



BANDERA ROAD GROUNDWATER PLUME SUPERFUND SITE Community Advisory Group Meeting

December 14, 2022

Stakeholders



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



- ▶ U.S. Environmental Protection Agency
- ▶ City of Leon Valley
- ▶ Community Advisory Group
- ▶ Texas Commission on Environmental Quality
- ▶ United States Geological Survey
- ▶ Edwards Aquifer Authority
- ▶ Texas Department of State Health Services
- ▶ EA Engineering, Science, and Technology, Inc., PBC (EA)
- ▶ HydroGeoLogic, Inc. (HGL)

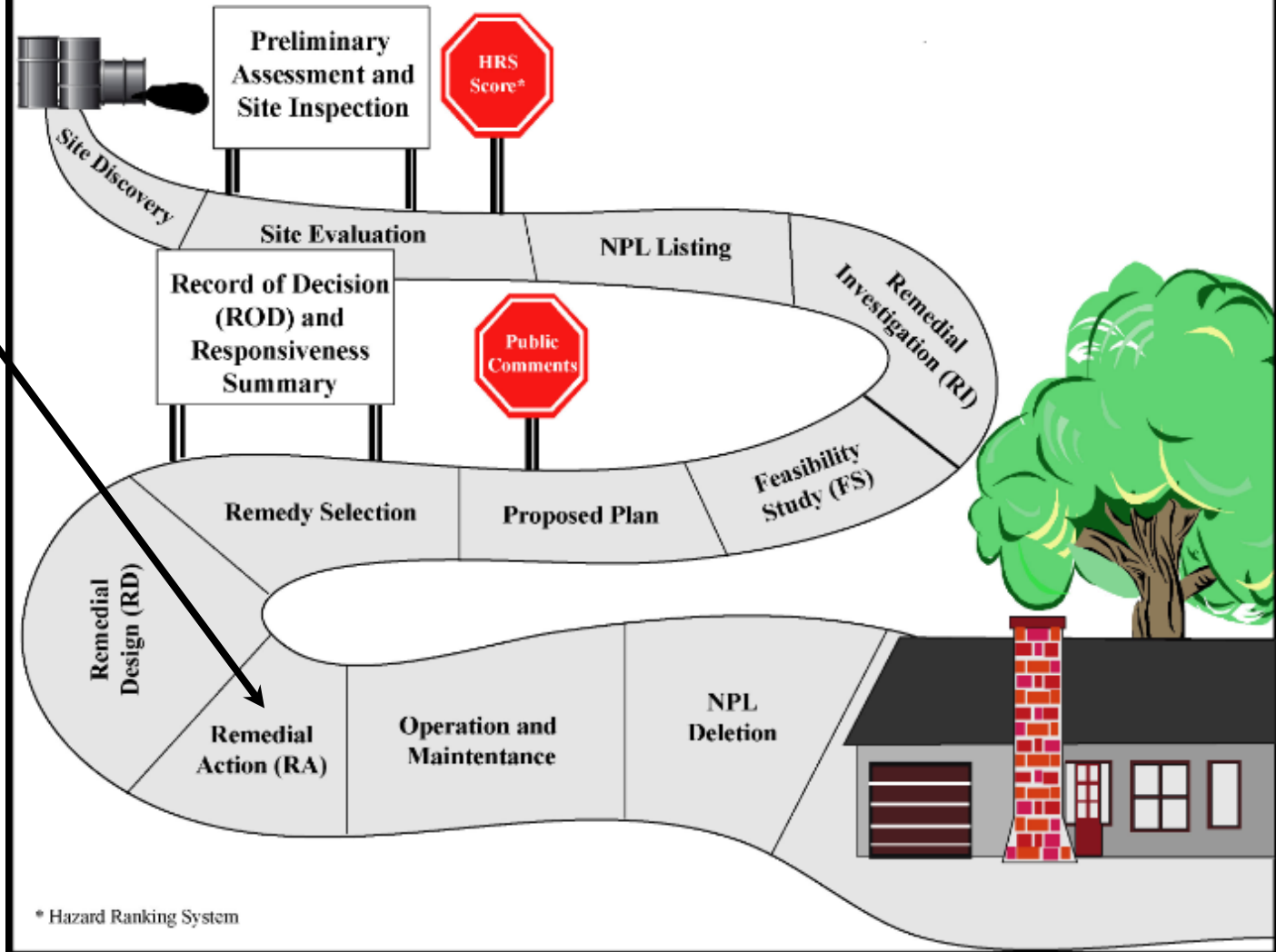


Texas Department of State Health Services

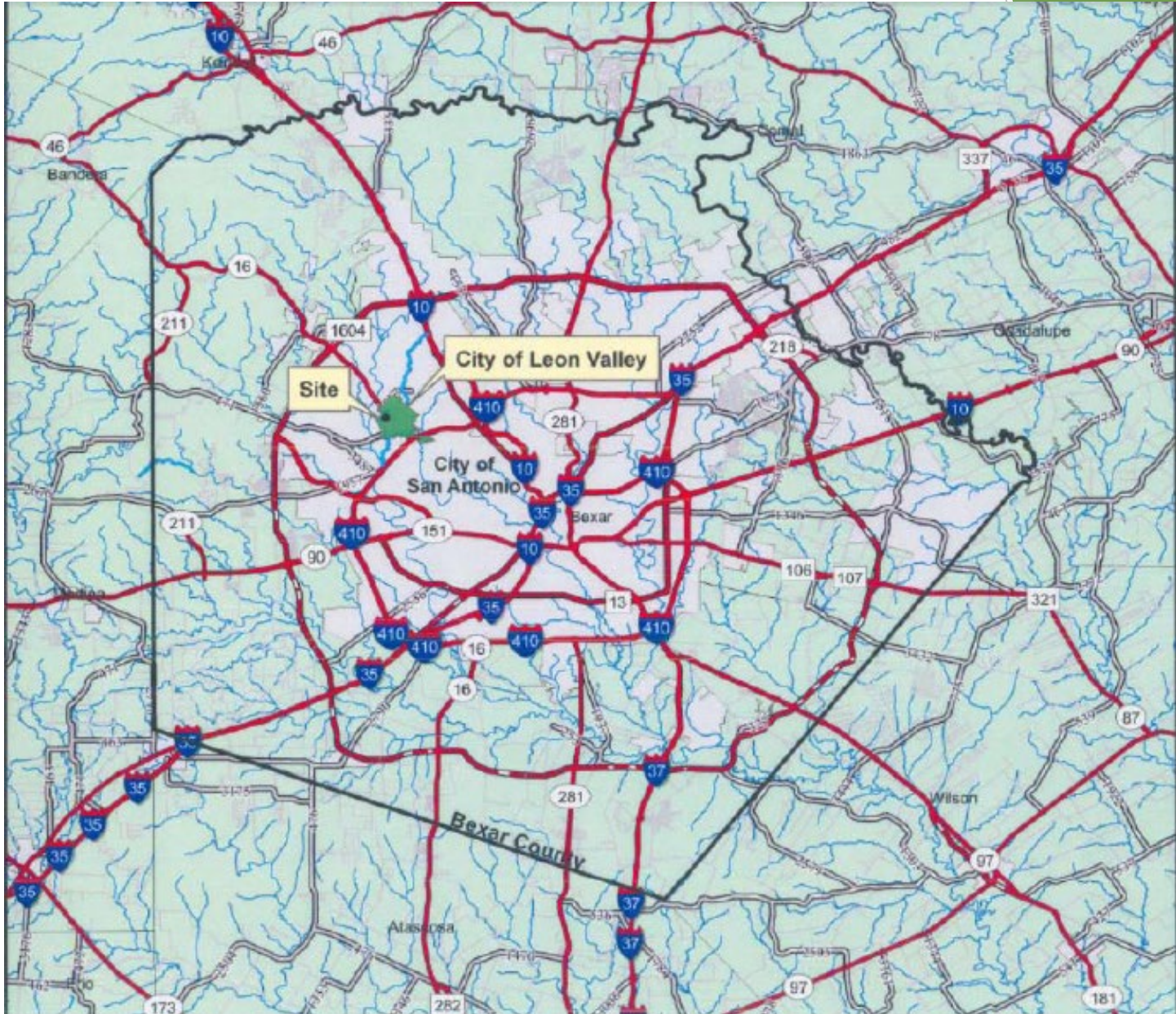
Meeting Agenda

- ▶ **Introductions**
- ▶ **Site Overview**
- ▶ **Remedial Design Status**
- ▶ **Remedial Action Status**
- ▶ **Path Forward**
- ▶ **Questions/Discussion**

The Superfund Process



Site Location



Site Location



Site Background

- ▶ 2004: Site identified from assessment activities by TCEQ Voluntary Clean-up Program.
- ▶ March 7, 2007: EPA lists site on the National Priorities List.
- ▶ 2007: Bandera Road Community Advisory Group formed.
- ▶ 2007: EPA Removal Action connecting six private water wells to public supply line.
- ▶ September 28, 2007: Agency for Toxic Substances and Disease Registry/TXDSHS completes Public Health Assessment.
- ▶ 2007: EPA Field Consent Order with Savings Square property owner to install indoor air mitigation system.
- ▶ 2009: EPA plugged and abandoned private wells drilled into the Edwards Aquifer: DW-30, DW-37, DW-43, DW-44, and USGS-44

Site Background

- ▶ 2011-2012: EPA completes Remedial Investigation Report, Feasibility Study Report, and Supplemental Remedial Investigation Report
 - Source Area 1/AOI 1: Area near the Savings Square Shopping Center (6707/6709 Bandera Road, San Antonio, TX 78238) where a previous dry-cleaning facility operated.
 - Source Area 2/AOI 2: Area near a defunct dry-cleaning facility (6600 Bandera Road, San Antonio, TX 78238)
- ▶ September 30, 2013: EPA issues Record of Decision (ROD).
 - Primary chemicals of concern: Tetrachloroethene (PCE) and its daughter products Trichloroethene (TCE), DCE (1,1- Dichloroethene and cis-1,2-Dichloroethene), vinyl chloride, and toluene.

Site Background

- ▶ 2013 Record of Decision:
 - Surface and Subsurface Soil: Alternative S-4 (Soil Vapor Extraction [SVE]) for Source Areas 1 and 2.
 - Vadose Zone Bedrock: Alternative B-3 (SVE) for source Areas 1 and 2.
 - Ground Water: Alternative GW-4 (In-situ bioremediation [ISB]) for Austin Chalk Northern Plume and Austin Chalk Southern Plume Alternative.
 - Indoor Air: Alternative VI-4 (Membrane Sealant with Vapor Vent) for Source Area 1 - Building B1.
- ▶ 2016: Remedial Design initiated.

Remedial Design

- ▶ Four Ground Water Sampling Events: December 2016, August 2017, February 2019, August 2019
- ▶ Five Air Sampling Events: January 2017, September 2017, February 2019, October 2019, March 2020
- ▶ Soil Gas Sampling:
 - ▶ Completed week of 30 January 2017
 - ▶ Installed soil gas ports and sampled week of 4 February 2019 at the commercial building (Doctors office).
- ▶ Abandoned 8 wells with Edwards Aquifer Authority.
- ▶ November 2020: Completed Final Design.

GROUNDWATER SAMPLING RESULTS



GROUNDWATER SAMPLING RESULTS

EPA Maximum Contaminant Level for PCE is 5 ug/L

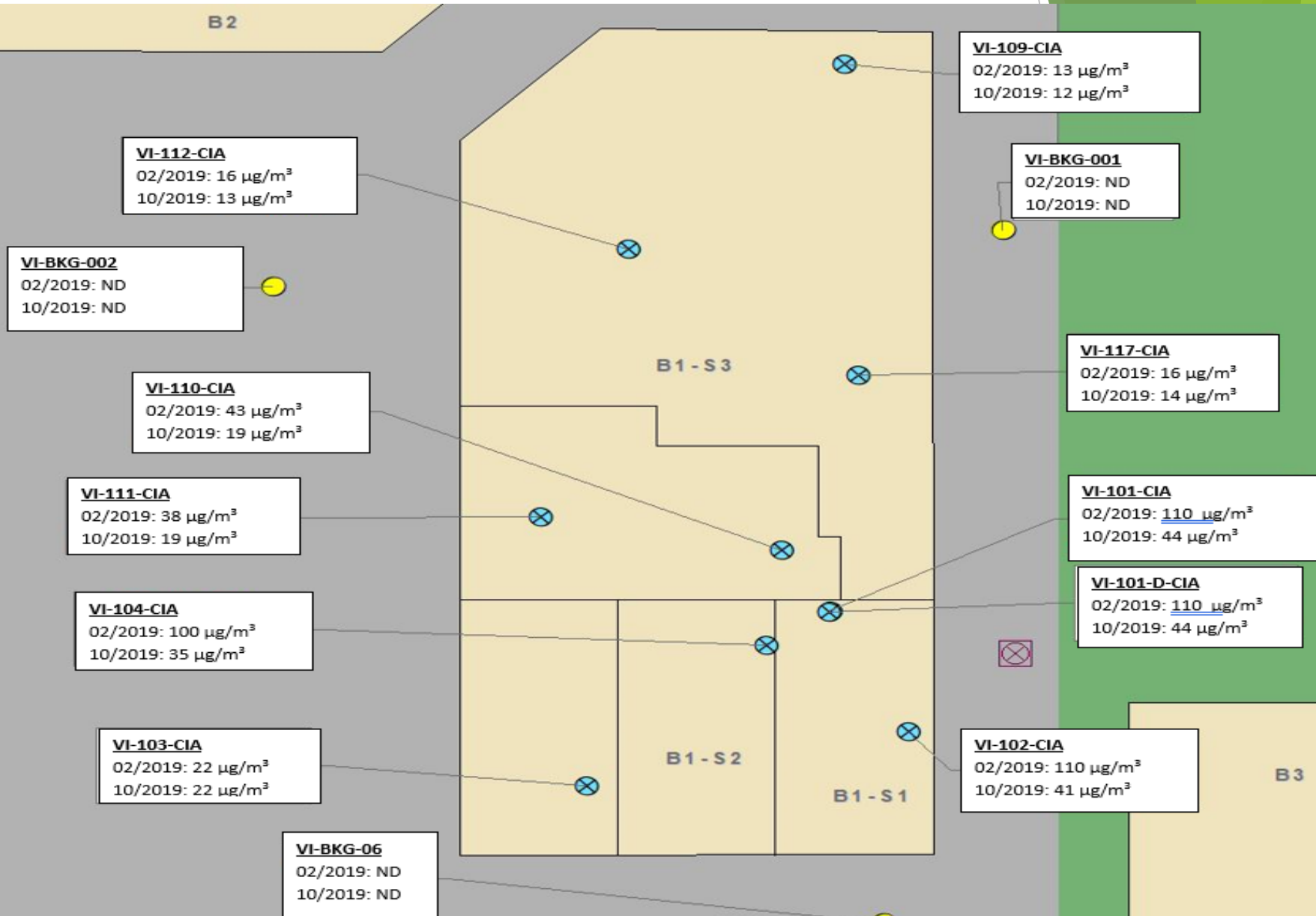
Well	December 2016 µg/L (PCE)	August 2017 µg/L (PCE)	February 2019 µg/L (PCE)	August 2019 µg/L (PCE)
DW-36	26.9	57	No Access	No Access
DW-403	5.3	2.3 (2.7)	3 (3)	2.7 J (2.7 J)
DW-404	1 U (1 U)	14	1 U	5 U
DW-405	1 U	1 U	.2 U	5 U
DW-406	1 U	1 U	1 U	5 U
DW-407	89.9	6.9	2	7.7
DW-408	65.4	190	83	180
DW-409	1 U (1 U)	No Access	1 U	5 U
DW-410	1 U	1 U	1 U	5 U
DW-411	1 U	1 U	1 U	5 U
DW-412	1 U	1 U	1 U	5 U
DW-413	1 U	1 U	1 U	5 U
DW-414	248 (264)	200 (200)	120 (120)	180
DW-415	163	110 (1100)	55 (45)	92
DW-416	1 U	1 U	1 U	5 U
DW-417	1 U	1 U	1 U	5 U
Terracon-1	133	Dry	43	Dry
Terracon-2	1350	530	330.E	280
USGS-18	1 U	1 U	1 U	5 U
USGS-42	3400	2500	4000.E	2700
USGS-50	1 U	1 U	1 U	5 U
USGS-51	1 U	1 U	1 U	5 U
USGS-58	1 U	No Access	1 U	5 U

AOI 1 - Savings Square Building 1 and Building 3



AOI 1 - Savings Square

Air Sampling Results, AOI 1 Building 1



AOI 1 - Savings Square

Air Sampling Results, AOI 1 - Building 3



B1

B3

VI-118-CIA

02/2019: 7.1 µg/m³

10/2019: 6.1 µg/m³

VI-107-CIA

02/2019: 7.8 µg/m³

10/2019: 5.5 µg/m³

VI-108-CIA

02/2019: 9.0 µg/m³

10/2019: 5.0 µg/m³

AIR SAMPLING RESULTS

EPA Industrial Air Risk Screening Level is $47\mu\text{g}/\text{m}^3$

Location	January 2017 $\mu\text{g}/\text{m}^3$	August 2017 $\mu\text{g}/\text{m}^3$	February 2019 $\mu\text{g}/\text{m}^3$	October 2019 $\mu\text{g}/\text{m}^3$
VI-101	110	110	110 (110)	44 (44)
VI-102	93	55.7	110	41
VI-103	12	3.60	22	22
VI-104	100	18.8	100	35
VI-107	10	6.93	7.8	5.5
VI-108	8.1	5.71	9.0	5.0
VI-109	12	9.58	13	12
VI-110	22	22.3	43	19
VI-111	22	23.9	38	19
VI-112	12	40.4	16	13
VI-117	15	45.1	16	14
VI-118	64	ND	7.1	6.1
VI-210	0.77	ND	0.51 (0.51)	1.4 (1.5)
VI-230	0.72	9.29	0.47	1.5
VI-BKG-001	NS	ND	ND	ND
VI-BKG-002	NS	36.8	ND	ND
VI-BKG-003	NS	ND	ND	ND
VI-BKG-03	0.85	NS	NS	NS
VI-BKG-05	0.56	NS	NS	NS
VI-BKG-06	ND	NS	NS	NS

AOI 2 - Pilgrim Dry Cleaner Building and Building C



AOI 2 - Air Sampling Results AOI 2 - Building C

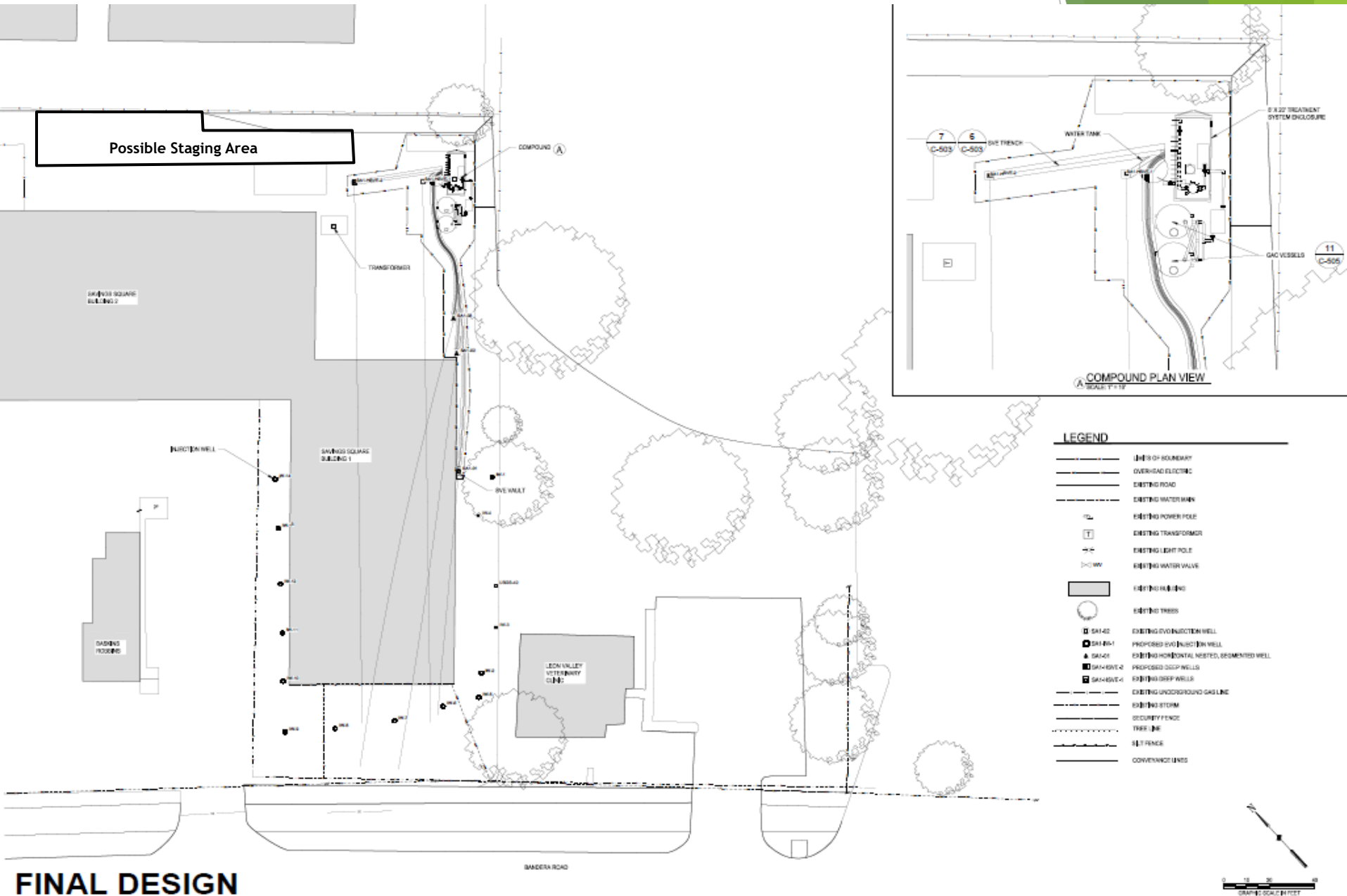


AOI 2 - Air Sampling Results AOI 2 - Pilgrim Dry Cleaner Building

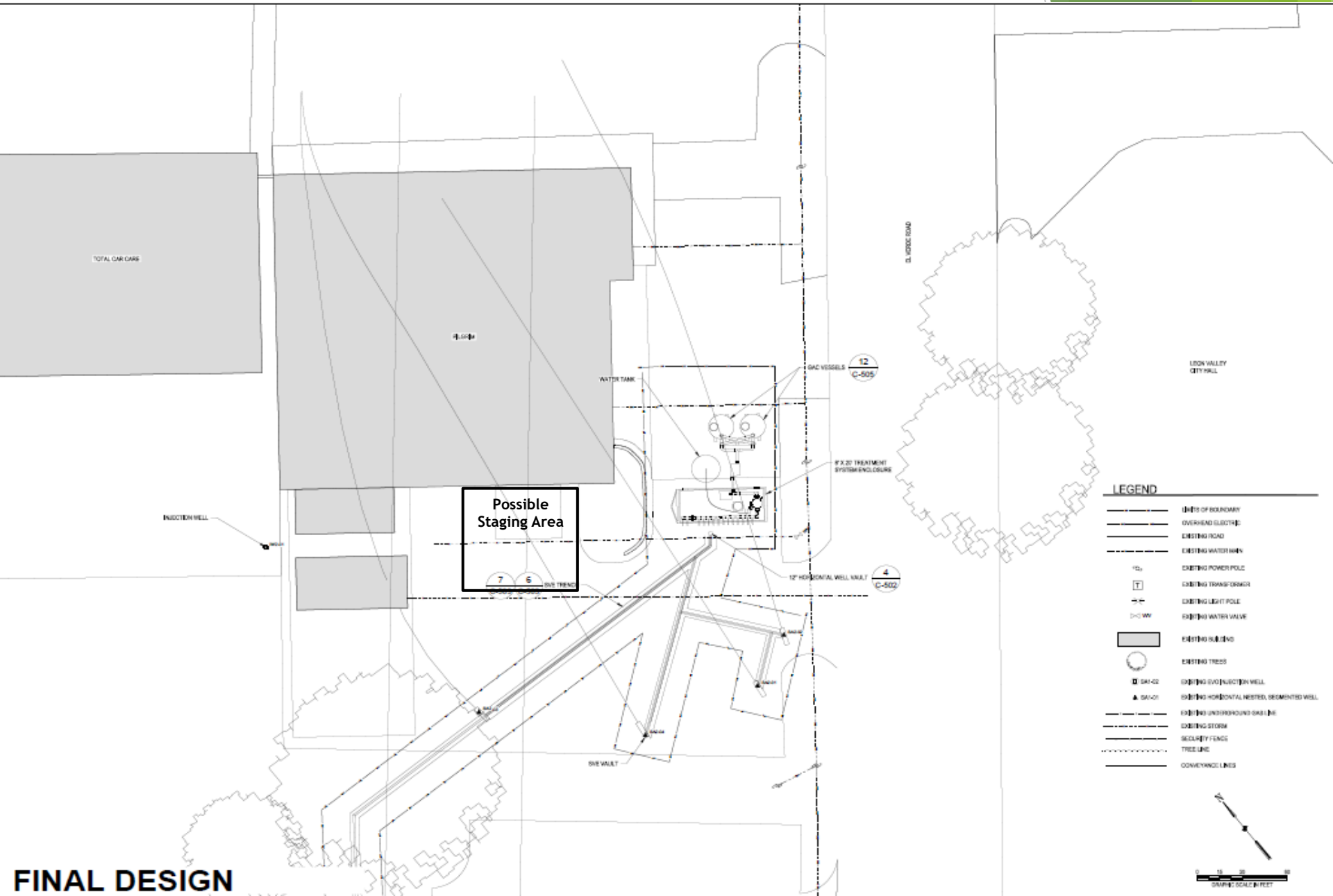
- ▶ March 2020:
 - One sub-slab soil vapor sample
 - Three indoor air samples

Sample Location	PCE Result (ug/m3)
VI-236-SGA-03172020 (sub slab)	5,100
VI-237-CIA-03172020	.50
VI-238-CIA-03172020	.48
VI-239-CIA-03172020	.42

Final Design AOI 1



Final Design AOI 2



Possible Staging Area

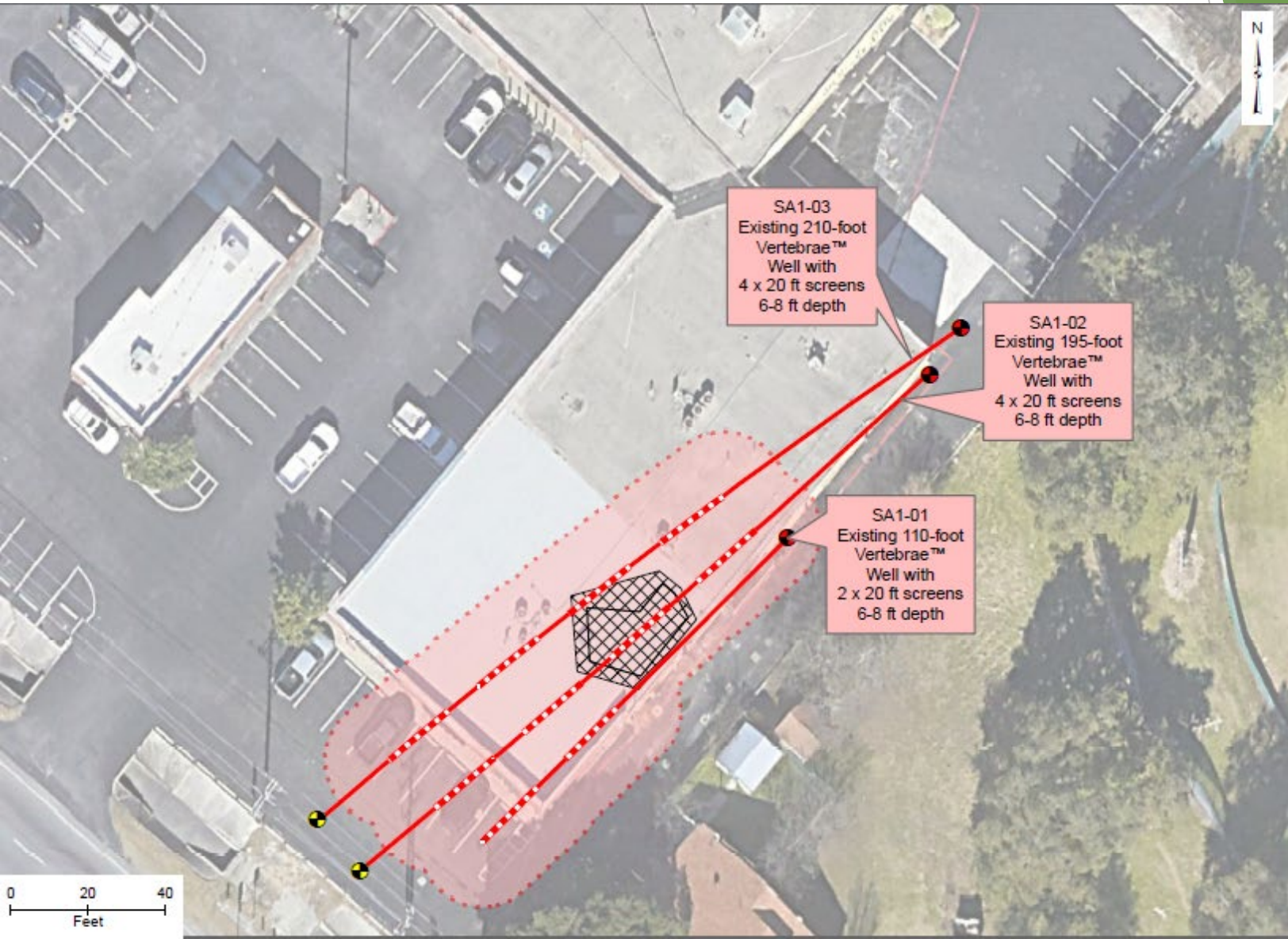
LEGEND	
	LINE OF BOUNDARY
	OVERHEAD ELECTRIC
	EXISTING ROAD
	EXISTING WATER MAIN
	EXISTING POWER POLE
	EXISTING TRANSFORMER
	EXISTING LIGHT POLE
	EXISTING WATER VALVE
	EXISTING BUILDING
	EXISTING TREE
	EXISTING VERTICAL Suction WELL
	EXISTING HORIZONTAL HETER. SEGMENTED WELL
	EXISTING UNDERGROUND GAS LINE
	EXISTING STORM
	SECURITY FENCE
	TREE LINE
	CONVEYANCE LINES



FINAL DESIGN

Final Design - AOI 1

Shallow Vertebrae™ Wells



SA1-03
Existing 210-foot
Vertebrae™
Well with
4 x 20 ft screens
6-8 ft depth

SA1-02
Existing 195-foot
Vertebrae™
Well with
4 x 20 ft screens
6-8 ft depth

SA1-01
Existing 110-foot
Vertebrae™
Well with
2 x 20 ft screens
6-8 ft depth



Recently Installed
Vertebrae™ Well
Entry Vault

Recently Installed
Vertebrae™ Well
Exit Vault

Recently Installed
Vertebrae™ Well
Blank Casing

Recently Installed
Vertebrae™ Well
Screen

Approximate SVE
Zone of Influence

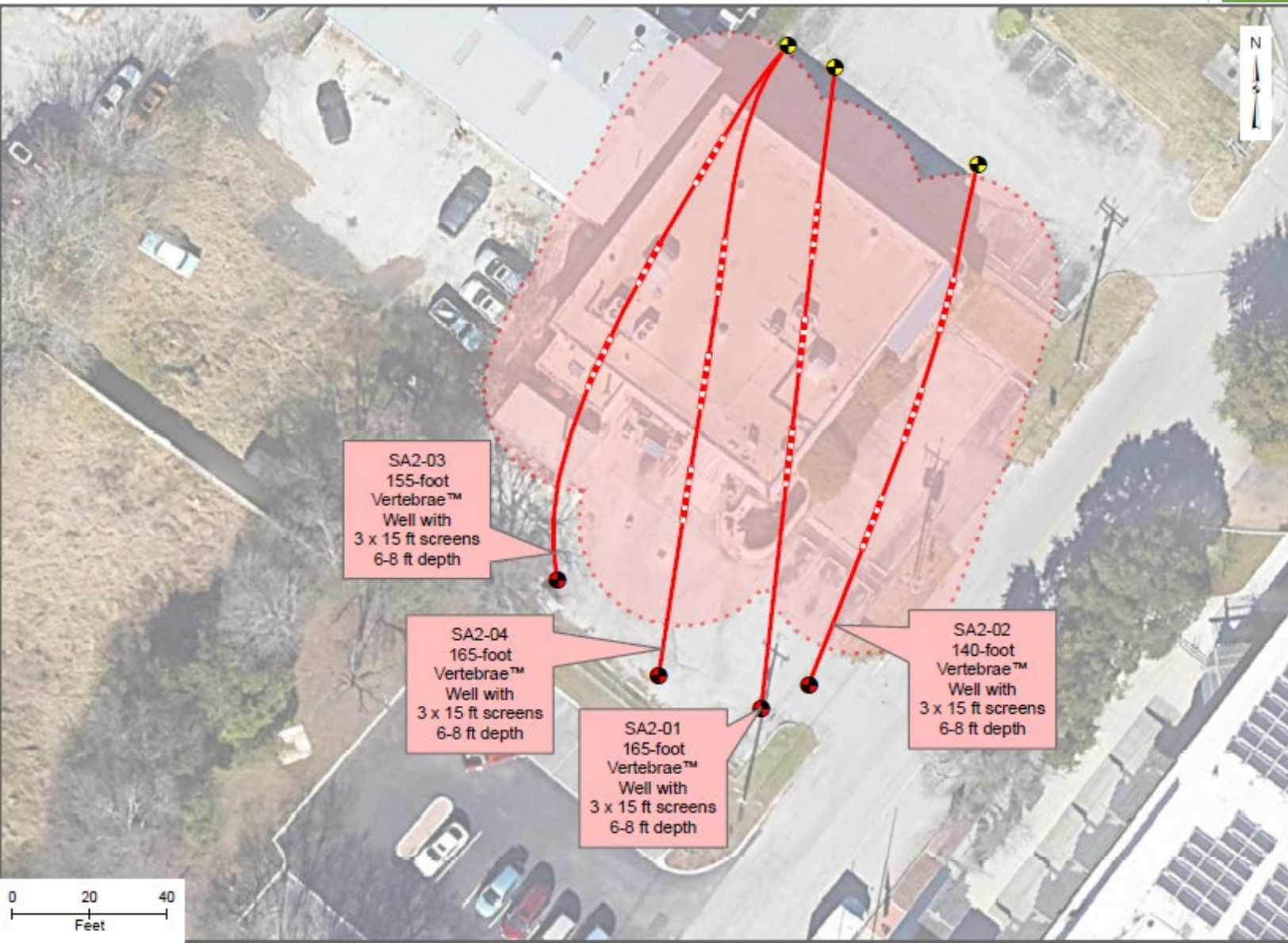
Approximate
Location of
Estimated
Excavation Area¹

Notes:
1. Estimated excavation source is Figure 5 of Appendix G of the Supplemental Remedial Investigation Report - Area of Interest 1, Bandera Groundwater Plume Site, August 2012.
2. Depths are relative to ground level at point of entry.

AOI = Area of Investigation
ft = feet
TM = trademark

Final Design - AOI 2

Shallow Vertebrae™ Wells

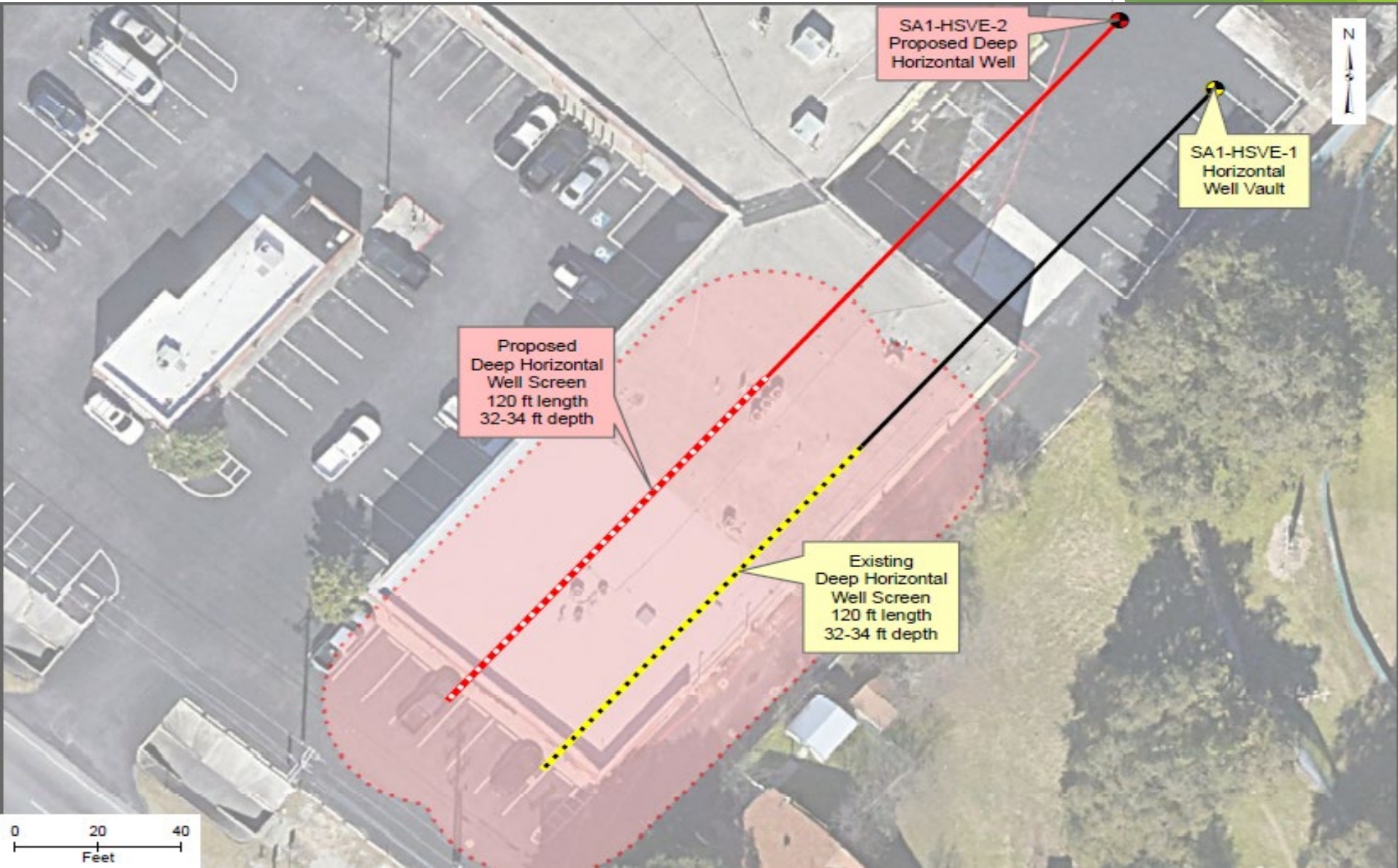


- Recently Installed
Vertebrae™ Well
Entry Vault
- Recently Installed
Vertebrae™ Well
Exit Vault
- Recently Installed
Vertebrae™ Well
Blank Casing
- Recently Installed
Vertebrae™ Well
Screen
- ⋯ Approximate SVE
Zone of Influence

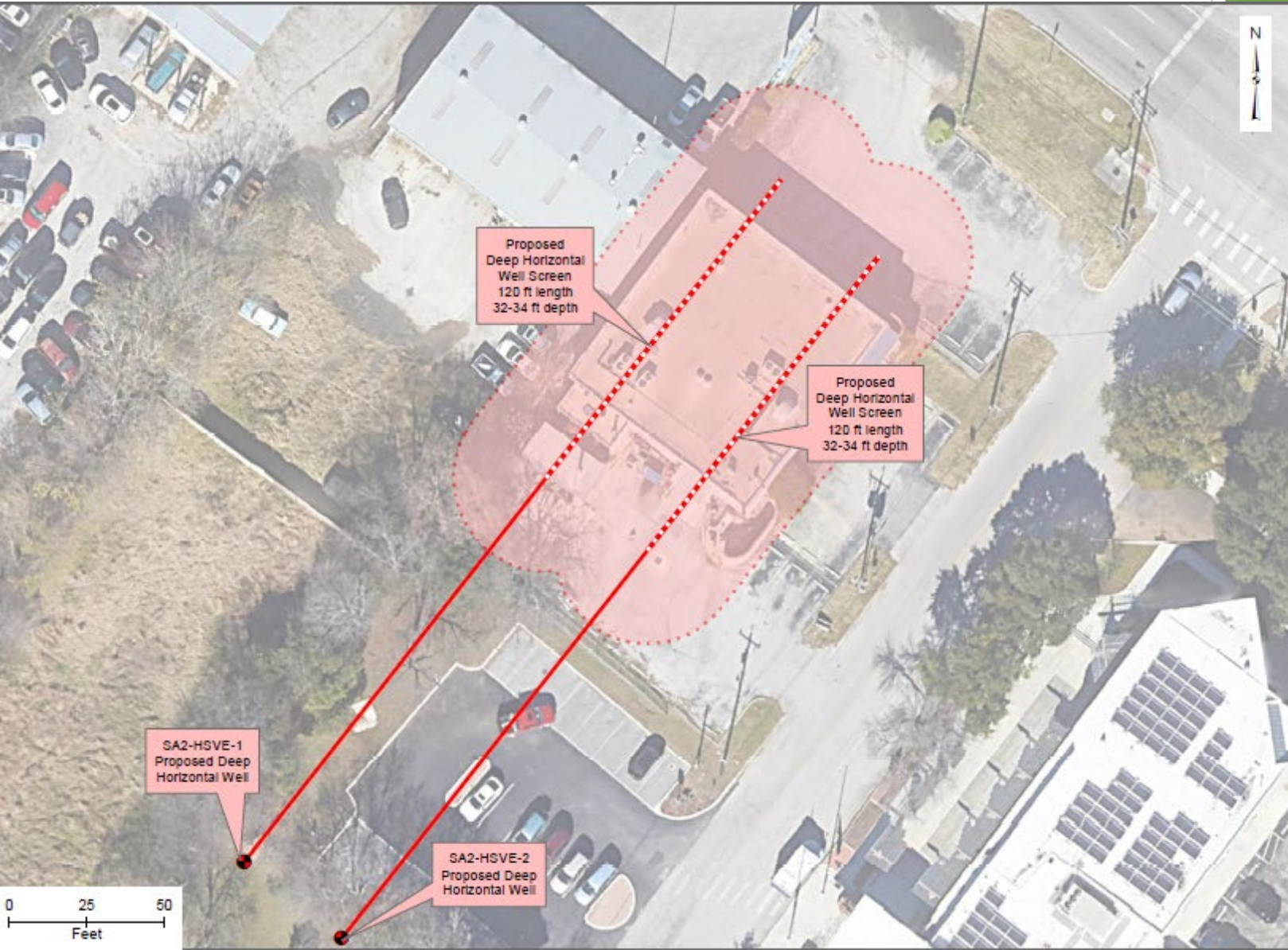
Note:
Depths are relative to
ground level at point of
entry

AOI = Area of Investigation
ft = feet
TM = trademark

Final Design - AOI 1 Deep SVE Wells



Final Design - AOI 2 Deep SVE Wells

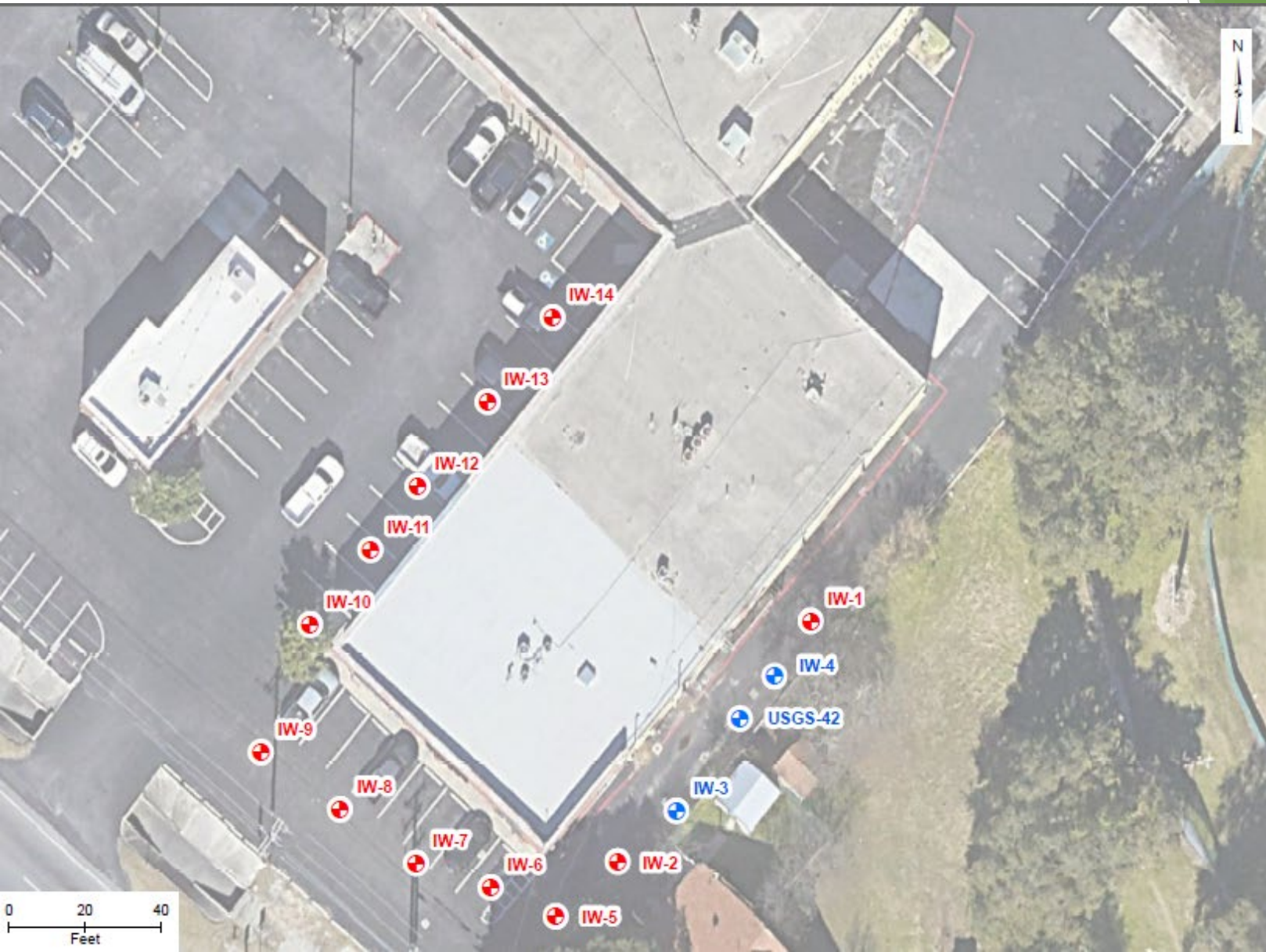


- Proposed Deep Horizontal Well Vault
- Proposed Deep Horizontal Well Blank Casing
- Proposed Deep Horizontal Well Screen
- Approximate SVE Zone of Influence

Note:
Depths are relative to ground level at point of entry

AOI = Area of Investigation
ft = feet

Final Design - AOI 1 Injection Well Layout



- Existing Amendment Injection Well
- Proposed Amendment Injection Well

Final Design - AOI 2 Injection well Layout



Remedial Action

- ▶ Overall Objectives
- ▶ Task Order Scope of Work and Sequencing
- ▶ Anticipated Progression of Work & Construction Milestones
- ▶ Communications

HGL's Construction Objectives

- ▶ Construct EPA's remedial design with highest regard for safety of the public, property owners, staff, and subcontractors
- ▶ Complete work in a timely and responsive manner with limited disruptions

HGL's Construction Objectives (Cont'd)

- ▶ Communicate effectively on schedule.
- ▶ Early identification of anticipated periods of constrained access.
- ▶ Operate remedies with focus on remedial action objectives and optimization framework; long-term presence with intent in getting done as quickly as possible.

Task Order Scope of Work

- Contract Duration: ~6 years (2022 - 2028)
- Tasks:
 - Planning
 - Project plans (e.g., site management plan, quality assurance project plan, waste management plan, health and safety, etc.), access agreements
 - Mobilization
 - Set up field trailer, perform utility locates, pre-construction field survey, pre-construction schedule communications

Task Order Scope of Work (Cont'd)

- ISB Construction
 - Installation of 13 injection wells, well development, aquifer testing
- ISB Injections
 - Amendment injections per RD, rate established by aquifer testing
 - First injection in summer 2023
 - 2nd injection potentially in 2025 or 2026

Task Order Scope of Work (Cont'd)

- SVE System Construction
 - *Offsite fabrication of SVE system* (long lead, critical path)
 - Installation of horizontal SVE wells
 - Construction of subsurface piping to connect new and existing SVE wells to the SVE systems
 - Installation of SVE systems, testing, startup
 - Final site inspection
 - Reporting

Task Order Scope of Work (Cont'd)

- SVE System Operation
 - Weekly inspections and air sampling to evaluate condition of GAC filters and changeout schedule.
 - GAC changeout and recycling/regeneration
 - Optimization (evaluate operation cycle - pulsed/intermittent operations likely)

Task Order Scope of Work (Cont'd)

- Groundwater Monitoring
 - Monitoring of current plumes
- Soil Vapor/Indoor Air Monitoring
 - Evaluate effectiveness of injected amendment at creating conditions leading to biodegradation of solvent contamination
- Investigation Derived Waste (IDW) Management
 - Drums and rolloffs will be onsite during construction for solid and liquid IDW

Anticipated Construction Milestones

- ▶ Planning: Current through Feb 2023
- ▶ Mobilization: March/April 2023 (ISB)
- ▶ In-Situ Bioremediation:
 - ▶ Construction/Injection: April-June 2023
 - ▶ Year 1 of operations: June-May 2024
 - ▶ Years 2-5 operations: June 2024-September 2028
- ▶ Soil Vapor Extraction :
 - ▶ Construction: May-July 2023
 - ▶ Years 1-5 operations: July 2023-September 2028

PATH FORWARD

- ▶ **December 2022: Groundwater, Soil Vapor, and Indoor Air sampling**
- ▶ **Spring 2023: RA Field Mobilization**
- ▶ **Community Advisory Group Updates**
- ▶ **Questions/Discussion**

EPA WEBSITE:

<https://www.epa.gov/superfund/bandera-road>

CAG WEBSITE:

<https://www.leonvalleytexas.gov/bc-cag>