



Mr. Ervin Lane  
Solid Waste Section - Compliance  
Division of Waste Management  
North Carolina Department of Environment and Natural Resources  
401 Oberlin Road, Suite 150  
Raleigh, NC 27605

March 22, 2010

Re: **Groundwater Contamination Assessment Plan**  
Cherokee County Subtitle D Lined MSW Landfill  
10160 US Hwy 19  
Murphy, NC 28905  
Permit No. 20-02

Mr. Lane:

Municipal Engineering Services Co., P.A. (MESCO), on behalf of Cherokee County, appreciates the opportunity to present this brief Groundwater Contamination Assessment Plan (Plan) to the Solid Waste Section. This Plan has been prepared in response to comments from your February 3, 2010 letter, attached, regarding MESCO's August 2009 *Groundwater Sampling Report and Statistical Analysis* (Report), and requesting further horizontal and vertical characterization of the contamination located in the vicinity of MW-6D and MW-7. The Report mentions laboratory results from this event with select VOC concentrations above the North Carolina Groundwater 2L Standards in the vicinity of MW-6S, MW-6D and MW-7.

## **BACKGROUND**

One area of concern near MW-6S and MW-6D is located south of the lined Phase 1 unit. MW-6S and MW-6D are located approximately 115 feet from the liner limit at the toe of the slope. Groundwater, in this immediate area, generally flows in a southerly direction toward the Valley River, the primary discharge feature. MW-6S was installed to a depth of approximately 20 feet below ground surface (bgs) and is screened in both partially weathered rock (PWR) and rock. MW-6D was installed to a depth of approximately 50 feet bgs and is screened entirely in gneiss.

Detections above the 2L Standard in the area of MW-6S and MW-6D have been reported in past semi-annual sampling events. In January 2006, three wells were installed at the 250-foot compliance boundary to monitor possible leachate migration. P-17 was installed to a depth of approximately 12.82 feet bgs, P-18 was installed to a depth of approximately 16.6 feet bgs and P-19 was installed to a depth of approximately 11.9 feet bgs. There have been no reported 2L violations of Appendix I or Appendix II listed constituents in these wells. Surveyed well locations are shown on Plate 1.

A second area of concern near MW-7 is located south of the Phase 1 and 2 lined units. MW-7 was installed approximately 125 feet from the liner limit to a depth of approximately 25 feet bgs

and is screened in sand and gravel. Groundwater, in this area, also generally flows in a southerly direction towards the primary drainage feature of the Valley River. Historically, detections in this area have not warranted further assessment. The surveyed location of MW-7 is shown on Plate 1.

### **PROPOSED SCOPE OF WORK**

In response to your requests, MESCO proposes the following actions to address the identified concerns:

- 1.) Install deep well P-18D adjacent to P-18 to delineate the vertical extent of the MW-6D plume. P-18D will be advanced to approximately 40 feet bgs and will be screened in rock. The proposed location is illustrated on Plate 1.
- 2.) Install well cluster pair P-20S and P-20D approximately 250 feet from the estimated extent of waste south of MW-7 to delineate the shallow and deep extent of the MW-7 plume. P-20S will be installed to a depth of approximately 15 feet bgs and the screen will traverse the water table. MW-20D will be installed to a depth of approximately 40 feet bgs and will be screened in rock. Proposed locations are depicted on Plate 1.
- 3.) Add additional Surface Water Monitoring Location SW-5 on the creek to monitor stream impact. The proposed location is shown on Plate 1.
- 4.) Include P-17, P-18, P-18D, P-19, P-20S and P-20D as temporary sampling locations for Appendix 1 VOCs for four semi-annual sampling events, to delineate the shallow and deep plumes, if any.

Wells will be properly installed and developed to ensure quality samples can be obtained. Any modification made while drilling based on current field conditions will have the intent of providing the best information source possible. Deep wells P-18D and P-20D will be installed as Type III wells in accordance with NCAC 2C Rules. Both deep wells will be constructed with an approximate twenty-foot long concrete seal in the annulus to prevent communication between the shallow and deep wells. The seals will begin approximately five feet beneath the estimated bottom of the screen, in the shallow well, and extend upward approximately five feet above the estimated top of the screen.

Groundwater samples will be collected from wells MW-6S, MW-6D, MW-7, MW-8, P-17, P-18, P-18D, P-19, P-20S, P-20D and SW-5 then analyzed for the Appendix I VOC listed constituents via EPA test method 8260B. Lab data will be analyzed to fully delineate the extent of Appendix I VOC contamination, if present, in the shallow and bedrock aquifers.

### **SUMMARY REPORT**

A summary report will be submitted for your review and approval, presenting the plume delineation, sample results and subsequent actions taken, if any. An Assessment of Corrective Measures Report might be performed, if deemed necessary, after full characterization of the MW-6D and MW-7 locations.

**CLOSING**

Municipal Engineering Services Co., P.A., on behalf of Cherokee County, appreciates the opportunity to submit this Assessment to the Solid Waste Section. Please contact us at (919) 772-5393 or by e-mail at [mgerman@mesco.com](mailto:mgerman@mesco.com) or [mbrown@mesco.com](mailto:mbrown@mesco.com) if you have any questions or comments regarding this plan.

Sincerely,  
**MUNICIPAL ENGINEERING SERVICES CO., P.A.**



Madeline German



Mark Brown, LG, PG

Enclosures

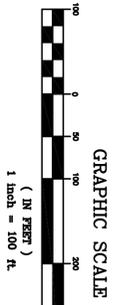
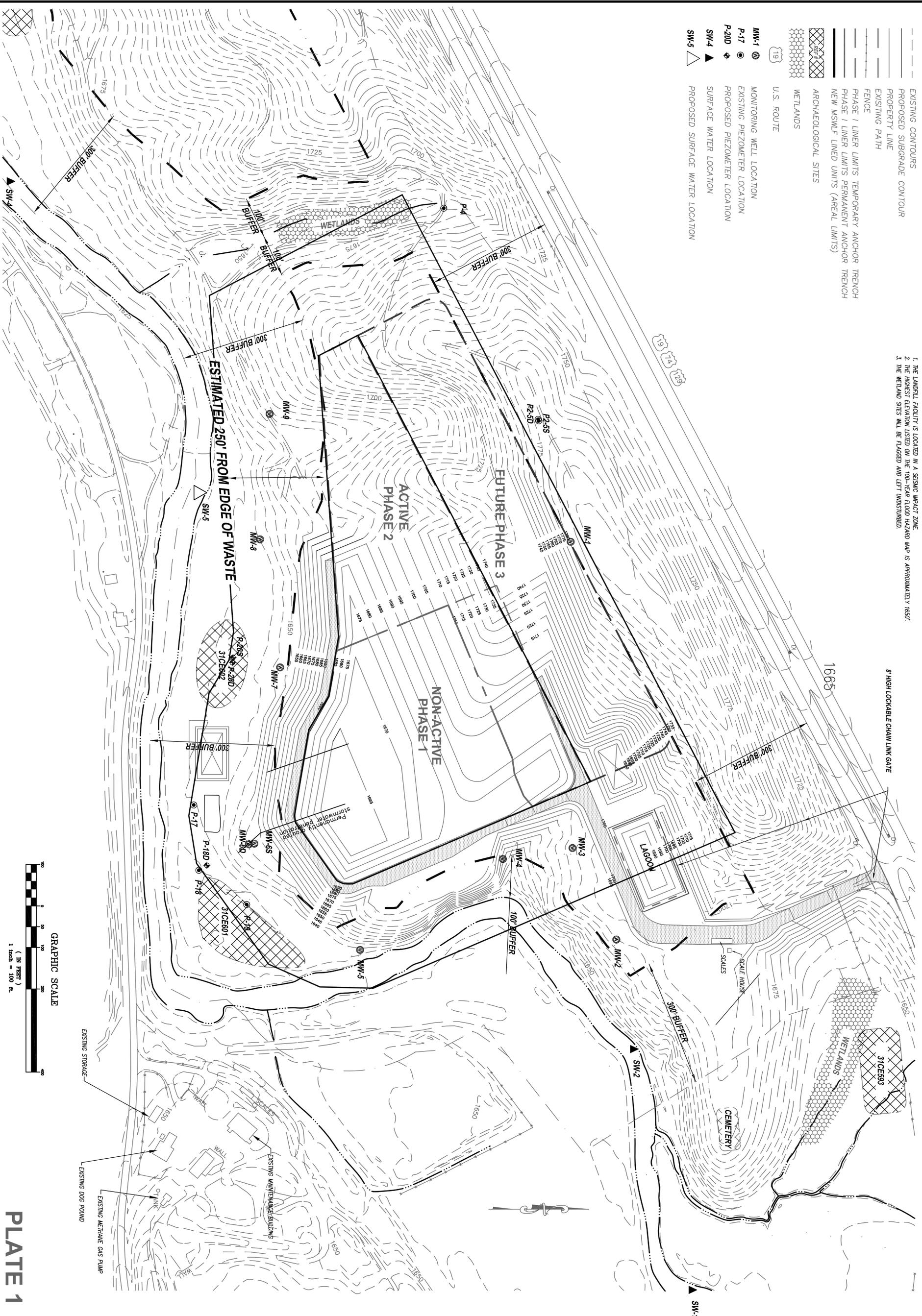
cc: Mr. Robert Allen, Cherokee County Solid Waste Director  
Wayne Sullivan, MESCO

**LEGEND**

- EXISTING CONTOURS
- - - PROPOSED SUBGRADE CONTOUR
- ==== PROPERTY LINE
- EXISTING PATH
- FENCE
- PHASE I LINER LIMITS TEMPORARY ANCHOR TRENCH
- PHASE I LINER LIMITS PERMANENT ANCHOR TRENCH
- NEW MSWLF LINED UNITS (AREAL LIMITS)
- ▨ ARCHAEOLOGICAL SITES
- ▨ WETLANDS
- 19 U.S. ROUTE
- ⊙ MM-1 MONITORING WELL LOCATION
- ⊙ P-17 EXISTING PIEZOMETER LOCATION
- ⊙ P-20D PROPOSED PIEZOMETER LOCATION
- ▲ SW-4 SURFACE WATER LOCATION
- ▲ SW-5 PROPOSED SURFACE WATER LOCATION

**NOTES**

1. THE LANDFILL FACILITY IS LOCATED IN A SEISMIC IMPACT ZONE.
2. THE HIGHEST ELEVATION LISTED ON THE 100-YEAR FLOOD HAZARD MAP IS APPROXIMATELY 1650'.
3. THE WETLAND SITES WILL BE FLAGGED AND LEFT UNDISTURBED.



**PLATE 1**

| DATE     | BY        | REV. | DESCRIPTION |
|----------|-----------|------|-------------|
| 03/22/10 | M. GERMAN |      |             |
|          | M. BROWN  |      |             |

SCALE: 1"=100'  
 DATE: 03/22/10  
 DRWN. BY: M. GERMAN  
 CHKD. BY: M. BROWN  
 PROJECT NUMBER: G10054.0  
 DRAWING NO.: SHEET NO.  
 PLATE 1 1 OF 1

**SUBTITLE D LINED LANDFILL  
 CHEROKEE COUNTY  
 NORTH CAROLINA**

LICENSE NUMBER: C-0281

**Municipal Services**  **Engineering Company, P.A.**

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