

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK BRANCH

LIMITED SUBSURFACE INVESTIGATION FOR LEAKING UNDERGROUND STORAGE TANK FACILITIES

July 27, 2007

This guidance is for performing a Limited Subsurface Investigation (LSI) at an underground storage tank (UST) site. As the tank owner of the UST system, you are responsible for insuring the LSI is performed in accordance with the following three sections included in this guidance:

I. Scope of Work for LSI Field Activities

Your ERAC shall follow this scope of work , and you will be reimbursed in accordance with the most recent Limits of Reimbursement for LSI. Your ERAC should have a copy of the most recent Limits of Reimbursement. You may find this document on our web site.

The purpose of the LSI is to simply determine if a release of a petroleum substance has occurred. No delineation of any contamination detected is attempted.

The LSI is performed utilizing direct-push technology. There are numerous advantages to using direct-push technology, in lieu of a conventional drill rig. Some of these advantages are: (1) quicker and cheaper boring/piezometer installation; (2) generation of less waste; and, (3) less spatial constraints. However, there are also certain disadvantages to using direct-push technology. Whether or not direct-push will be successful at a location depends greatly on the lithology of the site. Also, the relative small diameter of the piezometers limits their potential use.

For those persons familiar with MDEQ's "Guidelines for the Permanent Closure of Petroleum Underground Storage Tank Systems", the LSI closely follows the "Closure in Place" protocol. Even though there are differences between the "Closure in Place" protocol and the LSI, the main objective is the same. To simply determine if a release of a petroleum substance has occurred by the placement soil borings in the locations which would most likely produce the highest levels of contamination, namely, the perimeter of the tank bed and dispenser island(s).

II. Report Format for LSI Field Activities

Your ERAC shall prepare the LSI report for the field activities in this format.

III. Paperwork After LSI Field Activities

Your ERAC shall submit a complete LSI report to you. Then you shall review and submit a copy of the report to MDEQ. You shall submit your ERAC's invoices along with a Certification Affidavit (attached).

I. SCOPE OF WORK FOR LSI FIELD ACTIVITIES

The tank owner's ERAC shall follow this scope of work for performing the LSI. The ERAC shall follow the most current MDEQ-UST Standard Operating Procedure Manual (SOP) when performing all field activities.

1.0 Marking of Underground Utilities

All underground utilities shall be identified and clearly marked prior to any drilling activities as specified in the SOP under **I. Pre-Investigation Activities B. Utility Survey.**

2.0 One-quarter Mile Water Well Survey

The United States Geological Survey (601-965-4600), the Mississippi Office of Land and Water Resources (601-961-5200) and the local city or county water association must be contacted to obtain the location of all water wells within one-quarter mile radius of the site. All water well locations identified by the resources mentioned above should be field verified.

3.0 Boring Placement – Perimeter of Tank Bed

Tank bed borings should be advanced along the perimeter of the tank bed. The borings should be placed equidistant apart with not greater than 30-feet and not less than 20-feet between tank bed borings. Please use the distance that allows for the least number of borings. However, **no more than 7 tank bed borings should be installed without prior approval of the MDEQ Project Manager.** Boring should be advanced into native soil to a depth of approximately one-foot below the bottom of the deepest tank. Generally, the termination depth will be approximately 13-feet.

Each boring must be screened with a photoionization detector (PID) or a flame ionization detector (FID) at four-foot intervals beginning at four-foot below land surface. Below is a list of scenarios that should be used in determining sampling intervals. Please note: Elevated PID or FID readings are considered to be greater than 10 ppm and 250 ppm, respectively.

Scenario #1 – No Groundwater Encountered/Elevated PID or FID Vapor Readings

In this scenario, two soil samples from the boring may be sent to laboratory for proper analysis. One soil sample shall be collected from the termination depth. The second soil sample shall come from the interval which detected the highest PID/FID reading. If the interval with the highest PID/FID reading is at termination depth, then collect only that sample from the termination depth.

Scenario #2 – No Groundwater Encountered/No Elevated PID or FID Readings

In this instance, only one soil sample should be taken from the termination depth for laboratory analysis.

Scenario #3 – Groundwater Encountered

In cases where groundwater is encountered, only a groundwater sample should be taken for laboratory analysis. No soil samples should be taken regardless of the PID or FID readings. No piezometers should be installed. The groundwater sample should be extracted directly from the borehole. Please note that if free product is detected, no samples should be taken from that boring.

4.0 Boring Placement – Dispenser Island(s)

Once the borings have been installed along the perimeter of the tank bed, installation of borings along the dispenser island(s) should begin. As stated in the “Guidelines for the Permanent Closure of Petroleum Underground Storage Tank Systems”, an island is considered to be any dispenser or series of dispensers that are oriented in a straight line. Therefore, several different dispenser arrangements may exist that could be considered as one island. You should use your professional judgement to determine the most appropriate sampling scheme, however, **no more than six dispenser island borings should be installed without prior approval of the MDEQ Project Manager.**

If the dispenser island(s) are less than 60-feet in total length, the soil boring should be installed at the midpoint of that island. If the dispenser island(s) is greater than 60-feet in total length, soil borings must be conducted equidistant along the length of that island such that not greater than 30 feet and not less than 20 feet exists between dispenser island borings. Dispenser island(s) borings shall be advanced to a depth of one-foot below the bottom of the piping trench and into the native soil. This depth will be approximately 4-feet. One soil sample shall be taken for laboratory analysis from the bottom of the boring. No groundwater samples should be taken.

5.0 General Sampling Information

After all borings have been installed and the appropriate samples have been taken, it is necessary to submit these samples to a laboratory for proper analysis. All of the samples collected during this investigation should be analyzed for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) and Methyl Tertiary Butyl Ether (MTBE). However, only a total of two samples should be analyzed PolyNuclear Aromatic Hydrocarbons (PAHs). One PAH sample should come from the tank bed borings and one from the dispenser island(s) borings. Also, please ensure that all borings have properly abandoned once the appropriate samples have been taken.

NOTE: Remember to collect trip blanks, equipment blanks, and duplicate samples as outlined in the SOP.

*** Soil samples collected for Total BTEX and MTBE analysis shall be collected in accordance with EPA Method 5035. For the high level option, the MDEQ-UST Branch only reimburses for collecting a bulk sample.*

PAH Groundwater Sample (ppm)	
Boring / MW	
Sample Date	
Acenaphthene	
Acenaphthylene	
Anthracene	
Benzo (b) Fluoranthene	
Benzo (g, h, i) Perylene	
Benzo (k) Fluoranthene	
Benzo (a) Anthracene	
Benzo (a) Pyrene	
Chrysene	
Dibenzo (a, h) Anthracene	
Fluoranthene	
Fluorene	
Indeno (1,2,3,c,d) Pyrene	
Naphthalene	
Phenanthrene	
Pyrene	
Free Product Thickness (feet)	

III. PAPERWORK AFTER LSI FIELD ACTIVITIES

As the tank owner of the UST system, you shall follow the three steps below after the field activities have been completed.

Step One - Final Report Submittal

After the fieldwork has been completed, the next step is for the ERAC to prepare the final report. Data collected from this scope of work shall be reported as described in Section II of this guidance document.

Once the final report has been completed, the ERAC shall forward a copy to you for your review. The report will detail the findings of the environmental assessment, so the MDEQ strongly recommends that you review this report and ask questions regarding its content and quality.

Once you are satisfied with the final report, a copy shall be submitted to the MDEQ. It is imperative that this report is submitted in a timely fashion. The letter accompanying this package sets a "Due Date" for final report submittal. As stated in that letter, \$100.00 may be deducted from your eligible reimbursement for every calendar day the final report is overdue.

Step Two - Submittal of Certification Affidavit and Invoices

Reimbursement from the Trust Fund for the LSI can only occur after the MDEQ approves the final report and the MDEQ receives a completed "Certification Affidavit" (copy attached) along with itemized invoices.

Be sure that the "Certification Affidavit" has been completed in its entirety and with accurate information. Please ensure that information such as the Site Name, Trust Fund I.D. number, federal tax I.D. number or social security number, registered tank owner, etc. is correct. All applicable invoices (laboratory services, drilling services, etc.) shall be included along with the completed "Certification Affidavit". You may want to compare the invoices to the Limits of Reimbursement for LSI. The MDEQ shall only reimburse up to these limits, unless previously approved by our office.

Please note that if information on the "Certification Affidavit" is incorrect or omitted or if applicable invoices are omitted, reimbursement will be delayed until the correct information is submitted. If you have any questions regarding the completion of the "Certification Affidavit" or about the reimbursement process, please contact Donna Rogers at (601) 961-5288.

Please submit the "Certification Affidavit" and itemized invoices to:

Donna Rogers
MDEQ
P.O. Box 2261
Jackson, MS 39225-2261

Step Three – Reimbursement of you and your ERAC

As stated above, reimbursement from the Trust Fund for the LSI can only occur after the MDEQ approves the final report and the MDEQ receives a completed “Certification Affidavit” along with itemized invoices. Normally this process can take from 8 to 12 weeks from the time the Final Report is submitted to the MDEQ. It is up to you to pay your ERAC. As the tank owner/operator, you will be reimbursed directly. Please note that any evidence or discovery of fraud or other misuse of payments received from the Trust Fund may result in referral to the Attorney General for appropriate action.

Attach

Certification Affidavit