

Guidance for Soil Reuse Involving Soil Blending Activities at Chapter 62-780, F.A.C., Sites

Florida Department of Environmental Protection
Division of Waste Management
District and Business Support Program
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Disclaimer:

This document is guidance for engaging in site activities involving soil reuse including soil blending and placement within the contaminated site. If soil reuse is planned for a Chapter 62-780 site, a detailed description of the soil reuse activities should be included in the site's Soil Management Plan (SMP). This guidance is not intended to provide the mechanics on how to blend soil. Nothing in this guidance supersedes any Federal, State, or Local requirements; nor, as guidance, does it create any new rule requirements under Chapter 62-780, Florida Administrative Code (F.A.C.). All applicable Florida Department of Environmental Protection (FDEP) rules must still be adhered to.

The FDEP District and Business Support Program has prepared this guidance to promote consistency of data interpretation and to conduct soil blending in a protective manner for sites where soil reuse is performed. Nothing in this document precludes consideration of soil management practices on a site-specific basis.

DEFINITIONS

Contaminated Site

The term “contaminated site” is defined in ss. 376.301(11), Florida Statutes, as: “any contiguous land, sediment, surface water, or groundwater areas that contain contaminants that may be harmful to human health or the environment.” The definition in Section 62-780.200(47), F.A.C., points to this statutory definition and defines “site” to mean “contaminated site” as defined in the statute. The term “site” should not be confused with or used interchangeably with “property,” “facility,” “parcel,” or other similar terms.

In other words, a contaminated site is the area where contaminants of concern exist or have spread from the source. A site may encompass the source property and adjoining properties if the impacts have spread beyond the source property boundaries.

Decision Unit

A Decision Unit (DU) is defined as the volume of soil over which cleanup decisions will be made. For ease of analysis, the DU size may be set equivalent to the exposure unit size of the receptor of concern, but this is not required.

Exposure Unit

“Exposure Unit” means an area over which receptors are expected to have equal and random exposure. Exposure units shall be determined in accordance with the Chapter 62-780, F.A.C.

Soil Reuse

Soil reuse is considered to be any time site soils that exceed Direct Exposure soil cleanup target levels (SCTLs) or other applicable SCTLs are blended with lesser contaminated soils, including with imported clean fill, with the goal of achieving the applicable SCTL(s) in the blended soil. The blended soils may then be placed anywhere within the contaminated site for which that soil meets the applicable SCTL(s). Post-placement verification sampling is recommended for all areas where the blended soils were placed to confirm that the applicable SCTL(s) have been met. Blended soils should only be placed on the source property and other properties within the contaminated site being remediated (i.e., when the site extends beyond the source property boundaries such that it is a multi-property contamination site).

Source Property

The property where the release or discharge occurred.

Stockpile

Excavated, impacted site soils that are accumulated from remedial actions, which are temporarily stored and properly managed in accordance with the site's SMP to prevent the spread of impacts to uncontaminated areas.

Stockpiles may be contaminated, blended or 'clean' (meets applicable SCTLs) soil. Stockpiles of site soil should be assumed to be contaminated until analytical data demonstrates otherwise.

ACRONYMS

ASCTL	Alternative Soil Cleanup Target Level
bls	Below Land Surface
COC	Contaminant of Concern
DU	Decision Unit
F.A.C.	Florida Administrative Code
Ft	Feet
FDEP	Florida Department of Environmental Protection
ISM	Incremental Sampling Methodology
PRSR	Person Responsible for Site Rehabilitation
RCRA	Resource Conservation and Recovery Act
SCTL	Soil Cleanup Target Level
SMP	Soil Management Plan

BACKGROUND

Soil blending has been allowed by the Division of Waste Management (Division) for several years. This guidance was developed for large land tracts like former agricultural land or former golf courses that are redeveloped as primarily residential parcels. This guidance may need to be modified for other types of sites undergoing rehabilitation under Chapter 62-780, F.A.C., if blending activities are proposed. The Person Responsible for Site Rehabilitation (PRSR) may have discussions with the FDEP to determine the applicability and/or modifications of this guidance.

Soil blending has not always been performed in a consistent manner from one site to another. Many times, what becomes the normal practice in one geographic area is performed quite differently in other areas. In retrospect, not all previous soil reuse practices are equally protective, and this guidance is intended to provide safeguards so that current soil reuse practices are protective regardless of whether they are consistent with precedent. Soil blending is a remedial activity where site soils from an area of soil impacts are physically blended with non-contaminated soils with the goal of achieving a level of Contaminants of Concern (COCs) in soil that meets the applicable SCTL(s).

One important part of soil blending activities which has been found to be inconsistent and, therefore, potentially not equally protective is the methodology for collection of stockpile samples and the interpretation of these results. The methodology used to create stockpiles, the number of samples collected, the depth within the stockpile from which the sample is collected, and the type of sampling process used to collect a sample varies considerably from site to site. Site closure decisions have been made based on such stockpile sampling results and blended soil stockpile sampling results. Because of the variability in volumes of stockpiles and sampling techniques, it is important to understand whether the sampling results accurately characterize the soil concentrations for the stockpiles.

There are no easy answers for correcting the uncertainties in stockpile sampling methodology. This is discussed in more detail in the [White Paper – Stockpile Sampling for Soil Reuse at a Site](#) (Stuchal and Roberts, December 2020). To date, the Department and other state environmental agencies throughout the United States have not found economical solutions to reduce the uncertainties. In fact, researching other states' practices regarding soil blending revealed that most states do not allow the blending of soils to achieve lower soil concentrations.

PURPOSE

This guidance has been prepared to address the uncertainties associated with site soil reuse. The guidance should not be used to re-evaluate sites which have previously received an approved Site Rehabilitation Completion Order. This guidance provides general criteria for soil blending projects. Soil blending may not be a viable remedial strategy for all sites. The suitability of blending soil to meet the applicable SCTL(s) must be carefully evaluated based on site-specific information, including the desired closure endpoint, the concentrations and

distributions of the COCs, soil type(s), leachability potential, and the amount of imported fill (if needed to blend with the impacted soil) that the site has the capacity to accept. A demonstration should be provided and supported with appropriate documentation that, following soil blending, the soil concentration will achieve the applicable SCTL(s). It is recommended that proposed soil blending procedures be approved prior to any reuse activities being conducted on a site. An initial site assessment should be conducted prior to the implementation of source removal or blending activities.

This guidance does not promote the reuse of soils that are not suitable for reuse purposes. For example, soil reuse is not allowed for soils impacted by polychlorinated biphenyls or soils that contain a Resource Conservation and Recovery Act (RCRA) Listed Waste. It should be noted that soil containing a listed waste may meet residential SCTLs but is still regulated as hazardous and cannot be reused. Hazardous soils are soils that exhibit any one or more of the following properties: ignitability, corrosivity, reactivity, or toxicity. These types of soils must be managed and disposed of in accordance with federal regulations. Please refer to the revised FDEP August 9, 2006 guidance memorandum – [Management of Contaminated Media under RCRA](#).

Soils at the contaminated site that are not suitable for reuse should be addressed in some other manner (e.g., either removed from the site and properly disposed of at an appropriate permitted facility or capped with an engineering control).

SUMMARY OF IMPORTANT POINTS TO CONSIDER

1. Any time there is reuse conducted on a site, verification sampling (or an alternative approved approach) to confirm soils meet the applicable SCTL(s) should be conducted at every location on the property where blended soils were placed. This verification data and a map showing the placement of re-used soil should be submitted to the FDEP as part of the source removal report(s).
2. Reuse feasibility should be evaluated following the initial soil site assessment. For example, wide-spread impacts of elevated soil concentrations should be evaluated (pilot testing, blending ratio calculations, etc.) to determine if the soil is suitable for reuse. Contaminated soils not suitable for reuse should be properly disposed of off-site at a permitted facility or managed with institutional and engineering controls on the site.
3. The physical soil blending activity is only allowed within the original impacted soil area(s) (the contaminated site), on an impervious surface, or in a container to prevent the spread of contamination to previously unimpacted areas.
4. All soil disposal off-site shall be arranged by the PRSR; all analytical requirements for off-site disposal at a permitted waste facility are directed by the receiving facility and not the FDEP. Chapter 62-780, F.A.C., requires that this activity be thoroughly documented in report submittals to the FDEP.
5. Stockpiles used for blending activities are considered temporary soil storage and must be removed before 60 days elapse in accordance with Subparagraph 62-

780.500(3)(a)10, F.A.C.¹ Note: If the site is a RCRA site, the timeframe is 90 days and removal must adhere to federal regulations (and on-site reuse is not permissible).

6. When excavated contaminated soil or sediment is temporarily stored or stockpiled, the soil or sediment should be placed on an impermeable surface to prevent leachate infiltration and secured in a manner that prevents human exposure to contaminated soil or sediment and prevent soil or sediment exposure to precipitation that may cause surface runoff. Stockpiled soil on a permeable surface may necessitate additional soil and/or groundwater sampling once the stockpiled soil has been removed to verify that a new release/discharge has not occurred.
7. The FDEP will allow the use of non-contaminated soils, including imported clean fill, for blending purposes.
8. Sampling and analysis of any imported fill is recommended. The analysis is recommended to include site COCs and potential COCs associated with the source of the imported fill. The FDEP does not regulate the use of fill under Chapter 62-780, F.A.C. The expectation is that all imported clean fill will meet the applicable SCTL(s). If the imported clean fill is at a later time found to be a source of contamination, the PRSR may be liable for cleanup.
9. The source of imported fill and the site locations where clean fill is placed should be documented.
10. Soil reuse actions should be thoroughly planned in an SMP and documented in the Remedial Action Plan Report. The SMP should be approved by the FDEP prior to implementation of soil reuse activities (see [Guidance for Preparation of Soil Management Plans](#)).

SITE ASSESSMENT

Prior to making any decision regarding soil reuse on a site where rehabilitation is being conducted under Chapter 62-780, F.A.C., a complete site soil assessment should be completed.

DEVELOPING A SOIL MANAGEMENT PLAN (SMP)

The SMP is a component of the Remedial Action Plan and should include a thorough discussion on how soils will be managed as part of any excavation activities including interim actions. Guidance for developing a SMP is available: [Guidance for Preparation of Soil Management Plans](#).

¹ For RCRA cleanups, hazardous soils can be consolidated within an Area of Contamination (See United States Environmental Protection Agency guidance) without being considered placement. If hazardous soils are moved outside of an Area of Concern and placed on the ground, “placement” occurs along with Land Disposal violations. There is a 90-day limit for storage in containers and/or tanks or a containment building without a permit. RCRA does have a 40 CFR Part 270 Subpart H RAP (a type of RCRA permit) for temporary storage (up to 2 years) in a Staging Pile that can be used for management of hazardous soils.

VERIFICATION SAMPLING

Verification sampling and analysis should be performed to confirm the blended soils meet the applicable SCTL(s) any time site soils are blended and reused for any purpose anywhere on the property. If alternative approaches other than verification sampling are proposed, the alternative should be described in detail and documented in the SMP.

1. The verification sampling and analysis plan should be thoroughly documented in the SMP.
2. Verification sampling should only be conducted after the blended soils are reused on the contaminated site.
3. The locations where reused soils are placed should be thoroughly documented and the areas should be precisely located on site figures.
4. Verification sampling should be conducted within the depth interval where blended soils were used. Typically, placement of blended soil occurs within the top two feet (ft) and verification sampling should be conducted at the direct exposure interval of 0-2 ft below land surface (bls). Where blended soils were placed deeper than 2 ft, verification sampling may need to be conducted to the full depth of the reuse fill area. Note this sampling depth interval is different from the standard rule requirement (0-0.5 ft, 0.5-2 ft) because the blended soil is expected to be relatively homogeneous.
5. Representative vertical samples should be collected. For example, where soil reuse has occurred within the top two feet, discrete interval verification samples should be collected from homogenized soil collected from 0-2 ft bls, and not at a single sample depth interval (e.g. a point sample collected at 1 ft bls). Note: this does not apply when sampling for volatile organic compound analysis.
6. Verification samples should be used to characterize the reused soil to determine if the soil concentration results meet the applicable SCTL(s).
7. Verification sampling may be conducted using either discrete (homogenized soil representing the sample interval) or Incremental Sampling Methodology (ISM) sampling methodologies. Composite sampling methods other than ISM are not used for site closure per Chapter 62-780, F.A.C.
8. The verification sampling and analysis plan should include the size of the exposure unit for the verification sampling. The default exposure unit size per Chapter 62-780, F.A.C., is $\frac{1}{4}$ acre (generally the size of a residential lot). Other sizes of the exposure unit may be proposed but must be approved by FDEP. Note that larger exposure unit sizes may require a Declaration of Restrictive Covenant to prevent subdivision of the exposure unit.
9. The number of verification samples should be at a density which characterizes and ensures the blended soils meet the applicable SCTL(s).

10. A verification sampling plan is site-specific. The number and placement of verification samples may vary from site to site depending on the conceptual site model, where blended soil originated from, and its final placement.

EVALUATION OF VERIFICATION SAMPLING RESULTS

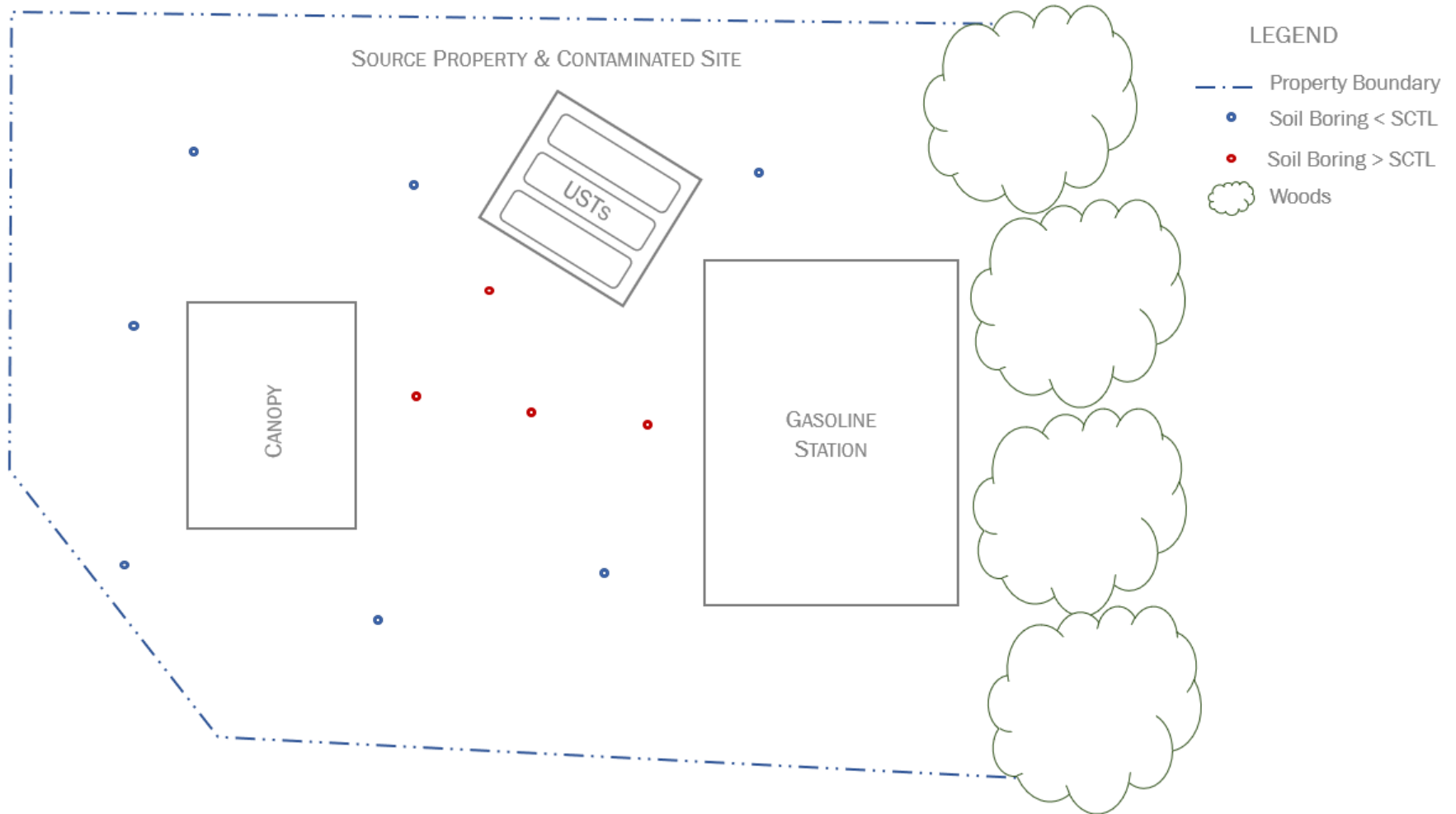
The FDEP will evaluate the verification sampling results for each exposure unit.

- If the result exceeds the applicable SCTL(s), then step-out samples may be collected within the exposure unit. Step out samples should continue to be collected at sufficient distances to ensure that all soil exceeding the applicable SCTL(s) has been identified.
- These step-out results should help determine if the area represented by the sample might need the soil replaced or re-blended or if the contamination may be managed by an engineering control.

STOCKPILE SAMPLING VERIFICATION USING INCREMENTAL SAMPLING METHODOLOGY

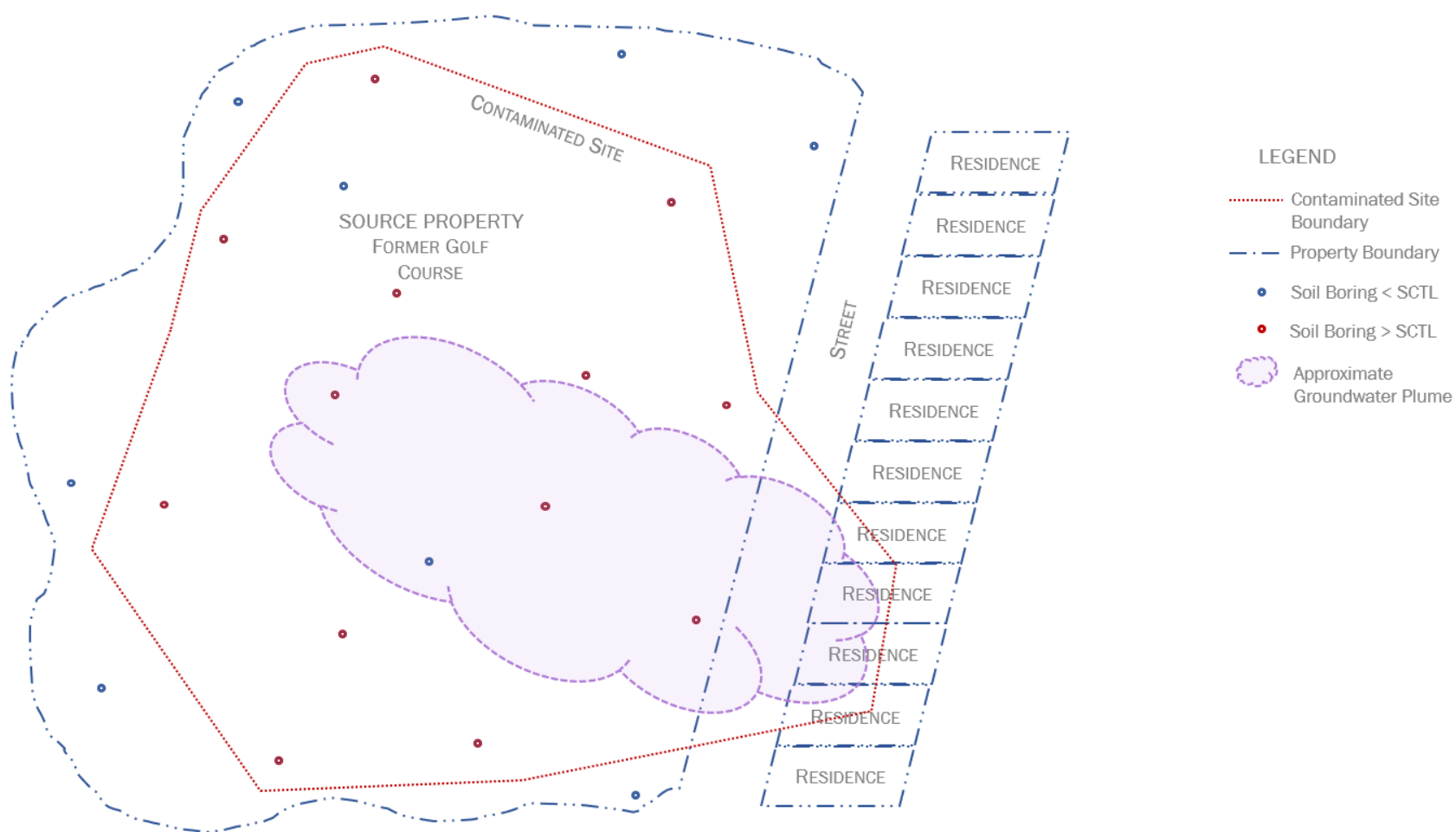
The Division commissioned a study by the University of Florida, Center for Environmental and Human Toxicology to evaluate stockpile sampling methodology that would be part of Best Management Practices for site soil reuse [see [White Paper – Stockpile Sampling for Soil Reuse at a Site](#) (Stuchal and Roberts, December 2020)]. The results of the study indicated that ISM yielded the most representative characterization. If verification sampling as described above is not conducted, an alternative approach could be to verify that stockpiled blended soils meet applicable SCTL(s) using ISM as per [Interstate Technology and Regulatory Council](#) guidance and the [White Paper](#). ISM or an equivalently rigorous stockpile sampling regimen could be allowable for verification of stockpile sampling results. Discrete or composite sampling methods are generally not statistically robust enough characterization methods to be representative of contaminant concentrations for decision making purposes.

Figure 1: A Contaminated Site & Source Property can be the same



A Source Property is the location where the release or discharge occurred. A Contaminated Site is the area where contaminants of concern exist or have spread from the source. In some instances, such as the example in Figure 1, the Contaminated Site is entirely within the Source Property. In this example, soil impacts above soil cleanup target levels (SCTLs) are limited to the source property. Therefore, the Contaminated Site is within the Source Property.

Figure 2: Example of a Contaminated Site that extends beyond the Source Property



A Contaminated Site includes the area where contaminants of concern exist or have spread from the source and may extend beyond the Source Property. Figure 2 demonstrates contamination extending beyond the Source Property (Former Golf Course) beneath the roadway and onto the adjacent Residences. In this example, the Contaminated Site includes the Source Property, Street, and four Residences.