NW REMEDIATION CONFERENCE

In Situ Stabilization and Solidification of a Former Manufactured Gas Plant

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Introduction

Source: Development of Performance Specifications for Solidification/Stabilization. Interstate Technology and Regulatory Council. 2011

The ISS remediation process is designed to accomplish one or more of the following:

- Improve the handling and physical characteristics of the impacted medium as in the sorption of free liquids
- Decrease the surface area of the impacted medium mass across which transfer of contaminants can occur
- Limit the solubility of any hazardous constituents of the impacted medium

Background

Site History

- Manufactured Gas Plant (MGP) in operation for 20 years during the late 1800s.
- 1.5 acre site between elevated interstate and state highways and large river.
- Entire area was filled during construction of a levee, the historical ground surface is now approximately 15 to 25 feet below the filled ground surface.
- Excavation and disposal of VOC, TPH, and PAH contaminated soils led to the discovery of the gas holders and prompted further investigation.

Chemical of Concern

Soil:

- VOCs and SVOCs at depths from 10-75 feet below ground surface.

Groundwater:

- VOCs, SVOCs, TPH, and NAPL. Generally stable conditions. Off-site migration not a concern.

ISS Selection and Approach

Remedial action objectives:

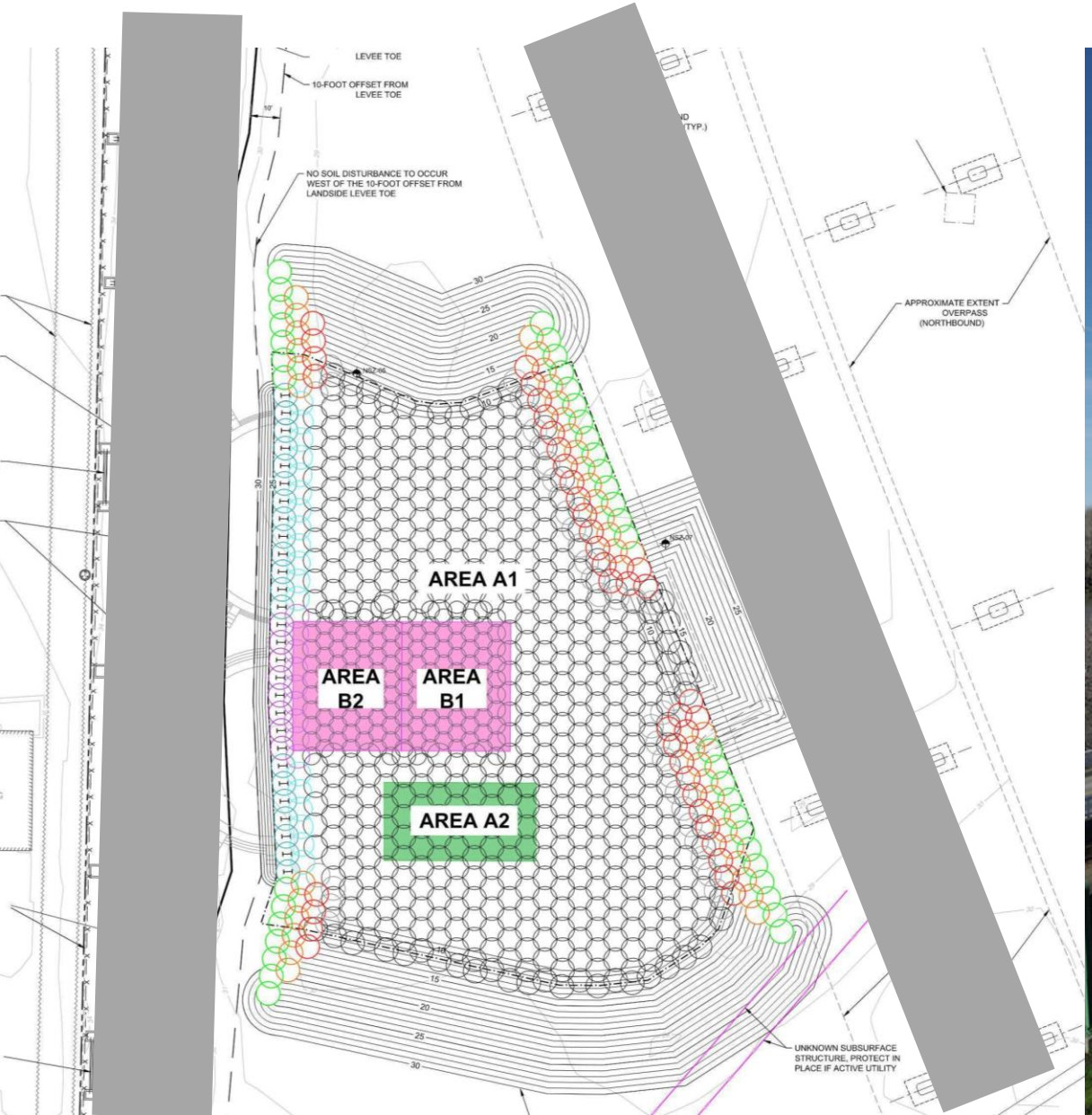
- Prevent exposure to soils
- Prevent migration from soils to groundwater
- Reduce concentrations in groundwater
- Maximize remediation within the confined area

ISS does all of this, and at about ½ the cost of T&D!

ISS approach:

- Earth retention system and overburden excavation
- Deep soil mixing with auger
- Multiple mix designs consisting of Portland Cement and Ground Granulated Blast-Furnace Slag
- Swell management and final cover installation

Work Area Limitations



Earth Retention System

Remember…

- Entire area was filled during construction of a levee, the contamination is 10-70’ below the current ground surface.
- Contamination was found across the property, very close to the overpasses.
- Desire to excavate clean overburden and reduce mixing costs

Earth Retention System preformed double duty

- The final system included deep soil mixing columns on the eastern and western sides, using the same mixing rig as the ISS treatment columns.
- The western side also included steel reinforcing to the columns.
- ERS columns acted as treatment within the ISS area

ISS Implementation

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Conclusions

ISS was the perfect technology for this site.

- Deep soil mixing ISS allows for the cost-effective remediation of contamination deep underground and with clean overburden soil present.
  - This site had both due to the historical fill placement as part of levee construction.
- ISS is a generally vertical remediation technology and can be performed within a confined drilling platform.
  - The construction area for this site was bounded by freeways and river, leaving very little room laterally.
- Earth retention systems can be created through ISS columns.
  - Earth retention system at this site pulled double duty as both treatment and excavation support.

Thank you