

Soil Sampling for Different Objectives: Site Investigation, Remediation Confirmation, Fill Reuse, and Waste Disposal



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Contamination in soil can have a profound impact on the use and development of real property, in addition to posing health risks and adversely affecting ecological resources. Sampling soil is often required to assess existing site conditions and ensure soil materials are appropriately managed. Primary objectives for soil sampling include site investigation, remediation confirmation, fill reuse, and waste disposal.

#### Site Investigation

Site investigation, in general, is the process of collecting data and information about a site, which can be evaluated or applied during subsequent site planning and development. For sites with unknown conditions, soil sampling during site investigation assists in identifying the presence or absence of contaminants. For sites with known contamination, soil sampling is performed as part of site characterization methods to delineate the extents of impact and determine a practical approach for site remediation. Whether soil samples are collected to assess sites with unknown conditions or characterize sites with known contamination, analytical parameters are typically selected to be inclusive of contaminants of concern. Contaminants of concern can be limited to a specific compound or group of compounds, or can extend to a comprehensive spectrum of compounds.

Soil sampling for site investigation is guided by a sampling and analysis plan, which is usually formally documented in a written report or proposal. This plan can be developed through input and experience of an environmental professional, and/or pursuant to guidance from environmental regulatory authorities. For instance, in New York, the New



York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER) has issued DER-10, "Technical Guidance for Site Investigation and Remediation." This document has applicability to sites with activities conducted pursuant to DER oversight, but can be a useful resource for any site. The DER-10 document provides guidelines for soil sampling to address different areas of concern, such as spill areas, storage tanks, septic systems, and historic fill.

#### **Remediation Confirmation**

Soil sampling for remediation confirmation is performed at a remediated site, as a means to verify whether or not established remedial objectives have been achieved. Similar to soil samples for site investigation, analytical parameters are inclusive of identified contaminants of concern. Sampling protocols are often established in a remedial action plan, or selected via directives or guidance from environmental regulatory authorities (e.g., NYSDEC DER-10).

# Fill Reuse

Excavated soil and imported soil should be evaluated prior to use as fill, to ensure the soil is suitable for the intended reuse option and location of placement. While uncontaminated fill is ideal, some level of contaminants in soil is common for sites with historical development. Fill material sampling and analysis protocols for remedial program sites in New York are guided by criteria described in NYSDEC DER-10. Other sites can refer to 6 NYCRR Part 360 for sampling and analysis protocol that is implemented to determine applicability of reuse under a predetermined beneficial use determination (BUD). NYSDEC DER-10 and 6 NYCRR Part 360 designate minimum sampling frequencies relative to cubic yardage of soil, and specify analytical parameters for collected grab and composite soil samples.

## Waste Characterization

Not all excavated soil materials are suitable for reuse. Certain soil materials may require designation as a solid waste, and a determination would be necessary to classify the soil as non-hazardous or hazardous. This can be accomplished through the collection of a waste characterization sample(s) to be analyzed for hazardous waste characteristics – ignitability, reactivity, corrosivity, and toxicity. Sample frequency and specific analytical parameters are routinely selected in coordination with the proposed disposal facility, and should account for concerns associated with the source of contamination. Additionally, it may be beneficial to consider segregation of waste soil based on levels of contamination. This approach can help to minimize hazardous waste generation and reduce disposal cost.



## **Soil Standards and Guidance Values**

Regardless of the objective for soil sampling and analysis, established numerical concentrations for comparison are needed to determine whether analysis results for collected samples are satisfactory. Established regulatory standards in New York are available in 6 NYCRR Part 375, as soil cleanup objectives (SCO). NYSDEC has also issued Commissioner Policy (CP-51) to provide supplemental soil cleanup objectives (SSCO) as guidelines for certain compounds not listed in 6 NYCRR Part 375. The SCO in 6 NYCRR Part 375 and SSCO in NYSDEC CP-51 are applied as a standard of comparison for soil samples collected during site investigation, remediation confirmation, and evaluation for fill reuse. For waste characterization, laboratory analysis results are compared to hazardous waste characteristics (i.e., properties that would render a waste as hazardous).

If you have a project that may require soil sampling, ATL has experienced environmental professionals located throughout New York State, to perform sampling and coordinate applicable analysis services. For more information, contact Cheyenne Dashnaw, PE, at <u>315-386-4578</u>, <u>info@atlantictesting.com</u>, or visit <u>AtlanticTesting.com</u>.

# **ASSOCIATED SERVICES**

Subsurface Investigations Environmental Services Remediation Project Monitoring Asbestos and Hazmat Survey Services



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