

TA-21: Diesel Spill, AST

### Sampling and Analysis Plan

#### Amendment 3

### TA-21-357 Continuous Coring For Fuel Oil Assessment

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**Project Numbers: 5393.06 and 5383.06**

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### 1.0 Purpose

The purpose of this amendment is to provide guidance in conducting additional subsurface assessment in support of the TA-21-357 Fuel Oil Assessment using a drill rig to collect core samples in areas determined to be contaminated during previous assessment activities.

### 2.0 Objective

The first objective of the drilling is to better define the vertical and horizontal extent of contamination in the area determined to be most heavily contaminated based on visual observations, soil analyses and GeoProbe sampling efforts during the pipe exposure sampling and Geo Probe sampling tasks.

### 3.0 Sample Collection

A CME-75 drill rig will be used to collect minimum 2" diameter core samples. Approximately ten vertical borings (see Figure 1-1) will be advanced through the area identified with the highest level of contamination. Borings will be advanced through the contaminated area, the first near the trench and additional coring will be stepped out towards the tank and parallel to the Steam Plant building (TA-3-21) in intervals that are based on previous boreholes. Coring will commence in a sequence (#1 through #8 see Figure 1-1) to assess the horizontal and vertical extent of the contamination. Coring will continue in the same fashion if the extent of the contamination goes outward beyond coring locations #1 through #8. Proposed sampling locations are provided on the attached site diagram (Figure 1-1). The vertical holes will provide data on the depth and horizontal extent of contamination in the most contaminated area between the AST (TA-21-357) and the Steam Plant.

If necessary, an additional angled boring will be designated for under the building (see Figure 1-1 #9). This bore hole will be used to assess the extent of contamination under the Steam Plant building.

After collection, each coring will be logged by a geologist to document depths at which soil types change and identify any fractures that may be encountered. The core samples will then be divided into samples for laboratory analysis with an emphasis on segregating samples from the various soil types encountered. Samples will be taken in intervals of 5 to 12 feet depending on the contamination encountered. Because the number of samples will be dependant upon the soil/tuff profile encountered, the exact number of samples is unknown.

Parameter	Sample Container	Preservative
TPH-DRO	8 oz glass wide mouth	Cool to 4° C and 14 day holding time.
PAH's	8 oz Amber glass wide mouth	Cool to 4° C, no head-space in jar and a 14 day holding time.
BTEX	4 oz Amber glass wide mouth	Cool to 4° C, no head-space in jar and a 14 day holding time.

### 4.0 Analysis and Quality Control.

Samples collected will be labeled and handled in accordance with the procedures outlined in the Sampling and Analysis Plan (SAP). The chain of custody, and decontamination requirements in the SAP will also apply to the drilling activities. The sampling team will attempt to collect one field duplicate sample from the contaminated zone of the fill material and the tuft. Collection of the duplicates will be dependent upon the amount of soil present in the core sample to represent these zones.

Each sample collected will be analyzed for diesel range organics (TPH-DRO) using method SW846 8015B. Two samples from soil or tuft zones with indications of contamination will be analyzed for polynuclear aromatic hydrocarbons (PAH) using method SW846 8310(HPLC) or SW846 8270C and benzene, toluene, ethylbenzene, and xylenes (BTEX, Nathalene and MTBE) using method SW846 8021 or SW846 8260B.

### 5.0 Data Analysis

Drilling locations will be surveyed using GPS for inclusion on the project maps being developed by (JCNNM-UMAP). The concentration profile will be diagrammed to determine the probable depth of contamination. The horizontal contamination profile along any identified fissures will be diagrammed to determine the likelihood of contaminant travel within the fissures.

Figure 1-1. Locations for vertical and angled coring and sampling for contamination assessment at TA-21-357 and TA-21-57.

