



ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

***SOLID WASTE DISPOSAL
FACILITY PERMIT***

PERMITTEE: Choctaw County Commission

FACILITY NAME: Choctaw County Regional Landfill

FACILITY LOCATION: Section 3, Township 12 North, Range 3 West in Choctaw County, Alabama and comprises of approximately 40.06 acres with a disposal area of approximately 28.85 acres.

PERMIT NUMBER: 12-01

PERMIT TYPE: Municipal Solid Waste Landfill

WASTE APPROVED FOR DISPOSAL: Non-hazardous, non-infectious putrescible wastes including but not limited to municipal solid waste, industrial waste, commercial waste, construction and demolition waste, and special wastes approved by the Department and other similar type materials.

APPROVED WASTE VOLUME: Average Daily Volume of 10,000 tons per day

APPROVED SERVICE AREA: All counties in all states East of the Mississippi River plus the state of Texas and Louisiana.

In accordance with and subject to the provisions of the Solid Wastes & Recyclable Materials Management Act, as amended, Code of Alabama 1975, SS 22-27-1 to 22-27-27 ("SWRMMA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, SS 22-22A-1 to 22-22A-15, and rules and regulations adopted thereunder, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to dispose of the above-described solid wastes at the above-described facility location.

ISSUANCE DATE: ????????????????

EFFECTIVE DATE: ??????????????????

EXPIRATION DATE: ??????????????????

Alabama Department of Environmental Management

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT**

Permittee: Choctaw County Commission
117 South Mulberry – Suite 9
Butler, Alabama 36904

Landfill Name: Choctaw County Regional Landfill

Landfill Location: Section 3, Township 12 North, Range 3 West in Choctaw County, Alabama

Permit Number: 12-01

Landfill Type: Municipal Solid Waste

Pursuant to the Solid Wastes & Recyclable Materials Management Act, Code of Alabama 1975, §§ 22-27-1, *et seq.*, as amended, and attendant regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM), this permit is issued to Choctaw County Commission (hereinafter called the Permittee), to operate a solid waste disposal facility, known as the Choctaw County Regional Landfill.

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions set forth herein (including those in any attachments), and the applicable regulations contained in Chapters 335-13-1 through 335-13-15 of the ADEM Administrative Code (hereinafter referred to as the "ADEM Admin. Code"). Rules cited are set forth in this document for the purpose of Permittee reference. Any Rule that is cited incorrectly in this document does not constitute grounds for noncompliance on the part of the Permittee. Applicable ADEM Administrative Codes are those that are in effect on the date of issuance of this permit or any revisions approved after permit issuance.

This permit is based on the information submitted to the Department on September 12, 2018, for the permit renewal and modification, as amended (hereby incorporated by reference and hereinafter referred to as the Application). Any inaccuracies found in this information could lead to the termination or modification of this permit and potential enforcement action. The Permittee must inform ADEM of any deviation from or changes in the information in the Application that would affect the Permittee's ability to comply with the applicable ADEM Admin. Code or permit conditions.

This permit is effective as of ??????????????????, and shall remain in effect until ??????????????????, unless suspended or revoked.

Alabama Department of Environmental Management

Date Signed

SECTION I. STANDARD CONDITIONS

A. Effect of Permit

The Permittee is allowed to dispose of nonhazardous solid waste in accordance with the conditions of this permit and ADEM Admin. Code Div. 13. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Except for actions brought under Code of Alabama 1975, §§ 22-27-1, *et seq.*, as amended, compliance with the conditions of this permit shall be deemed to be compliance with applicable requirements in effect as of the date of issuance of this permit and any future revisions.

B. Permit Actions

This permit may be suspended, revoked or modified for cause. The filing of a request for a permit modification or the notification of planned changes or anticipated noncompliance on the part of the Permittee, and the suspension or revocation does not stay the applicability or enforceability of any permit condition.

C. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

D. Definitions

For the purpose of this permit, terms used herein shall have the same meaning as those in ADEM Admin. Code Division 13, unless this permit specifically provides otherwise; where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

1. "EPA" for purposes of this permit means the United States Environmental Protection Agency.
2. "Permit Application" for the purposes of this permit, means all permit application forms, design plans, operational plans, closure plans, technical data, reports, specifications, plats, geological and hydrological reports, and other materials which are submitted to the Department in pursuit of a solid waste disposal permit.

E. Duties and Requirements

1. Duty to Comply

The Permittee must comply with all conditions of this permit except to the extent and for the duration such noncompliance is authorized by a variance granted by the Department. Any permit noncompliance, other than noncompliance authorized by a variance, constitutes a violation of Code of Alabama 1975, §§ 22-27-1 *et seq.*, as amended, and is grounds for enforcement action, permit suspension, revocation, modification, and/or denial of a permit renewal application.

2. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The renewal application must be submitted to the Department at least 180 days before this permit expires.

3. Permit Expiration

This permit and all conditions therein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application as required by Section I.E.2., and, through no fault of the Permittee, the Department has not made a final decision regarding the renewal application.

4. Need to Halt or Reduce Activity Not A Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit.

5. Duty to Mitigate

In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

6. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of control (and related appurtenances) that are installed or used by the Permittee to achieve compliance with the conditions of this permit.

7. Duty to Provide Information

If requested, the Permittee shall furnish to ADEM, within a reasonable time, any information that ADEM may reasonably need to determine whether cause exists for denying, suspending, revoking, or modifying this permit, or to determine compliance with this permit. If requested, the Permittee shall also furnish the Department with copies of records kept as a requirement of this permit.

8. Inspection and Entry

Upon presentation of credentials and other documents as may be required by law, the Permittee shall allow the employees of the Department or their authorized representative to:

- a. Enter at reasonable times the Permittee's premises where the regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit.
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit.
- c. Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit.
- d. Sample or monitor, at reasonable times, any substances or parameters at any location for the purposes of assuring permit compliance or as otherwise authorized by Code of Alabama 1975, §§ 22-27-1 *et seq.*

9. Monitoring, Corrective Actions, and Records

- a. Samples and measurements taken for the purpose of monitoring or corrective action shall be representative of the monitored activity. The methods used to obtain representative samples to be analyzed must be the appropriate method from Chapter 335-13-4 or the methods as specified in the Application attached hereto and incorporated by reference. Laboratory methods must be those specified in Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes

(EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), other appropriate EPA methods, or as specified in the Application. All field tests must be conducted using approved EPA test kits and procedures.

- b. The Permittee shall retain records, at the location specified in Section I.I., of all monitoring, or corrective action information, including all calibration and maintenance records, copies of all reports and records required by this permit, and records of all data used to complete the application for this permit for a period of at least three years from the date of the sample, measurement, report or record or for periods elsewhere specified in this permit. These periods may be extended by the request of the Department at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility.
- c. Records of monitoring and corrective action information shall include.
 - i. The exact place, date, and time of sampling or measurement.
 - ii. The individual(s) and company who performed the sampling or measurements.
 - iii. The date(s) analyses were performed.
 - iv. The individual(s) and company who performed the analyses.
 - v. The analytical techniques or methods used.
 - vi. The results of such analyses.
- d. The Permittee shall submit all monitoring and corrective action results at the interval specified elsewhere in this permit.

10. Reporting Planned Changes

The Permittee shall notify the Department, in the form of a request for permit modification, at least 90 days prior to any change in the permitted service area, increase in the waste received, or change in the design or operating procedure as described in this permit, including any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

11. Transfer of Permit

This permit may be transferred to a new owner or operator. All requests for transfer of permits shall be in writing and shall be submitted on forms provided by the Department. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of this permit.

12. Certification of Construction

The Permittee may not commence disposal of waste in any new cell or phase until the Permittee has submitted to the Department, by certified mail or hand delivery, a letter signed by both the Permittee and a professional engineer stating that the facility has been constructed in compliance with the permit. An engineer must attest or certify that the installation, seaming, etc., as proposed or as depicted on the plan or layout specified in a above would meet the standards or criteria prescribed, or required by the manufacturers of the components and the Department's regulations, and that the panels or components would be expected to perform satisfactorily, without failure, to the required standards over a normally expected lifetime or performance period for typical panels or components. The Department must inspect the constructed cells or phases before the owner or operator can commence waste disposal unless the Permittee is notified that the Department will waive the inspection.

13. Compliance Schedules

Reports of compliance or noncompliance with or any progress reports on interim and final requirements contained in any compliance schedule required and approved by the Department shall be submitted no later than 14 days following each schedule date.

14. Other Noncompliance

The Permittee shall report all instances of noncompliance with the permit at the time monitoring reports are submitted.

15. Other Information

If the Permittee becomes aware that information required by the Application was not submitted or was incorrect in the Application or in any report to the Department, the Permittee shall promptly submit such facts or information. In addition, upon request, the Permittee shall furnish to the Department, within a reasonable time, information related to compliance with the permit.

F. Design and Operation of Facility

The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or nonsudden release of contaminants (including leachate and explosive gases) to air, soil, groundwater, or surface water, which could threaten human health or the environment.

G. Inspection Requirements

1. The Permittee shall comply with all requirements set forth under ADEM Admin. Code Division 13.
2. The Permittee shall conduct random inspections of incoming loads.
3. Records of all inspections shall be included in the operating record.

H. Recordkeeping and Reporting

1. The Permittee shall maintain a written operating record at the location specified in Section I.I. The operating record shall include:
 - a. Documentation of inspection and maintenance activities.
 - b. Daily Volume reports.
 - c. Personnel training documents and records.
 - d. Solid/Hazardous Waste Determination Forms for Industrial Wastes, and associated ADEM disposal approval correspondence for special wastes, industrial wastes, etc.
 - e. Groundwater monitoring records.
 - f. Explosive gas monitoring records.
 - g. Surface water and leachate monitoring records. Monitoring is subject to applicable conditions of Section VII. of the permit.
 - h. Copies of this Permit and the Application.

- i. Copies of all variances granted by the Department, including copies of all approvals of special operating conditions (such as approvals for open burning,).

2. Quarterly Volume Report

Beginning with the effective date of this permit, the Permittee shall submit, within thirty (30) days after the end of each calendar quarter, a report summarizing the daily waste receipts for the previous (just ended) quarter. Copies of the quarterly reports shall be maintained in the operating record.

3. Monitoring and Corrective Action Reports

The Permittee shall submit reports on all monitoring and corrective activities conducted pursuant to the requirements of this permit, including, but not limited to, groundwater, surface water, explosive gas and leachate monitoring. The groundwater monitoring shall be conducted in March and September of each year and the reports shall be submitted at least semi-annually. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. Explosive gas monitoring must be submitted on a quarterly basis, and the reports should be submitted to the department and placed in the operating record within 30 days of the monitoring event. Copies of the semi-annual groundwater and quarterly explosive gas monitoring reports shall be maintained in the operating record.

4. Availability, Retention, and Disposition of Records

- a. All records, including plans, required under this permit or Division 13 must be furnished upon request, and made available at reasonable times for inspection by any officer, employee, or representative of the Department.
- b. All records, including plans, required under this permit or Division 13 shall be retained by the Permittee for a period of at least three years. The retention period for all records is extended automatically during the course of any unresolved enforcement action regarding the facility, or as requested by the Department.
- c. A copy of records of waste disposal locations and quantities must be submitted to the Department and local land authority upon closure of the facility.

I. Documents to be maintained by the Permittee

The Permittee shall maintain, at the Choctaw County Regional Landfill office, the following documents and amendments, revisions and modifications to these documents until an engineer certifies closure of the permitted landfill.

- 1. Operating record
- 2. Closure Plan.

J. Mailing Location

All reports, notifications, or other submissions which are required by this permit should be sent via signed mail (i.e. certified mail, express mail delivery service, etc.) or hand delivered to:

Mailing Address

Chief, Solid Waste Branch, Land Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, AL 36130-1463

Physical Address

Chief, Solid Waste Branch, Land Division
Alabama Department of Environmental Management
1400 Coliseum Blvd.
Montgomery, Alabama 36110-2400

K. Signatory Requirement

All applications, reports or information required by this permit, or otherwise submitted to the Department, shall be signed and certified by the owner as follows:

1. If an individual, by the applicant.
2. If a city, county, or other municipality or governmental entity, by the ranking elected official, or by a duly authorized representative of that person.
3. If a corporation, organization, or other legal entity, by a principal executive officer, of at least the level of Vice President, or by a duly authorized representative of that person.

L. Confidential Information

The Permittee may claim information submitted as confidential if the information is protected under Code of Alabama 1975 §§ 22-39-18, as amended.

M. State Laws and Regulations

Nothing in this permit shall be construed to preclude the initiation of any legal action or to relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation.

SECTION II. GENERAL OPERATING CONDITIONS

A. Operation of Facility

The Permittee shall operate and maintain the disposal facility consistent with the Application, this permit, and ADEM Admin. Code, Division 13.

B. Open Burning

The Permittee shall not allow open burning without prior written approval from the Department and other appropriate agencies. A burn request should be submitted in writing to the Department outlining why that burn request should be granted. This request should include, but not be limited to, specifically what areas will be utilized, types of waste to be burned, the projected starting and completion dates for the project, and the projected days and hours of operation. The approval, if granted, shall be included in the operating record.

C. Prevention of Unauthorized Disposal

The Permittee shall follow the approved procedures for the detecting and preventing the disposal of free liquids, regulated hazardous waste, PCB's, and medical waste at the facility.

D. Unauthorized Discharge

The Permittee shall operate the disposal facility in such a manner that there will be no water pollution or unauthorized discharge. Any discharge from the disposal facility or practice thereof may require a National Pollutant Discharge Elimination System permit under the Alabama Water Pollution Control Act.

E. Industrial and Medical Waste Disposal

The Permittee shall dispose of industrial process waste as required by ADEM Admin. Code Division 13, and as specified in the Application. The Permittee, prior to disposal of industrial waste and/or medical waste, shall obtain from each generator a written certification that the material to be disposed does not contain free liquids, regulated hazardous wastes, regulated medical waste, or regulated PCB wastes.

F. Boundary Markers

The Permittee shall ensure that the facility is identified with a sufficient number of permanent boundary markers that are at least visible from one marker to the next.

G. Certified Operator

The Permittee shall be required to have an operator certified by the Department on-site during hours of operation, in accordance with the requirements of ADEM Admin. Code 335-13-12.

SECTION III. SPECIFIC MSW LANDFILL REQUIREMENTS

A. Waste Identification and Management

1. Subject to the terms of this permit, the Permittee may dispose of the nonhazardous solid wastes listed in Section III.B. Disposal of other waste streams is prohibited, except waste that is granted a temporary or one-time waiver by the Director.
2. The total permitted area for the Choctaw County Regional Landfill is approximately 40.06 acres with approximately 28.85 acres permitted for disposal operations.
3. The maximum average daily volume of waste disposed at the facility shall not exceed 10,000 tons per day, except as provided under Rule 335-13-5-.06(2)(a)5. The average daily volume shall be computed as specified by Rule 335-13-5-.06(2)(a)5.(i).

B. Waste Streams

Non-hazardous, non-infectious putrescible wastes including but not limited to municipal solid waste, industrial waste, commercial waste, construction and demolition waste, and special wastes approved by the Department and other similar type materials.

C. Service Area

The Permittee is allowed to receive for disposal waste from all counties in all states east of the Mississippi River plus the state of Texas and Louisiana.

D. Special Waste

Disposal of special wastes is subject to a Hazardous/Solid Waste determination by ADEM.

1. Asbestos Waste

The Permittee shall dispose of asbestos waste in accordance with Rule 335-13-4-.26.

2. Foundry Sand

The Permittee shall dispose of foundry waste in accordance with Rule 335-13-4-.26.

3. Petroleum Contaminated Waste

The Permittee shall dispose of petroleum contaminated waste in accordance with Rule 335-13-4-.26.

4. Municipal Solid Waste Ash

The Permittee shall dispose of municipal solid waste ash in accordance with Rule 335-13-4-.26.

E. Liner Requirements

The Permittee shall install a composite liner system as described in the Application consisting of 2 feet of 1×10^{-7} cm/sec compacted soil, a 60 mil HDPE geomembrane, geocomposite drainage layer and a 12-inch thick leachate collection layer with a hydraulic conductivity of 1×10^{-4} cm/sec. The Permittee has been granted approval for an alternate liner. The alternate liner will consist of 12 inches of 1×10^{-5} cm/sec compacted soil, geosynthetic clay liner, a 60 mil HDPE geomembrane, geocomposite drainage layer and a 12-inch thick leachate collection layer with a hydraulic conductivity of 1×10^{-4} cm/sec. The base of the composite liner system shall be a minimum of five (5) feet above the highest measured groundwater level.

The Permittee will construct the bottom liner of Cell 2A using the approved alternate liner system, which consists of 12" compacted clay, GCL, 60 mil HDPE Liner, Geocomposite Drainage Layer, and a 12" Drainage Layer.

All waste in Cell 2B is to be completely removed. Once all of the old waste has been removed, the Permittee must backfill the excavated area to at least 5 feet above the highest measured groundwater level. If the depth is different from what is specified in the current approved plans then the Permittee shall either backfill to the base grades specified in the current permit application or the Commission must submit to the Department a major modification application which must be approved by the Department. The Permittee is granted approval to lower the permitted base grade in Cell 2B by four feet. The base grade shall be at least five feet above the highest measured groundwater level.

F. Septic Tank Pumpings and Sewage Sludge

The Permittee shall not dispose of septic tank pumpings and/or sewage sludge unless specifically approved in writing by the Department.

G. Large Dead Animals and Highly Putrescible Wastes

The Permittee shall handle the disposal of large dead animals and/or highly putrescible waste as required by Rule 335-13-4-.22(1)(j).

H. Cover Requirements

The Permittee shall cover all wastes as required by ADEM Admin. Code Division 13. The Permittee has been granted an approval to use auto fluff for an alternate daily cover pending waste characterization certification and solid/hazardous determination from the Department. It is noted that the Permittee has received approval from an earlier request to also use excavated waste as alternative cover material. Regardless of which alternative daily cover is used, the Permittee is still required to cover with six inches of compacted clean soil after the conclusion of the workweek, specifically each Friday. (See Section X.1.)

I. Waste Compaction

All waste shall be thoroughly compacted with adequate landfill equipment before the daily cover is applied. A completed daily cell shall not exceed eight feet in vertical thickness measured perpendicular to the slope of the preceding cell.

J. Daily Cells

All waste shall be confined to an area as small as possible and spread to a depth not exceeding two feet prior to compaction, and such compaction shall be accomplished on a face slope not to exceed 4 to 1 or as otherwise approved by the Department.

K. Security

The Permittee shall provide artificial and/or natural barriers, which prevent entry of unauthorized vehicular traffic to the facility.

L. All Weather Access Roads

The Permittee shall provide an all-weather access road to the dumping face that is wide enough to allow passage of collection vehicles.

M. Adverse Weather Disposal

The Permittee shall provide for disposal activities in adverse weather conditions.

N. Personnel

The Permittee shall maintain adequate personnel to ensure continued and smooth operation of the facility.

O. Equipment

The Permittee shall provide the landfill equipment as required by Rule 335-13-4-.22(1)(f).

P. Environmental Monitoring and Treatment Structures

The Permittee shall provide protection and proper maintenance of environmental monitoring and treatment structures.

Q. Vector Control

The Permittee shall provide for vector control as required by ADEM Admin. Code Division 13.

R. Bulk or Noncontainerized Liquid Waste

The Permittee shall not dispose of bulk or noncontainerized liquid waste, or containers capable of holding liquids, unless the conditions of Rule 335-13-4-.22(1)(k) are met.

S. Empty Containers

The Permittee shall render empty containers larger than normally found in household waste unsuitable for holding liquids prior to delivery to the landfill unit unless otherwise approved by the Department.

T. Other Requirements

The Department may enhance or reduce any requirements for operating and maintaining the landfill as deemed necessary by the Land Division.

U. Other Permits

The Permittee shall operate the landfill according to this and any other applicable permits.

V. Scavenging and Salvaging Operations

The Permittee shall prevent scavenging and salvaging operations, except as part of a controlled recycling effort. Any recycling operation must be in accordance with plans submitted and approved by the Department.

W. Signs

The Permittee shall provide a sign outlining instructions for use of the site. The sign shall be posted and have the information required by Rule 335-13-4-.22(1)(i).

X. Litter Control

The Permittee shall control litter.

Y. Fire Control

The Permittee shall provide fire control measures.

SECTION IV. GROUNDWATER MONITORING REQUIREMENTS

A. The Permittee shall install and/or maintain a groundwater monitoring system, as specified below.

1. The permittee shall maintain the groundwater monitoring wells and piezometers identified in Table IV.1. at the locations specified in the Application, and any other groundwater monitoring wells which are added (Section IV.A.3.) during the active life and the post closure care period.
2. **The Permittee shall maintain groundwater monitoring well MW-BW as the background groundwater monitoring wells for the entire facility.**
3. The Permittee shall install and maintain additional groundwater monitoring wells as necessary to assess changes in the rate and extent of any plume of contamination or as otherwise deemed necessary to maintain compliance with the ADEM Admin. Code.
4. Prior to installing any additional groundwater monitoring wells, the Permittee shall submit a report to the Department with a permit modification request specifying the design, location and installation of any additional monitoring wells. This report shall be submitted within ninety (90) days prior to the installation which, at a minimum, shall include.
 - a. Well construction techniques including proposed casing depths, proposed total depth, and proposed screened interval of well(s);
 - b. Well development method(s);
 - c. A complete analysis of well construction materials;
 - d. A schedule of implementation for construction; and
 - e. Provisions for determining the lithologic characteristics, hydraulic conductivity and grain-size distribution for the applicable aquifer unit(s) at the location of the new well(s).
5. **The Permittee is approved to use an interwell approach for statistical analysis.**

B. Groundwater Monitoring Requirements

1. The Permittee shall determine the groundwater surface elevation at each monitoring well and piezometer identified in Table IV.1. each time the well or piezometer is sampled and at least semi-annually throughout the active life and post-closure care period.
2. The Permittee shall determine the groundwater flow rate and direction in the first zone of saturation at least annually or each time groundwater is sampled and submit as required by ADEM Admin. Code Division 13.
3. Prior to the initial receipt of waste at the facility, the Permittee shall sample, and analyze for the parameters listed in Appendix I of Rule 335-13-4-.27, and/or any other parameters specified by the Department in Table IV. 2., all monitoring wells identified in Section IV.A.2. to establish background water quality and/or as directed by Rule 335-13-4-.27(2)(j) and 335-13-4-.27(2)(a)(1).
4. The Permittee shall sample and analyze all monitoring wells identified in Table IV.1 for the parameters listed in Appendix I of Rule 335-13-4-.27(3), and/or any other parameters specified by the Department in Table IV.3, on a semi-annual basis throughout the active life of the facility and the post-closure care period in accordance with Rule 335-13-4-.27(3). Sampling shall be conducted during March and September of each year, beginning with the effective date of this permit. The records and results of this sampling and analysis activity shall be submitted to the Department, within ninety (90) days of the date of sampling. **Groundwater Monitoring shall be conducted according to the groundwater monitoring plan submitted June 4, 2019.**
5. In addition to the requirements of Sections IV., B.1., B.2., B.3. and B.4., the Permittee shall record water levels, mean sea level elevation measuring point, depth to water, and the results of field tests for pH and specific conductance at the time of sampling for each well.

C. Sampling and Analysis Procedures

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the groundwater monitoring wells described in Section IV.A. to provide a reliable indication of the quality of the groundwater.

1. **Samples shall be collected, preserved, and shipped (when shipped off-site for analysis) in accordance with the procedures specified in the Application.**
2. Samples shall be analyzed according to the procedures specified of the Application, Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), or other appropriate methods approved by this Department. All field tests must be conducted using approved EPA test kits and procedures.
3. Samples shall be tracked and controlled using the chain-of-custody and QA/QC procedures specified of the Application.

D. Recordkeeping and Reporting Requirements

1. Recording of Results

For each sample and/or measurement taken pursuant to the requirements of this permit, the Permittee shall record the information required by Section I.E.9.c.

2. Recordkeeping

Records and results of all groundwater monitoring, sampling, and analysis activities conducted pursuant to the requirements of this permit shall be included in the operating record required by Section I.I.1.

E. Permit Modification

If at any time the Permittee or the Department determines that the groundwater monitoring system no longer satisfies the requirements of 335-13-4-.14 or Section IV.A. of this permit, the Permittee must, within 90 days, submit an application for a permit modification to make any necessary and/or appropriate changes to the system.

TABLE IV.1.
GROUNDWATER MONITORING WELLS

Monitoring Well Number	Top of Casing (feet msl)	Part Monitoring
UPGRADIENT/BACKGROUND MONITORING WELLS		
MW-BW	to be surveyed	Entire Landfill
DOWNGRAIENT MONITORING WELLS		
MW-B1R	to be surveyed	Entire Landfill
MW-B2	466.07	Entire Landfill
MW-B3	438.36	Entire Landfill
MW-B4R	to be surveyed	Entire Landfill
MW-B5	428.06	Entire Landfill
AMW-1	419.24	Entire Landfill
AMW-2	401.35	Entire Landfill
AMW-3	457.50	Entire Landfill
AMW-4	393.13	Entire Landfill
AMW-5	393.11	Entire Landfill
AMW-6	395.19	Entire Landfill
AMW-7	396.70	Entire Landfill

TABLE IV.2.
BACKGROUND GROUNDWATER MONITORING

NOTE: The parameters in this Table are those listed in Appendix I of Chapter 335-13-4.

NOTE: The Permittee shall conduct a minimum of four independent sampling events as the initial sampling event, and analyze for the parameters listed above, in order to establish background water quality. Following the four independent events, the Permittee can submit a request, with justification, for the deletion of or change in these parameters.

TABLE IV.3.
SEMI-ANNUAL GROUNDWATER MONITORING PARAMETERS

NOTE: The parameters to be monitored for in this Table are those listed in Appendix I of Chapter 335-13-4 , and/or any other waste stream specific parameters.

SECTION V. GAS MONITORING REQUIREMENTS

- A. The permittee shall design, construct, and operate the facility so as to control and monitor the generation and emission of explosive gases (such as methane), and so as to prevent said gases from collecting in, or around structures at concentrations exceeding the limits imposed by this permit.
- B. Systems and Equipment
- The Permittee shall provide, install, and maintain gas monitoring and/or recovery systems and equipment.
- C. Concentration Limits
- The Permittee shall prevent explosive gases from exceeding:
1. The lower explosive limit at the facility boundary.
 2. Twenty-five percent (25%) of the lower explosive limit in any facility structure other than those which are components of the gas control and/or recovery system.
- D. Gas Monitoring Program
1. The Permittee shall monitor explosive gases at the facility. The gas monitoring program shall monitor explosive gas concentrations in the atmosphere, in the soil, and inside all structures at the facility, including but not limited to buildings, under bridges, and any other location which is conducive to gas accumulation. Gas monitoring data shall be included in the operating record and be made available to the Department during inspections and at other times upon request.
 2. The Permittee shall conduct the gas monitoring at least once in each quarter. The Permittee shall submit a report to the Department within thirty (30) days after each monitoring event documenting the levels of explosive gases measured at the facility.
 3. In the event that explosive gas levels exceed, at any time, the limits specified in this permit, the Permittee shall:
 - a. Immediately take all necessary steps to ensure immediate protection of human health and property.
 - b. Immediately notify the Department of the explosive gas levels detected and the immediate steps taken to protect human health and property.
 - c. Within twenty (20) days, submit to the Department for approval a remedial plan for the explosive gas releases. This plan shall describe the nature and extent of the problem and the proposed remedy. The plan shall be implemented upon approval by the Department, but within sixty (60) days of detection. Within the sixty (60) days the plan shall be placed in the operating record of the facility and the Department notified that the plan has been implemented.
 4. Monitoring points for the measurement of explosive gas concentrations in the soil and/or atmosphere shall be located along the landfill boundaries and shall be spaced no more than 300 feet apart. In areas

where the landfill boundary is within 1000 feet of a structure, the monitoring points shall be not more than 100 feet apart.

SECTION VI – MUNICIPAL SOLID WASTE LANDFILL AIR EMISSIONS

This landfill may be subject to ADEM Admin. Code Division 3 Admin. Code and the Federal Clean Air Act. Contact the ADEM Air Division for applicable requirements and permits.

SECTION VII. LEACHATE AND SURFACE WATER MANAGEMENT REQUIREMENTS

The Permittee must collect and dispose of the leachate that is generated at the facility. The Permittee shall install a leachate collection system designed to maintain less than 12 inches (30 cm) depth of leachate over the liner. Prior to initial disposal, the permittee shall provide the Department with a letter from the receiving publicly or privately owned treatment works, approving the acceptance of the leachate. Discharges to publicly or privately owned treatment works may be subject to the requirements of the ADEM Water Division's State Indirect Discharge (SID) Program. The permittee shall construct and maintain run-on and run-off control structures. Surface water discharges from drainage control structures shall be permitted through the ADEM Water Division's National Pollutant Discharge Elimination System (NPDES) Program.

Rainwater falling on Cell 2B must be contained and pumped into the leachate collection system of Cell 2A.

SECTION VIII. CLOSURE AND POST- CLOSURE REQUIREMENTS

The Permittee shall close the landfill and perform post-closure care of the landfill in accordance with Division 13.

A. Final Cover

The Permittee shall grade final soil cover such that surface water does not pond over the permitted area as specified in the Application. The final cover system as specified in the application shall consist of 12 inches of compacted soil with a permeability of 1×10^{-5} cm/sec, 40 mil flexible membrane liner, geocomposite drainage system, 18 inches of protective soil, 6 inches of topsoil capable of supporting vegetative cover. **The Permittee shall grade final slopes to a 3 to 1 ratio. (See Section X.2.)**

B. Vegetative Cover

The Permittee shall establish a vegetative or other appropriate cover within 90 days after completion of final grading requirements in the Application. Preparation of a vegetative cover shall include, but not be limited to, the placement of seed, fertilizer, mulch, and water.

C. Notice of Intent

The Permittee shall place in the operating record and notify the Department of their intent to close the landfill prior to beginning closure.

D. Completion of Closure Activities

The Permittee must complete closure activities of each landfill unit in accordance with the Closure Plan within 180 days of the last known receipt of waste.

E. Certification of Closure

Following closure of each unit, the Permittee must submit to the Department a certification, signed by an engineer, verifying the closure has been completed according to the Closure Plan.

F. Post-Closure Care Period

Post-closure care activities shall be conducted after closure of each unit throughout the life of this permit and continuing for a period of thirty (30) years following closure of the facility. The Department may shorten or extend the post-closure care period applicable to the solid waste disposal facility. The Permittee shall reapply in order to fulfill the post-closure care requirements of this permit.

G. Post-Closure Maintenance

The Permittee shall provide post closure maintenance of the facility to include regularly scheduled inspections. This shall include maintenance of the cover, vegetation, monitoring devices and pollution control equipment and correction of other deficiencies that may be observed by ADEM. Monitoring requirements shall continue throughout the post closure period as determined by the Department unless all waste is removed and no unpermitted discharge to waters of the State have occurred.

H. Post-Closure Use of Property

The Permittee shall ensure that post closure use of the property never be allowed to disturb the integrity of the final cover, liner, or any other component of the containment system. This shall preclude the growing of deep-rooted vegetation on the closed area.

I. Certification of Post-Closure

Following post-closure of each unit, the Permittee must submit to the Department a certification, signed by an engineer, verifying the post-closure has been completed according to the Post-Closure Plan.

J. Notice in Deed to Property

The Permittee shall record a notation onto the land deed containing the property utilized for disposal within 90 days after permit expiration, revocation or when closure requirements are achieved as determined by the Department as stated in the Application. This notation shall state that the land has been used as a solid waste disposal facility, the name of the Permittee, type of disposal activity, location of the disposal facility and beginning and closure dates of the disposal activity.

K. Recording Instrument

The Permittee shall submit a certified copy of the recording instrument to the Department within 120 days after permit expiration, revocation, or as directed by the Department as described in the Application.

L. Removal of Waste

If the Permittee, or any other person(s), wishes to remove waste, waste residues, the liner, or any contaminated soils, the owner must request and receive prior approval from the Department.

SECTION IX. FINANCIAL ASSURANCE

A. The Permittee shall maintain detailed written cost estimates, in current dollars, at the landfill office and on file with ADEM in accordance with ADEM Admin. Code 335-13-4-.28.

B. All cost estimates must be updated annually as required by ADEM Admin Code 335-13-4-.28.

C. The Permittee must place a copy of the financial assurance mechanism along with other items required by ADEM Admin. Code 335-13-4-28. into the landfill operating record and submitted to ADEM before the initial receipt of waste in the case of closure, post-closure care, or no later than 120 days after corrective action remedy has been selected.

- D. The financial assurance mechanisms must ensure that funds will be available in a timely fashion when needed.
- E. The financial assurance mechanisms must be legally valid, binding, and enforceable under state and federal law.
- F. The Permittee shall demonstrate continuous compliance with ADEM Admin. Code 335-13-4-28. by providing documentation of financial assurance in at least the amount that equals or exceeds the cost estimate. Changes in the financial assurance mechanism must be approved by the Department.
- G. The Permittee shall increase the closure, post-closure or corrective action cost estimates and the amount of financial assurance if changes in the closure, post-closure or correction action plans or landfill conditions increase the maximum cost.
- H. The Permittee may reduce the amount of financial assurance by submitting justification and a revised estimate to ADEM for approval.

SECTION X. VARIANCES

- 1. The Permittee has been granted approval for an alternate daily cover. The Permittee has been granted an approval to use auto fluff for an alternate daily cover pending waste characterization certification and solid/hazardous determination from the Department. It is noted that the Permittee has received approval from an earlier request to also use excavated waste as alternative cover material. Regardless of which alternative daily cover is used, the Permittee is still required to cover with six inches of compacted clean soil after the conclusion of the workweek, specifically each Friday. (See Section III.H.)
- 2. **The Permittee is granted a variance from Rule 335-13-4-.20(2)(c)2. to allow for 3 to 1 final cover slopes. (See Section VIII.A.)**

Any variance granted by the Department may be terminated by the Department whenever the Department finds, after notice and opportunity for hearing, that the petitioner is in violation of any requirement, condition, schedule, limitation or any other provision of the variance, or that operation under the variance does not meet the minimum requirements established by state and federal laws and regulations or is unreasonably threatening the public health.

APPLICATION



HUTCHINSON, MOORE & RAUCH, LLC

Post Office Box 1127
Daphne, Alabama 36526

Telephone: (251) 626-2626
Fax: (251) 626-6934

September 6, 2018

Alabama Department of Environmental Management
Attn: Blake Holden
1400 Coliseum Blvd.
Montgomery, AL 36130-1463



Re: Dirt Pit Permit Renewal

Dear Mr. Holden,

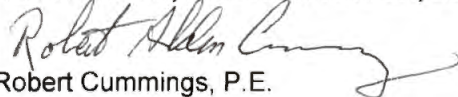
Per your Thursday August 9, 2018 e-mail to Mr. Tim Lawley with our office, please find attached the requested information.

1. Please consider this letter our formal request to have all previously approved variances incorporated into and remain part of the permit including the 3H:1V slope of the final grading for closure.
2. Please find attached the plans that have the updated groundwater monitoring wells located on them.
3. Attached hereto as Appendix A are the latest Financial Assurances from the previous year.
4. Waste Screening Procedure:
 - a. Only waste stipulated on the permit or otherwise approved by ADEM will be accepted at the facility. Any unapproved waste coming to the site for disposal will be refused. The facility operator will perform systematic inspections of every tenth load by directing the deliverer to proceed to the landfill and dump off to the side the contents which are then visually inspected to ensure that these loads do not contain free liquids, hazardous wastes, medical wastes, or PCB wastes. Records of these inspections will be kept on file in the facility's Load Inspection Book. These records will include the time/date of arrival of the waste, the company/customer name of the transporter or waste generator, truck number, and the location of the cell within the landfill that the waste is put into.
 - b. Personnel are trained biannually to inspect waste in a safe and orderly manner and to recognize any unacceptable waste such as free liquids, regulated hazardous wastes, medical wastes, regulated PCB wastes, or unapproved industrial users. If any load is suspected to contain hazardous or regulated waste ADEM will be notified immediately. Tires are taken to the on-site tire recycling collection station.
5. Drawings showing the disposal area are attached for your review. Please advise if there is anything additional that is needed to be shown on the plans.
6. The calculations to verify the sediment pond can process the needed volume are attached as Appendix B.

As always, please feel free to contact me if you have any questions

Sincerely,

HUTCHINSON, MOORE & RAUCH, LLC


Robert Cummings, P.E.

Project Manager

C1978/3969/18.074
/jml

APPENDIX A

	Design Volume (CY) Total Capacity	Volume (CY Filled at 9/30
<u>FY 2012</u>		
Cell 1	1,500,000	1,200,000
Cell 2A	750,000	225,000
<u>FY 2013</u>		
Cell 1	1,500,000	1,200,000
Cell 2A	750,000	30,000
<u>FY 2014</u>		
Cell 1	1,500,000	1,200,000
Cell 2A	750,000	345,000
<u>FY 2015</u>		
Cell 1	1,500,000	1,200,000
Cell 2A	750,000	400,000
Cell 2B	750,000	0
<u>FY 2016</u>		
Cell 1	1,500,000	1,200,200
Cell 2A	750,000	416,000
Cell 2B	750,000	17,000
<u>FY 2017</u>		
Cell 1	1,500,000	1,200,000
Cell 2A	750,000	433,000
Cell 2B	750,000	35,000

ENGINEERING COST ESTIMATE

Owner: SOUTHWEST ALABAMA SOLID WASTE DISPOSAL AUTHORITY

Project: CHOCTAW REGIONAL LANDFILL - CLOSE CELL 1, 2A, 2B

Date: November 27, 2017

ITEM #	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
1	GRASS	ACRE	1	1,500.00	\$ 1,500.00
2	6" EROSION LAYER	CY	820	6.00	\$ 4,920.00
3	18" INFILTRATION LAYER	CY	2,500	5.00	\$ 12,500.00
4	GEOCOMPOSITE DRAINAGE LAYER	SY	4,900	2.60	\$ 12,740.00
5	LINER	SY	4,900	4.25	\$ 20,825.00
6	6" SAND VENTING LAYER	CY	800	6.00	\$ 4,800.00
7	12" SOIL	CY	1,700	4.00	\$ 6,800.00
8	MOBILIZATION	LS	1		\$ 15,000.00
9	LABOR AND MATERIALS BOND	LS	1		\$ 3,000.00
10	GAS VENTING SYSTEM	LF	1,200	5.00	\$ 6,000.00
TOTAL AMOUNT PER ACRE FOR FINAL CAP					\$ 88,085.00

ITEM #	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
1	EXCAVATION AND HAUL OF EXCESS MATERIAL	CY	60,000	11.00	\$ 660,000.00
2	CLOSURE OF CELL	ACRE	19.00	88,085.00	\$ 1,673,615.00
3	42" RCP STORMSEWER PIPE	LF	875	80.00	\$ 70,000.00
4	HEADWALLS FOR STORMSEWER PIPE	EA	2	2,000.00	\$ 4,000.00
5	JUNCTION BOXES FOR STORMSEWER PIPE	EA	2	5,000.00	\$ 10,000.00
6	DITCH EXCAVATION	LF	2,000	7.00	\$ 14,000.00
7	EROSION CONTROL	LS	1		\$ 25,000.00
TOTAL AMOUNT					\$ 2,456,615.00

NOTE: PRICES HAVE NOT CHANGED ENOUGH TO AFFECT THE ESTIMATE FROM 2016-2017.



HUTCHINSON, MOORE & RAUCH, LLC

ENGINEERS ♦ SURVEYORS ♦ LAND PLANNERS

ENGINEERING COST ESTIMATE

Owner: SOUTHWEST ALABAMA SOLID WASTE DISPOSAL AUTHORITY

Project: CHOCTAW REGIONAL LANDFILL - POST CLOSURE CELL 1, 2A, 2B

Date: November 27, 2017

ITEM #	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
1	MAINTENANCE AND MOWING	LS	1		\$ 18,000.00
2	EROSION CONTROL	LS	1		\$ 5,000.00
3	GAS MONITORING	LS	1		\$ 5,000.00
4	GROUNDWATER MONITORING	LS	1		\$ 20,000.00
TOTAL AMOUNT PER YEAR					\$ 48,000.00
TOTAL AMOUNT FOR 30 YEARS					\$ 1,440,000.00

NOTE: PRICES HAVE NOT CHANGED ENOUGH TO AFFECT THE ESTIMATE FROM 2016-2017.



HUTCHINSON, MOORE & RAUCH, LLC

ENGINEERS ♦ SURVEYORS ♦ LAND PLANNERS

APPENDIX B

SEDIMENTATION POND

[illegible]

100 YEAR OVERFLOW PIPE FOR THE SEDIMENTATION POND

ROUND PIPE PARAMETERS

1	Friction coefficient 'N' .....	.012
2	Diameter of pipe in inches	60
3	Slope of pipe in ft./ft. ....	.005
4	Flow, 'Q' in cfs	199.66
5	Depth of water in pipe in inches ...	60
6	Velocity in ft./sec.	10.17

DRAINAGE SYSTEM FOR THE FACILITY PERIMETER

Total Drainage Area = 435600 SF = 10.000 AC

Time of Concentration is 10 MINS

with a weighted 'C' = 0.40

Subarea 1 has an area of 435600 SF = 10.000 AC

and has a Runoff Coefficient = 0.40

Using a 25 year return storm at Tc= 10 mins.; Intensity = 8.0 in./hr.

Total discharge = 32 CFS

OPEN DITCH PARAMETERS

1	Friction coefficient 'N' .....	.025
2	Width of ditch bottom in ft.	3
3	Side slope of ditch ('n': 1) lt....	3
4	Side slope of ditch ('n': 1) rt....	3
5	Flow, 'Q' in cfs	35
6	Depth of water in ft.	1.14
7	Slope of ditch bottom in ft./ft. ...	.01
8	Velocity in ft./sec.	4.77
9	Top width at top of water in ft. ...	9.86

ROUND PIPE PARAMETERS

1	Friction coefficient 'N' .....	.012
2	Diameter of pipe in inches	36
3	Slope of pipe in ft./ft. ....	.005
4	Flow, 'Q' in cfs	51.04
5	Depth of water in pipe in inches ...	36
6	Velocity in ft./sec.	7.22

Total Drainage Area = 871200 SF = 20.000 AC

Time of Concentration is 15 MINS

with a weighted 'C' = 0.40

Subarea 1 has an area of 871200 SF = 20.000 AC

and has a Runoff Coefficient = 0.40

Using a 25 year return storm at $T_c = 15$ mins.; Intensity = 7.0 in./hr.

Total discharge = 56 CFS

OPEN DITCH PARAMETERS

1	Friction coefficient 'N' .....	.025
2	Width of ditch bottom in ft.	3
3	Side slope of ditch ('n': 1) lt...	3
4	Side slope of ditch ('n': 1) rt...	3
5	Flow, 'Q' in cfs	56
6	Depth of water in ft.	1.43
7	Slope of ditch bottom in ft./ft. ...	.01
8	Velocity in ft./sec.	5.39
9	Top width at top of water in ft. ...	11.56

ROUND PIPE PARAMETERS

1	Friction coefficient 'N' .....	.012
2	Diameter of pipe in inches	42
3	Slope of pipe in ft./ft. ....	.005
4	Flow, 'Q' in cfs	77.04
5	Depth of water in pipe in inches ...	42
6	Velocity in ft./sec.	8.01



SOLID WASTE APPLICATION

PERMIT APPLICATION
SOLID WASTE DISPOSAL FACILITY
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
(Submit in Triplicate)

1. Facility type: ☒ Municipal Solid Waste Landfill (MSWLF)
☐ Industrial Landfill (ILF)
☐ Other (explain) _____

2. Facility Name Choctaw County Regional Landfill

3. Applicant:

Name: Choctaw County Commission - Judge Michael Armistead

Address: 117 South Mulberry Street, Suite 9

Butler, AL 36904

Telephone: 205-459-2100

4. Location: (Include county highway map or USGS map)

Township 12N Range 3W
Section 3 County Choctaw

5. Land Owner:

Name: Choctaw County Commission

Address: 117 South Mulberry Street, Suite 9

Butler, AL 36904

Telephone: 205-459-2100

(Attach copy of agreement from landowner if applicable.)

November 1997

Solid Waste Permit Application
Page 2

6. Contact Person:

Name Judge Michael Armistead

Position or Affiliation Probate Judge and Chairman of the Commission

Address: 117 South Mulberry Street, Suite 9
Butler, AL 36904

Telephone: 205-459-2100

7. Size of Facility:

40+/- **Acres**

Size of Disposal Area(s):

29+/- **Acres**

8. Identify proposed service area or specific industry that waste will be received from:

All Counties in all states East of the Mississippi River plus the state of Texas and Louisiana.

9. Proposed maximum average daily volume to be received at landfill (choose one):

10,000 **Tons/Day** **Cubic Yards/Day**

10. List all waste streams to be accepted at the facility (i.e., household solid waste, wood boiler ash, tires, trees, limbs, stumps, etc.):

Non-hazardous waste, industrial waste, commercial solid waste, non-hazardous sludge, and

construction/demolition waste.


SIGNATURE

7-3-18
DATE

SOLID WASTE APPLICATION

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ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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9. Proposed maximum average daily volume to be received at landfill (choose one):

10,000

Tons/Day

Cubic Yards/Day

10. List all waste streams to be accepted at the facility (i.e., household solid waste, wood boiler ash, fires, trees, limbs, stumps, etc.):

Non-hazardous waste, industrial waste, commercial solid waste, non-hazardous sludge, and

construction/demolition waste.


SIGNATURE

7-3-18
DATE

SOLID WASTE APPLICATION

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ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
(Submit in Triplicate)

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Non-hazardous waste, industrial waste, commercial solid waste, non-hazardous sludge, and

construction/demolition waste.


SIGNATURE

7-3-18
DATE

EXPLOSIVE GAS MONITORING PLAN

CHOCTAW REGIONAL LANDFILL
FIRETOWER ROAD
BUTLER, ALABAMA

PERMIT #12-01
SESI PROJECT NO: M02-037

SOUTHWEST ALABAMA SOLID WASTE DISPOSAL AUTHORITY
117 SOUTH MULBERRY STREET
BUTLER, ALABAMA 36904

JANUARY 2019



Geotechnical, Environmental & Construction Materials Testing
www.soeearth.com

Southern Earth Sciences, Inc.
Post Office Box 160745
Mobile, AL 36616
(251) 344-7711

Choctaw Regional Landfill
Butler, Alabama

Explosive Gas Monitoring Plan
Permit No.: 12-01

CERTIFICATION PAGE

I certify under penalty of law that I am an Alabama Registered Professional Geologist. The ***Explosive Gas Monitoring Plan*** for Permit #12-01 was prepared by myself or portions under my direction. The information submitted herein, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information.



Eric A. Guarino, P.G.
Registered, Alabama 1101

January 24, 2019

Date

TABLE OF CONTENTS

- 1.0 **General Permit Summary**
 - 1.1 Explosive Gas Monitoring Points
 - 1.2 Concentration Limits
 - 1.3 Explosive Gas Monitoring Program
 - 1.4 Explosive Gas Monitoring Schedule
 - 1.5 Explosive Gas Limits

FIGURE

Site Plan Monitoring Points

1.0 GENERAL PERMIT SUMMARY

Explosive gas measurements at Choctaw Regional Landfill facility shall occur as on a quarterly basis as outlined within Alabama Department of Environmental Management (ADEM) Permit No. 12-01. It is the responsibility of the Choctaw Regional Landfill to design, construct and operate the facility to control and monitor the generation and emission of explosive gases (methane) and to prevent the collection within or around structures at concentrations exceeding the permit limits. Explosive gas is a gas that is explosive under ordinary conditions and generally refers to methane (CH₄).

1.1 Explosive Gas Monitoring Points

Choctaw Regional Landfill shall maintain the network of explosive gas monitoring locations as outlined in the attached figure. There are a total of 17 points, identified as MM (Methane Monitoring). The monitoring points include points at the facility perimeter as well as interior space of a small shed. Monitoring points shall be located along the boundaries and shall be spaced no more than 300 feet apart. In areas where a structure is located within 1000 feet of the boundary, the monitoring points shall be no more than 100 feet apart.

1.2 Concentration Limits

The lower explosive limit (LEL) is the lowest percent by volume of a mixture of explosive gases which will propagate a flame in air at 25°C and atmospheric pressure. For methane the LEL is considered to be five (5) percent. The meter used shall be calibrated to a methane standard.

Choctaw Regional Landfill shall prevent the explosive gas concentrations from exceeding:

1. The LEL at the facility boundary.
2. Twenty-five percent (25%) of the LEL in any facility structure other than those that are components of a gas control or recovery system (if required).

1.3 Explosive Gas Monitoring Program

Choctaw Regional Landfill is required to monitor for explosive gases at the facility. This monitoring shall include, if applicable, explosive gas concentrations in the atmosphere, soil, and inside all structures at the facility. A structure includes buildings, beneath bridges, and any other area which is conducive to gas accumulation. This data must be made available to ADEM upon their request.

1.4 Explosive Gas Monitoring Schedule

Choctaw Regional Landfill shall perform monitoring at least 4 times within each calendar year on a quarterly schedule. Choctaw Regional Landfill shall submit the results to ADEM prior to the end of the next quarter or immediately (verbal or electronic) if a result exceeds a permit limit.

1.5 Explosive Gas Limits

Choctaw Regional Landfill shall immediately take all necessary steps to ensure immediate protection to human health and property if the explosive gas readings exceed the permit limits. Choctaw Regional Landfill shall immediately notify ADEM of the explosive gas concentrations detected and the immediate steps taken to protect human health and property. Within 20 days of the determination of excessive concentrations of explosive gas, Choctaw Regional Landfill shall submit a remedial plan describing the nature and extent of the problem and a remedy. The plan shall be implemented within 60 days and a note placed in the operating record and a notification sent to ADEM that plan has been implemented.

Choctaw Regional Landfill
Butler, Alabama

Explosive Gas Monitoring Plan
Permit No.: 12-01

FIGURE



- APPROXIMATE LOCATION
- METHANE WELL LOCATION
- ⊕ DEEP PIEZOMETER LOCATION
- ⊕ PASSIVE VENT WELL LOCATION

0 100 200 400
SCALE, IN FEET

CHOCTAW REGIONAL LANDFILL
PERMIT #12-01
TOXEY, ALABAMA

SOUTHERN EARTH SCIENCES, INC.

FIGURE 1
SITE MAP
SESI JOB NO.: M02-037M



Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

February 26, 2019

MEMORANDUM

TO: Blake Holden *CBH*
Solid Waste Branch

THRU: Brandy Tiblier *BT*
Compliance and Enforcement Section
Solid Waste Branch

FROM: Jordan Williams *JW*
Hydrogeology Section
Groundwater Branch

RE: Groundwater Monitoring Plan
Choctaw County Regional Landfill
Toxey, Choctaw County, Alabama
Permit # 12-01

Summary

The Department received the Groundwater Monitoring Plan for the above referenced facility. The submittal was prepared by Southern Earth Sciences, Inc. for the Choctaw County Regional Landfill and is dated January 24, 2019. The ADEM Solid Waste Branch requested that the Hydrogeology Section evaluate the submittal and provide pertinent comments and recommendations. This report is a result of that request.

Comments and Recommendations

- 1) This plan states that the groundwater monitoring network at this facility consists of eleven wells. There are only five wells (MW-1 through MW-5) listed in the permit for this facility. The additional assessment monitoring wells (AMW-1 through AMW-7) should be added to the permit.
- 2) MW-2 and AMW-3 are listed as the designated background wells for the entire facility. However, numerous VOCs have been continuously detected in these wells. Therefore, these wells may no longer be representative of background groundwater quality at the facility and additional wells may be needed.



- 3) These additional wells should be installed to the north/northwest of MW-B2 and Cell 1 so that they are not set in an area previously impacted by the facility.
- 4) The sampling procedures and statistical methods proposed appear to satisfy ADEM Admin Code 335-13-4-.27.

GROUNDWATER MONITORING PLAN

CHOCTAW REGIONAL LANDFILL
FIRETOWER ROAD
BUTLER, ALABAMA

PERMIT #12-01
SESI PROJECT NO: M02-037

SOUTHWEST ALABAMA SOLID WASTE DISPOSAL AUTHORITY
117 SOUTH MULBERRY STREET
BUTLER, ALABAMA 36904

JANUARY 2019



Geotechnical, Environmental & Construction Materials Testing
www.soeearth.com

Southern Earth Sciences, Inc.
Post Office Box 160745
Mobile, AL 36616
(251) 344-7711

Choctaw Regional Landfill
Butler, Alabama

Groundwater Monitoring Plan
Permit No.: 12-01

CERTIFICATION PAGE

I certify under penalty of law that I am an Alabama Registered Professional Geologist. The **Groundwater Monitoring Plan** for Permit #12-01 was prepared by myself or portions under my direction. The information submitted herein, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information.



Eric A. Guarino, P.G.
Registered, Alabama 1101

January 24, 2019

Date

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FIGURE

Figure 1 Site Plan

APPENDICIES

Appendix A - Appendix I and Appendix II Constituents

1.0 GENERAL GROUNDWATER PERMIT SUMMARY

Groundwater monitoring at Choctaw County Landfill facility shall occur as outlined within Alabama Department of Environmental Management (ADEM) Permit No. 12-01 and as required by ADEM Administrative Code 335-13-+4-.27. This plan is a summary of the permit requirements and details the sampling procedures to ensure the collection of representative groundwater samples at the facility.

1.1 Monitor Wells

Choctaw Regional Landfill shall maintain the groundwater monitor wells identified in Table IV.I. (see below) as outlined within the permit with the proposed modifications. Additionally, this plan shall apply to any monitor wells which are added during the active life and the post closure period.

**TABLE IV.I
GROUNDWATER MONITOR WELLS**

Monitor Well Number	Top of Casing (feet msl)	Depth (ft)
<i>UPGRADIENT/BACKGROUND MONITORING WELL</i>		
MW-B2	466.07	49.29
AMW-3	457.50	31.45
<i>DOWNGRADIENT MONITORING WELLS</i>		
MW-B3	438.36	18.40
MW-B4	434.67	20.00
MW-B5	428.06	27.4
AMW-1	419.24	15.22
AMW-2	401.35	30.65
AMW-4	393.13	15.42
AMW-5	393.11	19.86
AMW-6	395.19	19.00
AMW-7	396.70	20.15

Figure 1 is presented illustrating the monitor well locations, including modifications to the well system requested by ADEM during the 2018 permit renewal cycle.

1.2 Background and Compliance Well Designation

Choctaw Regional Landfill shall maintain monitor well MW-B2 as the background (upgradient) monitor well for the entire facility. At the request of ADEM or the Choctaw Regional Landfill, the background well location may be subject to change. Should the location of the background well be modified, all portions of this plan shall apply to the new background well and data collection requirements.

1.3 Additional Wells

Choctaw Regional Landfill will install and maintain additional monitor wells as necessary to assess changes in the rate and extent of any plume of contamination or as otherwise deemed necessary to maintain compliance with the ADEM regulations.

1.4 Monitoring Network Modification Plan (if required)

Prior to installing any additional monitor wells, Choctaw County Commission will submit a plan to ADEM with a permit modification request specifying the design, location and installation of any additional monitor wells. This plan will be submitted within ninety (90) days prior to the installation which, at a minimum, will include:

1. Well construction techniques included proposed casing depths, proposed total Depth, and proposed screened interval of well(s);
2. Well Development Method(s);
3. A complete analysis of well construction materials;
4. A schedule for implementation for construction; and
5. Provisions for determining the lithologic characteristics, hydraulic conductivity, and grain-size distribution for the applicable aquifer unit(s) at the location of the new well(s).

2.0 GROUNDWATER MONITORING REQUIREMENTS

Groundwater monitoring will remain as previously submitted for the facility. The below sections detail the procedures and requirements.

2.1 Groundwater Elevation Measurement

Choctaw Regional Landfill shall determine the groundwater surface elevation at each monitor well (Table IV.1) identified in the permit each time the well is sampled and at least semiannually throughout the active life and post-closure care period.

2.2 Certification of Flow Rate and Direction

Choctaw Regional Landfill will determine the groundwater flow rate and direction in the first zone of saturation each time groundwater is sampled and submit as required by ADEM Admin. Code r. 335-13-4-.27.

2.3 Background Water Quality

Choctaw Regional Landfill has sampled and established background water quality using MW-B2. As outlined the permit, background has been established sampling for the constituents as identified in Appendix I of ADEM Admin. Code r. 335-13-4. The records and results of these sampling and analysis activities are submitted to ADEM on a semi-annual basis.

2.4 Monitoring Parameters

Choctaw Regional Landfill shall sample, and analyze all monitoring wells identified in Table IV.1. of the permit for the parameters listed in Appendix I of ADEM Admin. Code r. 335-13-4, and/or any other parameters specified by ADEM in Table IV.2 of the permit. This sampling shall occur on a semi-annual basis throughout the active life of the facility and the post-closure care period in accordance with Rule 335-13-4-.27. Sampling is conducted in March and September of each calendar year.

2.5 Field Data Collection

During sampling activities, Choctaw Regional Landfill shall record water levels, depth to water, and the results of field tests for pH and specific conductance at the time of sampling for each well.

Additional field parameters are required to determine an adequate purge of the monitor well prior to sampling. Groundwater purging is discussed in a later section of this plan.

2.6 Sampling and Analysis Procedures

Choctaw Regional Landfill will use the following techniques and procedures when obtaining and analyzing samples from the monitor wells. These techniques and procedures will allow for consistency in the samples and minimize the potential for impacts not related to the landfill unit.

2.6.1 Purging and Sampling Methods

Purging shall be performed using a combination of submersible electric pumps, variable speed positive displacement bladder pumps, or peristaltic pumps. Bailers should not be used to purge monitor wells due to the potential for increasing turbidity within the annular space.

Purging and sampling shall generally occur as outlined within the *Alabama Environmental Investigation and Remediation Guidance Document, rev. 4.0, February 2017* or the current acceptable US Environmental Protection Agency (EPA) Science and Ecosystem Support Division (SESD) procedures (or referenced protocols) including low-flow and/or low-volume purging and sampling techniques. Low-flow and low-volume techniques minimize disturbance to the aquifer and greatly limit adverse impacts from sediment within the annular space. The referenced sampling methods allow for varied procedures to minimize purging below the typical three to five well volume scenario.

Purging consists of the removal of stagnant water from the well or piezometer. The removal of the stagnant water will ensure the collected sample is representative of aquifer conditions. All monitor wells that are to be sampled shall be purged prior to the collection of the sample with any exceptions to this noted within this procedure shall be noted on the field sampling sheet. The primary exception will be excessive drawdown of the water column at the lowest purging rate achievable. Excessive drawdown is considered a maximum of 1/10th of a meter or approximately 4 inches. Typical standard purging techniques require the removal of a minimum of three (3) calculated well volumes of water

from the well along with stabilization of indicator parameters. Well volumes are to be calculated using the below equation.

Volume = Total Well Depth (in feet) – Measured Depth to Water (in feet)* Water Volume per Casing Diameter (gallons/foot)

Well Casing Diameter (Inches)	Well Volume (gallons/foot)
1	0.041
2	0.163
3	0.367
4	0.653
5	1.02
6	1.469

Historical data will be utilized to determine the total depth of the monitoring well for calculation of the purge volume. The total depth of the well will not be determined by lowering the probe to the bottom of the well before purging and sampling.

Following calculation of the volume, multiply by three for the minimum purge volume required. All calculations and measurements should be written on the field sampling sheet or field book.

Standard purging is achieved after removal of three well volumes with the stabilization of groundwater chemistry parameters (pH, specific conductance, and temperature) and turbidity has stabilized or is below 10 NTUs. The groundwater chemistry parameters are considered stable when the pH measurement does not vary by more than 0.1 su between readings, specific conductance does not vary by more than 10 percent and the temperature is constant for a minimum of three readings. The procedure shall be to collect an initial reading of the groundwater chemistry parameters and the turbidity with at least one reading collected after each well volume is removed. Additional field parameters to be collected include Dissolved Oxygen and Redox. Although not specifically required by Alabama Department of Environmental Management or Environmental Protection Agency guidance, the Dissolved Oxygen and Redox should be stable. It should be noted that depth to groundwater measurements should be collected several times during the initial five minutes of purging to determine if excessive drawdown (>0.1 meter) is occurring.

Drawdown is determined by measuring the depth to water with the sampling equipment in the well prior to activation of the pump and subtracting the depth to water during purging. During pump start-up, the pump discharge may need to be adjusted more frequently to ensure minimal drawdown in the well. Discharge will be measured using a graduated container or cylinder and recording the volume discharged per one (1) minute (e.g., milliliters/minute). The cylinder or container will be graduated at 100 milliliter (ml)

intervals or less. Drawdown (initial water level minus measured purging water level) shall be calculated during the first minute of pump operation during purging, at five minutes and at each well volume.

Should the aquifer at the facility not allow for standard purging with minimal drawdown, Choctaw Regional Landfill will follow the most recent EPA SESD procedure for low-flow sampling utilizing equipment volume purging or screen interval purging. Low-flow sampling shall occur with the intake from the pump or tubing placed within the middle of the screened interval.

2.6.1.2 Field Equipment

Field meters used during the purging activities shall be capable of measuring pH, Temperature, Dissolved Oxygen (DO), Specific Conductance, Temperature, Oxidation Reduction Potential (ORP), Turbidity and water level. Prior to the beginning of field activities, the equipment shall be calibrated per the manufacturer's instructions. A flow-through cell or container shall be used when collecting measurements for purging stabilization. The flow-through cell operation will ensure that fresh formation water continuously contacts the measuring devices and does not aerate the sample or otherwise affect the groundwater properties.

2.6.1.3 Analytical Test Methods

Samples will be analyzed according to the procedures specified of the Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), or other appropriate methods approved by this Department.

The list of Appendix I Constituents is presented in **Appendix A**. As required, the analytical method used shall allow for the determination of concentrations to the Maximum Contaminant Level (MCL) of the constituent or alternate concentration as specified within the current ADEM guidance material.

Should the evaluation of groundwater data require the analyses for Appendix II Constituents, the analytical methods used shall also allow for the determination of concentrations to the MCL of the respective analyte. The list of Appendix II constituents is presented in **Appendix A**.

2.7 Statistical Analyses of Groundwater

ADEM Administrative Code, Division 13, 335-13-4-.27(2)(I) states the allowable statistical procedure. The statistical evaluation of groundwater at the facility shall be performed using a prediction limit. The prediction limit will be evaluated for each hazardous constituent separately using the interwell data. Intrawell evaluation is not representative as the facility had received waste prior to the initiation of groundwater monitoring. The analyses will be conducted taking into account the method detection limit as well as the practical quantification limit. The prediction limit will calculate statistical variance as

compared to the background established at MW-B2. We believe a prediction limit will meet the performance standards as outlined in the ADEM Administrative Code and that evaluation by the prediction limit will be protective of receptors (if a complete exposure pathway exists).

Quarterly sampling will occur on the wells that are proposed to be added to the system for one year to aide in a timely establishment of a minimally sufficient number of samples to allow for statistical evaluation. It should be noted that the EPA Unified Guidance document states as many as eight sample events may be require to establish sufficient data for prediction limit.

2.8 Chain of Custody

Samples will be tracked and controlled using a chain-of-custody. The chain-of-custody shall detail the sampling personnel, sample analytical procedure requested, sample container, date of sampling, time of sampling, sample preservation and maintain a custody of the sample from the time of sampling to final deliver to the analytical laboratory.

3.0 Recordkeeping and Reporting Requirements

3.1 Recording of Results-Record Keeping

For each sample and/or measurement taken pursuant to the requirements of the landfill permit, the Choctaw Regional Landfill will maintain the record for a minimum of three years.

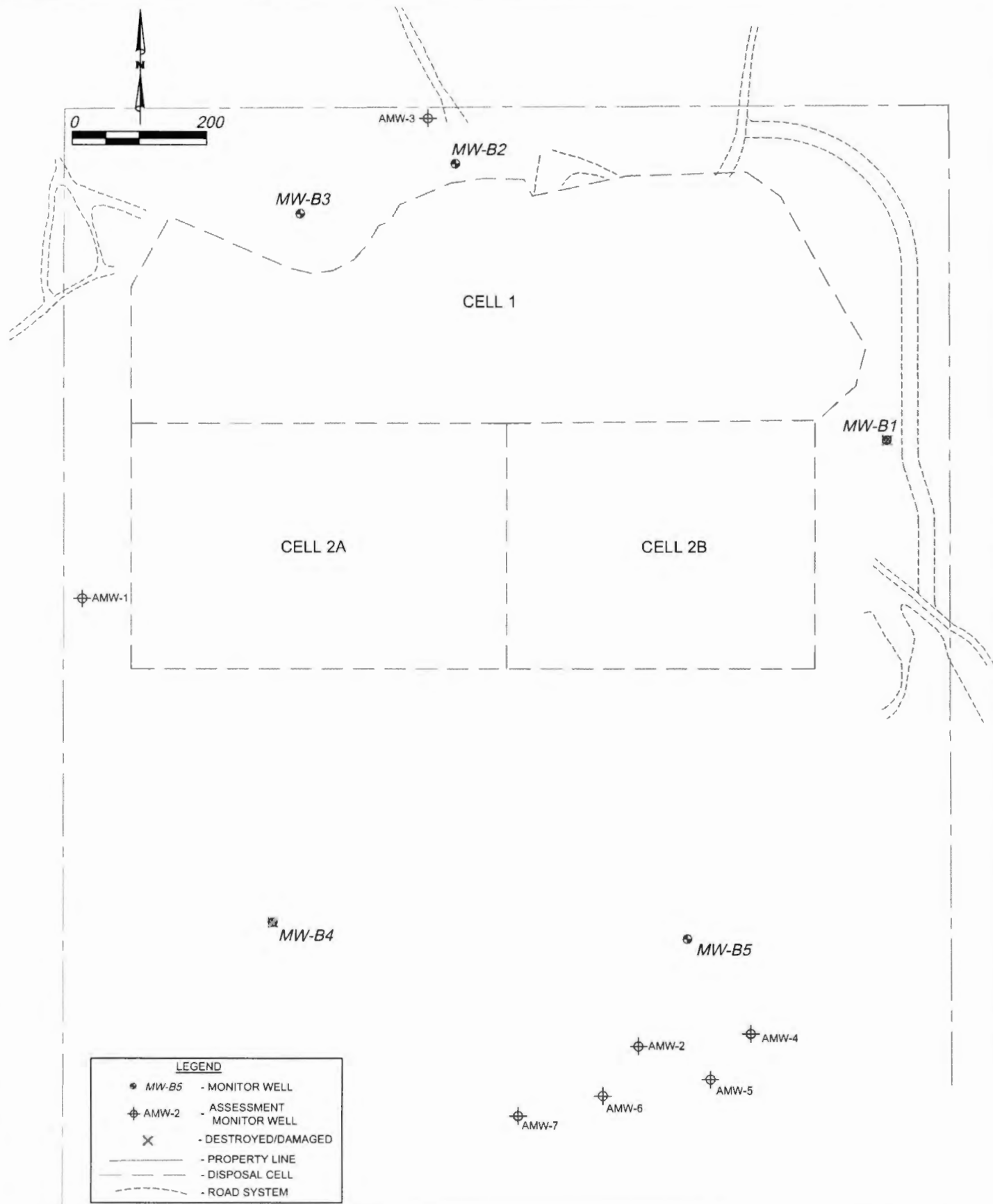
3.2 Permit Modification

If at any time, Choctaw Regional Landfill or ADEM determines that the groundwater monitoring system no longer satisfies the requirements of 335-13-4 or the permit requirements, Choctaw Regional Landfill will, within 90 days, submit an application for a permit modification to make any necessary and/or appropriate changes to the system.

Choctaw Regional Landfill
Butler, Alabama

Groundwater Monitoring Plan
Permit No.: 12-01

APPENDIX A



CHOCTAW REGIONAL LANDFILL
ADEM FACILITY 12-01
TOXEY, ALABAMA

SOUTHERN EARTH SCIENCES, INC.
Geotechnical, Environmental & Construction Materials Testing
www.soeearth.com

FIGURE 1
SITE PLAN
SESI JOB #: M02-037

Choctaw Regional Landfill
Butler, Alabama

Groundwater Monitoring Plan
Permit No.: 12-01

APPENDIX B



Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

June 6, 2019

MEMORANDUM

TO: Blake Holden *CBH*
Solid Waste Branch

THRU: Brandy Tiblier *BT*
Compliance and Enforcement Section
Solid Waste Branch

FROM: Jordan Williams *JW*
Hydrogeology Section
Groundwater Branch

RE: Response to Permit Renewal-Groundwater Monitoring Plan
Choctaw County Regional Landfill
Toxey, Choctaw County, Alabama
Permit # 12-01

Summary

The Department received the Response to Permit Renewal-Groundwater Monitoring Plan for the above referenced facility. The submittal was prepared by Southern Earth Sciences, Inc. for the Choctaw County Regional Landfill and is dated April 22, 2019. The ADEM Solid Waste Branch requested that the Hydrogeology Section evaluate the submittal and provide pertinent comments and recommendations. This report is a result of that request.

Comments and Recommendations

- 1) Replacement well MW-B1R is shown on Figure 1 to the east of existing well MW-B1. This appears to be an adequate location that has not been impacted by the landfill.
- 2) Proposed background well MW-BW appears to be located in an area that has not been historically impacted by the landfill.
- 3) Replacement well MW-B4R appears to have been installed according to ADEM Admin. Code r. 335-13-4-.27. A well abandonment report should be submitted to the Department for MW-B4.



Holden, Charles B

From: Holden, Charles B
Sent: Thursday, May 23, 2019 7:17 AM
To: 'Eric Guarino'
Subject: Choctaw County Regional Landfill GWM Well MW-B4 Abandonment

Mr. Guarino,

Due to circumstances of potential risk for injury concerning the abandonment of groundwater monitoring well MW-B4, the Department will allow well MW-B4 to temporarily remain in place. However, upon the start of construction for Cell 3 or at any time the Department sees fit, the well must be removed and properly abandoned. Should you have any questions or comments please contact me at the information listed below.

Sincerely,

Blake Holden

C. Blake Holden

Alabama Department of Environmental Management
Land Division – Solid Waste Branch
Senior Environmental Engineering Specialist
Office: (334) 274-4248
Email: cbholden@adem.alabama.gov



5460 Rangeline Road
Mobile, AL 36619
Tel: (251) 344-7711
Fax: (251) 443-9000
www.soeearth.com

April 22, 2019

Mr. Scott Story, Chief
Solid Waste Engineering Section
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

Re: Response to Permit Renewal-Groundwater Monitoring Plan (03/13/19)
Choctaw County Regional Landfill
Firetower Road
Butler, Choctaw County, Alabama
ADEM Permit No.: 12-01
SESI Project No.: M02-037S

Dear Mr. Story:

On behalf of the Southwest Alabama Solid Waste Disposal Authority (SWASWDA) and the Choctaw County Regional Landfill (CCRL), Southern Earth Sciences, Inc. (SESI) is submitting this response to the above referenced letter.

Addition of AMW-1 through AMW-7 to Permit No. 12-01

At the request of CCRL, SESI is providing the *Permit Modification for Monitor Well System (Attachment A)*. This document details the addition of the existing wells to the system for detection monitoring as required.

Background Well Designation

Issues and modifications to the existing background well location are discussed within the *Permit Modification for Monitor Well System (Attachment A)*. CCRL proposes to locate the well onto property to the west of the permitted facility. Relocation of the existing well to another location, within the permitted boundary of the facility, may not provide water quality results that do not indicate impacts from historic sanitary disposal issues.

MW-B4R Installation Report

SESI has prepared and is providing the *Monitor Well Installation Report (MW-B4R) (Attachment B)*.

**Choctaw County Regional Landfill
Response to Permit Requests
April 22, 2019**

Should you have any questions or comments, you may reach the undersigned at 251-344-7711 or via electronic mail to eguarino@soearth.com.

Sincerely,

SOUTHERN EARTH SCIENCES, INC. .



Eric A. Guarino, P.G.
Environmental Department Manager
Mobile, Alabama Branch Office

EAG

Choctaw County Regional Landfill
Response to Permit Requests
April 22, 2019

ATTACHMENT A

PERMIT MODIFICATION FOR MONITOR WELL SYSTEM

CHOCTAW COUNTY REGIONAL LANDFILL

CHOCTAW COUNTY, ALABAMA

PERMIT #12-01
SESI PROJECT NO: M02-037

MAY 2019

SOUTHWEST ALABAMA SOLID WASTE DISPOSAL AUTHORITY
117 SOUTH MULBERRY STREET, SUITE 9
BUTLER, ALABAMA 36904



Geotechnical, Environmental & Construction Materials Testing
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Southern Earth Sciences, Inc.
Post Office Box 160745
Mobile, AL 36616
(251) 344-7711

Choctaw County Regional Landfill
Choctaw County, Alabama

Modification to Monitor Well System
Permit No.: 12-01

CERTIFICATION PAGE

I certify under penalty of law that I am an Alabama Registered Professional Geologist. The **Permit Modification for Monitor Well System for Permit #12-01** was prepared by myself or portions under my direction. The information submitted herein, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information.



5/31/19

Date

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2.8	Chain of Custody
3.0	Record Keeping and Reporting Requirements
3.1	Recording of Results-Record Keeping
3.2	Permit Modification

FIGURE

Figure 1 Site Plan

ATTACHMENTS

Attachment A-Well Diagrams
Attachment B-Appendix I and Appendix II Constituents

1.0 CURRENT PERMITTED MONITOR WELLS

1.1 Monitor Wells

Choctaw County Regional Landfill (CCRL) currently maintains the groundwater monitor wells identified in Table IV.I. (see below) of the Alabama Department of Environmental Management (ADEM) permit 12-01. **Figure 1** is presented illustrating the locations of the monitor wells and the proposed additions.

TABLE IV.I
GROUNDWATER MONITOR WELLS

Monitor Well Number	Top of Casing (feet msl)	Depth (ft)
------------------------	-----------------------------	---------------

UPGRADIENT/BACKGROUND MONITORING WELL

MW-B2 (REMOVE AND ADD TO DOWNGRAIENT WELL SYSTEM)

MW-BW (NEW PROPOSED WELL)

DOWNGRAIENT (COMPLIANCE) MONITORING WELLS

MW-B1 (REMOVE FROM PERMIT-DESTROYED)

MW-B1R (PROPOSED REPLACEMENT FOR MW-B1)

MW-B2 (FORMER BKGRD)	466.07	49.29
MW-B3	438.36	18.40
MW-B4R (REPLACEMENT	to be surveyed	20.00
MW-B5	428.06	27.4
AMW-1 (ADD TO PERMIT)	419.24	15.22
AMW-2 (ADD TO PERMIT)	401.35	30.65
AMW-3 (ADD TO PERMIT)	457.50	31.45
AMW-4 (ADD TO PERMIT)	393.13	15.42
AMW-5 (ADD TO PERMIT)	393.11	19.86
AMW-6 (ADD TO PERMIT)	395.19	19.00
AMW-7 (ADD TO PERMIT)	396.70	20.15

Well Construction and Lithologic Logs (Boring Logs) for the existing monitor wells are presented in **Appendix A**. The stratigraphic logs for AMW-1, AMW-2, and AMW-3 cannot be located.

1.2 Background and Compliance Well Designation

CCRL at the request of the Alabama Department of Environmental Management will be installing a new background monitor well. Available groundwater data indicates that groundwater at the facility has a northerly flow component to the north of Cell No. 1. Additionally, existing background well MW-B2 has indicated concentrations of volatile organics. Inorganic concentrations historically reported in the samples of MW-B2 may not be impacts, but represent inorganic constituent concentration at the facility. Numerous volatile organics constituents have been reported within the background well

and prior to the construction and operation of Cell No. 1. The volatile organics within the groundwater are impacts from prior disposal at the historic sanitary landfill that existed prior to the current permitted facility. Due to the impacts, MW-B2 is proposed to be relocated to the west of the facility onto additional property owned by Choctaw County. This area is not known to have been historically used for sanitary disposal and it lies within the same surficial drainage and should be representative of natural background.

Additionally, MW-B1R, will be replaced by moving eastward away from Cell No. 1. MW-B1 was installed and typically had a very small column of groundwater. There is potential that an insufficient water column may be present to allow for sampling purposes above the claystone that is known to underlie the facility. Review of the *Addendum to Hydrogeological Evaluation*, dated October 4, 2002 states "wells drilled by Southern Earth Sciences to date all set in perched water table within the undifferentiated Gosport Sand and Lisbon Formation situated above the Tallahatta Formation".

1.3 Monitoring Network Modification

The modification proposed within this report includes the noted addition of the Assessment Monitoring Wells (AMW) and the re-designation of the former background well to the compliance monitoring system, replacement of MW-B1 and the installation of a new background well (MW-BW) for the facility. The proposed background well will be installed on county property to the west of the landfill. The well will be installed to the top of the rock confining unit that exists across the site. The depth is anticipated to not exceed thirty (30) feet. The well will be constructed with 10 feet of slotted screen. The additional proposed well locations are illustrated on **Figure 1**.

1.4 Approval and Scheduling

Upon approval of the proposed permit modification, CCRL will begin field activities within 60 days.

2.0 GROUNDWATER MONITORING REQUIREMENTS

Groundwater monitoring will remain as previously submitted for the facility. The below sections detail the procedures and requirements.

2.1 Groundwater Elevation Measurement

CCRL shall determine the groundwater surface elevation at each monitor well (Table IV.I as proposed by this modification) identified in the permit each time the well is sampled and at least semiannually throughout the active life and post-closure care period.

2.2 Certification of Flow Rate and Direction

CCRL will determine the groundwater flow rate and direction in the first zone of saturation each time groundwater is sampled and submit as required by ADEM Admin. Code r. 335-13-4-.27.

2.3 Background Water Quality

CCRL will establish background water quality within the new proposed well by sampling quarterly for one year for the constituents identified in Appendix I of ADEM Admin. Code r. 335-13-4. The results of this background monitoring will be submitted on a semi-annual basis.

2.4 Monitoring Parameters

CCRL will sample, and analyze all monitoring wells identified in Table IV.I. (as proposed by this modification) of the permit for the parameters listed in Appendix I of ADEM Admin. Code r. 335-13-4, and/or any other parameters specified by ADEM in Table IV.2 of the permit (when issued), on a semi-annual basis throughout the active life of the facility and the post-closure care period in accordance with Rule 335-13-4-.27. Semi-annual sampling will be conducted in March and September of each calendar year.

2.5 Field Data Collection

During sampling activities, CCRL shall record water levels, depth to water, and the results of field tests for pH and specific conductance at the time of sampling for each well. Additional field parameters are required to determine an adequate purge of the monitor well prior to sampling. Groundwater purging is discussed in a later section of this plan.

2.6 Sampling and Analysis Procedures

CCRL will use the following techniques and procedures when obtaining and analyzing samples from the monitor wells. These techniques and procedures will allow for consistency in the samples and minimize the potential for impacts not related to the landfill unit.

2.6.1 Purging and Sampling Methods

Purging shall be performed using a combination of submersible electric pumps, variable speed positive displacement bladder pumps, or peristaltic pumps. Bailers should not be

used to purge monitor wells due to the potential for increasing turbidity within the annular space.

Purging and sampling shall generally occur as outlined within the *Alabama Environmental Investigation and Remediation Guidance Document, rev. 4.0, February 2017* or the current acceptable US Environmental Protection Agency (EPA) Science and Ecosystem Support Division (SESD) procedures (or referenced protocols) including low-flow and/or low-volume purging and sampling techniques. Low-flow and low-volume techniques minimize disturbance to the aquifer and greatly limit adverse impacts from sediment within the annular space. The referenced sampling methods allow for varied procedures to minimize purging below the typical three to five well volume scenario.

Purging consists of the removal of stagnant water from the well or piezometer. The removal of the stagnant water will ensure the collected sample is representative of aquifer conditions. All monitor wells that are to be sampled shall be purged prior to the collection of the sample with any exceptions to this noted within this procedure shall be noted on the field sampling sheet. The primary exception will be excessive drawdown of the water column at the lowest purging rate achievable. Excessive drawdown is considered a maximum of 1/10th of a meter or approximately 4 inches. Adequate and proper purging techniques require the removal of a minimum of three (3) calculated well volumes of water from the well along with stabilization of indicator parameters. Well volumes are to be calculated using the below equation.

Volume = Total Well Depth (in feet) – Measured Depth to Water (in feet)* Water Volume per Casing Diameter (gallons/foot)

Well Casing Diameter (Inches)	Well Volume (gallons/foot)
1	0.041
2	0.163
3	0.367
4	0.653
5	1.02
6	1.469

Historical data will be utilized to determine the total depth of the monitoring well for calculation of the purge volume. The total depth of the well will not be determined by lowering the probe to the bottom of the well before purging and sampling.

Following calculation of the volume, multiply by three for the minimum purge volume required. All calculations and measurements should be written on the field sampling sheet or field book.

Adequate purging is typically achieved after removal of three well volumes with the stabilization of groundwater chemistry parameters (pH, specific conductance, and temperature) and turbidity has stabilized or is below 10 NTUs. Low-flow sampling procedures allow for variations to this volume based on stabilization and aquifer characteristics. The groundwater chemistry parameters are considered stable when the pH measurement does not vary by more than 0.1 su between readings, specific conductance does not vary by more than 10 percent and the temperature is constant for a minimum of three readings. The procedure shall be to collect an initial reading of the groundwater chemistry parameters and the turbidity with at least one reading collected after each well volume is removed. Additional field parameters to be collected include Dissolved Oxygen and Redox. Although not specifically required by Alabama Department of Environmental Management or Environmental Protection Agency guidance, the Dissolved Oxygen and Redox should be stable. It should be noted that depth to groundwater measurements should be collected several times during the initial five minutes of purging to determine if excessive drawdown (>0.1 meter) is occurring.

Drawdown is determined by measuring the depth to water with the sampling equipment in the well prior to activation of the pump and subtracting the depth to water during purging. During pump start-up, the pump discharge may need to be adjusted more frequently to ensure minimal drawdown in the well. Discharge will be measured using a graduated container or cylinder and recording the volume discharged per one (1) minute (e.g., milliliters/minute). The cylinder or container will be graduated at 100 milliliter (ml) intervals or less. Drawdown (initial water level minus measured purging water level) shall be calculated during the first minute of pump operation during purging, at five minutes and at each well volume.

2.6.1.2 Field Equipment

Field meters used during the purging activities shall be capable of measuring pH, Temperature, Dissolved Oxygen (DO), Specific Conductance, Temperature, Oxidation Reduction Potential (ORP), Turbidity and water level. Prior to the beginning of field activities, the equipment shall be calibrated per the manufacturer's instructions. A flow-through cell or container shall be used when collecting measurements for purging stabilization. The flow-through cell operation will ensure that fresh formation water continuously contacts the measuring devices and does not aerate the sample or otherwise affect the groundwater properties.

2.6.1.3 Analytical Test Methods

Samples will be analyzed according to the procedures specified of the Standard Methods for the Examination of Water and Wastewater (American Public Health Association, latest edition), Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Publication SW-846, latest edition), or other appropriate methods approved by this Department.

The list of Appendix I Constituents is presented in **Appendix B**. As required, the analytical method used shall allow for the determination of concentrations to the Maximum Contaminant Level (MCL) of the constituent.

Should the evaluation of groundwater data require the analyses for Appendix II Constituents, the analytical methods used shall also allow for the determination of concentrations to the MCL of the respective analyte. The list of Appendix II constituents is presented in **Appendix B**.

2.7 Statistical Analyses of Groundwater

ADEM Administrative Code, Division 13, 335-13-4-.27(2)(I) states the allowable statistical procedure. The statistical evaluation of groundwater at the facility shall be performed using a prediction limit. The prediction limit will be evaluated for each hazardous constituent separately using the interwell data. Intrawell evaluation is not representative as the facility had received waste prior to the initiation of groundwater monitoring. The analyses will be conducted taking into account the method detection limit as well as the practical quantification limit. The prediction limit will calculate statistical variance as compared to the background established at the proposed background well (MW-BW). We believe a prediction limit will meet the performance standards as outlined in the ADEM Administrative Code and that evaluation by the prediction limit will be protective of receptors (if a complete exposure pathway exists).

Quarterly sampling will occur on the wells that are proposed to be added to the system for one year to aide in a timely establishment of a minimally sufficient number of samples to allow for statistical evaluation. It should be noted that the EPA Unified Guidance document states as many as eight sample events may be require to establish sufficient data for prediction limit.

2.8 Chain of Custody

Samples will be tracked and controlled using a chain-of-custody. The chain-of-custody shall detail the sampling personnel, sample analytical procedure requested, sample container, date of sampling, time of sampling, sample preservation and maintain a custody of the sample from the time of sampling to final deliver to the analytical laboratory.

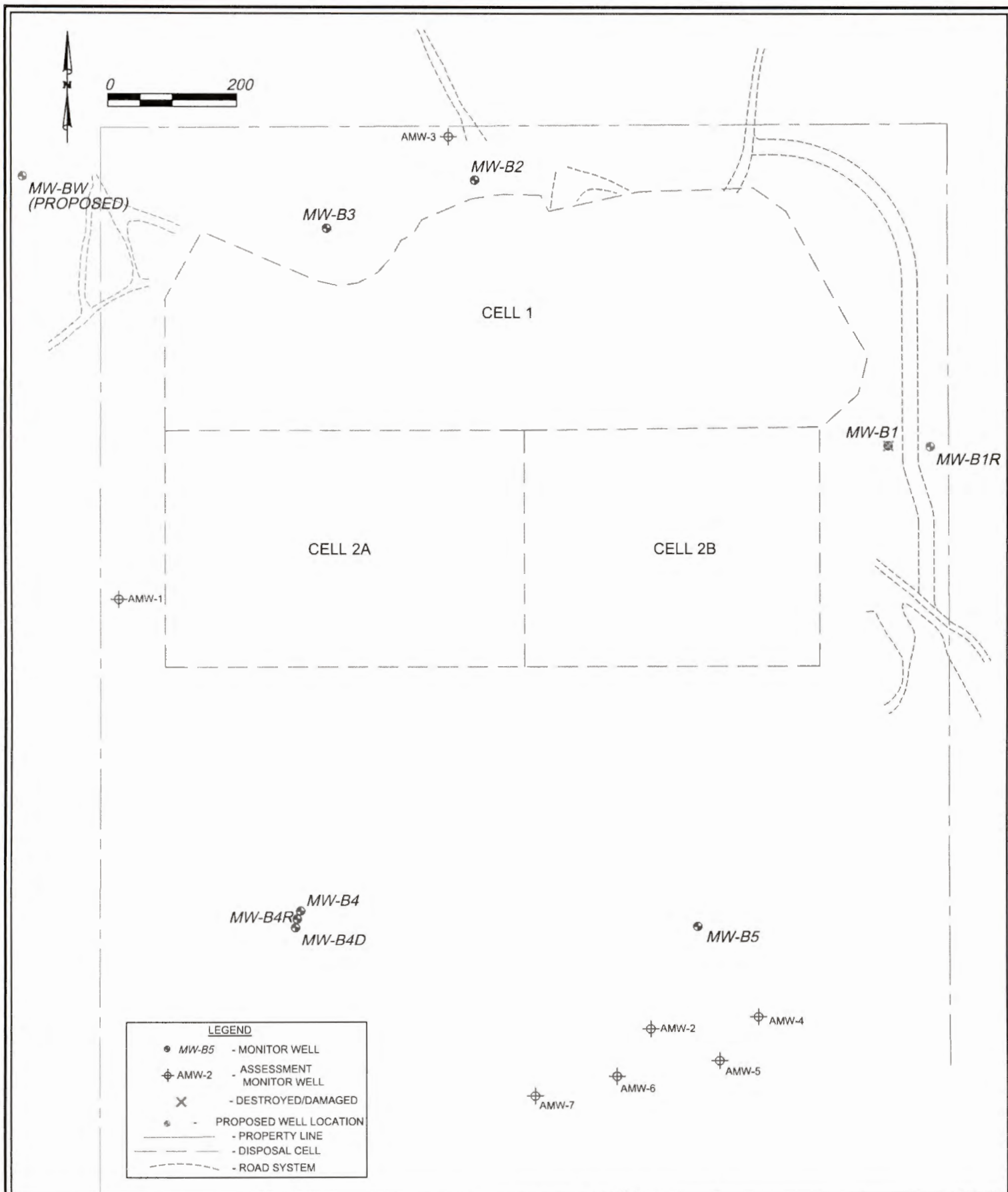
3.0 RECORDKEEPING AND REPORTING REQUIREMENTS

3.1 Recording of Results-Record Keeping

For each sample and/or measurement taken pursuant to the requirements of the landfill permit, CCRL will maintain the record for a minimum of three years.

3.2 Permit Modification

If at any time, CCRL or ADEM determines that the groundwater monitoring system no longer satisfies the requirements of 335-13-4 or the permit requirements, CCRL will, within 90 days, submit an application for a permit modification to make any necessary and/or appropriate changes to the system.



CHOCTAW COUNTY REGIONAL
LANDFILL
ADEM FACILITY 12-01
TOXEY, ALABAMA

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FIGURE 1
SITE PLAN
SESI JOB #: M02-037

Choctaw County Regional Landfill
Choctaw County, Alabama

Modification to Monitor Well System
Permit No.: 12-01

APPENDIX A

WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: MW-B1

DRILLER: R. LEE

Page 1 of 1

PROJECT NO.: 02-037

METHOD: HOLLOW-STEM AUGER

PROJECT: CHOCTAW COUNTY LANDFILL

WELL DIAMETER:

PROJECT LOCATION: BUTLER, AL

SCREEN SLOT SIZE:

COORDINATES: SEE TEST LOCATION PLAN

TOC ELEVATION: 451.63

DATE DRILLED: 02/20/02

GROUND ELEVATION: 448.35

DATE COMPLETED: 02/20/02

WATER LEVEL: 22 ft

GEOL / ENGR: T. POWERS

WATER LEVEL DATE: 02/21/02

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0			Dirt Cover	
			GARBAGE, ASPHALT, and WOOD Recovered	
440	7/6 11/6 19/6			
10	9/6 5/6 7/6			
430	24/6 16/6 16/6			
20	3/6 2/6 3/6	SC	Loose Light Gray and Orange Clayey SAND	
	5/6 6/6 12/6	SC	Firm Dark Greenish Clayey SAND, Glauconitic and Micaceous. Damp. (Glauconitic Rock at tip of Spoon)	
420	100/6	CH	Very Dense Tan Siltstone to Claystone and Green Glauconitic Rock to Green Silty Sandy CLAY-Glauconitic	
410				
400				
50				

Remarks: 3' STICKUP APPROX.

■ - Bentonite

□ - Filter Sand

▨ - Neat Cement

SOUTHERN EARTH SCIENCES, Inc.

ERIC Z:\PROJECTS\JOB FOLDERS\2000-09\2002\02\02037-CHOCTAW CO. LF BORLOGS.GPJ SO. EARTH COLOR.GDT 4/19/19

WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: MW-B2

DRILLER: R. LEE

Page 1 of 1

PROJECT NO.: 02-037

METHOD: HOLLOW-STEM AUGER

PROJECT: CHOCTAW COUNTY LANDFILL

WELL DIAMETER:

PROJECT LOCATION: BUTLER, AL

SCREEN SLOT SIZE:

COORDINATES: SEE TEST LOCATION PLAN

TOC ELEVATION: 466.07

DATE DRILLED: 02/19/02

GROUND ELEVATION: 463.42

DATE COMPLETED: 02/19/02

WATER LEVEL: 28 ft

GEOL / ENGR: T. POWERS

WATER LEVEL DATE: 02/20/02

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0		SM	Very Firm Dark and Pale Orange Silty SAND	
460	7/6 13/6 15/6			
10	9/6 10/6 15/6			
450		SP-SM	Very Firm Dark and Pale Orange Fine SAND to Silty SAND	
	5/6 8/6 14/6			
20	7/6 8/6 10/6	SM	Firm to Very Loose Pale Orange, Tan, and Pale Red to Orange Over Dark Gray Silty SAND (Damp to Wet @ 26")	
440	2/6 1/6 2/6			
30	5/6 5/6 8/6	CH-CL	Stiff Dark Gray Silty CLAY Micaceous	
430	15/6 28/6 50/6	SC	Very Dense Dark Grayish Green Glauconitic Clayey SAND and Glauconite (Rock)	
40	30/6 13/6 30/6	CH	Greenish Gray Siltstone to Claystone over 10" Dark Green Plastic CLAY. Micaceous	
420	15/6 30/6 36/6	CH	Hard Dark Greenish Gray Silty CLAY with Rock interspersed. Rock is Dark Greenish Gray Siltstone to Claystone	
50				

Remarks:

- Bentonite
 - Filter Sand
 - Neat Cement

SOUTHERN EARTH SCIENCES, Inc.

ERIC Z:\PROJECTS\JOB FOLDERS\2000-09\20020202037-CHOCTAW CO LF BORLOGS.GPJ SO_EARTH_COLOR.GDT 4/19/19

WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: MW-B3

DRILLER: R. LEE

Page 1 of 1

PROJECT NO.: 02-037

METHOD: HOLLOW-STEM AUGER

PROJECT: CHOCTAW COUNTY LANDFILL

WELL DIAMETER:

PROJECT LOCATION: BUTLER, AL

SCREEN SLOT SIZE:

COORDINATES: SEE TEST LOCATION PLAN

TOC ELEVATION: 438.36

DATE DRILLED: 02/19/02

GROUND ELEVATION: 435.28

DATE COMPLETED: 02/19/02

WATER LEVEL: 9.5 ft

GEOL / ENGR: T. POWERS

WATER LEVEL DATE: 02/19/02

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0		SC-SM	Loose Orange Silty SAND over Orange Clayey SAND. Possible Autochthonous Fill for Access Road. No Bedding.	
430				
10			Light Tan Siltstone to Claystone. Could Not Obtain Sample over Depth of 10.5'-11.5'	
420		CH	Hard Dark Gray Plastic CLAY. Height of Water on Rod after Collecting Sample was 7'	
20				
410				
30				
400				
40				
390				
50				

Remarks:

- Bentonite
 - Filter Sand
 - Neat Cement

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WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: MW-B4

DRILLER: R. LEE

Page 1 of 1

PROJECT NO.: 02-037

METHOD: HOLLOW-STEM AUGER

PROJECT: CHOCTAW COUNTY LANDFILL

WELL DIAMETER:

PROJECT LOCATION: BUTLER, AL

SCREEN SLOT SIZE:

COORDINATES: SEE TEST LOCATION PLAN

TOC ELEVATION: 434.67

DATE DRILLED: 02/21/02

GROUND ELEVATION: 431.80

DATE COMPLETED: 02/21/02

WATER LEVEL: 18.37 ft

GEOL / ENGR: T. POWERS

WATER LEVEL DATE: 02/22/02

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0				
430				
		SM	Firm Medium Orange, Pale Orange, and Pale Red Silty SAND to Loose Pale Orange and Light Gray Silty SAND. Micaceous	
10				
420				
20		SC	Loose Tan Clayey SAND to Sandy CLAY with Orange and Red Mottles (Horizontal) or Bedding, Micaceous	
410				
		CL	Hard Dark Greenish Gray CLAY over Dark Gray Sandy CLAY, Micaceous	
30				
400				
40				
390				
50				

Remarks:

■ - Bentonite

□ - Filter Sand

▨ - Neat Cement

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ERIC Z:\PROJECTS\JOB FOLDERS\2000-09\2002\02\02037-CHOCTAW CO. LF BORLOGS.GPJ SO. EARTH COLOR.GDT 4/19/19

WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: BW-4R

DRILLER: D. Gardner

Page 1 of 1

PROJECT NO.: 02-037

METHOD: HOLLOW-STEM AUGER

PROJECT: CHOCTAW COUNTY LANDFILL

WELL DIAMETER: 2

PROJECT LOCATION: BUTLER, AL

SCREEN SLOT SIZE:

COORDINATES: 32.044080, 88271064

TOC ELEVATION:

DATE DRILLED: 10/16/17

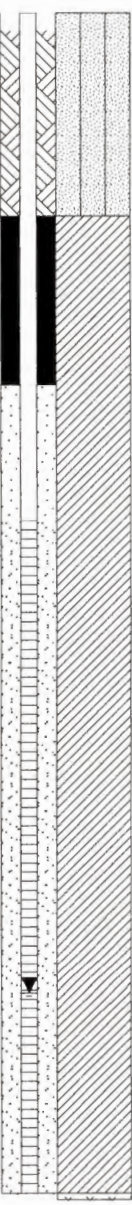
GROUND ELEVATION: unk

DATE COMPLETED: 10/18/17


WATER LEVEL: 14.57 ft

GEOL / ENGR: M. Reaves


WATER LEVEL DATE: 10/18/17

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0		SM	Red, orange and tan SILTY SAND (moist)	
5		CL	Grey and red SILTY CLAY (moist)	
10				
15				
20			Hard greenish grey siltstone/claystone (dry)	

Remarks: 4' Stickup Approx. (Measurements from ground)

 - Bentonite

 - Filter Sand

 - Neat Cement

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WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: MW-B5

DRILLER: R. LEE

Page 1 of 1

PROJECT NO.: 02-037

METHOD: HOLLOW-STEM AUGER

PROJECT: CHOCTAW COUNTY LANDFILL

WELL DIAMETER:

PROJECT LOCATION: BUTLER, AL

SCREEN SLOT SIZE:

COORDINATES: SEE TEST LOCATION PLAN

TOC ELEVATION: 428.06

DATE DRILLED: 02/21/02

GROUND ELEVATION: 424.99

DATE COMPLETED: 02/21/02

WATER LEVEL: 11.32 ft

GEOL / ENGR: T. POWERS

WATER LEVEL DATE: 02/22/02

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0			DIRT COVER	
			GARBAGE, WOOD, and FILL DIRT Recovered	
420				
	16/6 12/6 14/6			
10				
	50/6 22/6 16/6			
410				
	12/6 6/6 6/6			
20		CH	Very Stiff to Hard Dark Gray to Dark Greenish Gray Plastic Clay, Micaceous	
	9/6 12/6 13/6			
400				
	12/6 13/6 23/6			
30				
390				
40				
380				
50				

Remarks:

- Bentonite
 - Filter Sand
 - Neat Cement

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WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: AMW-4

DRILLER: SESI

Page 1 of 1

PROJECT NO.: M02-037

METHOD: HOLLOW STEM AUGER

PROJECT: Choctaw County Landfill

WELL DIAMETER: 2"

PROJECT LOCATION: Butler, Alabama

SCREEN SLOT SIZE: 0.010

COORDINATES: N32.02.639, W088.16.147

TOC ELEVATION: 393.13

DATE DRILLED: 07/31/14

GROUND ELEVATION: 390

DATE COMPLETED: 07/31/14

WATER LEVEL: 5 ft

GEOL / ENGR: S. Traylor

WATER LEVEL DATE: 07/31/14

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
390 0			Grass/Topsoil	
389 1			Brownish Red Fine Grain Silty Sand--Saturated at Approx. 5 feet--	
388 2				
387 3				
386 4				
385 5				
384 6				
383 7				
382 8				
381 9				
380 10			Dark Gray to Black Stiff Clay	
379 11				
378 12			Light Gray Chalk--Drill Could Not Penetrate--Thickness Unknown	
377 13				
376 14				
375 15				

Remarks:

- Bentonite
 - Filter Sand
 - Neat Cement

SOUTHERN EARTH SCIENCES, Inc.

ERIC Z:\PROJECTS\JOB FOLDERS\2000-09\2002\02037\GROUNDWATER INVESTIGATION\CHOCTAW CO. LF AMW-4 THRU 7 LOGS.GPJ SO_EARTH_COLOR.GDT 8/21/14

WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: AMW-5

DRILLER: SESI

Page 1 of 1

PROJECT NO.: M02-037

METHOD: HOLLOW STEM AUGER

PROJECT: Choctaw County Landfill

WELL DIAMETER: 2"

PROJECT LOCATION: Butler, Alabama

SCREEN SLOT SIZE: 0.010

COORDINATES: N32.02.635, W088.16.129

TOC ELEVATION: 393.11

DATE DRILLED: 07/30/14

GROUND ELEVATION: 390

DATE COMPLETED: 07/31/14

WATER LEVEL: 12 ft

GEOL / ENGR: S. Traylor

WATER LEVEL DATE: 07/31/14

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
390 0			Grass/Topsoil	
			Brownish Red Fine Grain Silty Sand--Saturated at Approx. 12 feet--	
385 5				
380 10				
375 15			Dark Gray to Black Stiff Clay	
370 20			Light Gray Chalk--Drill Could Not Penetrate--Thickness Unknown	

Remarks:

- Bentonite
 - Filter Sand
 - Neat Cement

SOUTHERN EARTH SCIENCES, Inc.

ERIC Z:\PROJECTS\JOB FOLDERS\2000-09\2002\2020\2037-CHOCTAW CO. LF\STATS-02037\GROUNDWATER INVESTIGATION\CHOCTAW CO. LF AMW-4 THRU 7 LOGS.GPJ SO EARTH_COLOR.GDT 8/21/14

WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: AMW-6

DRILLER: SESI

Page 1 of 1

PROJECT NO.: M02-037

METHOD: HOLLOW STEM AUGER

PROJECT: Choctaw County Landfill

WELL DIAMETER: 2"

PROJECT LOCATION: Butler, Alabama

SCREEN SLOT SIZE: 0.010

COORDINATES: N32.02.626, W088.16.156

TOC ELEVATION: 395.19

DATE DRILLED: 07/30/14

GROUND ELEVATION: 392

DATE COMPLETED: 07/31/14

WATER LEVEL: 12 ft

GEOL / ENGR: S. Traylor

WATER LEVEL DATE: 07/31/14

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0			Grass/Topsoil	
390			Brownish Red Fine Grain Silty Sand--Saturated at Approx. 12 feet--	
5				
385				
10				
380				
15			Dark Gray to Black Stiff Clay	
375				
20			Light Gray Chalk--Drill Could Not Penetrate--Thickness Unknown	
370				

Remarks:

- Bentonite
 - Filter Sand
 - Neat Cement

SOUTHERN EARTH SCIENCES, Inc.



ERIC Z:\PROJECTS\JOB FOLDERS\2000-09\2002\02037-CHOCTAW CO. LF\STATS-02037\GROUNDWATER INVESTIGATION\CHOCTAW CO. LF AMW-4 THRU 7 LOGS.GPJ SO EARTH_COLOR.GDT 8/21/14

WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: AMW-7

DRILLER: SESI

Page 1 of 1

PROJECT NO.: M02-037

METHOD: HOLLOW STEM AUGER

PROJECT: Choctaw County Landfill

WELL DIAMETER: 2"

PROJECT LOCATION: Butler, Alabama

SCREEN SLOT SIZE: 0.010

COORDINATES: N32.02.622, W088.16.186

TOC ELEVATION: 396.7

DATE DRILLED: 07/30/14

GROUND ELEVATION: 393

DATE COMPLETED: 07/31/14

WATER LEVEL: 12 ft

GEOL / ENGR: S. Traylor

WATER LEVEL DATE: 07/31/14

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0			Grass/Topsoil	
			Brownish Red Fine Grain Silty Sand--Saturated at Approx. 12 feet--	
390				
5				
385				
10				
380				
15				
			Dark Gray to Black Stiff Clay	
375				
20			Light Gray Chalk--Drill Could Not Penetrate--Thickness Unknown	

Remarks:

- Bentonite
 - Filter Sand
 - Neat Cement

SOUTHERN EARTH SCIENCES, Inc.

ERIC Z:\PROJECTS\JOB FOLDERS\2000-09\2002\2020\2037-CHOCTAW CO. LF\STATS-02037\GROUNDWATER INVESTIGATION\CHOCTAW CO. LF AMW-4 THRU 7 LOGS.GPJ SO EARTH COLOR.GDT 8/21/14

Choctaw County Regional Landfill
Choctaw County, Alabama

Modification to Monitor Well System
Permit No.: 12-01

APPENDIX B

335-13-4-APPENDIX I CONSTITUENTS FOR DETECTION MONITORING

Common Name²	CAS Number³
pH ⁴	N/A
Specific Conductance ⁴	N/A
Inorganic Constituents	
1. Antimony	Total
2. Arsenic	Total
3. Barium	Total
4. Beryllium	Total
5. Cadmium	Total
6. Chromium	Total
7. Cobalt	Total
8. Copper	Total
9. Lead	Total
10. Mercury	Total
11. Nickel	Total
12. Selenium	Total
13. Silver	Total
14. Thallium	Total
15. Vanadium	Total
16. Zinc	Total
Organic Constituents	
17. Acetone	67-64-1
18. Acrylonitrile	107-13-1
19. Benzene	71-43-2
20. Bromochloromethane	74-97-5
21. Bromodichloromethane	75-27-4
22. Bromoform; Tribromomethane	75-25-2
23. Carbon disulfide	75-15-0
24. Carbon tetrachloride	56-23-5
25. Chlorobenzene	108-90-7
26. Chloroethane; Ethyl chloride	75-00-3
27. Chloroform; Trichloromethane	67-66-3
28. Dibromochloromethane; Chlorodibromomethane	124-48-1
29. 1,2-Dibromo-3-chloropropane (DBCP)	96-12-8
30. 1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4
31. o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
32. p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
33. trans-1,4-Dichloro-2-butene	110-57-6
34. 1,1-Dichloroethane; Ethylidene chloride	75-34-3
35. 1,2-Dichloroethane; Ethylene dichloride	107-06-2
36. 1,1-Dichloroethylene; 1,1-dichloroethene; Vinylidene chloride	75-35-4
37. cis-1,2-Dichloroethylene; cis-1,2Dichloroethene	156-59-2
38. trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5

	Common Name ²	CAS Number ³
39.	1,2-Dichloropropane; Propylene dichloride	78-87-5
40.	cis-1,3-Dichloropropene	10061-01-5
41.	trans-1,3-Dichloropropene	10061-02-6
42.	Ethylbenzene	100-41-4
43.	2-Hexanone; Methyl butyl ketone	591-78-6
44.	Methyl bromide; Bromomethane	74-83-9
45.	Methyl chloride; Chloromethane	74-87-3
46.	Methylene bromide; Dibromomethane	74-95-3
47.	Methylene chloride; Dichloromethane	75-09-2
48.	Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
49.	Methyl iodide; Iodomethane	74-88-4
50.	4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1
51.	Styrene	100-42-5
52.	1,1,1,2-Tetrachloroethane	630-20-6
53.	1,1,2,2-Tetrachloroethane	79-34-5
54.	Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
55.	Toluene	108-88-3
56.	1,1,1-Trichloroethane; Methylchloroform	71-55-6
57.	1,1,2-Trichloroethane	79-00-5
58.	Trichloroethylene; Trichloroethene	79-01-6
59.	Trichlorofluoromethane; CFC-11	75-69-4
60.	1,2,3-Trichloropropane	96-18-4
61.	Vinyl acetate	108-05-4
62.	Vinyl chloride	75-01-4
63.	Xylenes	1330-20-7

Notes

- ¹ This list contains 47 volatile organics for which possible analytical procedure provided in EPA Report SW-846, "Test Methods for Evaluating Solid Waste," Third Edition, November 1986, as revised December 1987, includes Method 8260; and 15 metals for which SW-846 provides either Method 6010 or a method from the 7000 series of methods.
- ² Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
- ³ Chemical Abstracts Service registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.
- ⁴ State specific requirements.

Author: Russell A. Kelly.

Statutory Authority: Code of Alabama 1975, §§ 22-27-4, 22-27-7.

History: November 2, 1993.

Amended: July 26, 1996.

335-13-4-APPENDIX II LIST OF HAZARDOUS INORGANIC AND ORGANIC CONSTITUENTS¹

Common Name ²	CAS Number ³	Chemical Abstracts Service Index Name ⁴	Suggested Methods ⁵	PQL (µg/L) ⁶
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100 8270	200 10
Acenaphthylene	208-96-8	Acenaphthylene	8100 8270	200 10
Acetone	67-64-1	2-Propanone	8260	100
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100
Acetophenone	98-86-2	Ethanone, 1-phenyl-	8270	10
2-Acetylaminofluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	20
Acrolein	107-02-8	2-Propenal	8030 8260	5 100
Acrylonitrile	107-13-1	2-Propenenitrile	8030 8260	5 200
Aldrin	309-00-2	1,4,5,8,-Dimethanonaphthalene 1,2, 3,4,10,10-hexachloro-1,4,4a,5,8, 8a-hexahydro-(1a,4a, 4aß,5a, 8a,8aß)-	8080 8270	0.05 10
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8010 8260	5 10
4-Aminobiphenyl	92-67-1	[1,1'-Biphenyl]-4-amine	8270	20
Anthracene	120-12-7	Anthracene	8100 8270	200 10
Antimony	(Total)	Antimony	6010 7040 7041	300 2000 30
Arsenic	(Total)	Arsenic	6010 7060 7061	500 10 20
Barium	(Total)	Barium	6010 7080	20 1000
Benzene	71-43-2	Benzene	8020 8021 8260	2 0.1 5
Benzo[a]anthracene; Benzanthracene	56-55-3	Benz[a]anthracene	8100 8270	200 10
Benzo[b]fluoranthene	205-99-2	Benz[c]acephenanthrylene	8100 8270	200 10
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100 8270	200 10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100 8270	200 10
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100 8270	200 10
Benzyl alcohol	100-51-6	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010 7090 7091	3 50 2
alpha-BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2a,3ß,4a,5ß,6ß)-	8080 8270	0.05 10
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2ß,3a,4ß,5a,6ß)-	8080 8270	0.05 20
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2a,3a,4ß,5a,6ß)-	8080 8270	0.1 20
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1a,2a,3ß,4a,5a,6ß)-	8080 8270	0.05 20
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1'-[methylenebis(oxy)] bis[2-chloro-	8110 8270	5 10
Bis(2-chloroethyl) ether;	111-44-4	Ethane, 1,1'-oxybis[2-chloro-	8110	3

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Common Name ²	CAS Number ³	Chemical Abstracts Service Index Name ⁴	Suggested Methods ⁵	PQL (µg/L) ⁶
Dichloroethyl ether			8270	10
Bis(2-chloro-1-methylethyl) ether 2,21-Dichlorodisopropyl ether; DCIP, See note 7	108-60-1	Propane, 2,2 ¹ -oxybis[1-chloro-	8110 8270	10 10
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	8060	20
Bromochloromethane; Chlorobromomethane	74-97-5	Methane, bromochloro-	8021 8260	0.1 5
Bromodichloromethane; Dibromochloromethane	75-27-4	Methane, bromodichloro-	8010 8021 8260	1 0.2 5
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	8010 8021 8260	2 15 5
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	8110 8270	25 10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	8060 8270	5 10
Cadmium	(Total)	Cadmium	6010 7130 7131	40 50 1
Carbon disulfide	75-15-0	Carbon disulfide	8260	100
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010 8021 8260	1 0.1 10
Chlordane	See note 8	4,7-Methano-1H-indene, 1,2,4,5, 6,7,8,8- octachloro- 2,3,3a,4,7,7a-hexahydro-	8080 8270	0.1 50
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8270	20
Chlorobenzene	108-90-7	Benzene, chloro-	8010 8020 8021 8260	2 2 0.1 5
Chlorobenzilate	510-15-6	Benzenecetic acid, 4-chloro-a- (4-chlorophenyl)-a-hydroxy-ethyl ester	8270	10
p-Chloro-m-cresol; 4-Chloro-3-methylphenol	59-50-7	Phenol, 4-chloro-3-methyl-	8040 8270	5 20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010 8021 8260	5 1 10
Chloroform; Trichloromethane	67-66-3	Methane, trichloro-	8010 8021 8260	0.5 0.2 5
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro-	8120 8270	10 10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040 8270	5 10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	8110 8270	40 10
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro-	8010 8260	50 20
Chromium	(Total)	Chromium	6010 7190 7191	70 500 10
Chrysene	218-01-9	Chrysene	8100 8270	200 10
Cobalt	(Total)	Cobalt	6010 7200 7201	70 500 10
Copper	(Total)	Copper	6010 7210 7211	60 200 10

Common Name ²	CAS Number ³	Chemical Abstracts Service Index Name ⁴	Suggested Methods ⁵	PQL (µg/L) ⁶
m-Cresol; 3-methylphenol	108-39-4	Phenol, 3-methyl-	8270	10
o-Cresol; 2-methylphenol	95-48-7	Phenol, 2-methyl-	8270	10
p-Cresol; 4-methylphenol	106-44-5	Phenol, 4-methyl-	8270	10
Cyanide	57-12-5	Cyanide	8270	10
2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-	8150	10
4,4 ¹ -DDD	72-54-8	Benzene, 1,1 ¹ -(2,2-dichloroethylidene) bis[4-chloro-	8080 8270	0.1 10
4,4 ¹ -DDE	72-55-9	Benzene, 1,1 ¹ -(dichloroethylenylidene)bis[4-chloro-	8080 8270	0.05 10
4,4 ¹ -DDT	50-29-3	Benzene, 1,1 ¹ -(2,2,2-trichloroethylidene)bis[4-chloro-	8080 8270	0.1 10
Diallate	2303-16-4	Carbamothioic acid, bis(1-methyl ethyl)-,S-(2,3-dichloro-2-propenyl) ester	8270	10
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene	8100 8270	200 10
Dibenzofuran	132-64-9	Dibenzofuran	8270	10
Dibromochloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-	8010 8021 8260	1 0.3 5
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	Propane, 1,2-dibromo-3-chloro-	8011 8021 8260	0.1 30 25
1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4	Ethane, 1,2-dibromo-	8011 8021 8260	0.1 10 5
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	8060 8270	5 10
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	8010 8020 8021 8120 8260 8270	2 5 0.5 10 5 10
m-Dichlorobenzene; 1,3-Dichlorobenzene	541-73-1	Benzene, 1,3-Dichloro-	8010 8020 8021 8120 8260 8270	5 5 0.2 10 5 10
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-	8010 8020 8021 8120 8260 8270	2 5 0.1 15 5 10
3,3 ¹ -Dichlorobenzidine	91-94-1	[1,1 ¹ -Biphenyl]-4,4 ¹ -diamine, 3,3 ¹ -dichloro-	8270	20
trans-1,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8260	100
Dichlorodifluoromethane; CFC-12	75-71-8	Methane, dichlorodifluoro-	8021 8260	0.5 5
1,1-Dichloroethane; Ethyldiene chloride	75-34-3	Ethane, 1,1-dichloro-	8010 8021 8260	1 0.5 5
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,1-dichloro-	8010 8021 8260	0.5 0.3 5
1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	8010 8021 8260	1 0.5 5
cis-1,2-Dichloroethylene; cis-	156-59-2	Ethene, 1,2-dichloro-, (Z)-	8021	0.2

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Common Name ²	CAS Number ³	Chemical Abstracts Service Index Name ⁴	Suggested Methods ⁵	PQL (µg/L) ⁶
1,2-Dichloroethene			8260	5
trans-1,2-Dichloroethylene	156-60-5	Ethene, 1,2-dichloro-, (E)-	8010	1
trans-1,2-Dichloroethene			8021	0.5
			8260	5
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	8040	5
			8270	10
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane; Propylene dichloride	78-87-5	Propane, 1,2-dichloro-	8010	0.5
			8021	0.05
			8260	5
1,3-Dichloropropane; Trimethylene dichloride	142-28-9	Propane, 1,3-dichloro-	8021	0.3
			8260	5
2,2-Dichloropropane; Isopropylidene chloride	594-20-7	Propane, 2,2-dichloro-	8021	0.5
			8260	15
1,1-Dichloropropene	563-58-6	1-Propene, 1,1-dichloro-	8021	0.2
			8260	5
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	8010	20
			8260	10
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010	5
			8260	10
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b] oxirene, 3,4,5,6,9,9-hexa, chloro-1a, 2,2a,3,6,6a,7,7a-octahydro-, (1aa, 2ß, 2aa, 3ß, 6ß, 6aa, 7ß, 7aa)-	8080	0.05
			8270	10
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	8060	5
			8270	10
0,0-Diethyl 0-2-pyrazinyl; phosphorothioate Thionazin	297-97-2	Phosphorothioic acid, 0,0-diethyl 0-pyrazinyl ester	8141	5
			8270	20
Dimethoate	60-51-5	Phosphorodithioic acid, 0,0-dimethyl S-[2-(methylamino)-2-oxoethyl] ester.	8141	3
			8270	20
p-(Dimethylamino)azobenzene	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12-dimethyl-	8270	10
3,3'-Dimethylbenzidine	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	8270	10
2,4-Dimethylphenol; m-Xylenol	105-67-9	Phenol, 2,4-dimethyl-	8040	5
			8270	10
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060	5
			8270	10
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-	8270	20
4,6-Dinitro-o-cresol 4,6-Dinitro- 2-methylphenol	534-52-1	Phenol, 2-methyl-4,6-dinitro-	8040	150
			8270	50
2,4-Dinitrophenol	51-28-5	Phenol, 2,4-dinitro-	8040	150
			8270	50
2,4-Dinitrotoluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-	8090	0.2
			8270	10
2,6-Dinitrotoluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-	8090	0.1
			8270	10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	8150	1
			8270	20
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester	8060	30
			8270	10
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298-04-4	Phosphorodithioic acid, 0,0-diethyl S-[2-(ethylthio)ethyl] ester	8140	2
			8141	0.5
			8270	10
Endosulfan I	959-98-8	6,9-Methano-2,4,3-benzodioxathi epin, 6,7,8,9,10,10-hexachloro-1, 5,5a, 6,9,9a-hexahydro-3-oxide,	8080	0.1
			8270	20

Common Name ²	CAS Number ³	Chemical Abstracts Service Index Name ⁴	Suggested Methods ⁵	PQL (µg/L) ⁶
Endosulfan II	33213-65-9	6,9-Methano-2,4,3-benzodioxathi epin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-3-oxide, (3a, 5aa, 6ß, 9ß, 9aa)-	8080 8270	0.05 20
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3-benzodioxathi epin, 6,7,8,9,10,10-hexachloro-1,5,5a, 6,9,9a-hexahydro-3-3-dioxide.	8080 8270	0.5 10
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b] oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aa,2ß,2aß,3a,6a,6aß,7ß,7aa)-	8080 8270	0.1 20
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta cd]penta [lene-5-carboxaldehyde, 2,2a,3,3,4, 7-hexachlorodeca hydro-, (1a,2ß, 2aß, 4ß,4aß,5ß, 6aß,6bß,7R*)-	8080 8270	0.2 10
Ethylbenzene	100-41-4	Benzene, ethyl-	8020 8221 8260	2 0.05 5
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	8015 8260 8270	5 10 10
Ethyl methanesulfonate	62-50-0	Methanesulfonic acid, ethyl ester	8270	20
Famphur	52-85-7	Phosphorothioic acid, O-[4- [[dimethylamino)sulfonyl]phenyl] 0,0-dimethyl ester	8270	20
Fluoranthene	206-44-0	Fluoranthene	8100 8270	200 10
Fluorene	86-73-7	9H-Fluorene	8100 8270	200 10
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8, 8-heptachloro-3a,4,7,7a-tetrahydro-	8080 8270	0.05 10
Heptachlor epoxide	1024-57-3	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a, 1b,5,5a,6,6a-hexahydro-, (1aa,1bß, 2a,5a, 5aß,6ß,6aa)	8080 8270	1 10
Hexachlorobenzene	118-74-1	Benzene, hexachloro-	8120 8270	0.5 10
Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8021 8120 8260 8270	0.5 5 10 10
Hexachlorocyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8120 8270	5 10
Hexachloroethane	67-72-1	Ethane, hexachloro-	8120 8260 8270	0.5 10 10
Hexachloropropene	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-	8270	10
2-Hexanone; Methyl butyl ketone	591-78-6	2-Hexanone	8260	50
Indeno(1,2,3-cd)pyrene	193-39-5	Indeno(1,2,3-cd)pyrene	8100 8270	200 10
Isobutyl alcohol	78-83-1	1-Propanol, 2-methyl-	8015	50

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Common Name ²	CAS Number ³	Chemical Abstracts Service Index Name ⁴	Suggested Methods ⁵	PQL (µg/L) ⁶
			8240	100
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-(1a,4a,4aß,5ß,8ß,8aß)-	8270 8260	20 10
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	8090 8270	60 10
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-	8270	10
Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	8270	20
Lead	(Total)	Lead	6010 7420 7421	400 1000 10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-	8015 8260	5 100
Methapyrilene	91-80-5	1,2-ethanediamine, N,N.-dimethyl-N ¹ -2-pyridinyl-N ¹ /2-thienyl-methyl]-	8270	100
Methoxychlor	72-43-5	Benzene, 1,1 ¹ -(1,2,2, trichloroethylidene) bis[4-methoxy-	8080 8270	2 10
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	8010 8021	20 10
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-	8010 8021	1 0.3
3-Methylcholanthrene	56-49-5	Benz[<i>j</i>]aceanthrylene, 1,2-dihydro-3- methyl-	8270	10
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	2-Butanone	8015 8260	10 100
Methyl iodide; iodomethane	74-88-4	Methane, iodo-	8010 8260	40 10
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl, methyl ester	8015 8260	2 30
Methyl methanesulfonate	66-27-3	Methanesulfonic acid, methyl ester	8270	10
2-Methylnaphthalene	91-57-6	Naphthalene, 2-methyl-	8270	10
Methyl parathion; Parathion methyl	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	8140 8141 8270	0.5 1 10
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-	8015 8260	5 100
Methylene bromide; Dibromomethane	74-95-3	Methane, dibromo-	8010 8021 8260	15 20 10
Methylene chloride; Dichloromethane	75-09-2	Methane, dichloro-	8010 8021 8260	5 0.2 10
Naphthalene	91-20-3	Naphthalene	8021 8100 8260 8270	0.5 200 5 10
1,4-Naphthoquinone	130-15-4	1,4-Naphthalenedione	8270	10
1-Naphthylamine	134-32-7	1-Naphthalenamine	8270	10
2-Naphthylamine	91-59-8	2-Naphthalenamine	8270	10
Nickel	(Total)	Nickel	6010 7520	150 400

Common Name ²	CAS Number ³	Chemical Abstracts Service Index Name ⁴	Suggested Methods ⁵	PQL (µg/L) ⁶
o-Nitroaniline; 2-Nitroaniline	88-74-4	Benzenamine, 2-nitro-	8270	50
m-Nitroaniline; 3-Nitroaniline	99-09-2	Benzenamine, 3-nitro-	8270	50
p-Nitroaniline; 4-Nitroaniline	100-01-6	Benzenamine, 4-nitro	8270	20
Nitrobenzene	98-95-3	Benzene, nitro-	8090 8270	40 10
o-Nitrophenol; 2-Nitrophenol	88-75-5	Phenol, 2-nitro-	8040 8270	5 10
p-Nitrophenol; 4-Nitrophenol	100-02-7	Phenol, 4-nitro-	8040 8270	10 50
N-Nitrosodi-n-butylamine	924-16-3	1-Butanamine, N-butyl-N-nitroso-	8270	10
N-Nitrosodiethylamine	55-18-5	Ethanamine, N-ethyl-N-nitroso-	8270	20
N-Nitrosodimethylamine	62-75-9	Methanamine, N-methyl-N-nitroso-	8070	2
N-Nitrosodiphenylamine	86-30-6	Benzenamine, N-nitroso-N-phenyl-	8070	5
N-Nitrosodipropylamine; N-Nitroso- N- dipropylamine; Di-n-propylnitrosamine	621-64-7	1-Propanamine, N-nitroso-N-propyl-	8070	10
N-Nitrosomethylethylamine	10595-95-6	Ethanamine, N-methyl-N-nitroso-	8270	10
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitroso-	8270	20
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitroso-	8270	40
5-Nitro-o-toluidine	99-55-8	Benzenamine, 2-methyl-5-nitro-	8270	10
Parathion	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	8141 8270	0.5 10
Pentachlorobenzene	608-93-5	Benzene, pentachloro-	8270	10
Pentachloronitrobenzene	82-68-8	Benzene, pentachloronitro-	8270	20
Pentachlorophenol	87-86-5	Phenol, pentachloro-	8040 8270	5 50
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenyl)	8270	20
Phenanthrene	85-01-8	Phenanthrene	8100 8270	200 10
Phenol	108-95-2	Phenol	8040	1
p-Phenylenediamine	106-50-3	1,4-Benzenediamine	8270	10
Phorate	298-02-2	Phosphorodithioic acid, O,O-diethyl-S-[(ethylthio)methyl] ester	8140 8141 8270	2 0.5 10
Polychlorinated biphenyls; PCBs;Aroclors	See Note 9	1,1'-Biphenyl, chloro derivatives	8080 8270	50 200
Pronamide	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	8270	10
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015 8260	60 150
Pyrene	129-00-0	Pyrene	8100 8270	200 10
Safrole	94-59-1	1,3-Benzodioxole, 5-(2-propenyl)-	8270	10
Selenium	(Total)	Selenium	6010 7740 7741	750 20 20
Silver	(Total)	Silver	6010 7760 7761	70 100 10
Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100-42-5	Benzene, ethenyl-	8020 8021 8260	1 0.1 10
Sulfide	18496-25-8	Sulfide	9030	4000

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Common Name ²	CAS Number ³	Chemical Abstracts Service Index Name ⁴	Suggested Methods ⁵	PQL (µg/L) ⁶
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	8150	2
1,2,4,5-Tetrachlorobenzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	8010 8021 8260	5 0.05 5
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	8010 8021 8260	0.5 0.1 5
Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4	Ethene, tetrachloro-	8010 8021 8260	0.5 0.5 5
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Thallium	(Total)	Thallium	6010 7840 7841	400 1000 10
Tin	(Total)	Tin	6010	40
Toluene	108-88-3	Benzene, methyl-	8020 8021 8260	2 0.1 5
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8270	10
Toxaphene	See Note 10	Toxaphene	8080	2
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-	8021 8120 8260 8270	0.3 0.5 10 10
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	8010 8021 8260	0.3 0.3 5
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	8010 8260	0.2 5
Trichloroethylene; Trichloroethene	79-01-6	Ethane, trichloro-	8010 8021 8260	1 0.2 5
Trichlorofluoromethane; CFC-11	75-69-4	Methane, trichlorofluoro-	8010 8021 8260	10 0.3 5
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8270	10
2,4,6-Trichlorophenol	88-06-2	Phenol, 2,4,6-trichloro-	8040 8270	5 10
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-	8010 8021 8260	10 5 15
O,O,O-Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, O,O,O-triethylester	8270	10
sym-Trinitrobenzene	99-35-4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Total)	Vanadium	6010 7910 7911	80 2000 40
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8260	50
Vinyl chloride; Chloroethene	75-01-4	Ethene, chloro-	8010 8021 8260	2 0.4 10
Xylene (total)	See Note 11	Benzene, dimethyl-	8020 8021 8260	5 0.2 5
Zinc	(Total)	Zinc	6010 7950 7951	20 50 0.5

Notes

- ¹ The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6.
- ² Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
- ³ Chemical Abstracts Service registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.
- ⁴ CAS index are those used in the 9th Collective Index.
- ⁵ Suggested Methods refer to analytical procedure numbers used in EPA Report SW-846 "Test Methods for Evaluating Solid Waste", third edition, November 1986, as revised, December 1987. Analytical details can be found in SW-846 and in documentation on file at the agency. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.
- ⁶ Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in groundwaters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 mL samples for volatile organics and 1 L samples for semivolatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.
- ⁷ This substance is often called Bis(2-chloroisopropyl) ether, the name Chemical Abstracts Service applies to its noncommercial isomer, Propane, 2,2"-oxybis[2-chloro- (CAS RN 39638-32-9).
- ⁸ Chlordane: This entry includes alpha-chlordane (CAS RN 5103-71-9), beta-chlordane (CAS RN 5103-74-2), gamma-chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6). PQL shown is for technical chlordane. PQLs of specific isomers are about 20 µg/L by method 8270.
- ⁹ Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242 (CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6), Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.
- ¹⁰ Toxaphene: This entry includes congener chemicals contained in technical toxaphene (CAS RN 8001-35-2), i.e., chlorinated camphene.
- ¹¹ Xylene (total): This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7). PQLs for method 8021 are 0.2 for o-xylene and 0.1 for m- or p-xylene. The PQL for m-xylene is 2.0 µg/L by method 8020 or 8260.

Author: Russell A. Kelly.

Choctaw County Regional Landfill
Response to Permit Requests
April 22, 2019

ATTACHMENT B

5460 Rangeline Road
Mobile, AL 36619
Tel: (251) 344-7711
Fax: (251) 443-9000
www.soeearth.com

April 16, 2019

Mr. S. Scott Story, Chief
Solid Waste Engineering Section
**Alabama Department of
Environmental Management**
Post Office Box 301463
Montgomery, Alabama 36110-2400

Re: Monitor Well Installation Report (MW-B4R)
Choctaw Regional Landfill
Permit 12-01
Choctaw County, Alabama

Dear Mr. Story:

Southern Earth Sciences, Inc.'s (SESI's) is providing this Monitor Well Installation Report for MW-B4R at the above referenced facility. The Choctaw Regional Landfill has received the multiple transmittals (dated March 13 and March 14, 2019-(**Appendix A**)) to provide an installation report for MW-4R that was previously installed. The facility location is illustrated on **Figure 1**.

Monitor well MW-B4, due to erosion or excavation, is perched upon a narrow butte of land. The butte is approximately five feet around the surface completion. The immediate area adjacent to the butte is approximately 17 feet lower in elevation. MW-B4 cannot be sampled due to safety concerns and the elevated potential to slip and fall. Groundwater samples have not been collected from MW-B4 since March 2016. Although a formal monitor well installation plan had not been submitted, on October 16, 2017, drilling equipment was to onsite for unrelated task. While the equipment was available, a replacement well for BW-4 was installed. An abandonment plan has not been submitted, therefore, MW-4 remains intact on top of the butte feature. A photograph of MW-B4, MW-B4R and MW-B4 Deep (D) is presented in **Appendix B**.

Based upon review of historic depth to groundwater measurements (**Table 1**), groundwater was expected to be encountered at approximately 21.00' to 27.00' below the top of casing of MW-B4. On October 16, 2017, the depth to groundwater in MW-B4 was 24.50'. MW-B4's total depth is 27.77' below top-of-casing that includes the stickup riser. MW-B4 has a screened interval of 17.77' to 27.77' feet below top of casing.

On October 16, 2017, SESI installed replacement well MW-B4R near the base of the butte-like remnant around MW-B4 (adjacent to MW-B4 Deep (D)). The well location is shown on **Figure 2**. MW-B4R was installed using the hollow stem auger (HSA) drilling method. During installation, hard greenish grey siltstone/claystone was encountered at approximately 17.5' below ground surface (BGS). This material was well indurated and the HAS could not penetrate the well indurated unit. The monitor well was placed atop this unit at a depth of approximately 17.5' BGS. The shallow monitoring well is constructed of threaded, 2-inch diameter, Schedule 40 PVC pipe with 10' of 0.010-inch factory slotted screen and 10' of solid Schedule 40 PVC riser. Approximately 2.5' of stick up riser was left above ground. Encountered lithology is presented on the Well Construction and Lithologic Description Log presented in **Appendix C**.

Uniformly graded silica sand was used as a sand pack to approximately two (2) feet above the top of the screened interval. Two (2) feet of bentonite pellets were placed above the sand pack and then hydrated. The remaining annular space was grouted to near ground surface with a neat cement grout. The well was completed with a lockable steel box-type aboveground well cover set in a concrete pad around the well. After completion, the well was developed using a submersible pump by evacuating at least five well volumes. Development continued until the discharged water appeared relatively clear and free of fine grain sediments. Investigation derived wastes (drill cuttings and development water) were spread onsite. Construction details of the well are illustrated on the Well Construction and Lithologic Description included in **Appendix C**.

On October 18, 2017, the depth to water in MW-B4R was measured at 15.07' BGS after subtracting the stickup riser. Therefore, on that date, there was a 1.63' water column in the well. MW-B4R was sampled on June 8, 2018 by the contracted sampling company. Depth to water on June 8, 2018 was 10.15 feet below top of casing. The contracted sampling company also sampled MW-B4R on September 17, 2018. The measured depth to water on that day was 8.40 feet below top of casing.

There are now three (3) monitor wells located in this area (MW-B4, MW-B4R and MW-B4D). MW-B4D was installed using the mud rotary drilling method and extended through the siltstone/claystone layer that prevented MW-B4R from being installed deeper. The Well Construction and Lithologic Description logs for all three (3) wells are included in **Appendix C**. Based upon the logs, the siltstone/claystone layer was encountered at approximately the same depth in MW-B4R and MW-B4D. MW-B4 was not installed to the depth of the siltstone/claystone layer was encountered. The screened interval of both MW-B4 and MW-B4R were set in similar material above the siltstone/claystone layer. In MW-B4 the top 2.5' of screened interval was set in material described as firm medium pale orange and pale red silty sand to loose pale orange and grey micaceous silty sand. The middle portion of the screened interval was described as loose tan clayey sand to sandy clay with orange and red mottles (micaceous). The lower portion of the screened interval of MW-B4 was set in material described as hard dark greenish gray clayey over dark gray sandy clay (micaceous). The somewhat deeper screened interval of MW-B4R was set in material described as gray and red silty clay. SESI concludes the screened intervals of both wells are set in the same stratigraphic unit.

MW-B4 Monitor Wells Abandonment Plan

SESI proposes to leave MW-BR in place and not abandon the well. The butte feature does not allow for access to remove the casing and properly abandon the well. The potential for injury to occur to attempt to abandon monitor well MW-B4 is above the risk threshold.

MW-B4 and MW-B4R Statistical Comparison Test

As requested by ADEM, SESI will evaluate the historic data from MW-B4 via the guidance outlined within Chapter 5 of the Unified Guidance Document. It is our contention that the historic sampling method may have caused adverse turbidity to be present within the historic samples and the results from MW-B4 may not accurately indicate groundwater conditions. SESI has reviewed historical logs prepared during groundwater sample collection from MW-B4. Since the well was installed in 2002, groundwater samples have been collected on 42 different dates. Almost without exception, the samples were collected using bailers and where turbidity data is available for review, the results are elevated.

MW-B4 Historically Reported Constituents

Volatile organics (1,1-dichloroethane, 1,4-dichlorobenzene, 4-methyl-2-pentanone, chlorobenzene, cis-1,2-dichloroethylene, ethylbenzene, vinyl chloride, and xylenes) were reported during initial sampling conducted in 2002. Inorganics (arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, vanadium, and zinc) were historically reported during monitoring activities from 2002 through 2015. Methylene chloride was reported in the sample collected on September 15, 2015, and sulfide was reported in the samples collected on March 14, 2014 and March 25, 2015. A copy of a VOC Screening analysis (all detected constituents within the database) run of historical data from MW-B4 and MW-B4R is presented in **Appendix D**.

**Alabama Department of Environmental Management
Choctaw Regional Landfill**

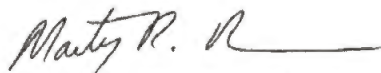
**April 16, 2019
Monitor Well Installation Report**

Future sampling events will be conducted using low flow sampling techniques. Purging will continue until turbidity readings at sample collection time are less than 10 NTU.

Should you have any questions, you may reach the undersigned at 251-445-4367 or via electronic mail to mreaves@soearth.com.

Sincerely,

SOUTHERN EARTH SCIENCES, INC.



Marty R. Reaves, P.G.
Project Manager



Eric A. Guarino, P.G.
Registered, Alabama 1101

MRR/EAG

Enclosures

cc: The Honorable Judge Michael W. Armstead, Chairman Choctaw County
Commission

FIGURES



1:24,000

NORTH

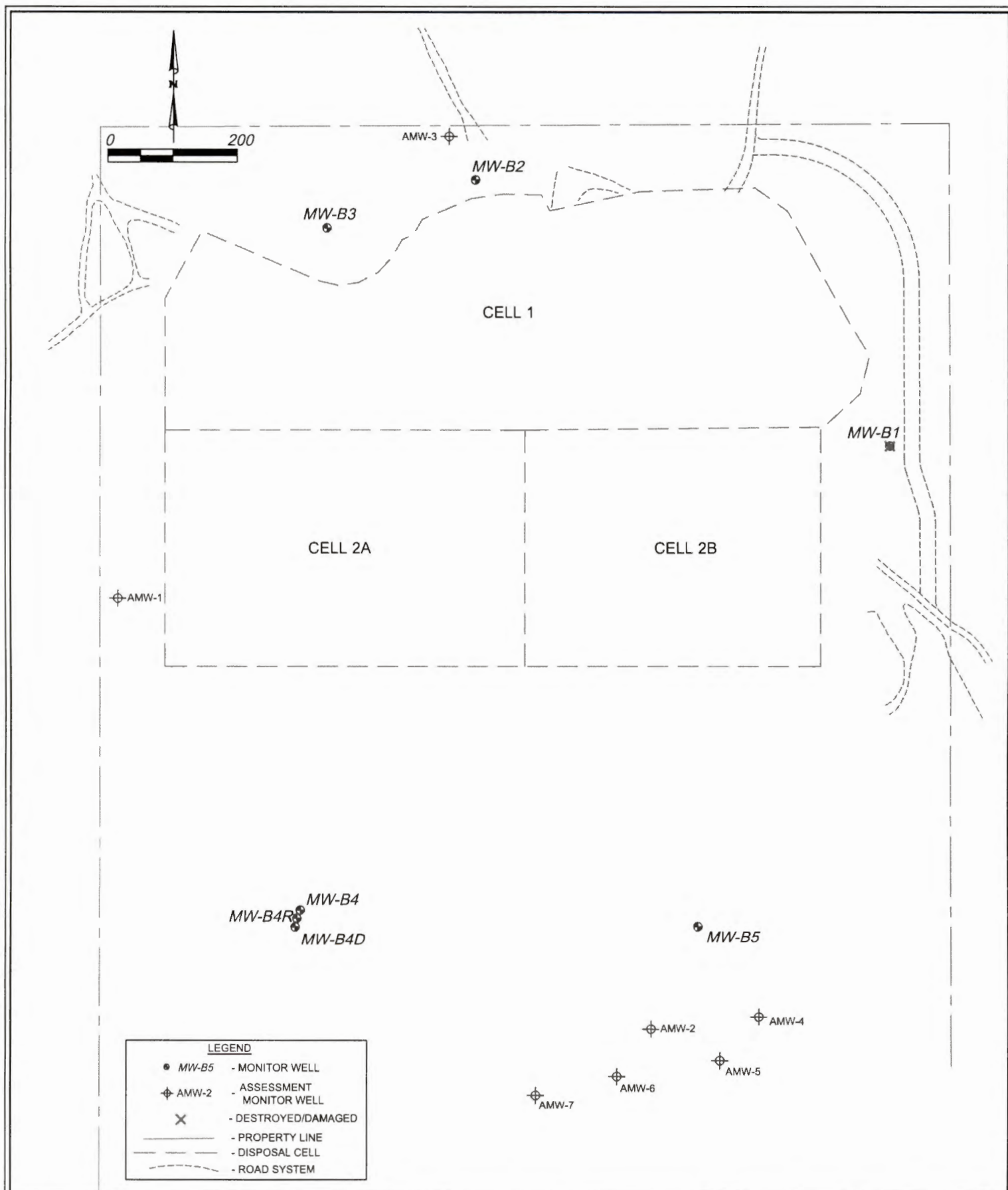


AERIAL PHOTOGRAPH IS THE 2015 N.A.I.P. PHOTOMOSAIC OF CHOCTAW COUNTY, ALABAMA. OBTAINED FROM THE N.R.C.S.

CHOCTAW REGIONAL LANDFILL
PERMIT NO.: 12-01
CHOCTAW COUNTY, ALABAMA

SOUTHERN EARTH SCIENCES, INC.
Geotechnical, Environmental & Construction Materials Testing
www.soeearth.com

FIGURE 1
SITE LOCATION MAP
SESI JOB NO.: 02-037



CHOCTAW REGIONAL LANDFILL
ADEM FACILITY 12-01
TOXEY, ALABAMA

SOUTHERN EARTH SCIENCES, INC.
Geotechnical, Environmental & Construction Materials Testing
www.soeearth.com

FIGURE 2
SITE PLAN
SESI JOB #: M02-037

Alabama Department of Environmental Management
Choctaw Regional Landfill

April 16, 2019
Monitor Well Installation Report

TABLE

<p align="center">TABLE 1</p> <p align="center">HISTORICAL GROUNDWATER ELEVATIONS</p> <p align="center">CHOCTAW COUNTY LANDFILL</p> <p align="center">PERMIT NUMBER 12-01</p>				
WELL ID	TOC Elevation	Date	Depth to Groundwater (ft)	Groundwater Elevation
MW-B4	434.67			
		3/19/07	23.33	411.34
		9/17/07	24.27	410.40
		3/25/08	22.74	411.93
		9/22/08	22.95	411.72
		3/18/09	21.63	413.04
		10/20/09	23.02	411.65
		11/4/10	26.15	408.52
		3/28/11	22.22	412.45
		9/15/11	24.14	410.53
		3/19/12	22.14	412.53
		9/11/12	23.41	411.26
		3/5/13	21.10	413.57
		9/25/13	25.07	409.60
		3/18/14	21.59	413.08
		9/15/14	27.00	407.67
		3/25/15	22.05	412.62
		9/14/15	26.70	407.97
		3/28/16	21.70	412.97
		9/19/16	NO ACCESS	
		3/27/17	NO ACCESS	
		9/12/17	NO ACCESS	
		3/26/18	NO ACCESS	
MW-B4R		9/17/18	8.40	

MSL - Average Mean Sea Level

TOC - Top of Casing

GW Elevation = [(TOC Elevation-Ground Surface Elevation)-Depth to
Water+Ground Surface Elevation}

Alabama Department of Environmental Management
Choctaw Regional Landfill

April 16, 2019
Monitor Well Installation Report

APPENDIX A ADEM TRANSMITTALS

LANCE R. LEFLEUR
DIRECTOR



KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

March 13, 2019

CERTIFIED MAIL 91 7199 9991 7038 6532 0893
RETURN RECEIPT REQUESTED

The Honorable Judge Michael W. Armistead, Chairman
Choctaw County Commission
117 South Mulberry Street, Suite 9
Butler, AL 36904

Re: Permit Renewal - Groundwater Monitoring Plan
Choctaw County Regional Landfill
Permit 12-01
Choctaw County, Alabama

Dear Judge Armistead:

The Department has reviewed the Groundwater Monitoring Plan, dated January 24, 2019, for the above referenced facility. After review, the following comments and recommendations were made:

- This plan states that the groundwater monitoring network at this facility consists of eleven wells. There are only five wells (MW-1 through MW-5) listed in Section IV of the permit for this facility. The additional assessment monitoring wells (AMW-1 through AMW-7) should be added to the permit.
- MW-2 and AMW-3 are listed as the designated background wells for the entire facility. However, numerous VOCs have been continuously detected in these wells. Therefore, these wells may no longer be representative of background groundwater quality at the facility and additional well(s) should be installed to the north/northwest of MW-B2 and Cell 1 so that they are not set in an area previously impacted by the facility.
- MW-B4R was installed prior to approval from the Department. In order for the Department to consider approval of the installed well location, a full installation report must be submitted for review.

In order for the Department to consider the permit renewal, please review all comments and provide the suggested information within the next 45 days of receipt of this letter.

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

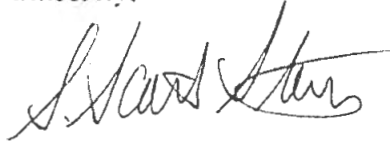


Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

If you should have any questions, please contact Mr. Blake Holden of the Solid Waste Branch at (334) 274-4248.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Scott Story". The signature is fluid and cursive, with the first name "S. Scott" and last name "Story" clearly distinguishable.

S. Scott Story, Chief
Solid Waste Engineering Section
Land Division

SSS/bh

Cc: SES, Robert Cummings via email

LANCE R. LEFLEUR
DIRECTOR



KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

March 14, 2019

CERTIFIED MAIL 91 7199 9991 7038 6540 8355
RETURN RECEIPT REQUESTED

The Honorable Judge Michael W. Armistead
Choctaw County Commission
117 South Mulberry Street, Suite 9
Butler, Alabama 36904

Dear Mr. Armistead:

Re: Response to ADEM Comments Letter and Statistical Analysis of Groundwater Data
Choctaw County Regional Landfill
Permit No. 12-01

The Department's Land Division has completed its review of the Response to ADEM Comments Letter and the Statistical Analysis of Groundwater Data Report for Choctaw County Regional Landfill, dated October 24, 2018 and December 6, 2018, respectively. Based on the review of these documents, the Department has the following comments and/or recommendations:

- The Response to ADEM Comments Letter dated October 24, 2018, states that Choctaw County Regional Landfill will submit a plan during the fourth quarter of 2018 proposing the location and intervals for additional monitoring wells to delineate the groundwater due to elevated inorganics. To date, the Department has not received the plan to delineate the contamination in the groundwater.
- The response letter also suggests that MW-B5 may have been installed through a layer of garbage. The Choctaw County Regional Landfill should provide the Department with more information regarding MW-B5, including how the facility proposes to resolve this issue.
- The Choctaw County Regional Landfill asserts that MW-B2 is potentially impacted from historical sanitary waste disposed of prior to the construction of the permitted facility. After review, the Department agrees with the facility's recommendation to install an additional background monitoring well upgradient from the landfill. Due to potential biased background data, the Department recommends the facility suspend initiating of assessment of corrective measures until new background data can be established and new statistical analysis can be performed. The Choctaw County Regional Landfill recently submitted a Groundwater Monitoring Plan that stated quarterly sampling will occur for one year on newly added monitoring wells to aide in the establishment of a minimal number of samples to allow for statistical evaluation. The Department agrees with quarterly sampling of the new background monitoring well to establish background data to perform statistical analysis. The Department requests the Choctaw County Regional Landfill submit an installation report for the new background monitoring well within **30 days** from receipt of this letter to the Department for approval.

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)



Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

Upon receiving Departmental approval, the facility must then install and begin sampling of the new background monitoring well within **90 days** or initiate an assessment of corrective measures.

- To date, the Department has not received plans for the abandonment and replacement of monitoring well MW-B4. Please submit a report detailing the reasoning for abandoning MW-B4 and the design, location and installation of the replacement well (MW-B4R) to the Department for approval. If approved, the Choctaw County Regional Landfill will then need to perform a statistical comparison test between the two sets of data to determine whether there is a significant difference between the two populations before pooling the background measurements. The Department requests the Choctaw County Regional Landfill submit the statistical analysis used, as well as trend tests for the data sets, to determine non-significance between the two sets of background data. Chapter 5 of the USEPA *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* discusses how to establish and update background data to best represent the current groundwater conditions at a facility.

Similarly, Solid Waste Permit #12-01 has yet to be updated to include assessment monitoring wells AMW-1 through AMW-7 in the groundwater monitoring system. These wells were installed in 2012 (AMW-1 through 3) and 2014 (AMW-5 through 7), but have not been added to the permit. The assessment monitoring wells should be added to the permit at this time.

- Section XVI of the report states that monitoring well AMW-2 had a turbidity greater than 1000 NTU; however, the field data sheets in Appendix A of the report indicates that the turbidity for AMW-2 was 9.1 NTU. There is also a discrepancy between the types of field equipment used to collect groundwater samples. Section VIII of the report states that the wells were purged using a disposable bailer while the response to comments letter dated October 24, 2018, states that the samples were collected using a peristaltic or submersible pump. Please clarify these inconsistencies for future monitoring reports.

The Department hereby requests that the Choctaw County Regional Landfill submit a response addressing the comments noted above within 30 days of receipt of this letter. If you have any questions regarding this matter, please contact Brandy Tiblier at (334) 271-7973 or at bltiblier@adem.alabama.gov.

Sincerely,



Heather M. Jones, Chief
Compliance and Enforcement Section
Solid Waste Branch

HMJ/bt

cc: Eric Guarino, Southern Earth Sciences

Alabama Department of Environmental Management
Choctaw Regional Landfill

April 16, 2019
Monitor Well Installation Report

**APPENDIX B
WELL PHOTOGRAPH**

MW-B4R (PVC), MWB-4D (Steel Cover), MW-B4 (Butte Remnant Background)



Choctaw Regional Landfill
Choctaw County, Alabama

SOUTHERN EARTH SCIENCES, INC.
Geotechnical, Environmental & Construction Materials Testing

Monitor Well Photograph
SESI Project No.: M02-037

**APPENDIX C
WELL CONSTRUCTION AND
LITHOLOGIC DESCRIPTION LOGS**

WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: BW-4R

DRILLER: D. Gardner

Page 1 of 1

PROJECT NO.: 02-037

METHOD: HOLLOW-STEM AUGER

PROJECT: CHOCTAW COUNTY LANDFILL

WELL DIAMETER: 2

PROJECT LOCATION: BUTLER, AL

SCREEN SLOT SIZE:

COORDINATES: 32.044080, 88271064

TOC ELEVATION:

DATE DRILLED: 10/16/17

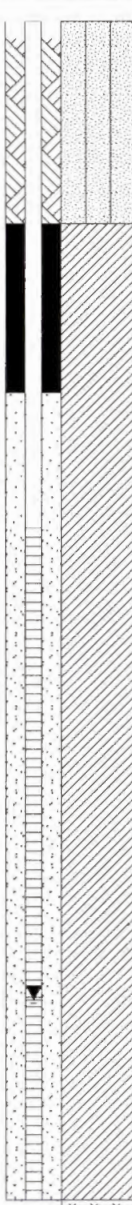
GROUND ELEVATION: unk

DATE COMPLETED: 10/18/17

WATER LEVEL: 14.57 ft

GEOL / ENGR: M. Reaves

WATER LEVEL DATE: 10/18/17

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0		SM	Red, orange and tan SILTY SAND (moist)	
5		CL	Grey and red SILTY CLAY (moist)	
10				
15				
20			Hard greenish grey siltstone/claystone (dry)	

Remarks: 4' Stickup Approx. (Measurements from ground)



- Bentonite



- Filter Sand



- Neat Cement

SOUTHERN EARTH SCIENCES, Inc.



WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: MW-B4

DRILLER: R. LEE

Page 1 of 1

PROJECT NO.: 02-037

METHOD: HOLLOW-STEM AUGER

PROJECT: CHOCTAW COUNTY LANDFILL

WELL DIAMETER:

PROJECT LOCATION: BUTLER, AL

SCREEN SLOT SIZE:

COORDINATES: SEE TEST LOCATION PLAN

TOC ELEVATION: 434.67

DATE DRILLED: 02/21/02

GROUND ELEVATION: 431.80

DATE COMPLETED: 02/21/02

WATER LEVEL: 18.37 ft

GEOL / ENGR: T. POWERS

WATER LEVEL DATE: 02/22/02

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
0		SM	Firm Medium Orange, Pale Orange, and Pale Red Silty SAND to Loose Pale Orange and Light Gray Silty SAND. Micaceous	
430				
	4/6 9/6 5/6			
10				
420	5/6 6/6 7/6			
	4/6 5/6 5/6			
20		SC	Loose Tan Clayey SAND to Sandy CLAY with Orange and Red Mottles (Horizontal) or Bedding. Micaceous	
410	2/6 4/6 5/6			
	15/6 50/6	CL	Hard Dark Greenish Gray CLAY over Dark Gray Sandy CLAY, Micaceous	
30				
400				
40				
390				
50				

Remarks:

 - Bentonite
  - Filter Sand
  - Neat Cement

SOUTHERN EARTH SCIENCES, Inc.

ERIC Z:\PROJECTS\JOB FOLDERS\2000-09\2002\02037-CHOCTAW CO. LF BORLOGS.GPJ SO EARTH COLOR.GDT 4/1/19

WELL CONSTRUCTION AND LITHOLOGIC DESCRIPTION

BORING NO.: MW-B4D

DRILLER: M.C.

Page 1 of 1

PROJECT NO.: 02-037

METHOD: MUD ROTARY

PROJECT: CHOCTAW COUNTY LANDFILL

WELL DIAMETER:

PROJECT LOCATION: BUTLER, AL

SCREEN SLOT SIZE:

COORDINATES: SEE TEST LOCATION PLAN

TOC ELEVATION: 416.7

DATE DRILLED: 01/06/03

GROUND ELEVATION: 412.82

DATE COMPLETED: 01/13/03

WATER LEVEL: 123.8 ft

GEOL / ENGR: M. WHITE

WATER LEVEL DATE: 01/22/03

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	PID ppm
410		CL	Hard Greenish Gray CLAY Interbedded with Clay Stone	
400	50/5"			
	5/6			
	7/6			
	29/6			
390	50/4"			
	50/3"			
380	12/6	SM	Very Dense Gray Silty SAND	
	21/6			
	32/6			
			Clay Stone	
370	40/6	CH	Very Hard Greenish Gray Clayey SILT to CLAY with Clay Stone	
	50/6			
	50/5"			
	50/5"			
	50/2"			
	50/6"			
	50/4"			
	50/1"			
	50/4"			
	50/1"			
	50/5"			
	50/5"			
	50/5"			
	50/4"			
	50/6"			
	27/6	SC	Very Dense Gray Clayey SAND	
	35/6			
	42/6			
	50/5"			
	50/4"	SM	Very Dense Tan Silty SAND	
	50/3"			
	50/2"			

Remarks:

■ - Bentonite □ - Filter Sand ▨ - Neat Cement

SOUTHERN EARTH SCIENCES, Inc.

ERIC Z:\PROJECTS\JOB FOLDERS\2000-09\2002\02037-CHOCTAW CO. LF BORLOGS.GPJ SO. EARTH. COLOR.GDT 4/1/19

Alabama Department of Environmental Management
Choctaw Regional Landfill

April 16, 2019
Monitor Well Installation Report

**APPENDIX D
DETECTED CONSTITUENTS
MW-B4 AND MW-B4R**

VOC Screening

Analysis Run 4/16/2019 10:48 AM

Choctaw County LF Client: S.E.S. Data: Choctaw Flat 2018

A listing of detects for 24 constituents in MW-B4 (d) on 42 dates:

1,1-Dichloroethane, MW-B4, 7/24/2002: 1.5 (D)
 1,4-Dichlorobenzene, MW-B4, 7/24/2002: 4 (D)
 4-Methyl-2-pentanone, MW-B4, 7/24/2002: 1 (D)
 Arsenic, MW-B4, 7/24/2002: 11 (D)
 Arsenic, MW-B4, 8/27/2002: 30
 Arsenic, MW-B4, 9/30/2002: 10
 Arsenic, MW-B4, 9/15/2014: 13
 Arsenic, MW-B4, 9/14/2015: 23
 Barium, MW-B4, 6/8/2018: 23.4
 Barium, MW-B4, 9/17/2018: 42.6
 Benzene, MW-B4, 7/24/2002: 1.5 (D)
 Beryllium, MW-B4, 9/14/2015: 9
 Beryllium, MW-B4, 6/8/2018: 0.1
 Beryllium, MW-B4, 9/17/2018: 0.42
 Cadmium, MW-B4, 9/15/2014: 48
 Cadmium, MW-B4, 3/25/2015: 28
 Cadmium, MW-B4, 9/14/2015: 27
 Chlorobenzene, MW-B4, 7/24/2002: 1.5 (D)
 Chromium, MW-B4, 7/24/2002: 15 (D)
 Chromium, MW-B4, 8/27/2002: 90
 Chromium, MW-B4, 9/30/2002: 60
 Chromium, MW-B4, 10/29/2003: 30
 Chromium, MW-B4, 9/15/2014: 80
 cis-1,2-Dichloroethylene, MW-B4, 7/24/2002: 7 (D)
 Cobalt, MW-B4, 9/15/2011: 20
 Cobalt, MW-B4, 3/25/2015: 20
 Cobalt, MW-B4, 9/14/2015: 270
 Cobalt, MW-B4, 6/8/2018: 2.8
 Cobalt, MW-B4, 9/17/2018: 6.8
 Copper, MW-B4, 9/15/2014: 10
 Copper, MW-B4, 9/14/2015: 20
 Ethylbenzene, MW-B4, 7/24/2002: 1.5 (D)
 Lead, MW-B4, 8/27/2002: 10
 Lead, MW-B4, 9/30/2002: 7
 Lead, MW-B4, 9/15/2014: 14
 Lead, MW-B4, 9/14/2015: 10
 Methylene chloride, MW-B4, 9/15/2014: 6
 Nickel, MW-B4, 3/25/2008: 10
 Nickel, MW-B4, 9/22/2008: 10
 Nickel, MW-B4, 3/25/2015: 50
 Nickel, MW-B4, 9/14/2015: 600
 Nickel, MW-B4, 6/8/2018: 3.4
 Nickel, MW-B4, 9/17/2018: 9.2
 Selenium, MW-B4, 9/14/2015: 50
 Sulfide, MW-B4, 3/18/2014: 0.3
 Sulfide, MW-B4, 3/25/2015: 0.5
 Vanadium, MW-B4, 8/27/2002: 80
 Vanadium, MW-B4, 9/15/2014: 50
 Vinyl chloride, MW-B4, 7/24/2002: 12 (D)
 Xylenes, MW-B4, 7/24/2002: 1.5 (D)
 Zinc, MW-B4, 9/30/2002: 70
 Zinc, MW-B4, 9/15/2014: 370
 Zinc, MW-B4, 3/25/2015: 720
 Zinc, MW-B4, 9/14/2015: 2140
 Zinc, MW-B4, 6/8/2018: 13.6
 Zinc, MW-B4, 9/17/2018: 31.6

CHOCTAW COUNTY COMMISSION

117 SOUTH MULBERRY AVENUE, SUITE 9

BUTLER, ALABAMA 36904

JUDGE MICHAEL W. ARMISTEAD, CHAIRMAN

JESSICA K. HARE, CLERK - TREASURER

COMMISSIONERS

TONY L. CHERRY - DISTRICT 1

C.D. BUDD RUFFIN - DISTRICT 2

COMMISSIONERS

SAMMY G. BONNER, JR. - DISTRICT 3

HORACE MOSLEY - DISTRICT 4

May 17, 2019

Alabama Department of Environmental Management

Attn: Blake Holden

1400 Coliseum Blvd.

Montgomery, Alabama 36130-1463



Re: Landfill Permit Renewal

12-01

Dear Mr. Holden,

Thank you for taking the time to meet with me on Wednesday, May 15, 2019 in your office. To recap our conversation, there are two outstanding items for the Landfill Permit renewal to be issued:

1. The Alabama Department of Environmental Management (ADEM) needs to complete its review of the heretofore submitted modifications to the groundwater monitoring plan. It is our understanding that the response/approval from the "hydro" department is imminently anticipated.
2. The heretofore submitted changes to the groundwater monitoring plan together collectively rise to constitute a minor landfill modification to the landfill permit; therefore a fee of \$3,275 is required and a check made payable to ADEM is attached hereto.

It is, therefore, the County's expectation that ADEM, with all needed documents and items now in hand, will expeditiously execute the landfill permit renewal upon completion of the hydro departments review. Questions on the groundwater monitoring plan should be directed to Eric Guarino of Southern Earth Sciences, and questions regarding the application can be directed to our consultant Scott Hutchinson or Robert Cummings at Goodwyn , Mills & Cawood, Inc.

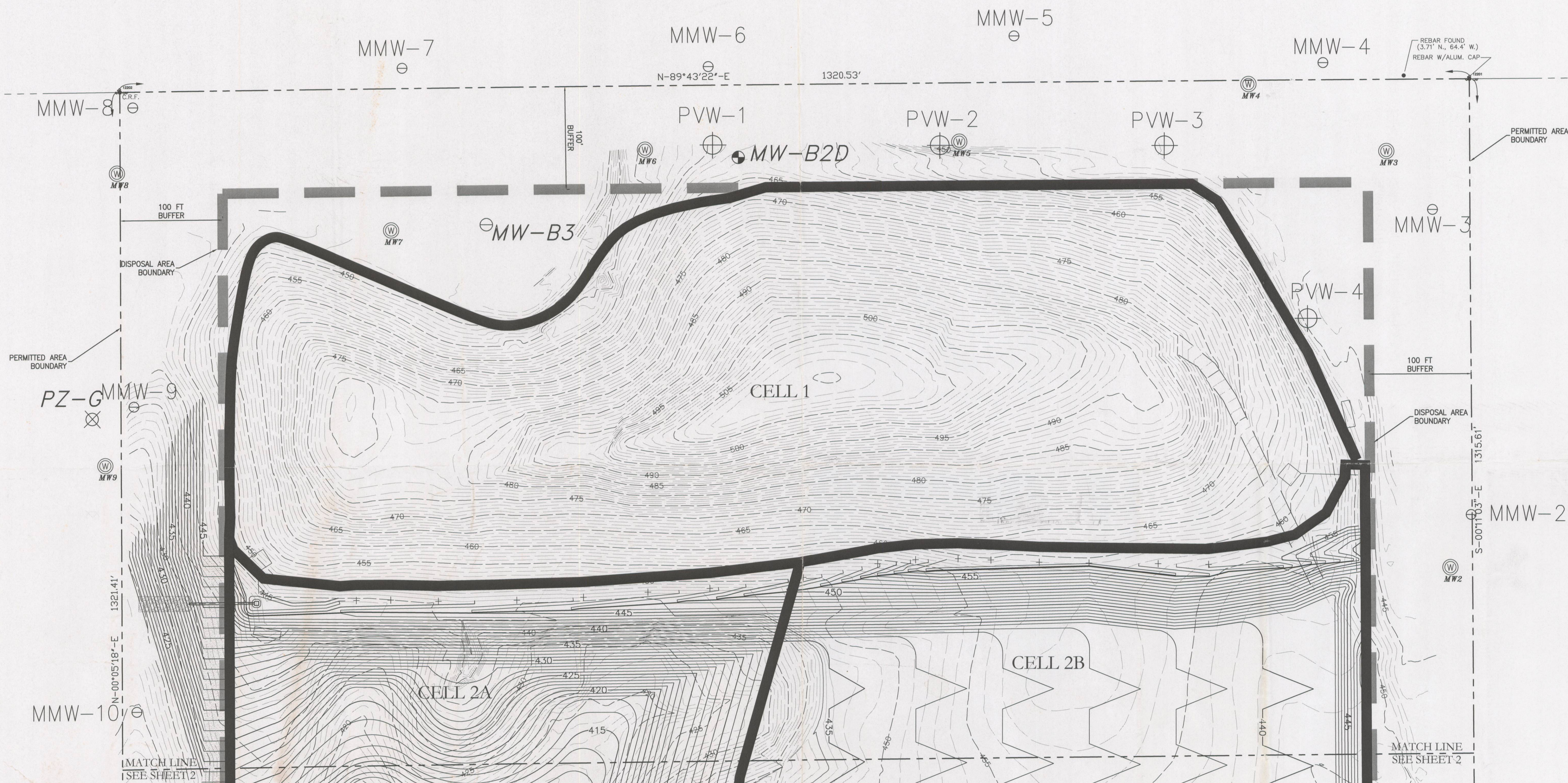
As always, please feel free to contact me if you have any questions.

Sincerely,

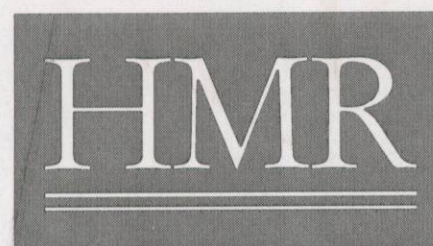
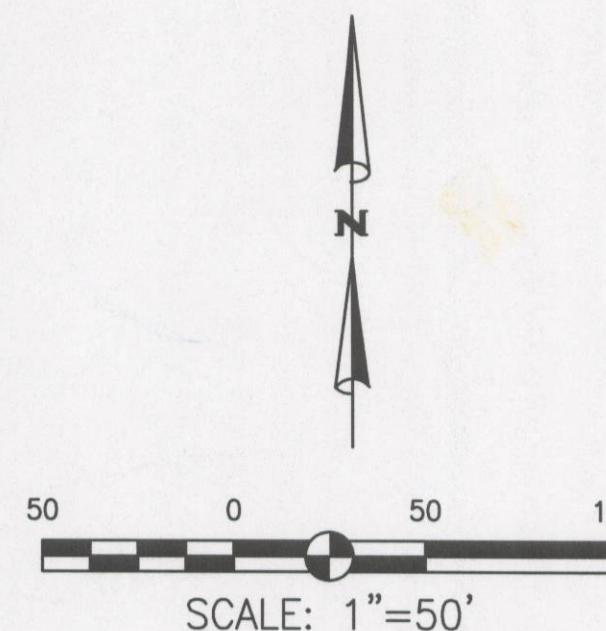
A handwritten signature in blue ink, appearing to read "Michael W. Armistead".

Michael W. Armistead, Chairman

Choctaw County Commission



- * APPROXIMATE LOCATION
- ⊖ METHANE WELL LOCATION
- DEEP PIEZOMETER LOCATION
- ⊕ PASSIVE VENT WELL LOCATION
- ⊙ GROUND WATER MONITORING WELL LOCATION

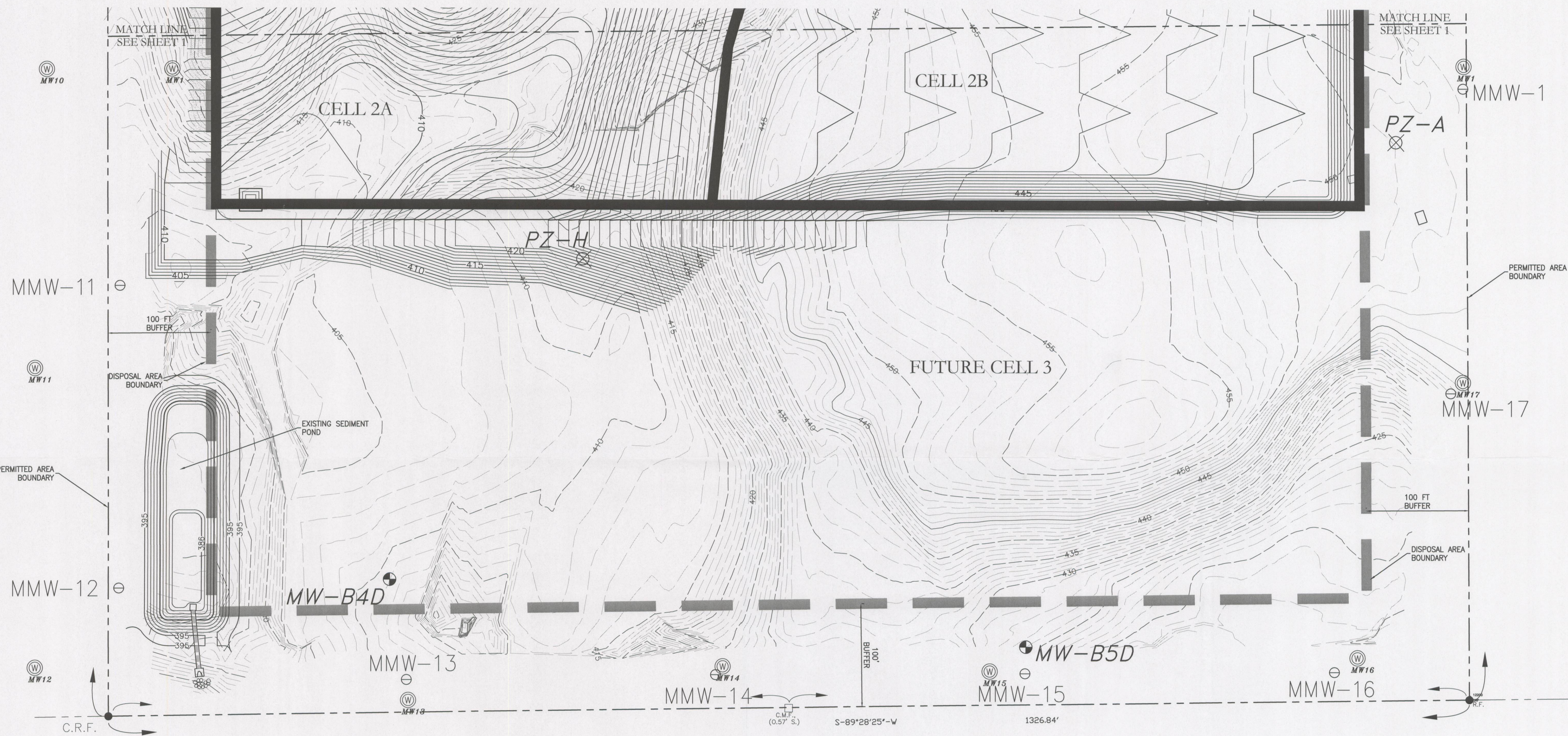


HUTCHINSON, MOORE & RAUCH, LLC
 2039 MAIN STREET
 DAPHNE, ALABAMA 36526
 ENGINEERS & SURVEYORS
 TEL (251) 626-2626
 FAX (251) 626-6934
 daphne@hmrengineers.com

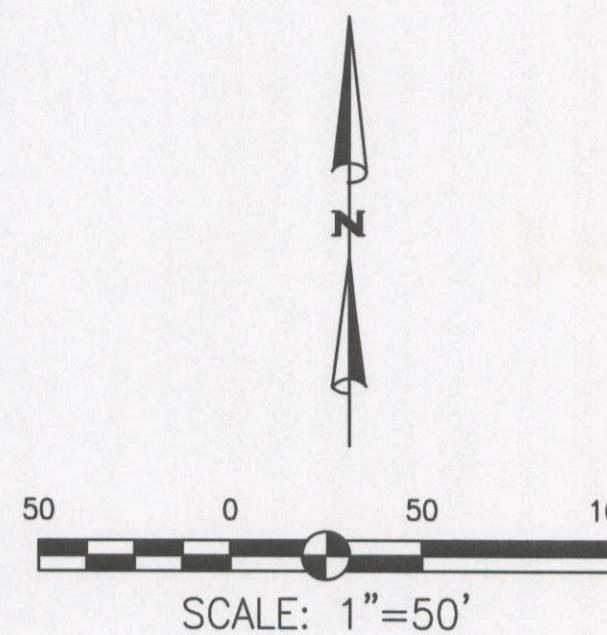
6963-8261
 C1
 6963-8261
 6963

LANDFILL EXHIBIT
 RENEWAL PERMIT
 CHOCTAW COUNTY

CLIENT	DATE	DRAWN BY	CHECKED BY	SHEET
SCALE	AUGUST, 2018	JHP		1 OF 2
1"=30'				



- * APPROXIMATE LOCATION
- ⊖ METHANE WELL LOCATION
- ⊕ DEEP PIEZOMETER LOCATION
- ⊕ PASSIVE VENT WELL LOCATION
- ⊙ GROUND WATER MONITORING WELL LOCATION



NO.	REVISION	DATE	ENGR.



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 FAX (251) 626-6934
 daphne@hmengineers.com

3969 EXHIBIT.dwg
 C1978-3969

LANDFILL EXHIBIT RENEWAL PERMIT CHOCTAW COUNTY				
CLIENT				
SCALE 1"=30'	DATE AUGUST, 2018	DRAWN BY JHP	CHECKED BY	SHEET 2 OF 2

CHOCTAW COUNTY COMMISSION

117 SOUTH MULBERRY AVENUE, SUITE 9
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August 13, 2019

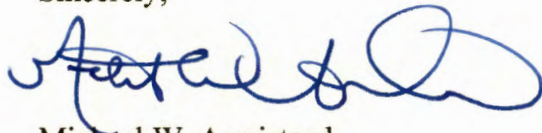
C. Blake Holden
Alabama Department of Environmental Management
Post Office Box 301463
Montgomery, Alabama 36130-1463

Mr. Holden,

During the August 13, 2019 meeting of the Choctaw County Commission, the Commission voted unanimously to move forward with the ten year permit renewal that we discussed by phone. I am attaching a check in the amount of \$18,635.00 to cover the fee associated with the permit renewal.

If you have any questions or if I can be of any further assistance, please call.

Sincerely,



Michael W. Armistead
Choctaw County Probate Judge,
County Commission Chairman

