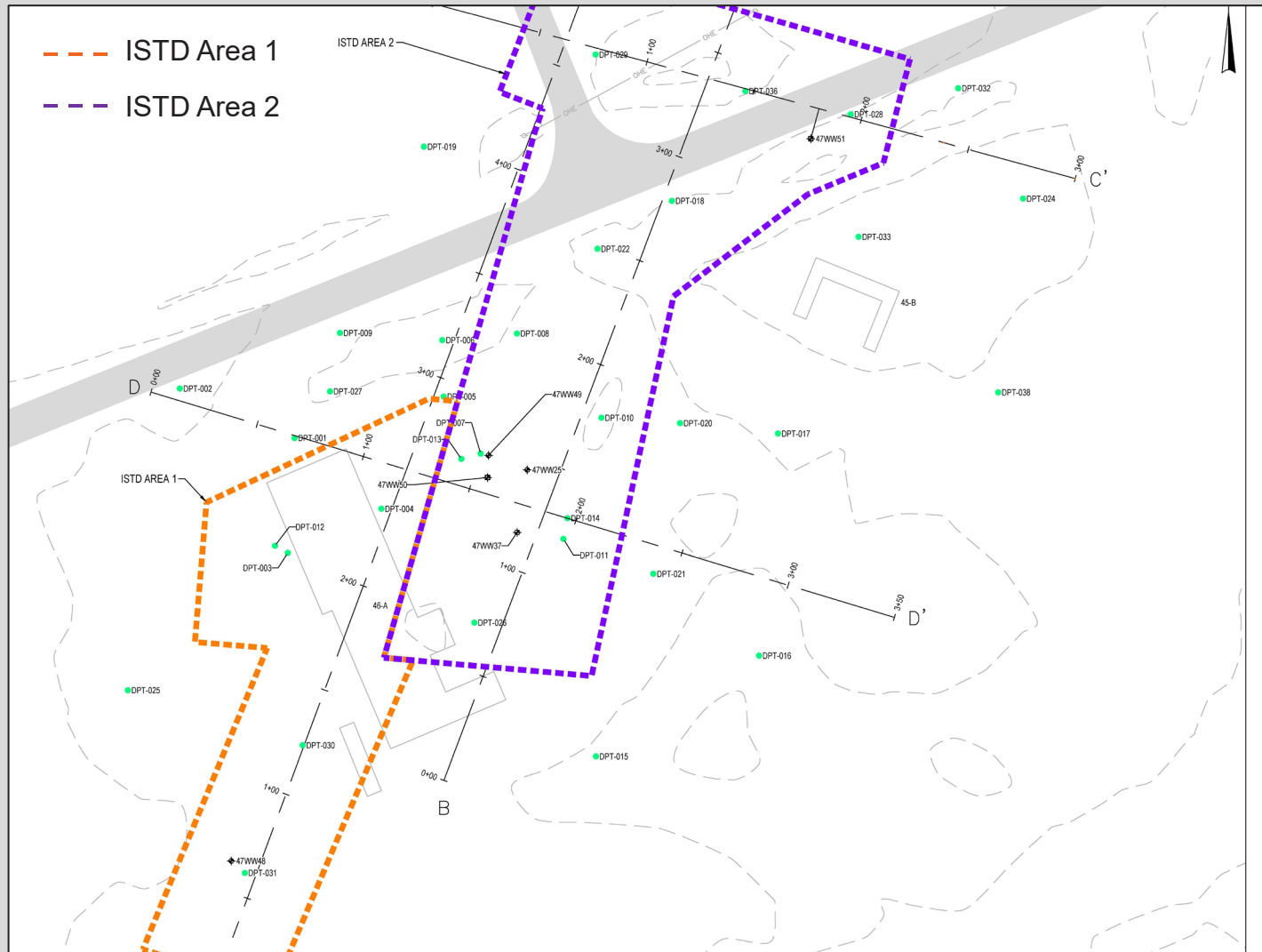
LHAAP-47 REMEDIAL DESIGN - EXCAVATION



LHAAP-47 REMEDIAL DESIGN – PHASE II



LHAAP-47 REMEDIAL DESIGN - THERMAL



NEXT MEETING SCHEDULE AND CLOSING REMARKS

Schedule Next Restoration Advisory Board Meeting (March 2027)

Other Items/Remarks

Thank You For Coming

Fact Sheet: Active Sites

Longhorn Army Ammunition Plant (LHAAP)

12 March 2026 Restoration Advisory Board Meeting

LHAAP-04 (Former Pilot Wastewater Treatment Plant)

- Contaminants of Concern (COCs): Perchlorate in Groundwater
- Prior Remedial Activities: Excavation, In-Situ Enhanced Bioremediation (ISB)
- Current Remedial Activities: Post-ISB Groundwater monitoring

LHAAP-12 (Landfill 12)

- COCs: Trichloroethene (TCE) in Groundwater
- Prior Remedial Activities: Land Use Controls (LUCs) and monitored natural attenuation (MNA)
- Current Remedial Activities: MNA (sampling and reporting), Long-Term Monitoring (LTM) for groundwater, LUC documentation and reporting

LHAAP-16 (Old Landfill)

- COCs: TCE, cis-1,2-dichloroethene (DCE), Vinyl Chloride (VC), and Perchlorate in Groundwater
- Prior Remedial Activities: ISB, Groundwater extraction
- Current Remedial Activities: Post-ISB Groundwater monitoring

LHAAP-35B (37) (Former Chemical Laboratory)

- COCs: 1,1-DCE, TCE, and Tetrachloroethylene (PCE) in Groundwater
- Prior Remedial Activities: Enhanced ISB
- Current Remedial Activities: LUC documentation and reporting and MNA (sampling and reporting)

LHAAP-46 (Plant 2 Area)

- COCs: TCE, cis-1,2-DCE, and VC in Groundwater
- Prior Remedial Activities: LUCs and MNA
- Current Remedial Activities: LUC documentation and reporting and MNA (sampling and reporting)

Fact Sheet: Active Sites

Longhorn Army Ammunition Plant (LHAAP)

12 March 2026 Restoration Advisory Board Meeting

LHAAP-50 (Former Sump Water Tank)

- COCs: Perchlorate, PCE, TCE, 1,1-DCE, 1,2-Dichloroethane (DCA), cis-1,2-DCE, and VC in Groundwater
- Prior Remedial Activities: MNA, Excavation, ISB
- Current Remedial Activities: Post-ISB Groundwater monitoring

LHAAP-35A (58) (Shops Area)

- COCs: PCE, 1,1-DCE, TCE, and VC in Groundwater
- Prior Remedial Activities: Enhanced ISB
- Current Remedial Activities: MNA (sampling and reporting) and LUC documentation and reporting

LHAAP-67 (Former Aboveground Storage Tank Farm)

- COCs: 1,1-DCE, 1,2-DCA, 1,1,1-trichloroethane (TCA), 1,1,2,-TCA, and TCE in Groundwater
- Prior Remedial Activities: MNA and LUCs
- Current Remedial Activities: MNA (sampling and reporting) and LUC documentation and reporting

LHAAP-001-R-01/-003-R-01 (Site 27, South Test Area, Bomb Test Area/ Site 54, Ground Signal Test Area)

- COCs: None
- Prior Remedial Activities: Removal of surface munition and explosives of concern
- Current Remedial Activities: Limited groundwater monitoring and LUCs

Fact Sheet: Active Sites

Longhorn Army Ammunition Plant (LHAAP)

12 March 2026 Restoration Advisory Board Meeting

LHAAP-18/24 (Burning Ground No. 3 / Unlined Evaporation Pond)

- COCs: Methylene Chloride (MC), TCE, cis-1,2-DCE, PCE, Benzene, 1,1,2-TCA, VC, Bromodichloromethane, 1,3,5-trinitrobenzene (TNB), 1,4-dioxane, arsenic, barium, chromium, cobalt, nickel, and perchlorate in Groundwater; TCE, MC, and PCE in Soil
- Prior Remedial Activities: Excavation
- Final Remedial Design submitted 1 March 2024
- Interim Remedy: Groundwater Treatment Plant operation from 1996 to current
- Selected Remedy: Groundwater extraction and treatment, Enhanced ISB, In-Situ Thermal Desorption (ISTD) of Dense Non-aqueous Phase Liquid (DNAPL), Maintenance of the Unlined Evaporative Pond (UEP) cap, Excavation and off-site disposal, MNA, LTM, and LUCs

LHAAP-29 (Former TNT Production Area)

- COCs: TCE, 1,2-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, MC, VC, 2,4-dinitrotoluene (DNT), 4-nitrotoluene (NT), 2-NT, 3-NT, arsenic, mercury, selenium, nickel, and perchlorate in Groundwater; 2,4,6-trinitrotoluene (TNT), 2,4-DNT, 2,6-DNT, and perchlorate in Soil; 1,3-dinitrobenzene (DNB), 2,4,6-TNT, 2,4-DNT, 2-amino-4,6-DNT, and 4-amino-2,6-DNT in Transite TNT Wastewater Line and Cooling Water Drain Line.
- Prior Remedial Activities: None
- Final Remedial Design submitted 29 February 2024
- Selected Remedy: Flush, inspect, and plug TNT wastewater and cooling water lines, Excavation and off-site disposal, ISTD, MNA, and LUCs

LHAAP-47 (Plant 3 Area)

- COCs: Perchlorate, TCE, cis-1,2-DCE, VC, 1,1-DCE, PCE, 1,2-DCA, acetone, chloroform, trans-1,2-DCE, 2,4,6-TNT, 2,4-DNT, 2,6-DNT, bis(2-ethylhexyl) phthalate, pentachlorophenol, aluminum, antimony, arsenic, cadmium, chromium, cobalt, manganese, nickel, silver, strontium, thallium, tin, and vanadium in Groundwater; Perchlorate and TCE in Soil
- Prior Remedial Activities: Plastic Liner to prevent migration in soil
- Final Remedial Design in progress

Fact Sheet: Active Sites

Longhorn Army Ammunition Plant (LHAAP)

12 March 2026 Restoration Advisory Board Meeting

- Selected Remedy: Excavation and off-site disposal of perchlorate-impacted soil near Building 25C, groundwater treatment to remove potential dense non-aqueous phase liquid from Shallow and Shallow/Intermediate Zones utilizing ISTD near Building 46A, ISB of potential dense non-aqueous phase liquid within targeted areas near Building 46A and the eastern Site boundary, installation of biobarriers near Building 46A and the southern site boundary to treat perchlorate and VOCs, LUCs, MNA, and LTM

LHAAP-17 (Burning Ground No. 2 / Flashing Area)

- COCs: Perchlorate, TCE, 1,1-DCE, 1,1-DCA, 1,2-DCA, and VC in Groundwater; Perchlorate, 2,4,6-TNT, 2,4-DNT, and 2,6-DNT in Soil
- Prior Remedial Activities: Excavation
- Current Remedial Activities: Groundwater Extraction and Performance Monitoring

12 March 2026 Restoration Advisory Board Meeting

LEGEND

- Poarch Creek Indians (PCI)/Bhate Joint Venture
- HDR Environmental, Operations and Construction, Inc (HDR)
- Munitions Management Group, LLC-TLI Solutions Inc. (MMG-TLI) Joint Venture
- Former Longhorn Army Ammunition Plant Boundary

0 0.375 0.75 Miles

Fact Sheet: Active Sites
Longhorn Army Ammunition Plant (LHAAP)
12 March 2026 Restoration Advisory Board Meeting

Definitions

In Situ Bioremediation (ISB) of Groundwater - Bioremediation is an engineered technology that modifies environmental conditions (physical, chemical, biochemical, or microbiological) to encourage microorganisms to destroy or detoxify organic and inorganic contaminants in the environment. The process can be applied above ground in land farms, tanks, biopiles, or other treatment systems (referred to as ex situ) or below ground in the soil or groundwater, referred to as in situ.

More info at [Community Guide to Bioremediation \(epa.gov\)](https://www.epa.gov/bioremediation/community-guide-to-bioremediation)

In situ thermal desorption (ISTD) is an intensive thermally enhanced environmental remediation technology that uses thermal conductive heating (TCH) elements to directly transfer heat to environmental media. The ISTD/TCH process can be applied at low (<100 °C), moderate (~100 °C) and higher (>100 °C) temperature levels to accomplish the remediation of a wide variety of contaminants, both above and below the water table. ISTD/TCH is the only major in situ thermal remediation (ISTR) technology capable of achieving subsurface target treatment temperatures above the boiling point of water and is effective at virtually any depth in almost any media. TCH works in tight soils, clay layers, and soils with wide heterogeneity in permeability or moisture content that are impacted by a broad range of volatile and semi-volatile organic contaminants.

More info at [Community Guide to In Situ Thermal Treatment \(epa.gov\)](https://www.epa.gov/thermal-treatment/community-guide-to-in-situ-thermal-treatment)

Natural attenuation relies on natural processes to decrease or “attenuate” concentrations of contaminants in soil and groundwater. Monitoring typically involves collecting soil and groundwater samples to analyze them for the presence of contaminants and other site characteristics. The entire process is called “monitored natural attenuation” or “MNA.” Natural attenuation occurs at most contaminated sites. However, the right conditions must exist underground to clean sites properly and quickly enough. Regular monitoring must be conducted to ensure that MNA continues to work.

More info at [Community Guide to Monitored Natural Attenuation \(epa.gov\)](https://www.epa.gov/monitored-natural-attenuation/community-guide-to-monitored-natural-attenuation)

Groundwater extraction and treatment or pump and treat is a common method for cleaning up groundwater contaminated with dissolved chemicals, including industrial solvents, metals, and fuel oil. Groundwater is pumped from wells to an above-ground treatment system that removes the contaminants. Pump and treat methods may involve installing one or more wells to extract the contaminated groundwater. Groundwater is pumped from these “extraction wells” to the ground surface, either directly into a treatment system or into a holding tank until treatment can begin. The treatment system may consist of a single cleanup method, such as activated carbon or air stripping, to clean the water. However, treatment often requires several cleanup methods if the groundwater contains different types of contaminants or high concentrations of a single contaminant. The approach to treatment may be modified as contaminant concentrations decrease

Fact Sheet: Active Sites

Longhorn Army Ammunition Plant (LHAAP)

12 March 2026 Restoration Advisory Board Meeting

More info at [Community Guide to Pump and Treat \(epa.gov\)](https://www.epa.gov/community-guide-to-pump-and-treat)

Bioremediation is the use of microbes to clean up contaminated soil and groundwater. Microbes are very small organisms, such as bacteria, that live naturally in the environment. Bioremediation stimulates the growth of certain microbes that use contaminants as a source of food and energy. Contaminants treated using bioremediation include oil and other petroleum products, solvents and pesticides.

More info at [Community Guide to Bioremediation \(epa.gov\)](https://www.epa.gov/community-guide-to-bioremediation)

Air stripping is the process of moving air through contaminated water in an aboveground treatment system to remove chemicals called “volatile organic compounds” or “VOCs.” VOCs are chemicals that easily evaporate, which means they can change from a liquid to a vapor (a gas). The air passed through contaminated water helps evaporate VOCs faster. The chemical vapors are collected, and either treated or vented outside if VOC levels are low enough. Air stripping is commonly used to treat groundwater as part of the pump and treat cleanup method.

More info at [Community Guide to Air Stripping \(epa.gov\)](https://www.epa.gov/community-guide-to-air-stripping)

A permeable reactive barrier, or “PRB,” is a wall created below ground to clean up contaminated groundwater. The wall is “permeable,” which means that groundwater can flow through it. Water must flow through the PRB to be treated. The “reactive” materials that make up the wall either trap harmful contaminants or make them less harmful. The treated groundwater flows out the other side of the wall.

More info at [Community Guide to Permeable Reactive Barriers \(epa.gov\)](https://www.epa.gov/community-guide-to-permeable-reactive-barriers)

Fact Sheet: Active Sites

Longhorn Army Ammunition Plant (LHAAP)

12 March 2026 Restoration Advisory Board Meeting

Acronyms and Abbreviations

COC	Contaminant of Concern
DCA	Dichloroethane
DCE	Dichloroethene
DNAPL	Dense Non-aqueous Phase Liquid
DNB	Dinitrobenzene
DNT	Dinitrotoluene
ISB	In-Situ Bioremediation
ISTD	In-Situ Thermal Desorption
LHAAP	Longhorn Army Ammunition Plant
LTM	Long Term Monitoring
LUC	Land Use Control
MC	Methylene Chloride
MNA	Monitored Natural Attenuation
NT	Nitrotoluene
PCE	Tetrachloroethene
TCA	Trichloroethane
TCE	Trichloroethene
TNB	Trinitrobenzene
TNT	Trinitrotoluene
UEP	Unlined Evaporative Pond
VC	Vinyl Chloride

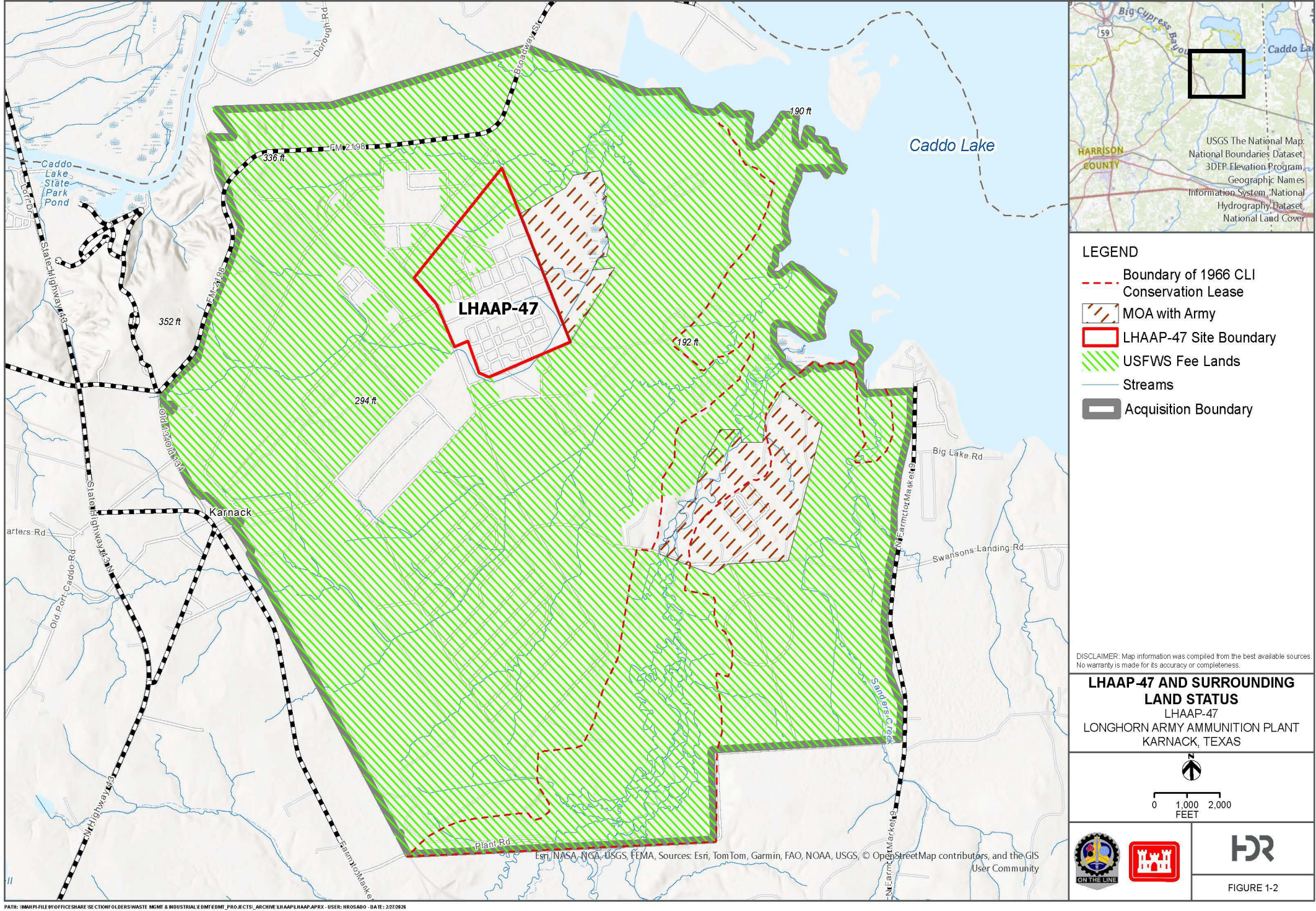
Longhorn Army Ammunition Plant (LHAAP)

LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production

Remedial Design Fact Sheet

Site History

Site LHAAP-47, identified as Plant 3, produced rocket motors and later pyrotechnic and illumination devices from 1954 to the early 1980s. LHAAP-47 is in the north-central portion of the former LHAAP, covering an area of approximately 275 acres. Many waste process sumps and several waste rack sumps were located within the site and soil and groundwater samples collected in proximity to these process sumps found elevated concentrations of trichloroethene (TCE) and tetrachloroethene (PCE), along with other volatile organic compounds (VOCs), exceeding screening levels.



Previous Investigations

- 1976 - Environmental investigations at the LHAAP began under the United States (U.S.) Army's Installation Restoration Program (IRP)
- 1980 - Installation-wide assessments and a record search conducted by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA)
- 1984 - Early groundwater sampling and contamination surveys were performed by Environmental Protection Systems, Inc.
- 1987 - Further evaluation was performed under the Resource Conservation and Recovery Act (RCRA) by the U.S. Army Environmental Hygiene Agency (USAEHA)
- 1988 - A preliminary RCRA Facility Assessment was performed by Maley
- 1992-1993 - Pre-Remedial Investigations (Pre-RIs) performed by EPS, BCM Engineers, and U.S. Army Corps of Engineers (USACE)
- 1993-2001 - Formal RI performed by Jacobs in three phases
- 2011 - Feasibility Study by Shaw to evaluate remedial alternatives in accordance with CERCLA criteria.
- 2013 - Draft Final Proposed Plan (PP) and Draft Record of Decision (ROD) were prepared
- 2018-2020 - Multiple Pre-Screening Investigations (PSIs) were conducted by HDR to update groundwater data and refine the conceptual site model. These efforts identified residual TCE dense non-aqueous phase liquid (DNAPL) near Building 46A and potential unsaturated soil sources
- 2022 - Revised Final ROD
- 2023-2024 – Pre-Design Investigation (PDI) and PDI Addendum was completed and included installation of new monitoring wells, groundwater sampling, and aquifer testing to inform the Remedial Design (RD)

Chemicals of Concern (COCs)

- COCs that exceed the respective maximum contaminant levels (MCLs) or in the absence of federal drinking water standards, the Texas Risk Reduction Program (TRRP) Tier 1 Residential Groundwater Protective Concentration Levels (PCLs)
- **Soil** – perchlorate and TCE
 - **Groundwater** - Perchlorate, VOCs, semi-volatile organic compounds (SVOCs), trinitrotoluene (TNT), 2,4-dinitrotoluene (DNT), 2,6-DNT, and metals

Remedial Action Objectives (RAOs)

- Protect future maintenance workers by preventing exposure to unacceptable levels of contaminants in groundwater via the groundwater ingestion pathway;
- Prevent perchlorate in soil from migrating to groundwater and surface water and prevent TCE in soil from migrating to groundwater;
- Prevent groundwater contaminated with perchlorate from migrating into nearby surface water; and
- Return of groundwater to its potential beneficial use, wherever practicable, within a reasonable time period given the particular site circumstances

Remedial Design:

The planned future remedial activities presented in the RD include the following:

Soil:

- Excavation and off-site disposal of perchlorate-impacted soil near Building 25C

Groundwater:

- Groundwater treatment to remove potential DNAPL utilizing in-situ thermal desorption (ISTD) near Building 46A
- In-situ bioremediation (ISB) of potential DNAPL within targeted areas near Building 46A and the eastern Site boundary
- Installation of biobarriers near Building 46A and the southern site boundary to treat perchlorate and VOCs
- Land Use Controls (LUCs), Monitored Natural Attenuation (MNA), and Long-Term Monitoring (LTM)
- Five-Year Reviews

LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production Remedial Design Fact Sheet

Planned Remedial Action (RA):

For the purpose of developing the RD, it is assumed that the RA will be implemented in two phases, as the design criteria for Phase 2 will depend on the monitoring and performance results of Phase 1 RA. The design approach considers the following phases.

Phase I – Source Control and Pilot Tests, Phase I will consist of the following remedial actions

- Mobilization and site preparation.
- Excavation of perchlorate-impacted unsaturated soil exceeding the soil cleanup level in six identified areas near Building 25C;
- Implementation of ISTD to remove potential DNAPL in two identified areas near Building 46A (identified with TCE concentrations greater than approximately 10,000 micrograms per liter [µg/L]); and,
- Four ISB pilot tests (3 grids and 1 biobarrier) in strategically selected locations to determine the design parameters for the ISB.
- Implementation of LUCs:

Restrict land use to nonresidential use until it is demonstrated that the COCs in soil and groundwater are at levels that allow for unlimited use and unrestricted exposure.

Prohibit potable use of groundwater above the cleanup levels until it is demonstrated that the COCs in groundwater are at levels that allow for unlimited use and unrestricted exposure.

Phase II – ISB, Phase II will consist of the following remedial actions:

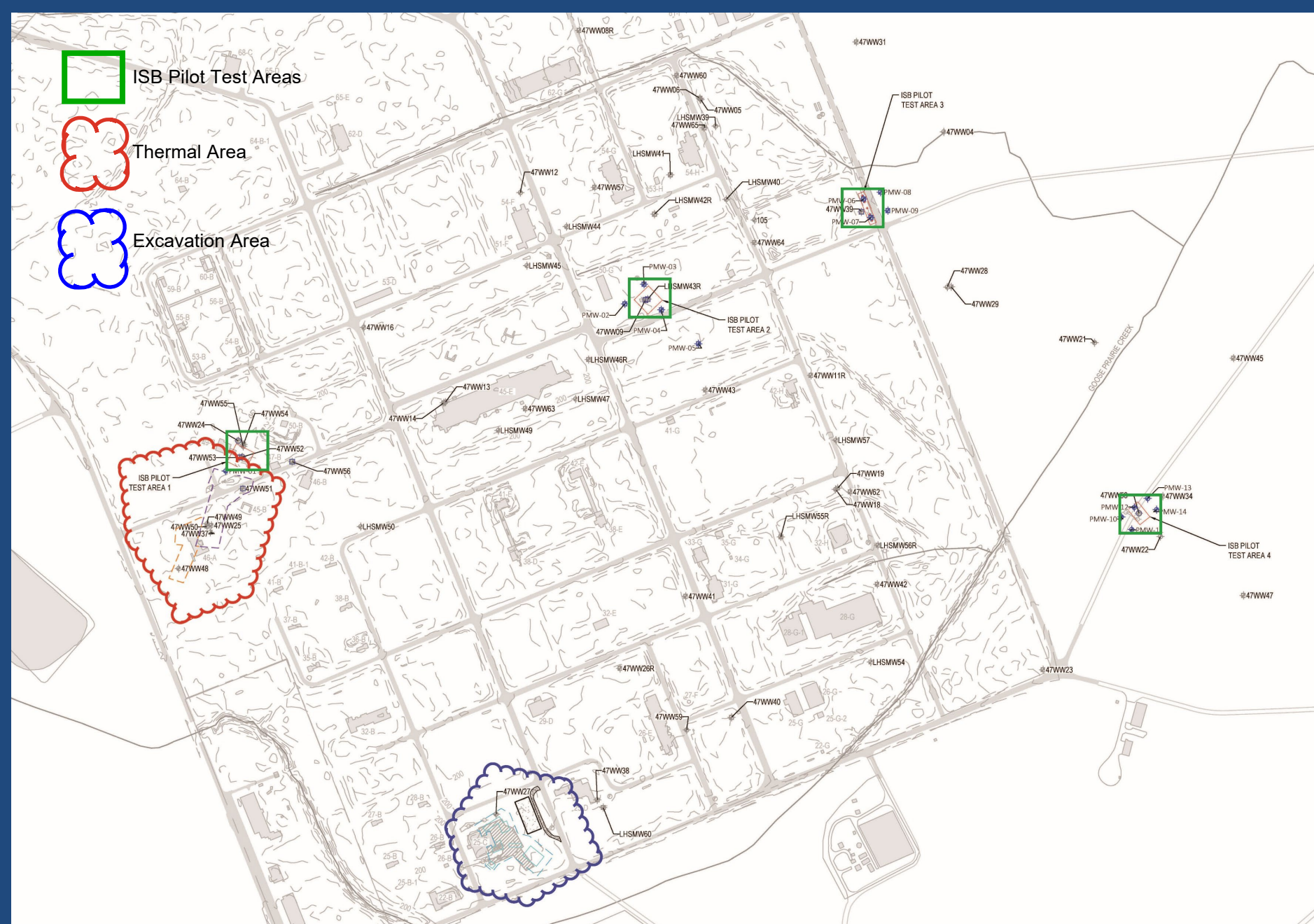
- Mobilization and site preparation.
- Implementation of ISB in grid configuration in nine target areas where perchlorate concentrations are greater than 20,000 µg/L and/or total VOC concentrations are greater than 1,000 µg/L.
- Implementation of three ISB biobarriers near the northern, southern, and eastern edge of the VOC plume, and at the northern and eastern edge of the perchlorate plume to mitigate the risk of contaminant migration off-site, further off-site, or further into the Site.
- Performance monitoring and reapplication of bio-amendments.
- Groundwater and surface water monitoring to evaluate MNA performance in both groundwater zones to ensure continued degradation of COCs and daughter products and that surface water in Goose Prairie Creek is not adversely affected by groundwater. MNA includes:

Evaluation of MNA based on performance objectives after 2 years of quarterly monitoring.

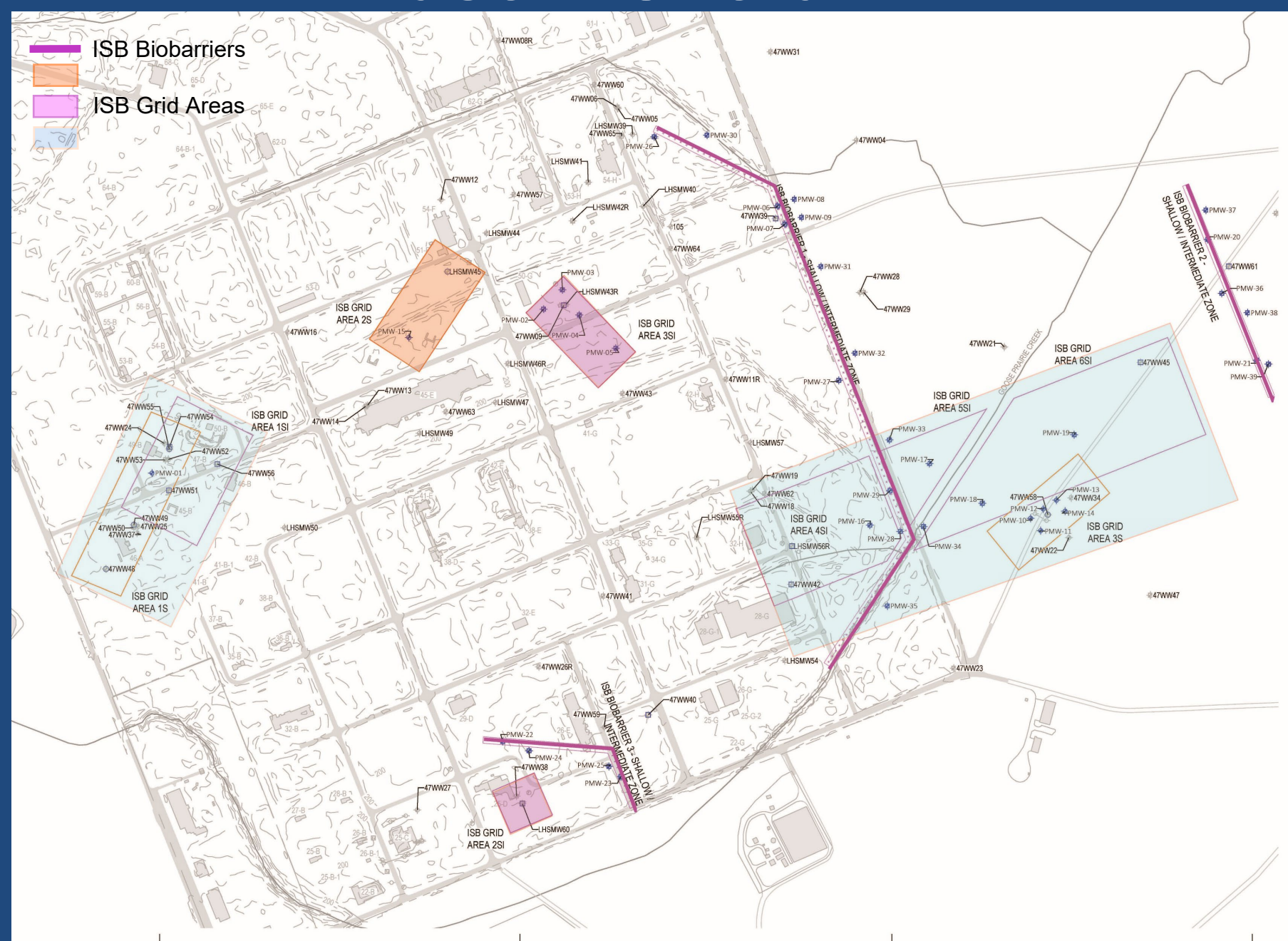
LTM semiannually for 3 years, then annually thereafter, until recommended otherwise by the Five-Year Review. LTM will not be initiated until MNA performance monitoring establishes the effectiveness of MNA.

If MNA is determined not to be successful, the contingency remedy for LHAAP-47 includes the injection of bioremediation amendments to enhance degradation of the groundwater contaminants at selected locations.

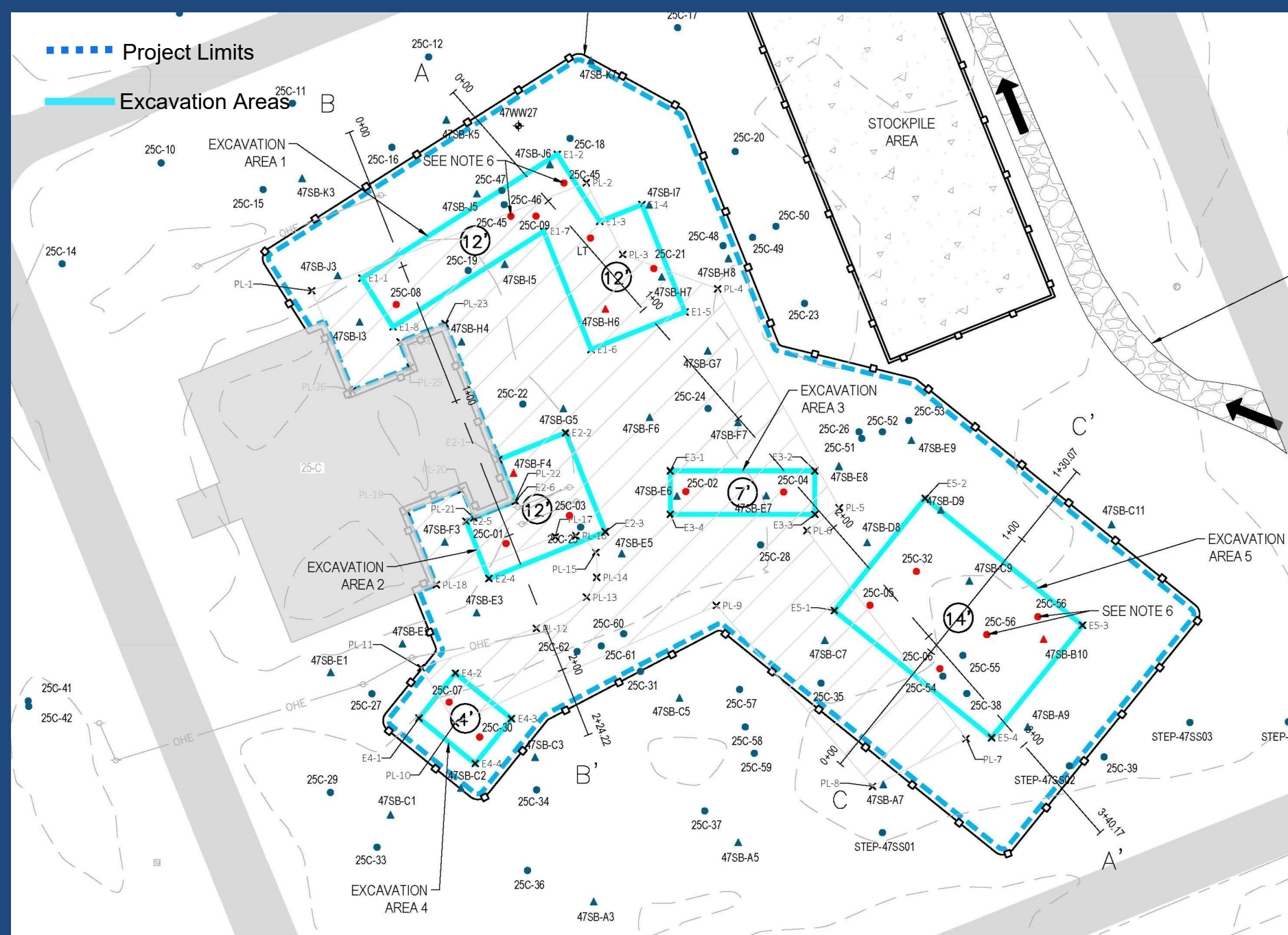
Phase I Overall



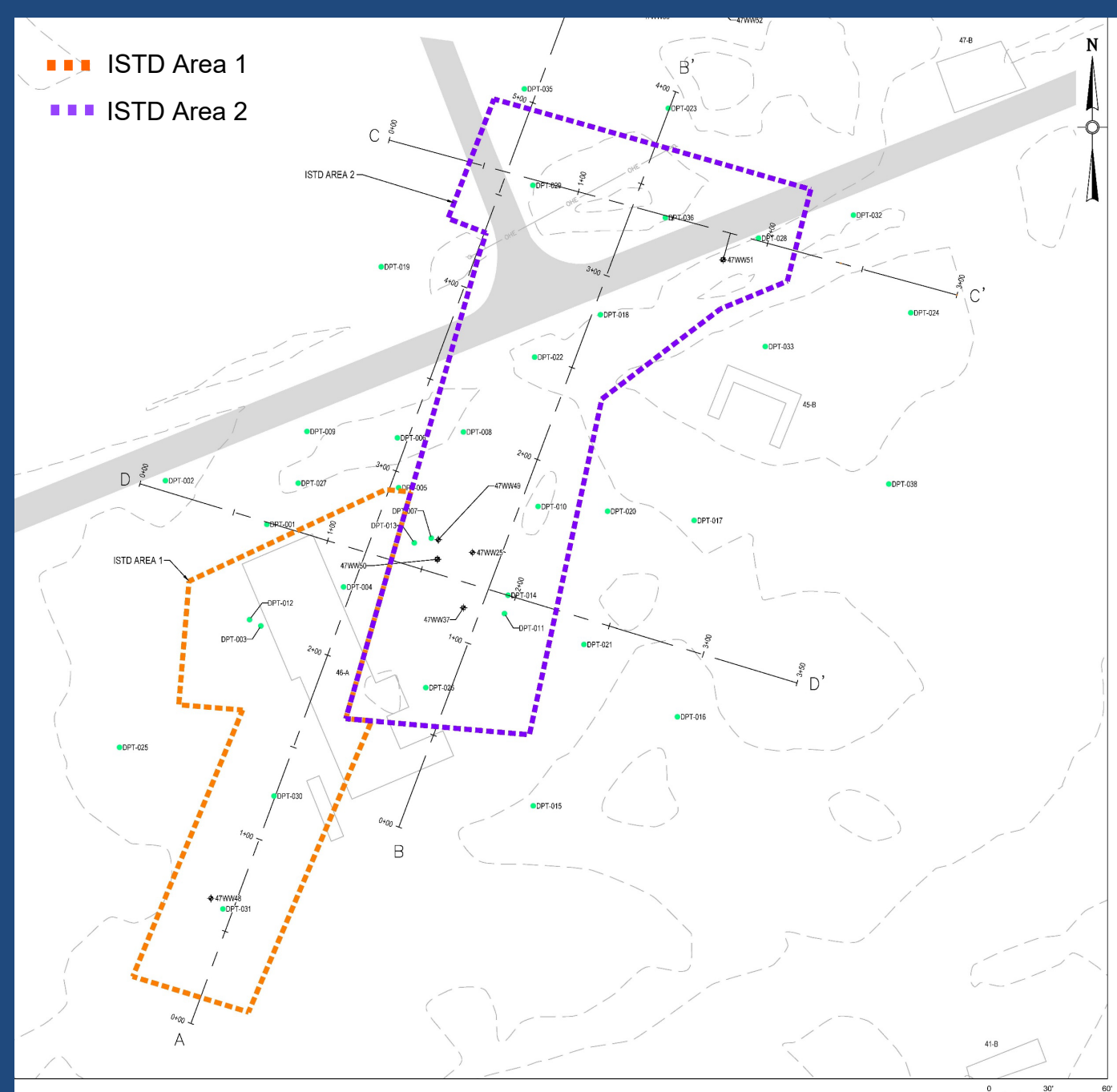
Phase II Overall



Excavation

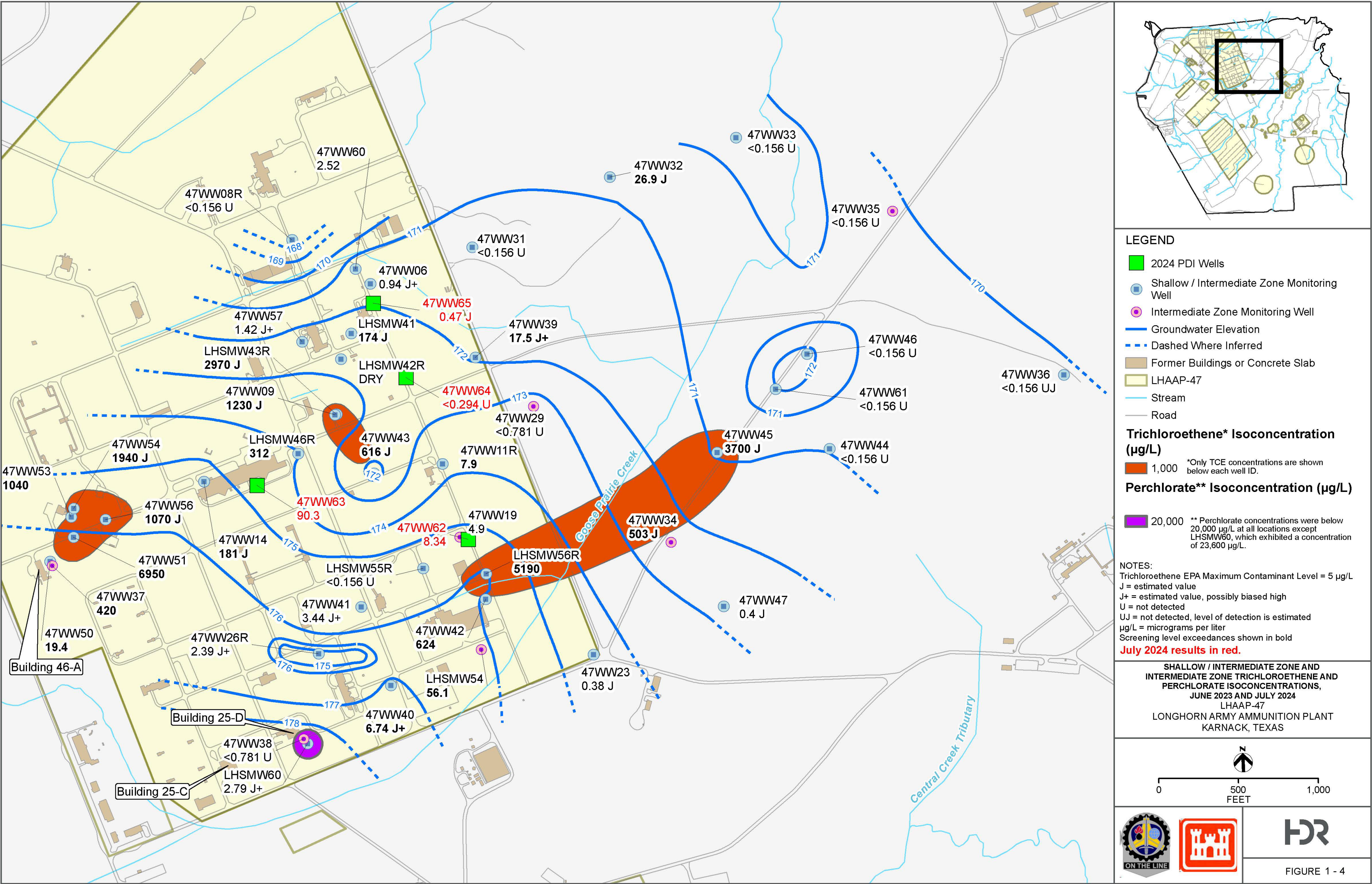
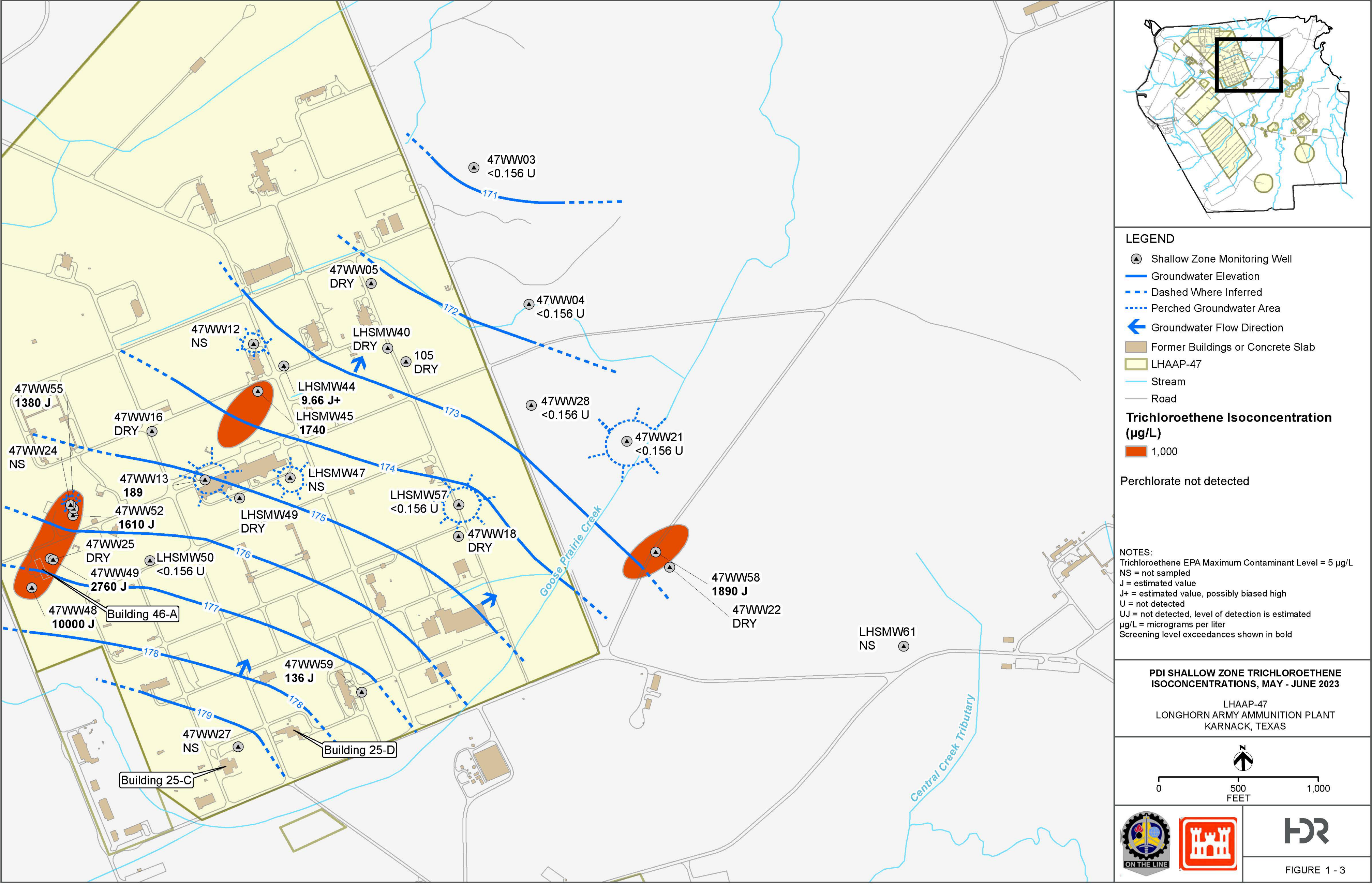


Thermal



LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production Remedial Design Fact Sheet

LHAAP-47 Groundwater Contamination



This page intentionally left blank.

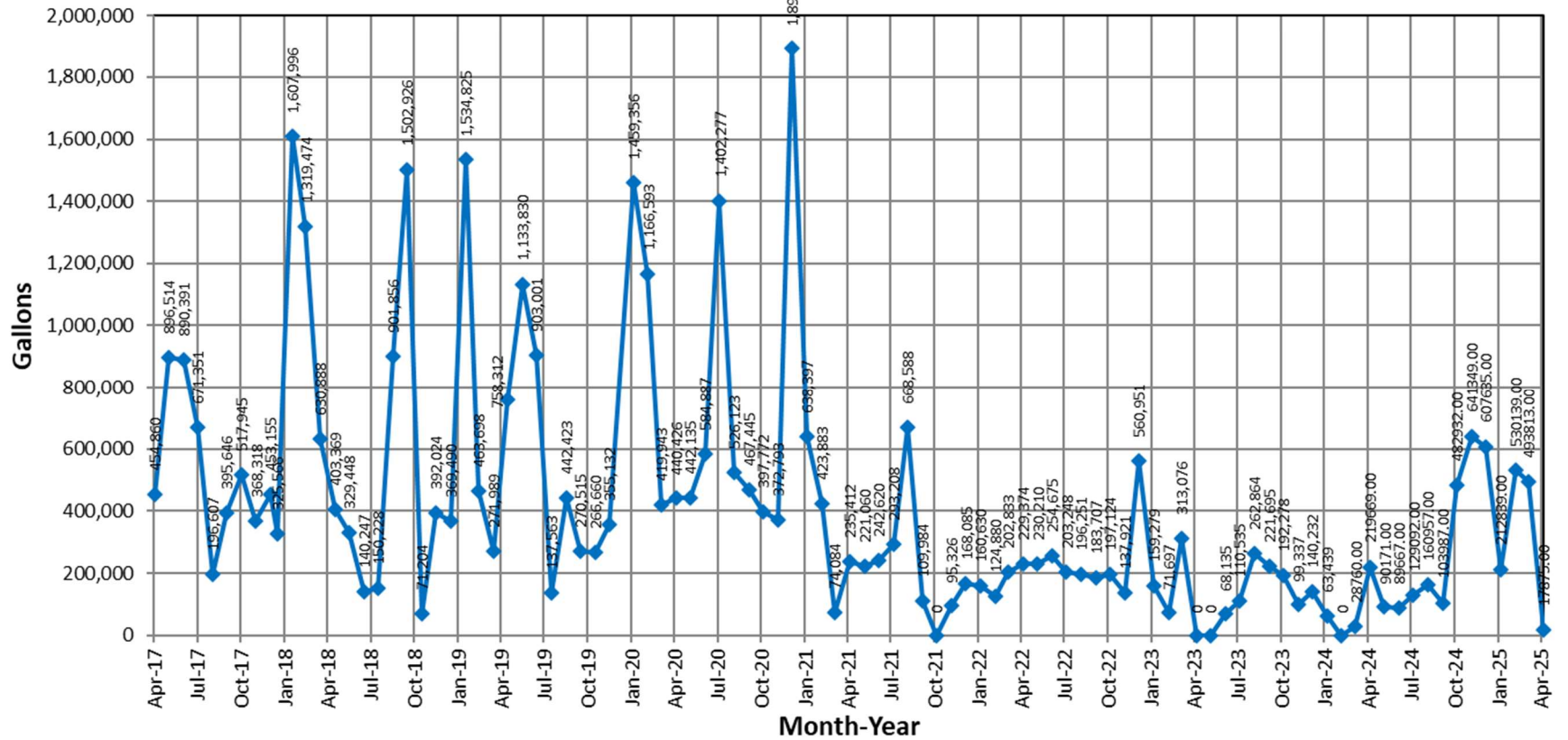
Groundwater Treatment Plant - Processed Groundwater Volumes

The amount of groundwater treated is determined by measuring the number of gallons of processed water discharged.

Processed Water Data (in gallons)

Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18
454,860	896,514	890,391	528,538	195,198	961,324	517,945	368,318	453,155	325,566	1,607,996	1,319,474
Apr-18	May-18	Jun-18	Jul - 18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19
630,888	403,369	329,448	140,247	150,228	901,856	1,502,926	71,204	392,024	369,490	1,534,825	463,698
Apr-19	May-19	Jun-19	Jul - 19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
271,989	758,312	1,133,830	1,415,203	493,063	442,423	270,515	288,683	355,132	1,459,356	1,166,593	419,943
Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
440,426	442,135	584,887	1,402,277	539,526	467,445	397,772	372,793	1,832,274	638,397	423,883	74,084
Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
235,412	1,121,060	242,620	293,208	668,588	109,984	0	95,326	439,585	322,130	124,880	202,833
Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
229,374	230,210	254,675	203,248	196,251	183,707	197,124	137,921	560,951	159,279	71,697	313,076
Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
0	0	68,135	110,535	262,864	221,695	192,278	99,337	140,232	63,439	0	28,760
Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	March-25
219,669	90,171	89,667	129,092	160,957	103,987	482,932	641,349	607,635	212,839	530,139	493,813
Apr-25											
17,875											

Treated Groundwater Discharged Monthly from April 2017 through April 2025



Notes:

No groundwater discharged in October 2021 due to a power disruption to the GWTP.

No groundwater discharged in April-May 2023 during contract transition.

No groundwater discharged in February 2024 due to freezing temperatures.

No groundwater discharged May 2025-March 2026 due to fire damage, gap in contracting, and GWTP maintenance.

Water Discharge Location and Volume (Gallons)					
Month	Total Combined to Harrison Bayou	LHAAP-18/24 Sprinklers	GWTP To INF Pond	INF Pond to Harrison Bayou	Contract Hauled Off-Site
Apr-17	113,038	0	236,821	0	0
May-17	0	0	534,155	0	0
Jun-17	958,404	0	294,550	490,574	0
Jul-17	0	0	528,538	0	0
Aug-17	0	0	195,197	0	0
Sep-17	651,434	0	309,980	651,434	0
Oct-17	0	0	517,945	0	0
Nov-17	0	0	368,318	0	0
Dec-17	560,350	0	453,155	560,350	0
Jan-18	325,566	0	253,177	325,566	0
Feb-18	1,607,996	0	62,017	1,430,634	0
Mar-18	1,319,474	0	0	870,816	0
Apr-18	630,888	0	0	630,888	0
May-18	403,369	0	0	403,369	0
Jun-18	193,669	0	135,779	0	0
Jul -18	0	0	140,247	0	0
Aug -18	49,409	0	100,819	0	0
Sep-18	585,397	0	316,459	524,484	0
Oct-18	1,409,106	0	93,820	1,016,285	0
Nov-18	71,204	0	0	0	0
Dec-18	392,024	0	0	0	0
Jan-19	369,490	0	0	369,490	0
Feb-19	1,534,825	0	0	1,326,485	0
Mar-19	463,698	0	0	83,250	0
Apr-19	271,989	0	0	0	0
May-19	758,312	0	0	253,817	0
Jun-19	1,133,830	0	0	847,918	0
Jul-19	1,415,203	0	0	903,001	0
Aug-19	374,629	0	118,434	0	0
Sep-19	0	0	442,423	0	0
Oct-19	0	0	270,515	0	0
Nov-19	115,503	0	173,180	0	0
Dec-19	318,248	0	36,884	0	0
Jan-20	1,459,396	0	0	1,115,183	0

Water Discharge Location and Volume (Gallons)					
Month	Total Combined to Harrison Bayou	LHAAP-18/24 Sprinklers	GWTP To INF Pond	INF Pond to Harrison Bayou	Contract Hauled Off-Site
Feb-20	1,166,593	0	0	741,954	0
Mar-20	419,943	0	0	0	0
Apr-20	440,426	0	0	0	0
May-20	442,135	0	0	0	0
June-20	584,887	0	0	0	0
July-20	1,402,277	0	0	984,393	0
Aug-20	216,197	0	323,359	0	0
Sep-20	0	0	467,445	0	0
Oct-20	0	0	397,772	0	0
Nov-20	0	0	372,793	0	0
Dec-20	1,832,274	0	60,199	1,571,432	0
Jan-21	638,397	0	0	383,318	0
Feb-21	423,883	0	0	259,875	0
Mar-21	74,084	0	0	74,084	0
Apr-21	235,412	0	0	0	0
May-21	1,121,060	0	0	900,000	0
Jun-21	242,620	0	0	0	0
Jul-21	293,208	0	0	243,675	0
Aug-21	668,588	0	0	561,527	0
Sep-21	0	0	109,984	0	0
Oct-21	0	0	0	0	0
Nov-21	0	0	95,326	0	0
Dec-21	271,500	0	168,085	271,500	0
Jan-22	161,500	0	160,630	161,500	0
Feb-22	0	0	124,880	0	0
Mar-22	190,898	0	11,935	0	0
Apr-22	229,374	0	0	0	0
May-22	230,210	0	0	0	0
June-22	254,675	0	0	0	0
July-22	0	0	203,248	0	0
Aug-22	34,115	0	162,136	0	0
Sept-22	83,312	0	100,395	0	0
Oct-22	0	0	197,124	0	0
Nov-22	0	0	137,921	0	0
Dec-22	560,951	0	0	514,515	0

Water Discharge Location and Volume (Gallons)					
Month	Total Combined to Harrison Bayou	LHAAP-18/24 Sprinklers	GWTP To INF Pond	INF Pond to Harrison Bayou	Contract Hauled Off-Site
Jan-23	159,279	0	0	145,321	0
Feb-23	71,697	0	0	71,697	0
Mar-23	313,076	0	0	313,076	0
Apr-23	0	0	0	0	0
May-23	0	0	0	0	0
June-23	68,135	0	0	0	0
July-23	29,133	0	110,535	0	0
Aug-23	0	0	262,864	0	0
Sept-23	0	0	221,695	0	0
Oct-23	0	0	192,278	0	0
Nov-23	0	0	99,337	0	0
Dec-23	0	0	140,232	0	0
Jan-24	187,463	0	63,439	175,500	0
Feb-24	0	0	0	0	0
Mar-24	28,760	0	0	0	0
Apr-24	219,669	0	0	0	0
May-24	90,171	0	0	0	0
Jun-24	89,667	0	0	0	0
Jul-24	129,092	0	0	0	0
Aug-24	160,957	0	0	0	0
Sept-24	103,987	0	0	0	0
Oct-24	282,932	0	0	0	0
Nov-24	641,349	0	0	0	0
Dec-24	607,635	0	0	0	0
Jan-25	212,839	0	0	0	0
Feb-25	530,139	0	0	0	0
Mar-25	493,813	0	0	0	0
Apr-25	17,875	0	0	0	0

Notes: GWTP – Groundwater Treatment Plant; INF - Intermediate-Range Nuclear Force

No groundwater discharged May 2025-March 2026 due to fire damage, gap in contracting, and GWTP maintenance.

This page intentionally left blank.

Harrison Bayou and Goose Prairie Creek – Perchlorate Data

Surface water samples are collected quarterly from each location in Harrison Bayou and Goose Prairie Creek, unless the sampling location is dry.

Surface Water Sample Data (in micrograms per liter)

Quarter	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd
Creek Sample ID	Feb 2017	May 2017	Aug 2017	Dec 2017	Mar 2018	Jun 2018	Aug 2018
GPW-1	<1 U	0.263	Dry	<2.0 U	<2.0 U	Dry	<2.0 U
GPW-3	<1 U	0.274	Dry	<2.0 U	<2.0 U	Dry	<2.0 U
HBW-1	<1 U	<0.2 U	<0.2 U	1.1 J	<2.0 U	Dry	<2.0 U
HBW-7	<1 U	0.155	<0.2 U	<2.0 U	<2.0 U	Dry	<2.0 U
HBW-10	<1 U	<0.2 U	0.111 J	<2.0 U	<2.0 U	Dry	<2.0 U

Quarter	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st
Creek Sample ID	Oct 2018	Jan 2019	Apr 2019	Jul 2019	Oct 2019	Jan 2020	Apr 2020	Jul 2020	Dec 2020	Feb 2021
GPW-1	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.163	0.0589 J	<0.05 U	0.110	<0.05 U
GPW-3	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.156	0.0662 J	0.0326 J	0.108	<0.05 U
HBW-1	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.0600 J	<0.05 U	<0.05 U	0.0374 J	<0.05 U
HBW-7	<2.0 U	<2.0 U	<2.0 U	27 (initial)/ 1.2 J (resample)	1.6 J	0.0761 J	<0.05 U	0.0318 J	0.0265 J	<0.05 U
HBW-10	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.0782 J	<0.05 U	<0.05 U	<0.05 U	<0.05 U

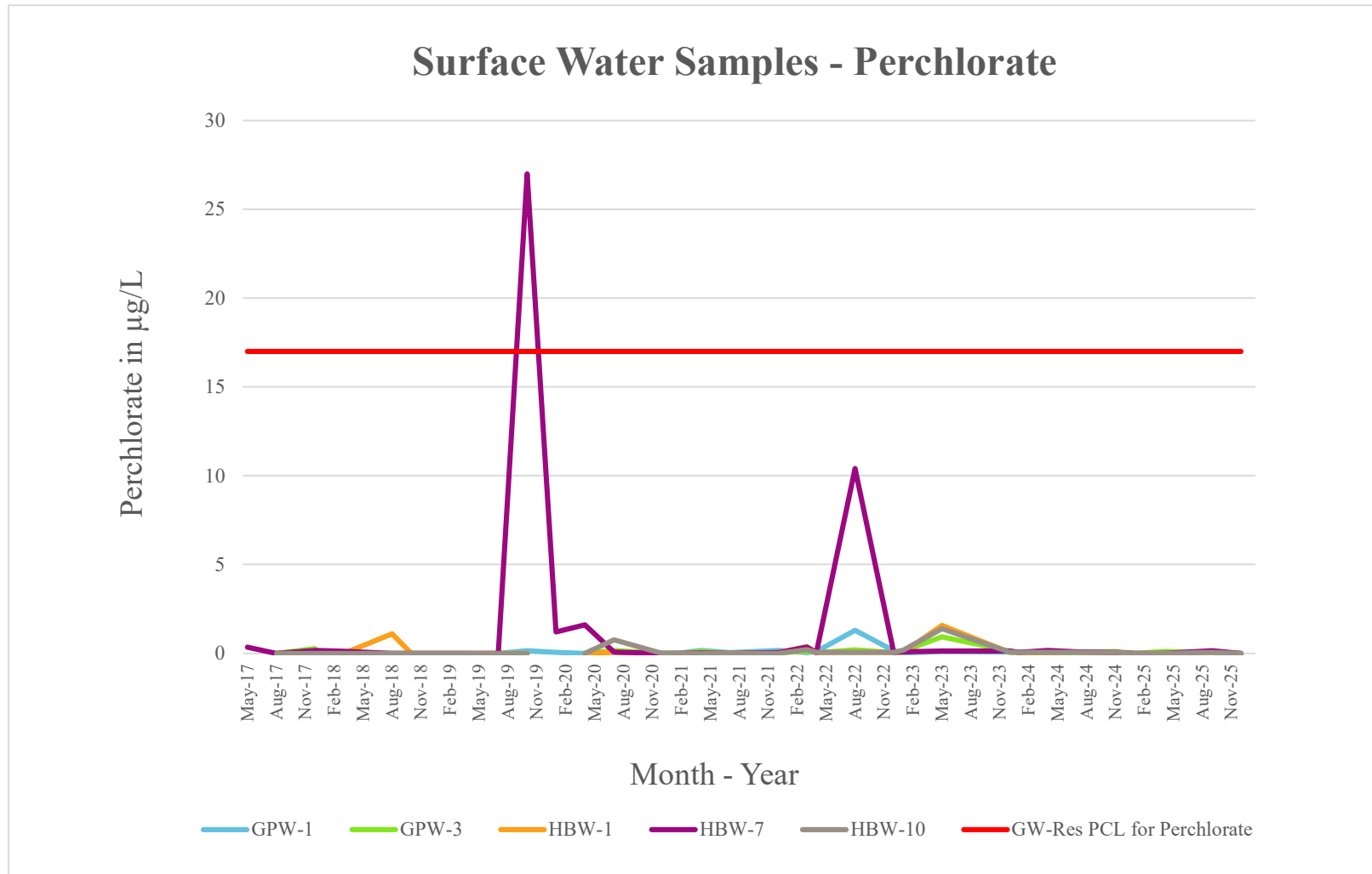
Quarter	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th
Creek Sample ID	Apr 2021	Jul 2021	Dec 2021	Mar 2022	Apr 2022	Aug 2022	Dec 2022	Jan 2023	May 2023	Jul-Sep 2023	Dec 2023
GPW-1	0.0268 J	0.154	0.0394 J	0.162	0.042 J	0.104	1.30	0.153	0.0286 J	Dry	0.0973 J
GPW-3	0.0321 J	0.122	0.0344 J	0.198	0.0384 J	0.132	0.938	0.137	< 0.05 U	Dry	0.0382 J
HBW-1	0.0410 J	0.369	0.050 U	0.052 J	<0.05 U	0.0540 J	1.58	0.0568 J	< 0.05 U	Dry	< 0.05 U
HBW-7	0.0373 J	0.348	0.0359 J	10.4	0.0493 J	0.0880 J	0.125	0.133	< 0.05 U	Dry	0.163
HBW-10	<0.05 U	0.207	0.0464 J	<0.05 U	<0.05 U	0.171	1.39	0.0654 J	< 0.05 U	Dry	0.0546 J

Quarter	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th
Creek Sample ID	Jan 2024	Apr 2024	Jul 2024	Nov 2024	Jan 2025	Apr 2025	Sep 2025	Dec 2025
GPW-1	0.0671 J	0.0907 J	0.0253 J	< 0.10 U	0.069 J	< 0.10 U	Dry	0.079 J
GPW-3	0.0490 J	0.106	0.0419 J	0.095 J	0.050 J	< 0.10 U	Dry	0.36
HBW-1	0.0693 J	0.0368 J	0.0342 J	< 0.10 U	0.064 J	< 0.10 U	Dry	0.076 J
HBW-7	0.0772 J	< 0.05 U	0.0338 J	< 0.10 U	0.14 J	< 0.10 U	Dry	0.079 J
HBW-10	0.0565 J	< 0.05 U	0.0306 J	< 0.10 U	0.057 J	< 0.10 U	Dry	0.076 J

U – non-detect

J – Estimated

Dry – no surface water



Note: Surface water at HBW-7 had a detection of 27 µg/L from a sample collected on 11 July 2019. Surface water at HBW-7 was resampled 19 days later (30 July 2019) with a detection of 1.2 J (estimated result) µg/L. GPW – Goose Prairie Creek sample location; HBW – Harrison Bayou sample location. GW Res – Groundwater residential limit; MSC – Medium Specific Concentration; PCL – Protective Concentration Level; µg/L – micrograms per liter. No surface water sampling was conducted in the 3rd Quarter 2023 or 2025 due to dry conditions.

Longhorn Army Ammunition Plant Creek Sampling Locations

