

In-Situ Management of Impacted Soil

As environmental professionals, we were taught early on, and by early on we mean back in the '70s, that "dilution is not the solution to pollution". For the first 30 years or so of government environmental oversight on the Federal and State level, laws were enacted to prevent "Generators" of hazardous or regulated waste (including impacted soil) from mixing it with clean materials to reduce the concentrations of the regulated chemicals below regulatory thresholds.

The most notable example of such a law is the Resource Conservation and Recovery Act (RCRA). This Federal law was enacted in 1976 for the management of hazardous and non-hazardous solid waste. Part of that federal law (40 CFR Part 261) contains provision for the identification and listing of hazardous waste. Part 261 not only identifies hazardous waste based upon its characteristics (i.e. Ignitability, corrosivity, re-



activity and toxicity) but also includes "listed" chemicals that are deemed hazardous regardless of their concentration, thereby preventing the generators of waste containing these chemicals from diluting them to non-hazardous levels to save money on disposal.

Applying this approach to addressing soil at redevelopment sites impacted by past industrial activity was primarily limited to "Dig and Haul" operations involving excavation and

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Matinecock Court Bringing Healthy Affordable Housing and Clean Soil to Long Island

by Richard Izzo

Construction is well underway at Matinecock Court located on the corner of Pulaski and Elwood Road in Greenlawn, Town of Huntington, NY. This, in and of itself is no small feat as the 14.5-acre site's planned affordable housing usage has been a political football and legal quagmire since redevelopment was first proposed back in 1978. Legal cases involving the site reached as far as the Supreme Court back in 1988, and most recently, last winter there was concern by environmental groups over the on-site nesting habitat for the Northern Long-Eared Bat.

Working closely with the Town of Huntington, among others, our valued Client, D&F Development Group, LLC was able to navigate the choppy political waters and secure the necessary approvals for the redevelopment of the site, which remained vacant and overgrown for the past several decades. Prior to that, the site was used for agricultural purposes including a potato farm.



The Matinecock Court development will include 146 limited equity cooperative units in 17 two-story buildings, including 18 one-bedroom units, 89 two-bedroom units, 38 three-bedroom units and a two-bedroom unit for the site superintendent. Six of the units are slated for residents with developmental disabilities. The project will include a 5,200 square-foot community "Clubhouse" (pictured in the above rendering by BHC Architects) and an on-site sewage treatment plant.

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However, environmental challenges facing site redevelopment were not just limited to furry flying mammals. Soil testing performed back in 2007 revealed that the upper foot or so of site-wide soils were impacted by low levels of pesticides and arsenic (historically used for pest control). Consequently, D&F and the Town called upon CA RICH to assist them in rendering the site safe for redevelopment and future occupation.

The impacts to site soils, although only on and close to the surface, were documented to be generally site wide. As such, excavation and off-site disposal of the impacted soils was not practicable from a logistical or cost standpoint. Additionally, the concentrations of the contaminants were very low and had remained at or close to the surface of the vacant overgrown property for several decades.

This indicates that the contaminants were adsorbed onto soil particles and did not pose a danger of leaching down to groundwater (some 150 feet below land surface). Further, the chemicals themselves are not volatile by nature and thus possess no potential as a source for vapor intrusion.

Based on this information, it was determined that the site was an excellent candidate for in-place management of the impacted surficial soils. CA RICH prepared a Soil Management Plan (SMP) in cooperation with our Client and the Town of Huntington. The SMP was implemented as part of site preparation prior to construction.



Soil Placement Areas and testing locations

The work performed under the approved SMP included the scraping of surface materials to a depth of one to two feet sitewide and placement of the removed surface materials into on-site “Soil Placement Areas”



Excavation of Soil Placement Area and placement of impacted surface soil

including perimeter berms and a planned paved parking lot. The surface soils in each of the Soil Placement Areas were removed and samples were collected of the underlying materials to document that the deeper soil quality met NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs).

The documented clean deeper soils were then excavated from each soil placement area to depths of approximately 15 to 20 feet below grade and the scraped impacted surficial materials from across the site were placed within the excavations and covered with one to two feet of the clean soil excavated at depth. The remaining stockpiled clean soils were used to provide an additional foot of clean material in the planned unpaved areas throughout the site. Final grade in the unpaved areas will be achieved through the importation of approximately a one-foot thickness of clean topsoil.

CA RICH provided full-time oversight and documentation of the soil management work including real-time health and safety dust monitoring upwind and downwind of the work zone. In addition, a Soil Management Report was prepared and submitted to the Town for approval.

Measures will be put in place to prevent future occupants of the site from contacting the buried soils through provisions in lease or cooperative agreements. Any future work involving the necessary disturbance of the Soil Placement Areas will be done in accordance with the provisions in the SMP.

Although some controversy still exists surrounding the project, it is clear that Matinecock Court will provide much-needed affordable housing on Long Island and a safe environment for its future residents.

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off-site disposal of the affected soil to meet limitation standards set by regulatory agencies or determined by performance of an exhaustive site-specific quantitative environmental and human health risk assessment.

However, over the past 20 years or so, there has been a shift in environmental industry practices and associated regulatory policy toward allowing impacted soil to remain “in situ” and managed through application of engineering controls such as a cap or cover system and institutional controls such as an environmental easement or deed restriction limiting site usage and access to the capped soil. This may be attributed to the need for more cost-effective solutions to make “brownfield” redevelopment economically viable, as well as the desire for sustainability in environmental remediation and reduction of fossil fuel emissions.

A prime example of this is New York State’s Brownfield Cleanup Program (BCP) established in 1994 (and subsequently updated several times) and its associated 6 NYCRR PART 375 Soil Cleanup Objectives (SCOs). The BCP includes the option of employing different cleanup “Tracks” which may be preferentially selected by the applicant (subject to agency approval) depending upon the degree of soil remediation to be performed.

The most stringent is “Track 1” which includes excavation and off-site disposal of soil not meeting an “Unrestricted Use” SCO. This track does not require provision for engineering or institutional controls. The other cleanup tracks require cleanup to less-stringent SCOs, allowing impacted soil to remain on-site while requiring acceptable engineering and institutional controls to manage the materials in place.

On Eastern Long Island, NY, soil testing on properties historically used for agricultural purposes and slated for residential redevelopment often reveals low level impacts in the upper foot or so of site soils from pesticides and certain



Installation of a 2-ft. clean fill cap at a Bronx BCP site

metals such as arsenic (which was historically used in pesticides). Depending upon the concentration and distribution of impacted soil on these sites, a dig and haul approach is oftentimes impractical and cost-prohibitive.

County Health Departments in concert with local governments, are currently allowing some impacted soil to remain on site and be managed through the development and implementation of Soil Management Plans (SMP).

Such a plan includes protocol for handling the impacted soil on site through measures such as deep soil mixing (i.e., dilution) or emplacement of impacted materials beneath berms, parking lots, roadways or buildings to remove the potential for direct contact to the materials or dust that may be generated if the impacted soil remained on the surface. In addition, SMPs include provision for end-point sampling to ensure the resultant surface soils meet NYSDEC Part 375 Unrestricted or Residential Use SCOs.

SMPs also include health and safety measures to be implemented during on-site handling of the soils including dust monitoring and dust suppression, oftentimes, as well as a method to ensure that potential future contact with the buried soil will be minimized. This is normally done through a deed restriction, homeowners association agreements or in the case of rental units, written into lease agreements.

It is noted that these measures may only be approved if the nature and concentrations of the chemicals in the soil are such that the potential for vapor intrusion or groundwater impact is not a concern and that direct skin contact is the only route of exposure.

In-situ management of impacted soils seems the next natural step in the evolutionary progression of environmental remediation. If planned and implemented properly by an experienced environmental professional, it can provide a cost-effective and sustainable way to address low level soil impacts, ensuring a cleanup that remains adequately protective of human health and the environment.



“Dig & Haul” at Brooklyn BCP site

What's new at CA RICH

President, **Charles Rich** continues his support and involvement with Engineers Without Borders in their work to provide potable water to villages in Malawi, East Africa. Mr. Rich was recently called upon to provide his hydrogeology expertise in reviewing geophysical electrical resistivity data to assist in designing and locating productive fractured-bedrock water supply wells in two separate remote, rural villages situated within the severely drought-stricken Sakata region of southern Malawi.

Vice President, **Richard Izzo** and Staff Geologist, **Tim Maines** have been consulting to the Town of Huntington and residential developer D&F Development Group, LLC to assist in the development of affordable housing at a formerly agricultural site in Greenlawn, NY, through the provision and implementation a Soil Management Plan including safe on-site management of surficial soil impacted by low levels of farm-related chemicals (*see enclosed article*).

Vice President, **Jason Cooper** is about to begin cleanup of "Phase Five" of the relatively large (1,700 residential units plus retail) multi-phased Rockaway Village redevelopment site. Mr. Cooper has recently received approval of the Remedial Action Plan to bring the final development Phase across the finish line, under the auspices of the New York City Office of Environmental Remediation (OER). The approved work is scheduled to begin as early as December.

Senior Project Manager, **Jessica Proscia** is coordinating and overseeing testing and remedial action at an assisted living facility in the shadow of Yankee Stadium. Ms. Proscia is working in concert with our remedial engineer, Karen Tyll, P.E. and NYSDEC, to develop, install and operate a #4 fuel oil recovery system targeting the impacted saturated fractured bedrock beneath the facility.

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