

## FORMER MANUFACTURED GAS PLANT ISS

<b>CLIENT</b>	PSEG
<b>LOCATION</b>	Camden, New Jersey
<b>VALUE</b>	\$10.3M
<b>DATE</b>	June 2013 - February 2014
<b>SAFETY</b>	Zero OSHA Recordables

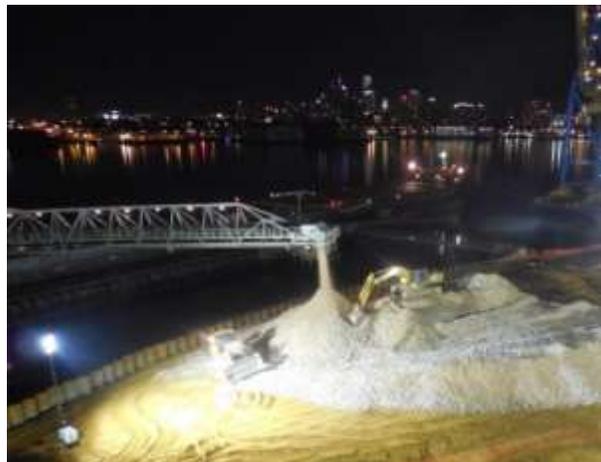


### Excavation and In-Situ Stabilization (ISS)

NorthStar was retained to perform an in-situ stabilization (ISS) project starting in the summer of 2011 at this former Manufactured Gas Plant Site located in Camden, New Jersey. This project was time-critical for the client as there was a new substation planned to be constructed on this property starting in the spring of 2012. The project included preliminary demolition activities, followed by excavation and off-site disposal of nearly 50,000 tons of soil to specified depths, and then included ISS treatment of over 24,000 cubic yards (CY) of soils using an excavator mixing method. The work performed by NorthStar consisted of the following activities:

- An extensive list of pre-work submittals were prepared and submitted to the client and their Engineer for review and approval. Concurrently, NorthStar performed additional bench-scale treatability testing to attempt to refine the reagent mix design previously provided by others. We also met with the NJDEP to negotiate modified leachability criteria for treated material as the impact to groundwater standards included in the specifications were prohibitive and difficult to achieve. The end result was negotiation of an order of magnitude more lenient criteria for leachability.
- Site preparation activities were performed that included pre-work topographic surveying and existing conditions surveys of adjacent facilities, locating existing utilities using a combination of utility locator services and pre-trenching the site perimeter using soft dig techniques since the site was surrounded by public streets with numerous known and suspect active and abandoned utilities, installing erosion controls, removing the existing perimeter fence where necessary and installing temporary fence and concrete barriers around the site perimeter, setting up a support zone and contamination reduction zone, performing clearing and grubbing, constructing a material staging area, and installing a 200 gallon per minute water treatment system.

- Demolition activities were completed to remove existing above grade structures at the site. Most notable was the demolition of a large steel gas holder and demolition of two small structures (including the associated asbestos abatement). Concurrently, any abandoned utilities identified via the trenching discussed above were removed and capped and any concrete pads, structures, and other obstructions were removed from the work areas for ISS. NorthStar also removed the gas holder walls and floor slab and a notable quantity of wood piles used to support these structures. All resulting concrete and wooden debris was loaded out and disposed of off-site.
- Steel sheeting was installed around the perimeter of the site once the pre-trenching was completed to clear the sheeting alignment and once certain active overhead utilities were relocated. The sheets were installed as permanent sheeting to protect a fragile ductile iron gas main located along the south side of the project site.
- Excavation of contaminated soil for off-site disposal was performed in three areas of concern. Area 1 was only excavated to a depth of 3 feet. Since the planned construction of the site required imported fill with certain soil qualities to a depth of 12 feet below grade, Area 2 was excavated that depth. In Area 3, the ISS-treated material was required to be no higher than 12 feet below grade after treatment. Area 3 was excavated to between 13 and 14 feet to accommodate the swell resulting from ISS treatment. This minimized the disposal of the denser ISS-treated material. Excavated soil was loaded into trucks and transported to the pre-approved thermal disposal facilities.
- ISS was performed in Area 3 to the required depth of 30 feet using an excavator-mixing method. A grout plant was set up and the required reagent grout was produced in an on-site batch plant then conveyed to the ISS treatment cell, where it was added on a per weight basis using a pre-determined mix design of 9% by weight for granulated blast furnace slag and 3% by weight Portland cement. ISS was performed on over 24,000 CY of soil.
- Once ISS was completed, the site was backfilled as required, using primarily an engineered fill material with the properties specified for the ensuing substation construction project. A 4-inch layer of crushed stone surfacing was installed above the engineered fill. Backfill material was installed in controlled lifts and compacted.
- Other site restoration activities included the removal of temporary fence and barriers and installation of permanent fence where specified as well as replacement of concrete



sidewalks and curbing. All equipment and temporary facilities were decontaminated and removed from the site and support areas were restored.

The stabilized soil met the treatment criteria of a minimum unconfined compressive strength of 50 psi at 28 days and a minimum hydraulic conductivity of  $1 \times 10^{-6}$  cm/sec as well as the modified SPLP concentrations for leachability.