

Soil Off-Haul Protocol

All soil must be evaluated by UC Berkeley standards for environmental contamination with laboratory analysis before export to any off-site location. **UC Berkeley soil cannot be taken to K-12 schools, residential developments or other sensitive receptor¹ sites.**

UC Berkeley retains right of approval for all proposed disposal or reuse sites.

Contaminated soil disposal will be subject to taxation through the Board of Equalization, based on weight and hazard class.

Responsibilities:

UC Berkeley EH&S will:

- Review sampling requirements imposed by landfill or other accepting site.
- Approve of sampling methods needed for complete site characterization of UC Berkeley properties.
- Approve of sampling personnel performing work.
- Review and interpret laboratory analytical information prior to soil removal.
- Receive copies of soil removal documents including shipping documents from each truckload.

UC Berkeley Construction and Design will include specifications that meet the following criteria:

- No sampling is to be conducted without EH&S review.
- Hazardous materials shipping documents, including shipments to hazardous waste or Class II landfills, are signed by UC Berkeley DOT-trained personnel.
- Non-hazardous soil shipment shipping documents are signed by UC Berkeley.
- All soil shipping procedures and documents are maintained according to this protocol.
- Contractors are not allowed to sample soil for off-haul waste characterization.
- All buildings that undergo abatement must include sampling soil around the perimeter, as part of the hazardous material survey.

Do not let contractors sample soil. Too often, contractors do not sample properly and either over categorize or under categorize material.

Planning in Advance:

- For efficient project planning, key actions will be to determine history of soil origins and former land uses, volume/quantity of soil, and schedule for removal. A Historic Site Assessment (HSA) must be completed to assess the potential for chemical contamination. If necessary, a hazardous materials (for example leaded paint, asbestos, and PCB caulking) survey of structures should be completed.
- It is often most efficient to perform sampling in advance of excavation or off-haul so that it can be determined if special handling requirements are needed for hazardous materials and to arrange disposal destination before excavation. Sampling of soil can occur anytime, inside, outside or underneath an existing building, but off-haul will be delayed if contamination is discovered during excavation.

- Utility clearances must be performed by Underground Service Alert (USA) and a private locator:
 - USA will only survey public right-of-way up to property line. Private locator is used to survey the entire site that will be disturbed, impacted or drilled.
- Site conditions dictate access and sampling methodology. A Soil Sampling Plan should be completed based on the findings of the HSA and any hazardous materials surveys. An Excavation, Grading, and Restoration Plan can be developed to aid in determining what equipment is needed for soil sampling.

Note: Analytical data is only valid for a limited period of time acceptable to landfill or delivery site. Projects must verify data validity requirements with prospective delivery site.

Best Options for Preliminary Sampling:

- Piggy-back on geotechnical work.
- Sample while pot-holing or exposing any subsurface soils such as when trenching.
- Drill inside of buildings with special equipment.

Limited sampling can be conducted by EH&S on projects that meet the following with 72-hours advance notice:

- a. Soil is exposed, no coring of surfaces is required, effort is expected to be less than 2 hours of work with hand equipment and sampling depth is less than 3-feet below ground surface.
- b. Project has equipment available to assist EH&S to reach appropriate depths and sampling requirements within 2 hours of work (Back hoes, augers, drill rigs, etc.)
- c. Where soil can be stockpiled/stored on site.
- d. Emergencies² where suspect materials (odors, chemicals, tanks, cultural resources, etc.) are encountered and need evaluation.

Qualified environmental consultants will need to be hired on most projects where:

- a. Soil is covered with structural materials and needs coring or destructive removal.
- b. Sampling effort is expected to be greater than 2 hours of work with hand equipment, and for depths greater than 3-feet below ground surface.
- c. Sampling needs are greater than 2 hours of work with mechanical equipment.
- d. Project is considered high profile³, will change use that includes ‘sensitive receptors’ or UC Berkeley has determined there is potential for tort litigation.

Soil Testing

1. At minimum, soils must be screened for the following analytical criteria. Based on the HSA or end-site requirements, additional testing may be required. :
 - a. Total Petroleum Hydrocarbons as Diesel (TPHd) and Gasoline (TPHg) by EPA Method 8015
 - b. California Toxic Metals (CAM 17) by EPA Method 6010B and 7471A

- c. BTEX-suite or Volatile Organic Compounds (VOCs) by EPA Method 8021 or 8260B

In some project cases, these additional analyses may also be required:

- d. Semi-Volatile Organics (SVOCs) by EPA Method 8260B
- e. Pesticides by EPA Method 8081B

2. Sampling methodology

- a. A Soil Sampling Plan (SSP) should be developed by the project and approved by EH&S.
- b. UC Berkeley generally requires soils to be sampled using Incremental Sampling Methodology (ITRC 2012). Sampling increments and frequency (samples/unit volume) should be included in the SSP.
- c. Additional samples required by disposal sites or end-use sites may be required and should be included in the SSP.

3. EH&S will review analytical data to determine if material meets:

- a. California Code of Regulations hazardous waste criteria (Toxic and Soluble Threshold Limit Concentrations).
- b. Disposal or delivery site criteria or UC Berkeley reuse criteria.
- c. UC Berkeley sampling and screening requirements.
- d. Complete and sign any profiles required for Class I (Hazardous) or Class II (Special Waste) landfill or other Treatment, Storage, and Disposal Facilities.

4. Construction & Design will approve removal, and final delivery to re-use site or landfill site with Contractor through EH&S by:

- a. Submitting analytical data to the final export location.
- b. Receiving written approval from accepting location (via form or email communication).
- c. Arranging with EH&S of expected dates for hazardous materials off-haul and document signatures.

5. Soil Removal/Off-Haul Documentation

- a. Non-hazardous waste must be shipped with a Bill of Lading (BOL). BOLs require the signature of a UC Berkeley Representative⁴. Construction & Design sends document copies to EH&S.
- b. Hazardous waste requires a Hazardous Waste Manifest and must be signed by EH&S or an EH&S approved qualified campus representative⁵. EH&S will file documents with the EPA.
- c. All soil shipping documents (BOLs and manifests) must be sent to EH&S for final record retention.

Notes:

1 = Sensitive receptors are defined as facilities where potentially sensitive population groups such as children, the elderly, and the acutely or chronically ill, are likely to be present. These include schools, playgrounds, child care centers, retirement homes, hospitals, and medical clinics.

2 = Emergencies are considered to be unforeseen events or discoveries of suspect materials during normal work. Lack of planning and need to remove soil with less than 72-hours advance notice does not qualify.

3 = High Profile would mean any site that has been subject to significant publicity, past compliance or operational issues, is under an environmental agency's authority, presence of activism, etc.

4 = UC Representative is whoever has legal signatory to accept or remove non-hazardous materials from UC property. Hazardous waste manifests can only be signed by appropriate UC Berkeley personnel.

5 = For example, if hazardous materials are limited to lead or asbestos, Sugi Harto at Facilities Services can sign manifests.