Florida Department of

Memorandum — Environmental Protection

To: Interested Parties

From: Mike Sole, Chief
Bureau of Petroleum Storage Systems

Date: February 3, 1998

Subject: Interim Guidance for Laboratory Analyses of Soil Samples for Petroleum Contamination Site Assessments

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In addition to allowing use of field soil screening techniques for soil assessment, the revised Chapter 62-770, F.A.C. established soil cleanup target levels which need to be compared to soil laboratory analytical results. Therefore, all petroleum site assessments must have laboratory analyses performed on representative soil samples from areas suspected of being contaminated by petroleum products (regardless of the type of product). Soil samples obtained for the purpose of comparison with soil cleanup target levels must be:

a. Grab samples (not composited) which are collected during field soil screening activities;
b. Collected in the vadose zone no deeper than one foot above the water table; and
c. Collected at least once during site assessment (although additional sampling may be required depending on the age of the soil data and on the horizontal and vertical extent of soil contamination). Laboratory samples may not be needed each time field soil screening is performed (if adequate laboratory analytical results have already been obtained).

The criteria to determine which subsamples of the field screened samples should be taken for laboratory analyses are listed below.

1. At each source area, when there is a positive response (above background) during soil screening activities, at least three soil samples for laboratory analyses should be collected as follows:
   a. One sample taken at the soil screening location with the highest corrected hydrocarbon measurement (if several screening results exceed the instrument's detection capability, the sample should be collected close to the suspected source area);
   b. One sample taken at a soil screening location with a medium range corrected hydrocarbon measurement; and
   c. One sample taken at a soil screening location with a low positive response corrected hydrocarbon measurement (the value should be above background).

   Each sample should be analyzed for Volatile Organic Aromatics (VOAs) plus MTBE and Polycyclic Aromatic Hydrocarbons (PAHs) using any approved method and Total Recoverable Petroleum Hydrocarbons (TRPHs) using FL-PRO.

Note, additional laboratory samples may be required in cases where there are large areas of soil contamination (to ensure that at least 5% of the positive soil screening readings are analyzed as appropriate), in cases where contamination is located in complex lithologies, in cases where there is poor correspondence between soil screening results and laboratory results, or in cases where the age of the spill suggests that any contamination remaining may consist of non-volatile chemicals. Additional laboratory samples should also be obtained when different areas of the contaminated soil are suspected to have been impacted by different types of petroleum products.

2. At each source area, when there are no positive responses during soil screening activities, only one soil sample for laboratory analyses should be collected from the suspected contamination source area. If information is not available regarding the depth of the suspected discharge, or if there was a suspected surface spillage (based on the eligibility information), then the sample should be collected from within two feet of the ground surface. However, if the discharge is suspected to have occurred at depth (such as a ruptured line or fuel tank), then the soil sample should be collected at the depth suspected of having been most impacted. The soil samples should be analyzed for VOAs plus MTBE and PAHs using any approved method and TRPHs using FL-PRO.

Note, if laboratory analyses indicate that there is petroleum contamination in the soil, then soil assessment should proceed on the assumption that the screening method may not be able to resolve the extent of the soil contamination (see below).

3. At sites where soil contamination has been confirmed from laboratory results, but it has been demonstrated that vadose zone soil contamination is not detected by field soil screening or where the soil contamination is suspected to not register on standard field soil screening devices, then the extent of the soil contamination will need to be defined by laboratory analyzed samples. The sampling locations and the number of samples needed to define the extent of this type of soil contamination are determined on a site by site basis.

4. Laboratory soil samples should be obtained from the perimeter of new excavation areas, during or immediately after excavation, to confirm that the soil contamination has been removed (usually at least one soil sample collected from the north, south, east and west sides of the excavation). The samples should be collected at the depth where the soil was most impacted. At least one soil sample should also be obtained from the bottom of the excavation if the water table was not intersected. These samples should be analyzed for VOAs plus MTBE and PAHs using any approved method and TRPHs using FL-PRO (unless grab samples were collected and analyzed prior to source removal, in which case the confirmatory samples only need to be analyzed for the contaminants identified in the excavated soil).

Soil sampling laboratory analytical results should be compared to the soil cleanup target levels specified in Table IV of the revised Chapter 62-770, F.A.C. The default cleanup standards in Table IV are the Direct Exposure I concentrations illustrated in column 1 and the Leachability Table V concentrations illustrated in column 3.

Owners of petroleum contaminated sites with Remedial Action Plans or Monitoring Only Plans that were approved prior to September 23, 1997, and were being implemented on that date, have the option to adhere to the site rehabilitation completion requirements stipulated in the Chapter 62-770, F.A.C. that was in effect on September 3, 1996 (as long as the approved active remediation or monitoring is continued to completion). If they do, these sites are not required to perform the laboratory soil sampling as stipulated in the revised rule.

Tabular summaries of soil analytical results should be combined with the screening results. The contaminant concentrations should be illustrated adjacent to the filtered, unfiltered and corrected hydrocarbon measurements.

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