UNIVERSITY OF WASHINGTON
Environmental Health & Safety
Design Guide

Environmental Protection

Site Contamination

Basis of Design

This design guide will assist Project Managers with developing specifications and designs, while protecting schedules and budgets, when environmental contamination exists at a site.

Overview

Environmental Health & Safety (EH&S) maintains information on the location of known and suspected contaminated sites and oversees compliance with the Washington State Model Toxics Control Act (MTCA) rules. MTCA rules guide environmental release discovery, investigation and cleanup requirements and sets cleanup standards to protect human health and the environment.

The discovery of environmental contamination during construction can lead to project delays, contractor change-orders, and emergency response costs. Therefore, EH&S recommends that Project Managers conduct due diligence early in the project and manage known or suspected environmental contamination prior to construction where possible, and ensure specifications and designs clarify environmental impacts.

Due Diligence

Due diligence may start with reviewing a Phase I Environmental Site Assessment (ESA). Determine if a Phase I ESA is available for the site. The Phase I ESA helps determine if the site has any recognized environmental conditions based on historic uses, an onsite visit, onsite interviews, and an extensive records review. EH&S or UW Real Estate may have a copy of it. If a Phase I ESA doesn't exist for the property, consider hiring an environmental consultant to conduct one. Sites with heating oil tanks, imported soil, and a history of past commercial or industrial activities may contain environmental contamination.

Contact EH&S (206-616-0585) to discuss the results of the Phase I ESA and suggestions for additional assessments. EH&S will review environmental recommendations and help the Project Manager determine when additional assessments are necessary.

Reporting newly discovered environmental contamination

If contamination is found in due diligence or during construction, contact EH&S immediately. EH&S will help determine if the release is reportable. Notifications of confirmed releases from an underground storage tank (UST) or associated piping are required within 24 hours of discovery, while other types of releases are reported within 90 days.

Managing environmental contamination

Project Managers can manage certain types of site contamination issues early in the pre-design stage of the project. For example, consider the closure of an underground storage tank prior to mass excavation activities. If the tank leaked, properly trained and equipped contractors can manage the cleanup efficiently and effectively following UST and MTCA requirements. This simplifies specifications and designs as the project moves forward.

In other cases, site contamination may need to be managed during construction, and the Project Manager will rely on carefully crafted specifications and designs to inform bidders of environmental impacts including remediation and disposal plans.

Project Managers will rely on environmental consultants to conduct environmental assessments and, in combination with EH&S, clarify their impacts to the project designs. EH&S recommends use of the UW State Hazmat Contract to hire environmental contractors who are familiar with site contamination requirements and the impacts to the specifications. Contact EH&S for a copy of the contract and to review the environmental consultant's scope of work.

Environmental consultants may be called upon to provide the following types of services:

- Conducting due diligence (a Phase I and II Environmental Site Assessment)
- Closing down an underground storage tank per Ecology requirements
- Characterizing soil and groundwater conditions prior to and during construction
- Drafting a wastewater discharge permit that stipulates specific limits and conditions of allowable discharge
- Drafting a Construction National Pollution Discharge Elimination System Permit (NPDES)
- Drafting a Construction Storm Water General Permit (CSWGP) and a Storm Water Pollution Prevention Plan
- Developing a waste management plan including the proper storage, sampling and disposal of soil and water
- Drafting waste profiles for EH&S signature
- Conducting a methane assessment and determining the need for methane mitigation systems at sites located on or within 1000-feet of the Montlake Landfill
- Conducting a vapor intrusion assessment and determining the need for vapor mitigation systems
- Drafting assessment and cleanup reports for EH&S to review
- Preparing contract documents/specifications to ensure all contractors are aware of site conditions, safety considerations, cleanup and waste management plans

EH&S will review environmental bids, waste management plans and profiles, sampling results, draft assessment and cleanup reports, and designs and specifications to determine if they meet environmental standards. EH&S is required to submit environmental assessment and cleanup reports to Ecology.

EH&S (206.616.0585) will assist project managers with determining the extent of cleanup requirements. Cleanup requirements vary from site to site and depend on the location, contaminant, concentration, and the likelihood of impacts to human health and the environment. Ecology requires removal of the source of the environmental contamination to the extent practicable and in a manner that prevents the spread of hazardous substances. In most cases,

contaminated soil excavation and offsite disposal is required.

If soil contamination runs deep and is suspected of impacting the groundwater, Ecology will expect proof that the groundwater was not impacted. The environmental consultant will advise EH&S and the Project Manager if groundwater monitoring wells are necessary to assess this impact.

When environmental contamination cannot be fully remediated due to structural constraints or safety considerations, the University implements engineering or institutional controls to protect human health and the environment.

Engineering or Institutional Controls

Engineering or institutional controls limit or prohibit activities that may interfere with the integrity of a cleanup action or that may result in exposure to hazardous substances at a site.

Institutional controls can be
(a) Physical measures such as fences;
(b) Use restrictions such as limitations on the use of property or resources; or requirements that cleanup action occur if existing structures or pavement are disturbed or removed;
(c) Maintenance requirements for engineered controls such as the inspection and repair of monitoring wells, treatment systems, caps or groundwater barrier systems;
(d) Educational programs such as signs, postings, public notices, health advisories, mailings, and similar measures that educate the public and/or employees about site contamination and ways to limit exposure

Disposal of contaminated soil

During assessment and cleanup activities contaminated soil must be contained, labeled and protected from the weather. Contaminated soil must remain on site until it has been fully characterized for disposal.

Waste soil may be stored in bins, labeled drums, or covered stockpiles on Visqueen before it is hauled under a waste profile to a UW authorized disposal site. In certain cases, soil may be pre-characterized, placed into dump trucks, and hauled directly to a UW authorized disposal site.

Representative samples of contaminated soil must be taken for waste designation purposes and the analytical must be sent to EH&S for review prior to disposal.

EH&S will determine if the soil is Hazardous Waste, Solid Waste or “reusable”. All Hazardous Waste and Solid Waste must go to a UW approved disposal site. If soil designates as a Hazardous Waste, EH&S must manage the containment, transport and disposal of it through the state hazardous waste contract. If soil is a solid waste, the contractor will arrange for containment, transport and disposal to a UW approved treatment, recycling or disposal site.

Petroleum-contaminated soils depending on the specific contaminant and concentration are a Solid Waste and must be disposed at a UW approved treatment, recycling or disposal site like a subtitle D landfill or a treatment facility. Treatment Facilities classify and manage petroleum-contaminated soils by the concentration of gas-, diesel-or heavy oil-hydrocarbons present in the

waste. Class 3 and 4 petroleum contaminated soils contain high concentrations of petroleum hydrocarbons and are thermally treated.

Disposal costs vary depending on the contaminant, container, volume, and transportation requirements. It can be quite expensive to dispose of soil that designates as a Hazardous Waste. Contact EH&S at 206.685-3759 for assistance in estimating disposal costs. A good rule of thumb when estimating the volume and weight of soil for disposal is that one cubic yard of dry soil weighs approximately 1.5 tons.

Disposal of contaminated water

Where contamination exists at a construction site, water quality will need to be evaluated during and post construction to identify appropriate discharge locations (storm water system, sanitary system, off-site disposal).

During construction, water should be pumped into Baker tanks, settled and then sampled for turbidity, pH, and suspected chemical contaminants following permit requirements prior to discharge.

Projects need authorization permits to discharge to the sanitary sewer, to the storm sewer system, or directly to surface waters of the state.

Contact EH&S for assistance with the proper treatment, sampling and discharge permit requirements. See the Wastewater and Storm Water Management Design Guides for more information.

Worksite training requirements

All site workers at a MTCA listed contaminated site who will or are likely to have contact with contaminated soil, water or air-borne hazardous materials must have the appropriate level of Hazardous Waste Operations and Emergency Response (HAZWOPER) training (WAC 296-843) or the documented equivalent training.