

## In Situ Slurry Excavation

### FORMER BRUNSWICK MGP SITE

Brunswick, Georgia



The Former Brunswick Manufactured Gas Plant (MGP) represented the major challenge of removing source material from the saturated zone. Previous Removal Actions had excavated source material from the unsaturated zone down to the groundwater elevation, a depth of approximately 14-feet below ground surface (BGS). To further complicate the project, the site had a limited footprint of less than one acre and was situated less than 100 yards from the bay in Brunswick, Georgia.

Preliminary designs recommended installing H-piles with wood lagging, in conjunction with a well-point system, to excavate the saturated zone soils from 15 to 40-feet BGS. SBX evaluated the preliminary design and had concerns with the safety of using the specified shoring system and the amount of dewatering and water treatment required. During the proposal process SBX evaluated and proposed an alternate approach utilizing a Slurry Excavation Approach (SEA).

The SEA had several advantages over the conventional shoring initially specified. Using the SEA:

- Significant cost savings, shorter project duration and risk reduction were realized by the owners
- Overburden could be excavated and stockpiled for backfilling
- Excavation was limited to 10-feet BGS, creating a safer work site
- Dewatering was reduced to treating contact and decontamination water
- Work could progress during rain events
- Reduced potential for MGP related air emissions and odors during the excavation

SBX installed a temporary shoring system along the alley to protect existing utility lines.



The SEA utilized a Portland Cement/Bentonite slurry to displace excavated soil and would remain in place as saturated zone backfill. The slurry was designed to exhibit clay-like physical characteristics after curing. The saturated zone soil was excavated using a 75-ton excavator with a long-stick attachment and a 5-foot wide bucket. A batch mixing plant was used to mix the slurry and a grout pump was used to deliver the slurry to the excavation area.

The excavation was sequenced in 5-foot wide panels with a 6-12 inch overlap on adjacent panels to ensure the impacted material was removed. A minimum of two days cure time was allowed before excavation of an adjacent panel could be performed. The panels were sequenced to allow continuous excavation to occur while allowing sufficient cure time to adjacent panels.



The excavated material was placed on a curbed concrete pad to allow water to drain from the saturated soils. This water, along with any decontamination water was treated by the on-site water treatment plant, and then reused in the slurry batch plant. After dewatering, the soils were stockpiled on the concrete pad and scheduled for loading and off-site disposal.

Due to the site being situated in a heavily urbanized area, perimeter air monitoring was performed during remedial activities by an independent consultant. The SEA allowed the excavation to be performed without exceeding the targeted perimeter air monitoring levels. Secondary air emission controls were used in the soil stockpile area and consisted of vapor suppressing foam, a misting system and covering the soil stockpiles during non-working periods.

A total of 8,352 tons of saturated zone soils were excavated, transported and disposed of in a Subtitle D landfill. The project was completed within one week of the initial schedule even with the excavation area being extended during the project. Safety was a key consideration in the determination to use the SEA. The work was successfully completed with zero accidents, zero near-misses and no safety issues.