



Former Aboveground Storage Tank PB-881 Dike Roadway Release Remedial Investigation and Final Report (Public Information Session)

Former Philadelphia Energy Solutions Refinery, Facility ID No. 51-33620
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM)
3144 West Passyunk Avenue, Philadelphia, Pennsylvania

Presented by:

Kevin Long (Principal Consultant) & Rachel Weaver (Sr. Project Consultant)

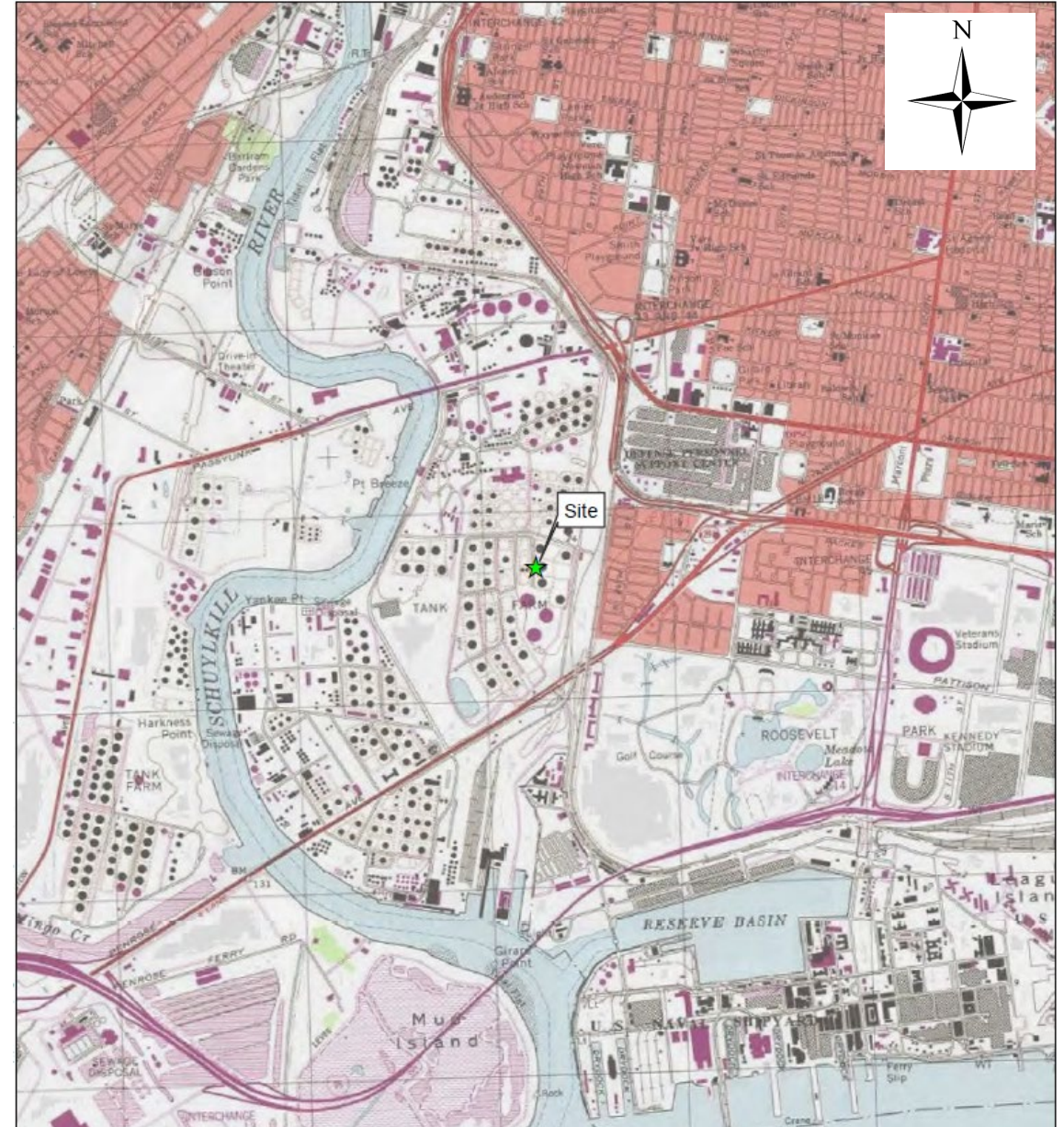
Terraphase Engineering Inc.

February 12, 2024



PB-881 Dike Roadway Release Incident Summary

- November 16, 2021
- Removal of **overhead pipelines** west of tank PB-881
- Pipelines previously used to transfer **crude oil** during refinery operation
- **Out-of-service** for more than 10 years



USGS Philadelphia (1995) 7.5 Minute Quadrangle

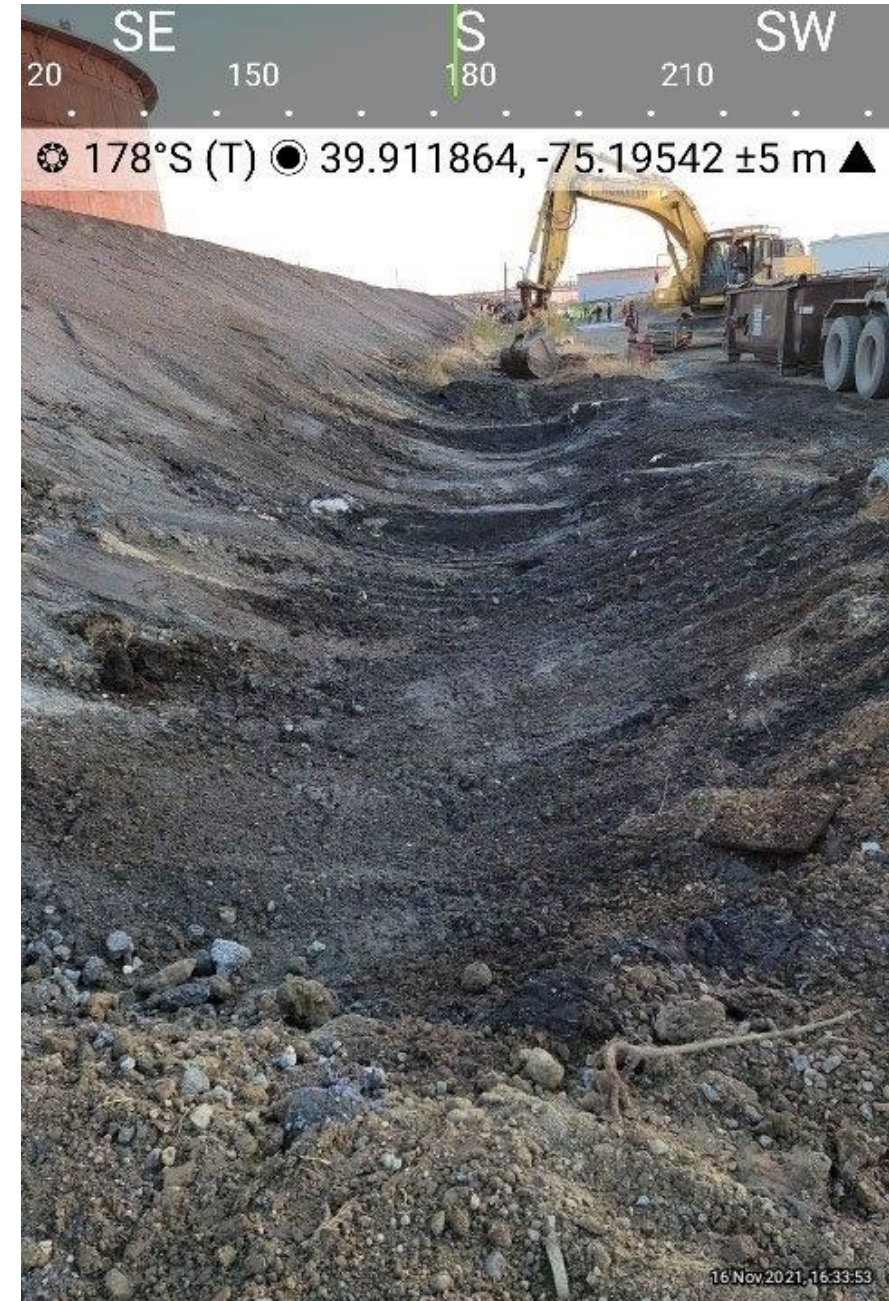
PB-881 Dike Roadway Release Incident Summary

- Resulted in **three small** separate impacted areas
- Release of ~ 500 gallons total of a **water and oil** mixture across the three areas



PB-881 Dike Roadway Release Incident Summary

- Resulted in **three small** separate impacted areas
- Release of ~ 500 gallons total of a **water** and **oil** mixture across the three areas
- **Prompt** interim **response** included shallow soil excavations



PB-881 Dike Roadway Release Incident Summary

- Resulted in **three small** separate impacted areas
- Release of ~ 500 gallons total of a **water** and **oil** mixture across the three areas
- **Prompt** interim **response** included shallow soil excavations
- Approx. 100 tons (~ 60 yd³) of **soil removed** and **transported off-site** to a disposal facility in New Jersey



Pennsylvania's Land Recycling Program (“Act 2”)



<https://www.dep.pa.gov/Business/Land/LandRecycling/Pages/default.aspx>

- Cleanup program established in 1995
- Encourages **cleanup/reuse** of contaminated **commercial & industrial** sites
- Sets standards which are **protective** of human health and the environment
- PB-881 Dike Roadway release remediated to attain the **Statewide Health Standard** under Act 2
- One of three remediation standards which can be used to **demonstrate** that a release has been **adequately characterized** and **remediated** under Act 2
- Statewide Health Standard uses **generic risk-based cleanup levels** derived by PADEP (“Medium-Specific Concentrations”; MSCs)
- Used to demonstrate that chemical concentrations are at **acceptable** levels and considers:
 - (1) risk to human health from **direct contact** with chemicals in soil and
 - (2) the **protection of groundwater** for potable and nonpotable uses (i.e., **leaching** of chemicals in soil)

PB-881 Dike Roadway Release Site Setting & Applicable MSCs

Site Setting

- Facility is being **decommissioned** prior to **redevelopment**
- **Currently** zoned for **industrial** use
- **Future** land use will be **commercial & industrial**

Applicable MSCs

- Non-Residential Soil **Direct Contact** Exposure
- Non-Residential Used Aquifer **Soil-to-GW**

<https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Pages/Statewide-Health-Standards.aspx>

PB-881 Dike Roadway Release

Sampling and Analysis Following Removal

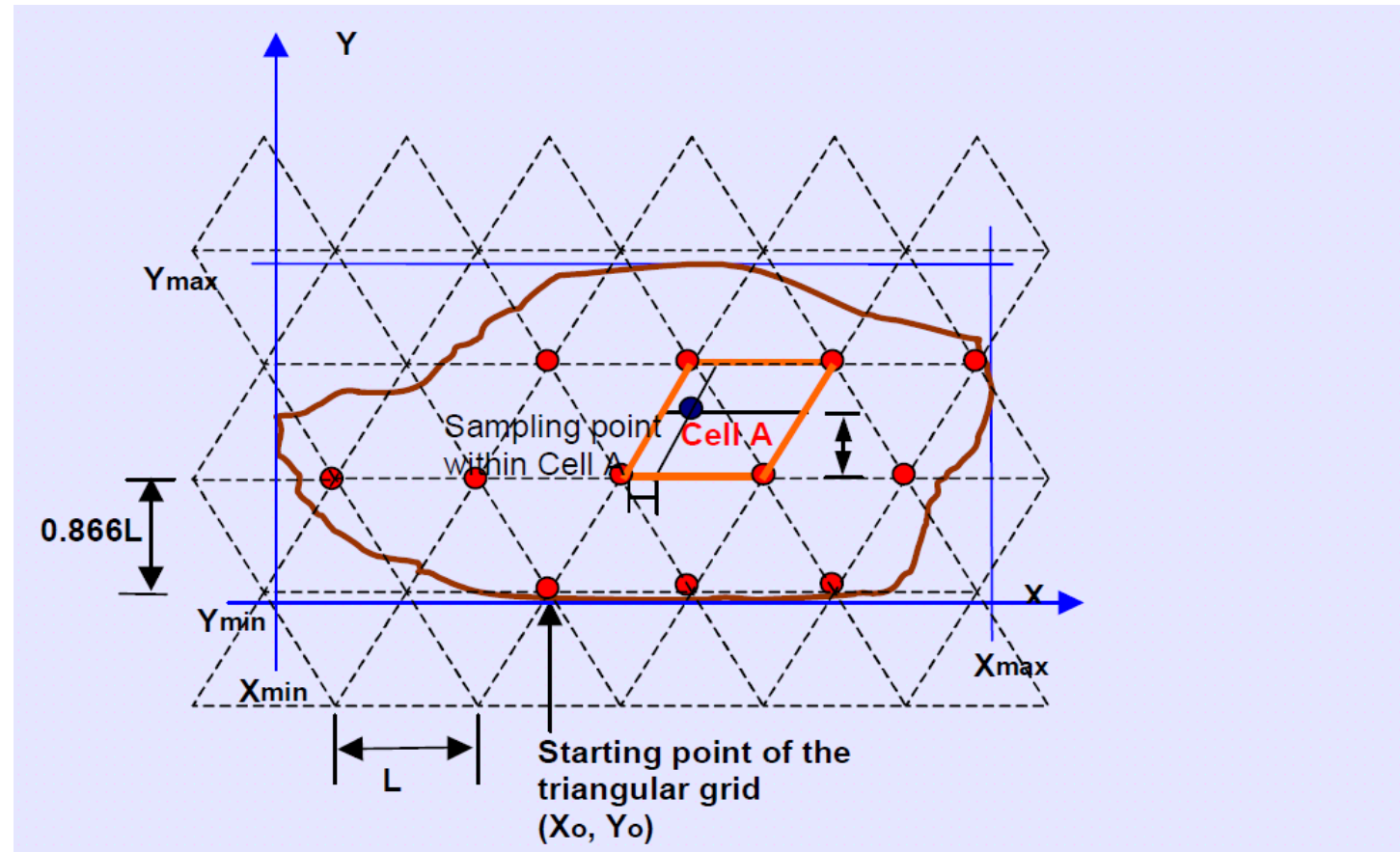
- **8** soil samples collected from **each** area following soil excavation
- Locations **randomly** selected within footprint of the excavations
- Random selection made using PADEP's *Systematic Random Sampling* tool
- Analyzed for chemicals in **crude oil** (PADEP 2014, ITRC 2018)
 - Volatile organic compounds (VOCs)
 - Semi-volatile organic compounds (SVOCs)
- Goal to remove soil contamination and **attain the Statewide Health Standard**



Pennsylvania DEP Guidance

Determining Sampling Locations - Systematic Random Sampling

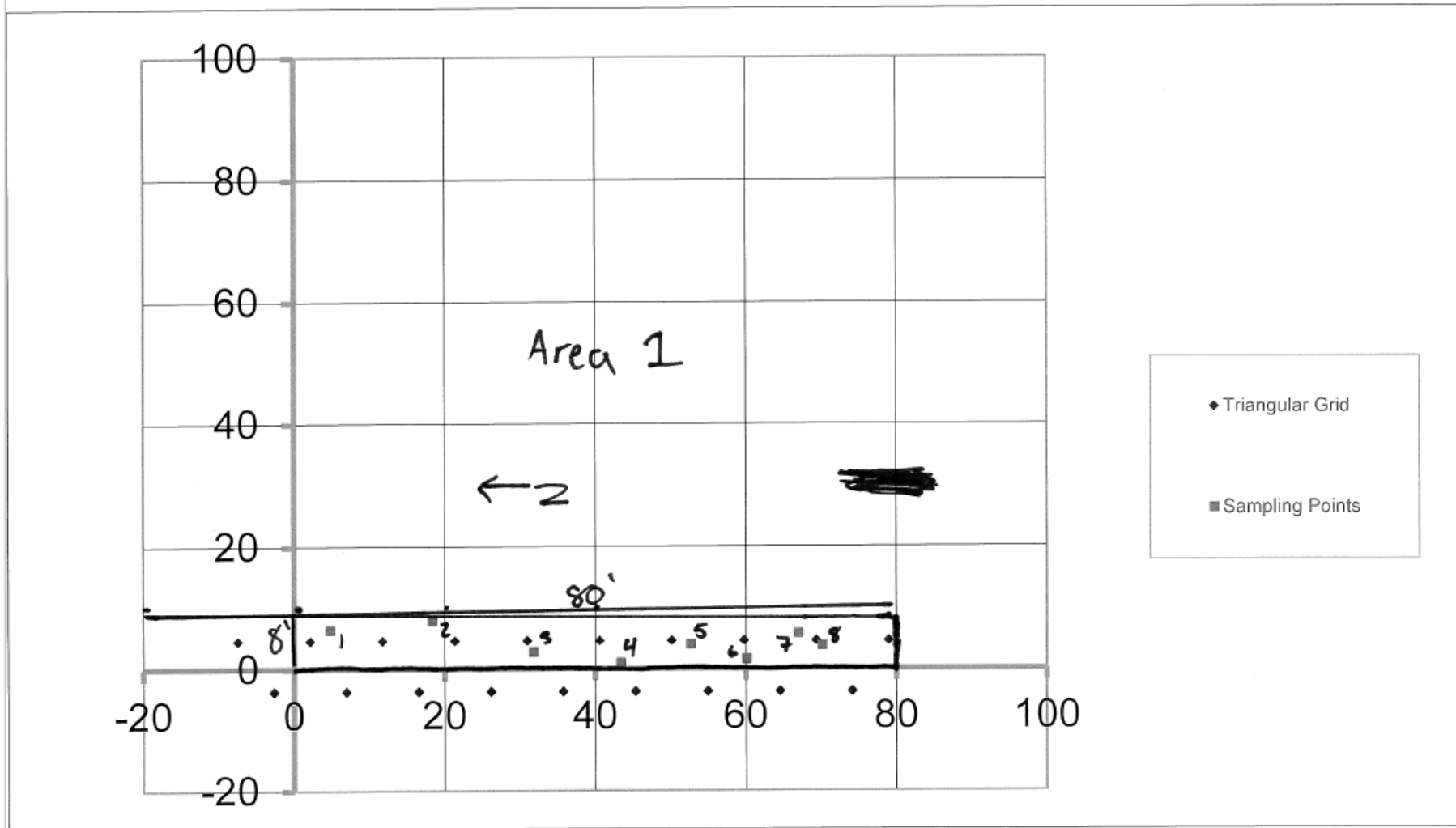
- Divides area into individual **triangles**
- Triangle areas are then used to define **diamond-shaped cells**
- 1 sampling point is **randomly** generated within each diamond-shaped cell
- The **# of samples** (i.e., the # of cells) is based upon the **size** of the **excavation area**
- No less than **8 samples**

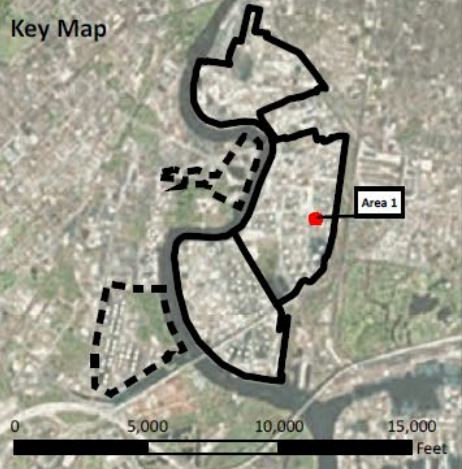


<https://files.dep.state.pa.us/EnvironmentalCleanupBrownfields/LandRecyclingProgram/LandRecyclingProgramPortalFiles/GuidanceTechTools/Help%20document%20revised%206.2018.pdf>

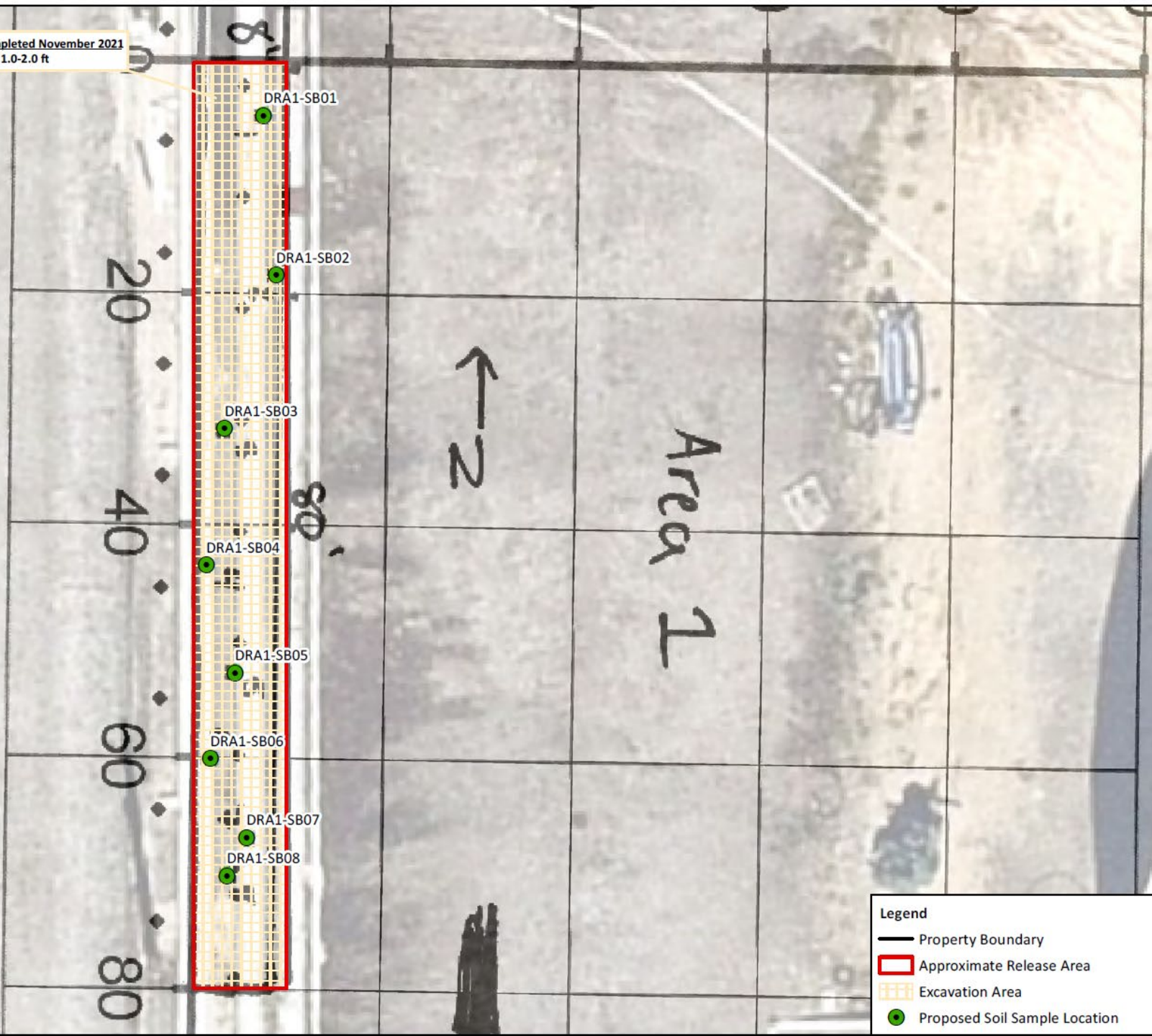
Determining Sampling Locations

PADEP's Systematic Random Sampling Workbook





Excavation Completed November 2021
Depth: Approx. 1.0-2.0 ft

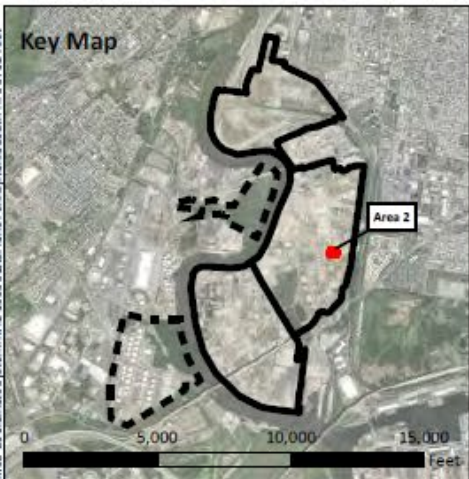


- Concentrations in all 8 soil samples < MSCs
- Demonstrated that remediation attained **Statewide Health Standard**

PB-881
Dike Roadway Release
Area 1

Legend

- Property Boundary
- Approximate Release Area
- ▤ Excavation Area
- Proposed Soil Sample Location

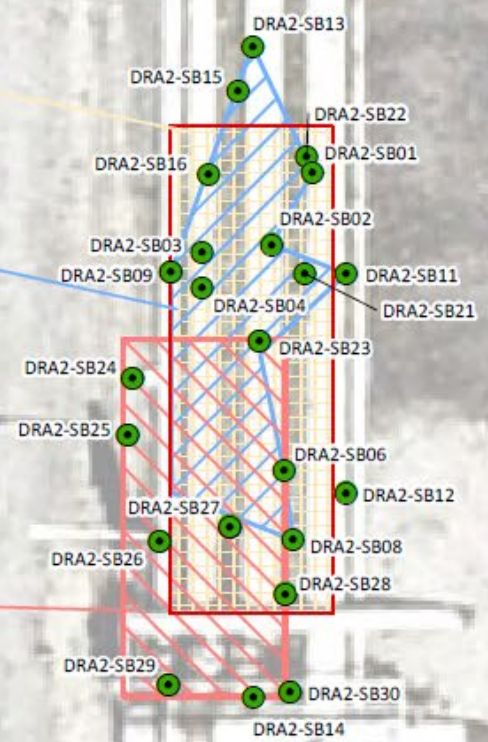


- Concentrations in soil remaining meet MSCs
- Demonstrated that remediation attained **Statewide Health Standard**

Initial Excavation Completed November 2021
Depth: 0.1 ft

Second Excavation Completed May 2022
Depth: Approx. 1.5 ft

Proposed Third Excavation



PB-881 Dike Roadway Release Area 2

Legend

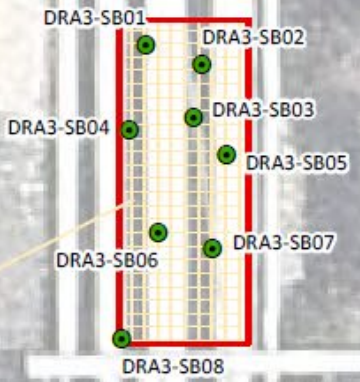
- Property Boundary
- Approximate Release Area
- Initial Excavation Area
- Second Excavation Area
- Proposed Third Excavation Area
- Proposed Soil Sample Location

Note:
Aerial imagery source NearMap 11/17/2021



- Concentrations in **all 8** soil samples < MSCs
- Demonstrated that remediation **attained Statewide Health Standard**

PB-881 Dike Roadway Release Area 3



Legend

- Property Boundary
- Approximate Release Area
- ▨ Excavation Area
- Proposed Soil Sample Location

PB-881 Dike Roadway Release

Attainment

- **Remediation** of contamination from release to **Areas 1, 2, & 3** has attained the Statewide Health Standard
- **Volatile Organic Chemicals**
 - Benzene
 - Cumene
 - Ethyl benzene
 - 1,2,4- & 1,3,5-TMB
 - Toluene
 - Xylenes
- **Semivolatile Organic Chemicals**
 - Anthracene
 - B(a)P, B(b)P, B(b)F, B(ghi)P
 - Chrysene
 - Fluorene
 - Naphthalene
 - Phenanthrene
 - Pyrene



PB-881 Dike Roadway Release Summary

- On November 16, 2021, a **release** occurred during the removal of out-of-use **pipelines** west of tank PB-881
- **Water** and **oil** from these pipelines were released to **three small areas** along the dike roadway
- Soil **removed** for **off-site** disposal
- Sampling **demonstrates** that remediation of these areas has resulted in conditions which **attain** the **Statewide Health Standard**



THANK YOU



Former Aboveground Storage Tank PB-881 Dike Roadway Release Remedial Investigation and Final Report (Public Information Session)

Former Philadelphia Energy Solutions Refinery, Facility ID No. 51-33620
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM)
3144 West Passyunk Avenue, Philadelphia, Pennsylvania

Presented by:
Kevin Long (Principal Consultant) & Rachel Weaver (Sr. Project Consultant)
Terraphase Engineering Inc.

February 12, 2024

