

PROJECT NUMBER BORING NUMBER 160492.SA.03 MW-104

## **SOIL BORING LOG**

PROJECT: Long Term Operational Areas - Memphis Depot LOCATION : Memphis, Tennessee

ELEVATION: 295.76 feet MSL (TOC); 296.13 feet MSL (ground)

DRILLING CONTRACTOR: Tri-State Testing Services, Inc.

DRILLING METHOD AND EQUIPMENT USED: Hollow Stem Auger 4.25 inch ID with CME Sampler

WATER LEVELS: 63.01 feet BTOC (11/2001)

START: 10/15/2001

END: 10/16/2001

LOGGER: Jayl

| WATER LEVELS: 63.01 feet BTOC (11/2001) START: |              |     |        |   | 10/15/2001 END: 10/16/2001   | LOGGER: | Jay Parker (Jacobs)             |
|--|--------------|-----|--------|---|--|---------|---------------------------------|
| DEPTH BELOW SURFACE (FT) STANDARD              |              |     | FT)    | STANDARD  | SOIL DESCRIPTION   |         | COMMENTS                        |
| ·  |              |     |        | PENETRATION                                       |  |         |                                 |
|  | RECOVERY (%) |     |        | TEST  | SOIL NAME, USCS GROUP SYMBOL, COLOR,   |         | DEPTH OF CASING, DRILLING RATE, |
|  |              |     | #/TYPE | RESULTS   | MOISTURE CONTENT, RELATIVE DENSITY,  |         | DRILLING FLUID LOSS,            |
|  |              |     |        | 6"-6"-6"-6"                                       | OR CONSISTENCY, SOIL STRUCTURE,  |         | TESTS, AND INSTRUMENTATION.     |
|  |              |     |        | (N)   | MINERALOGY.  |         | Corrected FID (ppm):            |
|  |              |     |        |   | 5" Asphalt and gravel  |         | (Soil headspace)                |
| _  |              |     |        |   | CLAYEY Silt, drown 7.5 YR 4/3, medium stiff, non-plastic, damp   |         |                                 |
|  | i i          | 100 |        | auger   |  |         | 0.5                             |
| _  |              | 100 |        | drilling method<br>no penetration test<br>results |  |         | 0.5 =                           |
| _  | <u>   </u>   |     |        | results   |  |         | _                               |
|  |              | !   |        |   | Clayey SILT, brown 7.5 YR 4/5 with pinkish-grey 7.5YR 6/2 mottles, med   | lium,   |                                 |
| _  |              |     |        |   | stiff, non-plastic, dry  |         | =                               |
| 5  |              | i   |        |   |  |         |                                 |
|  |              |     |        |   |  |         |                                 |
| _  |              | 100 |        |   |  |         | 0.0 _                           |
|  |              | !   |        |   |  |         |                                 |
| _  |              |     |        |   |  |         | _                               |
| _  | i – – – i    | i   |        |   |  |         | _                               |
|  |              |     |        |   | Clayey SILT, brown 7.5YR 4/5, medium stiff, non-plastic, dry   |         |                                 |
| -  | Į į          |     |        |   |  |         | =                               |
| 10   | !!!          | !   |        |   |  |         |                                 |
|  |              | 400 |        |   |  |         | _                               |
| _  |              | 100 |        |   |  |         | 0.0 _                           |
|  |              | i   |        |   |  |         |                                 |
|  | i            | i   |        |   |  |         | =                               |
| _  | II           | J   |        |   |  |         | _                               |
|  | !            |     |        |   | Clayey SILT, same as above, damp   |         |                                 |
| _  |              |     |        |   |  |         | =                               |
| 15   |              |     |        |   |  |         |                                 |
|  |              |     |        |   |  |         |                                 |
| -  | i            | 100 |        |   |  |         | 0.0 _                           |
|  |              |     |        |   |  |         |                                 |
|  |              |     |        |   |  |         | _                               |
| _  | !            |     |        |   | No   | . F-O   | =                               |
|  |              |     |        |   | Clayey SILT, mottled again as the 3-8' zone, with reddish black slumps of<br>nedium stiff, damp, more clay content than above, outside of sample wet | reux,   |                                 |
|  |              |     |        |   | mediani dani, danip, more day doment than above, datalae or daniple wet  | •       | _                               |
| 20   | i            | i   |        |   |  |         | _                               |
|  |              | 100 |        |   |  |         | 0.0                             |
| _  |              | 100 |        |   |  |         | 0.0 _                           |
|  |              |     |        |   |  |         |                                 |
|  |              |     |        |   |  |         | IFO @ 00 to -4                  |
| _  | ii           | j   |        |   | Clayey SILT, same as above, grading to silty sanc  |         | JEG @ 23 feet<br>Perched water  |
|  | ı i          |     |        |   | says, sair, same as above, grading to sity same  |         | . S. S. Su Water                |
| 1 7  | <u> </u>     |     |        |   |  |         | _                               |
| <sup>25</sup> —                                |              |     |        |   | Diff. CAND and the beauty C. DVD 4/4   |         | _                               |
|  |              | 100 |        |   | Silty SAND, reddish brown 2.5YR, 4/4 moist, soft/medium dense, grading sandier with depth.   |         | 0.0                             |
| -  | i :          | .00 |        |   | solution with depth.   |         | -                               |
| ] _  | i i          | Ī   |        |   |  |         | _                               |
|  | į į          |     |        |   |  |         |                                 |
| _  |              | !   |        |   | SAND, very pale brown 10YR 7/4, loose, dry, fine, well sorted.   |         | -                               |
| _  |              | !   |        |   |  |         | _                               |
| 00   |              |     |        |   |  |         | ]                               |
| 30   | i :          | i   |        |   |  |         | _                               |
|  | i i          | 50  |        |   |  |         | 0.0                             |
| _  | ı i          |     |        |   |  |         | ]                               |
| -  | <u> </u>     | ]   |        |   |  |         | _                               |
|  |              |     |        |   | SAND, same as above  |         |                                 |
| _  |              | !   |        |   | or are, carrie as above  |         | -                               |
|  |              |     |        |   |  |         | _                               |
| 1 _ 7  |              | i   |        |   |  |         | _                               |
| 35   | ı            | E0  |        |   | SAND, 5 YR 5/8 yellowish red, fine to medium, loose, damp, three gravel  |         |                                 |
|  | ı i          | 50  |        |   | איס איז פ ,טאאס yellowish rea, title to mealum, loose, damp, three gravel  |         | 0.0                             |
|  | !!!          |     |        |   |  |         | _                               |
|  |              |     |        |   |  |         | _                               |



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Long Term Operational Areas - Memphis Depot LOCATION : Memphis, Tennessee PROJECT:

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|   | : 63.01 feet BTOC          |  | 10/15/2001  | END: 10/16/2001                                | LOGGER :         | Jay Parker (Jacobs)  |                        |
|---|----------------------------|--|---|--|------------------|--|------------------------|
| EPTH BELOW SU   |                            | STANDARD   |   | SOIL DESCRIPTION                               |                  | COMMENTS   |                        |
| INTERVA   | L (FT) RECOVERY (%) #/TYPE | PENETRATION TEST RESULTS   |   | GROUP SYMBOL, COLOR,<br>NT, RELATIVE DENSITY,  |                  | DEPTH OF CASING, DRILLII<br>DRILLING FLUID LOSS,                     | NG RATE,               |
|   |                            | 6"-6"-6"<br>(N)  | OR CONSISTENCY,<br>MINERALOGY.                                    |  |                  | TESTS, AND INSTRUMENTA   | ATION.<br>ed FID (ppm) |
| - <b> </b><br>- <b> </b><br>-0 - <b> </b><br>- <b> </b> | 50                         | Used hollow-stem<br>auger<br>drilling method<br>no penetration test<br>results | SAND, same as above damp, no gravel.                              | e, grading to SAND 5YR 5/8 yellowish red,      | medium, loose,   |  | 0.0                    |
| - <br>-   |                            |  | SAND, as above, trace   | e gravel                                       |                  |  |                        |
| 5   | 100                        |  | SAND, moist to wet  |  |                  |  | 0.0                    |
| - <b> </b><br>- <b> </b><br>0                           |                            |  | SAND, as above, to  | race gravel grades away by 48                  |                  |  |                        |
| / <br> -<br> -<br> -<br> -                              | 100                        |  |   |  |                  |  | 0.0                    |
| - <b>i</b> -  | 400                        |  | SAND, 5YR 5/6 yellow  | vish red, medium to coarse, well sorted, loo   | se damp.         |  | 0.0                    |
| -¦<br>_l<br>!<br>-                                      | 100                        |  |   | h red, with yellow mottles, very plastic, sof  | t, damp.         |  |                        |
| -i<br> <br> - <br> - <br> -                             | 70                         |  | Clay continues to 59<br>SAND same as above<br>SAND turns to yello |  |                  |  | 0.0                    |
| - <br>- <br>- <br>-                                     |                            |  | SAND, fine, wet seam<br>SAND, 5YR 5/6 yellow                      | ~1" vish red, medium to coarse, saturated, med | ium dense.       | Sample collected for VOCs<br>Water Table<br>Sample collected for TOC | <u> </u>               |
| 5_ <b> </b><br> <br> -                                  | 75                         |  | Sandy Silt, very fine, d  | lense, join clay, slightly plastic             |                  |  |                        |
| -1<br>-1<br>-1  |                            |  | SAND, same color, fin<br>SAND as above gradir                     |  |                  |  |                        |
|   | 50                         |  | Pebbly SAND, yellowis<br>saturated                                | sh-red, coarse, loose, rounded to subround     | led fine gravel, | Saturated sample lost out bottom.                                    |                        |
|   |                            |  | No sample recovered,  | probably same loose, saturated, pebbly SA      | AND as above.    |  |                        |



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|--|----------|----------|--------|---|--|---------------------------------|
| DEPTH BELOW SURFACE (FT) STANDARD              |          |          |        | STANDARD  | SOIL DESCRIPTION   | COMMENTS                        |
| 1  | INTERVA  | L (FT)   |        | PENETRATION                                       |  |                                 |
| 1  |          |          |        | TEST  | SOIL NAME, USCS GROUP SYMBOL, COLOR,   | DEPTH OF CASING, DRILLING RATE, |
|  |          |          | #/TYPE | RESULTS   | MOISTURE CONTENT, RELATIVE DENSITY,  | DRILLING FLUID LOSS,            |
|  |          |          |        | 6"-6"-6"-6"                                       | OR CONSISTENCY, SOIL STRUCTURE,  | TESTS, AND INSTRUMENTATION.     |
| 1  |          |          |        | (N)   | MINERALOGY.  | Corrected FID (ppm):            |
|  |          | l        |        | (**/  |  | (66.00)                         |
| 75   |          | i        |        | Used hollow-stem                                  |  |                                 |
|  | Ī        | į ,      |        | auger drilling method no penetration test results |  |                                 |
| -  |          | 0        |        | no penetration test                               |  | _                               |
|  |          | <u> </u> |        | results   |  |                                 |
|  |          |          |        |   |  | _                               |
| _  |          | !<br>1   |        |   | No comple may 50/ finer cond in complex acturated  | _                               |
|  | i        | i        |        |   | No sample, may 5% finer sand in sampler, saturated   |                                 |
|  | ĺ        | Ī        |        |   |  | _                               |
| 80   |          | <u>I</u> |        |   |  | _                               |
|  |          |          |        |   |  |                                 |
| _  |          | 5        |        |   |  | _                               |
|  |          | !<br>!   |        |   |  |                                 |
| 1 7  | i        | i        |        |   |  | _                               |
| -  | I———     | i        |        |   | No sample again, race clay at end at 80'   | -                               |
|  |          | <u> </u> |        |   | No sample again, race clay at end at 88'   |                                 |
|  |          | <u> </u> |        |   |  | _                               |
| 85   |          |          |        |   |  | _                               |
|  |          |          |        |   |  |                                 |
| _  |          | 5        |        |   |  | -                               |
|  | İ        | Ī        |        |   |  | _                               |
|  |          | l        |        |   |  |                                 |
| _  | <u> </u> | ļ        |        |   | Oand and arrival as above at 00 51   | -                               |
|  |          |          |        |   | Sand and gravel as above at 90.5'  |                                 |
|  |          |          |        |   |  | _                               |
| 90   |          | i        |        |   |  | _                               |
|  | Ī        | 100      |        |   | OLAV deducered to according to the control of the c |                                 |
| -  |          | 100      |        |   | CLAY, dark greenish, gray, CLAY 4/1, very dense/stiff, damp  | _                               |
|  |          | <u> </u> |        |   |  |                                 |
|  |          | <u> </u> |        |   |  | _                               |
| -  |          | <u> </u> |        |   | BORING TERMINATED @ 93 FEET BGS.   | -                               |
| -  |          |          |        |   | BORING TERMINATED (# 93 FEET BGS.  | =                               |
| 95   |          |          |        |   |  |                                 |
|  |          |          |        |   |  | _                               |
| -  |          |          |        |   |  | =                               |
|  |          |          |        |   |  |                                 |
| 1 -  |          |          |        |   |  | _                               |
| -  |          |          |        |   |  | -                               |
| 1  |          |          |        |   |  |                                 |
| -  |          |          |        |   |  | -                               |
| 100  |          |          |        |   |  | _                               |
|  |          |          |        |   |  |                                 |
| -  |          |          |        |   |  | -                               |
| 1  |          |          |        |   |  |                                 |
| 1 -  |          |          |        |   |  | -                               |
| -  |          |          |        |   |  | -                               |
| 1  |          |          |        |   |  |                                 |
| 1 -  |          |          |        |   |  | -                               |
| 105  |          |          |        |   |  | _                               |
| 1  |          |          |        |   |  |                                 |
| -  |          |          |        |   |  | -                               |
| 1  |          |          |        |   |  |                                 |
| 1 -  |          |          |        |   |  | I -                             |
| _  |          |          |        |   |  | -                               |
| 1  |          |          |        |   |  |                                 |
| -  |          |          |        |   |  | _                               |
| 110  |          |          |        |   |  |                                 |
| 1 -  |          |          |        |   |  | _                               |
| 1 _  | l        | l        | 1      |   |  | I                               |