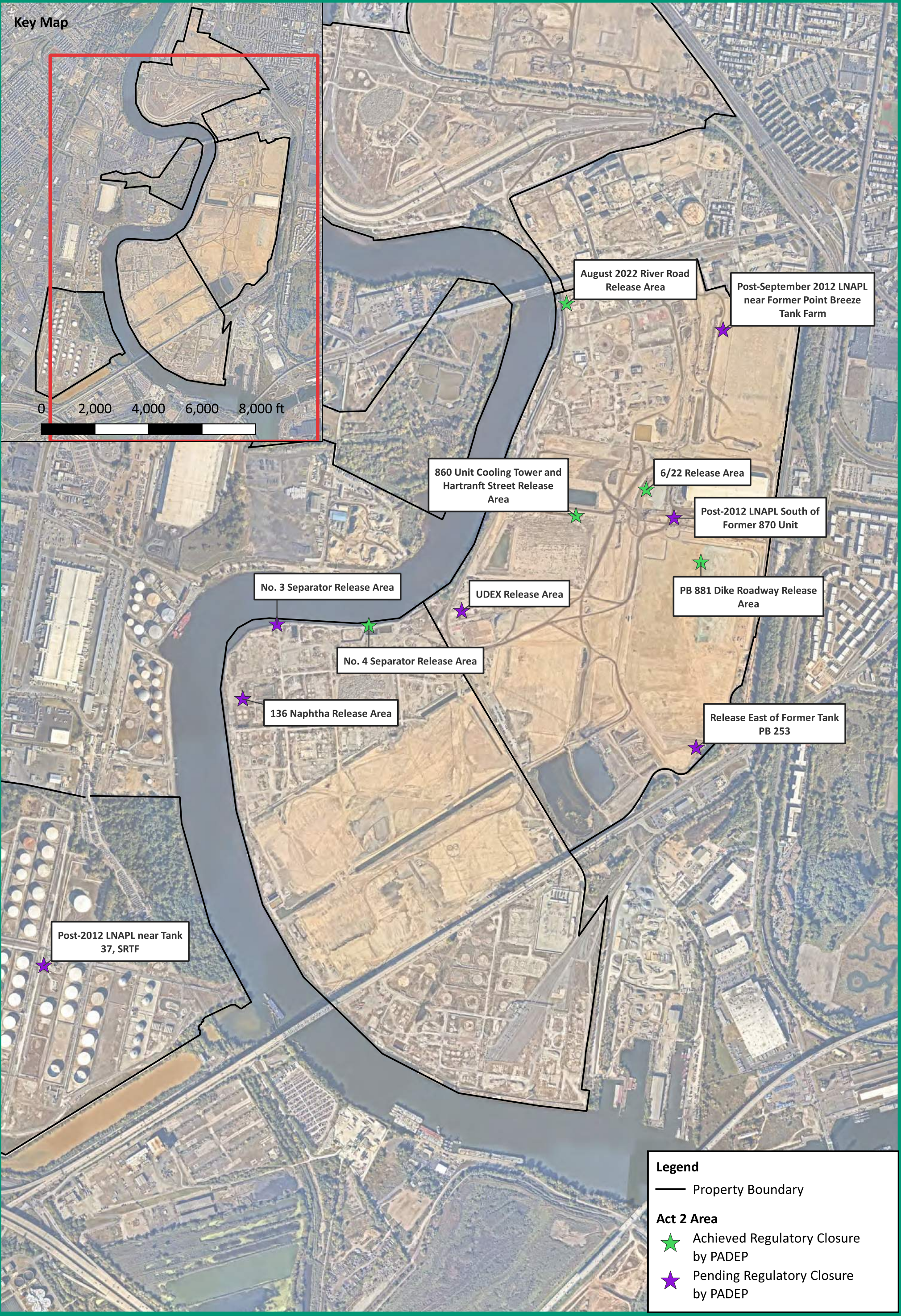




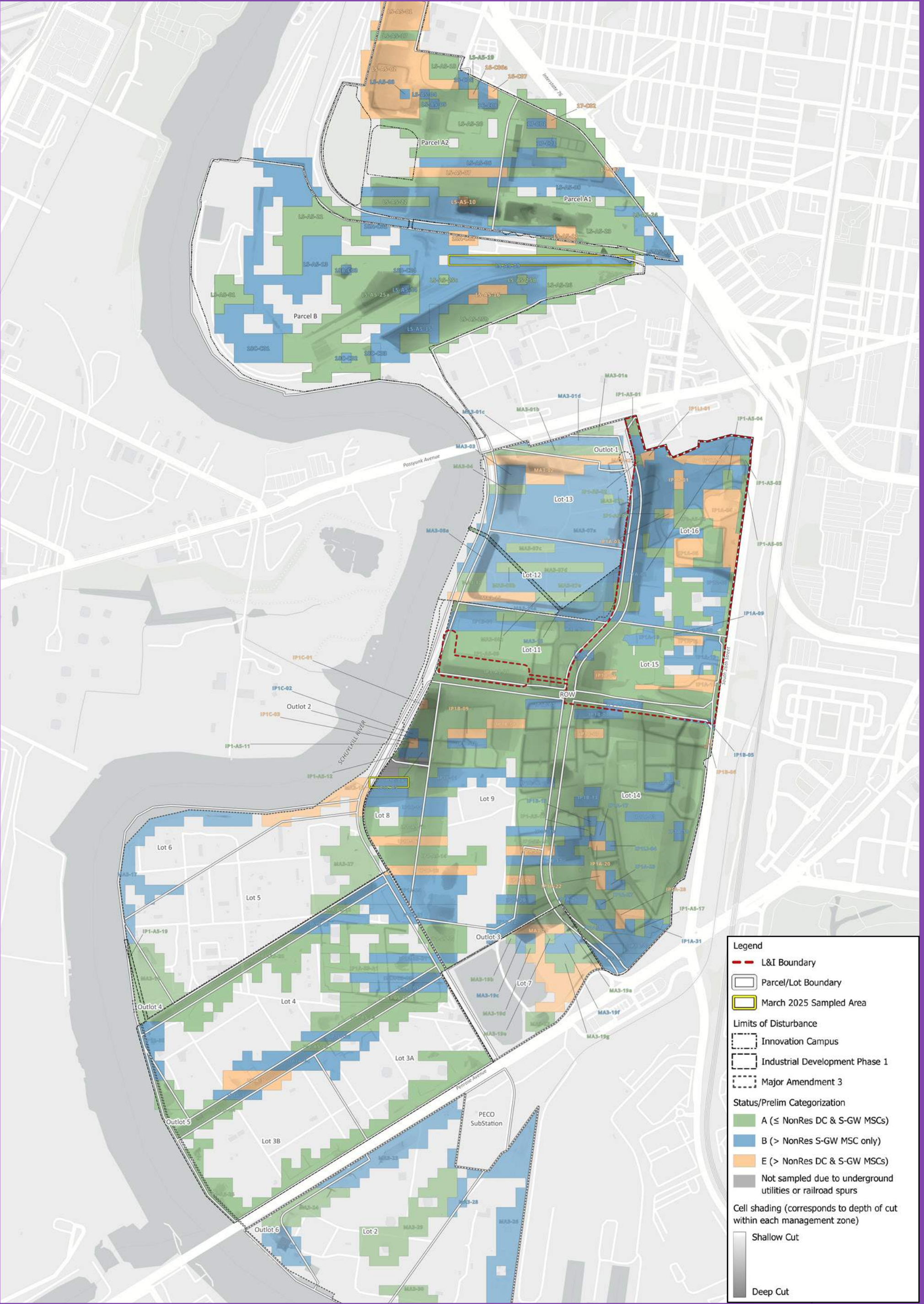
## BWD ACT 2 ACTIVITIES

- Notices of Intent to Remediate (NIR) have been submitted to PADEP for 12 releases that occurred after September 2012
- NIR formally enter releases into Pennsylvania's Land Recycling Program (Act 2)
- As additional contamination is identified, it will be addressed by BWD or Evergreen depending on the age of the release



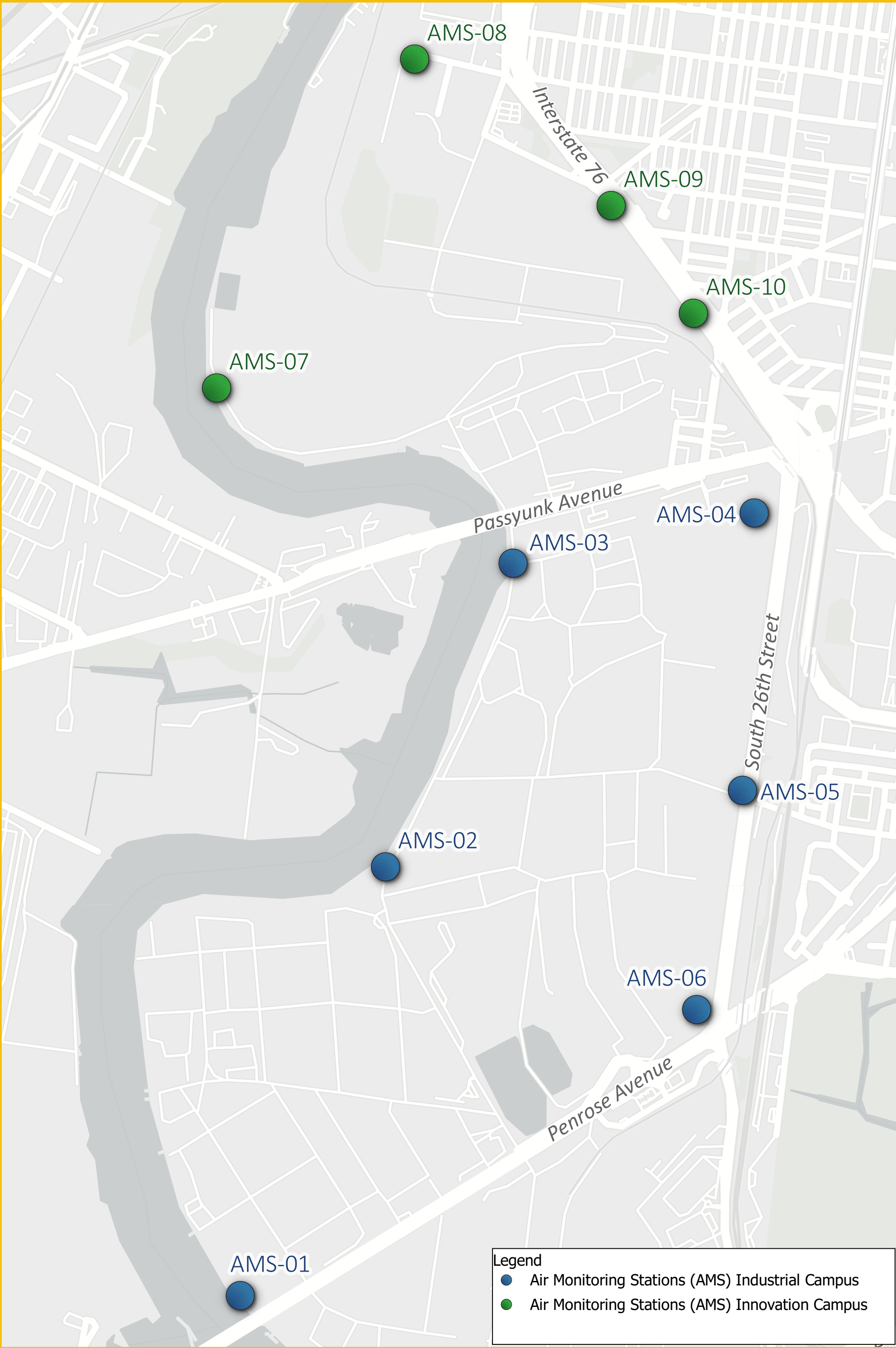
## SOIL MANAGEMENT PLAN

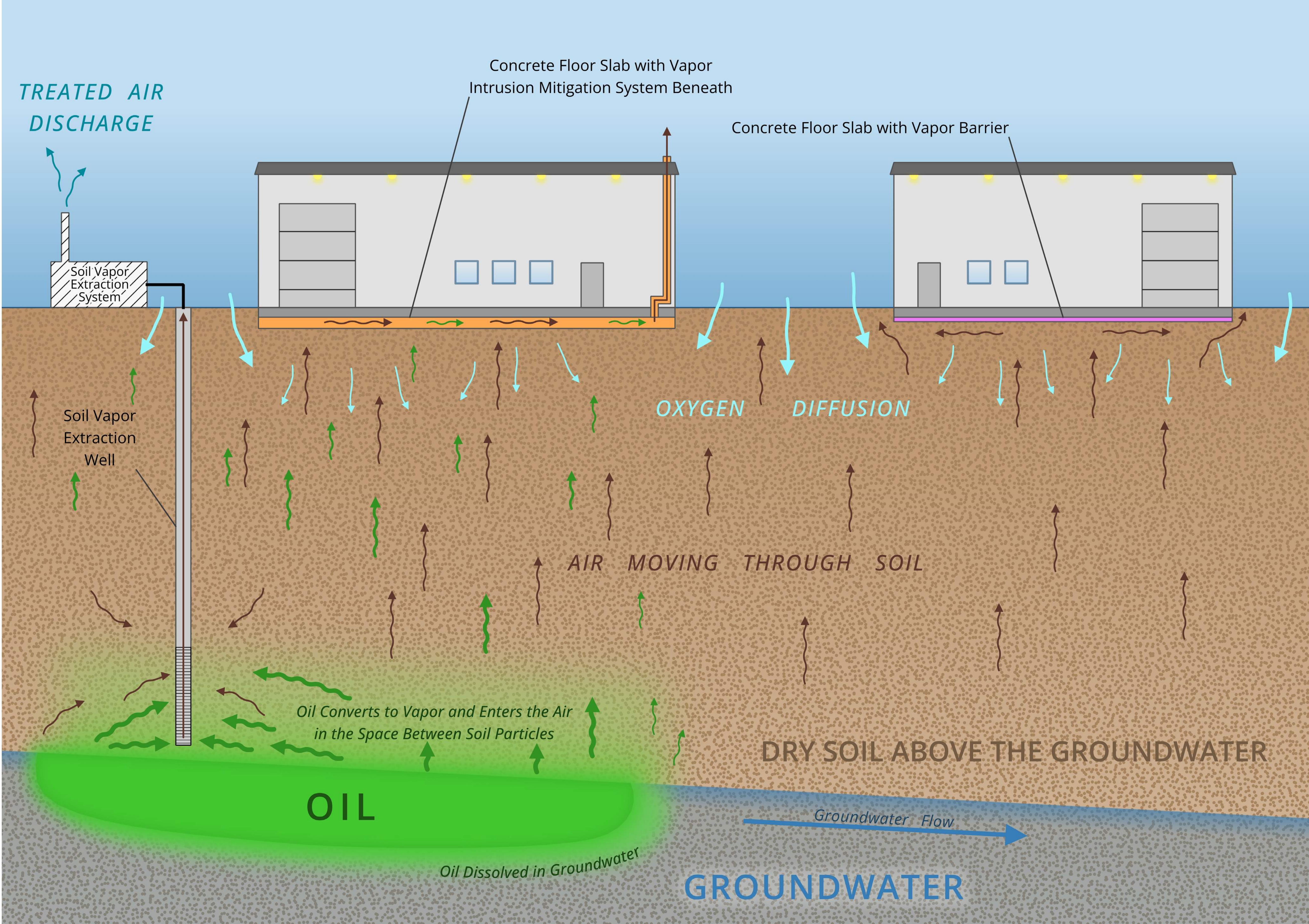
- To ensure appropriate management of soil during redevelopment BWD has agreed with PADEP on a Soil Management Plan
- Soil is sampled before it is moved at a frequency of 1 sample per 2,000 CY
- Sampling results are compared to statewide health standards to identify soil that needs to be capped
- The location of contaminated soil is documented and tracked throughout earthwork
- Capping of contaminated soil is documented



## AIR MONITORING PLAN

- Ten monitoring stations are located along the perimeter of The Bellwether District
- Total volatile organic compounds (VOCs) and dust are continuously monitored in accordance with BWD's publicly-available Air Monitoring Plan
- Monitoring reports are posted to The Bellwether District website monthly







Possible Remediation Approaches for Oil Spilled in the Ground

|                                                                                                                                                                                                                                                                                                                                                                                                                   | Direct Extraction/Skimming                                                                                                                                                  | Multi-Phase Extraction                                                                                                                                                                                                   | Soil Vapor Extraction                                                                                                                                                                      | Natural Attenuation                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| How does it work?                                                                                                                                                                                                                                                                                                                                                                                                 | Liquid oil is skimmed off the groundwater and pumped out of the ground. Groundwater is not removed. Pumped oil is placed in a tank at the surface and transported off site. | Liquid oil and nearby groundwater are pumped out of the ground. Oil is separated from the water at the ground surface. Oil is placed in a tank and transported off site. Water is treated and discharged on or off site. | Vacuum is used to pump air from underground. Movement of air converts liquid oil to vapor. Vacuum is used to pump oil vapor to the surface where it is collected and treated or destroyed. | Naturally occurring bacteria or other microorganisms break down residual oil into less harmful byproducts like carbon dioxide and water.  |
| When is this type of remediation most effective?                                                                                                                                                                                                                                                                                                                                                                  | When the volume of oil is large and localized. When pumping can begin soon after the release.                                                                               | When oil has contaminated a large area. When oil has dissolved in groundwater, and groundwater treatment is also needed.                                                                                                 | When the type of oil is easily converted from liquid to vapor phase (example: gasoline).                                                                                                   | When the potential for oil recovery by other approaches is limited. When conditions are stable, and the oil is not moving into new areas. |
| Where has this approach been used at The Bellwether District?                                                                                                                                                                                                                                                                                                                                                     | Used from 2018 through 2021 to treat a release of oil from an underground pipe referred to as the UDEX line release.                                                        | Used from 2012 through 2021 to treat a release from a former refinery process sewer referred to as the No. 3 Separator release.                                                                                          | Used from 2021 through present to treat the UDEX line release.                                                                                                                             | May be used as a final remediation step when oil has been recovered as much as possible using other approaches.                           |
| How long does it take?                                                                                                                                                                                                                                                                                                                                                                                            | Months to a few years                                                                                                                                                       | Multiple years (typically more than 5)                                                                                                                                                                                   | Multiple years (typically less than 5)                                                                                                                                                     | Many years                                                                                                                                |
| Summary: The Bellwether District is using multiple remediation approaches to address oil that was historically spilled into the ground at this site. Different remediation approaches are used depending on the type of oil released and whether or not groundwater has been significantly contaminated. During and after active remediation, oil in the subsurface is also broken down through natural processes |                                                                                                                                                                             |                                                                                                                                                                                                                          |                                                                                                                                                                                            |                                                                                                                                           |

Possible Remediation Approaches for Soil Contamination

|                                                                                                                                                                                                                                                                                                                                                                                             | Excavation & Off-Site Disposal                                                                                                                                                                                                                    | Cap/Engineered Barrier                                                                                                                                        | Phytoremediation                                                                                                                                                                                                                                                                                                                                                                   | Bioremediation                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| How does it work?                                                                                                                                                                                                                                                                                                                                                                           | Soil is excavated and transported in trucks to a landfill for disposal. New soil is hauled from off-site sources to backfill the excavations.                                                                                                     | Clean soil, concrete, or asphalt is placed at the ground surface so that the contaminated soil cannot be touched.                                             | Specific plant species store contamination in their roots or help break down chemicals into less harmful byproducts.                                                                                                                                                                                                                                                               | Bacteria or other microorganisms that are either already present in the soil or are injected into the ground break down chemicals into less harmful byproducts.                   |
| When is this type of remediation most effective?                                                                                                                                                                                                                                                                                                                                            | When the area and volume of contamination is localized and clearly defined. When the contaminated soil is close to the ground surface. When the area surrounding the contaminated soil is not contaminated or is significantly less contaminated. | When the contaminated area is widespread. When multiple types of contaminants are present, like petroleum hydrocarbons and metals.                            | When contamination is localized in a small footprint. When activities that would interfere with plant growth do not need to occur in the treatment area. When contamination is present below the groundwater table where plant root systems "drink." When the contamination is located at a depth that plant root systems can reach. When a single type of contaminant is present. | When contamination is present below the groundwater table where microbes typically live. When the contaminants are organic compounds, like petroleum hydrocarbons but not metals. |
| Where has this approach been used at The Bellwether District?                                                                                                                                                                                                                                                                                                                               | At multiple locations throughout the property.                                                                                                                                                                                                    | Has not yet been used. Development features like buildings, parking areas, and landscape features may be used as caps to support eventual regulatory closure. | Not expected to be used because contamination not addressed through excavations and off-site disposal is spread out (not localized), much of the contamination is above the groundwater table, and multiple different types of contaminants are present.                                                                                                                           | Not expected to be used because much of the contamination is above the groundwater table and contaminants that are not treatable with bioremediation (like metals) are present.   |
| How long does it take?                                                                                                                                                                                                                                                                                                                                                                      | Weeks to months                                                                                                                                                                                                                                   | Months to years to construct                                                                                                                                  | Many years                                                                                                                                                                                                                                                                                                                                                                         | Multiple years                                                                                                                                                                    |
| Summary: Excavation & Off-Site Disposal and Caps/Engineered Barriers are the primary remediation approaches for contaminated soil at The Bellwether District. Excavation is used to address contaminated soil in localized areas. Engineered Barriers will be used to address more spread out soil contamination. The barriers will be inspected and maintained after they are constructed. |                                                                                                                                                                                                                                                   |                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                   |