

# ISCO & Extraction Treating LNAPL

Former Oil Refinery – Princeton, IN

## Drilled Well Injection

**Project Summary:** ORIN successfully reduced the amount of LNAPL within the groundwater utilizing a combination of in situ chemical oxidation and vacuum extraction. Approximately four vacuum extraction events took place prior to the full scale injection event. A vacuum extraction truck was onsite and was utilized simultaneous to the injection event. 122 injection wells with a screened interval of 15 to 35 ft bgs were used to deliver the treatment chemistry. A total of approximately 86,430 gallons of treatment chemistry was injected across the site.

83% Reduction in LNAPL

### Site Conditions:

**Groundwater Contaminants –**

LNAPL: maximum 18.5 ft

**Impacted Matrix –**

Silty and Sandy Clay

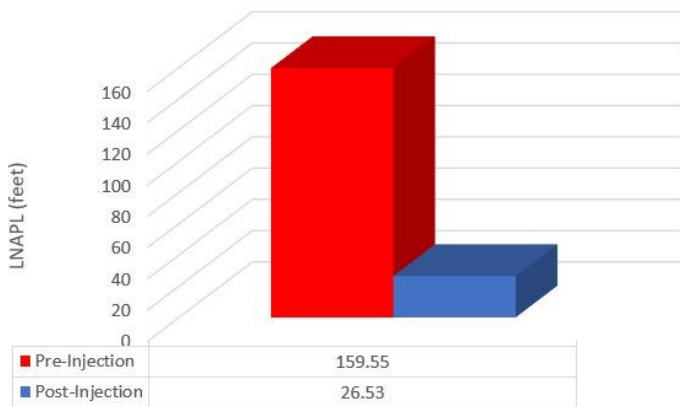
Varying 12 to 32 ft-bgs

**Treatment Chemistry –**

Sodium Persulfate

Activated w/ Caustic

Site-Wide LNAPL Difference



**Project Results:** The remedial efforts aided in reducing the thicknesses of free product in the subsurface. Of the nine monitoring wells within the injection area, LNAPL was reduced by 67% and benzene was reduced by 18%. Out of the 122 injection wells on site, free product was reduced by 83%. These reductions were after one injection event. Site monitoring will continue to determine any further action for this site.