Sample Collection and Handling Protocol for SOD Testing

Sample Volume
A minimum of 50 grams of soil is required for each SOD test. It is recommended that additional sample be collected in case a re-analysis is required or if multiple testing is performed.

If site groundwater is available, it should be used for the SOD test. A minimum of 250-milliliters of groundwater is required. It is recommended that additional sample be collected in case a re-analysis is required or if multiple testing is performed. If site groundwater is not provided or available, de-ionized (DI) or distilled water can be substituted and should be noted in the report. The effects of contaminants in the site groundwater usually will not significantly impact the test results because the concentrations of materials in the soil that react with permanganate are the major contributing factors.

Preservation and Hold Time
Soil and groundwater samples should be preserved for transportation and tested promptly. For this screening test, cooling at 4° C is the only sample preservation required during transport and storage. Soil and groundwater samples exposed to air and drying may undergo physical and chemical changes with time, such as oxidation and reduction reactions. These changes can have significant effects on the SOD test results. Therefore, samples should be analyzed as quickly as practical, but the maximum recommended hold time for soil samples is two weeks.

Collecting Representative Samples for SOD Testing
Representative soil samples from the treatment zone may be collected using a variety of methods. Discrete or composite soil samples can be taken. Soil samples may be collected using geotechnical type soil samplers with a drilling rig, direct push rig, or an excavator. Soil samples should be collected from areas within the region(s) of the subsurface where remediation is anticipated. Determining if soil samples are representative is a professional judgment based on experience and site-specific information. For SOD test screening, it is suggested that at least two samples be collected from regions and/or horizons in the subsurface based on:

- Sediment geology;
- Contaminant concentration ranges (e.g. +/- 500 mg/kg);
- Contaminants; and
- Color

Groundwater samples can be obtained from monitoring wells, via direct push water sampling, or direct push wells. The water sample should be representative of the treatment zone and should be the same groundwater that is present at the soil sampling locations. Care should be exercised to minimize aeration of samples to avoid altering the oxidation-reduction potential of the water.