



ALABAMA  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

# SOLID WASTE DISPOSAL FACILITY PERMIT

**PERMITTEE:** Geo Specialty Chemicals, Inc.

**FACILITY NAME:** Geo Specialty Chemicals, Inc. Inert Landfill

**FACILITY LOCATION:** Northwest ¼ of Section 22, Township 19 North, Range 4 East in Hale County, Alabama. The total permitted area is approximately 9.5 acres with 6.7 acres approved for disposal.

**PERMIT NUMBER:** 33-02

**PERMIT TYPE:** Construction/Demolition Landfill

**WASTE APPROVED FOR DISPOSAL:** Non-hazardous inert spent silica mud from the production of alum

**APPROVED WASTE VOLUME:** Average Yearly Volume of 35,000 cubic yards

**APPROVED SERVICE AREA:** Geo Specialty Chemicals, Inc. Plant located in Demopolis, Alabama

In accordance with and subject to the provisions of the Alabama Solid Wastes and 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  
SOLID WASTE PERMIT**

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Permittee: Geo Specialty Chemicals, Inc.  
5365 County Road 57  
Demopolis, Alabama 36732

Landfill Name: Geo Specialty Chemicals, Inc. Inert Landfill

Landfill Location: Northwest ¼ of Section 22, Township 19 North, Range 4 East in Hale County, Alabama

Permit Number: 33-02

Landfill Type: Construction and Demolition Landfill

Pursuant to the Alabama Solid Wastes and Recyclable Materials Management Act, as amended, Code of Alabama 1975, SS 22-27-1 to 22-27-27 ("SWRMMA"), et seq., as amended, and attendant regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM), this permit is issued to Geo Specialty Chemicals, Inc. (hereinafter called the Permittee), to operate a solid waste disposal facility, known as the Geo Specialty Chemicals, Inc. Inert 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 ADEM on May 16, 2019, for permit renewal and is hereby known as the Permit Application (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.

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Alabama Department of Environmental Management

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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, Section 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, Section 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 Permit tee'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, Section 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. 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 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 of 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.,1. The operating record shall include:
  - a. Documentation of inspection and maintenance activities.
  - b. Disposal Volume reports.
  - c. Personnel training documents and records.
  - d. Solid/Hazardous Waste Determination Forms for Industrial Wastes, and associated ADEM disposal approval correspondence for industrial waste and special waste.
  - e. Copies of this Permit and the Application.
  - f. Copies of all variances granted by the Department, including copies of all approvals of special operating conditions.
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 waste receipts for the previous (just ended) quarter. Copies of the quarterly reports shall be maintained in the operating record. If there is

no receipt of waste for the reporting quarter, the Permittee shall still be required to complete and submit a report of non-receipt of waste.

3. Monitoring and Corrective Action Reports

The Permittee shall submit reports of any monitoring and corrective activities conducted pursuant to the requirements of this permit. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. All 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 Geo Specialty Chemicals, Inc office located in Demopolis, Alabama, 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 Waste Disposal

The Permittee can only dispose of the industrial waste listed in Section III. B as required by ADEM Admin. Code 335-13-4-.21(1)(c), and as specified in the Application.

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.

### SECTION III. SPECIFIC REQUIREMENTS FOR C/D LANDFILLS

#### A. Waste Identification and Management

1. Subject to the terms of this permit, the Permittee may dispose of the nonhazardous solid wastes listed in III. B. Disposal of any other wastes is prohibited, except waste granted a temporary or one time waiver by the Director.
2. The total permitted area for the Geo Specialty Chemicals Inc. Inert Landfill is approximately 9.5 acres with a disposal area of 6.7 acres.
3. The maximum average yearly volume of waste disposed at the facility shall not exceed 35,000 cubic yards except as provided under Rule 335-13-5-.06(2)(a)5.

#### B. Waste Streams

The Permittee may accept for disposal non-hazardous inert spent silica mud from the production of alum.

#### C. Service Area

The Permittee is allowed to receive for disposal waste from Geo Specialty Chemicals, Inc. Plant located in Demopolis, Alabama.

#### D. Waste Placement, Compaction, and Cover

All waste shall be confined to an area as small as possible and placed onto an appropriate slope not to exceed 4 to 1 (25%). Due to the nature of the disposal cells (pits), compaction of the waste material using landfill equipment will not be practical due to the depth of the pits. As such, the waste will be placed in an uncompacted state until the waste has reached an elevation within the cell that safely allows access to the cell by landfill equipment. The disposal cells (consist of five pits separated by small berms of chalk) shall be dewatered prior to filling.

The dewatering activities shall begin with the removal of water from the southernmost pit (Pit A). The water from Pit A should be discharged to Pit B. Should water overflow the berm in Pit B, the water should be contained in Pit C. Once dewatered, Pit A should be filled with the permitted waste stream until full. Pit B will then be dewatered with the discharge to Pit C. Pit B will then be filled and the process continued until dewatering of the northernmost pit is required. Water removed from the northernmost pit (Pit E) should be discharged to the surface water retention pond located near the northern property boundary. The location of the pits and retention pond are provided on Figures C-1.0 and C-2.0 of the application.

In the future, if additional pits are excavated within the permitted area for the removal of chalk, these pits will be used for the disposal of waste. In the event additional pits require dewatering, the water will be discharged to the surface water retention pond located near the northern property boundary.

#### E. Liner Requirements

The Permittee shall not be required to install a composite liner system at this time. However, the permittee should maintain minimum of ten (10) feet separation from the base of the disposal pits and the top of the highest measured elevation of the groundwater table.

#### F. Security

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

G. 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.

H. Adverse Weather Disposal

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

I. Personnel

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

J. Environmental Monitoring and Treatment Structures

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

K. Vector Control

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

L. 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-.23(1)(j) are met.

M. Empty Containers

Empty containers larger than 10 gallons in size must be rendered unsuitable for holding liquids prior to disposal in the landfill unless otherwise approved by the Department.

N. Other Requirements

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

O. Other Permits

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

P. 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.

Q. Signs

If the landfill is available to the public or commercial haulers, 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-.23(1)(f).

R. Litter Control

The Permittee shall control litter.

S. Fire Control

The Permittee shall provide fire control measures.

SECTION IV. GROUNDWATER MONITORING REQUIREMENTS

Groundwater monitoring is not required at this landfill provided that the waste stream is in accordance with Section III.B. Should any waste be disposed other than the waste streams indicated in Section III.B., the Department might require that groundwater monitoring wells be installed.

SECTION V. GAS MONITORING REQUIREMENTS

Gas monitoring is not being required at this landfill. If at any time the Department determines that an explosive gas monitoring system is deemed necessary for the protection of human health and the environment, the Permittee must, within 90 days, submit an application for a permit modification for the installation of an explosive gas monitoring system that meets the proper regulatory requirements of the Alabama Department of Environmental Management.

SECTION VI. SURFACE WATER MANAGEMENT REQUIREMENTS

The Permittee shall construct and maintain a sedimentation pond on the northern property boundary as part of run-on and run-off control structures to control the discharge of pollutants in stormwater. Any discharges from drainage control structures shall be permitted through a discharge permit issued by the ADEM Water Division.

SECTION VII. 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 Closure Plan.

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. If the LF unit has remaining capacity and there is reasonable likelihood that the LF unit will receive additional wastes, closure activities of the LF unit must begin no later than three years after the date of known final receipt of wastes.

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 has 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, or any liner or contaminated soils, the owner must request and receive prior approval from the Department.

### SECTION VIII. VARIANCES

1. A variance is granted from Rule 335-13-4-.15 requiring weekly cover. The Permittee shall not be required to cover until closure (see Section III.D)
2. A variance is granted from Rule 335-13-4-.16 that requires explosive gas monitoring (See section V)



3. A variance is granted from Rule 335-13-4-.27 requiring groundwater monitoring.
4. A variance is granted from Rule 335-13-4-.13 requiring a 100-foot minimum buffer. A 50-foot buffer zone is permitted around the perimeter of the facility as shown on Figure C-1 of the application.
5. A variance is granted from Rule 335-13-4-20 2(f) regarding closure activities. If the LF unit has remaining capacity and there is reasonable likelihood that the LF unit will receive additional wastes, closure activities of the LF unit must begin no later than three years after the date of known final receipt of wastes.
6. A variance is granted from Rule 335-13-4-.20(2)(b)1 regarding specification of a final cover material. The final cover of the disposal area can be constructed by grading the waste materials to promote drainage and prevent ponding. An erosion layer will consist of a minimum six inches of material(s) that is capable of sustaining native plant growth, to minimize erosion and, when applicable, maximize evapotranspiration should be laid on top of the graded waste material (see Section VII.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



May 15, 2019

Alabama Department of Environmental Management  
Post Office Box 301463  
Montgomery, Alabama 36130-1463

Attention: Mr. Eric Sanderson, Chief  
Solid Waste Branch  
Land Division

RE: GEO Specialty Chemicals, Inc. Inert Landfill  
Solid Waste Permit No.: 33-02 Renewal  
Hale County, Alabama

Dear Mr. Sanderson:

On behalf of GEO Specialty Chemicals, Inc. (GEO), **Highland Technical Services, Inc. (HTSI)** is submitting three copies of the enclosed Solid Waste Disposal Permit Renewal application for the referenced landfill. The applicable permit fees will be submitted under separate cover. The enclosed permit application documents include the following:

- Solid Waste Permit Application
- Permit Application Narrative, including Petition to Extend Prior or Existing Variances
- Site Location Map and relevant Appendices

Please note, pursuant to previous discussions between HTSI and members of your staff, the list of Adjacent Landowners and the coincidental map of adjacent properties will be submitted at a later date under separate cover, so as to provide as current a list as possible of adjacent landowners for the facility prior to a final decision by the Department on this permit renewal application.

**Highland Technical Services, Inc.** appreciates your consideration in this matter. If you have questions concerning this submittal or require any additional information, please contact our office at (205) 985-4874.

Sincerely,

**HIGHLAND TECHNICAL SERVICES, INC.**

A handwritten signature in blue ink, appearing to read "William W. Cooch".

William W, Cooch, P.G.  
Principal Geologist

Attachment



**SOLID WASTE DISPOSAL FACILITY PERMIT  
RENEWAL APPLICATION**

**GEO SPECIALTY CHEMICALS, INC.  
GEO SPECIALTY CHEMICALS, INC. INERT LANDFILL  
8664 ALABAMA HIGHWAY 69  
GREENSBORO, HALE COUNTY, ALABAMA**

**PERMIT No.: 33-02  
HTSI PROJECT No.: 19-070515A.02**

PREPARED FOR:

GEO SPECIALTY CHEMICALS, INC.  
5365 COUNTY ROAD 57  
DEMOPOLIS, ALABAMA 36732

MAY 15, 2019

PREPARED BY:

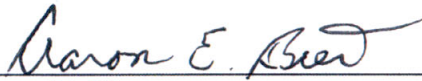
HIGHLAND TECHNICAL SERVICES, INC.  
528 MINERAL TRACE  
BIRMINGHAM, ALABAMA 35244  
PHONE: (205) 985-4874      FAX: (205) 987-6080

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William W. Cooch, P.G.  
Principal Geologist

### 1.0 PERMITTEE CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Aaron E. Bier  
GEO Specialty Chemicals, Inc.



Date



## **2.0 FACILITY DESCRIPTION**

GEO Specialty Chemicals, Inc. (GEO) requests a renewal of its Solid Waste Disposal Facility Permit (Permit No. 33-02) for its Construction/Demolition Solid Waste Landfill, the GEO Specialty Chemicals, Inc. Inert Landfill, located near Greensboro, Hale County, Alabama. The landfill is located at 8664 Alabama Highway 69, within the Northwest ¼ of Section 22, Township 19 North, Range 4 East. The site is situated approximately at Latitude 32° 36' 36" and Longitude 87° 40' 11". (See Figure 1)

GEO requests the permitted landfill area remain at 9.5 acres, with approximately 6.7 acres utilized for disposal. The average annual volume of waste is requested to remain at 35,000 cubic yards, and the approved service area would be the GEO Specialty Chemicals, Inc. facility located in Demopolis, Alabama. GEO also requests the waste stream approved for disposal continue to be nonhazardous inert spent silica mud from the production of alum.

## **3.0 LANDFILL SITING STANDARDS**

The GEO Specialty Chemicals, Inc. Inert Landfill meets the siting standards required by ADEM Administrative Code 335-13-4-.01, as originally permitted based on the permit application prepared and submitted to ADEM in September 2009, and as updated in the subsequent 2014 permit renewal. The pertinent information contained in those previous permit applications is incorporated by reference, herein.

## **4.0 GENERAL OPERATIONAL STANDARDS**

The facility will continue to be operated and maintained in a manner consistent with this permit application and in accordance with the applicable requirements of the ADEM Solid Waste Program regulations (Division 335-13), so as to be protective of human health and the environment. The expected life of the landfill is dependent on the amount of generated material necessary to reclaim the borrow pits located at the site. No changes to the operational procedures of the landfill from those of previous permit periods are requested as part of this renewal application, and those previous operational procedures are incorporated by reference, herein.

## **5.0 PERMIT VARIANCES**

Pursuant to the requirements of Chapter 8, of ADEM Admin. Code Division 335-13, Section VIII of Solid Waste Disposal Facility Permit No. 33-02, as issued on October 31, 2014, and effective on November 13, 2014, includes certain variances.

In accordance with ADEM Admin. Code Rule 335-13-8-.03(1), GEO Specialty Chemicals, Inc., requests the following prior or existing variances be granted as part of this permit renewal:

1. A variance is granted from Rule 335-13-4-.15 requiring weekly cover. The Permittee shall not be required to cover until closure.
2. A variance is granted from Rule 335-13-4-.16 that requires explosive gas monitoring.

3. A variance is granted from Rule 335-13-4-.27 requiring groundwater monitoring.
4. A variance is granted from Rule 335-13-4-.13 requiring a 100-foot minimum buffer. A 50-foot buffer zone is permitted around the perimeter of the facility as shown on Figure C-1 of the September 2009 permit application.
5. A variance is granted from Rule 335-13-4-.20(2)(f) regarding closure activities. If the landfill unit has remaining capacity and there is reasonable likelihood that the landfill unit will receive additional wastes, closure activities of the landfill unit must begin no later than three years after the date of known final receipt of wastes.
6. A variance is granted from Rule 335-13-4-.20(2)(b)1 regarding specification of final cover material. The final cover material of the disposal area can be constructed by grading the waste material to promote drainage and prevent ponding. An erosion layer will consist of a minimum of six inches of material(s) that is capable of sustaining native plant growth to minimize erosion and, when applicable, should be laid on top of the graded waste material to maximize evapotranspiration.

GEO Specialty Chemicals, Inc., requests that the record, opinion and order made pursuant to ADEM Admin. Code Rule 335-13-8-.02, for each of these prior and existing variances previously approved by the Department, be incorporated into this petition for extension as part of this permit renewal.

### FIGURES

- Figure 1      Site Map  
Figure 2      Site Layout

### APPENDICES

- Appendix A    ADEM Form 305  
Appendix B    Landowner Agreement (Letter from Mr. Lee Jackson to Mr. Rao Malladi)  
Appendix C    Legal Description





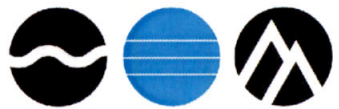
# ***FIGURES***





**Legend**

-  Piezometer
-  Property Boundary



**HTSI** Practicing in the Environmental and GeoSciences  
 Highland Technical Services, Inc.

528 MINERAL TRACE  
 HOOVER, AL 35244  
 (205) 985-4874

TITLE: **Site Location Map**

GEO Specialty  
 Chemicals, Inc.  
 Inert Landfill (33-02)  
 Hale County, AL

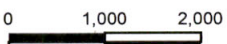
SCALE:  
  
 1 inch = 2,000 feet

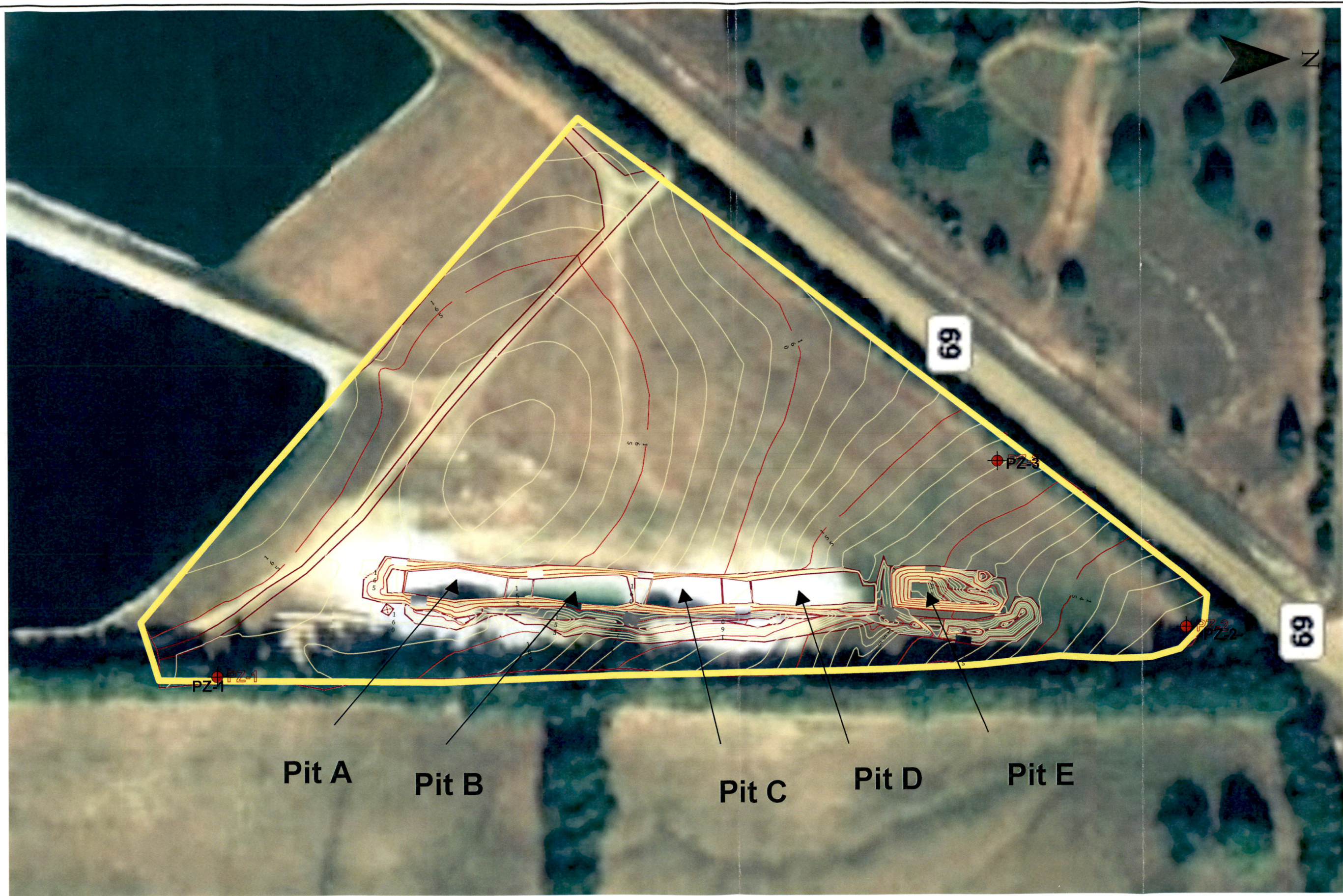
FIGURE NO.  
 1

PROJECT NO.  
 19070515A.02



DRAWN BY  
 PDD

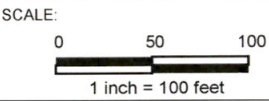
DATE DRAWN  
 05/14/2019





**Legend**

-  Piezometer
-  Subject Site Boundary



TITLE:

**Site Layout**

GEO Specialty  
Chemicals, Inc  
Inert Landfill (33-02)

Hale County, AL

FIGURE NO.	HTSI PROJECT NO.
2	19070515A.02

DRAWN BY:	DRAWN DATE:
PDD	05/14/2019



528 MINERAL TRACE  
HOOVER, AL 35244  
(205) 985-4874



# ***APPENDIX A***





SECTION III

LANDFILL OPERATOR:

Name: (1) GEO Specialty Chemicals, Inc. (2) \_\_\_\_\_  
Address: 5365 County Road 57 \_\_\_\_\_  
Demopolis, AL 36732 \_\_\_\_\_  
\_\_\_\_\_  
Telephone: (334) 289-3650 \_\_\_\_\_

SECTION IV:

CONTACT PERSON(S):

Name: (1) Aaron Bier, Plant Manager (2) J. Louis Graham  
Address: 5365 County Road 57 300 Brookside Avenue  
Demopolis, AL 36732 Building #23, Suite 100  
\_\_\_\_\_  
Ambler, PA 19002  
Telephone: (334) 289-3650 \_\_\_\_\_

SECTION V:

LANDOWNERS:

Name: (1) Lee Jackson. (2) \_\_\_\_\_  
Address: 8664 Highway 69 \_\_\_\_\_  
Greensboro, AL 36744 \_\_\_\_\_  
\_\_\_\_\_  
Telephone: (205) 361-3653 \_\_\_\_\_

Attach copy of agreement from landowner giving permission to use site for disposal if landowner is different from applicant.

SECTION VI:

ADJACENT LANDOWNER(S):

- a. Submit a list of all adjacent landowners including name and current mailing address.  
To be submitted under separate cover.
- b. Submit a drawing/map identifying the proposed disposal site and the properties of all adjacent landowners listed in a "a" above.  
To be submitted under separate cover.



SECTION X:

---

This Section is to be completed by the applicants/permittees. A copy of all concurrence letters must be attached to this application upon submittal to the Department.

---

Location Standards (Rule 335-13-4.01(1):

- a. Is the landfill located in the 100-year flood plain? (need to have flood plain map)  
NO: X            YES: \_\_\_\_\_
- b. Does the proposed landfill disposal area:
- (1) Jeopardize the continued existence of endangered or threatened species protected under the Endangered Species Act of 1973?  
NO: X            YES: \_\_\_\_\_
- (2) Result in the destruction or adverse modification of critical habitats protected under the Endangered Species Act of 1973?  
NO: X            YES: \_\_\_\_\_
- c. Is the proposed landfill located in a zone of active faults, seismic impact zones and unstable areas?  
NO: X            YES: \_\_\_\_\_  
(If YES then all required seismic studies should be submitted to the Department.)
- d. Is the proposed landfill located in an area that is archaeologically sensitive?  
NO: X            YES: \_\_\_\_\_ (Attach letter from State Historic Preservation Officer)

Water Quality Standards (Rule 335-13-4-.01(2):

(ADEM Water Division should be contacted to determine if permit is required.)

- a. Will the proposed landfill discharge pollutants to waters of the State in violation of requirements of the National Pollutant Discharge Elimination System (NPDES) Permit?  
NO: X            YES: \_\_\_\_\_
- b. Will the proposed landfill violate any requirement of an area wide or Statewide water quality plan that has been approved under the Alabama Water Pollution Control Act?  
NO: X            YES: \_\_\_\_\_
- c. Will any part of the landfill, including buffer zone, be located in wetlands, beaches, dunes?  
NO: X            YES: \_\_\_\_\_
- d. Will solid waste be disposed in any location which will significantly degrade wetlands, beaches, or dunes?  
NO: X            YES: \_\_\_\_\_



e. Will the proposed landfill be located outside the boundaries of the coastal area? (If not, then all demonstrations should be submitted to the Department for review.)

NO: \_\_\_\_\_ YES: X

Groundwater Elevations:

Has a minimum five-foot separation between the floor of the disposal cell and the groundwater been established? NO: \_\_\_\_\_ YES: X

SECTION XI:

GENERAL COMMENTS:

All materials listed in Rules 335-13-4-.12 to 335-1-4-.20, and Rule 335-13-4-.23 shall be kept at the landfill office along with a copy of the engineering drawings which must be submitted to the Department for review.

The applicant /permittee is responsible for obtaining a copy of the Division 13 regulations and complying with all Rules related to construction/demolition landfill units.

SECTION XII:

CERTIFICATION OF LOCAL GOVERNEMENT APPROVAL: N/A

Upon submittal of this application, we the undersigned certify that local approval has been obtained from \_\_\_\_\_ (city/county). Evidence of this local approval is contained in documents which are on file at the permit applicant's business address.

CERTIFICATION OF COMPLIANCE:

Upon submittal of this application, we the undersigned certify that this document and all attachments submitted are to the best of our knowledge and belief, true, accurate, and complete. We also understand that if any of the material certified to above has not been received, or is not complete or is not accurate, that shall be grounds for the Department to revoke the landfill permit if issued.

SIGNATURE (Responsible official of permit applicant):

Aaron E. Bier TITLE: Plant Manager  
Aaron E. Bier DATE: 5/14/19  
(please print or type name)

SIGNATURE (Certifying Engineer):

Judith A. Pike TITLE: Senior Project Engineer  
Judith A. Pike, P.E. DATE: 5/15/19  
(please print or type name)  
FIRM: Highland Technical Services, Inc.





# ***APPENDIX B***



7/28/09

Alabama Department of Environmental Management  
Waste Program Branch  
P.O. Box 301463  
Montgomery, AL 36130-1463

Attn: Mr. Rao Malladi  
Solid Waste Section  
Land Division

Dear Mr. Malladi:

This letter is a follow up to my 3/19/07 letter requesting you allow approval for GEO Specialty Chemicals to refurbish a lime borrow pit on my property, with the processed silica from their process in Demopolis, AL.

I currently have a borrow pit in the middle of 200 acres which I own at 8664 Highway 68, Greensboro, AL. This acreage is planted in grass and hay for cow feed.

I have asked GEO to assist me in obtaining approval and submitting all necessary documentation to permit this section of my property as a C&D Landfill, to receive only GEO's processed silica, until the pit is reclaimed. Once reclaimed, the pit will be covered with 1' of top soil and seed with appropriate grass.

Please advise if there is any other information you may need to assist you in your approval by calling Mrs. Charita Redding on my behalf at 478-472-1174 or responding with correspondence to GEO Specialty Chemicals, P.O. Box 1249, Oglethorpe, GA 31068.

Thank you for your assistance.

Sincerely,



Leo Jackson  
Property Owner



# ***APPENDIX C***



LEGAL DESCRIPTION:

A parcel of land situated in the Northwest quarter of Section 22, Township 19 North, Range 4 East, Hale County, Alabama, and being more particularly described as follows:

Commence at a found ½ inch rebar, said point also being the Southeast corner of the Southwest quarter of said Section 22; thence run in a Northerly direction along the West line of said Southwest quarter for a distance of 2657.61 feet to found ½ inch pipe, said point also being the Southeast corner of said Northwest quarter; thence turn an exterior angle to the right of 179 degrees 30 minutes 00 seconds and run in a Northerly direction along the West line of said Northwest quarter for a distance of 1287.23 feet to a set capped rebar stamped Latham Eng CA-903-LS, said point also being the POINT OF BEGINNING; thence leaving said West line of said Northwest quarter turn an exterior angle to the right of 129 degrees 01 minutes 28 seconds and run in a Northwesterly direction for a distance of 820.07 feet to a set capped rebar stamped Latham Eng CA-903-LS, said point also being on the Easterly right of way line of Alabama State Highway #69 (100' R.O.W.); thence turn an exterior angle to the right of 269 degrees 36 minutes 35 seconds and run in a Northeasterly direction along said Easterly right of way line for a distance of 934.22 feet to a found concrete right of way monument (disturbed), said point being at the intersection of said Easterly right of way line of Alabama State Highway #69 and the Southerly right of way line of Hale County Road #16 (80' R.O.W.); thence leaving said Easterly right of way line turn exterior angle to the right of 206 degrees 18 minutes 32 seconds and run in a Northeasterly direction along said Southerly right of way line for a distance of 59.41 feet to a found ½ inch rebar, said point also being on said West line of said Northwest quarter; thence leaving said Southerly right of way line of Hale County Road #16 turn an exterior angle to the right of 295 degrees 03 minutes 25 seconds and run in a Southerly direction along said West line for a distance of 1271.28 feet to the POINT OF BEGINNING. Said parcel contains 417,263 square feet or 9.58 acres more or less.

# Stormwater Management Pond Analysis and Hydrology Summary

for

## **GEO SPECIALTY CHEMICALS, Inc.**

Geo Specialty Chemicals, Inc. Inert Landfill (Permit No. 33-02)

Greensboro, Alabama

January 21, 2020

RECEIVED

JAN 27 2020

LAND DIVISION

LPC Technologies, under contract with Highland Technical Service, Inc. has prepared this analysis of the existing sedimentation and stormwater management pond that serves the landfill located on the Geo Specialty Chemicals Inert Landfill site to evaluate its performance during the 25 year, 24 hour storm event.

The analysis was performed by determining the total landfill property area that constitutes the watershed for the pond based on drainage contours. The designated watershed area also contains the total area of the landfill and the area of the retention pond and is about 6.7 acres. The total permitted area of the landfill is about 9.5 acres.

The pond is designed mainly for retention although it does have an overflow spillway that provides overflow relief according to the design plans prepared by Latham Engineering, LLC, Tuscaloosa, Alabama, dated August 2009. The pond has a triangular shape and is about 10 feet deep. The bottom of the pond is at elevation 135.60 while the top elevation is 145.60. The overflow spillway elevation is 144.90 and has a width of 14' wide.

The volume of the pond was calculated to be 87,893 cubic feet at a total depth of 10 feet.

A hydrology analysis and stormwater basin routing was performed for the stormwater management pond. The runoff hydrograph/inflow hydrograph for the 25 year/24 hour storm for the drainage basin of 6.7 acres. A conservative runoff coefficient/curve number of 65 was chosen for the basin. The time of concentration was set conservatively at 10 minutes and the applicable storm distribution for the landfill area in Hale County is Type III. The time to peak for the inflow hydrograph of the 25 year/24 hour storm is about 12.15 hours, which results in a peak inflow of about 22.07 CFS.

The runoff hydrograph/inflow hydrograph for the 25 year storm was then routed through the stormwater management pond. The results of the routing indicate that the peak discharge from the pond is 0.54 CFS at a peak elevation in the pond of 144.95 feet. Most of the water is retained in the pond for long periods of time which results in a near complete settling of sediments.

The aforementioned analysis are the results from the 25 year, 24 hour storm and demonstrates that the pond has sufficient capacity to comply with ADEM Rule 335-13-4-.17(2) and Rule 335-13-4-.17(3). Moreover, additional storm frequencies were analyzed to view the effects of lesser frequency storms on flow and retention times. Those storms were the 2, 5 and 10 year and all indicate complete retention of the stormwater runoff and complete settling of water-borne sediments.

LPC Technologies

5184 Caldwell Mill Road, Ste 204 • Birmingham, AL 35244 • Phone: (205)253-0268 • patchumbley@gmail.com

The following documents are attached to this report:

- Hydrographs and Pond Reports (2,10, and 25 year, 24 hour storm events);
- Dwg. C-1, Existing Conditions, Hale County Landfill Site, Latham Engineering, LLC (8/26/09);
- Dwg. C-2.0, Retention Pond Plan, Hale County Landfill Site, Latham Engineering, LLC (8/24/09);

Respectfully Submitted,



Patrick L. Chumbley, PE,  
Registration 19181

LPC Technologies

5184 Caldwell Mill Road, Ste 204 • Birmingham, AL 35244 • Phone: (205)253-0268 • [patchumbley@gmail.com](mailto:patchumbley@gmail.com)

# Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	6.94	3	729	29,796	----	-----	-----	GEOSPECIALTY INERT LANDFILL SITE THROUGH POND
2	Reservoir	0.00	3	0	0	1	140.48	29,796	
GEOSPECIALTY CHEMICALS HALE					Retention Pond 2017			Monday, Jan 20 2020, 2:42 PM	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve

Monday, Jan 20 2020, 2:42 PM

## Hyd. No. 1

### GEOSPECIALTY INERT LANDFILL

Hydrograph type	= SCS Runoff	Peak discharge	= 6.94 cfs
Storm frequency	= 2 yrs	Time interval	= 3 min
Drainage area	= 6.17 ac	Curve number	= 65
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 29,796 cuft

(Printed values >= 1% of Qp. Print interval = 2)

### Hydrograph Discharge Table

Time -- Outflow (hrs      cfs)	Time -- Outflow (hrs      cfs)	Time -- Outflow (hrs      cfs)	Time -- Outflow (hrs      cfs)
11.30    0.09	14.70    0.66	18.10    0.27	21.50    0.19
11.40    0.14	14.80    0.65	18.20    0.27	21.60    0.19
11.50    0.19	14.90    0.63	18.30    0.26	21.70    0.18
11.60    0.29	15.00    0.62	18.40    0.26	21.80    0.18
11.70    0.51	15.10    0.60	18.50    0.26	21.90    0.18
11.80    0.95	15.20    0.58	18.60    0.26	22.00    0.18
11.90    1.63	15.30    0.57	18.70    0.26	22.10    0.22
12.00    3.16	15.40    0.55	18.80    0.25	22.20    0.23
12.10    6.11	15.50    0.54	18.90    0.25	22.30    0.21
12.20    6.93	15.60    0.52	19.00    0.25	22.40    0.18
12.30    5.77	15.70    0.50	19.10    0.25	22.50    0.18
12.40    4.29	15.80    0.48	19.20    0.24	22.60    0.18
12.50    3.29	15.90    0.47	19.30    0.24	22.70    0.18
12.60    2.35	16.00    0.45	19.40    0.24	22.80    0.17
12.70    1.74	16.10    0.43	19.50    0.24	22.90    0.17
12.80    1.46	16.20    0.42	19.60    0.23	23.00    0.17
12.90    1.34	16.30    0.41	19.70    0.23	23.10    0.17
13.00    1.23	16.40    0.40	19.80    0.23	23.20    0.17
13.10    1.12	16.50    0.40	19.90    0.23	23.30    0.17
13.20    1.05	16.60    0.39	20.00    0.23	23.40    0.16
13.30    1.00	16.70    0.38	20.10    0.22	23.50    0.16
13.40    0.97	16.80    0.37	20.20    0.22	23.60    0.16
13.50    0.95	16.90    0.37	20.30    0.22	23.70    0.16
13.60    0.92	17.00    0.36	20.40    0.22	23.80    0.16
13.70    0.89	17.10    0.35	20.50    0.21	23.90    0.15
13.80    0.86	17.20    0.34	20.60    0.21	24.00    0.15
13.90    0.83	17.30    0.34	20.70    0.21	24.10    0.11
14.00    0.79	17.40    0.33	20.80    0.21	
14.10    0.76	17.50    0.32	20.90    0.20	
14.20    0.74	17.60    0.31	21.00    0.20	...End
14.30    0.72	17.70    0.30	21.10    0.20	
14.40    0.71	17.80    0.30	21.20    0.20	
14.50    0.69	17.90    0.29	21.30    0.19	
14.60    0.68	18.00    0.28	21.40    0.19	



# Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	13.02	3	729	52,663	----	-----	-----	GEOSPECIALTY INERT LANDFILL SITE THROUGH POND
2	Reservoir	0.00	3	0	0	1	142.84	52,663	
GEOSPECIALTY CHEMICALS HALE						Retention Ponds		Monday, Jan 20 2020, 2:42 PM	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve

Monday, Jan 20 2020, 2:42 PM

## Hyd. No. 1

### GEOSPECIALTY INERT LANDFILL

Hydrograph type	= SCS Runoff	Peak discharge	= 13.02 cfs
Storm frequency	= 5 yrs	Time interval	= 3 min
Drainage area	= 6.17 ac	Curve number	= 65
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 6.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 52,663 cuft  
(Printed values >= 1% of Qp. Print interval = 2)

### Hydrograph Discharge Table

Time -- Outflow	Time -- Outflow	Time -- Outflow	Time -- Outflow
(hrs cfs)	(hrs cfs)	(hrs cfs)	(hrs cfs)
10.55 0.14	13.95 1.31	17.35 0.52	20.75 0.32
10.65 0.17	14.05 1.26	17.45 0.51	20.85 0.32
10.75 0.21	14.15 1.21	17.55 0.50	20.95 0.32
10.85 0.25	14.25 1.18	17.65 0.48	21.05 0.31
10.95 0.29	14.35 1.15	17.75 0.47	21.15 0.31
11.05 0.33	14.45 1.13	17.85 0.46	21.25 0.30
11.15 0.39	14.55 1.10	17.95 0.45	21.35 0.30
11.25 0.47	14.65 1.08	18.05 0.43	21.45 0.30
11.35 0.57	14.75 1.05	18.15 0.42	21.55 0.29
11.45 0.69	14.85 1.03	18.25 0.42	21.65 0.29
11.55 0.83	14.95 1.00	18.35 0.41	21.75 0.28
11.65 1.18	15.05 0.97	18.45 0.41	21.85 0.28
11.75 1.93	15.15 0.95	18.55 0.41	21.95 0.28
11.85 3.08	15.25 0.92	18.65 0.40	22.05 0.31
11.95 4.82	15.35 0.89	18.75 0.40	22.15 0.38
12.05 9.25	15.45 0.86	18.85 0.39	22.25 0.34
12.15 13.02 <<	15.55 0.84	18.95 0.39	22.35 0.30
12.25 11.63	15.65 0.81	19.05 0.39	22.45 0.28
12.35 8.67	15.75 0.78	19.15 0.38	22.55 0.28
12.45 6.42	15.85 0.75	19.25 0.38	22.65 0.28
12.55 4.71	15.95 0.73	19.35 0.38	22.75 0.27
12.65 3.32	16.05 0.70	19.45 0.37	22.85 0.27
12.75 2.61	16.15 0.67	19.55 0.37	22.95 0.27
12.85 2.31	16.25 0.66	19.65 0.37	23.05 0.26
12.95 2.12	16.35 0.64	19.75 0.36	23.15 0.26
13.05 1.93	16.45 0.63	19.85 0.36	23.25 0.26
13.15 1.77	16.55 0.62	19.95 0.35	23.35 0.25
13.25 1.67	16.65 0.61	20.05 0.35	23.45 0.25
13.35 1.62	16.75 0.60	20.15 0.35	23.55 0.25
13.45 1.57	16.85 0.58	20.25 0.34	23.65 0.25
13.55 1.52	16.95 0.57	20.35 0.34	23.75 0.24
13.65 1.47	17.05 0.56	20.45 0.33	23.85 0.24
13.75 1.42	17.15 0.55	20.55 0.33	23.95 0.24
13.85 1.36	17.25 0.53	20.65 0.33	24.05 0.21

Continues on next page...

GEOSPECIALTY INERT LANDFILL

## Hydrograph Discharge Table

**Time -- Outflow**  
**(hrs      cfs)**

*...End*

# Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	17.45	3	729	69,488	----	-----	-----	GEOSPECIALTY INERT LANDFILL SITE THROUGH POND
2	Reservoir	0.00	3	0	0	1	144.24	69,488	
GEOSPECIALTY CHEMICALS HALE						Retention Pond 2010 year		Monday, Jan 20 2020, 2:42 PM	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve

Monday, Jan 20 2020, 2:42 PM

## Hyd. No. 1

### GEOSPECIALTY INERT LANDFILL

Hydrograph type = SCS Runoff  
 Storm frequency = 10 yrs  
 Drainage area = 6.17 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 7.00 in  
 Storm duration = 24 hrs

Peak discharge = 17.45 cfs  
 Time interval = 3 min  
 Curve number = 65  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 10.0 min  
 Distribution = Type III  
 Shape factor = 484

Hydrograph Volume = 69,488 cuft

(Printed values >= 1% of Qp. Print interval = 2)

### Hydrograph Discharge Table

Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)	Time (hrs)	Outflow (cfs)
10.15	0.18	13.55	1.92	16.95	0.71	20.35	0.42
10.25	0.22	13.65	1.86	17.05	0.70	20.45	0.42
10.35	0.25	13.75	1.79	17.15	0.68	20.55	0.41
10.45	0.29	13.85	1.73	17.25	0.67	20.65	0.41
10.55	0.34	13.95	1.66	17.35	0.65	20.75	0.40
10.65	0.38	14.05	1.59	17.45	0.64	20.85	0.40
10.75	0.43	14.15	1.53	17.55	0.62	20.95	0.39
10.85	0.48	14.25	1.49	17.65	0.60	21.05	0.39
10.95	0.54	14.35	1.45	17.75	0.59	21.15	0.38
11.05	0.60	14.45	1.42	17.85	0.57	21.25	0.38
11.15	0.68	14.55	1.39	17.95	0.56	21.35	0.37
11.25	0.80	14.65	1.36	18.05	0.54	21.45	0.37
11.35	0.94	14.75	1.32	18.15	0.53	21.55	0.36
11.45	1.11	14.85	1.29	18.25	0.52	21.65	0.36
11.55	1.31	14.95	1.26	18.35	0.51	21.75	0.35
11.65	1.82	15.05	1.22	18.45	0.51	21.85	0.35
11.75	2.88	15.15	1.19	18.55	0.51	21.95	0.34
11.85	4.49	15.25	1.15	18.65	0.50	22.05	0.38
11.95	6.82	15.35	1.12	18.75	0.50	22.15	0.47
12.05	12.66	15.45	1.09	18.85	0.49	22.25	0.43
12.15	17.45 <<	15.55	1.05	18.95	0.49	22.35	0.38
12.25	15.36	15.65	1.02	19.05	0.48	22.45	0.35
12.35	11.30	15.75	0.98	19.15	0.48	22.55	0.35
12.45	8.29	15.85	0.95	19.25	0.47	22.65	0.34
12.55	6.06	15.95	0.91	19.35	0.47	22.75	0.34
12.65	4.26	16.05	0.87	19.45	0.46	22.85	0.33
12.75	3.34	16.15	0.84	19.55	0.46	22.95	0.33
12.85	2.95	16.25	0.82	19.65	0.45	23.05	0.33
12.95	2.71	16.35	0.81	19.75	0.45	23.15	0.32
13.05	2.45	16.45	0.79	19.85	0.45	23.25	0.32
13.15	2.25	16.55	0.78	19.95	0.44	23.35	0.32
13.25	2.13	16.65	0.76	20.05	0.44	23.45	0.31
13.35	2.05	16.75	0.75	20.15	0.43	23.55	0.31
13.45	1.99	16.85	0.73	20.25	0.43	23.65	0.30

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### Hydrograph Discharge Table

**Time -- Outflow  
(hrs        cfs)**

23.75	0.30
23.85	0.30
23.95	0.29
24.05	0.27

*...End*

# Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	22.07	3	729	87,219	----	-----	-----	GEOSPECIALTY INERT LANDFILL SITE THROUGH POND
2	Reservoir	0.54	3	1188	9,121	1	144.95	78,708	
GEOSPECIALTY CHEMICALS HALE						Retention Ponds 2025 year		Monday, Jan 20 2020, 2:42 PM	

# Hydrograph Report

Hydrographs by IntelliSolve

Monday, Jan 20 2020, 2:42 PM

## Hyd. No. 1

GEOSPICALTY INERT LANDFILL

- Hydrograph type = SCS Runoff
- Storm frequency = 25 yrs
- Drainage area = 6.17 ac
- Basin Slope = 0.0 %
- Tc method = USER
- Total precip. = 8.00 in
- Storm duration = 24 hrs

- Peak discharge = 22.07 cfs
- Time interval = 3 min
- Curve number = 65
- Hydraulic length = 0 ft
- Time of conc. (Tc) = 10.0 min
- Distribution = Type III
- Shape factor = 484

## Hydrograph Discharge Table

Time -- Outflow (hrs)	Time -- Outflow (hrs)	Time -- Outflow (hrs)	Time -- Outflow (hrs)
9.80	2.23	16.60	0.53
9.90	2.26	16.70	0.91
10.00	0.30	16.80	0.89
10.10	0.33	16.90	0.87
10.20	0.37	17.00	0.85
10.30	0.42	17.10	0.83
10.40	0.47	17.20	0.81
10.50	0.53	17.30	0.79
10.60	0.59	17.40	0.77
10.70	0.65	17.50	0.75
10.80	0.72	17.60	0.74
10.90	0.79	17.70	0.72
11.00	0.86	17.80	0.70
11.10	0.95	17.90	0.68
11.20	1.08	18.00	0.66
11.30	1.26	18.10	0.64
11.40	1.46	18.20	0.63
11.50	1.69	18.30	0.62
11.60	2.09	18.40	0.62
11.70	3.12	18.50	0.61
11.80	4.89	18.60	0.60
11.90	7.24	18.70	0.60
12.00	11.96	18.80	0.59
12.10	20.29	18.90	0.59
12.20	21.28	19.00	0.58
12.30	16.69	19.10	0.58
12.40	11.79	19.20	0.57
12.50	8.82	19.30	0.56
12.60	6.20	19.40	0.56
12.70	4.53	19.50	0.55
12.80	3.79	19.60	0.55
12.90	3.45	19.70	0.54
13.00	3.14	19.80	0.54
13.10	2.85	19.90	0.53
13.20	2.65	20.00	0.53
13.30	2.54	20.10	0.52
13.40	2.46	20.20	0.51
13.50	2.38	20.30	0.51
13.60	2.30	20.40	0.50
13.70	2.21	20.50	0.50
13.80	2.13	20.60	0.49
13.90	2.05	20.70	0.48
14.00	1.97	20.80	0.48
14.10	1.89	20.90	0.47
14.20	1.82	21.00	0.47
14.30	1.78	21.10	0.46
14.40	1.74	21.20	0.46
14.50	1.70	21.30	0.45
14.60	1.66	21.40	0.44
14.70	1.62	21.50	0.44
14.80	1.58	21.60	0.43
14.90	1.54	21.70	0.43
15.00	1.50	21.80	0.42
15.10	1.45	21.90	0.42
15.20	1.41	22.00	0.41
15.30	1.37	22.10	0.51
15.40	1.33	22.20	0.54
15.50	1.29	22.30	0.48
15.60	1.24	22.40	0.42
15.70	1.20	22.50	0.42
15.80	1.16	22.60	0.41
15.90	1.12	22.70	0.41
16.00	1.07	22.80	0.40
16.10	1.03	22.90	0.40
16.20	1.00	23.00	0.39
16.30	0.98	23.10	0.39
16.40	0.96	23.20	0.38
16.50	0.94	23.30	0.38

Continues on next page...

Hydrograph Volume = 87,219 cuft  
 (Printed values >= 1% of Cp. Print interval = 2)



### Hydrograph Discharge Table

**Time -- Outflow  
(hrs        cfs)**

23.40	0.38
23.50	0.37
23.60	0.37
23.70	0.36
23.80	0.36
23.90	0.35
24.00	0.35
24.10	0.26

*...End*

# Pond Report

Hydraflow Hydrographs by Intelisolve

Monday, Jan 20 2020, 2:50 PM

## Pond No. 1 - HALE CO POND

### Pond Data

Pond storage is based on known contour areas. Average end area method used.

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	135.60	4,032	0	0
0.40	136.00	4,331	1,673	1,673
1.40	137.00	5,122	4,727	6,399
2.40	138.00	5,980	5,551	11,950
3.40	139.00	6,904	6,442	18,392
4.40	140.00	7,895	7,400	25,792
5.40	141.00	8,951	8,423	34,215
6.40	142.00	10,074	9,513	43,727
7.40	143.00	11,263	10,669	54,396
8.40	144.00	12,519	11,891	66,287
9.40	145.00	13,728	13,124	79,410
10.00	145.60	14,549	8,483	87,893

### Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .000	.000	.000	.000
Orif. Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 14.00	0.00	0.00	0.00
Crest El. (ft)	= 144.90	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

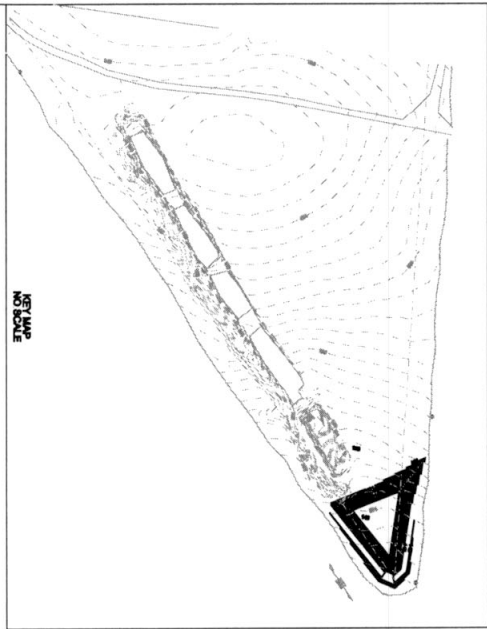
Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

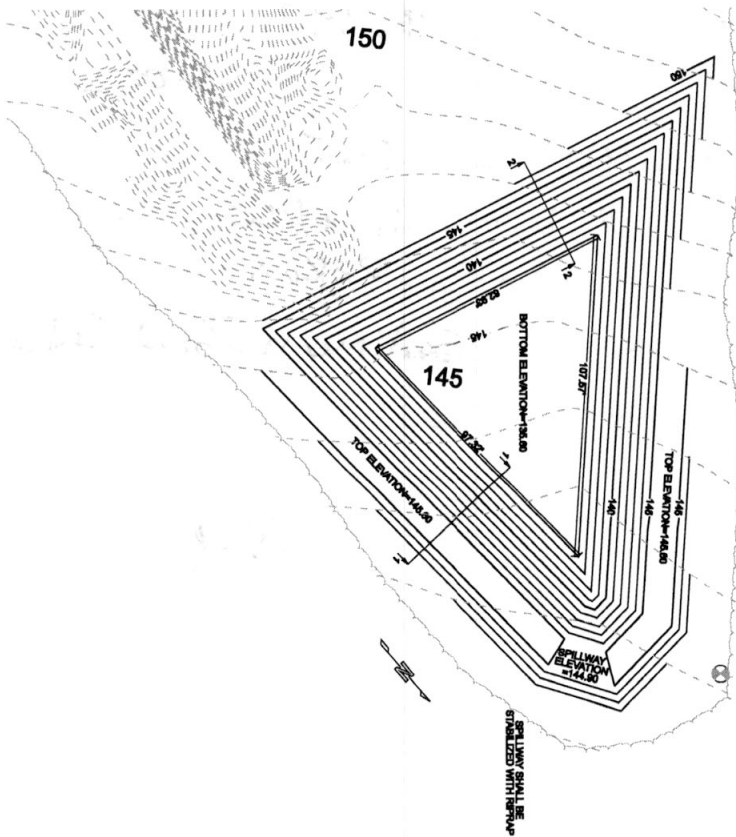
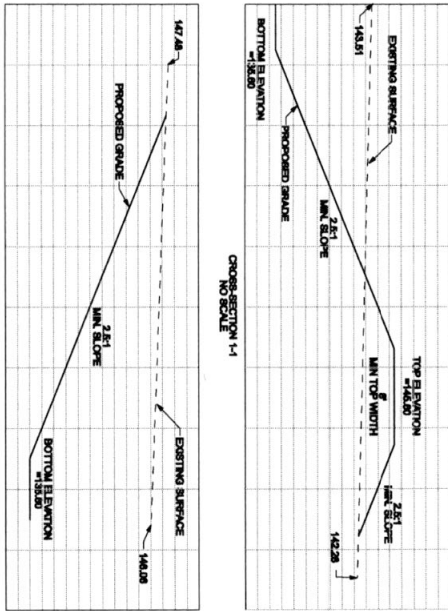
### Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	135.60	---	---	---	---	0.00	---	---	---	---	0.00
0.40	1,673	136.00	---	---	---	---	0.00	---	---	---	---	0.00
1.40	6,399	137.00	---	---	---	---	0.00	---	---	---	---	0.00
2.40	11,950	138.00	---	---	---	---	0.00	---	---	---	---	0.00
3.40	18,392	139.00	---	---	---	---	0.00	---	---	---	---	0.00
4.40	25,792	140.00	---	---	---	---	0.00	---	---	---	---	0.00
5.40	34,215	141.00	---	---	---	---	0.00	---	---	---	---	0.00
6.40	43,727	142.00	---	---	---	---	0.00	---	---	---	---	0.00
7.40	54,396	143.00	---	---	---	---	0.00	---	---	---	---	0.00
8.40	66,287	144.00	---	---	---	---	0.00	---	---	---	---	0.00
9.40	79,410	145.00	---	---	---	---	1.15	---	---	---	---	1.15
10.00	87,893	145.60	---	---	---	---	21.32	---	---	---	---	21.32





NOTES:  
 1. RETENTION POND SHALL BE BUILT ACCORDING TO STANDARD PRACTICES AND SHALL BE MAINTAINED AS SUCH. EROSION CONTROL, SEDIMENT CONTROL AND STORMWATER MANAGEMENT ON CONSTRUCTION SITES AND URBAN AREAS  
 2. ALL DISTURBED AREAS SHALL BE STABILIZED AS SOON AS POSSIBLE AND SHALL BE MAINTAINED AS SUCH BY THE CONTRACTOR THROUGH THE DURATION OF THE PROJECT.



RETENTION POND  
 PLAN VIEW  
 NO SCALE

PROJECT NO. 09112	DRAWING NO. C-349	<b>RETENTION POND PLAN</b> <b>HALE COUNTY LANDFILL SITE</b> ALABAMA HIGHWAY @ CDAWVILLE, ALABAMA <b>GEO SPECIALTY CHEMICALS</b> COLUMBIA, GEORGIA 31008				<b>REVISIONS</b>	
		DRAWN C. LATHAM	CHECKED C. LATHAM	SCALE	DATE 02/09/09	NO.	DESCRIPTION
FIELD BOOK PAGE				MAP BOOK PAGE		SECTION 20 TOWNSHIP 19 RANGE 10	

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