

East Tennessee Technology Park Groundwater Update Sam Scheffler, Groundwater & Water Quality Program Manager June 2024



#### **Overview**

- Background
- DOE's Cleanup Strategy
- East Tennessee Technology Park (ETTP) Groundwater sub-units and status
  - K-31/K-33
  - Main Plant Area (MPA)
  - Zone 1
- Questions







#### **Cleanup strategy and timeline**

1991

Tri-party Federal Facility Agreement signed

DOE, U.S. EPA, State of Tennessee

1990s

**Early actions** 

Off-site contamination

High-risk/high-priority releases to the environment 2000s Watershed Interim Records of Decision signed

Addresses numerous contaminant sources, building demolition projects 2000s - 2024

East Tennessee Technology Park building demolitions, soil remedial actions complete 2024

Focus shifting to groundwater at East Tennessee Technology Park



# Three ETTP groundwater Record of Decision geographical areas

- K-31/K-33 (purple)
- Main Plant Area (green)
- Zone 1 (yellow)





# K-31/K-33 Record of Decision

- The Record of Decision (ROD) was signed 05/09/2024
  - Selected Remedy: Monitored Natural Attenuation and Land Use Controls
- Limited to groundwater in the K-31/K-33 Area
- Contamination has been detected in a limited number of K-31/K-33 groundwater monitoring wells
- Overall concentrations have exhibited a downward trend since monitoring began in the late 1980s
- Most recent sampling results show concentrations are currently below drinking water standards



# K-31/K-33 Groundwater

- In the last comprehensive sampling round for the K-31/K-33 Remedial Investigation & Feasibility Study, only 2 of the 21 wells yielded samples with constituents above drinking water standards
- Land use controls under the ETTP soils RODs and K-31/K-33
   Groundwater ROD prevent use of or exposure to groundwater





### K-31/K-33 Groundwater – Selected Remedy

- Monitored natural attenuation is an EPA-approved groundwater remediation approach that involves careful monitoring of natural processes that reduce concentrations of contaminants in groundwater
- This process involves continuous monitoring of groundwater conditions to measure and evaluate progress toward achieving remedial action objectives and until cleanup levels are attained
- Natural attenuation processes are applicable to chromium, nickel, and other inorganic contaminants in K-31/K-33

Control States Environmental Protection	
Monitored Natural Attenuation of Inorganic Contaminants in Ground Water Volume 1 Technical Basis for Assessment	
Evolution of Inorganic Contain	ninant Plume
Time 3 Immobilized inorganic contaminant still present on aquifer solids	Immobile Contaminant



## K-31/K-33 - Components of the Remedy and Next Steps

- Develop a Remedial Action Work Plan that defines monitoring, evaluation, and reporting
- Sampling is assumed to be performed quarterly for first
  2 years, then on a semi-annual basis
- Monitoring results are reported annually to EPA and TDEC along with an assessment of progress toward groundwater restoration
- Land Use Controls related to groundwater use and potential exposures to contaminated groundwater will be implemented with monitored natural attenuation actions





## **Main Plant Area Interim Record of Decision**

- Interim ROD was signed 05/16/2024
  - Selected Remedy: Enhanced in-situ Bioremediation (EISB) and continuation of Land Use Controls
- Limited to six chlorinated volatile organic compound (CVOC) groundwater source areas in the Main Plant Area (MPA)
- This interim action addresses some of the highest concentrations of CVOCs, primarily trichloroethene (TCE), in MPA groundwater
- Implementing this interim action will (1) help further define the extent of the six plumes, (2) reduce the concentration of CVOCs in the high-concentration areas of each plume, and (3) provide technology performance information that will be used in selecting final actions for these and other plumes at the site



#### Main Plant Area Source Areas Addressed in Interim ROD









EISB remedy at 6 CVOC plumes (Main Plant Area IROD): injection of micro-organisms into the subsurface to consume/degrade contaminants and reduce mass in aquifer





#### Main Plant Area – Beyond the Interim Action

- Investigations to support a final MPA groundwater action will be complemented by the interim action
- Goals for Remedial Investigation and Feasibility Study for final MPA groundwater remedial action:
  - Extent of CVOC plumes (lateral and vertical)
  - Nature and extent of non-CVOC contaminants





## Zone 1 Groundwater

- Remedial Investigation Work
  Plan Approved
  - Plan investigations to address data gaps, develop/update conceptual site models, and arrive at a final groundwater decision(s)
- Data will be collected to inform remedial alternatives





# **Questions?**

