

## New Technologies Reduce Time & Cost Of Brownfield Redevelopment

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In New Jersey, where land is at a premium, brownfield sites have become a popular option for new industrial, residential, and commercial development with revitalization efforts and redevelopment projects springing up in urban and more rural areas. The state has backed these efforts by offering economic incentives to developers to remediate contaminated properties.

Private companies have the largest inventory of potential brownfield properties. Many of these properties are left without any tenants as companies evaluate and balance the potential economic benefits and environmental liabilities of redevelopment.

While redevelopment is gaining momentum as an option for corporations that no longer wish to carry brownfield properties on their balance sheets, the cost of remediation can be astounding. Companies looking to re-establish or improve brownfield sites to capitalize on all of their physical assets are becoming even more sophisticated when it comes to the decision of who will develop these sites, requesting developers with experience in this type of project.

The developer that takes on the task of rehabilitating a brownfield site is held responsible, and liable, for assuring that the area is sufficiently remediated. Corporate obligation to finish the site clean up, even after the property is sold, can create long-lasting legal and financial obligations. But by hiring qualified professionals to complete remediation work in a timely and efficient manner, many of these concerns can be addressed.

During a recent remediation project in Passaic, N.J., the Whitman Companies was able to save time and money for our client by accurately characterizing the area that required remediation without having to collect soil and groundwater samples or having to wait for several weeks until the lab results were returned with conclusive results.

The project manager at the site relied on electrical resistivity imaging and a membrane interface probe (MIP) that relayed information about contaminant levels at the site almost instantaneously. As the MIP probe advances through the soil, it volatilizes certain chemicals and sends the vapors up a tube to the surface, where it is immediately analyzed by on site instrumentation. Site personnel can then make real-time decisions on where to complete additional investigation.

It used to be that the standard procedure for remediation was to remove all of the contaminated soil through excavation and then eventually dispose of that soil, which can be very costly. In addition, excavation does not always address contamination in deeper bedrock layers or impacted groundwater.

At Whitman, we've found the best way to reduce the cost of environmental clean up is to evaluate the situation (i.e., the development plan and contamination footprint) and combine the

best of the new and old technologies that can be applied for each individual remediation and development project.

At a site in Elizabeth, N.J., our client was responsible for remediating a large area of land that was highly contaminated from years of industrial use. The original remediation plan for the site called for excavating and treating a large portion of contaminated soil. Upon completion of soil delineation, the estimated cost for the approved cleanup was between \$13 and \$15 million.

By identifying the most contaminated soils, the ones that contained more than 95 percent of the contaminant mass, the excavation costs were drastically reduced to about \$6 million. The remaining impacted areas still required remediation, but enhanced technologies were used to decrease the overall remediation costs.

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We started by introducing Slow Release Substrate, or SRS<sup>®</sup>, at the site of the excavation. SRS<sup>®</sup> is a soy-based, food-grade oil that provides nutrients to the natural bacteria present in the soils on site. The SRS<sup>®</sup> serves the purpose of enhancing bacterial growth, which in turn naturally degrades the site contaminants.

The SRS<sup>®</sup> worked well, but there was still contamination that needed to be addressed. The remaining contamination was treated using zero-valent iron (ZVI) injected into the subsurface. ZVI is a proven technology for the treatment of chlorinated solvents and was chosen in consultation with the New Jersey Department of Environmental Protection. By choosing larger particles of ZVI, Whitman was able to produce the clean up results that the DEP expected, but at a greatly reduced cost to our client.

The end result at the site, which is still being remediated, was a drop in remediation cost from as much as \$15 million to a total to date of just over \$7 million. Because of the site conditions and the amount of contamination on site, either excavation or enhanced technologies used alone would have been extremely costly and ultimately ineffective. However, by combining technologies and using innovative sampling techniques, the total project time was reduced. The end result at both sites was that Whitman was able to save the developers several million dollars.