PRELIMINARY DETERMINATION

PERMIT RENEWAL AND MODIFICATION

Cypress Creek Landfill, LLC
3 Waterway Square Place, Suite 550
The Woodlands, Texas 77316

Cypress Creek Landfill
Permit No. 63-18

April 24, 2025

Promus Engineering, on behalf of Cypress Creek Landfill, LLC., has submitted to the Alabama Department of Environmental Management (ADEM) an application to renew and modify the Solid Waste Disposal Facility Permit for the Cypress Creek Landfill (Permit No. 63-18). The modification includes revisions to grading plans, stormwater and erosion control plans, and an increase to the maximum average daily volume. The waste stream for the Cypress Creek Landfill would remain non-putrescible and non-hazardous construction and demolition waste and rubbish as defined by ADEM Admin. Code 335-13-1-.03, discarded tires, off-spec rubber material generated by BF Goodrich located in Tuscaloosa, AL, and nylon screens generated by Phifer Wire located in Tuscaloosa, AL. The service area for the Cypress Creek Landfill would remain Bibb, Fayette, Greene, Hale, Jefferson, Perry, Shelby, Sumter, Tuscaloosa and Walker Counties in the State of Alabama. The maximum average daily volume of waste disposed at the Cypress Creek Landfill would be 5,000 cubic yards per day. An extension of the previously approved variances was requested and would be granted in the renewed permit. All other conditions of the current permit for the Cypress Creek Landfill will remain the same.

The Cypress Creek Landfill is located in Section 7, Township 22 South, Range 9 West in Tuscaloosa County, Alabama. The facility acreage for the Cypress Creek Landfill will remain 121.0 acres with a disposal area of 87.9 acres.

The Land Division has determined that the permit renewal and modification meet all applicable requirements of ADEM's Administrative Code Division 13 regulations.

Technical Contact:

Hunter Baker
Solid Waste Engineering Section
Land Division

SOLID WASTE DISPOSAL FACILITY PERMIT

PERMITTEE:	**Cypress Creek Landfill, LLC**
FACILITY NAME:	**Cypress Creek Landfill**
FACILITY LOCATION:	**Part of the Northeast ¼ of the Northwest ¼ of Section 7, Township 22 South, Range 9 West in Tuscaloosa County, Alabama. The total area of the facility is approximately 121.0 acres with a disposal area of 87.9 acres.**
PERMIT NUMBER:	**63-18**
PERMIT TYPE:	**Construction/Demolition Landfill**
WASTE APPROVED FOR DISPOSAL:	**Non-putrescible and non-hazardous construction and demolition waste and rubbish as defined by ADEM Rule 335-13-1-.03, discarded tires, off-spec rubber material generated by BF Goodrich located in Tuscaloosa, AL, and nylon screens generated by Phifer Wire located in Tuscaloosa, AL.**
APPROVED WASTE VOLUME:	**Average Daily Volume of 5,000 cubic yards per day**
APPROVED SERVICE AREA:	**Bibb, Fayette, Greene, Hale, Jefferson, Perry, Shelby, Sumter, Tuscaloosa and Walker Counties in the State of Alabama**

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:	**?????**

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Alabama Department of Environmental Management

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE PERMIT

Permittee:	Cypress Creek Landfill LLC 3 Waterway Square Place, STE 510 The Woodlands, Texas, 77316
Landfill Name:	Cypress Creek Landfill
Landfill Location:	Part of the Northeast ¼ of the Northwest ¼ of Section 7, Township 22 South, Range 9 West Tuscaloosa County, Alabama
Permit Number:	63-18
Landfill Type:	Construction/Demolition

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 or Department), this permit is issued to Cypress Creek Landfill, LLC (hereinafter called the Permittee) to modify and continue to operate the solid waste disposal facility known as the Cypress Creek 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 335-13-16 of the ADEM Administrative Code (hereinafter referred to as the "ADEM Admin. Code 335-13"). 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 July 14, 2023, and as amended, for permit renewal and modification, and is 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.

_____ _____

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 335-13. 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 335-13, 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 ADEM Admin. Code 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 120 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. Before the Permittee may commence disposal of waste in any new cell or phase:

a. The Permittee must submit a letter to the Department signed by both the Permittee and a professional engineer stating that the facility has been constructed in compliance with this permit.

b. The Department must inspect the new cells or phases unless the Permittee is notified that the Department will waive the inspection.

c. The Permittee may not commence disposal activities in any new cells or phases until approval of the new cells or phases is granted by the Department.

13. Noncompliance. The Permittee shall report all instances of noncompliance with the permit at the time noncompliance is discovered.

14. 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 335-13-4-.21(1)(b).

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 inspections 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 industrial waste and special waste.

e. Groundwater monitoring records if required.

f. Explosive gas monitoring records if required.

g. Surface water monitoring records. Monitoring is subject to applicable conditions of Section VI. 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.

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, or as directed by the Department, and the reports shall be submitted at least semi-annually, or as directed by the Department. The reports should contain all monitoring results and conclusions from samples and measurements conducted during the sampling period. Explosive gas monitoring must be submitted once each year, 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 groundwater and 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 ADEM Admin. Code 335-13 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 ADEM Admin. Code 335-13 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 Cypress Creek Landfill, 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 pursuant to ADEM Admin. Code 335-1-1-.06.

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 335-13.

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, as provided in the application, for the detecting and preventing the disposal of free liquids, regulated hazardous waste, PCB's, regulated medical waste, and other unauthorized waste streams 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 shall not dispose of industrial process waste at this landfill except for those listed in Section III.B.

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 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 Cypress Creek Landfill facility is approximately 121.0 acres with a disposal area of 87.9 acres.

3. The maximum average daily volume of waste disposed at the facility shall not exceed 5,000 cubic yards per day. Should the average daily volume exceed this value by 20% or 100 tons/day, whichever is less, for two (2) consecutive quarters, the permittee shall be required to modify the permit in accordance with ADEM Admin. Code 335-13-5-.06(2)(b)2. The average daily volume shall be computed as specified by ADEM Admin. Code 335-13-4-.23(2)(f).

B. Waste Streams. The Permittee may accept for disposal non-putrescible and non-hazardous construction and demolition waste and rubbish as defined by ADEM Admin. Code 335-13-1-.03, discarded tires, off-spec rubber material generated by BF Goodrich located in Tuscaloosa, AL, and nylon screens generated by Phifer Wire located in Tuscaloosa, AL.

C. Service Area. The service area for this landfill, as contained in the permit application, is Bibb, Fayette, Greene, Hale, Jefferson, Perry, Shelby, Sumter, Tuscaloosa and Walker Counties in the State of Alabama.

D. Waste Placement, Compaction, and Cover. All waste shall be confined to an area as small as possible within a single working face and placed onto an appropriate slope not to exceed 3 to 1 (See Section VIII.2.). All waste shall be spread in layers two feet or less in thickness and thoroughly compacted weekly with adequate landfill equipment prior to placing additional layers of waste or placing the weekly cover. A minimum of six inches of compacted earth or other alternative cover material approved by the Department and listed in Section VIII shall be added at the conclusion of each week's operation.

E. Liner Requirements. At this time, the Permittee shall not be required to install a liner system. The base of the landfill shall be a minimum of five (5) feet above the highest measured groundwater level as determined by ADEM Admin. Code 335-13-4-.11(2)(a).

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 335-13.

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 ADEM Admin. Code 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 ADEM Admin. Code 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.

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 1 at the locations specified in the Application, and any other groundwater monitoring wells which are added during the active life and the post closure care period.

2. The Permittee shall maintain groundwater monitoring well PMW-1 and PMW-2 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 a plume of contamination or as otherwise deemed necessary to maintain compliance with ADEM Admin. Code 335-13.

4. Prior to installing additional groundwater monitoring wells, the Permittee shall submit a plan to ADEM with a permit modification request specifying the design, location and installation of additional monitoring wells. This plan shall be submitted within 120 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 inter-well 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 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 335-13.

3. Upon installation of proposed groundwater monitoring wells, the Permittee shall sample, and analyze for the parameters listed in Appendix I of ADEM Admin. Code 335-13-4-.27, in all monitoring wells identified in Section IV.A.2. on a quarterly basis for a period of two years, to establish background water quality and/or as directed by ADEM Admin. Code 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 1 for the parameters listed in Appendix I of ADEM Admin. Code 335-13-4-.27(3), on a semi-annual basis throughout the active life of the facility and the post-closure care period in accordance with ADEM Admin. Code 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 ADEM, within ninety (90) days of the date of sampling.

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. Monitoring wells shall be bailed or pumped to remove at least four times the well volume of water. Slow recharge wells shall be bailed until dry. Wells shall be allowed to recharge prior to sampling.

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 the Permittee or ADEM determines that the groundwater monitoring system no longer satisfies the requirements of ADEM Admin. Code 335-13-4-.14 or Section IV.A. of this permit, the Permittee must, within 120 days, submit an application for a permit modification to make necessary and/or appropriate changes to the system.

TABLE 1
GROUNDWATER MONITORING WELLS

Monitoring Well Number	Top of Casing (feet msl)	Part Monitoring
UPGRADIENT/BACKGROUND MONITORING WELL		
PMW-1	370.06	Entire Landfill
PMW-1R	TBI	Entire Landfill
PMW-2	354.04	Entire Landfill
DOWNGRADIENT MONITORING WELLS		
PMW-3	373.31	Entire Landfill
PMW-4	317.29	Entire Landfill
PMW-5	347.76	Entire Landfill
PMW-6	291.19	Entire Landfill
PMW-7	313.44	Entire Landfill
PMW-8	328.19	Entire Landfill
PMW-9	TBI	Entire Landfill

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*TBI- Well to be installed as described in the Groundwater Monitoring Plan

SECTION V. GAS MONITORING REQUIREMENTS

The Permittee must install and maintain an explosive gas monitoring system in accordance with ADEM Admin. Code 335-13.

SECTION VI. SURFACE WATER MANAGEMENT

The Permittee shall construct and maintain 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 ADEM Admin. Code 335-13.

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 Permittee has been granted a variance for 3 to 1 slopes for the final cover system (See Section VIII.3.). All other requirements for the final cover system shall comply with ADEM Admin. Code 335-13.

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 a registered professional 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 a minimum 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.

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 a registered professional engineer, verifying the post-closure has been completed according to the Post-Closure Plan.

J. Recording Instrument. The Permittee must provide documentation of compliance with the requirements of the Uniform Environmental Covenants Program in ADEM Admin. Code 335-5 and shall execute the following:

1. Record a notation onto the land deed within 90 days from the certification of closure. 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.

2. File the covenant at the courthouse where the land deed is held within thirty (30) days of receipt of the covenant signed by ADEM's Land Division Chief.

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

K. 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. The Permittee is granted a variance for the previously disposed waste in the buffer zone. No future disposal is permitted in the buffer zone. The existing waste in the buffer zone shall be graded and final cover shall be constructed as per Major Permit Modification Drawings Submitted in March 2004.

2. The Permittee is granted a variance from ADEM Admin. Code 335-13-4-.23(1)(c) requiring 4 to 1 operating slopes. The Permittee shall be allowed 3 to 1 operating slopes (See Section III.D.).

3. The Permittee is granted a variance from ADEM Admin. Code 335-13-4-.20(2)(c)2. requiring 4 to 1 slopes for the final cover system. The Permittee shall be allowed 3 to 1 slopes for the final cover system (See Section VII.A.).

4. The Permittee is granted a variance from ADEM Admin. Code 335-13-4-.12(2)(f) along the northwest corner of the landfill boundary as shown in the September 22, 2021 application. No buffer zone is required along this boundary line.

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.

Permit Application

PROMUS ENGINEERING
1200 Mountain Creek Road, Suite 102
Chattanooga, Tennessee 37405
T. (888) 811-9066
www.promusengineering.com

July 14, 2023

Mr. Hunter Baker
Alabama Department of Environmental Management (ADEM)
Land Division – Solid Waste Branch
1400 Coliseum Blvd.
Montgomery, Alabama 36110
Hunter.Baker@adem.alabama.gov

RE: Permit Renewal & Minor Modification Request
Cypress Creek Landfill
ADEM Permit No. 63-18

Dear Mr. Baker:

On behalf of our client, Cypress Creek Landfill, LLC (the Owner), we are pleased to submit this application for permit renewal and request for minor modification to the solid waste permit for Cypress Creek Landfill located in Tuscaloosa, Alabama. Included herein are a permit renewal application, a discussion of the requested modifications, an updated Operations Manual, and revised Permit Drawings. Permit fees will be remitted under separate cover. The specifics of each are discussed in the paragraphs below.

YARDAGE INCREASE

The Owner has received approval from the Tuscaloosa County Commission to increase the maximum daily waste acceptance rate from 2,000 cubic yards per day to 5,000 cubic yards per day. We are requesting approval from ADEM to increase the maximum daily waste acceptance accordingly in the facility permit. Documentation of the local approval is included in Appendix B of the enclosed Operations Manual.

GROUNDWATER MONITORING PLAN

The statistical methodology presented in the Groundwater Monitoring Plan has been changed to intra-well from inter-well. Upgradient monitoring well PMW-1 will be abandoned without replacement, due to it being unnecessary as data are consistent with upgradient monitoring well PMW-2. We are also proposing to install a new sampling location PMW-9 prior to waste placement in future Cell 8. The revised Groundwater Monitoring Plan is included as Appendix L.

PERMIT DRAWINGS

The future perimeter grading in multiple areas outside of the landfill on the previous permit drawings did not tie to the existing topography. The proposed final cover did not tie to the proposed basegrades around the landfill perimeter in some areas as well. We have corrected both items on these drawings by tying the basegrades to the existing topographic survey. The revised drawings provide detailed grading for the perimeter berm, perimeter stormwater conveyance features, and incorporate a perimeter access road, which was not included in the previous drawings. The stormwater conveyance features generally follow the approved design, and the addition of the road will provide improved access to the existing sediment ponds and future landfill cells. The bottom grade revisions are depicted on Sheet 3 of the Drawings.

We have also revised the final cover grades to tie to the revised perimeter basegrades. The maximum horizontal extents of waste, maximum waste slope, and maximum waste elevation of the landfill will remain unchanged from the previous drawings. We have revised the final cover geometry on inside corners by adding a smooth radius to the grades in lieu of a sharp valley. The radius design will minimize the potential for waste overfills and formation of erosion rills from concentrated stormwater flow. The final cover revisions are depicted on Sheet 4 of the Drawings.

Finally, we have revised the stormwater management and erosion control plan to provide additional detail on the erosion and sediment control best management practices (BMPs). We have incorporated tack-on stormwater diversions approximately every 25 vertical feet, as well as corrugated plastic downdrain pipes to convey water to the bottom of the landfill into perimeter channels. The overall concept of stormwater flow has not been revised from the previous design. The revised stormwater management and erosion control features are depicted on Sheet 7 of the Drawings.

VARIANCES

The Owner is requesting re-approval the following variances in the permit. Each of the variances is currently approved and are simply being re-requested.

1) The Permittee requests a variance for the previously disposed waste in the buffer zone as depicted in Sheet 2 of the Permit Drawings. No future disposal will be permitted in the buffer zone. The existing waste in the buffer zone shall be graded and final cover shall be constructed per Permit Drawings.

2) The Permittee requests a variance from ADEM Rule 335-13-4-.23(l)(c) requiring 4 to 1 operating slopes. The Permittee requests 3 to 1 operating slopes (See Section III.D.).

3) The Permittee requests a variance from ADEM Rule 335-13-4-.20(2)(c)2. requiring 4 to 1 slopes for the final cover system. The Permittee requests 3 to 1 slopes for the final cover system.

4) The Permittee requests a variance from ADEM Rule 335-13-4-.12(2)(f) along the northwest corner of the landfill boundary. A copy of the previously-approved variance allowing this buffer waiver is included as Appendix K of the permit application.

We appreciate your time and effort in reviewing this permit renewal application and request for permit modifications. Should you have any questions or comments, please contact me via phone at (888) 811-9066 or email at rwitcher@promusengineering.com.

Sincerely,

PROMUS ENGINEERING, LLC



C. Rob Witcher, PE
Principal Engineer

Distribution: *Mr. Hunter Baker, ADEM*
Mr. Matthew Belden, Cypress Creek Landfill
Mr. Joe Vieceli, Waste Connections

Attachments: *Operations Manual*
Revised Permit Drawings

OPERATIONS MANUAL

CYPRESS CREEK LANDFILL
ADEM PERMIT NUMBER 63-18

Tuscaloosa, Alabama

July 2023

Promus Project No. 230087

Prepared for:

Cypress Creek Landfill, LLC

Prepared by:

PROMUS ENGINEERING



1200 Mountain Creek Road, Suite 102 | Chattanooga, Tennessee 37405

www.promusengineering.com

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Operations Manual

Cypress Creek Landfill

Tuscaloosa, Alabama

1. INTRODUCTION

1.1. Purpose

The Operations Manual for the Cypress Creek Landfill (Permit #63-l8) has been prepared primarily as a guideline for use by landfill personnel in the daily operations and maintenance of the facility throughout its active life, closure, and post-closure care period. It also contains specifications for materials and procedures to be used to construct and close the landfill facility. Additionally, this manual contains data that pertains specifically to the regulatory requirements for obtaining a permit to operate a C/D Landfill.

This Operations Manual is accompanied by Design Plans that provide a detailed presentation of the engineering design of the facility. These Plans will be referenced throughout the Manual. The Landfill Supervisor should become familiar with the contents of this Operations Manual and the Design Plans. Each should be maintained in the Operator's Office at the landfill for review by ADEM personnel during periodic site inspections.

1.2. General Facility Information

The landfill was originally permitted as L.C. Harris Landfill (ADEM permit no. 63-07R/63-18) in or prior to 1988 with a permitted area of approximately 40 acres. The landfill was acquired by Mr. Ford Williams, dba Cypress Creek, Inc. in 1995 when the name was changed to Cypress Creek Landfill. The facility was expanded by an additional 80 acres in 1997. The permit was transferred to Mr. Knox Horner in June 2004 with the indication that Cypress Creek, Inc. was purchased by Mr. Horner. An application for name change was made in March 2011 to change ownership from Cypress Creek Landfill, Inc. to Unison Environmental Services, LLC. In 2021, the facility was acquired by Cypress Creek Landfill, LLC, which is a wholly owned subsidiary of Waste Connections, Inc. The permitted waste boundary currently encompasses 87.9 acres.

The site is located approximately 200 feet east of U.S. Highway 82 located in Section 7, Township 22 South, Range 9 West in Tuscaloosa County, Alabama. A vicinity map of the landfill's location is provided in the engineering drawings included with this manual. The proposed waste stream accepted at the facility consists of non-putrescible and non-hazardous construction and demolition waste and rubbish as defined by ADEM Rule 335-13-1-.03, discarded tires, off-spec rubber material generated by BF Goodrich located in Tuscaloosa, AL, and nylon screens generated by Phifer Wire located in Tuscaloosa, AL. The service area of the Cypress Creek Landfill includes Bibb, Fayette, Greene, Hale, Jefferson, Perry, Shelby, Sumter, Tuscaloosa, and Walker Counties in the State of Alabama.

1.3. Boundary Description

Cypress Creek Landfill, LLC owns nine (9) parcels totaling 121.00 acres, of which 87.9 acres may be used for the disposal of waste as defined in Section 5.2 of this manual. A boundary plat and legal description of the properties are provided in Appendix F of this manual. Permanent markers designating the limits of C/D waste disposal have been installed so they are at least visible from one marker to the next. A boundary survey of the property is included in Appendix D.

1.4. Applicable Regulations

The permitting of C/D Landfills in the State of Alabama is prescribed by the solid waste disposal regulations stated in the ADEM Administrative Code Division 13, Rule 335-13-4, which establishes criteria for the construction, operation, and closure of solid waste disposal facilities.

1.5. Location Standards

Rule 335-13-4-.01 of the ADEM Administrative Code Division 13 Regulations outlines location standards that must be addressed in order to prevent adverse effects on human health and the environment when siting a C/D landfill. The siting standards that apply to the Cypress Creek Landfill property and the appropriate documentation to address those standards are as follows:

1.5.1. 100-Year Floodplain

> *A facility located in a floodplain shall not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste, so as to pose a hazard to human health and the environment.*

The facility is not located within the 100-year floodplain. A current flood insurance rate map (FIRM), published by the Federal Emergency Management Agency (FEMA), is included in Appendix E.

1.5.2. Threatened and Endangered Species

1. *A facility shall not jeopardize the continued existence of endangered or threatened species protected under the Endangered Species Act of 1973.*
2. *The facility shall not result in the destruction or adverse modification of critical habitats protected under the Endangered Species Act of 1973.*

A *Wetlands Delineation and Endangered Species Study*, prepared in 1995 by Carter, Darnell, and Grubbs Engineers, Inc., concluded that the facility is not likely to have a negative impact on federally protected species. A copy of the report is included in Appendix F.

1.5.3. Airports

> *A MSWLF unit shall not be sited within 10,000 feet of any airport runway end. Owners or operators proposing to renew existing or site new MSWLF units located within a five-mile radius of any airport runway must notify the affected airport and the Federal Aviation Administration (FAA).*

The facility is not located within 10,000 feet of an airport runway. The nearest airport to the facility is Tuscaloosa National Airport, which is located approximately 7 (37,000 feet) miles northwest of the facility.

1.5.4. Faults, Seismic Zones, and Unstable Areas

Zones of active faults, seismic impact zones and unstable areas shall be avoided in locating facilities and practices unless a site-specific evaluation as described below, demonstrates minimum potential for adverse effects upon waters of the State.

1. *Site specific evaluations for geology and hydrology shall comply with 335-13-4-.11 through 335-13-4-.14.*
2. *Site specific evaluation shall include minimum design parameters necessary to protect the waters of the State and human health to include minimum requirements of 335-13-4-.15 through 335-13-4-.24.*
3. *Landfill Units shall not be located within 200 feet of a fault that has had displacement within the Holocene epoch unless the owner or operator demonstrates to the Department that an alternative setback distance of less than 200 feet will not result in damage to the structural integrity of the facility and will be protective of human health and the environment.*
4. *Landfill units shall not be located in seismic impact zones, unless the owner or operator demonstrates to the Department that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.*
5. *Landfill units shall not be located in an unstable area unless engineering measures have been incorporated in the design of the facility to ensure that the integrity of the structural components of the facility will not be disrupted. The following factors, at a minimum, must be considered when determining whether an area is unstable:*
    - *i. On-site or local soil and subsurface conditions that may result in significant differential settling;*
    - *ii. On-site or local geologic or geomorphologic features; and*
    - *iii. On-site or local human-made features or events (both surface and subsurface).*

Geologic and hydrogeologic criteria were addressed in a Hydrogeologic Report prepared by TTL, Inc. in 1997. A copy of the report is included in Appendix H.

1.5.5. Historical and Archaeological Areas

Landfill units shall not be located on a site that is archaeologically or historically sensitive as determined by the Alabama Historical Commission. Written certification must be provided from the State Historic Preservation Officer.

An *Archaeological Survey and Cultural Resources Evaluation*, prepared in 1995 by Environmental Resource Analysts, states that the investigation did not reveal the presence of any cultural remains

or the location of any significant cultural resources within the area of the landfill. A copy of the report is included in Appendix G.

1.6. Water Quality Standards

Rule 335-13-4-.01 of the ADEM Administrative Code Division 13 Regulations outlines water quality standards that must be addressed in order to prevent adverse effects on human health and the environment when siting a C/D landfill. The siting standards that apply to the Cypress Creek Landfill property and the appropriate documentation to address those standards are as follows:

1.6.1. Waters of the State

> *A facility shall not cause a discharge of pollutants into waters of the State, including wetlands, that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES), Alabama Water Pollution Control Act, Code of Alabama 1975, §§ 22-22-1 to 22-22-14 and/or section 404 of the Clean Water Act, as amended.*
>
> *A facility shall not cause non-point source pollution of waters of the State, including wetlands, that violates any requirements of an area wide and Statewide water quality management plan that has been approved under the Alabama Water Pollution Control Act.*

A National Pollutant Discharge Elimination System (NPDES) stormwater discharge permit (Permit Number ALG160073) has been obtained for discharge into waters of the state. The landfill will not result in a discharge of dredge or fill material into waters of the state. Sources of non-point pollution will be mitigated by the use of management practices, such as silt fences, straw bales, vegetative covers, diversion structures, and sediment control structures. A copy of the current NPDES Stormwater Discharge Permit is included in Appendix I.

Design calculations for the existing sediment ponds and stormwater management features, prepared by Quantum Environmental and Engineering Services, LLC in 2017, are included herein as Appendix J.

1.6.2. Wetlands

> *Landfill units including buffer zones shall not be permissible in wetlands, beaches or dunes.*
>
> *Landfill units shall not be permissible in any location where the disposal of solid waste would significantly degrade wetlands, beaches or dunes.*
>
> *Landfill units shall be located outside the boundaries of the coastal area, unless no other reasonable alternative is available. If a site within the coastal area is proposed for development as a landfill unit, it shall be demonstrated to the satisfaction of the Department that siting, design, construction, and operation will ensure that present levels of coastal plants and animals will be maintained.*

Environmental Resource Analysts performed a wetlands delineation for the facility in 1995. The U.S. Fish & Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (USACE) both concurred with their finding that no wetlands area present onsite.

TTL, Inc. performed a wetlands delineation in 2002 and delineated wetlands along an intermittent tributary that crosses the property from east to west. A sediment pond was constructed on the northern edge of the property that resulted in filling approximately 0.6 acres of wetlands (124 linear feet of intermittent stream). The total wetlands impacted by the pond was 0.39 acres. Prior to construction of the pond, the facility owner obtained approval from the USACE under Nationwide Permit 39 (Jurisdictional Number ALNW02-02284-K).

Both wetland delineations and concurrence letters for each are included in Appendix F.

1.7. Facility Contact Persons

Questions and comments concerning the Cypress Creek Landfill may be addressed by:

Mr. Matthew Belden
District Manager
Waste Connections
6315 12th Avenue East
Tuscaloosa, Alabama 35405
(205) 750-0553

2. HYDROGEOLOGIC REPORT

A *Hydrogeologic Report* was prepared for the subject landfill and groundwater was monitored January through May 1997 to determine seasonal high elevations in accordance with Rule 335-13-4-.11(2). A separation of more than five feet was maintained from the highest groundwater elevations for design of the bottom elevations of the disposal area.

The *Hydrogeologic Report*, prepared by TTL, Inc. in 1997, is included herein as Appendix H.

3. LANDFILL MONITORING

3.1. Explosive Gas Monitoring Plan

The generation of explosive gases, especially methane (CH_4) can occur when organic wastes at the landfill decompose. Landfill gas migration can result in vegetation damage (i.e. landfill cover vegetation) and can even result in explosions if concentrations exceed 5%. The Landfill Operator shall monitor for explosive gases at the facility during the active life, closure and post-closure care period as required by ADEM and in accordance with the following gas monitoring plan.

3.1.1. Location of Gas Monitoring Wells

Explosive gas monitoring locations are shown along the landfill property on the engineering plans included with this manual. These gas monitoring locations are placed no more than 300 feet apart and are no more than 100 feet apart in areas where a dwelling is within 1,000 feet of the landfill property boundary. The locations shall be monitored using either a pre-drilled gas monitoring probe or the barhole punch method. If probes are installed, the probe depth shall be 6 feet, or at the groundwater or rock elevations, whichever is encountered first. In addition to the explosive gas wells,

other monitoring stations include on-site structures, culverts, drop inlets, and other locations which are conducive to gas accumulation.

3.1.2. Explosive Gas Monitoring Procedures and Reporting Plan

Monitoring will be conducted on an annual basis, or as otherwise specified by ADEM, using an explosive gas meter, calibrated to methane, visual observation, or other device deemed appropriate. In addition, onsite building structures will be identified and levels of explosive gas will be measured inside the structure.

Monitoring reports shall express the levels of gas detected in percent methane by volume and percent lower explosive limit. The monitoring reports shall be submitted to ADEM and placed in the operating record of the facility within 30 days of the monitoring event.

The maximum allowable methane gas concentration in the probes/barholes at the facility boundary shall be the lower explosive limit (LEL) for methane, or 5% by volume. The maximum allowable methane gas concentration in the facility structures is 25% of the LEL for methane, or 1.25% by volume. Should explosive gas levels exceed the LEL at any point along the property boundary or twenty five percent around or inside any facility structure, the interval of testing shall be increased to monthly. Should concentrations approach the established limits, then testing should be increased to weekly or daily to detect dangerous levels of combustible gas.

Within 7 days of detection, the landfill supervisor shall place in the Operating Record, the explosive gas levels detected and the immediate steps taken to protect human health and property.

Within 20 days of detection, the landfill supervisor shall submit to ADEM 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 ADEM within 60 days of detection. Within this 60 day period, a copy of the plan shall be placed in the Operating Record and ADEM shall be notified of the plan's implementation.

3.2. Groundwater Monitoring Plan

A groundwater sampling and analysis plan has been prepared for the facility. The Plan is included herein as Appendix L.

3.3. Stormwater Monitoring Plan

The landfill operator shall monitor stormwater discharges in accordance with monitoring requirements stated in the NPDES stormwater discharge permit.

4. GENERAL OPERATIONAL STANDARDS

4.1. Origin of Waste

The service area of the Cypress Creek Landfill includes Bibb, Fayette, Greene, Hale, Jefferson, Perry, Shelby, Sumter, Tuscaloosa, and Walker Counties in the State of Alabama.

4.2. Acceptable Waste

The proposed waste stream accepted at the facility consists of non-putrescible and non-hazardous construction and demolition waste and rubbish as defined by ADEM Rule 335-13-1-.03, discarded tires, off-spec rubber material generated by BF Goodrich located in Tuscaloosa, AL, and nylon screens generated by Phifer Wire located in Tuscaloosa, AL.

4.3. Unacceptable Waste

Typical waste streams that are unacceptable at the Cypress Creek Landfill are household garbage, ash, medical waste, sewage sludge and insecticides/herbicides. Non-putrescible material that has been mixed with household garbage may not be disposed of at this facility. Industrial waste may not be disposed of at this facility unless approved by ADEM. Containerized and bulk liquid waste will not be disposed of at the facility.

4.4. Daily Volume

The maximum daily volume received at the landfill will be 5,000 cubic yards per day.

4.5. Restricted Waste Detection Plan

The following plan shall be implemented by the Landfill Operator to detect and prevent the disposal of hazardous and restricted wastes at the landfill facility.

1. The landfill personnel shall make random inspections of incoming loads to ensure that the loads do not contain hazardous or restricted waste.
2. The landfill personnel shall inspect any suspicious load.
3. The landfill personnel shall keep records of the inspections performed at the facility. The information recorded from each inspection shall be the following:
    - The origin of the waste (if known) that is suspected to be hazardous or restricted at the facility,
    - The transporter of the waste.
    - Any certifications that are provided by the waste generator.
4. The landfill personnel shall receive training from the Landfill Operator to detect hazardous or restricted waste.
5. The Landfill Operator shall notify ADEM, the waste generator, and the transporter if any hazardous or restricted waste is discovered.
6. The Landfill Operator shall notify ADEM prior to allowing the disposal of any waste stream that may be questionable in terms of being acceptable at a C/D Landfill.

4.6. Open Burning

Open burning of solid waste shall not occur at the landfill unless it is approved by ADEM as follows:

1. Clearing debris at the landfill such as trees and stumps may be burned if prior approval is received from ADEM and the Alabama Forestry Commission.

2. Emergency clean-up debris resulting from catastrophic incidents may be burned at the landfill if prior approval is received from ADEM and the other appropriate agencies.
3. If approved, open burning shall not occur over previously filled areas or within 200 feet of the existing disposal operations unless otherwise specified by ADEM.
4. If approved, open burning shall not cause a public nuisance or pose a threat to public health.
5. A copy of the approval shall be maintained in the Facility Operating Record.

A written request shall be submitted to ADEM by the person or agency requesting permission to burn solid waste. The request shall be made by submitting the following information to ADEM in writing:

1. The type of waste to be burned,
2. The reason for the request,
3. The specific area of the landfill to be utilized,
4. Projected days and hours of operation, and
5. Projected starting/completion dates of the project.

4.7. Personnel and Personnel Facilities

An adequate number of trained personnel will be provided to ensure continued and smooth operation of the site. Personnel who will be at the site on a daily basis will have access to facilities which provide shelter, communications, lavatory, and toilets which will be kept clean and well repaired. An operator certified by ADEM shall be present onsite during all ours of operation, in accordance with the requirements of ADEM Administrative Code 335-13-12.

4.8. Landfill Equipment

The equipment mainatained at the facility will vary depending on the operational needs at any specific time. Typically, the following equipment (or others that will achieve the same results) will be dedicated to operating the facility:

- 1 track-type dozer;
- 1 landfill compactor;
- 1 track-type hydraulic excavator (or tractor with pan);
- 1 haul truck (or tractor with pan);
- 1 water pump; and
- miscellaneous tools and equipment.

Scheduled maintenance will be performed to keep the equipment in good working order. Equipment substitutions, deletions, and additions may occur as necessary to facilitate waste flow and facility operations. In case of equipment breakdown, arrangements will be made for the acquisition of substitute equipment so that proper continued operation of the landfill may occur.

4.9. Monitoring Structures

Monitoring structures will be protected from damage due to heavy equipment operation by notifying the landfill personnel of the location of the structures and by ensuring that each structure is marked,

and that vegetation is properly maintained. The monitoring structures will be inspected by the landfill personnel on a biannual basis to ensure that they remain in good repair.

5. SPECIFIC REQUIREMENTS

5.1. Unloading and Compacting Waste

The basic design parameter of this landfill is its capacity to hold waste. This capacity is maximized by adequately compacting the waste that is unloaded at the landfill. Waste which is capable of being compacted and does not require special disposal methods shall be unloaded at the general working face and thoroughly spread in layers two feet or less in thickness. The waste shall be thoroughly compacted with adequate landfill equipment prior to placing additional layers of waste on it. The waste shall also be thoroughly compacted prior to placing monthly cover over the working face.

5.2. Confining Waste Area

The landfill operator shall confine the waste in the smallest area possible that still allows for adequate equipment operation. It is important to keep in mind that the capacity of the landfill to hold waste is reduced by the volume of cover material that is applied each month. Therefore, the landfill operator shall minimize the amount of cover material required by confining the waste to a small area that will allow for adequate equipment operation.

5.3. Operating Face

The landfill operator shall dump waste onto the working face and spread along the face in approximately two-foot-thick layers. Each layer should then be compacted with a minimum of three (3) passes with a compactor, or as otherwise determined acceptable to achieve adequate compaction of the waste, prior to spreading another layer of waste.

5.4. Cover Material

A minimum of six inches of soil cover shall be placed over the working area at the conclusion of each week's operation to control disease vectors, fires, odors, blown litter and scavenging. The cover material shall be excavated from an adjacent unused portion of the landfill disposal area, or other borrow area, as shown in the Excavation Plan provided in the engineering drawings.

5.5. Scavenging and Salvaging

Scavenging shall not be permitted with the facility. The landfill supervisor shall control traffic in and out of the active disposal areas and shall lock the entrance gate on the main access road during all closed hours to minimize the potential for scavenging. Salvaging shall be allowed only in a designated area of the landfill that is away from the working face.

5.6. Litter Control

The landfill will continue to maintain litter control practices to minimize the potential for litter to be blown from the working face onto other areas of the landfill, adjacent property, and access roads.

The practices shall include portable litter fences, permanent litter fences, or a combination of each. Additionally, the landfill personnel shall periodically collect, dispose of, and cover windblown litter that escapes the active landfill area.

5.7. Fire Control

The landfill operator shall implement fire control measures in the active disposal areas. These measures shall include but are not limited to the following:

1. Access to a vehicle equipped with a water tank sufficient capacity to extinguish small fires that could occur at the working face.
2. The telephone number of the Tuscaloosa Fire Department posted in the Operator's Office.
3. Designated smoking areas away from the disposal area.

5.8. Vector Control

Vector control at the landfill shall be the responsibility of the landfill operator. Weekly cover shall be used to prevent the transmission of disease by vectors. Waste that could encourage vector breeding shall not be left uncovered at the site. Areas where standing water accumulates will be graded to promote positive runoff.

5.9. Access Control Structures

The site shall be adequately secured to prevent unauthorized access. Perimeter fencing and a security gate located at the main access road to the facility will remain locked except during hours of operation and when personnel are on site. Vehicular access along the property boundary is limited by vegetation and the existing topography.

5.10. Landfill Signs

A sign shall be posted near the entrance to the facility which includes the following information:

1. Name of permittee,
2. Owner and/or Operator,
3. Name of landfill,
4. Days and hours of operation,
5. Waste types accepted, and
6. Disposal fees for use of the landfill.

5.11. Adverse Weather Operations

A “wet weather” accessible area may be utilized when direct access to the working face is not possible due to adverse weather conditions. Access to the area will be provided with all-weather roads. The Landfill Manager shall determine the need for a “wet weather” area. Measures (such as the construction of temporary diversion ditches) will be taken as necessary at the active cells to minimize run-off and run-on from entering the work area.

5.12. Record Keeping

An Operating Record shall be maintained at the landfill facility and the Cypress Creek, LLC office. The documents to be kept in the Operating Records will include, but are not limited to, the following:

1. Daily/Quarterly Volume Reports;
2. Certifications from ADEM for Industrial Users Inspection Reports of Incoming Loads;
3. Solid Waste Disposal Facility Permit Operation Manual;
4. Design Drawings;
5. NPDES Permit(s);
6. Best Management Practice Plan;
7. Closure Plan;
8. Copies of Documentation and Correspondence; and
9. Quarterly volume reports will be submitted to ADEM on or before the 15th day of the month following each quarterly period ending in March, June, September, and December.

6. CLOSURE PLAN

6.1. Final Closure Schedule

Upon notifying the Department that Cypress Creek, LLC intends to complete final closure of the landfill, a final closure schedule that provides approximate dates of completing final closure requirements will be submitted to ADEM for approval. This Closure Schedule will become effective 30 days after the final receipt of waste occurs at the landfill facility.

6.2. Maximum Inventory of Waste

Upon final closure of this facility, the Landfill Operator shall submit to ADEM an estimate of the maximum amount of waste that has been disposed in the C/D Landfill. This will be accomplished through the use of volume reports completed during the active life of the landfill, and through a comparison of the initial and final contours of the facility.

6.3. Final Grading

The Closure Plan for this landfill includes a final cover grading and drainage plan as required by ADEM Administrative Code, Rule 335-13-4-.20. The regulations require that the final soil cover be graded so that:

1. Surface water does not pond over the landfill unit.
2. The final grade does not exceed 25 percent or as specified by ADEM to minimize erosion.
3. Slopes longer than 25 feet shall require horizontal terraces, of sufficient width for equipment operation, for every 20 feet rise in elevation or utilize other erosion control measures approved by ADEM.

4. The final grade for the disposal facility shall not be less than 5 percent or as specified by ADEM to minimize ponding.
5. Final grading of the infiltration layer shall be completed within 90 days after the unit has received the last known receipt of waste.

The Permit Drawings have been revised to provide clarification on the final cover and final stormwater management system components. The facility was previously granted a variance to fill the waste slopes to a maximum grade of 3H:1V, and the Owner has requested to extend this variance with this permit renewal. The minimum grade of the final cover will remain 5 percent. The revised permit drawings depict these slopes, as well as a series of "tack-on" stormwater diversion berms and letdowns to manage stormwater on the final cover.

Final cover construction will be initiated within 90 days of receipt of the last known load of waste and will be constructed in accordance with the following section.

6.4. Final Cover System

All portions of the proposed C/D Landfill and existing Inert Landfill disposal areas are required to be in compliance with the final cover requirements stated in the ADEM Administrative Code Division 13, Rule 335- 13-4-.20(2). This Rule requires the installation of a final cover system that is designed to minimize infiltration and erosion. The final cover system must be comprised of an erosion layer underlain by an infiltration layer as follows:

1. The infiltration layer must be comprised of a minimum of 18 inches of compacted earthen material excluding sands, and
2. The erosion layer must consist of a minimum of 6 inches of earthen material that is capable of sustaining native plant growth.

The landfill operator must select a source of material to construct the 18-inch infiltration layer. Upon location of a material source, whether on-site or off-site, laboratory analysis must be performed to determine the following:

1. Maximum Dry Density and Optimum Moisture Content (ASTM D-698);
2. Atterberg Limits (ASTM D-4318);
3. USCS Classification (ASTM D-2487); and
4. Remolded Hydraulic Conductivity (ASTM D-5084).

The landfill disposal area shall be graded and compacted to provide a stable subbase upon which the infiltration layer can be constructed. The clay infiltration layer material shall then be placed in layers or loose "lifts" not to exceed 8 inches and compacted to the Standard Proctor Density defined by the laboratory analysis necessary to achieve a permeability coefficient less than or equal to $1x10^{-5}$ cm/sec. This procedure shall be continued for three lifts to complete the 18-inch-thick infiltration layer.

Above the infiltration layer shall be a six (6) inch thick layer of topsoil. The topsoil shall be a loamy soil, refuse, or subsoil and reasonably free from bard lumps, clay, brush, etc. The material shall be suitable for growing grasses or other vegetative ground cover.

6.5. Vegetative Plan

Upon completion of the final cover, a vegetative cover shall be established to prevent erosion and maximize evapotranspiration. Deep rooted vegetation (vegetation with roots that may grow below the six-inch erosion layer) are prohibited from use as a vegetative cover.

Within 90 days following the completion of final grading, the Landfill Operator shall prepare the earth cover for the establishment of the vegetative layer by preparing the seed bed and placing the appropriate species of grass, fertilizer, lime, and mulch. Vegetation shall be placed in accordance with the current version of the *Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas*, or approved equivalent.

6.6. Access Control Structures and Signs

The facility gate shall remain locked except during post-closure inspections by the Landfill Operator or ADEM. A sign shall be posted by the gate which states that the facility is closed and will give the location of the nearest permitted facility. If unauthorized waste is dumped at the facility after closure, it will be removed and disposed of at an approved facility.

6.7. Deed Record

Within 90 days after closure requirements are achieved, Cypress Creek, Inc. shall record a notation onto the land deed or onto some other legal instrument that is normally examined during a title search, that will in perpetuity, notify any potential purchaser of the property that:

1. The land has been used as a solid waste disposal facility.
2. That post-closure use of the property must never be allowed to disturb the integrity of the final cover or the function of the monitoring systems, unless ADEM determines that the activities will not increase the potential threat to human health or the environment; or the activities are necessary to reduce the threat to human health or the environment.
3. The locations and dimensions of the disposal facility with respect to permanently surveyed benchmarks and section comers have been placed on a plat prepared and sealed by a land surveyor.
4. The Permittee of the Cypress Creek Landfill is Cypress Creek, LLC (or current Owner) and the facility was utilized for the disposal of construction/ demolition debris.
5. Certification has been made an independent professional engineer licensed in the State of Alabama that all closure requirements have been completed as determined by ADEM.

Upon completion of the deed recording requirements, the Landfill Operator shall submit a certified copy of the recording instrument to ADEM and place a copy in the operating record.

6.8. Engineers Certification

Upon completion of closure activities, the Engineer shall document in a report that closure activities have being performed in accordance with the approved closure plan. Upon completion of closure activities, the Engineer shall review the site and certify that closure requirements have been accomplished in accordance with the closure plan. This certification shall then be placed in the public records along with the deed information stated above.

If Cypress Creek, LLC, or any subsequent owner of this property wishes to remove the waste, waste residues, or contaminated soils from the landfill, the owner shall request approval from ADEM. The owner will also request approval from ADEM to remove the notation from the recording instrument if alt waste and contaminated soils are removed from the property and no unpermitted discharges to state waters have occurred.

7. POST-CLOSURE PLAN

7.1. Post-Closure Care For 30-Years

The landfill operator must maintain the landfill and continue monitoring requirements throughout the post- closure care period. The post-closure maintenance and monitoring period shall continue for thirty years or for a period of time that has otherwise been determined by ADEM.

7.2. Change in Length of Post Closure Care Period

The length of the post-closure care period may be decreased by ADEM if the landfill supervisor demonstrates that a reduced period is sufficient to protect human health and the environment and the demonstration is approved by ADEM.

The length of the post-closure care period may also be increased if ADEM determines that the lengthened period is necessary to protect human health and the environment.

7.3. Post-Closure Plan

Upon final closure of the C/D Landfill, Cypress Creek does not have any further plans to utilize any portion of the landfill property. If Cypress Creek intends to have any post-closure use for the property in the future, ADEM will be notified.

Post-closure use of the property shall not disturb the integrity of the final cover or any component of the monitoring systems. Maintenance or post-closure use with equipment shall only be performed during dry periods to prevent damage to the final cover system.

7.4. Landfill Gas Monitoring During Post-Closure

The Landfill Operator shall monitor for explosive gases annually during post-closure in accordance with the following gas monitoring plan:

1. Monitoring will be conducted at a minimum depth of six feet in each permanent well. Monitoring will also be conducted in buildings and other areas conductive to gas accumulation.
2. Monitoring reports shall express the levels of gas detected in percent methane and percent LEL. The monitoring reports will be submitted to ADEM and placed in the landfill closure record within 30 days of the monitoring event.
3. If the explosive gas level exceeds the LEL at the well locations at the facility boundary, ADEM will be notified immediately and all necessary steps will be taken to protect human health and the property.

7.5. Stormwater Monitoring During Post-Closure

Stormwater monitoring shall be performed in accordance with the current NPDES Permit for a period of time specified by the Department.

7.6. Facility Maintenance

The landfill operator shall maintain the landfill property for the post-closure care period as determined by ADEM. The landfill operator shall inspect the facility on a monthly basis and after major storm events to identify problems with vector control, erosion, cracks, ponding, settlement and other such deficiencies.

Eroded areas shall be filled with suitable soil cover, compacted graded and revegetated in accordance with Section 6.5 of this manual. Areas that allow surface water ponding due to settlement shall also be filled, graded and vegetated. Extensive surface cracks must be identified and corrected to prevent the infiltration of surface water.

7.7. Post-Closure Certification

Following the completion of the post-closure care period of this C/D Landfill, the landfill operator will submit to ADEM a certification, signed by an independent professional engineer licensed in the State of Alabama verifying that post-closure care has been completed in accordance with the post-closure plan. A copy of the certification will also be placed in the C/D Landfill Operating Record.

7.8. Post-Closure Care Contacts

Any questions or comments during the Post-Closure Care Period of this facility may be addressed by the following:

Cypress Creek Landfill, LLC
3 Waterway Square Place, Suite 550
The Woodlands, TX 77316

Alabama Department of Environmental Management
Solid Waste Section, Land Division
1400 Coliseum Blvd.
Montgomery, Alabama 36130

APPENDIX A

Solid Waste Permit 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)
__X__ Construction and Demolition Landfill (C/DLF)
_____ CCR Landfill (CCRLF)
_____ CCR Surface Impoundment (CCRSI)
_____ Other (explain)_____

2. Facility Name Cypress Creek Landfill

3. Applicant/Permittee:

Name: Cypress Creek Landfill, LLC

Address: 3 Waterway Square Place, Suite 550
The Woodlands, Texas 77316

Telephone: (205) 750-0553

If applicant/permittee is a Corporation, please list officers:

Names of Officers provided in disclosure statement on file with ADEM

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

Township 22 South **Range** 9 West
Section 7 **County** Tuscaloosa

5. Land Owner:

Name: Cypress Creek Landfill, LLC

Address: 3 Waterway Square Place, Suite 550
The Woodlands, Texas 77316

Telephone: (205) 750-0553

(Attach copy of agreement from landowner if applicable.)

6. Contact Person:

Name: Matthew Belden

Position or Affiliation: District Manager

Address: 6315 12th Ave E
Tuscaloosa, Alabama 35405

Telephone: (813) 944-8847

7. Size of Facility: 121.0 Acres

Size of Disposal Area(s): 87.9 Acres

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

State of Alabama Counties Bibb, Fayette, Greene, Hale, Jefferson, Perry, Shelby, Sumter, Tuscaloosa, and Walker

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

_____ Tons/Day 5,000 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-putrescible and non-hazardous construction and demolition waste and rubbish as defined by ADEM Rule 335-13-1-.03, discarded tires, off-spec rubber material generated by BF Goodrich located in Tuscaloosa, AL, and nylon screens generated by Phifer Wire located in Tuscaloosa, AL.

SIGNATURE (Responsible official of permit applicant):

Matthew Belden TITLE: District Manager

Matthew Belden DATE: 14 July 23
(please print or type name)

APPENDIX B

Local Approval

Initial Landfill Approval – 1995

RESOLUTION TO APPROVE A CONSTRUCTION/DEMOLITION LANDFILL SITE IN TUSCALOOSA COUNTY

WHEREAS, the Tuscaloosa County Commission has developed a Solid Waste Management Plan in accordance with Section 22-27-47 of the Code of Alabama; and

WHEREAS, Cypress Creek, Inc. has proposed the development of an 80 acre construction/demolition landfill in Section 7, Township 22 South, Range 9 West located south of the Tuscaloosa City Limits; and

WHEREAS, the service area for the proposed landfill has been defined to include Tuscaloosa County, Greene County, Hale County, Perry County, Bibb County, Shelby County, Jefferson County, Walker County, Fayette County, and Sumter County, Alabama; and

WHEREAS, the average daily volume has been defined as 2000 cubic yards per day; and

WHEREAS, Cypress Creek, Inc., also intends to expand the service area of the L.C. Harris Landfill to the above listed counties and to increase the average daily volume to 2000 cubic yards per day; and

WHEREAS, the Tuscaloosa County Commission did publish a Notice of Hearing to Accept Public Comment Concerning Approval of a Proposed Construction/Demolition Landfill and permit modification in Tuscaloosa County, and said notice was published at least 30 days prior to the hearing, and said notice was published in the Tuscaloosa News; and

WHEREAS, a public hearing was held on Monday, November 20, 1995, at 9:00 a.m. at the Tuscaloosa County Courthouse, Tuscaloosa, Alabama, to accept public comment concerning the approval of the proposed construction/demolition landfill site and proposed permit modification; and

WHEREAS, in determining whether to recommend approval of the new construction/demolition landfill site and proposed permit modification, the Tuscaloosa County Commission has considered each of the following:

1. The consistency of the proposal with the County's solid waste management need as identified in its plan;

2. The relationship of the proposal to local planned or existing development, or the absence thereof, to major transportation arteries, and to existing state primary and secondary roads;

3. The relationship of the proposed facility to existing industries in the state that generate large volumes of solid waste, or the relationship to the areas projected for development of industries that will generate solid waste;

4. The costs and availability of public services, facilities and improvements which would be required to support the facility in this location and protect public health, safety and the environment;

5. The impact of the proposed facility on public health and safety and provisions made to minimize the impact on public health and safety; and

6. The social and economic impacts of the proposed facility on the affected community, including changes in property values, and social or community perception, and other costs.

THEREFORE, BE IT RESOLVED that the Tuscaloosa County Commission hereby approves the proposed Cypress Creek Construction/Demolition Landfill and the proposed permit modification in accordance with its approved Solid Waste Management Plan.

CERTIFICATION

I, the undersigned, as Clerk of the Tuscaloosa County Commission, hereby certify that the foregoing is a true and correct copy of a resolution duly adopted by the Commission at its regular meeting held on the 29th day of November, 1995.

Robert H. Johnston

Robert H. Johnston, Clerk

The Tuscaloosa News

Tuscaloosa, Alabama 35402

LEGAL NOTICE
NOTICE OF HEARING TO ACCEPT PUBLIC COMMENT CONCERNING APPROVAL OF A PROPOSED CONSTRUCTION/ DEMOLITION LANDFILL IN TUSCALOOSA COUNTY

The Tuscaloosa County Commission shall accept public comment concerning approval of a 80 acre proposed construction/demolition landfill in Tuscaloosa County to be owned and operated by Cypress Creek, Inc. and the expanded service area and volume of the existing L.C. Harris Landfill. The proposed facility lies in Section 7, Township 22 South, Range 9 West and is located south of the Tuscaloosa City Limits. The service area of the proposed facility includes Tuscaloosa County, Greene County, Hale County, Perry County, Bibb County, Shelby County, Jefferson County, Walker County, Fayette County, and Sumter County, Alabama. The proposed landfill and the modified permit for the existing landfill would allow an average daily volume of up to 2000 cubic yards per day.

In determining whether to recommend approval of the proposed issuance of a new construction/demolition landfill site and the modified permit, the Tuscaloosa County Commission shall consider each of the following:

1. The consistency of the proposal with the County's solid waste management need as identified in its plan.
2. The relationship of the proposal to local planned or existing development or the absence thereof, to major transportation arteries and to existing state primary and secondary roads;
3. The location of a proposed facility in relationship to existing industries that generate large volumes of solid waste, or the relationship to the areas projected for development of industries that will generate solid waste;
4. Cost and availability of public services, facilities and improvements required to support a proposed facility and protect public health, safety and the environment;
5. The impact of a proposed facility on public safety and provisions made to minimize the impact on public health and safety; and
6. The social and economic impacts of a proposed facility on the affected community, including changes in property values, and social or community perception.

Interested persons are invited to comment on this proposal at a public hearing to be held on November 20, 1995, at 9:00 a.m. at the Tuscaloosa County Courthouse, Tuscaloosa, Alabama. Anyone having questions concerning this proposal may contact Robert Johnston with the Tuscaloosa County Commission.

THE TUSCALOOSA NEWS
October 25,
November 1, 8, 15, 1995

) the attached notice was published in The Tuscaloosa News once a week

secutive weeks: viz. October 25, November 1, 8, 15, 1995

Legal Clerk

n to before me on this the 17th day of November 19 95

Notary Public

My Commission Expires 10-21-98

West Alabama
Planning & Development Council

4200 Highway 69 North • Suite 1
Northport, AL 35476
(205) 333-2990 • FAX: (205) 333-2713

James E. Gay, Chairman
Leland Avery, Vice-Chairman

Robert B. Lake, Executive Director

June 24, 1997

PROJECT #

RECEIVED JUN 2 6 1997

Ms. Melanie Caton
Carter, Darnell and Grubbs Engineers, Inc.
P.O. Box 278
Andalusia, AL 36420

Subject: Proposed Cypress Creek Landfill
Tuscaloosa County, Alabama

Dear Ms. Caton:

The West Alabama Planning and Development Council has received your request for a statement of consistency regarding the proposed 80 acre Cypress Creek Landfill in Tuscaloosa County for the disposal of construction and demolition materials.

We have evaluated the proposal using the provisions of the 1989 West Alabama Regional Solid Waste Needs Assessment which notes the L.C. Harris Landfill and the Holt Landfill, both of which are permitted for construction materials. The needs assessment states that the total acreage for these two landfills was 85 acres with 79 acres usable for landfill. It was projected that both landfills would reach capacity by 1995. I understand that the proposed Cypress Creek Landfill is located at the site of the former L.C. Harris facility.

Based upon this information, we have determined that the proposed 80 acre facility's capacity does not exceed expected regional needs, and the proposal is consistent with the solid waste needs assessment for Tuscaloosa County.

Sincerely,

Robert B. Lake

RBL:JDR

cc: Probate Judge W. Hardy McCollum

Yardage Increase Approval – 2023

STATE OF ALABAMA §

COUNTY OF TUSCALOOSA §

RESOLUTION OF LOCAL HOST GOVERNMENT APPROVAL FOR LANDFILL PERMIT MODIFICATION

WHEREAS, the Cypress Creek Landfill (formerly known as the L.C. Harris Landfill) is a construction and demolition landfill facility owned and operated by Cypress Creek, L.L.C.; and

WHEREAS, the Cypress Creek Landfill operates under Alabama Department of Environmental Management (ADEM) permit Number 63-18; and

WHEREAS, the current permit restricts the waste acceptance rate to 2,000 cubic yards per day; and

WHEREAS, the only other construction and demolition waste disposal facility open to the public and located within Tuscaloosa County is preparing to close, severely limiting the availability of construction and demolition landfill within the county; and

WHEREAS, the Cypress Creek Landfill is requesting a modification of its permit from ADEM to increase the maximum acceptance rate at its facility to 5,000 cubic yards per day; and

WHEREAS, Section 22-27-48 of the Code of Alabama (1975) requires approval from the local host government before ADEM will consider an application from the landfill operator.

NOW, THEREFORE, BE IT RESOLVED by the Tuscaloosa County Commission, as follows:

The Tuscaloosa County Commission grants local host government approval of the application by Cypress Creek Landfill to increase the maximum acceptance rate at its facility to 5,000 cubic yards per day.

IN WITNESS WHEREOF, the Tuscaloosa County Commission has caused this Resolution to be executed in its name and on its behalf by its Chairman on this the 21st day of June, 2023.

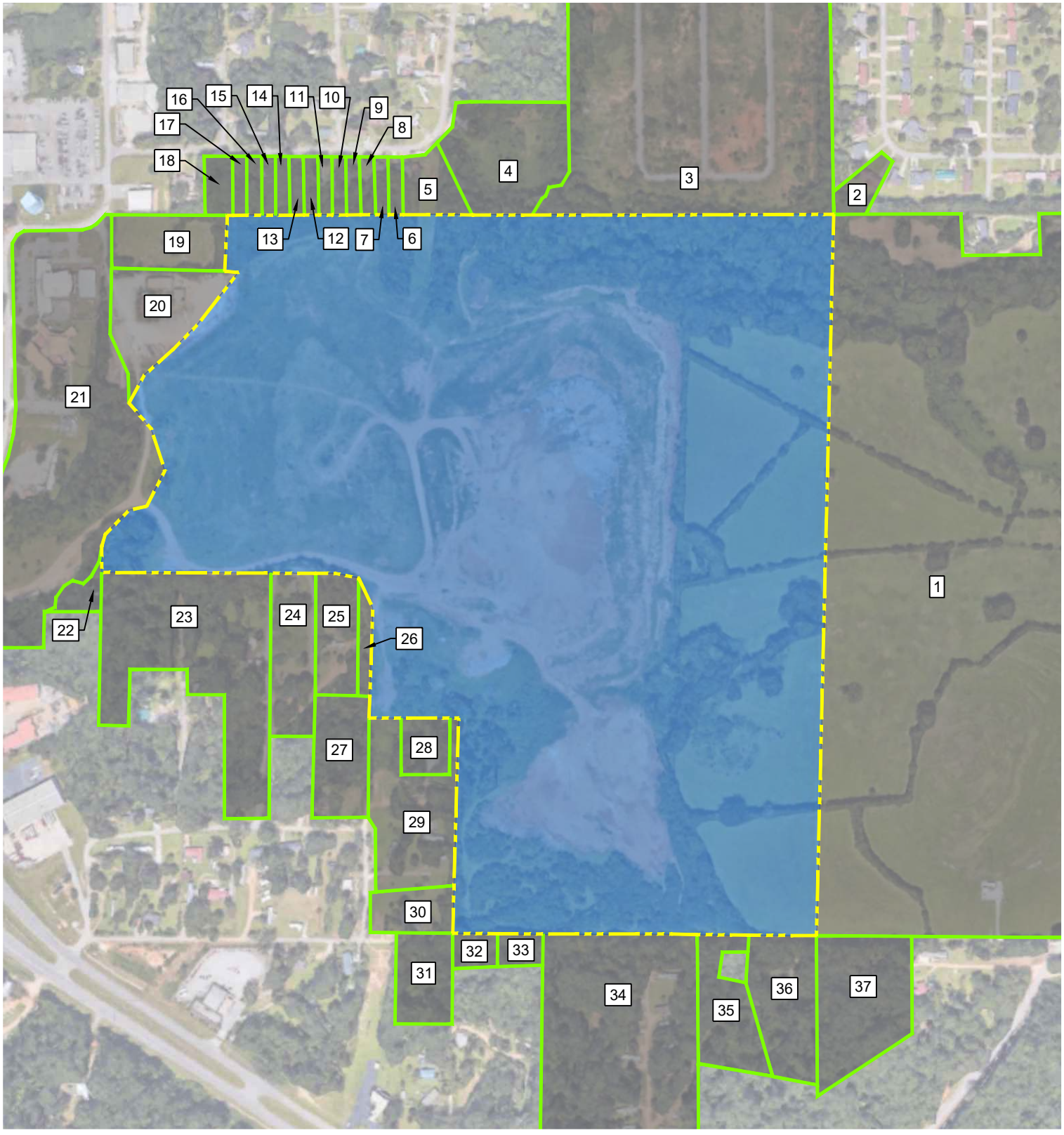
Ward D. Robertson, III, Chairman
Tuscaloosa County Commission

ATTEST:

Melvin Vines, County Administrator

APPENDIX C

Adjacent Property Owner's Map



250 0 250 500

SCALE IN FEET

NOTES:

1. PROPERTY TRACT BOUNDARIES AND OWNER INFORMATION WERE OBTAINED FROM THE TUSCALOOSA COUNTY, ALABAMA GIS WEBSITE ON JULY 3, 2023.

LEGEND

- 5 — PARCEL ID
- LANDFILL PROPERTY
- ADJACENT PARCEL

DESCRIPTION	APPR. BY	DRA. BY	DATE	REV
ISSUED FOR PERMITTING	CRW	CRW	07/2023	0

PREPARED FOR:

CYPRESS CREEK LANDFILL, LLC
6315 12th AVENUE EAST
TUSCALOOSA, ALABAMA 35405

PREPARED BY:

PROMUS ENGINEERING
www.promusengineering.com

ADJACENT PROPERTY OWNERS

PERMIT RENEWAL
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA

FIGURE NO.
C

APPENDIX C

ADJACENT PROPERTY OWNERS

ID	PARCEL	OWNER NAME	ADDRESS	CITY	STATE	ZIP
1	63 37 03 07 1 001 002.000	Smith LLC	13152 Woodview Rdg.	Northport	AL	35475
2	63 37 03 06 4 002 006.000	Lasonya Michelle Wright	2003 58th St.	Tuscaloosa	AL	35405
3	63 37 03 06 4 002 013.002	Robert L Skelton	8933 Taylorwood Lane	Tuscaloosa	AL	35405
4	63 37 03 06 3 010 001.000	Loretta G. Witherspoon	15 Ross Dr.	Tuscaloosa	AL	35404
5	63 37 03 06 3 010 002.000	Bary Tidmore	1427 58th St. E.	Tuscaloosa	AL	35405
6	63 37 03 06 3 010 003.001	Bary Tidmore	1427 58th St. E.	Tuscaloosa	AL	35405
7	63 37 03 06 3 010 003.000	Otis Davis Jr. (Life Estate)	1415 58th St. E.	Tuscaloosa	AL	35405
8	63 37 03 06 3 010 003.002	Otis Davis	1415 58th St. E.	Tuscaloosa	AL	35405
9	63 37 03 06 3 010 004.000	Clarence Gardner	5314 12th Ave. E.	Tuscaloosa	AL	35405
10	63 37 03 06 3 010 005.000	Frederick Harris	PO Box 4	Tuscaloosa	AL	36744
11	63 37 03 06 3 010 006.000	Frederick Harris	PO Box 4	Tuscaloosa	AL	36744
12	63 37 03 06 3 010 007.000	Robert C Anderson	4400 Lakeside Cv	Tuscaloosa	AL	35405
13	63 37 03 06 3 010 008.001	Cedric Holifield	2209 56th St. E.	Tuscaloosa	AL	35405
14	63 37 03 06 3 010 008.000	Cedric Holifield	2209 56th St. E.	Tuscaloosa	AL	35405
15	63 37 03 06 3 010 009.000	Cedric Holifield	2209 56th St. E.	Tuscaloosa	AL	35405
16	63 37 03 06 3 010 010.000	Madison Annie Etal	3516 35th St.	Tuscaloosa	AL	35401
17	63 37 03 06 3 010 011.000	Epps Delanie Etal	1505 9th Way N	Tuscaloosa	AL	35406
18	63 37 03 06 3 010 012.000	Grover Thompson Jr.	5640 Cedar Rock Dr.	Nashville	TN	37211
19	63 37 03 07 2 001 006.000	Cemetery	Boswell Rd	Tuscaloosa	AL	35401
20	63 37 03 07 2 001 007.002	Taylor Connie Etvir	536 Stone River Rd. N	Tuscaloosa	AL	35406
21	63 37 03 07 2 001 008.000	County of Tuscaloosa Alabama	6001 12th Ave. E.	Tuscaloosa	AL	35401
22	63 37 03 07 2 001 010.000	Miller Cindy Michelle Jones	255 S. River Dr.	Shelby	AL	35143
23	63 37 03 07 2 001 015.000	Howard Clayton Marcum	6308 Greenwood Dr.	Tuscaloosa	AL	35405
24	63 37 03 07 2 001 017.000	Wayne & Doris Earl	6217 Martin Bayou Dr.	Biloxi	MS	39532
25	63 37 03 07 2 001 018.001	Frank P Marcum	6100 Greenwood Dr.	Tuscaloosa	AL	35405
26	63 37 03 07 2 001 022.001	Frank P Marcum	6100 Greenwood Dr.	Tuscaloosa	AL	35405
27	63 37 03 07 2 001 018.000	Edgar C Ross II	1802 Cottonwood Rd.	Carrollton	TX	75006
28	63 37 03 07 2 001 020.000	Towne & Country Properties LLC	38472 AL Hwy 69	Moundville	AL	35474
29	63 37 03 07 2 001 019.001	Trenton Matthew Gardner	1537 Greenwood Cir	Tuscaloosa	AL	35405
30	63 37 03 07 2 001 019.005	Dean Kip Etux Schryer	1511 Greenwood Cir.	Tuscaloosa	AL	35405
31	63 37 03 07 3 001 007.000	Lucy Campbell	1445 Greenwood St.	Tuscaloosa	AL	35405
32	63 37 03 07 4 001 001.000	Charlene Gunn	590 Birkhead Rd.	Winfield	MO	63389
33	63 37 03 07 4 001 001.001	Frankie Baker Hammond	1816 Dhort 14th St. N.	Bessemer	AL	35020
34	63 37 03 07 4 001 003.000	Cullen & Connor G. Cook	12852 Gooden Dr.	Tuscaloosa	AL	35405
35	63 37 03 07 4 001 006.000	Cathy & Ray Gant Dye (Life Estate)	52 Brookhaven Dr,	Tuscaloosa	AL	35405
36	63 37 03 07 4 001 006.002	Cathy & Ray Gant Dye	1901 Hope Ln.	Tuscaloosa	AL	35401
37	63 37 03 07 4 001 007.000	Cathy & Ray Gant Dye	1901 Hope Ln.	Tuscaloosa	AL	35401

Source: Tuscaloosa County GIS: https://www.alabamagis.com/Tuscaloosa

Ownership information accessed on July 3, 2023

APPENDIX D

Boundary Survey
(Crafton Tull, 2021)

This survey coordinated, but not performed, by Commercial Due Diligence Services. Survey obtained from and certified to by a land surveyor licensed in the state property is located.

CDS COMMERCIAL DUE DILIGENCE SERVICES

1 TITLE DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE COUNTY OF TUSCALOOSA, STATE OF ALABAMA, AND IS DESCRIBED AS FOLLOWS:

ALL THAT CERTAIN LOT OR PARCEL OF LAND SITUATED IN THE COUNTY OF TUSCALOOSA, STATE OF ALABAMA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

TRACT I
A PART OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, LOCATED IN TUSCALOOSA COUNTY, ALABAMA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: START AT THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 7; THENCE RUN IN AN EASTERLY DIRECTION ALONG THE SOUTH LINE OF SAID NORTHEAST QUARTER OF THE NORTHWEST QUARTER FOR A DISTANCE OF 873.49 FEET TO THE POINT OF BEGINNING; THENCE CONTINUE IN AN EASTERLY DIRECTION ALONG THE SOUTH LINE OF SAID NORTHEAST QUARTER OF THE NORTHWEST QUARTER FOR A DISTANCE OF 123.23 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 91 DEGREES 52 MINUTES TO THE RIGHT, RUN IN A SOUTHERLY DIRECTION FOR A DISTANCE OF 122.99 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 156 DEGREES 29 MINUTES TO THE RIGHT, RUN IN A NORTHWESTERLY DIRECTION FOR A DISTANCE OF 113.48 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 55 DEGREES 39 MINUTES TO THE LEFT, RUN IN A NORTHWESTERLY DIRECTION FOR A DISTANCE OF 79.29 FEET TO THE POINT OF BEGINNING; SAID PARCEL CONTAINING 0.09 ACRES, MORE OR LESS.

TRACT II
PART OF THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY, ALABAMA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT A 1 INCH IRON PIPE AND BEING ACCEPTED AS THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF SAID SECTION 7; THENCE RUN NORTH 89 DEGREES, 58 MINUTES, 15 SECONDS, EAST AND ALONG THE SOUTH LINE OF SAID WEST HALF OF THE NORTHEAST QUARTER 809.69 FEET TO A CAPPED REBAR (ALMON), SAID POINT BEING THE POINT OF BEGINNING; THENCE RUN NORTH 89 DEGREES, 57 MINUTES, 23 SECONDS, EAST AND ALONG SAID SOUTH LINE 520.55 FEET TO A 1INCH IRON PIPE AND BEING ACCEPTED AS THE SOUTHEAST CORNER OF SAID WEST HALF OF THE NORTHEAST QUARTER; THENCE RUN NORTH 01 DEGREES, 52 MINUTES, 54 SECONDS, EAST AND ALONG THE EAST LINE OF SAID WEST HALF OF THE NORTHEAST QUARTER 2672.64 FEET TO A 3/4 INCH IRON PIPE ACCEPTED AS THE NORTHEAST CORNER OF SAID WEST HALF OF THE NORTHEAST QUARTER; THENCE RUN NORTH 89 DEGREES, 56 MINUTES, 41 SECONDS, WEST AND ALONG THE NORTH LINE OF SAID WEST HALF OF THE NORTHEAST QUARTER 520.23 FEET TO A CAPPED REBAR (ALMON); THENCE RUN SOUTH 01 DEGREES, 53 MINUTES, 17 SECONDS, WEST 2673.55 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 31.92 ACRES, MORE OR LESS.

ALSO DESCRIBED AS THE FOLLOWING:

WEST 1/2 OF NORTHEAST 1/4 OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY, ALABAMA,

LESS AND EXCEPT:

A PARCEL OF LAND LYING AND BEING IN THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY, ALABAMA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF SAID WEST HALF OF NORTHEAST QUARTER OF SECTION 7; THENCE SOUTH 89 DEGREES 57 MINUTES 30 SECONDS EAST FOR A DISTANCE OF 635.00 FEET ALONG THE NORTH BOUNDARY OF SAID WEST HALF OF NORTHEAST QUARTER TO THE POINT OF BEGINNING; THENCE SOUTH 89 DEGREES 57 MINUTES 30 SECONDS EAST FOR A DISTANCE OF 178.64 FEET; THENCE SOUTH 01 DEGREES 52 MINUTES 22 SECONDS WEST FOR A DISTANCE OF 2673.65 FEET TO A CAPPED REBAR SET ON THE SOUTH BOUNDARY OF SAID WEST HALF OF NORTHEAST QUARTER; THENCE SOUTH 89 DEGREES 57 MINUTES 09 SECONDS WEST FOR A DISTANCE OF 809.89 FEET TO THE SOUTHWEST CORNER OF SAID WEST HALF OF NORTHEAST QUARTER; THENCE NORTH 01 DEGREES 44 MINUTES 15 SECONDS EAST FOR A DISTANCE OF 889.86 FEET ALONG THE WEST BOUNDARY OF SAID WEST HALF OF NORTHEAST QUARTER TO THE SOUTHWEST CORNER OF THAT PARCEL OF LAND DESCRIBED IN DEED BOOK 1998, PAGE 1423, AS RECORDED IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY; THENCE SOUTH 89 DEGREES 57 MINUTES 30 SECONDS EAST FOR A DISTANCE OF 633.63 FEET TO THE SOUTHEAST CORNER OF SAID PARCEL; THENCE NORTH 01 DEGREES 51 MINUTES 45 SECONDS EAST FOR A DISTANCE OF 1784.98 FEET TO THE POINT OF BEGINNING.

ALSO, LESS AND EXCEPT:

A PARCEL OF LAND LYING AND BEING IN THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY, ALABAMA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGIN AT THE NORTHWEST CORNER OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 7; THENCE SOUTH 01 DEGREES 51 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 1330.45 FEET ALONG THE WEST BOUNDARY OF SAID NORTHWEST QUARTER OF NORTHEAST QUARTER TO THE SOUTHWEST CORNER OF SAID NORTHWEST QUARTER OF NORTHEAST QUARTER, THENCE SOUTH 01 DEGREES 41 MINUTES 21 SECONDS WEST FOR A DISTANCE OF 454.49 FEET ALONG THE WEST BOUNDARY OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 7 TO A CAPPED REBAR, THENCE SOUTH 89 DEGREES 57 MINUTES 30 SECONDS EAST FOR A DISTANCE OF 633.63 FEET TO A CAPPED REBAR, THENCE NORTH 01 DEGREES 51 MINUTES 45 SECONDS EAST FOR A DISTANCE OF 1784.98 FEET TO A CAPPED REBAR SET ON THE NORTH BOUNDARY OF SAID NORTHWEST QUARTER OF NORTHEAST QUARTER, THENCE NORTH 89 DEGREES 57 MINUTES 30 SECONDS WEST FOR A DISTANCE OF 635.00 FEET TO THE POINT OF BEGINNING.

TRACT III
PARCEL 1:
A PARCEL OF LAND LYING AND BEING IN THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY, ALABAMA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGIN AT THE NORTHWEST CORNER OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 7; THENCE SOUTH 01 DEGREES 51 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 1330.45 FEET ALONG THE WEST BOUNDARY OF SAID NORTHWEST QUARTER OF NORTHEAST QUARTER TO THE SOUTHWEST CORNER OF SAID NORTHWEST QUARTER OF NORTHEAST QUARTER; THENCE SOUTH 01 DEGREES 41 MINUTES 21 SECONDS WEST FOR A DISTANCE OF 454.49 FEET ALONG THE WEST BOUNDARY OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 7 TO A CAPPED REBAR; THENCE SOUTH 89 DEGREES 57 MINUTES 30 SECONDS EAST FOR A DISTANCE OF 633.63 FEET TO A CAPPED REBAR; THENCE NORTH 01 DEGREES 51 MINUTES 45 SECONDS EAST FOR A DISTANCE OF 1784.98 FEET TO A CAPPED REBAR SET ON THE NORTH BOUNDARY OF SAID NORTHWEST QUARTER OF NORTHEAST QUARTER; THENCE NORTH 89 DEGREES 57 MINUTES 30 SECONDS WEST FOR A DISTANCE OF 635.00 FEET TO THE POINT OF BEGINNING.

PARCEL 2:
A PARCEL OF LAND LYING AND BEING IN THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY, ALABAMA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCE AT THE NORTHWEST CORNER OF SAID WEST HALF OF NORTHEAST QUARTER OF SECTION 7; THENCE SOUTH 89 DEGREES 57 MINUTES 30 SECONDS EAST FOR A DISTANCE OF 635.00 FEET ALONG THE NORTH BOUNDARY OF SAID WEST HALF OF NORTHEAST QUARTER TO THE POINT OF BEGINNING; THENCE SOUTH 89 DEGREES 57 MINUTES 30 SECONDS EAST FOR A DISTANCE OF 178.64 FEET; THENCE SOUTH 01 DEGREES 52 MINUTES 22 SECONDS WEST FOR A DISTANCE OF 2673.65 FEET TO A CAPPED REBAR SET ON THE SOUTH BOUNDARY OF SAID WEST HALF OF NORTHEAST QUARTER; THENCE SOUTH 89 DEGREES 57 MINUTES 09 SECONDS WEST FOR A DISTANCE OF 809.89 FEET TO THE SOUTHWEST CORNER OF SAID WEST HALF OF NORTHEAST QUARTER; THENCE NORTH 01 DEGREES 44 MINUTES 15 SECONDS EAST FOR A DISTANCE OF 889.86 FEET ALONG THE WEST BOUNDARY OF SAID WEST HALF OF NORTHEAST QUARTER TO THE SOUTHWEST CORNER OF THAT PARCEL OF LAND DESCRIBED IN DEED BOOK 1998, PAGE 1423, AS RECORDED IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY; THENCE SOUTH 89 DEGREES 57 MINUTES 30 SECONDS EAST FOR A DISTANCE OF 633.63 FEET TO THE SOUTHEAST CORNER OF SAID PARCEL; THENCE NORTH 01 DEGREES 51 MINUTES 45 SECONDS EAST FOR A DISTANCE OF 1784.98 FEET TO THE POINT OF BEGINNING.

LESS AND EXCEPT THE FOLLOWING:
A PARCEL OF LAND LYING AND BEING IN THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY, ALABAMA AND BEING PART OF THAT PROPERTY AS DESCRIBED IN DEED BOOK 1217, PAGE 633, RECORDED IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF THE SAID NORTHEAST QUARTER OF THE NORTHWEST QUARTER; THENCE SOUTH 89 DEGREES 58 MINUTES 00 SECONDS EAST A DISTANCE OF 11.87 FEET; THENCE SOUTH 02 DEGREES 31 MINUTES 58 SECONDS WEST A DISTANCE OF 210.19 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 89 DEGREES 58 MINUTES 15 SECONDS EAST A DISTANCE OF 480.76 FEET; THENCE SOUTH 32 DEGREES 29 MINUTES 56 SECONDS WEST A DISTANCE OF 84.46 FEET; THENCE SOUTH 40 DEGREES 34 MINUTES 52 SECONDS WEST A DISTANCE OF 175.26 FEET; THENCE SOUTH 46 DEGREES 30 MINUTES 22 SECONDS WEST A DISTANCE OF 213.32 FEET; THENCE SOUTH 52 DEGREES 02 MINUTES 47 SECONDS WEST A DISTANCE OF 69.59 FEET; THENCE SOUTH 29 DEGREES 03 MINUTES 03 SECONDS WEST A DISTANCE OF 121.02 FEET; THENCE NORTH 00 DEGREES 44 MINUTES 25 SECONDS EAST A DISTANCE OF 98.45 FEET; THENCE NORTH 21 DEGREES 20 MINUTES 24 SECONDS WEST A DISTANCE OF 177.73 FEET; THENCE NORTH 02 DEGREES 31 MINUTES 58 SECONDS EAST A DISTANCE OF 236.26 FEET TO THE POINT OF BEGINNING.

ALSO LESS AND EXCEPT PARCEL 1 AS DESCRIBED IN THE QUIT CLAIM DEED RECORDED FEBRUARY 23, 1994 IN BOOK 1171 PAGE 599 MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A PART OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, IN TUSCALOOSA COUNTY, ALABAMA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: START AT THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 7; THENCE RUN IN AN EASTERLY DIRECTION ALONG THE SOUTH LIKE OF SAID NORTHEAST QUARTER FOR A DISTANCE OF 621.30 FEET TO THE POINT OF BEGINNING; THENCE CONTINUE EASTERLY ALONG THE SOUTH LINE OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER FOR A DISTANCE OF 252.19 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 167 DEGREES 18 MINUTES TO THE LEFT, RUN IN A NORTHWESTERLY DIRECTION FOR A DISTANCE OF 10.94 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 13 DEGREES 17 MINUTES TO THE LEFT, RUN IN A WESTERLY DIRECTION FOR A DISTANCE OF 241.53 FEET TO THE POINT OF BEGINNING; SAID PARCEL CONTAINING .007 ACRES MORE OR LESS.

BENEFICIAL EASEMENTS LOCATED IN THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS AND BEING DESIGNATED AS CYPRESS CREEK ROAD CONTAINED IN THAT CERTAIN EASEMENT AND RIGHT OF WAY TO CYPRESS CREEK, INC. RECORDED IN DEED BOOK 1998, PAGE 19948 AND SUPPORTING AFFIDAVIT RECORDED IN DEED BOOK 2008, PAGE 23804 IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

PARCEL 4 (EASEMENT):
A PARCEL OF LAND LYING AND BEING IN THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST OF THE HUNTSVILLE MERIDIAN TUSCALOOSA COUNTY, ALABAMA, CONTAINING 0.193 ACRES, MORE OR LESS, BEING A PART OF THAT PROPERTY DEEDED TO THE COUNTY OF TUSCALOOSA, ALABAMA AND DESCRIBED IN DEED BOOK 817, PAGE 184 AS RECORDED IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF NORTHWEST QUARTER OF SAID SECTION 7; THENCE SOUTH 89 DEGREES 58 MINUTES 00 SECONDS EAST ALONG THE NORTH BOUNDARY OF SAID NORTHEAST QUARTER OF NORTHWEST QUARTER A DISTANCE OF 11.87 FEET THENCE SOUTH 02 DEGREES 31 MINUTES 58 SECONDS WEST A DISTANCE OF 75.59 FEET TO THE POINT OF BEGINNING, SAID POINT BEING ON THE EAST BOUNDARY OF SAID "THE COUNTY OF TUSCALOOSA, ALABAMA" PROPERTY; CONTINUE THENCE ALONG SAID EAST BOUNDARY SOUTH 02 DEGREES 31 MINUTES 58 SECONDS WEST A DISTANCE OF 205. 94 FEET; THENCE NORTH 87 DEGREES 39 MINUTES 40 SECONDS WEST A DISTANCE OF 31.31 FEET; THENCE NORTH 02 DEGREES 20 MINUTES 20 SECONDS EAST A DISTANCE OF 181.80 FEET; THENCE NORTH 30 DEGREES 57 MINUTES 23 SECONDS WEST A DISTANCE OF 57.23 FEET TO THE SOUTHEASTERLY RIGHT OF WAY MARGIN OF THE OLD BOSWELL ROAD (25 FEET FROM CENTERLINE); THENCE ALONG THE SAID CURVING SOUTHEASTERLY RIGHT OF WAY MARGIN OF BOSWELL ROAD (SAID CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 212.15 FEET) A DISTANCE OF 40.25 FEET; THENCE SOUTH 30 DEGREES 57 MINUTES 24 SECONDS EAST A DISTANCE OF 58.53 FEET TO THE POINT OF BEGINNING

PARCEL 5 (EASEMENT):
A PARCEL OF LAND LYING AND BEING IN THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST OF THE HUNTSVILLE MERIDIAN TUSCALOOSA COUNTY, ALABAMA, CONTAINING 1.253 ACRES, MORE OR LESS, BEING A PART OF PROPERTY DEEDED TO THE COUNTY OF TUSCALOOSA, ALABAMA AND DESCRIBED IN DEED BOOK 817, PAGE 184 AS RECORDED IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF NORTHWEST QUARTER OF SAID SECTION 7; THENCE SOUTH 89 DEGREES 58 MINUTES 00 SECONDS EAST ALONG THE NORTH BOUNDARY OF SAID NORTHEAST QUARTER OF NORTHWEST QUARTER A DISTANCE OF 11.87 FEET; THENCE SOUTH 02 DEGREES 31 MINUTES 58 SECONDS WEST ALONG THE EAST BOUNDARY AND THE PROLONGATION THEREOF OF SAID "THE COUNTY OF TUSCALOOSA, ALABAMA" PROPERTY A DISTANCE OF 446.45 FEET; THENCE SOUTH 21 DEGREES 20 MINUTES 24 SECONDS EAST ALONG SAID EAST BOUNDARY A DISTANCE OF 177. 73 FEET; THENCE SOUTH 00 DEGREES 44 MINUTES 25 SECONDS WEST ALONG SAID EAST BOUNDARY A DISTANCE OF 98.45 FEET; THENCE SOUTH 3 9 DEGREES 51 MINUTES 06 SECONDS EAST ALONG SAID EAST BOUNDARY A DISTANCE OF 104.90 FEET TO THE POINT OF BEGINNING; CONTINUE THENCE SOUTH 39 DEGREES 51 MINUTES 06 SECONDS EAST ALONG SAID EAST BOUNDARY A DISTANCE OF 27. 10 FEET; THENCE SOUTH 19 DEGREES 00 MINUTES 10 SECONDS EAST ALONG SAID EAST BOUNDARY A DISTANCE OF 30.53 FEET; THENCE SOUTH 16 DEGREES 05 MINUTES 14 SECONDS WEST A DISTANCE OF 191.93 FEET; THENCE SOUTH 57 DEGREES 58 MINUTES 49 SECONDS EAST A DISTANCE OF 61.89 FEET, MORE OR LESS, TO THE CENTER OF A BRANCH BEING THE EAST BOUNDARY OF SAID "THE COUNTY OF TUSCALOOSA, ALABAMA" PROPERTY; THENCE SOUTH 13 DEGREES 55 MINUTES 39 SECONDS WEST ALONG THE CENTER OF SAID BRANCH A DISTANCE OF 39.23 FEET; THENCE LEAVING SAID BRANCH RUN NORTH 82 DEGREES 02 MINUTES 22 SECONDS WEST A DISTANCE OF 76.20 FEET; THENCE SOUTH 62 DEGREES 10 MINUTES 54 SECONDS WEST A DISTANCE OF 80.58 FEET; THENCE SOUTH 47 DEGREES 43 MINUTES 28 SECONDS WEST A DISTANCE OF 175.90 FEET; THENCE SOUTH 26 DEGREES 56 MINUTES 58 SECONDS WEST A DISTANCE OF 147.79 FEET; THENCE SOUTH 67 DEGREES 13 MINUTES 27 SECONDS WEST A DISTANCE OF 165.16 FEET; THENCE NORTH 87 DEGREES 42 MINUTES 43 SECONDS WEST A DISTANCE OF 167.53 FEET TO THE EASTERLY RIGHT OF WAY MARGIN OF THE OLD BOSWELL ROAD (25 FEET FROM CENTERLINE); THENCE NORTH 07 DEGREES 55 MINUTES 05 SECONDS EAST ALONG SAID EASTERLY RIGHT OF WAY MARGIN A DISTANCE OF 60.13 FEET; THENCE NORTH 87 DEGREES 12 MINUTES 02 SECONDS EAST A DISTANCE OF 175.59 FEET; THENCE NORTH 64 DEGREES 38 MINUTES 02 SECONDS EAST A DISTANCE OF 69.07 FEET; THENCE NORTH 42 DEGREES 40 MINUTES 07 SECONDS EAST A DISTANCE OF 147.03 FEET; THENCE NORTH 47 DEGREES 43 MINUTES 28 SECONDS EAST A DISTANCE OF 321.74 FEET; THENCE NORTH 16 DEGREES 05 MINUTES 14 SECONDS EAST A DISTANCE OF 225.92 FEET TO THE POINT OF BEGINNING.

TRACT IV
PARCEL ONE: COM NORTHEAST COR SOUTHEAST 1/4-NORTHWEST 1/4 SOUTH 7 TOWNSHIP 22 SOUTH RANGE 9 WEST; TH WEST 195 TO POB; TH SOUTH 531 WEST 135; NORTH 395(S); NORTHWEST 17.3; NORTH 123; EAST 134(S) TO POB.

IT IS INTENDED TO CONVEY TAX PARCEL NUMBER 37-03-07-2-001-019.000

PARCEL TWO: BEGIN AT A POINT ON THE EAST LINE OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, WHICH SAID POINT IS 263 YARDS NORTH OF THE SOUTH EAST CORNER OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST; THENCE WEST AND PARALLEL WITH THE SOUTH LINE OF SAID NORTHWEST QUARTER OF SECTION 7 ALONG THE NORTH LINE OF THE LOT CONVEYED TO J. G. MARCUM, A DISTANCE OF 195 FEET; THENCE NORTH AND PARALLEL WITH THE EAST LINE OF SAID NORTHWEST QUARTER OF SECTION 7 A DISTANCE OF 177 YARDS TO THE NORTH LINE OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST; THENCE EAST ALONG SAID NORTH LINE OF SAID FORTY A DISTANCE OF 195 FEET TO A POINT ON THE EAST LINE OF THE SAID NORTHWEST QUARTER; THENCE SOUTH ALONG THE SAID EAST LINE OF THE NORTHWEST QUARTER A DISTANCE OF 177 YARDS TO THE POINT OF BEGINNING; SAID PROPERTY BEING A PART AND PARCEL OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY, ALABAMA. SURFACE RIGHTS ONLY.

THE LAND SHOWN IN THIS SURVEY IS THE SAME AS THAT DESCRIBED IN FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NUMBER **NCS-1066046-CO** WITH AN EFFECTIVE DATE OF MAY 27, 2021 AT 8:00 A.M.

3 SCHEDULE 'B' ITEMS

NOTES CORRESPONDING TO SCHEDULE "B":

10. POLE LINE PERMIT TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 434, PAGE 335** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT I) **DOES AFFECT, BLANKET IN NATURE**
11. OIL, GAS AND MINERAL LEASE TO HAWKEYE OIL & GAS, INC., RECORDED IN **DEED BOOK 964, PAGE 473** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT II AND TRACT III, PARCEL 1 AND 2) **DOES AFFECT, BLANKET IN NATURE**
12. DECLARATION OF RESTRICTIVE COVENANTS RECORDED IN **DEED BOOK 2004, PAGE 4487** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT II AND TRACT III, PARCEL 1 AND 2) **DOES AFFECT, BLANKET IN NATURE**
13. TERMS, CONDITIONS AND RESTRICTIONS CREATED BY AND CONTAINED IN THAT CERTAIN UNRECORDED OPTION AGREEMENT DATED MARCH 11, 2016, AS EVIDENCED BY THAT MEMORANDUM OF OPTION AGREEMENT RECORDED IN **DEED BOOK 2016, PAGE 6615** AND MEMORANDUM OF ASSIGNMENT OF OPTION RECORDED IN DEED **BOOK 2016, PAGE 8971**, BOTH IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT II) **DOES AFFECT, BLANKET IN NATURE**
14. THIS ITEM HAS BEEN INTENTIONALLY DELETED.
15. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 206, PAGE 378** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III, PARCEL 1 AND 2) **DOES AFFECT, BLANKET IN NATURE**
16. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 307, PAGE 38** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT II AND TRACT III, PARCEL 1 AND 2) **DOES AFFECT, BLANKET IN NATURE**
17. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 446, PAGE 627** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT II AND TRACT III, PARCEL 1 AND 2) **DOES AFFECT, BLANKET IN NATURE**
18. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 467, PAGE 35** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT II AND TRACT III, PARCEL 1 AND 2) **DOES AFFECT, BLANKET IN NATURE**
19. RIGHTS, RESERVATIONS, TERMS AND CONDITIONS AS SET FORTH IN **DEED BOOK 1998, PAGE 1423** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III, PARCEL 1) **DOES AFFECT, BLANKET IN NATURE**
20. RESERVATION OF COALBED METHANE GAS AND RIGHT OF WAY FOR INGRESS AND EGRESS AS RECORDED IN **DEED BOOK 2004, PAGE 4704** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III, PARCEL 2) **DOES AFFECT, BLANKET IN NATURE**
21. EASEMENT AND RIGHT OF WAY TO CYPRESS CRESS, INC. RECORDED IN **DEED BOOK 1998, PAGE 19948** AND SUPPORTING AFFIDAVIT RECORDED IN **DEED BOOK 2008, PAGE 23804** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III, PARCEL 3) **DOES AFFECT, SHOWN**
22. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 247, PAGE 513** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III, PARCEL 3) **DOES AFFECT, BLANKET IN NATURE**
23. EASEMENT TO COMCAST OF ALABAMA, INC. RECORDED IN **DEED BOOK 2011, PAGE 16139** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III, PARCEL 3) **DOES AFFECT, BLANKET IN NATURE**
24. RIGHT OF WAY AS RECORDED IN **DEED BOOK 2002, PAGE 16541** AND **DEED BOOK 2003, PAGE 2003** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III, PARCEL 3) **DOES AFFECT, SHOWN**
25. RIPARIAN RIGHTS INCIDENT TO THE PREMISES. (TRACT III, PARCEL 3) **DOES AFFECT, SOUTHWESTERLY PROPERTY LINE IS BORDERED BY CREEK, AS SHOWN**
26. THIS ITEM HAS BEEN INTENTIONALLY DELETED.
27. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 2015, PAGE 817** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III) **DOES AFFECT, SHOWN**
28. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 2015, PAGE 813** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT IV) **DOES AFFECT, SHOWN**
29. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 2015, PAGE 810** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT IV) **DOES AFFECT, SHOWN**
30. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 467, PAGE 37** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT IV) **DOES AFFECT, BLANKET IN NATURE**
31. SURFACE RIGHTS ONLY AS SET OUT IN **DEED BOOK 1133, PAGE 383** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT IV) **DOES AFFECT, BLANKET IN NATURE**
32. RIGHT OF WAY TO ALABAMA POWER COMPANY RECORDED IN **DEED BOOK 992, PAGE 460** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III, PARCELS 4 AND 5 - EASEMENT) **PENDING DOCUMENT**
33. RIGHTS OF OTHERS TO USE EASEMENT AND RIGHT OF WAY TO CYPRESS CRESS, INC. RECORDED IN **DEED BOOK 2008, PAGE 23804** IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA. (TRACT III, PARCELS 4 AND 5 - EASEMENT) **DOES AFFECT, AS SHOWN.**

4 SURVEYOR CERTIFICATION

TO:
FIRST AMERICAN TITLE INSURANCE COMPANY, COMMERCIAL DUE DILIGENCE SERVICES, AND WASTE CONNECTIONS OF ALABAMA, INC., A DELAWARE CORPORATION:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(A), 7(A), 7(B)(1), 7(C), 8, 9, 10, 13, 14, 16, 17, AND 19 (GRAPHICALLY DEPICT IN RELATION TO THE SUBJECT TRACT OR PROPERTY ANY OFFSITE EASEMENTS OR SERVITUDES BENEFITING THE SURVEYED PROPERTY AND DISCLOSED IN RECORD DOCUMENTS PROVIDED TO THE SURVEYOR AS PART OF THE SCHEDULE "A") OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON JULY 8, 2021.

DATE OF PLAT OR MAP: 10/07/2021

ALABAMA LICENSED PROFESSIONAL LAND SURVEYOR No. 35732 JEFFREY SCOTT PARKER

JEFFREY S. PARKER, PS #35732
JEFF.PARKER@CRAFTONTULL.COM

10/07/2021

2 TITLE INFORMATION

THE TITLE DESCRIPTION AND SCHEDULE B ITEMS HEREON ARE FROM FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NUMBER NCS-1066046-CO, DATED MAY 27, 2021.

9 LEGEND

PROPERTY LINE		SET IRON ROD (I.R.)	
P.O.B.	POINT OF BEGINNING	FOUND MONUMENT AS NOTED	
P.O.C.	POINT OF COMMENCEMENT	FP	FLAG POLE
(M)	MEASURED CALL		HANDICAP PARKING
(R)	RECORD CALL	MH	MANHOLE
M/L	MORE OR LESS	TB	TELEPHONE BOX
(N.T.S.)	NOT TO SCALE		UTILITY POLE
	CENTERLINE		LIGHT POLE
	CONCRETE		ELECTRIC CONTROL CABINET
	RAILROAD TRACK		ELECTRIC TRANSFORMER
	FENCE	EM	ELECTRIC METER
	BUILDING SETBACK LINE	FV	FIRE VALVE
	EASEMENT LINE		FIRE HYDRANT
OHE	OVERHEAD ELECTRIC		WATER VALVE
			GAS METER

Key to CDS ALTA Survey

1 TITLE DESCRIPTION
2 TITLE INFORMATION
3 SCHEDULE 'B' ITEMS
4 SURVEYOR CERTIFICATION
5 FLOOD INFORMATION
6 CEMETERY
7 POSSIB

This survey coordinated, but not performed, by Commercial Due Diligence Services. Survey obtained from and certified to by a land surveyor licensed in the state property is located.

CDS COMMERCIAL DUE DILIGENCE SERVICES

5 FLOOD INFORMATION

BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN ZONE "X" OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 01125C0519G, WHICH BEARS AN EFFECTIVE DATE OF JANUARY 16, 2014. (ZONE "X" IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) THIS PROPERTY IS NOT IN SPECIAL FLOOD HAZARD ZONE.

6 CEMETERY

THERE IS NO VISIBLE EVIDENCE OF CEMETERIES ON THE SUBJECT PROPERTY AT THE TIME OF SURVEY. (NOTE: THERE IS A CEMETERY BORDERING THE NORTH AND WEST PROPERTY LINES IN THE NORTHWEST CORNER OF THE PROPERTY)

12 PARKING INFORMATION

NO CLEARLY DEFINED PARKING SPACES OBSERVED ON SITE AT TIME OF SURVEY

13 LAND AREA

TRACT I ±0.09 AC OR 3920.40 SQFT
TRACT II ±31.90 AC OR 1389564.00 SQFT
TRACT III PARCEL 1 ±25.99 AC OR 1132124.40 SQFT
TRACT III PARCEL 2 ±23.84 AC OR 1038470.40 SQFT
TRACT III PARCEL 3 ±33.75 AC OR 1471048.38 SQFT
TRACT III PARCEL 4 ±0.19 AC OR 8423.26 SQFT
TRACT III PARCEL 5 ±1.25 AC OR 54569.15 SQFT
TRACT IV PARCEL 1 ±1.61 AC OR 70322.53 SQFT
TRACT IV PARCEL 2 ±2.38 AC OR 103650.36 SQFT
TOTAL: 121.00 AC OR 5270760.00 SQFT

14 BUILDING AREA

NO BUILDINGS OBSERVED ON SITE AT TIME OF SURVEY

15 BUILDING HEIGHT

NO BUILDINGS OBSERVED AT TIME OF SURVEY

11 SURVEYOR'S NOTES

1. NO OBSERVABLE EVIDENCE OF BUILDING CONSTRUCTION OR BUILDING ADDITIONS WITHIN RECENT MONTHS.

2. THERE WAS OBSERVABLE EVIDENCE OF RECENT EARTHWORK.

3. NO OBSERVABLE EVIDENCE OF CHANGES IN STREET RIGHT OF WAY LINES COMPLETED, AND AVAILABLE FROM THE CONTROLLING JURISDICTION AND NO OBSERVABLE EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS.

4. PROPERTY HAS PHYSICAL ACCESS TO 12TH AVENUE E AND GREENWOOD CIRCLE A PUBLIC STREET.

5. ALL STATEMENTS WITHIN THE CERTIFICATION, AND OTHER REFERENCES LOCATED ELSEWHERE HEREON, RELATED TO: UTILITIES, IMPROVEMENTS, STRUCTURES, BUILDINGS, PARTY WALLS, PARKING, EASEMENTS, SERVITUDES, AND ENCROACHMENTS; ARE BASED SOLELY ON ABOVE GROUND, VISIBLE EVIDENCE, UNLESS ANOTHER SOURCE OF INFORMATION IS SPECIFICALLY REFERENCED HEREON.

8 ZONING INFORMATION

CDS ZONING AND COMPLIANCE REPORT # 21-05-0058

CURRENT USE:
RECYCLING STATION

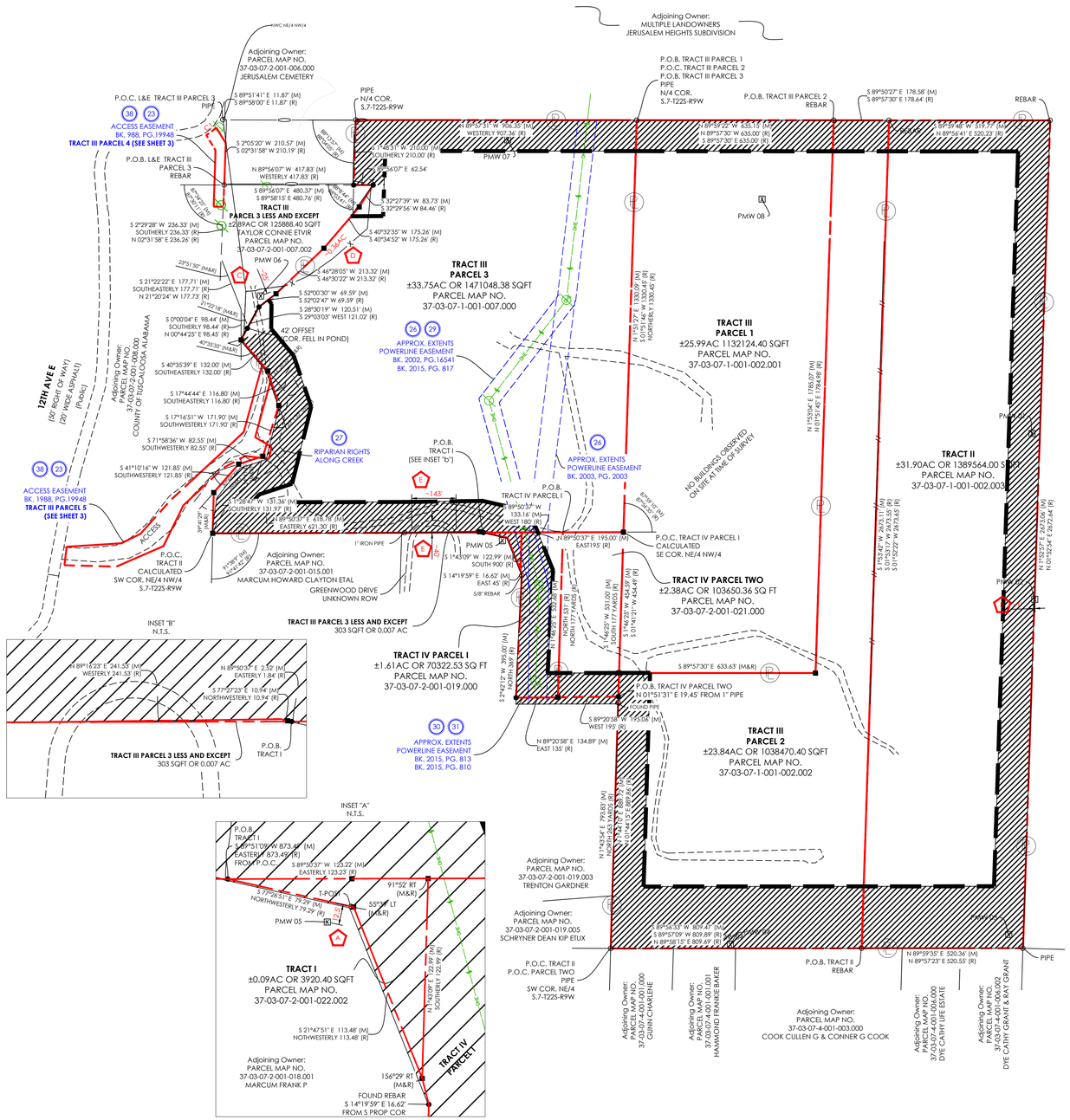
BUILDING SETBACK REQUIREMENTS:
FRONT - N/A
SIDE - N/A
REAR - N/A

BUILDING HEIGHT:
MAXIMUM HEIGHT - N/A

LOT AND BUILDING REQUIREMENTS:
MINIMUM LOT AREA - N/A
MINIMUM LOT WIDTH - N/A
MINIMUM LOT DEPTH - N/A
MAXIMUM BUILDING COVERAGE - N/A
FLOOR AREA RATIO - N/A
RESIDENTIAL DENSITY - N/A

PARKING:
N/A

19 SURVEY DRAWING



7 POSSIBLE ENCROACHMENTS

A — MONITORING WELL 12.5' OVER PROPERTY LINE
B — MONITOR WELL ~1' OVER PROPERTY LINE
C — MONITOR WELL ~25' OVER PROPERTY LINE
D — FENCE AND GRAVEL LOT OVER PROPERTY LINE ±0.36AC
E — ASPHALT ROAD OVER PROPERTY LINE ~143' AND ~40'

17 NORTH ARROW / SCALE

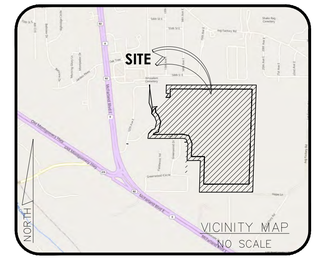
SCALE : 1" = 200'

0 100 200 400

10 BASIS OF BEARINGS

BEARINGS BASED ON ALABAMA STATE PLANE COORDINATE SYSTEM, NAD'83 (2011), WEST ZONE AS DETERMINED BY GPS OBSERVATION. ALL DISTANCES ARE US SURVEY FEET.

16 VICINITY MAP



9 LEGEND

PROPERTY LINE		SET IRON ROD PS# 35732	
P.O.B.	POINT OF BEGINNING	CALCULATED POINT	
P.O.C.	POINT OF COMMENCEMENT	FLAG POLE	
(M)	MEASURED CALL	HANDICAP PARKING	
(R)	RECORD CALL	MANHOLE	
M/L	MORE OR LESS	TELEPHONE BOX	
(N.T.S.)	NOT TO SCALE	UTILITY POLE	
CL	CENTERLINE	LIGHT POLE	
	CONCRETE	ELECTRIC CONTROL CABINET	
	RAILROAD TRACK	ELECTRIC TRANSFORMER	
X	FENCE	ELECTRIC METER	
	WOOD RAIL FENCE	FIRE VALVE	
	BUILDING SETBACK LINE	FIRE HYDRANT	
	EASEMENT LINE	WATER VALVE	
OHE	OVERHEAD ELECTRIC	GAS METER	

Key to CDS ALTA Survey

1 TITLE DESCRIPTION
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7 POSSIBLE ENCROACHMENTS
8 ZONING INFORMATION
9 LEGEND
10 BASIS OF BEARING
11 SURVEYOR'S NOTES
12 PARKING INFORMATION
13 LAND AREA
14 BUILDING AREA
15 BUILDING HEIGHT
16 VICINITY MAP
17 NORTH ARROW / SCALE
18 CLIENT INFORMATION BOX
19 SURVEY DRAWING
20 PROJECT ADDRESS

Approved CDS Surveyor

Surveyors Name: CRAFTON TULL
Address: 1000 Ledgelawn Drive
Conway, AR 72034
Telephone Number: 501-328-3316
email: nick.tucker@craftontull.com

18 ALTA/NSPS Land Title Survey

This survey prepared in accordance with the "2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys" (Effective February 23, 2021)

This Work Coordinated By:
FA Commercial Due Diligence Services Co.

CDS COMMERCIAL DUE DILIGENCE SERVICES
3550 W. Robinson Street, Third Floor
Norman, Oklahoma 73072
Office: 405-253-2444
website: www.firstamcds.com
Toll Free: 888.322.7371

Drwn By: J.PARKR	Date: 8-27-21
Surveyor Ref.No: FASV0026	Revision: NEW TITLE COMMITMENT
Aprvd By: L.DOW	Date: Revision:
Field Date: 7-8-21	Date: Revision:
Scale: 1" = 200'	Date: Revision:

Prepared For:

Client Ref. No:

20 PROJECT ADDRESS

GREENWOOD CIRCLE AKA 6315 12TH AVE E., TUSCALOOSA, AL

Project Name:
WASTE CONNECTIONS TUSCALOOSA, AL

CDS Project Number:
21-05-0058

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CDS COMMERCIAL DUE DILIGENCE SERVICES

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NO CLEARLY DEFINED PARKING SPACES OBSERVED ON SITE AT TIME OF SURVEY

13 LAND AREA

TRACT 1 ±0.09 AC OR 3920.40 SQFT
TRACT II ±31.90 AC OR 1389564.00 SQFT
TRACT III PARCEL 1 ±25.99 AC OR 1132124.40 SQFT
TRACT III PARCEL 2 ±23.84 AC OR 1038470.40 SQFT
TRACT III PARCEL 3 ±33.77 AC OR 1471017.17 SQFT
TRACT III PARCEL 4 ±0.19 AC OR 8423.26 SQFT
TRACT III PARCEL 5 ±1.25 AC OR 54569.15 SQFT
TRACT IV PARCEL 1 ±2.64 AC OR 114998.40 SQFT
TRACT IV PARCEL 2 ±2.46 AC OR 107157.60 SQFT
TOTAL: 122.13 AC OR 5320244.78 SQFT

14 BUILDING AREA

NO BUILDINGS OBSERVED ON SITE AT TIME OF SURVEY

15 BUILDING HEIGHT

NO BUILDINGS OBSERVED AT TIME OF SURVEY

11 SURVEYOR'S NOTES

1. NO OBSERVABLE EVIDENCE OF BUILDING CONSTRUCTION OR BUILDING ADDITIONS WITHIN RECENT MONTHS.

2. THERE WAS OBSERVABLE EVIDENCE OF RECENT EARTHWORK.

3. NO OBSERVABLE EVIDENCE OF CHANGES IN STREET RIGHT OF WAY LINES COMPLETED, AND AVAILABLE FROM THE CONTROLLING JURISDICTION AND NO OBSERVABLE EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS.

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8 ZONING INFORMATION

CDS ZONING AND COMPLIANCE REPORT # 21-05-0058

CURRENT USE:
RECYCLING STATION

BUILDING SETBACK REQUIREMENTS:
FRONT - N/A
SIDE - N/A
REAR - N/A

BUILDING HEIGHT:
MAXIMUM HEIGHT - N/A

LOT AND BUILDING REQUIREMENTS:
MINIMUM LOT AREA - N/A
MINIMUM LOT WIDTH - N/A
MINIMUM LOT DEPTH - N/A
MAXIMUM BUILDING COVERAGE - N/A
FLOOR AREA RATIO - N/A
RESIDENTIAL DENSITY - N/A

PARKING:
N/A

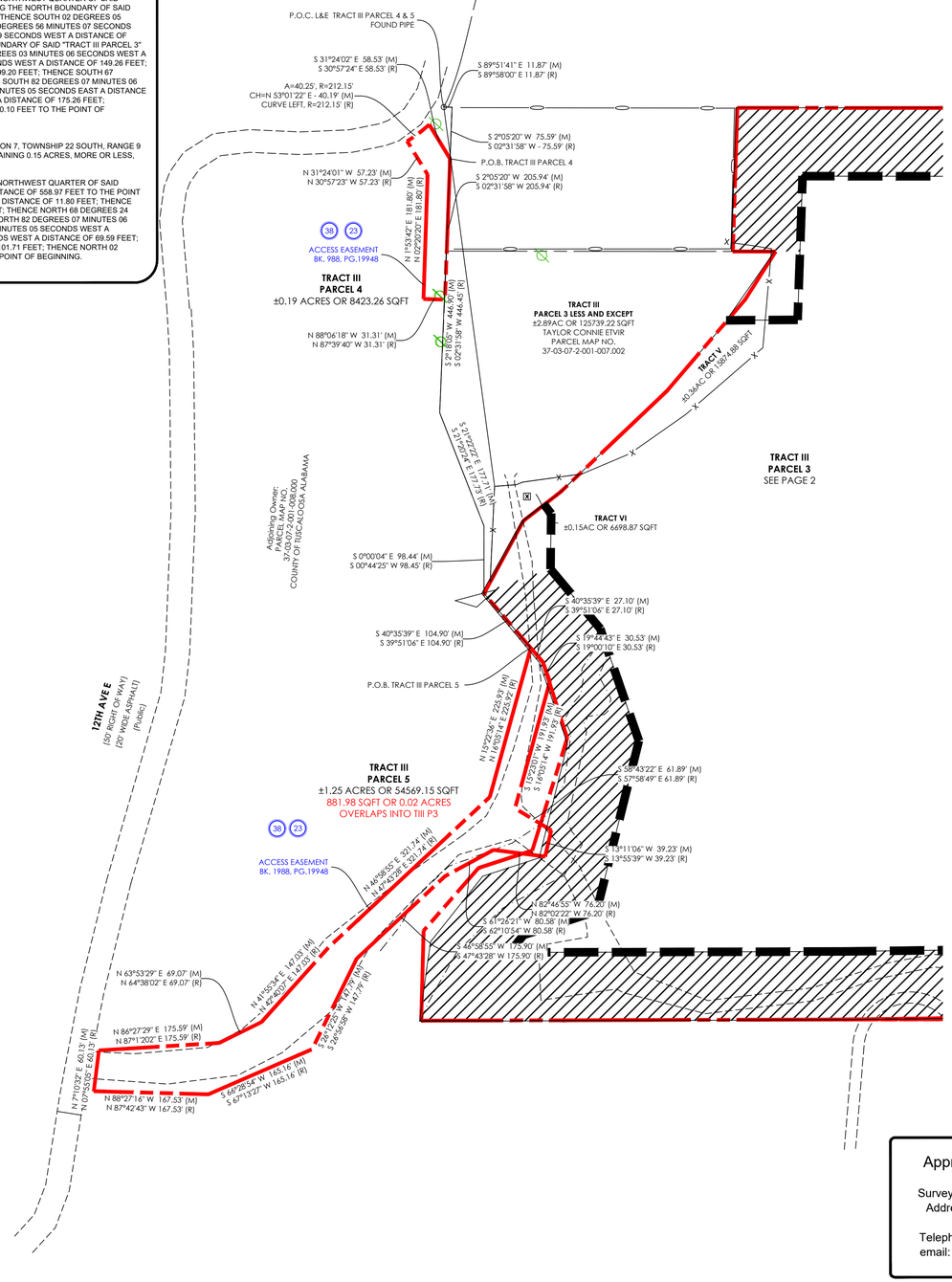
TRACT V:
A PARCEL OF LAND LYING AND BEING IN THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST OF THE HUNTSVILLE MERIDIAN TUSCALOOSA COUNTY, ALABAMA, CONTAINING 0.36 ACRES, MORE OR LESS, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF NORTHWEST QUARTER OF SAID SECTION 7; THENCE SOUTH 89 DEGREES 58 MINUTES 00 SECONDS EAST ALONG THE NORTH BOUNDARY OF SAID NORTHEAST QUARTER OF NORTHWEST QUARTER A DISTANCE OF 11.87 FEET; THENCE SOUTH 02 DEGREES 05 MINUTES 20 SECONDS WEST A DISTANCE OF 210.57 FEET; THENCE SOUTH 89 DEGREES 56 MINUTES 07 SECONDS EAST A DISTANCE OF 480.37 FEET; THENCE SOUTH 32 DEGREES 27 MINUTES 39 SECONDS WEST A DISTANCE OF 13.63 FEET TO THE POINT OF BEGINNING, SAID POINT BEING ON THE EAST BOUNDARY OF SAID "TRACT III PARCEL 3" PROPERTY; CONTINUE THENCE ALONG SAID EAST BOUNDARY SOUTH 05 DEGREES 03 MINUTES 06 SECONDS WEST A DISTANCE OF 129.51 FEET; THENCE SOUTH 49 DEGREES 06 MINUTES 21 SECONDS WEST A DISTANCE OF 149.26 FEET; THENCE SOUTH 54 DEGREES 57 MINUTES 27 SECONDS WEST A DISTANCE OF 99.20 FEET; THENCE SOUTH 67 DEGREES 01 MINUTES 01 SECONDS WEST A DISTANCE OF 76.03 FEET; THENCE SOUTH 82 DEGREES 07 MINUTES 06 SECONDS WEST A DISTANCE OF 4.15 FEET; THENCE NORTH 46 DEGREES 28 MINUTES 05 SECONDS EAST A DISTANCE OF 176.56 FEET; THENCE NORTH 40 DEGREES 32 MINUTES 35 SECONDS EAST A DISTANCE OF 175.26 FEET; THENCE NORTH 32 DEGREES 27 MINUTES 39 SECONDS EAST A DISTANCE OF 70.10 FEET TO THE POINT OF BEGINNING.

TRACT VI:
A PARCEL OF LAND LYING AND BEING IN THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST OF THE HUNTSVILLE MERIDIAN TUSCALOOSA COUNTY, ALABAMA, CONTAINING 0.15 ACRES, MORE OR LESS, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF NORTHWEST QUARTER OF SAID SECTION 7; THENCE SOUTH 07 DEGREES 36 MINUTES 53 SECONDS EAST A DISTANCE OF 558.97 FEET TO THE POINT OF BEGINNING; THENCE NORTH 86 DEGREES 00 MINUTES 52 SECONDS EAST A DISTANCE OF 11.80 FEET; THENCE NORTH 85 DEGREES 30 MINUTES 36 SECONDS EAST A DISTANCE OF 19.86 FEET; THENCE NORTH 68 DEGREES 24 MINUTES 41 SECONDS EAST A DISTANCE OF 10.39 FEET; CONTINUE THENCE NORTH 82 DEGREES 07 MINUTES 06 SECONDS EAST A DISTANCE OF 83.17 FEET; THENCE SOUTH 46 DEGREES 28 MINUTES 05 SECONDS WEST A DISTANCE OF 36.76 FEET; THENCE SOUTH 52 DEGREES 00 MINUTES 50 SECONDS WEST A DISTANCE OF 69.59 FEET; THENCE SOUTH 28 DEGREES 30 MINUTES 19 SECONDS WEST A DISTANCE OF 101.71 FEET; THENCE NORTH 02 DEGREES 37 MINUTES 24 SECONDS EAST A DISTANCE OF 140.08 FEET TO THE POINT OF BEGINNING.

19 SURVEY DRAWING



7 POSSIBLE ENCROACHMENTS

A — ±0.08AC OVERLAP OF TRACTS I & IV
B — MONITOR WELL ~1' OVER PROPERTY LINE
C — MONITOR WELL ~25' OVER PROPERTY LINE
D — FENCE AND GRAVEL LOT OVER PROPERTY LINE ±0.36AC
E — ASPHALT ROAD OVER PROPERTY LINE ~143' AND ~40'

17 NORTH ARROW / SCALE

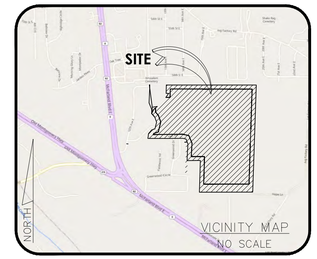
SCALE : 1" = 100'

0 50 100 200

10 BASIS OF BEARINGS

BEARINGS BASED ON ALABAMA STATE PLANE COORDINATE SYSTEM, NAD'83 (2011), WEST ZONE AS DETERMINED BY GPS OBSERVATION. ALL DISTANCES ARE US SURVEY FEET.

16 VICINITY MAP



9 LEGEND

PROPERTY LINE		SET IRON ROD PS# 35732	
P.O.B.	POINT OF BEGINNING		CALCULATED POINT
P.O.C.	POINT OF COMMENCEMENT		FLAG POLE
(M)	MEASURED CALL		HANDICAP PARKING
(R)	RECORD CALL	MANHOLE	
M/L	MORE OR LESS	TELEPHONE BOX	
(N.T.S.)	NOT TO SCALE	UTILITY POLE	
CENTERLINE		LIGHT POLE	
CONCRETE		ELECTRIC CONTROL CABINET	
RAILROAD TRACK		ELECTRIC TRANSFORMER	
FENCE		ELECTRIC METER	
WOOD RAIL FENCE		FIRE VALVE	
BUILDING SETBACK LINE		FIRE HYDRANT	
EASEMENT LINE		WATER VALVE	
OHE — OVERHEAD ELECTRIC		GAS METER	

Approved CDS Surveyor

Surveyors Name: CRAFTON TULL
Address: 1000 Ledgelawn Drive
Conway, AR 72034
Telephone Number: 501-328-3316
email: nick.tucker@craftontull.com

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14 BUILDING AREA
15 BUILDING HEIGHT
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17 NORTH ARROW / SCALE
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20 PROJECT ADDRESS

18 ALTA/NSPS Land Title Survey

This survey prepared in accordance with the "2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys" (Effective February 23, 2021)

This Work Coordinated By:
FA Commercial Due Diligence Services Co.
CDS COMMERCIAL DUE DILIGENCE SERVICES
3550 W. Robinson Street, Third Floor
Norman, Oklahoma 73072
Office: 405-253-2444
website: www.firstamcds.com
Toll Free: 888.322.7371

Drwn By: J.PARKR	Date:
Surveyor Ref.No: FASV0026	Revision:
Aprvd By: L.DOW	Date:
Field Date: 7-8-21	Revision:
Scale: 1" = 200'	Date:
	Revision:

Prepared For:

Client Ref. No:

20 PROJECT ADDRESS

GREENWOOD CIRCLE AKA 6315 12TH AVE E., TUSCALOOSA, AL

Project Name:
WASTE CONNECTIONS TUSCALOOSA, AL

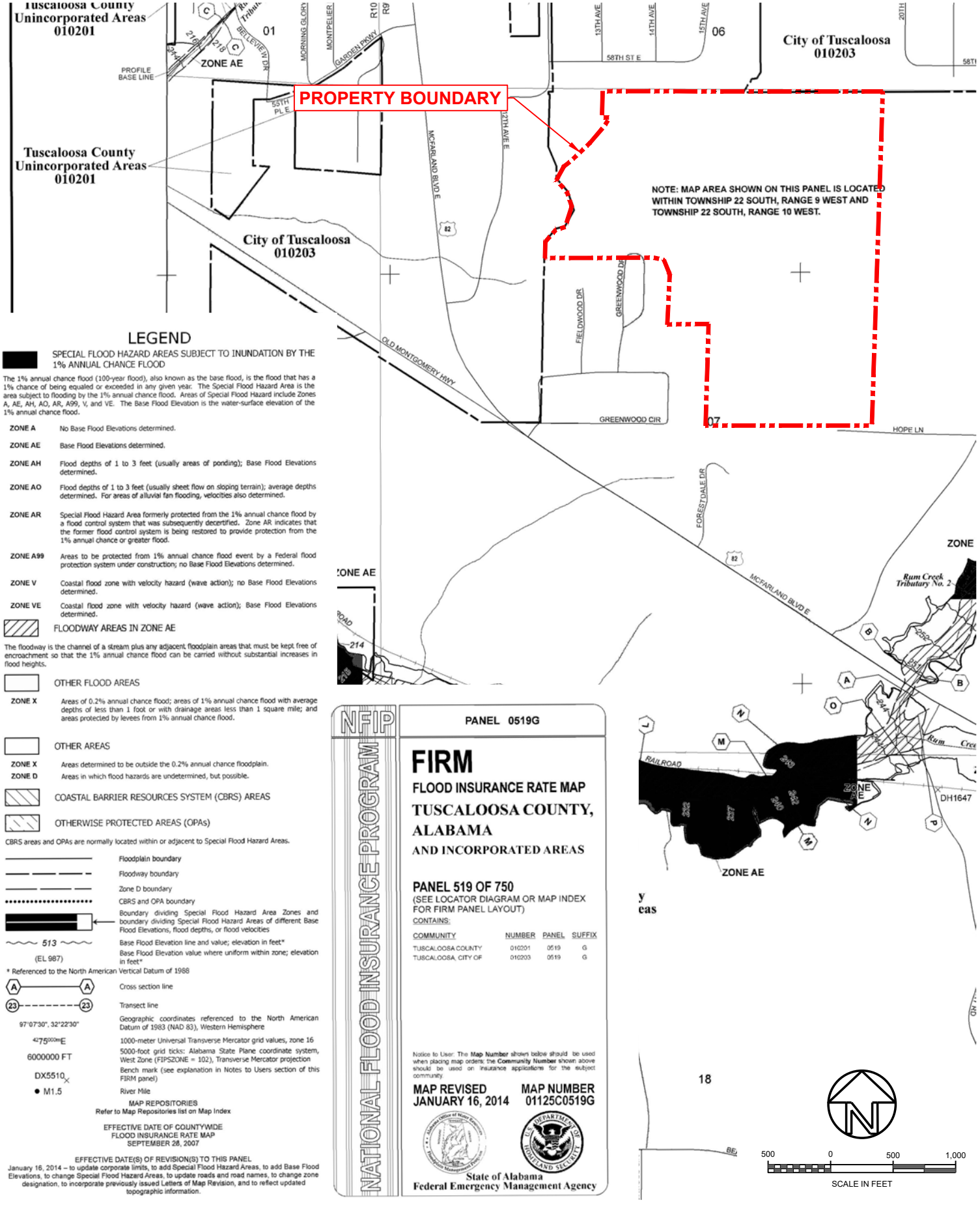
CDS Project Number:
21-05-0058

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This survey coordinated, but not performed, by Commercial Due Diligence Services. Survey obtained from and certified to by a land surveyor licensed in the state property is located.

APPENDIX E

Flood Map



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- (A)—(A) Cross section line
- (23)---(23) Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4275000mE — 1000-meter Universal Transverse Mercator grid values, zone 16
- 6000000 FT — 5000-foot grid ticks: Alabama State Plane coordinate system, West Zone (FIPSZONE = 102), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
SEPTEMBER 28, 2007

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
January 16, 2014 – to update corporate limits, to add Special Flood Hazard Areas, to add Base Flood Elevations, to change Special Flood Hazard Areas, to update roads and road names, to change zone designation, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0519G

FIRM

FLOOD INSURANCE RATE MAP

TUSCALOOSA COUNTY, ALABAMA

AND INCORPORATED AREAS

PANEL 519 OF 750
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
TUSCALOOSA COUNTY	010201	0519	G
TUSCALOOSA, CITY OF	010203	0519	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP REVISED
JANUARY 16, 2014

MAP NUMBER
01125C0519G

State of Alabama
Federal Emergency Management Agency

18

500 0 500 1,000
SCALE IN FEET

DESCRIPTION	APPR. BY	DRA. BY	DATE	REV
ISSUED FOR PERMITTING	CRW	CRW	04/2023	0

PREPARED FOR:

CYPRESS CREEK LANDFILL, LLC
6315 12th AVENUE EAST
TUSCALOOSA, ALABAMA 35405

PREPARED BY:

PROMUS ENGINEERING
www.promusengineering.com

FLOOD MAP

PERMIT RENEWAL
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA

FIGURE NO.
D

APPENDIX F

Wetlands Delineations and Endangered Species Survey
(Carter, Darnell, and Grubbs Engineers, Inc., 1995; TTL, Inc., 2002)

WETLANDS DELINEATION AND ENDANGERED SPECIES STUDY AT THE PROPOSED LATERAL EXPANSION OF THE CYPRESS CREEK LANDFILL

Prepared for:

Carter, Darnell and Grubbs Engineers, Inc.
Andalusia, AL

Prepared by:

Environmental Resource Analysts
601 County Road 57
Notasulga, Alabama 36866

Joseph Frieda, Ph.D.
Project Director

10/30/95
Date

1.0 INTRODUCTION

Environmental Resource Analysts (ERA) was contracted by Carter Darnell and Grubbs Engineers, Inc. to conduct a wetlands delineation and endangered species study for the proposed lateral expansion of the Cypress Creek construction/demolition landfill in Tuscaloosa County, Alabama. The approximate location of the study area is illustrated in Figure 1. The objectives of the study were to locate and map potential Section 404 jurisdictional wetlands. In addition, we conducted a survey for federally listed endangered or threatened species of plants and animals or their critical habitat.

2.0 METHODS

The wetlands delineation study was conducted August 30, 1995 according to the 1987 Army Corp Engineers wetlands delineation manual (ACE 1987). The "on site", routine determination method for areas greater than 5 acres was employed. The objective was to identify and map potential jurisdictional wetlands. Jurisdictional wetlands exhibit 3 characteristics: 1) Hydric Soil, 2) Hydrophytic Vegetation, 3) Wetland Hydrology. Soil color was determined with the use of a Munsell soil color charts (Munsell Color 1990). A Hydric soils list for Tuscaloosa County was obtained from the U.S. Soil Conservation Service (Table 1). Plants were identified by ERA personnel according to Radford et al. (1968) and Brown and Kirkman (1990). The depth of the water table was determined by digging a standard soil pit.

The regional office of the U.S. Fish and Wildlife in Daphne, AL was contacted for their determination of the potential impact on threatened or endangered species, and their critical habitat (Attachment A).

3.0 RESULTS

The northern half of the property was primarily pasture with a boarder of deciduous forest. The southern half of the property was selectively cut deciduous forest with a dense understory of wild grape.

Two small intermittent tributaries were indicated on the USGS quadrangle (Figure 2). The first tributary flowed from east to west along the northern property boarder. The creek was approximately 5 foot wide and 6 inches deep and was moderately disturbed by siltation from the adjacent landfill and cattle pastures. The hillsides adjacent to the tributary were very steep, well drained, and contained no springs or seeps. Although this creek is a "Waters of the US", it was not associated with any "potential jurisdictional wetlands". Soil borings along the creek did not indicate any soils with hydric characteristics. The

Tuscaloosa soil survey mapped Smithdale and Flomaton soils (Figure 3, mapping unit # 35) for the areas surrounding the tributaries which are not listed hydric soils. In addition, no vegetation was observed growing from the creek banks or channel bottom.

The second tributary flowed from east to west through the center of the property. It was dry at the time of survey and is probably dry for most of the year, except during rainstorms. The tributary lacked of a defined channel, supported no riparian vegetation, and the headwaters on the adjacent property had been damned to create a "cattle pond". The pond was also dry at the time of survey. This tributary may not be considered a waters of the US due to its highly intermittent nature and certainly was not associated with any wetlands due the lack of wetland hydrology, wetland vegetation, and hydric soil.

Due to the disturbed nature of the property, it is unlikely that the proposed landfill will have a negative impact on federally protected species. The U.S. Fish and Wildlife Service concurred with our findings and agreed that the project would have no impact on federally protected species or their critical habitat (Attachment A).

4.0 LITERATURE CITED

ACE. 1987. Corps of Engineers wetlands delineation manual. Dept. Army, U.S. Army Corps of Engineers, Washington, DC, 20314-1000.

Brown, C.L. and L.K. Kirkman. 1990. Trees of Georgia and Adjacent States. Timber Press, Portland OR. 292 pp.

Munsell Color. 1990. Munsell Soil Color Charts. Kollmorgen Corp. Baltimore, MD.

Radford, A.E., H.E. Ahles, and C. R. Bell. 1968. Manual of Vascular Flora of the Carolinas. The University of North Carolina Press. Chapel Hill, NC. 1183 pp.

USDA. 1981. Soil Survey of Tuscaloosa County, Alabama. USDA, SCS. 118 pp.

Figure 1. The approximate location of the study site within the state of Alabama.



Figure 2. U.S. Geologic survey map (Tuscaloosa Quadrangle) of the study site.

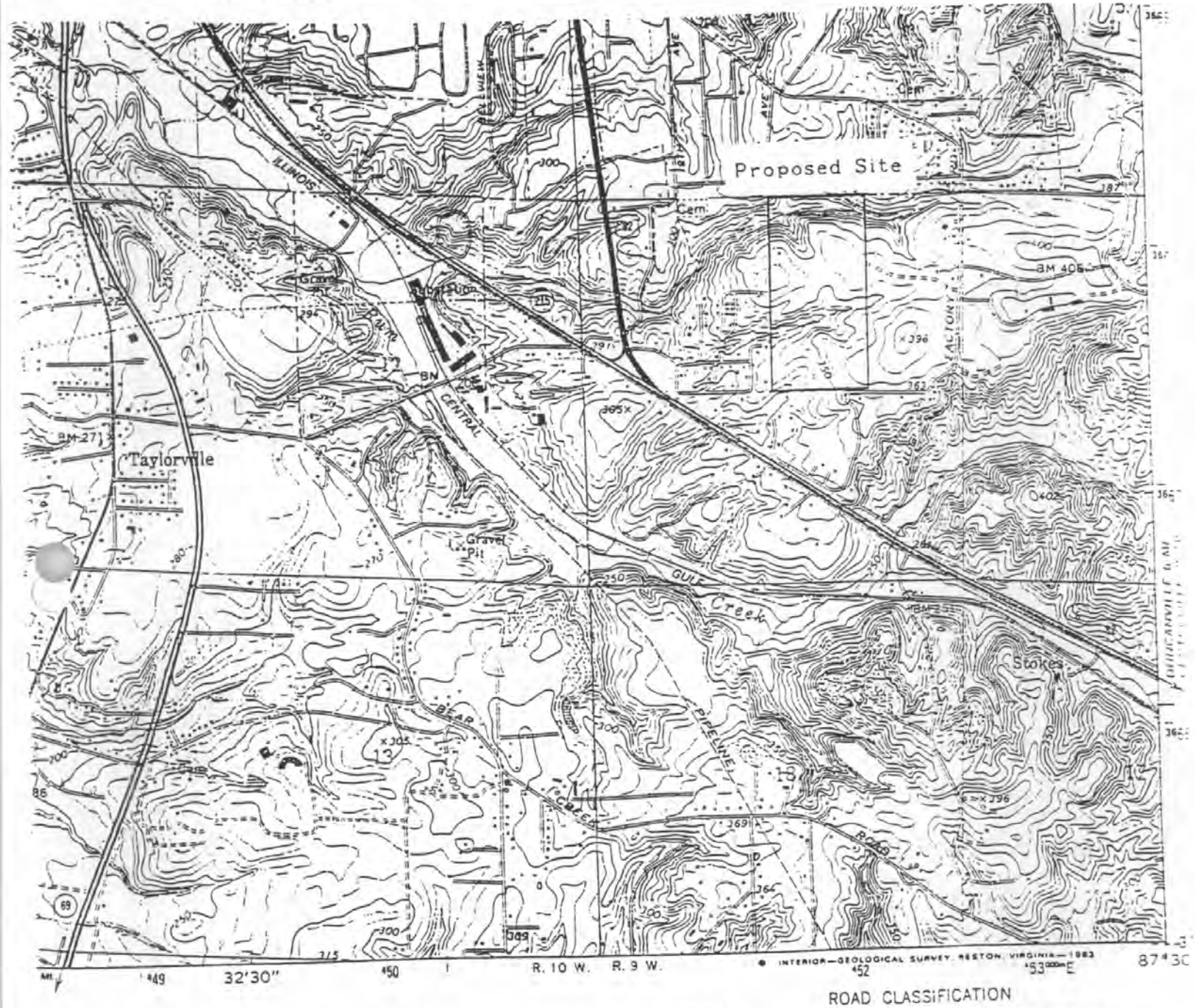


Figure 3. U.S.D.A. Soil Survey for the study site.

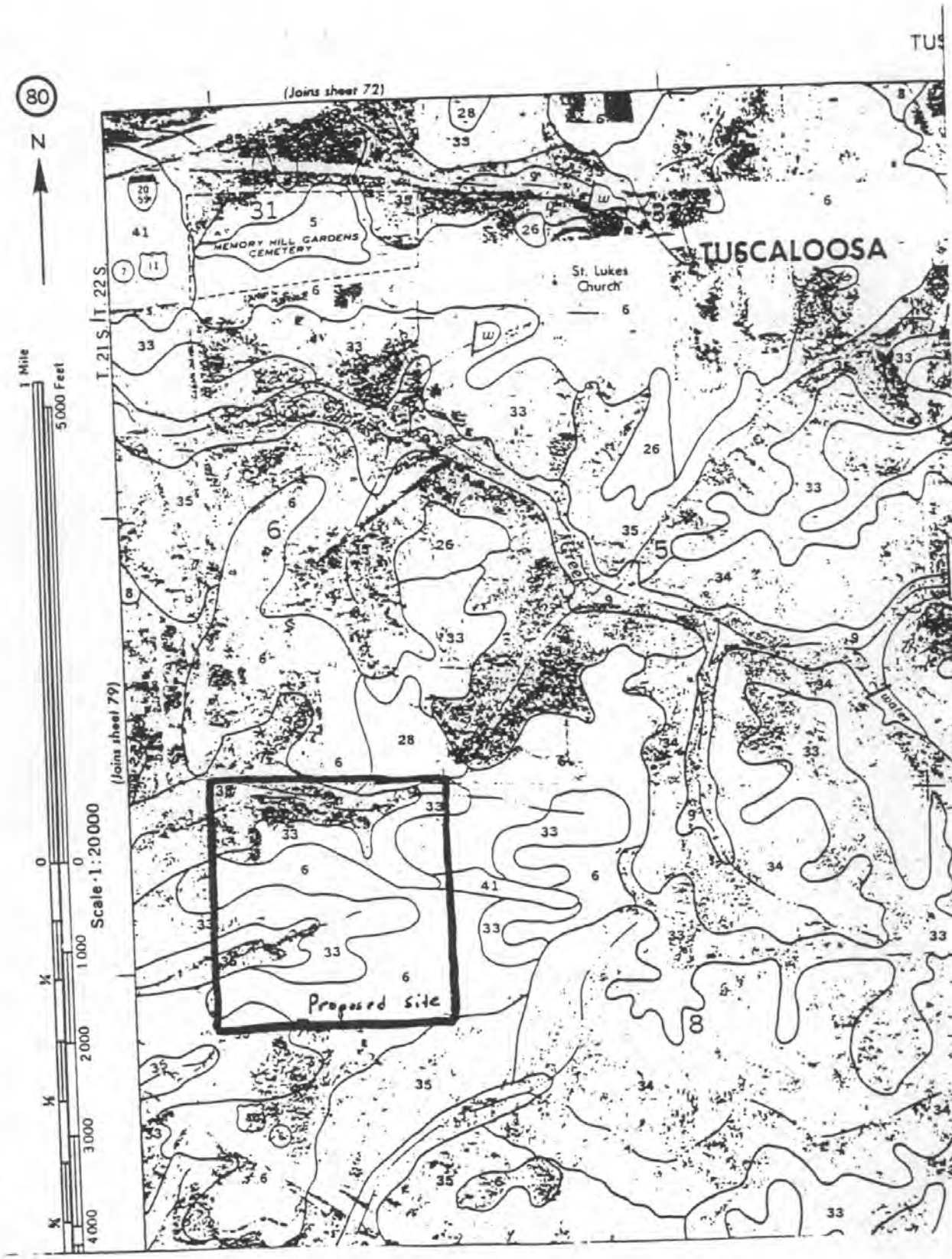


Table 1. Hydric Soil List for Tuscaloosa County.

USDA-SCS
ALABAMA

TUSCALOOSA COUNTY, ALABAMA (125)

HYDRIC SOILS LIST _1/

NORTHPORT FIELD OFFICE
TECHNICAL GUIDE
SECTION II-A
NOVEMBER 1990

MAP SYMBOL	SOIL NAME	SLOPE RANGE	LCS	COMP % * ***	HYDRIC _2/ COMPONENT	LANDSCAPE POSITION OF HYDRIC PART (MULTI-TAXA UNIT)	HYDRIC _3/ CRITERIA
2	ADATON	0-2	3w	1 100	ALL		S
4	AUGUSTA	0-2	5w	1 75	*		-
4	AMY	0-2	5w	2 20	Amy part	Depressions	S
9	BIBB	0-2	5w	1 100	ALL		S

NON-HYDRIC SOILS
(WITH OR WITHOUT HYDRIC INCLUSIONS)

MAP SYMBOL	SOIL NAME	SLOPE RANGE	LCS	COMP % * ***	HYDRIC INCLUSIONS	LOCATION	HYDRIC _3/ CRITERIA OF INCLUSIONS
3	ALLEN	8-15	4e	1 65	Adaton	Drainageways	S
3	BODINE	8-15	4s	2 25	Adaton	Drainageways	S
5	BAMA	0-2	1	1 100			
6	BAMA	2-6	2e	1 100			
7	BAMA			1 50			
7	URBAN LAND			2 40			
8	BAMA			1 50			
8	URBAN LAND			2 45			
10	BODINE	15-35	7s	1 50	Adaton	Drainageways	S
10	ALLEN	15-35	6e	2 40	Adaton	Drainageways	S
11	BOSWELL	4-10	4e	1 100	Bibb	Drainageways	S
12	BRILLIANT	6-45	7s	1 100	Bibb	Drainageways	S
13	CAHABA	0-4	2e	1 100	Bibb, Amy	Depressions, Drainageways	S
14	CHOCCOLOCCO	0-2	1	1 100	Adaton	Depressions, Drainageways	S
15	DECATUR	2-8	2e	1 100			
16	DUNDEE	0-2	2w	1 100	Adaton	Depressions, Drainageways	S
17	ELLISVILLE	0-2	2w	1 100	Adaton	Depressions	S
18	FALKNER	0-2	2w	1 100	Adaton	Depressions, Drainageways	S
19	IUKA	0-2	5w	1 45	Bibb	Depressions	S
19	MANTACHIE	0-2	5w	2 30	Bibb	Depressions	S
20	LUVERNE	4-10	4e	1 60	Bibb	Drainageways	S
20	SMITHDALE	4-10	4e	2 30	Bibb	Drainageways	S
21	MONTEVALLO	15-45	7e	1 45	Bibb	Drainageways	S
21	NAUVOO	15-45	7e	2 40	Bibb	Drainageways	S
22	MONTEVALLO	10-45	7e	1 55	Bibb	Drainageways	S
22	NAUVOO	10-30	7e	2 30	Bibb	Drainageways	S
23	NAUVOO	4-10	3e	1 100	Bibb	Drainageways	S
24	PALMERDALE	6-45	7s	1 100	Bibb	Drainageways	S
25	PALMERDALE	6-45	7s	1 100	Bibb	Drainageways	S
26	PITS			1 100			
27	RUSTON	0-2	1	1 100			
28	RUSTON	2-6	2e	1 100			
						Depressions, Drainageways	S

Table 1. (continued)

TUSCALOOSA COUNTY, ALABAMA (125)

NON-HYDRIC SOILS
(WITH OR WITHOUT HYDRIC INCLUSIONS)

MAP SYMBOL	SOIL NAME	SLOPE RANGE	LCS	COMP *	COMP %	HYDRIC INCLUSIONS	LOCATION	HYDRIC _3/ CRITERIA OF INCLUSIONS
30	SHATTA	2-6	2e	1	100	Adaton, Amy	Depressions, Drainageways	S
31	SHATTA			1	45	Adaton, Amy	Depressions, Drainageways	S
31	URBAN LAND			2	40			
32	SHATTA			1	45	Adaton, Amy	Depressions, Drainageways	S
32	URBAN LAND			2	40			
33	SMITHDALE	6-15	4e	1	100	Bibb	Drainageways	S
34	SMITHDALE	15-35	7e	1	100	Bibb	Drainageways	S
35	SMITHDALE	15-35	7e	1	45	Bibb	Drainageways	S
35	FLOMATON	15-35	7e	2	20	Bibb	Drainageways	S
36	SMITHDALE	15-35	7e	1	45	Bibb	Drainageways	S
36	LUVERNE	15-35	7e	2	30	Bibb	Drainageways	S
37	SMITHDALE			1	55	Bibb	Drainageways	S
37	URBAN LAND			2	40			
38	SMITHDALE	10-25	7e	1	100	Bibb	Drainageways	S
39	SMITHDALE	10-35	7e	1	50	Bibb	Drainageways	S
39	LUVERNE	10-35	7e	2	30	Bibb	Drainageways	S
40	SMITHDALE	10-35	7e	1	35	Bibb	Drainageways	S
40	PIKEVILLE	10-35	7e	2	25	Bibb	Drainageways	S
41	URBAN LAND			1	100			

_1/ All hydric soils in this county support woody vegetation under natural conditions.

_2/ An asterick (*) indicates that this soil is a non-hydric component of a multi-taxa unit.

_3/ Several criteria may be used to cause a soil to be classified as hydric. The criteria met by a particular soil mapping unit is indicated by the symbols S, P, or FF. These are defined as follows:

S -- soils are hydric due to a water table at or near the surface.

P -- soils are ponded for long duration during the growing season.

FF -- soils are frequently flooded for long duration during the growing season.

Letter Of Concurrence

From U.S. Army Corps Of Engineers

For The 1995 Wetlands Study

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF:

December 8, 1995

Regulatory Branch
Operations Division

SUBJECT: Wetland Delineation Verified for Jurisdictional
File Number ALJ95-04826-K

Environmental Resource Analysts
Attention: Mr. Joseph Freda, Ph.D.
601 County Road 57
Notasulga, Alabama 36866

Dear Dr. Freda:

Reference is made to the Wetlands Delineation and Endangered Species Study submitted to our office concerning wetlands on the Cypress Creek Landfill site. Specifically, the property is located in Section 7, Township 21 South, Range 9 West, Tuscaloosa County, Alabama.

This office verifies your Wetland Delineation as being correct. The study shows no jurisdictional wetlands located within the property boundary. However, there are 2 small jurisdictional headwater drainageways that flow from east to west through the northern property boundary. Should any development occur in these drainageways a Department of the Army Permit will be required.

Please be advised that this jurisdictional determination reflects current policy and regulation and is valid for a period of 5 years from the date of your letter. If after the 5-year period, this jurisdictional determination has not been specifically revalidated by the U.S. Army Corps of Engineers, it shall automatically expire.

This letter grants no property rights and does not obviate any obligation or responsibility for the compliance with the provisions of any other law or regulation of any local, State, or Federal authority.

If you have any questions concerning our jurisdictional authority, pursuant to Section 404 of the Clean Water Act in the designated wetland area, or if you wish to discuss any permit requirements for future activities at the site, please contact Ms. Cindy J. House-Pearson of the Enforcement Section at (334) 694-3873.

Sincerely,

Ronald A. Krizman
Chief, Regulatory Branch
Operations Division

TTL
Technology and Tradition

Construction Materials Engineering and Testing ■
Environmental Engineering and Consulting ■
Geotechnical Engineering ■
Analytical Services ■

July 29, 2002

Mr. Ford Williams, President
Fair Contracting Company
P.O. Box 71149
Tuscaloosa, AL 35407

RE: Wetland Determination and Delineation
For Cypress Creek Landfill Proposed North Sedimentation Pond, Tuscaloosa, Tuscaloosa County, Alabama
TTL Job No.: **1302-001-113**

Dear Mr. Williams:

TTL, Inc. is pleased to present the results of the Wetland Determination and Delineation for the Cypress Creek Landfill Proposed North Sedimentation Pond, Tuscaloosa, Tuscaloosa County, Alabama.

To summarize the findings, one wetland area associated with an intermittent stream totaling 0.505 acres is present within the proposed development. The proposed dam would fill 0.06 acres of wetlands (124 linear feet of intermittent stream). The sedimentation pond would cover 0.33 acres of wetlands associated with the intermittent stream. The total wetlands impacted by the project would be 0.39 acres.

A proposed mitigation plan is included. The mitigation would create and/or improve 0.48 acres of wetlands on the site. An additional 0.54 acres of upland buffer around the sedimentation pond would be placed in a conservancy easement. The total mitigation acreage would be 1.02 acres.

Site maps, recorded data and on-site findings are included in this report.

We appreciate the opportunity to provide this service. If you have any questions regarding this matter, please call me at your convenience.

Sincerely,
TTL, Inc.

Darren Mitchell
Biologist

WDM
Enclosure

cc: Ms. Melanie Thomason
CDG Engineers & Associates, Inc.
1840 U.S. Highway 29 North
Andalusia, Alabama 3620

TTL
Technology and Tradition

Construction Materials Engineering and Testing ■
Environmental Engineering and Consulting ■
Geotechnical Engineering ■
Analytical Services ■

REPORT OF

WETLAND DETERMINATION AND

DELINEATION

for

CYPRESS CREEK LANDFILL PROPOSED NORTH SEDIMENTATION POND

TUSCALOOSA, TUSCALOOSA COUNTY, ALABAMA

July 29, 2002

3516 Greensboro Avenue (35401) ■ Drawer 1128 (35403) ■ Tuscaloosa, Alabama ■ 205.345.0816 ■ Fax 205.345.0992

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INTRODUCTION

TTL, Inc. was retained by CDG Engineers & Associates, Inc. of Andalusia, Alabama to conduct a wetland determination and delineation for a proposed sedimentation pond at Cypress Creek Landfill, Tuscaloosa, Alabama. The Cypress Creek Landfill is located east of U.S. Highway 82 just north of the intersection of U.S. Highway 82 and U.S. Highway 215.

The determination and delineation of wetlands were performed according to the U.S. Army Corps of Engineers Wetland Delineation Manual, 1987 Edition, and subsequent memoranda to the Manual. Included with this survey is a preliminary threatened and endangered species survey.

The survey was performed on February 19, 2002 by **TTL, Inc.** biologist, Darren Mitchell. A walk-over survey was performed on July 18, 2002 to ensure the site had not changed since the February survey. The site was found to be in the same condition.

PROJECT DESCRIPTION

The survey site is adjacent to the north-central boundary Section 7, Township 21 South, Range 10 West of the Tuscaloosa 7½ Quadrangle, Tuscaloosa County, Alabama (See Figure 1). The site is approximately twenty-five (25) acres.

GENERAL SITE DESCRIPTION

The entire site is within the boundaries of Cypress Creek Landfill. The site is generally undeveloped stream with surrounding hardwood forests and deep, steep banks. The intermittent steam traverses the site from east to west. At the western site boundary, the steam is within a culvert beneath the Landfill.

RECORDED DATA

The Soil Conservation Service Soil Survey for the survey area indicates three major soil units within the site: Bama fine sandy loam (2 to 6 percent slopes), Smithdale fine sandy loam (6 to 15 percent slopes and Smithdale-Flomaton complex (15 to 35 percent slopes. None of the soils units within the site are classified as hydric. However, Smithdale fine sandy loam and Flomation may contain hydric inclusions of Bibb in drainageways (See Figure 2).

Review of the 1983 Tuscaloosa quadrangle indicated no wetlands. The stream is shown as a dashed blue line.

Review of the 1981 Tuscaloosa National Wetland Inventory Map (NWI) only indicated wetlands associated with the intermittent stream. The wetlands are classified as PFOIA, palustrine, forested, broad-leaved, temporary (See Figure 3).

ON-SITE WETLAND DETERMINATIONS AND DELINEATIONS

No wetland indicators were found within the survey area except those associated with an intermittent stream.

The intermittent stream had distinct bed and bank. A small flow was observed during the wetland survey. West of the wetland survey area the stream is within a culvert under the Landfill. The steam had very high and steep banks within the survey area. Some siltation of the stream was present.

Since the surface area of intermittent streams are considered wetlands, the high-water marks on each side of the stream were flagged as wetlands. The stream bottom was sand/silt. Very little vegetation was present within the stream bed. The stream banks were very steep. Species adjacent to the stream include privet, water oak, black willow, tulip poplar, honeysuckle, supplejack, and sphagnum moss. (See Appendix - Field Data Sheet 1).

The western area near the culvert widens to form a small area of wetland adjacent to the stream. A sampling point was placed within this area (See Appendix - Field Data Sheet 1). The soil was red and very sandy. One layer of the soil was high in organics and low-chroma in the upper sixteen inches. The soil was saturated in the upper twelve inches and free water was observed in the test pit. Three primary wetland hydrology indicators were present: saturated in the upper twelve inches, sediment deposits and drainage patterns. The vegetation at this sampling point was strongly hydrophytic and included such species as beech, tulip poplar, black willow, sweetbay magnolia, water oak, privet and cattails. Some of the trees had buttressed trunks indicating frequent soil saturation or innundation. This low area appears to be frequently flooded.

The wetland area was mapped by Almon Associates, Tuscaloosa, Alabama. The total wetland area is 0.505 acres.

PRELIMINARY ENDANGERED SPECIES SURVEY

The list of endangered or threatened species for Tuscaloosa County was obtained from the Fish and Wildlife Service web site on March 26, 2002. The web site indicates that the list was updated January 11, 2002. Listed below are the species that can occur in this vicinity and the findings of the preliminary survey.

1. Red-cockaded woodpecker, *Picoides borealis* (endangered) - No suitable nesting habitat exists within the survey area for the red-cockaded woodpecker. This species requires habitat with pine trees greater than sixty (60) years old.

2. American peregrine falcon, *Falco peregrinus anatum* (endangered) - No suitable nesting habitat exists within the survey area for the American peregrine falcon. This species typically nests on cliff ledges.

3. Wood stork, *Mycteria americana* (endangered) - No suitable nesting habitat exists within the survey area for the wood stork. This species requires habitat such as cypress or mangrove swamps for nesting.

4. Bald Eagle, *Haliaeetus leucocephalus* (threatened) - No suitable nesting habitat exists within the survey area for the bald eagle. This species requires habitat where large nests can be built near open water.

5. Flattened musk turtle, *Sternotherus depressus* (threatened) - No suitable habitat exists within the survey area for the flattened musk turtle. The intermittent stream does not provide adequate habitat.

6. White fringless orchid, Platanthera integrilabia (candidate) - No suitable habitat exists within the survey area for the white fringless orchid. There are no wet boggy areas or seepage slopes within the site.

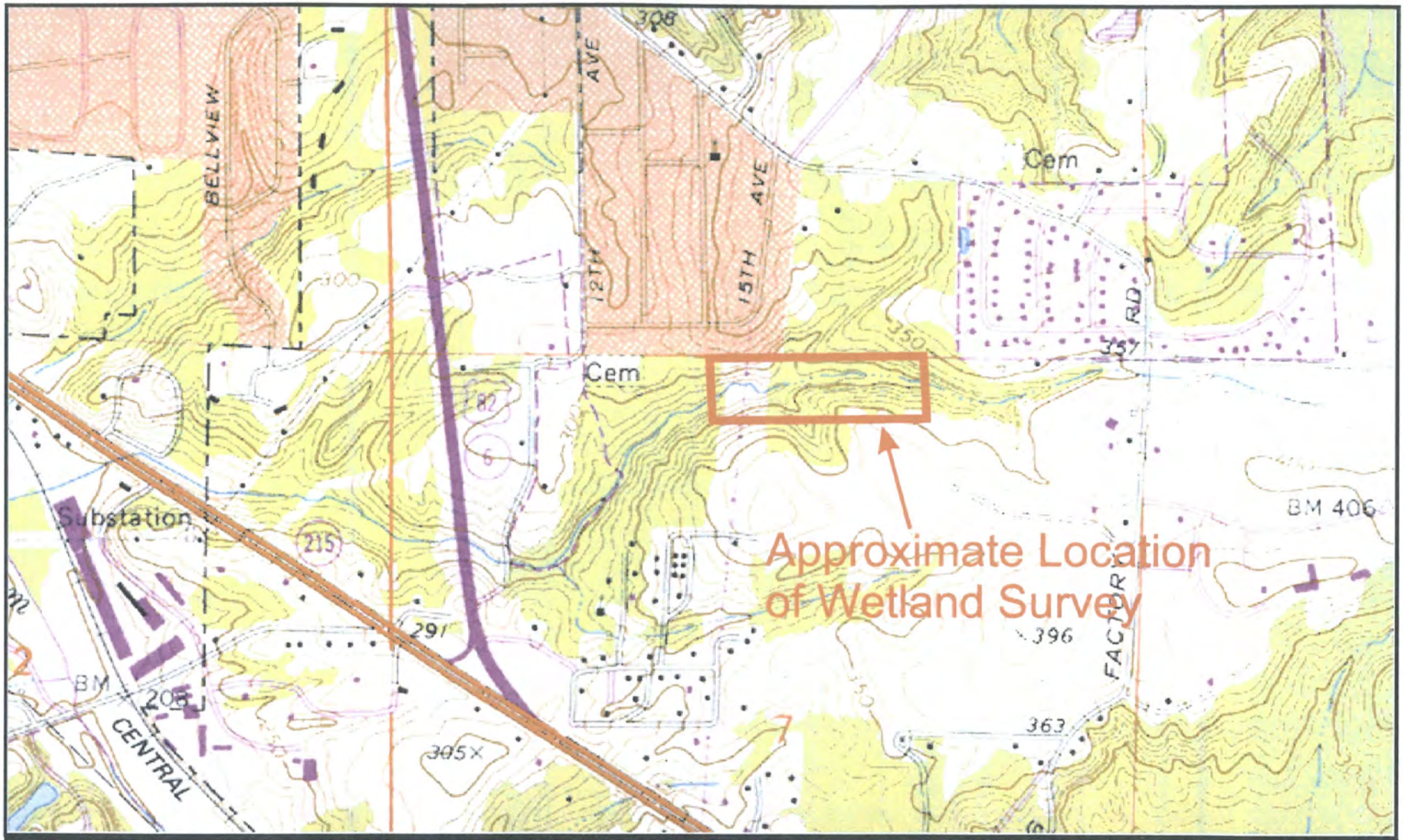
7. Several mussel species are listed - No suitable habitat exists within the project area. The intermittent stream does not provide adequate habitat for any of the listed species.

PROPOSED WETLAND MITIGATION

The proposed dam for the north sedimentation pond would fill 0.06 acres of wetlands (124 linear feet of intermittent stream). The sedimentation pond would cover 0.33 acres of wetlands associated with the stream. Therefore, the total wetlands impacted by the project would be 0.39 acres. To mitigate the loss of 0.39 acres of wetlands the following are proposed:

Between the proposed dam and the culvert, remove any existing siltation from the intermittent stream and wetlands, excavate the non-wetlands to the same grade or slightly lower grade than the existing wetland, ensure that the culvert opening is above the new wetland grade to allow for standing water, plant seasonally available shrubs and trees along the created wetland margins and use best management practices to protect the area. This will create or enhance 0.48 acres of wetlands. Additionally, an upland buffer zone will be established around the wetlands. The buffer zone will include the steep slope on the north and south of the wetlands. The buffer zone will be 0.54 acres. The wetlands and buffer zone will be placed in a conservancy easement. The total mitigation area is 1.02 acres. This produces a mitigation ratio of 2.62 to 1. (See Figure 4)

FIGURES

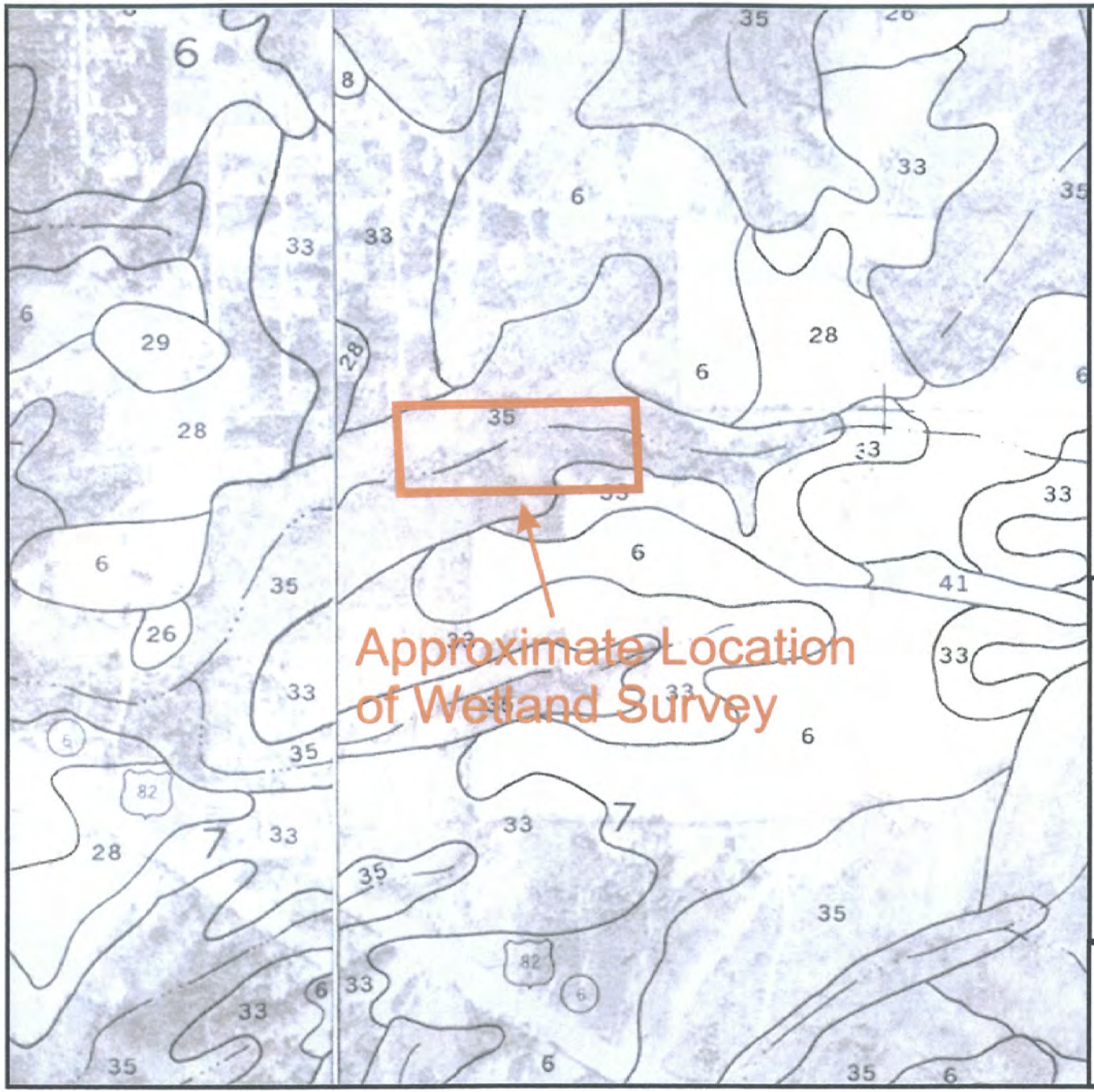


Scale (feet)
1" = 1000'

Figure 1. Location of Wetland Survey for Cypress Creek Landfill Proposed North Sedimentation Pond, Tuscaloosa, Tuscaloosa County, Alabama

The site is located in the NW quarter of the NE quarter and the NE quarter of the NW quarter of Section 7, T. 22 S., R. 9 W as shown on the Tuscaloosa, Alabama 7.5 minute U.S.G.S. Topographic map (1971; photorevised 1983).

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3516 Greensboro Ave.
Tuscaloosa, AL 35401
Phone (205)345-0816



Scale (feet)
1" = ~1000'

Index of Soil Map Units within the Site

6 Bama fine sandy loam, 2 to 6% slopes

33 Smithdale fine sandy loam, 6 to 15% slopes

35 Smithdale-Flomaton complex, 15 to 35% slopes

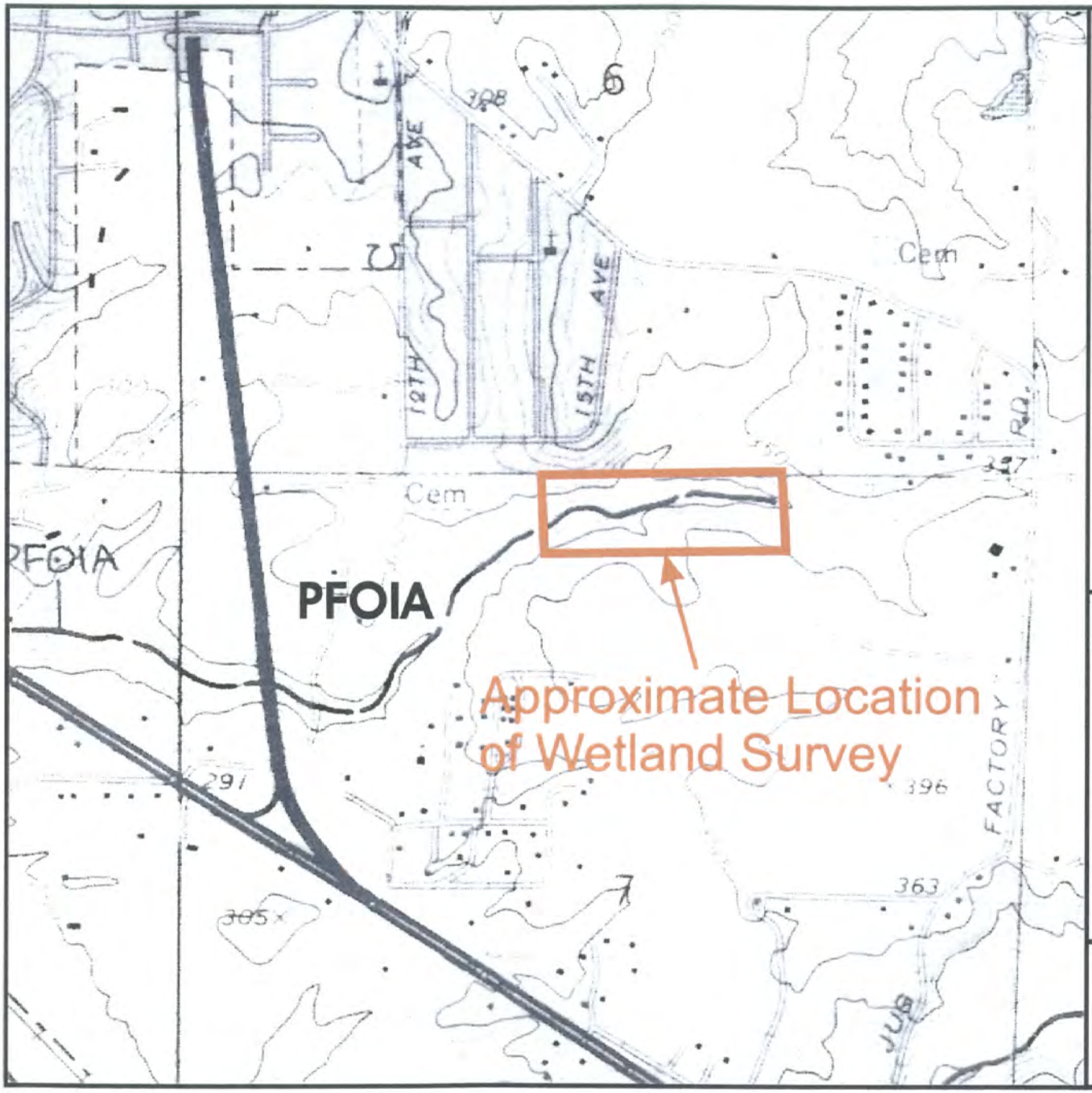
Figure 2. Soil Survey Map for Cypress Creek Landfill Proposed North Sedimentation Pond, Tuscaloosa, Tuscaloosa County, Alabama

Map taken from Soil Conservation Service, Soil Survey of Tuscaloosa, County, Alabama 1981

The site is located in the NW quarter of the NE quarter and the NE quarter of the NW quarter of Section 7, T. 22 S., R. 9 W as shown on the Tuscaloosa, Alabama 7.5 minute U.S.G.S.

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N

Scale (feet)
1" = 1000'

Wetland Legend

PFOIA - Palustrine, Forested, Broad-leaved Deciduous, Temporary

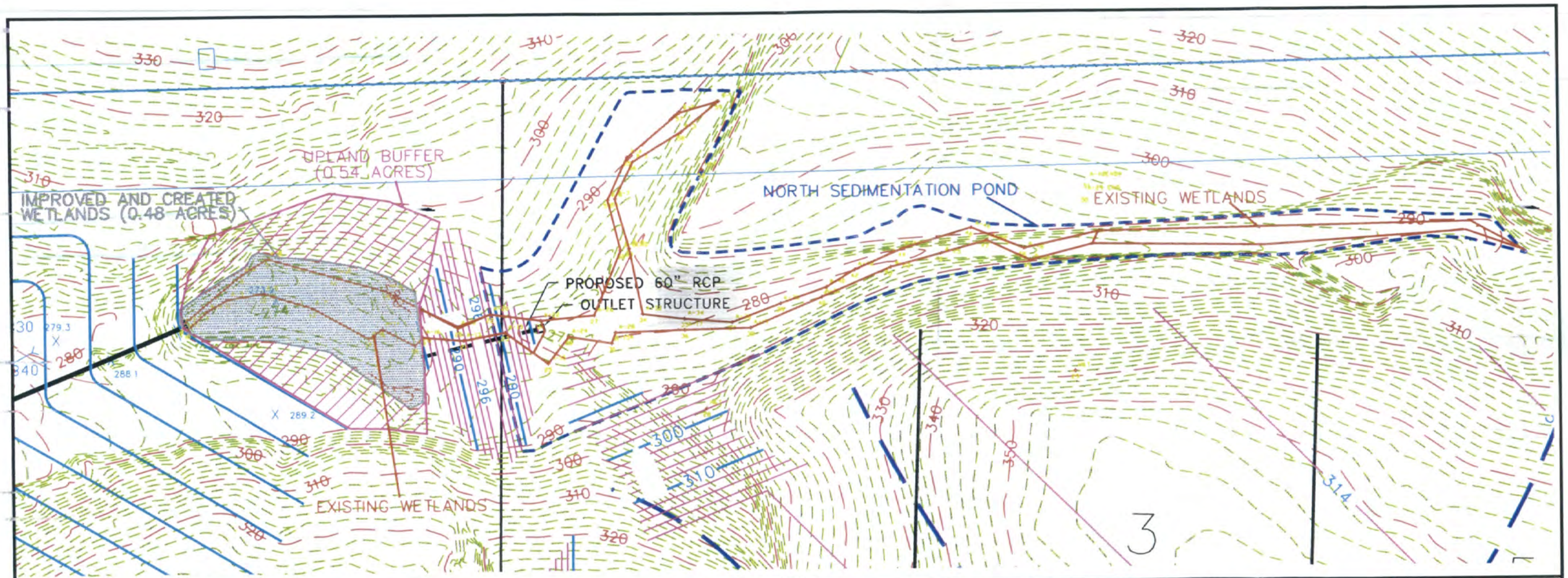
Figure 3. National Wetland Inventory Map for Cypress Creek Landfill Proposed North Sedimentation Pond, Tuscaloosa, Tuscaloosa County, Alabama

Map taken from National Wetland Inventory Map, U.S Department of the Interior, Tuscaloosa, Alabama 1981

The site is located in the NW quarter of the NE quarter and the NE quarter of the NW quarter of Section 7, T. 22 S., R. 9 W as shown on the Tuscaloosa, Alabama 7.5 minute U.S.G.S.

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Scale (feet)
1" = 110'

Figure 4. Location of Existing Wetlands and Proposed On-Site Mitigation for Cypress Creek Landfill Proposed North Sedimentation Pond, Tuscaloosa, Tuscaloosa County, Alabama

The site is located in the NW quarter of the NE quarter and the NE quarter of the NW quarter of Section 7 T. 22 S., R. 9 W as shown on the Tuscaloosa, Alabama 7.5 minute U.S.G.S. Topographic map (1971; photorevised 1983).

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APPENDIX

FIELD DATA SHEET 1

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Proposed North Sedimentation Pond	Date:	2/19/2002
Applicant /Owner:	Cypress Creek Landfill	County:	Tuscaloosa
Investigators:	Darren Mitchell, TTL, Inc.	State:	Tuscaloosa, Alabama
Topo. Location:	NW 1/4 of NE1/4, and NE 1/4 of NW 1/4 of Sec. 7, T 21 S, R 10 W, Tuscaloosa	Transect ID:	N/A
Community ID:	Intermittent Stream	Plot ID:	

Do Normal Circumstances Exist on the Site?	YES
Is the site significantly disturbed (Atypical Situation)?	NO
Is the area a potential Problem Area? (If needed, explain on reverse.)	NO

VEGETATION

Dominant Plant Species	Stratum:	Rating:
Liriodendron tuipifera	Tree	FAC
Fagus grandifolia	Tree	FACU
Salix nigra	Tree	FACW
Calycanthus floridus	Shrub/Sap	FACU+
Magnolia virginiana	Shrub/Sap	FACW+
Salix nigra	Shrub/Sap	FACW
Ligustrum sinense	Shrub/Sap	FAC
Campsis radicans	Wdy Vine	FAC
Smilax laurifolia	Wdy Vine	FACW+
Lonicera japonica	Wdy Vine	FAC-
Typha latifolia	Herb	OBL
Thelypteris thelypteroides	Herb	FACW

	FAC or wetter	Total	%
Percent of Dominant Species OBL, FACW or FAC (Exclude FAC-):	9	12	75.0

Remarks: Many of the trees in this area have strong buttresses.

HYDROLOGY

_____ Recorded Data
_____ Stream/Lake/Tide Gauge
_____ Aerial Photos
_____ Other _____
__X__ No Recorded Data

Field Observations
Depth of Surface water: None* (in.)
Depth to Free Water in Pit: 5 (in.)
Depth to Saturated Soil: 3 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
__X__ Saturated in Upper 12 in.
_____ Water Marks
_____ Drift lines
__X__ Sediment Deposits
__X__ Drainage Patterns

Secondary Indicators (2 or more required)
_____ Oxidized root channels (12 in.)
__X__ Water Stained Leaves
_____ Local Soil Survey Data
__X__ FAC-Neutral Test 6 : 2
_____ Other _____

Remarks: Most of the marked wetland area is confined to the high water mark of the intermittent stream except the area around this sampling point which is near the culvert area.
Stream width is 5 - 15 feet.
West of the culvert the stream banks are very steep and high (>20 ft. in some areas).

SOILS

Map Unit Name (Series and Phase:): Bama fine sandy loam, 2-6% slopes; Smithdale fine sandy loam, 6-15% slopes; Smithdale-Flomaton complex, 15-35% slopes

Drainage Class: Well Drained; Well Drained; Well & Excessively Drained

Taxonomy (Subgroup): Fine-loamy, siliceous, thermic Typic Paleudults; Fine-loamy, siliceous, thermic Typic Paleudults; Sandy-skeletal, siliceous, thermic Psammentic Paleudults (Flomaton)

Field Observations
Confirm Mapped Types: No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Contrast/Size	Texture, Concretions, Structure, Etc.
0 - 6"		10YR 6/8	None Noted		Sand
6 - 12"		7.5YR 5/8	None Noted		Sand
12 - 14"		2.5Y 6/3**	None Noted		Silty Sand
14 - 16"		10YR 4/4	None Noted		Silty Sand

Hydric Soil Indicators:

N	Histosol	N	Concretions
N	Histic Epipedon	Y	High Organic Content in Surface Layer (Sandy)
Y	Sulfidic Odor	N	Organic Streaking (Sandy)
N	Aquic Moisture Regime	N	Listed on Local Hydric Soils List
N	Reducing Conditions	N	Listed On National Hydric Soils List
N	Gleyed or Low-Chroma Colors		Other (Explain

Remarks: The soil way red and sandy. In the third layer the was organics and organic streaking of the soil. A sulfidic odor was noted.
The color and texture of the top tweleve inches of soil were consistant with the silitation of the stream.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? YES
Wetland Hydrology Present? YES
Hydric Soils Present? YES

Is the Sampling Point Within a Wetland? YES

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soil indicators, the sample point is within a wetland.

This frequently flooded area and the intermittent stream were marked as wetlands.

Letter Of Concurrence and Correspondence

From U.S. Army Corps Of Engineers

For The 2002 Wetlands Study

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF:

August 28, 2002

Regulatory Branch
Operations Division

SUBJECT: Nationwide Permit Authorization, Cypress Creek Landfill - Jurisdictional Number ALNW02-02284-K

TTL, Inc.
Attention: Mr. Darren Mitchell
3516 Greensboro Avenue
Tuscaloosa, Alabama 35401

Dear Mr. Mitchell:

Reference is made to your request to construct a sediment pond on the Cypress Creek Landfill property in Tuscaloosa. Specifically, the property is located within Section 7, Township 22 South, Range 9 West, Tuscaloosa County, Alabama.

This letter verifies that your proposed pond is already authorized by Nationwide Permit 39 in accordance with 33 CFR Part 330 of our regulations. A copy is enclosed with the appropriate sections marked for your reference. Further authorization from this office is not required provided the scope of work is in accordance with your submitted plans, mitigation proposal and the Nationwide Permit conditions. We request that you submit a copy of the recorded conservation easement to this office so we may include it in your file.

By letter dated March 16, 2002, the Alabama Department of Environmental Management (ADEM), has certified that work authorized by this Nationwide Permit will be in compliance with the applicable water quality standards established under Section 303 of the Clean Water Act and Title 22, Section 22-22-9(g), Code of Alabama 1975, provided the applicant acts in accordance with the attached (encl.1) conditions as specified.

The statements contained herein do not convey any property rights, or any exclusive privileges, and do not authorize any injury to property or obviate the requirements to obtain other local, State or Federal assent required by law.

The enclosed Notice of Authorization must be posted at the site during construction of the permitted activity. If the scope of work or project location changes, you are urged to contact this office for a verification of this determination.

Please be advised that this jurisdictional determination reflects current policy and regulations. This Nationwide Permit authorization will expire March 19, 2007.

If you have any questions or require further information concerning this matter, please contact Ms. Cindy J. House-Pearson of the Enforcement Section at (251) 690-3188.

Sincerely,

Ronald A. Krizman
Chief, Regulatory Branch
Operations Division

Enclosure

This notice of authorization must be conspicuously displayed at the site of work.

United States Army Corps of Engineers

A permit to perform work authorized by statutes and regulations of the Department of the Army

at SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY, ALABAMA

has been issued to CYPRESS CREEK LANDFILL TTL INC. on AUGUST 28, 2002

Address of Permittee 3516 GREENSBORO AVENUE, TUSCALOOSA, ALABAMA

Permit Number

ALNW02-02284-K

For the District Commander
RONALD A. KRIZMAN, Chief, OP-S
Operations Division

ENG FORM 4336, Jul 81 (33 CFR 320-330) EDITION OF JUL 70 MAY BE USED (Proponent: CECW-0)

Federal Register

Tuesday,
January 15, 2002

Part II

Department of Defense

Department of the Army, Corps of Engineers

Issuance of Nationwide Permits; Notice

New York

New York District Engineer, ATTN: CENAN–OP–R, 26 Federal Plaza, New York, NY 10278–0090

North Carolina

Wilmington District Engineer, ATTN: CESAW–RG, P.O. Box 1890, Wilmington, NC 28402–1890

North Dakota

Omaha District Engineer, ATTN: CENWO–OP–R, 106 South 15th Street, Omaha, NE 68102–1618

Ohio

Huntington District Engineer, ATTN: CELRH–OR–F, 502 8th Street, Huntington, WV 25701–2070

Oklahoma

Tulsa District Engineer, ATTN: CESWT—PE–R, 1645 S. 101st East Ave, Tulsa, OK 74128–4609

Oregon

Portland District Engineer, ATTN: CENWP–PE–G, P.O. Box 2946, Portland, OR 97208–2946

Pennsylvania

Baltimore District Engineer, ATTN: CENAB–OP–R, P.O. Box 1715, Baltimore, MD 21203–1715

Rhode Island

New England District Engineer, ATTN: CENAE–R, 696 Virginia Road, Concord, MA 01742–2751

South Carolina

Charleston District Engineer, ATTN: CESAC–CO–P, P.O. Box 919, Charleston, SC 29402–0919

South Dakota

Omaha District Engineer, ATTN: CENWO–OP–R, 106 South 15th Street, Omaha, NE 68102–1618

Tennessee

Nashville District Engineer, ATTN: CELRN–OP–F, P.O. Box 1070, Nashville, TN 37202–1070

Texas

Ft. Worth District Engineer, ATTN: CESWF–PER–R, P.O. Box 17300, Ft. Worth, TX 76102–0300

Utah

Sacramento District Engineer, ATTN: CESPK–CO–R, 1325 J Street, CA 95814–2922

Vermont

New England District Engineer, ATTN: CENAE–R, 696 Virginia Road, Concord, MA 01742–2751

Virginia

Norfolk District Engineer, ATTN: CENAO–OP–R, 803 Front Street, Norfolk, VA 23510–1096

Washington

Seattle District Engineer, ATTN: CENWS–OP–RG, P.O. Box 3755, Seattle, WA 98124–2255

West Virginia

Huntington District Engineer, ATTN: CELRH–OR–F, 502 8th Street, Huntington, WV 25701–2070

Wisconsin

St. Paul District Engineer, ATTN: CEMVP–CO–R, 190 Fifth Street East, St. Paul, MN 55101–1638

Wyoming

Omaha District Engineer, ATTN: CENWO–OP–R, 106 South 15th Street, Omaha, NE 68102–1618

District of Columbia

Baltimore District Engineer, ATTN: CENAB–OP–R, P.O. Box 1715, Baltimore, MD 21203–1715

Pacific Territories (American Samoa, Guam, & Commonwealth of the Northern Mariana Islands)

Honolulu District Engineer, ATTN: CEPOH–EC–R, Building 230, Fort Shafter, Honolulu, HI 96858–5440

Puerto Rico & Virgin Islands

Jacksonville District Engineer, ATTN: CESAJ–CO–R, P.O. Box 4970, Jacksonville, FL 32202–4412

Dated: January 4, 2002.

Approved:

Robert H. Griffin,

Brigadier General, U.S. Army, Director of Civil Works.

Nationwide Permits, Conditions, Further Information, and Definitions

A. Index of Nationwide Permits, Conditions, Further Information, and Definitions

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3. Maintenance
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5. Scientific Measurement Devices
6. Survey Activities
7. Outfall Structures and Maintenance
8. Oil and Gas Structures
9. Structures in Fleeting and Anchorage Areas
10. Mooring Buoys
11. Temporary Recreational Structures
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6. *Survey Activities.* Survey activities including core sampling, seismic exploratory operations, plugging of seismic shot holes and other exploratory-type bore holes, soil survey, sampling, and historic resources surveys. Discharges and structures associated with the recovery of historic resources are not authorized by this NWP. Drilling and the discharge of excavated material from test wells for oil and gas exploration is not authorized by this NWP; the plugging of such wells is authorized. Fill placed for roads, pads and other similar activities is not authorized by this NWP. The NWP does not authorize any permanent structures. The discharge of drilling mud and cuttings may require a permit under section 402 of the CWA. (Sections 10 and 404)

7. *Outfall Structures and Maintenance.* Activities related to:

(i) Construction of outfall structures and associated intake structures where the effluent from the outfall is authorized, conditionally authorized, or specifically exempted, or are otherwise in compliance with regulations issued under the National Pollutant Discharge Elimination System Program (Section 402 of the CWA), and

(ii) Maintenance excavation, including dredging, to remove accumulated sediments blocking or restricting outfall and intake structures, accumulated sediments from small impoundments associated with outfall and intake structures, and accumulated sediments from canals associated with outfall and intake structures, provided that the activity meets all of the following criteria:

a. The permittee notifies the District Engineer in accordance with General Condition 13;

b. The amount of excavated or dredged material must be the minimum necessary to restore the outfalls, intakes, small impoundments, and canals to original design capacities and design configurations (i.e., depth and width);

c. The excavated or dredged material is deposited and retained at an upland site, unless otherwise approved by the District Engineer under separate authorization; and

d. Proper soil erosion and sediment control measures are used to minimize reentry of sediments into waters of the US.

The construction of intake structures is not authorized by this NWP, unless they are directly associated with an authorized outfall structure. For maintenance excavation and dredging to remove accumulated sediments, the notification must include information regarding the original design capacities and configurations of the facility and the presence of special aquatic sites (e.g., vegetated shallows) in the vicinity of the proposed work. (Sections 10 and 404)

8. *Oil and Gas Structures.* Structures for the exploration, production, and transportation of oil, gas, and minerals on the outer continental shelf within areas leased for such purposes by the DOI, Minerals Management Service (MMS). Such structures shall not be placed within the limits of any designated shipping safety fairway or traffic separation scheme, except temporary anchors that comply with the fairway regulations in 33 CFR 322.5(l). (Where such limits have not been designated, or where changes are anticipated, District Engineers will consider asserting discretionary authority in accordance with 33 CFR 330.4(e) and will also review such proposals to ensure they comply with the provisions of the fairway regulations in 33 CFR 322.5(l). Any Corps review under this permit will be limited to the effects on navigation and national security in accordance with 33 CFR 322.5(f)). Such structures will not be placed in established danger zones or restricted areas as designated in 33 CFR part 334: nor will such structures be permitted in EPA or Corps designated dredged material disposal areas. (Section 10)

9. *Structures in Fleeting and Anchorage Areas.* Structures, buoys, floats and other devices placed within anchorage or fleeting areas to facilitate moorage of vessels where the USCG has established such areas for that purpose. (Section 10)

10. *Mooring Buoys.* Non-commercial, single-boat, mooring buoys. (Section 10)

11. *Temporary Recreational Structures.* Temporary buoys, markers, small floating docks, and similar structures placed for recreational use during specific events such as water skiing competitions and boat races or seasonal use provided that such structures are removed within 30 days after use has been discontinued. At Corps of Engineers reservoirs, the reservoir manager must approve each buoy or marker individually. (Section 10)

12. *Utility Line Activities.* Activities required for the construction, maintenance and repair of utility lines and associated facilities in waters of the US as follows:

(i) Utility lines: The construction, maintenance, or repair of utility lines, including outfall and intake structures and the associated excavation, backfill, or bedding for the utility lines, in all waters of the US, provided there is no change in preconstruction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication (see Note 1, below). Material resulting from trench excavation may be temporarily sidecast (up to three months) into waters of the US, provided that the material is not placed in such a manner that it is dispersed by currents or other forces. The District Engineer may extend the period of temporary side casting not to exceed a total of 180 days, where appropriate. In wetlands, the top 6" to 12" of the trench should normally be backfilled with topsoil from the trench. Furthermore, the trench cannot be constructed in such a manner as to drain waters of the US (e.g., backfilling with extensive gravel layers, creating a french drain effect). For example, utility line trenches can be backfilled with clay blocks to ensure that the trench does not drain the waters of the US through which the utility line is installed. Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

(ii) Utility line substations: The construction, maintenance, or expansion of a substation facility associated with a power line or utility line in non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters, provided the activity does not result in the loss of greater than ½-acre of non-tidal waters of the US.

(iii) Foundations for overhead utility line towers, poles, and anchors: The construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the US, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

(iv) Access roads: The construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters, provided the discharges do not cause the loss of greater than ½-acre of non-tidal waters of the US. Access roads shall be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes the adverse effects on waters of the US and as near as possible to preconstruction contours and

than minimal degradation of water quality of any stream (see General Conditions 9 and 21);

g. This permit cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars; and

h. The crossing is a single and complete project for crossing waters of the US. Where a road segment (*i.e.*, the shortest segment of a road with independent utility that is part of a larger project) has multiple crossings of streams (several single and complete projects) the Corps will consider whether it should use its discretionary authority to require an Individual Permit. (Sections 10 and 404)

Note: Some discharges for the construction of farm roads, forest roads, or temporary roads for moving mining equipment may be eligible for an exemption from the need for a Section 404 permit (see 33 CFR 323.4).

15. *U.S. Coast Guard Approved Bridges.* Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the US, including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided such discharges have been authorized by the USCG as part of the bridge permit. Causeways and approach fills are not included in this NWP and will require an individual or regional Section 404 permit. (Section 404)

16. *Return Water From Upland Contained Disposal Areas.* Return water from upland, contained dredged material disposal area. The dredging itself may require a Section 404 permit (33 CFR 323.2(d)), but will require a Section 10 permit if located in navigable waters of the US. The return water from a contained disposal area is administratively defined as a discharge of dredged material by 33 CFR 323.2(d), even though the disposal itself occurs on the upland and does not require a Section 404 permit. This NWP satisfies the technical requirement for a Section 404 permit for the return water where the quality of the return water is controlled by the state through the Section 401 certification procedures. (Section 404)

17. *Hydropower Projects.* Discharges of dredged or fill material associated with (a) small hydropower projects at existing reservoirs where the project, which includes the fill, are licensed by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act of 1920, as amended; and has a total generating capacity of not more than 5000 kW; and the permittee notifies the District Engineer in accordance with the "Notification" General Condition; or (b) hydropower projects for which the FERC has granted an exemption from licensing pursuant to section 408 of the Energy Security Act of 1980 (16 U.S.C. 2705 and 2708) and section 30 of the Federal Power Act, as amended; provided the permittee notifies the District Engineer in accordance with the "Notification" General Condition. (Section 404)

18. *Minor Discharges.* Minor discharges of dredged or fill material into all waters of the US if the activity meets all of the following criteria:

a. The quantity of discharged material and the volume of area excavated do not exceed 25 cubic yards below the plane of the ordinary high water mark or the high tide line;

b. The discharge, including any excavated area, will not cause the loss of more than 1/10-acre of a special aquatic site, including wetlands. For the purposes of this NWP, the acreage limitation includes the filled area and excavated area plus special aquatic sites that are adversely affected by flooding and special aquatic sites that are drained so that they would no longer be a water of the US as a result of the project;

c. If the discharge, including any excavated area, exceeds 10 cubic yards below the plane of the ordinary high water mark or the high tide line or if the discharge is in a special aquatic site, including wetlands, the permittee notifies the District Engineer in accordance with the "Notification" General Condition. For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands (also see 33 CFR 330.1(e)); and

d. The discharge, including all attendant features, both temporary and permanent, is part of a single and complete project and is not placed for the purpose of a stream diversion. (Sections 10 and 404)

19. *Minor Dredging.* Dredging of no more than 25 cubic yards below the plane of the ordinary high water mark or the mean high water mark from navigable waters of the US (i.e., Section 10 waters) as part of a single and complete project. This NWP does not authorize the dredging or degradation through siltation of coral reefs, sites that support submerged aquatic vegetation (including sites where submerged aquatic vegetation is documented to exist, but may not be present in a given year), anadromous fish spawning areas, or wetlands, or the connection of canals or other artificial waterways to navigable waters of the US (see 33 CFR 322.5(g)). (Sections 10 and 404)

20. *Oil Spill Cleanup.* Activities required for the containment and cleanup of oil and hazardous substances which are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR part 300) provided that the work is done in accordance with the Spill Control and Countermeasure Plan required by 40 CFR 112.3 and any existing state contingency plan and provided that the Regional Response Team (if one exists in the area) concurs with the proposed containment and cleanup action. (Sections 10 and 404)

21. *Surface Coal Mining Activities.* Discharges of dredged or fill material into waters of the US associated with surface coal mining and reclamation operations provided the coal mining activities are authorized by the DOI, Office of Surface Mining (OSM), or by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977 and provided the permittee notifies the District Engineer in accordance with the "Notification" General Condition. In addition, to be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing. The Corps, at the discretion of the District Engineer, may require a bond to ensure success of the mitigation, if no other Federal or state agency has required one. For discharges in special aquatic sites, including wetlands, and stream riffle and pool complexes, the notification must also include a delineation of affected special aquatic sites, including wetlands. (also, see 33 CFR 330.1(e))

Mitigation: In determining the need for as well as the level and type of mitigation, the District Engineer will ensure no more than minimal adverse effects to the aquatic environment occur. As such, District Engineers will determine on a case-by-case basis the requirement for adequate mitigation to ensure the effects to aquatic systems are minimal. In cases where OSM or the state has required mitigation for the loss of aquatic habitat, the Corps may consider this in determining appropriate mitigation under Section 404. (Sections 10 and 404)

22. *Removal of Vessels.* Temporary structures or minor discharges of dredged or fill material required for the removal of wrecked, abandoned, or disabled vessels, or the removal of man-

between the landowner and NRCS or FWS (even though the restoration, enhancement, or creation activity did not require a Section 404 permit). The five-year reversion limit does not apply to agreements without time limits reached under paragraph (a)(1). The prior condition will be documented in the original agreement or permit, and the determination of return to prior conditions will be made by the Federal agency or appropriate state agency executing the agreement or permit. Before any reversion activity the permittee or the appropriate Federal or state agency must notify the District Engineer and include the documentation of the prior condition. Once an area has reverted to its prior physical condition, it will be subject to whatever the Corps Regulatory requirements will be at that future date. (Sections 10 and 404)

Note: Compensatory mitigation is not required for activities authorized by this NWP, provided the authorized work results in a net increase in aquatic resource functions and values in the project area. This NWP can be used to authorize compensatory mitigation projects, including mitigation banks, provided the permittee notifies the District Engineer in accordance with General Condition 13, and the project includes compensatory mitigation for impacts to waters of the US caused by the authorized work. However, this NWP does not authorize the reversion of an area used for a compensatory mitigation project to its prior condition. NWP 27 can be used to authorize impacts at a mitigation bank, but only in circumstances where it has been approved under the Interagency Federal Mitigation Bank Guidelines.

28. *Modifications of Existing Marinas.* Reconfiguration of existing docking facilities within an authorized marina area. No dredging, additional slips, dock spaces, or expansion of any kind within waters of the US is authorized by this NWP. (Section 10)

29. *Single-family Housing.* Discharges of dredged or fill material into non-tidal waters of the US, including non-tidal wetlands for the construction or expansion of a single-family home and attendant features (such as a garage, driveway, storage shed, and/or septic field) for an Individual Permittee provided that the activity meets all of the following criteria:

a. The discharge does not cause the loss of more than ¼-acre of non-tidal waters of the US, including non-tidal wetlands;

b. The permittee notifies the District Engineer in accordance with the "Notification" General Condition;

c. The permittee has taken all practicable actions to minimize the on-site and off-site impacts of the discharge. For example, the location of the home may need to be adjusted on-site to avoid flooding of adjacent property owners;

d. The discharge is part of a single and complete project; furthermore, that for any subdivision created on or after November 22, 1991, the discharges authorized under this NWP may not exceed an aggregate total loss of waters of the US of ¼-acre for the entire subdivision;

e. An individual may use this NWP only for a single-family home for a personal residence;

f. This NWP may be used only once per parcel;

g. This NWP may not be used in conjunction with NWP 14 or NWP 18, for any parcel; and,

h. Sufficient vegetated buffers must be maintained adjacent to all open water bodies, streams, etc., to preclude water quality degradation due to erosion and sedimentation.

For the purposes of this NWP, the acreage of loss of waters of the US includes the filled area previously permitted, the proposed filled area, and any other waters of the US that are adversely affected by flooding, excavation, or drainage as a result of the project. This NWP authorizes activities only by individuals; for this purpose, the term "individual" refers to a natural person and/or a married couple, but does not include a corporation, partnership, or similar entity. For the purposes of this NWP, a parcel of land is defined as "the entire contiguous quantity of land in possession of, recorded as property of, or owned (in any form of ownership, including land owned as a partner, corporation, joint tenant, etc.) by the same individual (and/or that individual's spouse), and comprises not only the area of wetlands sought to be filled, but also all land contiguous to those wetlands, owned by the individual (and/or that individual's spouse) in any form of ownership." (Sections 10 and 404)

30. *Moist Soil Management for Wildlife.* Discharges of dredged or fill material and maintenance activities that are associated with moist soil management for wildlife performed on non-tidal Federally-owned or managed, state-owned or managed property, and local government agency-owned or managed property, for the purpose of continuing ongoing, site-specific, wildlife management activities where soil manipulation is used to manage habitat and feeding areas for wildlife. Such activities include, but are not limited to: The repair, maintenance or replacement of existing water control structures; the repair or maintenance of dikes; and plowing or discing to impede succession, prepare seed beds, or establish fire breaks. Sufficient vegetated buffers must be maintained adjacent to all open water bodies, streams, etc., to preclude water quality degradation due to erosion and sedimentation. This NWP does not authorize the construction of new dikes, roads, water control structures, etc. associated with the management areas. This NWP does not authorize converting wetlands to uplands, impoundments or other open water bodies. (Section 404)

31. *Maintenance of Existing Flood Control Facilities.* Discharge of dredge or fill material resulting from activities associated with the maintenance of existing flood control facilities, including debris basins, retention/detention basins, and channels that

(i) were previously authorized by the Corps by Individual Permit, General Permit, by 33 CFR 330.3, or did not require a permit at the time it was constructed, or

(ii) were constructed by the Corps and transferred to a non-Federal sponsor for operation and maintenance. Activities authorized by this NWP are limited to those resulting from maintenance activities that are conducted within the "maintenance baseline," as described in the definition below. Activities including the discharges of dredged or fill materials, associated with maintenance activities in flood control facilities in any watercourse that has previously been determined to be within the maintenance baseline, are authorized under this NWP. The NWP does not authorize the removal of sediment and associated vegetation from the natural water courses except to the extent that these have been included in the maintenance baseline. All dredged material must be placed in an upland site or an authorized disposal site in waters of the US, and proper siltation controls must be used. (Activities of any kind that result in only incidental fallback, or only the cutting and removing of vegetation above the ground, e.g., mowing, rotary cutting, and chainsawing, where the activity neither substantially disturbs the root system nor involves mechanized pushing, dragging, or other similar activities that redeposit excavated soil material, do not require a Section 404 permit in accordance with 33 CFR 323.2(d)(2)).

Notification: After the maintenance baseline is established, and before any maintenance work is conducted, the permittee must notify the District Engineer in accordance with the "Notification" General Condition. The notification may be for activity-specific

Temporary fill must be entirely removed to upland areas, or dredged material returned to its original location, following completion of the construction activity, and the affected areas must be restored to the pre-project conditions. Cofferdams cannot be used to dewater wetlands or other aquatic areas to change their use. Structures left in place after cofferdams are removed require a Section 10 permit if located in navigable waters of the U.S. (See 33 CFR part 322). The permittee must notify the District Engineer in accordance with the "Notification" General Condition. The notification must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources. The District Engineer will add Special Conditions, where necessary, to ensure environmental adverse effects is minimal. Such conditions may include: limiting the temporary work to the minimum necessary; requiring seasonal restrictions; modifying the restoration plan; and requiring alternative construction methods (e.g. construction mats in wetlands where practicable.). (Sections 10 and 404)

34. *Cranberry Production Activities.* Discharges of dredged or fill material for dikes, berms, pumps, water control structures or leveling of cranberry beds associated with expansion, enhancement, or modification activities at existing cranberry production operations provided that the activity meets all of the following criteria:

a. The cumulative total acreage of disturbance per cranberry production operation, including but not limited to, filling, flooding, ditching, or clearing, does not exceed 10 acres of waters of the U.S., including wetlands;

b. The permittee notifies the District Engineer in accordance with the "Notification" General Condition. The notification must include a delineation of affected special aquatic sites, including wetlands; and,

c. The activity does not result in a net loss of wetland acreage. This NWP does not authorize any discharge of dredged or fill material related to other cranberry production activities such as warehouses, processing facilities, or parking areas. For the purposes of this NWP, the cumulative total of 10 acres will be measured over the period that this NWP is valid. (Section 404)

35. *Maintenance Dredging of Existing Basins.* Excavation and removal of accumulated sediment for maintenance of existing marina basins, access channels to marinas or boat slips, and boat slips to previously authorized depths or controlling depths for ingress/egress, whichever is less, provided the dredged material is disposed of at an upland site and proper siltation controls are used. (Section 10)

36. *Boat Ramps.* Activities required for the construction of boat ramps provided:

a. The discharge into waters of the U.S. does not exceed 50 cubic yards of concrete, rock, crushed stone or gravel into forms, or placement of pre-cast concrete planks or slabs. (Unsuitable material that causes unacceptable chemical pollution or is structurally unstable is not authorized);

b. The boat ramp does not exceed 20 feet in width;

c. The base material is crushed stone, gravel or other suitable material;

d. The excavation is limited to the area necessary for site preparation and all excavated material is removed to the upland; and,

e. No material is placed in special aquatic sites, including wetlands.

Another NWP, Regional General Permit, or Individual Permit may authorize dredging to provide access to the boat ramp after obtaining a Section 10 if located in navigable waters of the U.S. (Sections 10 and 404)

37. *Emergency Watershed Protection and Rehabilitation.* Work done by or funded by:

a. The NRCS which is a situation requiring immediate action under its emergency Watershed Protection Program (7 CFR part 624); or

b. The USFS under its Burned-Area Emergency Rehabilitation Handbook (FSH 509.13); or

c. The DOI for wildland fire management burned area emergency stabilization and rehabilitation (DOI Manual part 620, Ch. 3).

For all of the above provisions, the District Engineer must be notified in accordance with the General Condition 13. (Also, see 33 CFR 330.1(e)). (Sections 10 and 404)

38. *Cleanup of Hazardous and Toxic Waste.* Specific activities required to effect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority provided the permittee notifies the District Engineer in accordance with the "Notification" General Condition. For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. Court ordered remedial action plans or related settlements are also authorized by this NWP. This NWP does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste. Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA as approved or required by EPA, are not required to obtain permits under section 404 of the CWA or section 10 of the Rivers and Harbors Act. (Sections 10 and 404)

39. *Residential, Commercial, and Institutional Developments.* Discharges of dredged or fill material into non-tidal waters of the U.S., excluding non-tidal wetlands adjacent to tidal waters, for the construction or expansion of residential, commercial, and institutional building foundations and building pads and attendant features that are necessary for the use and maintenance of the structures. Attendant features may include, but are not limited to, roads, parking lots, garages, yards, utility lines, stormwater management facilities, and recreation facilities such as playgrounds, playing fields, and golf courses (provided the golf course is an integral part of the residential development). The construction of new ski areas or oil and gas wells is not authorized by this NWP.

Residential developments include multiple and single unit developments. Examples of commercial developments include retail stores, industrial facilities, restaurants, business parks, and shopping centers. Examples of institutional developments include schools, fire stations, government office buildings, judicial buildings, public works buildings, libraries, hospitals, and places of worship. The activities listed above are authorized, provided the activities meet all of the following criteria:

a. The discharge does not cause the loss of greater than ½-acre of non-tidal waters of the U.S., excluding non-tidal wetlands adjacent to tidal waters;

b. The discharge does not cause the loss of greater than 300 linear-feet of a stream bed, unless for intermittent stream beds this criterion is waived in writing pursuant to a determination by the District Engineer, as specified below, that the project complies with all terms and conditions of this NWP and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

c. The permittee must notify the District Engineer in accordance with General Condition 13, if any of the following criteria are met:

(1) The discharge causes the loss of greater than ⅛-acre of non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters; or

(4) The notification must include a compensatory mitigation proposal to offset losses of waters of the US; or

c. For the construction of building pads for farm buildings, the discharge does not cause the loss of greater than ½-acre of non-tidal wetlands that were in agricultural production prior to December 23, 1985, (i.e., farmed wetlands) and the permittee must notify the District Engineer in accordance with General Condition 13; and

d. Any activity in other waters of the US is limited to the relocation of existing serviceable drainage ditches constructed in non-tidal streams. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively. For impacts exceeding 300-linear feet of impacts to existing serviceable ditches constructed in intermittent non-tidal streams, the permittee must notify the District Engineer in accordance with the "Notification" General Condition 13; and

e. The term "farm tract" refers to a parcel of land identified by the Farm Service Agency. The Corps will identify other waters of the US on the farm tract. NRCS will determine if a proposed agricultural activity meets the terms and conditions of paragraph a. of this NWP, except as provided below. For those activities that require notification, the District Engineer will determine if a proposed agricultural activity is authorized by paragraphs b., c., and/or d. of this NWP. USDA Program participants requesting authorization for discharges of dredged or fill material into waters of the US authorized by paragraphs (c) or (d) of this NWP, in addition to paragraph (a), must notify the District Engineer in accordance with General Condition 13 and the District Engineer will determine if the entire single and complete project is authorized by this NWP. Discharges of dredged or fill material into waters of the US associated with completing required compensatory mitigation are authorized by this NWP. However, total impacts, including other authorized impacts under this NWP, may not exceed the ½-acre limit of this NWP. This NWP does not affect, or otherwise regulate, discharges associated with agricultural activities when the discharge qualifies for an exemption under section 404(f) of the CWA, even though a categorical minimal effects exemption, minimal effect exemption, or mitigation exemption from NRCS pursuant to the Food Security Act of 1985, as amended, may be required. Activities authorized by paragraphs a. through d. may not exceed a total of ½-acre on a single farm tract. If the site was used for agricultural purposes and the farm owner/operator used either paragraphs a., b., or c. of this NWP to authorize activities in waters of the US to increase agricultural production or construct farm buildings, and the current landowner wants to use NWP 39 to authorize residential, commercial, or industrial development activities in waters of the US on the site, the combined acreage loss authorized by NWPs 39 and 40 cannot exceed ½-acre (see General Condition 15). (Section 404)

41. *Reshaping Existing Drainage Ditches.* Discharges of dredged or fill material into non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters, to modify the cross-sectional configuration of currently serviceable drainage ditches constructed in waters of the US. The reshaping of the ditch cannot increase drainage capacity beyond the original design capacity. Nor can it expand the area drained by the ditch as originally designed (i.e., the capacity of the ditch must be the same as originally designed and it cannot drain additional wetlands or other waters of the US). Compensatory mitigation is not required because the work is designed to improve water quality (e.g., by regrading the drainage ditch with gentler slopes, which can reduce erosion, increase growth of vegetation, increase uptake of nutrients and other substances by vegetation, etc.).

Notification: The permittee must notify the District Engineer in accordance with General Condition 13 if greater than 500 linear feet of drainage ditch will be reshaped. Material resulting from excavation may not be permanently sidecast into waters but may be temporarily sidecast (up to three months) into waters of the US, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The District Engineer may extend the period of temporary sidecasting not to exceed a total of 180 days, where appropriate. In general, this NWP does not apply to reshaping drainage ditches constructed in uplands, since these areas are generally not waters of the US, and thus no permit from the Corps is required, or to the maintenance of existing drainage ditches to their original dimensions and configuration, which does not require a Section 404 permit (see 33 CFR 323.4(a)(3)). This NWP does not authorize the relocation of drainage ditches constructed in waters of the US; the location of the centerline of the reshaped drainage ditch must be approximately the same as the location of the centerline of the original drainage ditch. This NWP does not authorize stream channelization or stream relocation projects. (Section 404)

42. *Recreational Facilities.* Discharges of dredged or fill material into non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters, for the construction or expansion of recreational facilities, provided the activity meets all of the following criteria:

a. The discharge does not cause the loss of greater than ½-acre of non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters;

b. The discharge does not cause the loss of greater than 300 linear-feet of a stream bed, unless for intermittent stream beds this criterion is waived in writing pursuant to a determination by the District Engineer, as specified below, that the project complies with all terms and conditions of this NWP and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

c. The permittee notifies the District Engineer in accordance with the "Notification" General Condition 13 for discharges exceeding 300 linear feet of impact of intermittent stream beds. In such cases, to be authorized the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine the adverse environmental effects are minimal both individually and cumulatively, and waive this limitation in writing before the permittee may proceed;

d. For discharges causing the loss of greater than ⅒-acre of non-tidal waters of the US, the permittee notifies the District Engineer in accordance with General Condition 13;

e. For discharges in special aquatic sites, including wetlands, the notification must include a delineation of affected special aquatic sites;

f. The discharge is part of a single and complete project; and

g. Compensatory mitigation will normally be required to offset the losses of waters of the US. The notification must also include a compensatory mitigation proposal to offset authorized losses of waters of the US.

US at the project site to the maximum extent practicable, and the notification must include a written statement detailing compliance with this condition (i.e., why the discharge must occur in waters of the US and why additional minimization cannot be achieved);

c. In addition to General Conditions 17 and 20, activities authorized by this permit must not substantially alter the sediment characteristics of areas of concentrated shellfish beds or fish spawning areas. Normally, the mandated water quality management plan should address these impacts;

d. The permittee must implement necessary measures to prevent increases in stream gradient and water velocities and to prevent adverse effects (e.g., head cutting, bank erosion) to upstream and downstream channel conditions;

e. Activities authorized by this permit must not result in adverse effects on the course, capacity, or condition of navigable waters of the US;

f. The permittee must use measures to minimize downstream turbidity;

g. Wetland impacts must be compensated through mitigation approved by the Corps;

h. Beneficiation and mineral processing for hard rock/mineral mining activities may not occur within 200 feet of the ordinary high water mark of any open waterbody. Although the Corps does not regulate discharges from these activities, a CWA section 402 permit may be required;

i. All activities authorized must comply with General Conditions 9 and 21. Further, the District Engineer may require modifications to the required water quality management plan to ensure that the authorized work results in minimal adverse effects to water quality;

j. Except for aggregate mining activities in lower perennial streams, no aggregate mining can occur within stream beds where the average annual flow is greater than 1 cubic foot per second or in waters of the US within 100 feet of the ordinary high water mark of headwater stream segments where the average annual flow of the stream is greater than 1 cubic foot per second (aggregate mining can occur in areas immediately adjacent to the ordinary high water mark of a stream where the average annual flow is 1 cubic foot per second or less);

k. Single and complete project: The discharge must be for a single and complete project, including support activities. Discharges of dredged or fill material into waters of the US for multiple mining activities on several designated parcels of a single and complete mining operation can be authorized by this NWP provided the ½-acre limit is not exceeded; and

l. *Notification:* The permittee must notify the District Engineer in accordance with General Condition 13. The notification must include: (1) A description of waters of the US adversely affected by the project; (2) A written statement to the District Engineer detailing compliance with paragraph (b), above (i.e., why the discharge must occur in waters of the US and why additional minimization cannot be achieved); (3) A description of measures taken to ensure that the proposed work complies with paragraphs (c) through (f), above; and (4) A reclamation plan (for aggregate mining in isolated waters and non-tidal wetlands adjacent to headwaters and hard rock/mineral mining only).

This NWP does not authorize hard rock/mineral mining, including placer mining, in streams. No hard rock/mineral mining can occur in waters of the US within 100 feet of the ordinary high water mark of headwater streams. The term's "headwaters" and "isolated waters" are defined at 33 CFR 330.2(d) and (e), respectively. For the purposes of this NWP, the term "lower perennial stream" is defined as follows: "A stream in which the gradient is low and water velocity is slow, there is no tidal influence, some water flows throughout the year, and the substrate consists mainly of sand and mud." (Sections 10 and 404)

C. Nationwide Permit General Conditions

The following General Conditions must be followed in order for any authorization by an NWP to be valid:

1. *Navigation.* No activity may cause more than a minimal adverse effect on navigation.

2. *Proper Maintenance.* Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

3. *Soil Erosion and Sediment Controls.* Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

4. *Aquatic Life Movements.* No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

5. *Equipment.* Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

6. *Regional and Case-By-Case Conditions.* The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)). Additionally, any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

7. *Wild and Scenic Rivers.* No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

8. *Tribal Rights.* No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

9. *Water Quality.* (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)).

(b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality (refer to General Condition 21 for stormwater

(9) For NWP 29 (Single-Family Housing), the PCN must also include:

(i) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;

(ii) A statement that the single-family housing activity is for a personal residence of the permittee;

(iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring ¼-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than ¼-acre in size, formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));

(iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

(10) For NWP 31 (Maintenance of Existing Flood Control Projects), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

(i) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;

(ii) A delineation of any affected special aquatic sites, including wetlands; and,

(iii) Location of the dredged material disposal site;

(11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources;

(12) For NWPs 39, 43 and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site;

(13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

(15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with state and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the US adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the US, a description of measures taken to comply with the criteria of the NWP, and a reclamation plan (for all aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities);

(17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work; and

(18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

(c) *Form of Notification:* The standard Individual Permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)–(18) of General Condition 13. A letter containing the requisite information may also be used.

(d) *District Engineer's Decision:* In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may submit a proposed mitigation plan with the PCN to expedite the process. The District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the District Engineer will notify the permittee and include any conditions the District Engineer deems necessary. The District Engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within 45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to

minimal impact requirement associated with NWPs.

(e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

(g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.

(h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

20. *Spawning Areas.* Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

21. *Management of Water Flows.* To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

22. *Adverse Effects From Impoundments.* If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

23. *Waterfowl Breeding Areas.* Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

24. *Removal of Temporary Fills.* Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

25. *Designated Critical Resource Waters.* Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

26. *Fills Within 100-Year Floodplains.* For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

(a) *Discharges in Floodplain; Below Headwaters.* Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below

ensure protection and/or enhancement of the overall aquatic ecosystem.

Restoration: Re-establishment of wetland and/or other aquatic resource characteristics and function(s) at a site where they have ceased to exist, or exist in a substantially degraded state.

Riffle and Pool Complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Single and Complete Project: The term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers (see definition of independent utility). For linear projects, the "single and complete project" (i.e., a single and complete crossing) will apply to each crossing of a separate water of the US (i.e., a single waterbody) at that location. An exception is for linear projects crossing a single waterbody several times at separate and distant locations: each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies.

Stormwater Management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater Management Facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and BMPs, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream Bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream Channelization: The manipulation of a stream channel to increase the rate of water flow through the stream channel. Manipulation may include deepening, widening, straightening, armoring, or other activities that change the stream cross-section or other aspects of stream channel geometry to increase the rate of water flow through the stream channel. A channelized stream remains a water of the US, despite the modifications to increase the rate of water flow.

Tidal Wetland: A tidal wetland is a wetland (i.e., water of the US) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line (i.e., spring high tide line) and are inundated by tidal waters two times per lunar month, during spring high tides.

Vegetated Buffer: A vegetated upland or wetland area next to rivers, streams, lakes, or other open waters which separates the open water from developed areas, including agricultural land. Vegetated buffers provide a variety of aquatic habitat functions and values (e.g., aquatic habitat for fish and other aquatic organisms, moderation of water temperature changes, and detritus for aquatic food webs) and help improve or maintain local water quality. A vegetated buffer can be established by maintaining an existing vegetated area or planting native trees, shrubs, and herbaceous plants on land next to open-waters. Mowed lawns are not considered vegetated buffers because they provide little or no aquatic habitat functions and values. The establishment and maintenance of vegetated buffers is a method of compensatory mitigation that can be used in conjunction with the restoration, creation, enhancement, or preservation of aquatic habitats to ensure that activities authorized by NWPs result in minimal adverse effects to the aquatic environment. (See General Condition 19.)

Vegetated Shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: A waterbody is any area that in a normal year has water flowing or standing above ground to the extent that evidence of an ordinary high water mark is established. Wetlands contiguous to the waterbody are considered part of the waterbody.

[FR Doc. 02-539 Filed 1-14-02; 8:45 am]
BILLING CODE 3710-92-P

EXHIBIT "A"

LEGAL DESCRIPTION 46.0 ACRE PARCEL:

A part of the Northwest Quarter of the Northeast Quarter and part of the Southwest Quarter of the Northwest Quarter of Section 7, Township 22 South, Range 9 West in Tuscaloosa County, Alabama, being more particularly described as follows: As a POINT OF BEGINNING, start at the Northwest corner of the Northwest Quarter of the Northeast Quarter of said Section 7; thence run in a Southerly direction along the West boundary of the Northeast Quarter of said Section 7 for a distance of 1,978.86 feet to a point; thence with a deflection angle of 91 degrees 45 minutes to the left, run in an Easterly direction parallel to the North boundary of the Northwest Quarter of the Northeast Quarter of said Section 7 for a distance of 1,013.22 feet to a point; thence with a deflection angle of 88 degrees 15 minutes to the left, run in a Northerly direction parallel to the West boundary of the Northeast Quarter of said Section 7 for a distance of 1,978.86 feet to a point on the North boundary of the Northwest Quarter of the Northeast Quarter of said Section 7; thence with a deflection angle of 91 degrees 45 minutes to the left, run in a Westerly direction along the North boundary of the Northwest Quarter of the Northeast Quarter of said Section 7 for a distance of 1,013.22 feet to the point of beginning, said parcel containing 46.0 acres.

EXHIBIT "B"

LEGAL DESCRIPTION 34 ACRE, MORE OR LESS, PARCEL:

ALL of the Northwest Quarter of the Northeast Quarter and the Southwest Quarter of the Northeast Quarter (as shown on Drawing # 117-95 by McGuire and Associates, Inc.) LESS AND EXCEPT the above described 46.0 acre parcel, containing 34 acres, more or less.

APPENDIX G

Archaeological Survey and Cultural Resources Evaluation
(Environmental Resource Analysts, 1995)

ARCHAEOLOGICAL SURVEY AND CULTURAL RESOURCE EVALUATION OF A PROPOSED CONSTRUCTION/DEMOLITION LANDFILL LOCATION IN TUSCALOOSA COUNTY, ALABAMA

Prepared for:

Carter, Darnell and Grubbs Engineers, Inc.

Prepared by:

Environmental Resource Analysts
601 County Road 57
Notasulga, Alabama 36866

Robert H. Campbell — 10-10-95

Robert H. Campbell
Archaeological Consultant

Date

1.0 INTRODUCTION

At the request of Carter, Darnell, and Grubbs Engineers, Inc., an archaeological survey and cultural resource evaluation was conducted by Robert H. Campbell during August and September 1995 at the location of a proposed Construction/Demolition Landfill adjacent to Cypress Creek Landfill in Tuscaloosa County, Alabama.

In compliance with current federal laws and regulations, this survey was conducted to evaluate the potential impact of the proposed project on any significant cultural resources present within the project area. The entire area associated with the proposed site was physically inspected by means of walked transects and subsurface tests were carried out where appropriate. An assessment of available archaeological and historical literature was conducted along with a search of the National Register of Historic Places, the Alabama Register, and the Alabama State Site Survey File. This information was gathered and this document was prepared under the January, 1995 Alabama Historical Commission Policy for Archaeological Survey and Testing in Alabama and is submitted as an instrument for informed management of cultural resources.

1.1 PROJECT LOCATION/DESCRIPTION

The project area of less than eighty acres is located to the east of and adjacent to the existing Cypress Creek Landfill in Tuscaloosa County, Alabama (Figures 1 & 2) and is in the E 1/4, NW 1/4 of Section 7 and the W 1/2, NE 1/4 of Section 7, T22S, R9W.

The survey area ranged from 370 feet to 280 feet in elevation consisting of a broad relatively level central area bordered to the north and to the south by tributaries of Rum Creek. This property is located within the Fall Line Hills Physiographic District of the East Gulf Coastal Plain and exhibits generally reddish brown sandy clay soils of Cretaceous age. Much erosion has taken place and the western portion of the tract has been utilized as a sand and gravel quarry in the past. Both the northern and southern tributaries are heavily silted and the eastern portion of the relatively flat broad ridge top is currently in pasture.

The western quarry area is extensively disturbed and exhibits no top soil remaining. Dark reddish brown (2.5YR 3/4) hard packed sandy-clay substrate underlies the entire survey tract and is visible in existing pit walls to a depth in excess of four meters. Shovel tests in the central pasture areas of the tract revealed a dark brown (7/5YR 3/4) sandy loam top soil layer from 3 cm to 7 cm deep over the dark reddish brown (2.5YR 3/4) hard packed sandy-clay substrate. A lighter yellowish brown sandy loam soil was encountered on slopes along the southern tributary to a depth of 10 cm - 15 cm.

2.0 LITERATURE AND DOCUMENT SEARCH

To assist in the identification of cultural resources within the general project area, an assessment of available records was conducted. A search of the Alabama State Site Survey File revealed no record of archaeological sites within the general vicinity of the project location. Although the National Register of Historic Places and the Alabama Register of Landmarks and Heritage list thirty-two and thirty-four properties respectively in Tuscaloosa County, Alabama, none of these properties were determined to be in close proximity to the survey area.

3.0 FIELD METHODS

In order to identify and determine the significance of any cultural resources in the project area, a visual inspection of the survey tract was carried out by means of walked transects at 10 meter intervals as well as inspection of all exposed areas. Assisting in the field investigations were Mr. Myles T. Horne and Mr. F. Charles Williams, Jr. Subsurface shovel tests at least 30 cm in diameter to clay substrate and beyond were carried out at approximately 25 meter intervals. All soil from shovel tests was screened through 1/4 inch mesh. Surrounding areas adjacent to the survey location were visually inspected and photographic documentation was made of the survey tract (Figures 3-8).

In excess of twenty shovel tests were carried out in the disturbed quarry area, all without recovery. Thirty-one shovel tests were carried out along the north tributary and twenty-five shovel tests were completed along the south tributary. The pasture area was tested in twenty-three locations. All shovel tests revealed the aforementioned soil stratigraphy and resulted in no recovery of cultural materials.

4.0 RESULTS

These investigations did not reveal the presence of any cultural remains or the location of any significant cultural resources within the area of the proposed landfill. The systematic surface survey and subsurface testing indicated an absence of cultural remains. No recovery was made from any of the subsurface tests.

5.0 SURVEY INTERPRETATION AND EVALUATION

The absence of any significant cultural resources within the project may be explained by the disturbed and eroded condition of much of the tract as well as the moderate sloping topography of areas adjacent to the creeks. Extensive earth-moving activities have taken place in the past as evidenced by the sand and gravel quarry on the west side of the survey tract and agricultural terracing on much of the remaining areas. These past activities may have destroyed any evidence of significant cultural activity if it ever existed.

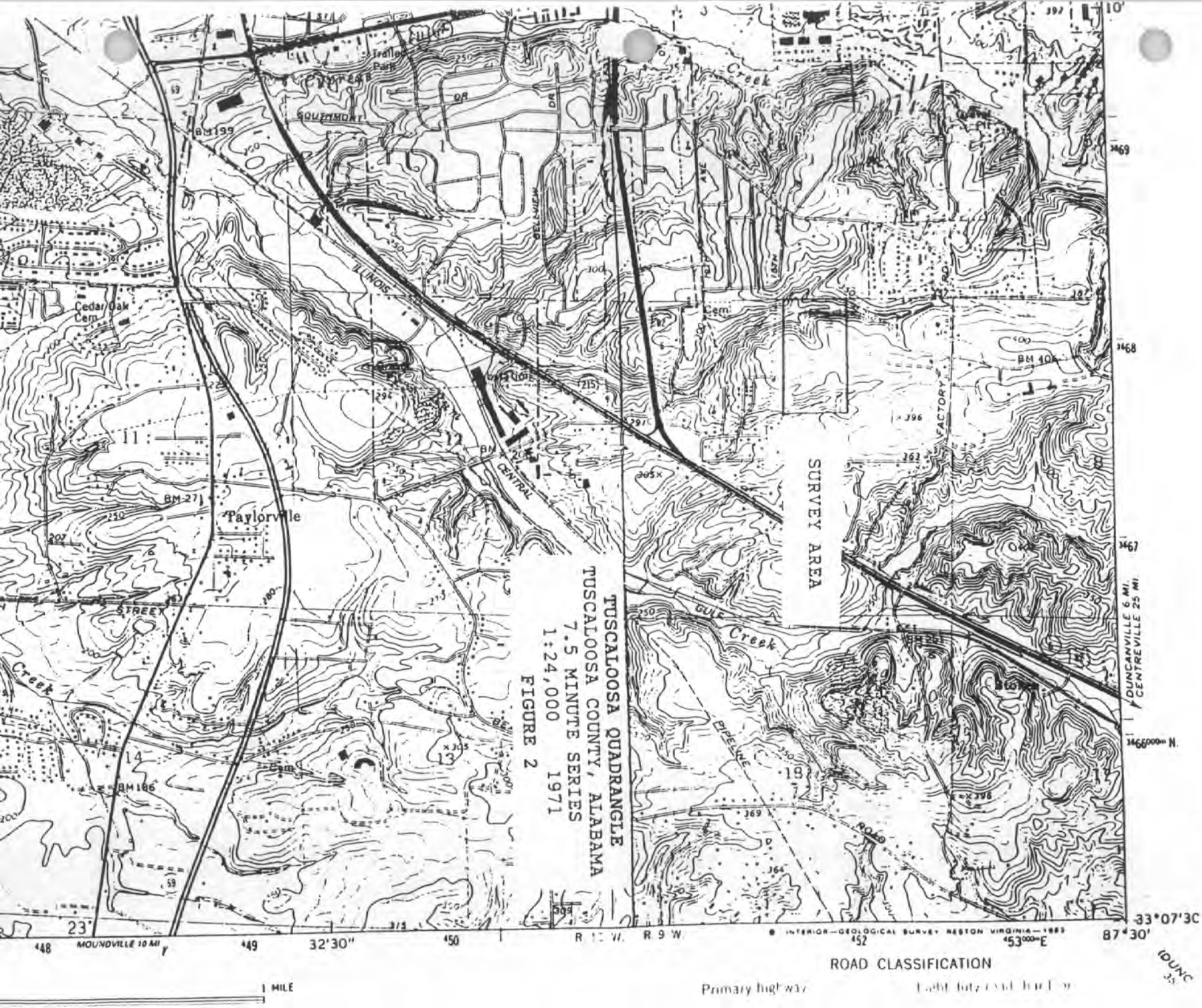
6.0 RECOMMENDATIONS

Based on the evaluation of this information, it is the recommendation of this report that no significant cultural resources will be impacted by the utilization of the survey area as a Construction/Demolition Landfill and the proposed activities thereon will have no effect on significant cultural resources and will not violate current federal or state laws and regulations governing the identification and management of cultural resources.



PROPOSED LANDFILL LOCATION

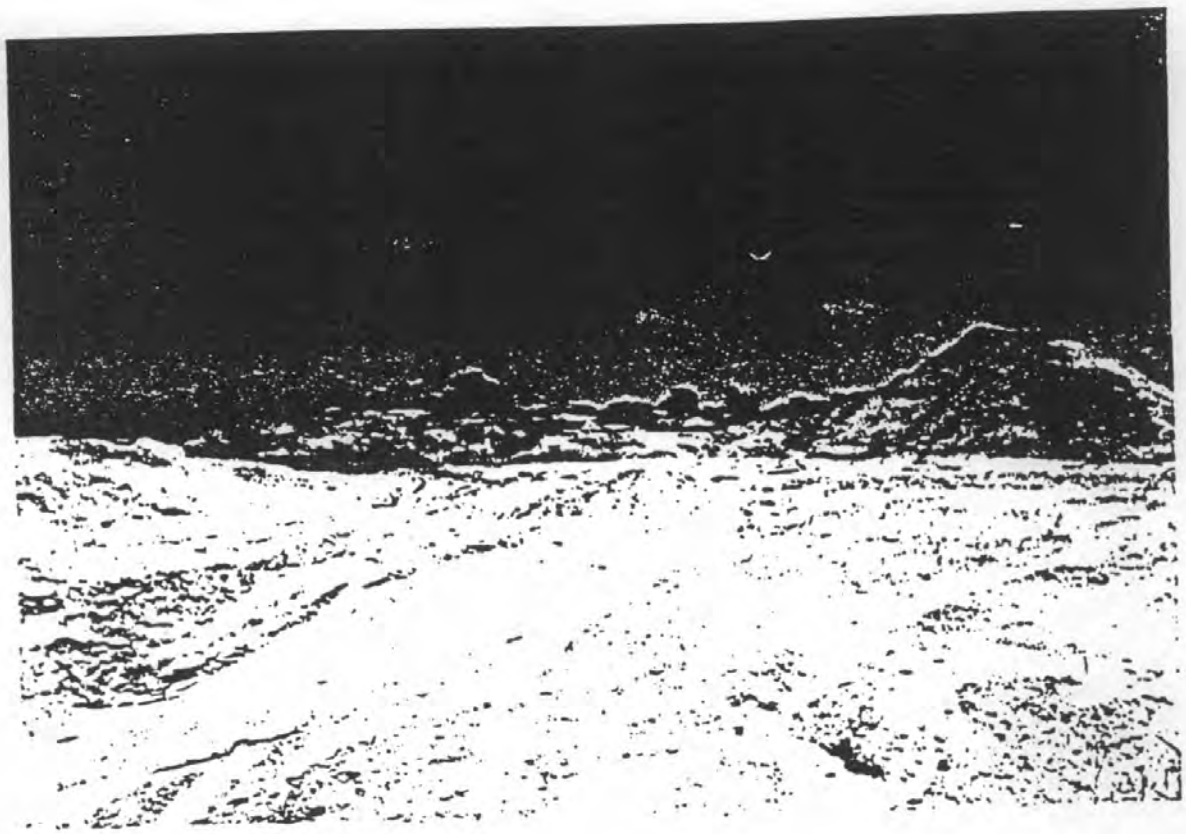
FIGURE 1


TUSCALOOSA QUADRANGLE
TUSCALOOSA COUNTY, ALABAMA
7.5 MINUTE SERIES
1:24,000 1971
FIGURE 2
SURVEY AREA
Taylorville
Cedar Oak Cem
Trailer Park
SOUTHMONT
ILLINOIS CENTRAL
FACTORY
GULF
Creek
PIPELINE
ROAD
STREET
BM 199
BM 271
BM 166
BM 404
BM 261
Cem
MOUNDVILLE 10 MI
DUNCANVILLE 6 MI.
CENTREVILLE 25 MI.
1 MILE
ROAD CLASSIFICATION
Primary highway
Light duty road, hard or
33°07'30"
87°30'
32'30"
R 10 W.
R 9 W.
INTERIOR—GEOLOGICAL SURVEY RESTON VIRGINIA—1983



NORTH VIEW OF WEST AREA

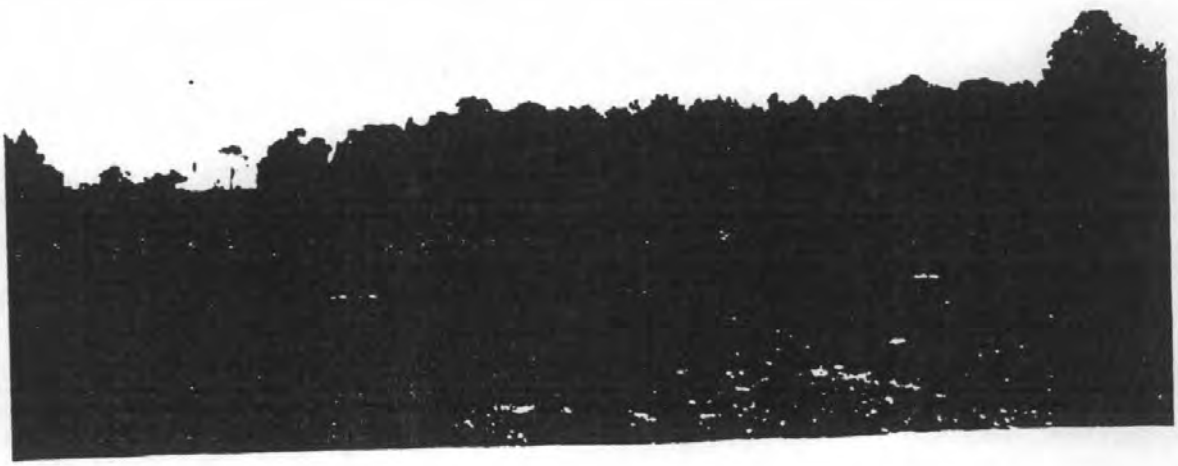
SOUTH VIEW OF WEST AREA





EAST VIEW OF PASTURE AREA

SOUTH VIEW OF PASTURE AREA





NORTH VIEW OF PASTURE AREA



SOUTH TRIBUTARY AREA

Letter Of Concurrence

From Alabama Historical Commission

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
468 South Perry Street
MONTGOMERY, ALABAMA 36130-0900

F. LAWERENCE OAKS
EXECUTIVE DIRECTOR

TELEPHONE NUMBER
242-3184

November 15, 1995

RECEIVED NOV 20 1995

Environmental Resource Analysts
601 County Road 57
Notasulga, Alabama 36866

Re: AHC 96-0184
Cultural Resource Assessment
Construction/Demolition Landfill
Tuscaloosa County, Alabama

Dear Sirs:

Upon review of the cultural resource assessment conducted by Robert Campbell, the Alabama Historical Commission has determined the following. We agree with the reports findings that the project activities will not affect any cultural resources listed on or eligible for the National Register of Historic Places. Therefore, our office can concur with the proposed project.

We appreciate your efforts in helping us preserve Alabama's cultural heritage. If we may be of further service or if you have any questions or comments, please contact Greg Rhinehart of our office.

Sincerely,

F. Lawerence Oaks
State Historic Preservation Officer

FLO/GCR/gtj

APPENDIX H

Hydrogeologic Report
(TTL, Inc., 1997)

SECTION 2.2

HYDROGEOLOGIC REPORT

CYPRESS CREEK C/D LANDFILL
TUSCALOOSA COUNTY, ALABAMA

prepared by:

TTL, Inc.

June 6, 1997

SECTION 2.2

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2.2.3 DATA PRESENTATION 2.2-2
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- 2.2.3.3 Slug and Bail Tests 2.2-13

2.2.4 REFERENCES 2.2-15

ATTACHMENTS

Attachment 2.1 - Boring logs and piezometer-completion diagrams
Attachment 2.2 - Laboratory analyses of soil/sediment samples

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2.2.1 INTRODUCTION

In January-February 1997, **TTL, Inc.** constructed 13 piezometers to determine seasonal high ground-water elevations beneath the proposed permit area of the Cypress Creek C/D Landfill. The site includes about 38 acres of existing landfill operations and about 45 acres of proposed expansion area. The proposed expansion is generally east and southeast of existing landfill operations. The following sections provides descriptions of lithologic units penetrated during augering of the borings for the piezometers and results of geotechnical analyses of soil/sediment samples retrieved from the borings. Also included are a tabulation of ground-water elevations in the 13 new and the 1 existing piezometers from February 12 through May 13, 1997, the general directions of ground-water flow beneath the proposed expansion area, and estimates of the hydraulic conductivity of sediments within the first saturated zone beneath the proposed expansion area.

2.2.2 FIELD OPERATIONS

On January 21, 1997, **TTL** began field operations to construct piezometers 97-1 through 97-13. A CME-75 truck-mounted drill equipped with 4¼-inch ID hollow-stem augers was used to auger the borings for the piezometers. During augering of the borings, samples of soil/sediment were collected with 5-foot-long continuous samplers and described by an on-site geologist. Fourteen soil/sediment samples were selected from the borings for the piezometers and submitted to **TTL's** laboratory for grain-size analyses, determination of Atterberg limits, and Unified Soil Classification.

Piezometers 97-1 through 97-13 were constructed by removing the hollow-stem augers and inserting about 10 feet of 2-inch diameter, 0.010-inch slotted PVC (polyvinylchloride) screen connected to PVC riser into each open borehole. A sand pack, consisting of graded filter sand, was emplaced around each well screen and a bentonite plug was placed on top of the sand pack. A cement/bentonite seal was placed on top of the bentonite plug. The PVC riser of each piezometer was terminated about 3 feet above the land surface and the top of the riser and sealed with a threaded PVC cap. A protective steel casing was placed over the well head of each of six piezometers constructed in a cattle pasture. Each piezometer was developed with a Westinghouse pneumatic pump until the ground water recovered from each piezometer was relatively clear.

The locations of piezometers 97-1 through 97-13 and piezometer PZ-3 (constructed by TTL in May 1995) are shown on Figure 2.1. Piezometers PZ3, 97-1, 97-2, and 97-11 are along the perimeter of the existing landfill operations. Piezometers 97-3 through 97-10 and 97-12 are within the proposed expansion area, which is generally east and southeast of existing landfill operations. Piezometer 97-13 is adjacent to the northeast corner of the expansion area.

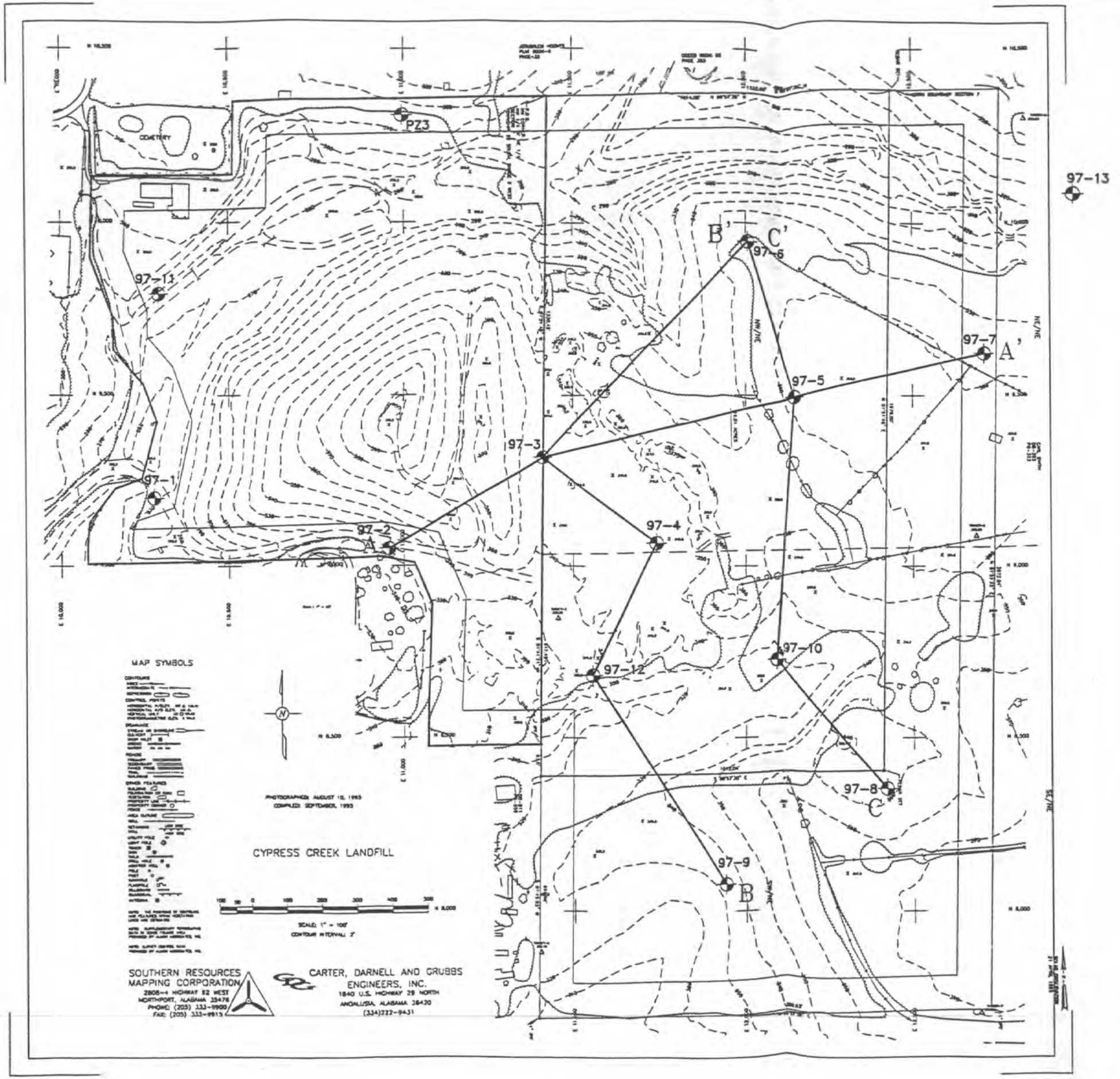
The elevations of the measuring point of each piezometer and the land surface adjacent to each piezometer were surveyed by Almon Associates of Tuscaloosa, Alabama.

On May 13 and 21, 1997, slug and bail tests were conducted in piezometers 97-3, 97-6, and 97-10. About 5 feet of solid 1½-inch diameter PVC were used to raise and lower quickly the water levels in the three piezometers. A pressure-sensitive transducer was used to measure the changes in water levels in the piezometers in response to insertion or removal of the solid PVC. The transducer was connected to an In Situ data logger. Algorithms in the AQTESOLV computerized software (Geraghty & Miller, Inc. 1994) were used to analyze the data recorded by the data logger so that the hydraulic conductivities of the first-saturated zone could be estimated.

2.2.3 DATA PRESENTATION

2.2.3.1 Lithology

Ten of the fourteen piezometers are in the proposed expansion area. Logs of borings and completion diagrams of these 10 piezometers and the 4 piezometers along the perimeter of the landfill are provided in Attachment 2.1 of this report. The construction characteristics of the 14 piezometers are presented in Table 2.1. Three geologic cross-sections (see Figures 2.2, 2.3, and 2.4) of the expansion area were prepared by review of lithologies at the site. The locations of these cross-sections are shown on Figure 2.1. Lithologies penetrated during augering of the borings for the 14 piezometers consisted predominantly of sands. Clayey and gravelly sands are from land surface to 5 to 20 feet BLS (below land surface). The surficial clayey and gravelly sands are underlain by 10 to at least 40 feet of silty fine-grained sand with interbedded discontinuous 5- to 20-foot-thick clayey sands. The water table was within the 10 to 40 feet of silty and/or clayey sands.



LEGEND

97-1 / PZ3 Piezometer and identifier

A–A' Line of cross-section

TTL, Inc.

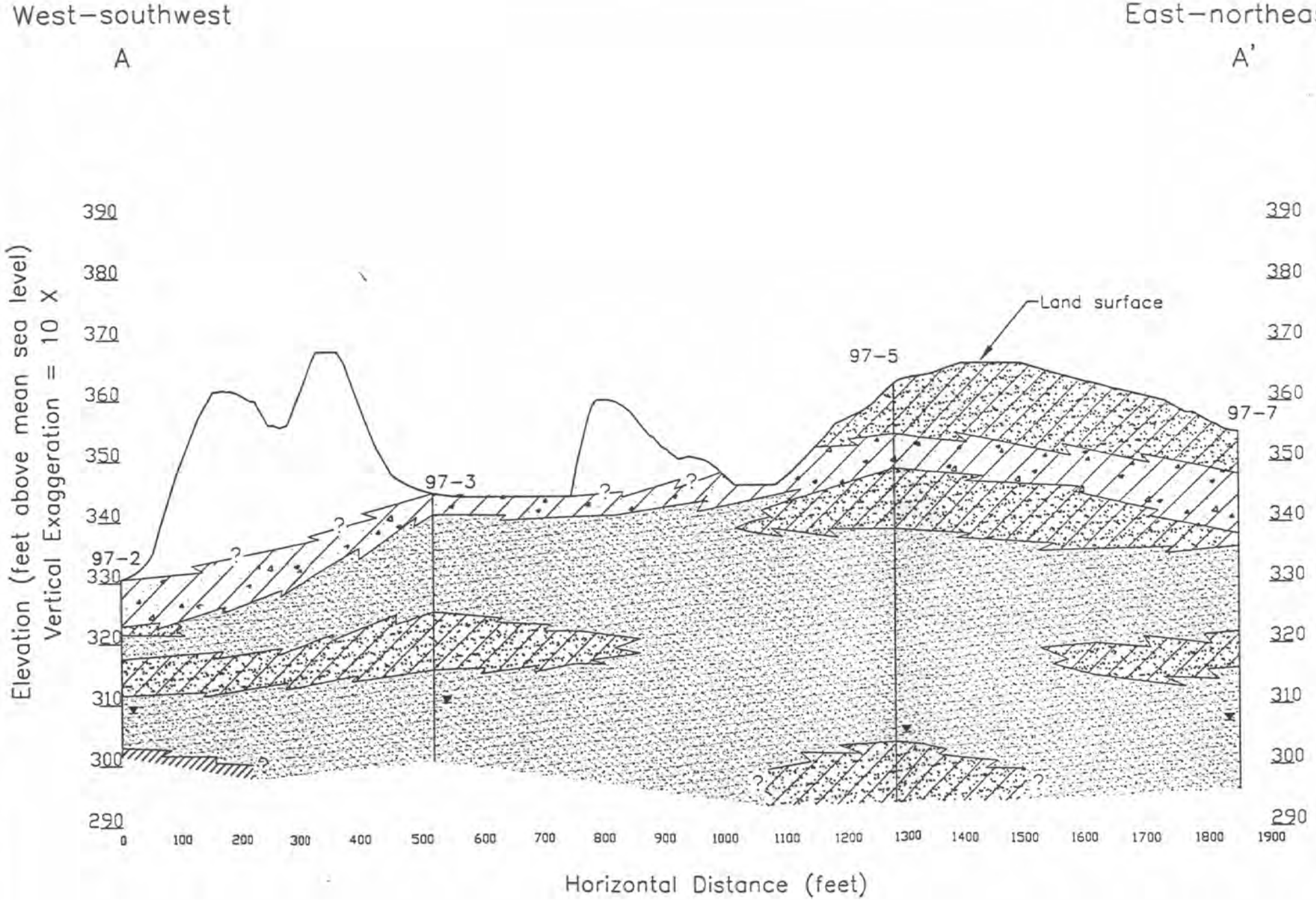
PRACTICING IN THE GEOSCIENCES

Figure 2.1. Locations of piezometers and lines of geological cross-sections; Cypress Creek C/D Landfill; Tuscaloosa, Alabama.

TABLE 2.1. Construction characteristics of piezometers; Cypress Creek C/D Landfill; Tuscaloosa County, Alabama.

Piezometer Identifier	Date Augered/ Constructed	Total Depth (ft. BLS)[1]	Diameter of Borehole (Inches)	Diameter of PVC Casing (Inches)	Screened Interval (ft. BLS)	Slot Size of Screen (Inches)	Sand Pack (ft. BLS)	Bentonite Pellet Seal (ft. BLS)	Cement/ Bentonite Seal (ft. BLS)
97-1	1/21/97	24	8.25	2	14-23	0.010	12-24	10-12	0-10
97-2	1/21/97	29	8.25	2	19-28	0.010	17-29	15-17	0-15
97-3	1/22/97	44	8.25	2	34-43	0.010	31-44	29-31	0-29
97-4	1/23/97	49	8.25	2	39-48	0.010	36-49	34-36	0-34
97-5	1/23/97	69	8.25	2	59-68	0.010	56-69	54-56	0-54
97-6	1/23/97	64	8.25	2	54-63	0.010	51-64	49-51	0-49
97-7	1/27/97	59	8.25	2	49-58	0.010	46-59	44-46	0-44
97-8	1/27/97	54	8.25	2	44-53	0.010	41-54	39-41	0-39
97-9	1/27/97	44	8.25	2	34-43	0.010	30-44	28-30	0-28
97-10	1/27-29/97	34	8.25	2	24-33	0.010	22-34	20-22	0-20
97-11	1/27/97	14	8.25	2	4-13	0.010	2-14	1-2	0-1
97-12	1/27/97	34	8.25	2	24-33	0.010	22-34	20-22	0-20
97-13	2/12/97	39	8.25	2	29-38	0.010	25.5-39	23.5-25.5	0-23.5
PZ-3	5/11/95	49	8.25	2	39-48	0.010	37-49	34-37	0-34

[1] Feet below land surface.



LEGEND

- Sand, clayey with gravel
- Sand, clayey
- Sand, fine–grained, silty
- Clay, silty, sandy
- 97-7 Piezometer and identifier
- Highest ground–water elevation

TTL, Inc.

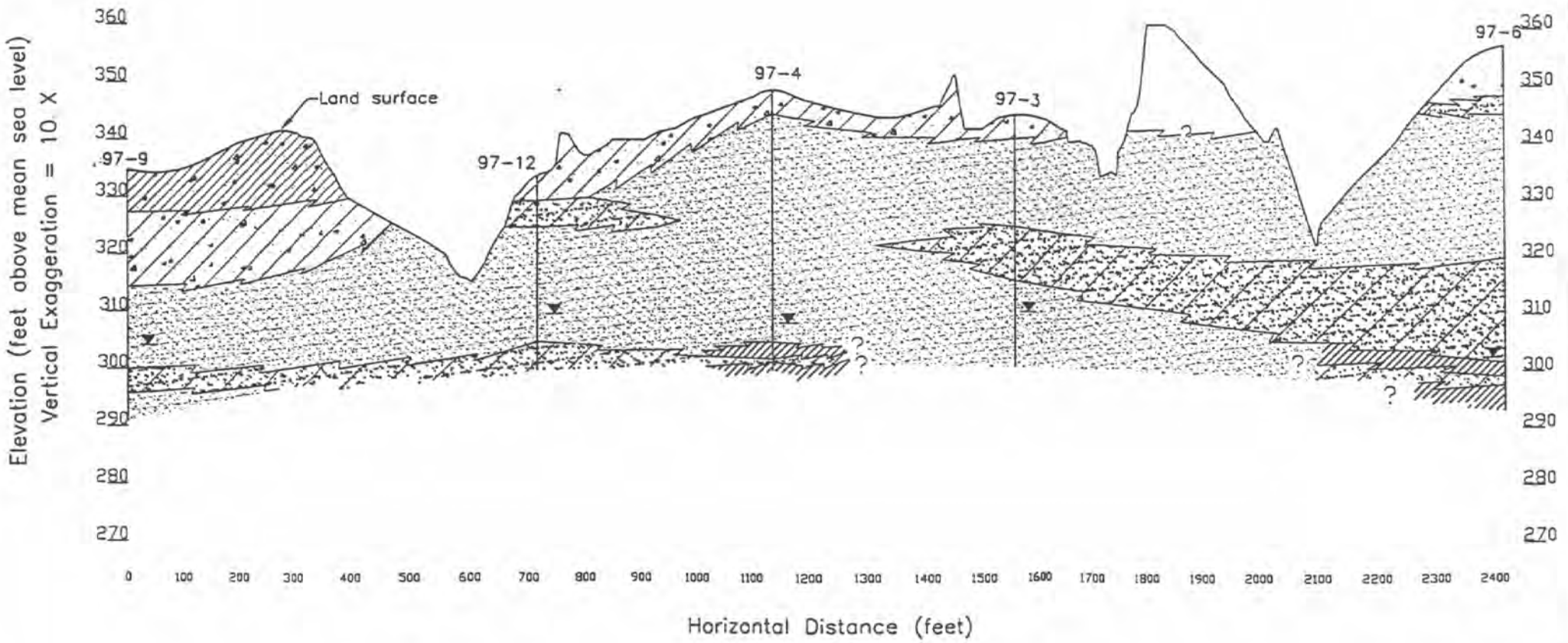
PRACTICING IN THE GEOSCIENCES

Figure 2.2. Geologic cross–section A–A' and highest ground–water elevation from February 12 to May 13, 1997; Cypress Creek Landfill; Tuscaloosa County, Alabama.

Note: Location of cross–section shown on Figure 2.1.

South
B

North
B'



LEGEND

- Clay, sandy with gravel
- Sand, clayey with gravel
- Sand, clayey
- Sand, fine-grained, silty
- Clay, silty, sandy

97-6 Piezometer and identifier

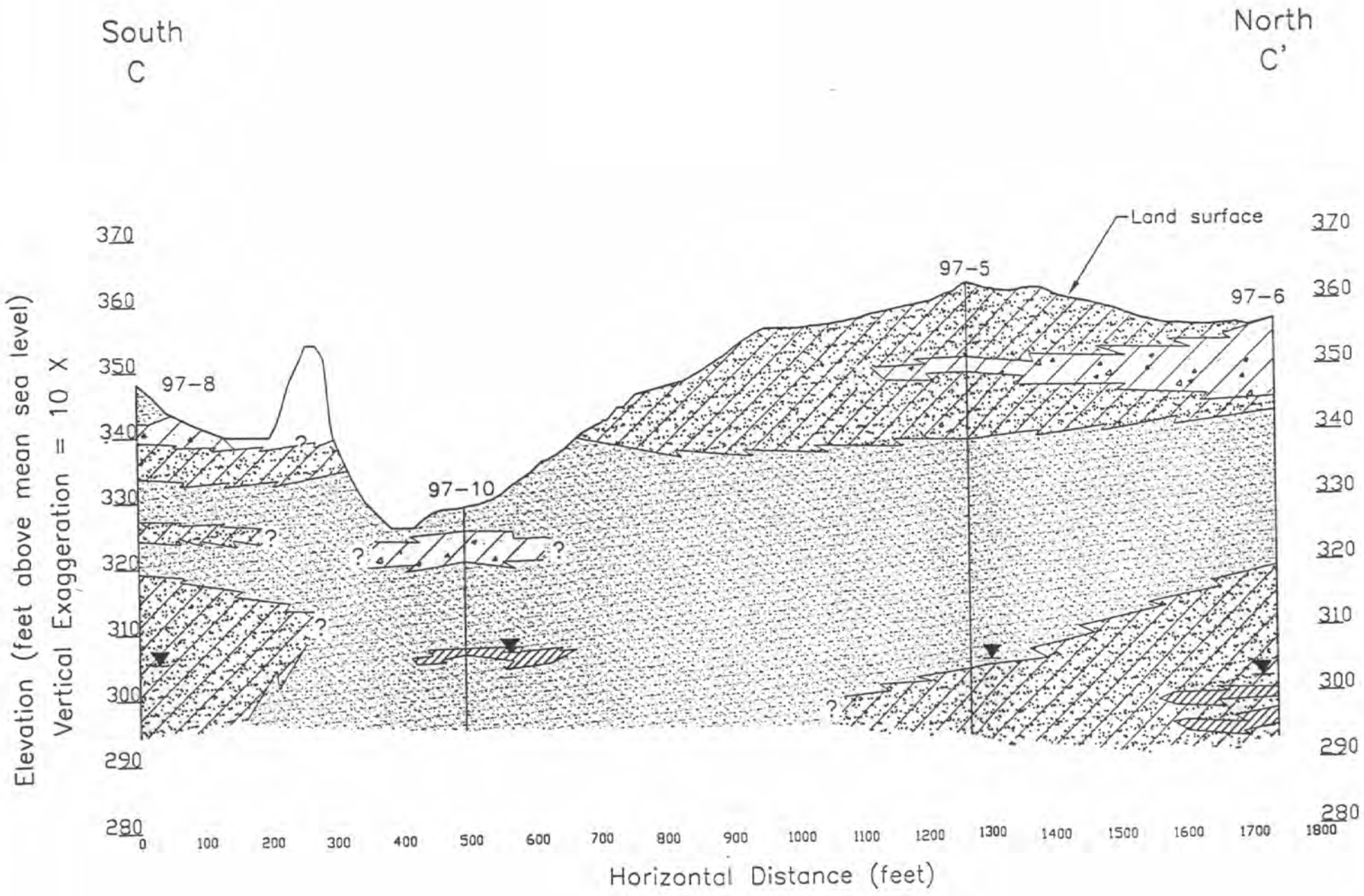
Highest ground-water elevation

TTL, Inc.

PRACTICING IN THE GEOSCIENCES

Figure 2.3. Geologic cross-section B-B' and highest ground-water elevation from February 12 to May 13, 1997; Cypress Creek Landfill; Tuscaloosa County, Alabama.

Note: Location of cross-section shown on Figure 2.1.



LEGEND

Sand, clayey with gravel

Sand, clayey

Sand, fine-grained, silty

Clay, silty, sandy

97-6

Piezometer and identifier

Highest ground-water elevation

TTL, Inc.

PRACTICING IN THE GEOSCIENCES

Figure 2.4. Geologic cross-section C-C' and highest ground-water elevation from February 12 to May 13, 1997; Cypress Creek Landfill; Tuscaloosa County, Alabama.

Note: Location of cross-section shown on Figure 2.1.

The top of a relatively stiff clay was penetrated in the boreholes of 97-2, 97-4, and 97-6 at about 27, 44, and 60 feet BLS, respectively. The clay was 1- to 3-foot-thick and not continuous. Grain sizes and soil classification determined by laboratory analyses generally matched field descriptions. The results of grain-size analyses for the 14 soil/sediment samples are provided graphically in Attachment 2.2 of this report. Atterberg limits also are provided in Attachment 2.2.

2.2.3.2 Ground-Water Elevations

The depths to water were measured in the piezometers on February 12 and 25, March 11 and 24, April 7 and 21, and May 13, 1997 (see Table 2.2). Composite contours of the highest ground-water elevations in the proposed expansion area are shown on Figure 2.5. (Piezometers west and north of the existing landfill operations were not used to contour ground-water elevations in the expansion area.) The variations in the ground-water elevations in the 14 piezometers were small during the February, March, April, and May interval of measurements. The greatest difference between the lowest and highest ground-water elevations in a piezometer within the proposed expansion area was only 1.19 feet. This greatest variation occurred in piezometer 97-6, which is in the northern part of the proposed expansion area. The smallest difference between the lowest and highest ground-water elevations in a piezometer within the expansion area was 0.22 foot. This smallest variation occurred in piezometer 97-13, which is adjacent to the northeast corner of the expansion area.

TABLE 2.2 Ground-water elevations[1] in piezometers; February 12 through May 13, 1997; Cypress Creek C/D Landfill; Tuscaloosa County, Alabama.

Piezometer Identifier	Elevation of Land Surface (feet)	Elevation of Measuring Point[2] (feet)	Date of Measurement	Depth to Water (ft. BMP)[3]	Ground-Water Elevation (ft. AMSL)[4]
97-1	269.00	272.50	2/12/97	19.25	253.25
			2/25/97	19.10	253.40
			3/11/97	18.98	253.52
			3/24/97	19.10	253.40
			4/7/97	19.12	253.38
			4/21/97	19.08	253.42
			5/13/97	19.09	253.41
97-2	330.50	332.74	2/12/97	24.66	308.08
			2/25/97	24.48	308.26
			3/11/97	24.20	308.54
			3/24/97	24.02	308.72
			4/7/97	24.06	308.68
			4/21/97	24.03	308.71
			5/13/97	24.03	308.71
97-3	344.60	348.50	2/12/97	39.17	309.33
			2/25/97	38.88	309.62
			3/11/97	38.48	310.02
			3/24/97	38.38	310.12
			4/7/97	38.44	310.06
			4/21/97	38.32	310.18
			5/13/97	38.36	310.14
97-4	348.90	353.01	2/12/97	45.65	307.36
			2/25/97	45.50	307.51
			3/11/97	45.29	307.72
			3/24/97	45.07	307.94
			4/7/97	44.90	308.11
			4/21/97	44.76	308.25
			5/13/97	44.75	308.26
97-5	362.70	366.38	2/12/97	62.28	304.10
			2/25/97	62.29	304.09
			3/11/97	62.20	304.18
			3/24/97	61.87	304.51
			4/7/97	61.69	304.69
			4/21/97	61.45	304.93
			5/13/97	61.36	305.02

Continued on next page

TABLE 2.2 – Continued

97-6	357.00	361.08	2/12/97	59.86	301.22
			2/25/97	59.68	301.40
			3/11/97	59.47	301.61
			3/24/97	59.32	301.76
			4/7/97	59.14	301.94
			4/21/97	58.88	302.20
			5/13/97	58.67	302.41
97-7	354.90	356.83	2/12/97	50.41	306.42
			2/25/97	50.38	306.45
			3/11/97	50.26	306.57
			3/24/97	50.02	306.81
			4/7/97	49.93	306.90
			4/21/97	49.73	307.10
			5/13/97	49.73	307.10
97-8	348.30	351.90	2/12/97	46.92	304.98
			2/25/97	46.90	305.00
			3/11/97	46.78	305.12
			3/24/97	46.61	305.29
			4/7/97	46.56	305.34
			4/21/97	46.43	305.47
			5/13/97	46.42	305.48
97-9	334.80	338.29	2/12/97	34.84	303.45
			2/25/97	34.52	303.77
			3/11/97	34.29	304.00
			3/24/97	34.16	304.13
			4/7/97	34.45	303.84
			4/21/97	34.43	303.86
			5/13/97	34.42	303.87
97-10	329.10	332.93	2/12/97	26.59	306.34
			2/25/97	26.34	306.59
			3/11/97	26.20	306.73
			3/24/97	26.17	306.76
			4/7/97	26.22	306.71
			4/21/97	26.07	306.86
			5/13/97	26.01	306.92
97-11	279.00	282.96	2/12/97	9.52	273.44
			2/25/97	9.46	273.50
			3/11/97	9.32	273.64
			3/24/97	9.55	273.41
			4/7/97	9.72	273.24
			4/21/97	9.65	273.31
			5/13/97	9.62	273.34

Continued on next page

TABLE 2.2 -- Continued

97-12	333.80	337.53	2/12/97	28.70	308.83
			2/25/97	28.38	309.15
			3/11/97	27.90	309.63
			3/24/97	28.12	309.41
			4/7/97	28.36	309.17
			4/21/97	28.47	309.06
			5/13/97	28.44	309.09
97-13	332.40	336.90	2/12/97	NM[5]	NM
			2/25/97	29.28	307.62
			3/11/97	29.18	307.72
			3/24/97	29.17	307.73
			4/7/97	29.17	307.73
			4/21/97	29.06	307.84
			5/13/97	29.08	307.82
PZ3	316.80	320.10	2/12/97	NM	NM
			2/25/97	46.06	274.04
			3/11/97	46.02	274.08
			3/24/97	46.00	274.10
			4/7/97	46.04	274.06
			4/21/97	45.86	274.24
			5/13/97	45.86	274.24

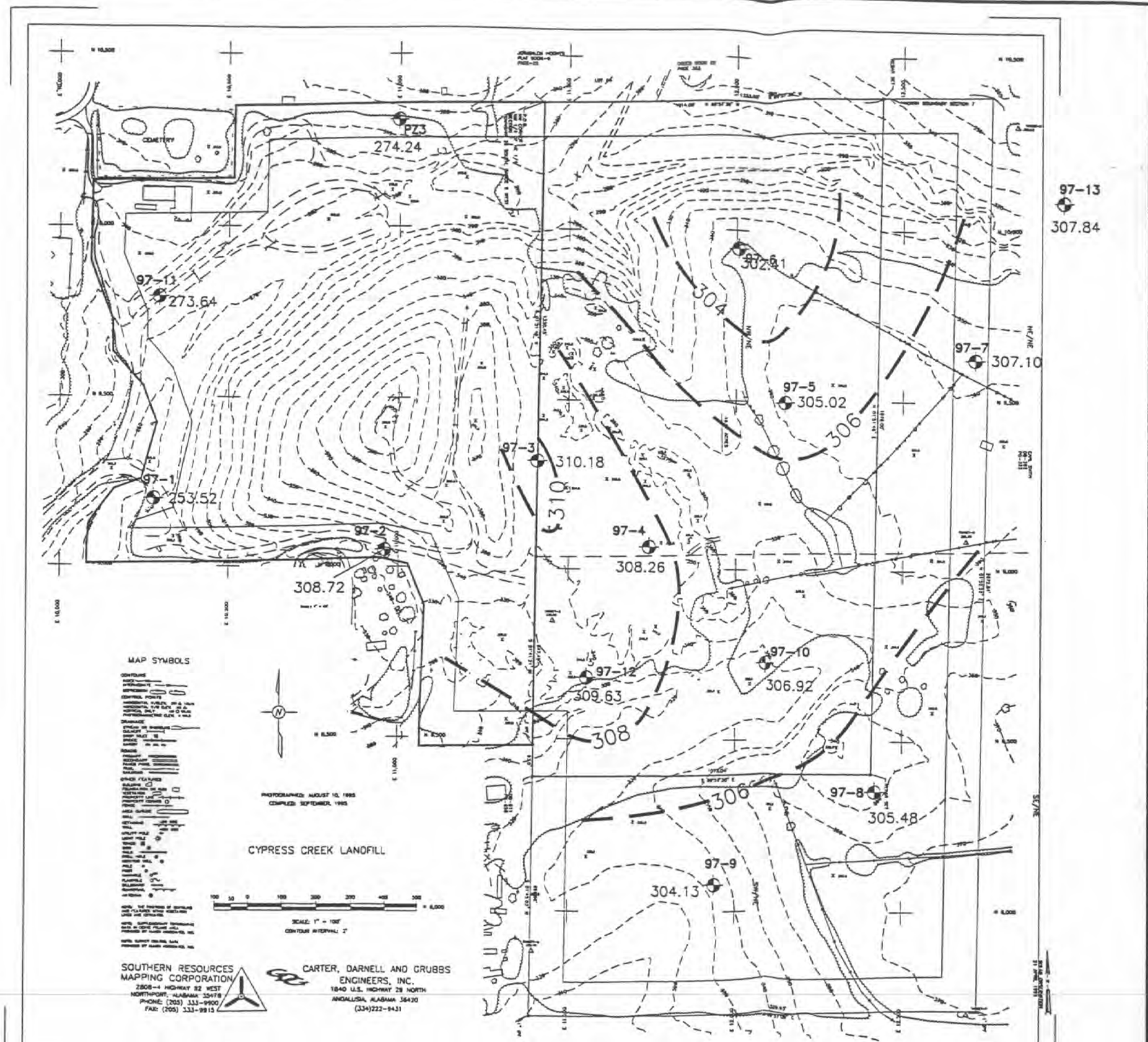
[1] Based on land-surface and measuring-point elevations surveyed by Almon Associates, February 1997.

[2] Top of casing.

[3] Feet below measuring point.

[4] Feet above mean sea level.

[5] NM = Not measured



LEGEND

97-1 / PZ3 — Piezometer and identifier

253.52 — Highest elevation of ground water

304 — Ground-water contour
Contour interval = 2 feet

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PRACTICING IN THE GEOSCIENCES

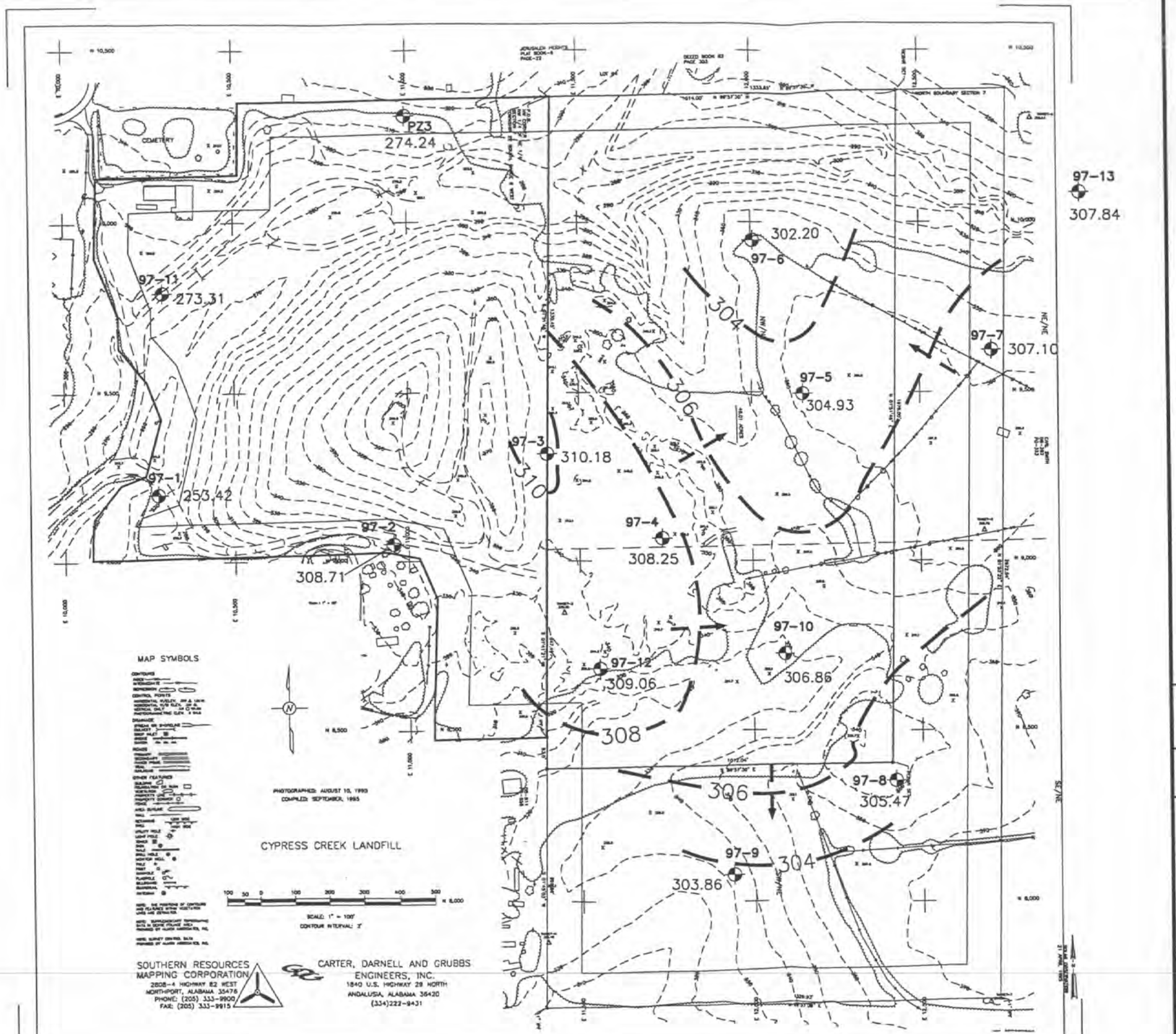
Figure 2.5. Composite contours of highest ground-water elevations in piezometers; February 12 through May 13, 1997; expansion area; Cypress Creek C/D Landfill; Tuscaloosa, Alabama.

Figure 2.6 shows ground-water elevations at the site on April 21, 1997. On April 21, 1997, ground-water flow in the northern part of the expansion area was generally north towards an east-west trending drainageway along the northern property boundary. The hydraulic gradients between piezometers 97-3 and 97-6 and between 97-7 and 97-6, which are in the northwest and northeast parts of the expansion area, respectively, were about 0.009 and 0.006 ft/ft, respectively. In the southern part of the expansion area, the general direction of ground-water flow was generally south on April 21, 1997. On April 21, 1997, the hydraulic gradient between piezometers 97-12 and 97-9, which are in the southwestern part of the expansion area, was 0.007 ft/ft (foot per foot). The hydraulic gradient between piezometers 97-10 and 97-8, which are in the central and southeast parts of the expansion area, respectively, was 0.003 ft/ft. The water table is relatively flat in the central part of the expansion area. On April 21, 1997, the water table in the western half of the expansion area was steeper (0.007 and 0.009 ft/ft) than the water table in the eastern half of the expansion area (0.006 and 0.003 ft/ft). As shown on Figure 2.6, ground water flows radially from a ground-water high along the west part of the expansion area at piezometer 97-3.

2.2.3.3 Slug and Bail Tests

Slug and bail tests were conducted in piezometers 97-3, 97-6, and 97-10 to estimate the hydraulic conductivities of sediments within the first zone of saturation beneath the expansion area. Piezometers 97-3, 97-6, and 97-10 are in the west-central, north-central, and south-central parts of the expansion area, respectively. Piezometers 97-3 and 97-10 are screened across silty fine sands. The hydraulic conductivity of the sediment adjacent to the screen of piezometer 97-3 is on the order of 4×10^{-2} cm/sec (centimeter per second). The hydraulic conductivity of the sediment adjacent to the screen of piezometer 97-10 is on the order of 1×10^{-3} cm/sec. Piezometer 97-6 is screened across clayey sands and sandy clays. The hydraulic conductivity of the sediment adjacent to the screen of piezometer 97-6 is on the order of 3×10^{-3} cm/sec.

The effective porosity of sands within the first zone of saturation probably is about 15 percent (Mercer and Waddell, 1993).



LEGEND

97-1
PZ3 — Piezometer and identifier

310.18 — Ground-water elevation (in feet above mean sea level)

304 — Ground-water contour
Contour interval = 2 feet

General direction of ground-water flow

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PRACTICING IN THE GEOSCIENCES

Figure 2.6. Ground-water elevations in piezometers on April 21, 1997; expansion area; Cypress Creek C/D Landfill; Tuscaloosa, Alabama.

2.2.4 REFERENCES

Geraghty & Miller, Inc. 1994, AQTESOLV: Geraghty & Miller Modeling Group, Reston, VA.

Mercer, J. W., and Waddell, R. K., 1993, Containment transport in groundwater in Mainment, D. R., Handbook of hydrology: McGraw-Hill, Inc., New York.

ATTACHMENTS

ATTACHMENT 2.1

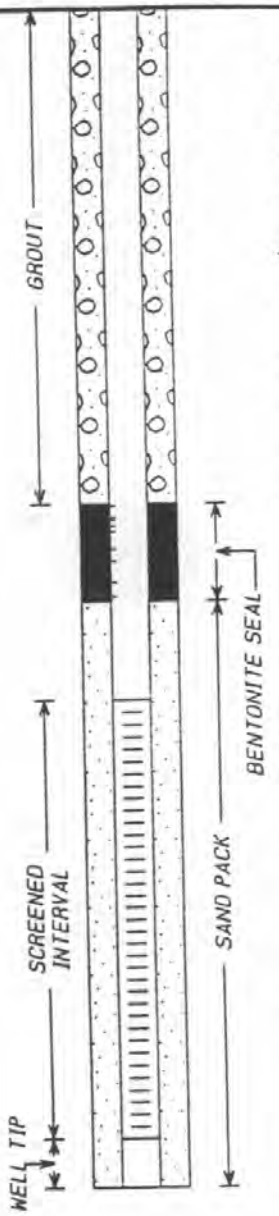
Boring Logs and Piezometer-Completion Diagrams

TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-1 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/21/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *24 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *269.00 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *15.48 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
		CL	CLAY, dark yellowish brown (10YR 4/2), silty
			CLAY, dark yellowish orange, sandy, stiff
5		SM	SAND, moderate brown (5YR 3/4), fine-grained, ferruginous
10			SAND, light brown (5YR 5/6), very fine-grained, silty & ferruginous --------Very moist--------
15		SC	SAND, very pale orange (10YR 8/2) & dark yellowish orange, fine-grained w/thin (~ 1/8"), light gray (N9), clay lenses
		CL	CLAY, pale yellowish brown (10YR 8/2) & dark yellowish orange w/moderate red (5R 5/4) streaks, sandy
20		SC	SAND, light brown w/occasional light gray clay lenses (~ 1/4" thick) & occasional ironstone fragments
25			BORING TERMINATED AT 24 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 3/11/97.
30			

WATER LEVEL

PIEZOMETER CONSTRUCTION (2-inch diameter)

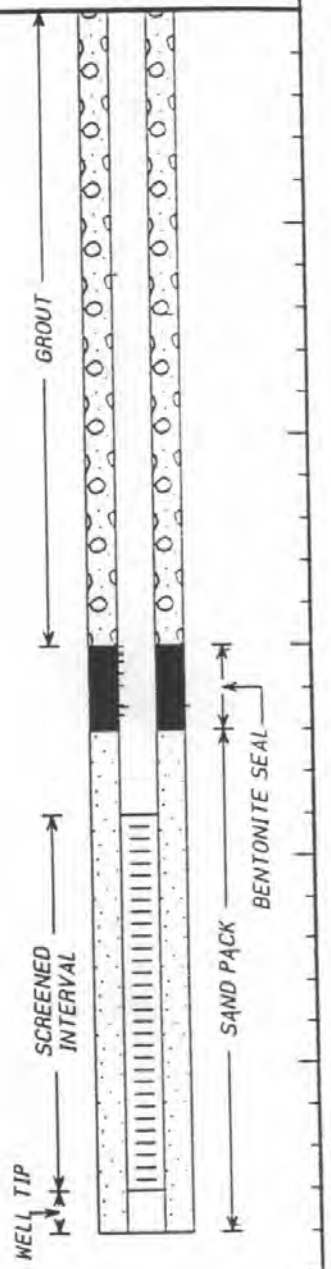


TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-2 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/21/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *29 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *330.50 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *21.78 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
5		SM	SAND, light brown (5YR 5/8), fine-grained, silty w/gravel
		SC	SAND, light brown & dark yellowish orange (10YR 6/6), fine-grained, clayey
10		SM	SAND, light brown & dark yellowish orange, fine-grained, silty
15		SC	SAND, w/occasional thin (~ 1/8" thick) clay lenses
20		SM	SAND, light brown & dark yellowish orange, fine-grained & micaceous, silty
25			SAND, yellowish gray (5Y 7/2), fine-grained, silty, micaceous -----Very moist-----
		CL	CLAY, dark yellowish orange & yellowish gray, silty
30			BORING TERMINATED AT 29 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 3/24/97.
35			

WATER LEVEL

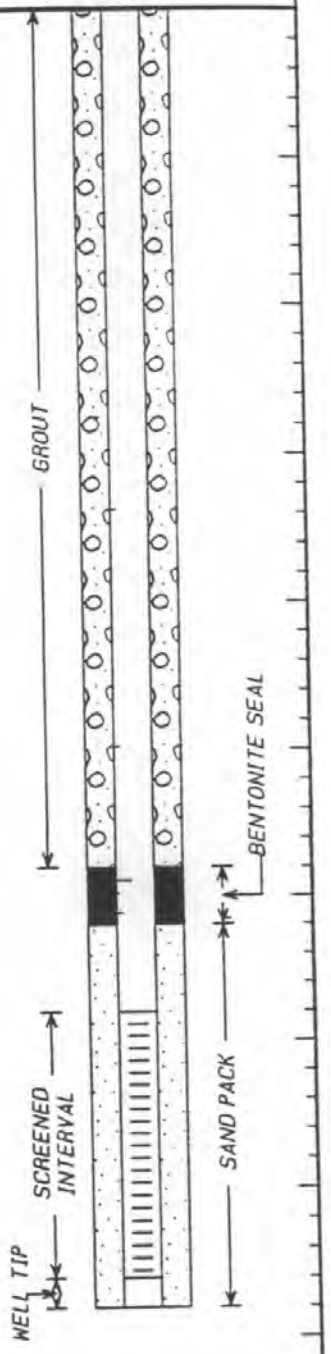
PIEZOMETER CONSTRUCTION (2-inch diameter)



TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-3 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/22/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *44 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *344.60 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *34.42 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION	WATER LEVEL
0		SM	SAND, light brown (5YR 5/8), fine-grained, silty w/gravel	
5			SAND, dark yellowish orange, fine-grained, silty micaceous	
10				
15				
20		SC	SAND, dark yellowish orange & light brown, fine-grained w/occasional thin (~ 1/16") light gray clay lenses	
25				
30		SM	SAND, dark yellowish orange & light brown, fine-grained, micaceous	
35			--------Saturated--------	▼
40				
45			BORING TERMINATED AT 44 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 4/21/97.	
50				

PIEZOMETER CONSTRUCTION (2-inch diameter)

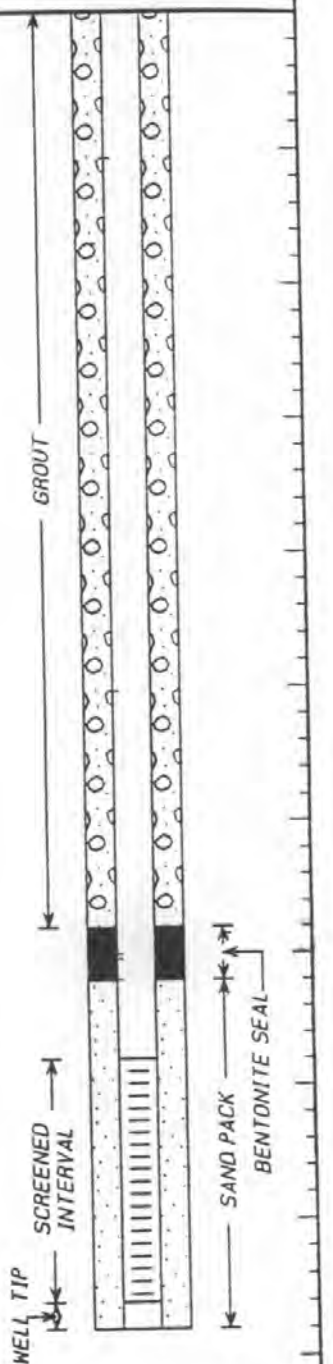


TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-4 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/23/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *49 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *348.90 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *40.64 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
		SM	SAND, silty, light brown (5YR 5/6), fine-grained, with occasional gravel and ironstone fragments
5		SP	SAND, light brown and dark yellowish orange (10YR 6/6), fine-grained
10			SAND, dark yellowish orange, fine-grained.
15			
20			SAND, dark yellowish orange, fine-grained, micaceous
25		SM	SAND, silty, very pale orange, fine-grained, micaceous
30			SAND, silty, dark yellowish orange, fine-grained, micaceous
35		SP	SAND, fine-grained -------Moist-------
40			SAND, light brown and pale yellowish brown (10YR 6/2), fine-grained, micaceous -------Very Moist------- Ironstone fragments
45		CL	CLAY, dark yellowish orange and pale yellowish brown, silty, stiff
			CLAY, dark yellowish orange and pale yellowish brown, sandy
		SC	SAND, clayey, very pale orange, fine-grained
		CL	CLAY, dark yellowish orange and pale yellowish brown, sandy
50			BORING TERMINATED AT 49 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 4/21/97.
55			

WATER LEVEL

PIEZOMETER CONSTRUCTION (2-inch diameter)



TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-5 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/23/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *69 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *362.70 Feet AMSL*	BORING DIAMETER: *8.25 Inches*
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *57.68 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION	WATER LEVEL	PIEZOMETER CONSTRUCTION (2-inch diameter)
0		SC	SAND, dark reddish brown (10R 3/4), clayey,		GROUT
10			SAND, dark reddish brown, clayey w/abundant quartz gravel		
			with occasional gravel		
15			SAND, dark reddish brown, clayey, silty		
20					
25		SM	SAND, very pale orange, fine-grained, micaceous		
30			SAND, light brown & dark yellowish orange, fine-grained, micaceous		
35					
40					

TTL, INC.
PRACTICING IN THE GEOSCIENCES

CYPRESS CREEK
C/O LANDFILL

LOG OF BORING
97-5
AND PIEZOMETER CONSTRUCTION

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION	WATER LEVEL	PIEZOMETER CONSTRUCTION (2-inch diameter)
45		SM	--------Moist--------		GROUT
50					
55			--------Very moist--------	▼	BENTONITE SEAL
60		SC	SAND, light brown & very pale orange, fine-grained, micaceous, clayey		SAND PACK
65			--------Wet--------		SCREENED INTERVAL
70			BORING TERMINATED AT 69 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 5/13/97.		WELL TIP
75					
80					

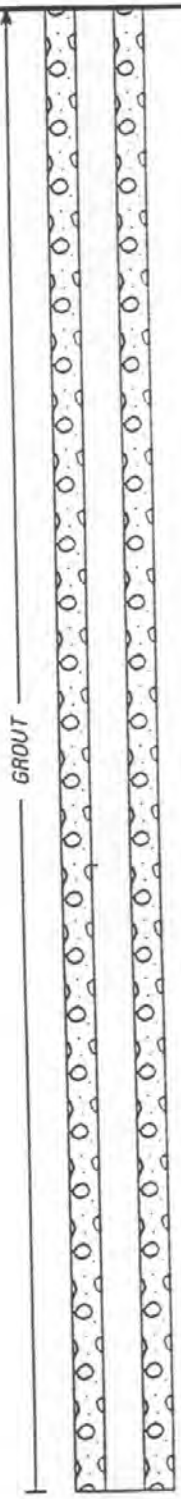
TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-6 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/23/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *64 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *357.00 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *54.59 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
5		SC	SAND, dark reddish brown (10R 3/4), clayey, w/gravel w/abundant gravel
10			SAND, dark reddish brown, clayey
15		SM	SAND, dark reddish brown, fine-grained, silty
20			SAND, dark yellowish orange (10YR 6/6), very pale orange (10YR 8/2), fine-grained, micaceous
25			
30			SAND, dark yellowish orange & light brown, fine-grained, micaceous
35			
40		SC	SAND, dark yellowish orange & light brown, fine-grained, clayey, micaceous --------Very moist--------

WATER LEVEL

PIEZOMETER CONSTRUCTION (2-inch diameter)

GROUT



TTL, Inc

TTL, INC.
PRACTICING IN THE GEOSCIENCES

CYPRESS CREEK
C/D LANDFILL

LOG OF BORING
97-6
AND PIEZOMETER CONSTRUCTION

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION	WATER LEVEL	PIEZOMETER CONSTRUCTION (2-inch diameter)
45		SC	SAND, dark yellowish orange & very pale orange, fine-grained, micaceous, clayey		GROUT
50			SAND, dark yellowish & light brown, fine-grained, micaceous, clayey		BENTONITE SEAL
55		CL	CLAY, pale yellowish brown & very pale orange, sandy, --------Very moist--------		SCREENED INTERVAL
		SC	SAND, moderate orange pink (10R 7/4), fine-grained, clayey, micaceous ------Wet------		SAND PACK
60		CL	CLAY, pale yellowish brown w/very fine-grained sand laminae		WELL TIP
		SC	SAND, pale yellowish brown & dark yellowish orange, fine-grained, clayey		
65			BORING TERMINATED AT 64 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 5/13/97.		
70					
75					
80					

TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-7 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/27/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *59 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *354.90 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *47.80 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION	WATER LEVEL	PIEZOMETER CONSTRUCTION (2-inch diameter)
5		SC	SAND, moderate brown (5YR 3/4), clayey, w/organics		GROUT
10			SAND, dark yellowish brown, clayey, w/gravel		
15			SAND, dark reddish brown, clayey		
20		SM	SAND, fine-grained, moderate reddish brown (10R 4/6), silty		
25					
30			SAND, very pale orange (10YR 8/2) & light brown, fine-grained, silty		
35		SC	SAND, dark yellowish orange, fine-grained, w/occasional thin clay lenses		

TTL, INC.
PRACTICING IN THE GEOSCIENCES

CYPRESS CREEK
C/D LANDFILL

LOG OF BORING
97-7
AND PIEZOMETER CONSTRUCTION

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION	WATER LEVEL	PIEZOMETER CONSTRUCTION (2-inch diameter)
		SC	SAND, grayish orange, fine-grained, micaceous, w/ occasional thin clay lenses		
40		SM	SAND, grayish orange, fine-grained, micaceous		
45			SAND, grayish orange & light red (5R 6/8) ------Very moist------	▼	
50			SAND, grayish orange, fine-grained, micaceous --------Saturated--------		
55					
60			BORING TERMINATED AT 59 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 4/21/97.		
65					
70					

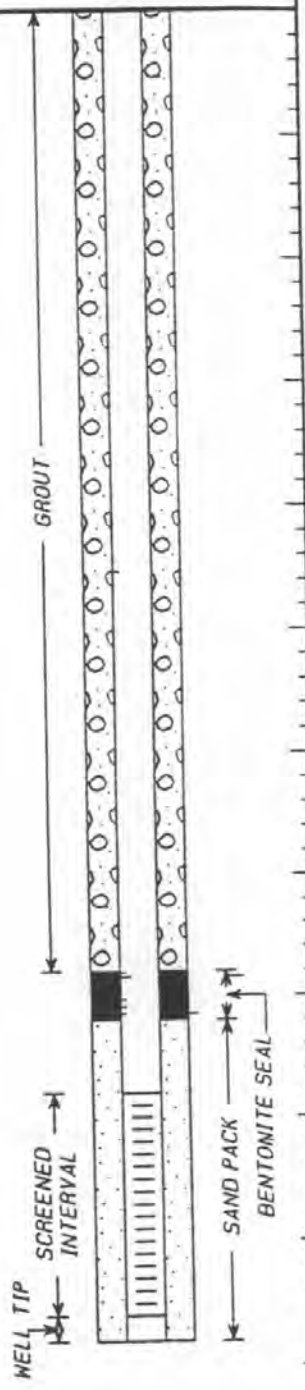
GROUT
BENTONITE SEAL
SAND PACK
SCREENED INTERVAL
WELL TIP

TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-8 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/27/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *54 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *348.30 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *42.82 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
5		SM	SAND, moderate reddish brown (10YR 4/6), silty
			SAND, silty, w/gravel
10		SC	SAND, dark yellowish orange & moderate reddish brown, fine-grained & clayey
15		SM	SAND, dark yellowish orange, fine-grained, silty, slightly micaceous
20		SC	SAND, dark yellowish orange & grayish orange, fine-grained w/occasional thin (~ 1/8") clay lense
25		SM	SAND, tan, silty
30		SC	SAND, dark yellowish orange, fine-grained, w/occasional thin (~ 1/16") clay lense
35			
40			
45			
50			
55			BORING TERMINATED AT 54 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 5/13/97.
60			

WATER LEVEL

PIEZOMETER CONSTRUCTION (2-inch diameter)

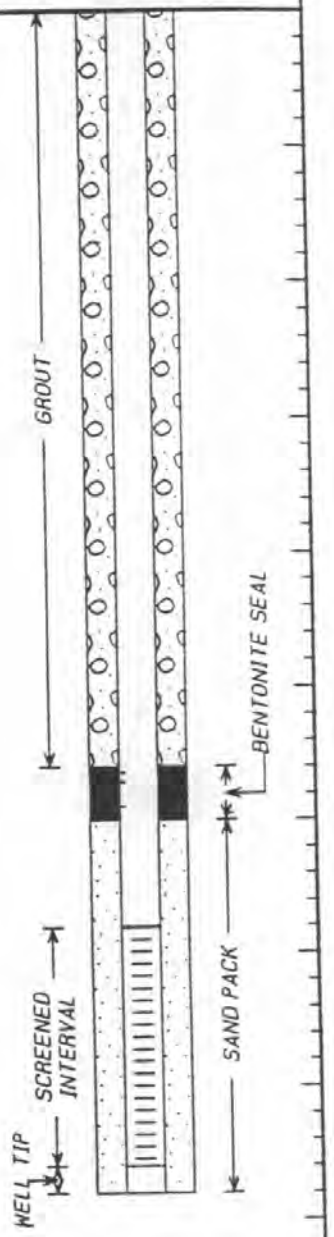


TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-9 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/27/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *44 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *334.80 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *30.67 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
5		CL	CLAY, dusky brown (5YR 2/2), sandy w/gravel
			CLAY, light brown (5YR 5/6), sandy w/gravel
10		SC	SAND, light brown & light olive gray (5Y 6/1), clayey, w/gravel
15			SAND, moderate reddish brown (10R 4/6), clayey w/gravel
20		SM	SAND, dark yellowish orange, fine-grained, micaceous, silty
25			
30			
35		SC	SAND, dark yellowish orange, fine-grained, micaceous, clayey ------Very moist------
			--------Saturated--------
40		SM	SAND, fine- to medium-grained
45			BORING TERMINATED AT 44 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 3/24/97.
50			
55			

WATER LEVEL

PIEZOMETER CONSTRUCTION (2-inch diameter)

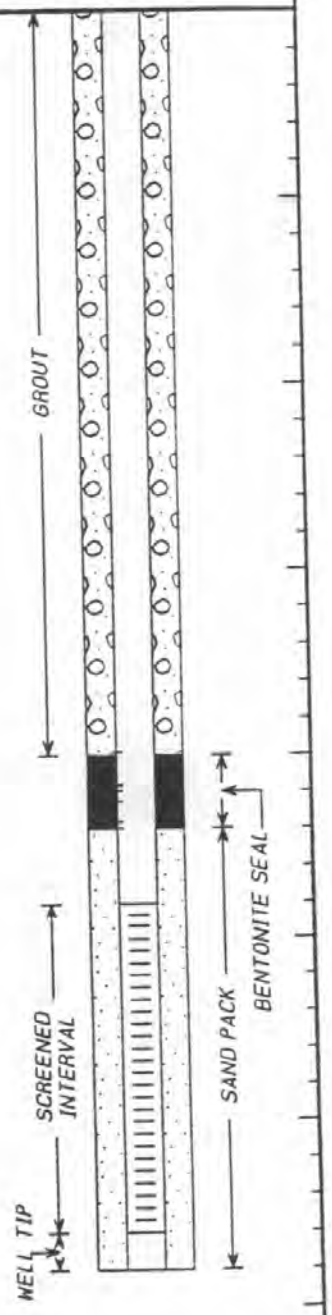


TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-10 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/27-29/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *34 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *329.10 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *22.18 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
0		SM	SAND, grayish brown (5YR 3/2), silty w/organics
5			SAND, moderate brown (5YR 4/4), silty w/occasional gravel
			SAND, light brown (5YR 5/6), silty w/gravel
10			SAND, grayish orange (10YR 7/4), fine-grained, silty
15			
20			--------Very moist--------
		CL	CLAY, dark yellowish orange & pale reddish purple (5RP 6/2), w/very fine-grained sand laminae, very stiff
		SM	SAND, dark yellowish orange & light brown, fine-grained, micaceous, silty
25			
30			--------Saturated--------
35			BORING TERMINATED AT 34 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 5/13/97.
40			

WATER LEVEL

PIEZOMETER CONSTRUCTION (2-inch diameter)



TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-11 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/27/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *14 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *279.00 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *5.36 Feet BLS*

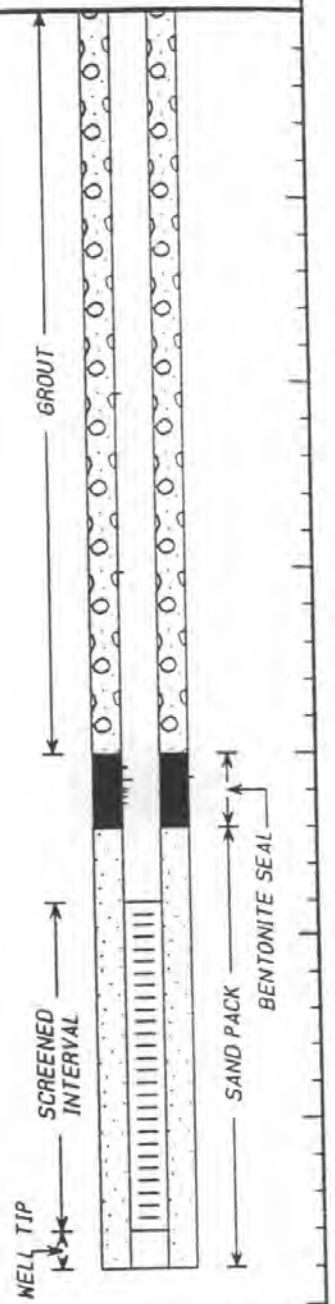
DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION	WATER LEVEL	PIEZOMETER CONSTRUCTION (2-inch diameter)
5		SC	SAND, moderate yellowish brown (10YR 5/4), fine-grained, clayey, w/organics	▼	GROUT, BENTONITE SEAL, SCREENED INTERVAL, SAND PACK, WELL TIP
		CL	CLAY, yellowish gray (5Y 7/2), sandy		
		SM	SAND, dark yellowish orange & very pale orange, fine-grained, micaceous ------Saturated------		
10		SC	SAND, olive gray (5Y 4/1), clayey relatively stiff		
15			BORING TERMINATED AT 14 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 3/11/97.		
20					
25					

TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING 97-12 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *1/27/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *34 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *333.80 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *24.17 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
0		SC	SAND, moderate reddish brown (10R 4/6), fine-grained, clayey w/occasional gravel
5			SAND, moderate reddish brown, fine-grained, clayey
10		SM	SAND, moderate reddish brown & dark yellowish orange (10YR 8/6), fine-grained, silty
15			SAND, dark yellowish orange & very pale orange, fine-grained, silty
20			
25			--------Saturated--------
30		SC	SAND, moderate yellowish brown (10YR 5/4), fine- to medium-grained, clayey
35			BORING TERMINATED AT 34 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER. DATE OF MEASUREMENT IS 3/11/97.
40			

WATER LEVEL

PIEZOMETER CONSTRUCTION (2-inch diameter)

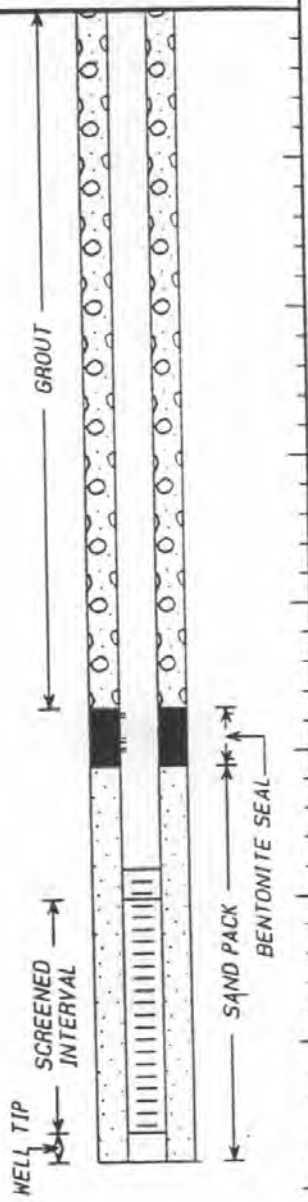


TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING- 97-13 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *STEVE T. GRAMMAS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *2/12/97*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *39 Feet BLS*
DRILLER: *KEN PATE & CREW*	L.S.ELEVATION: *332.40 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *24.56 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
0		CL	CLAY, light brown, sandy
15		SM	SAND, light brown & dark yellowish orange, silty micaceous
25		SC	SAND, light red & dark yellowish orange, clayey w/mica
30			SAND, dark yellowish orange, fine-grained, clayey, micaceous
40			BORING TERMINATED AT 39 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 3/11/97.

WATER LEVEL

PIEZOMETER CONSTRUCTION (2-inch diameter)

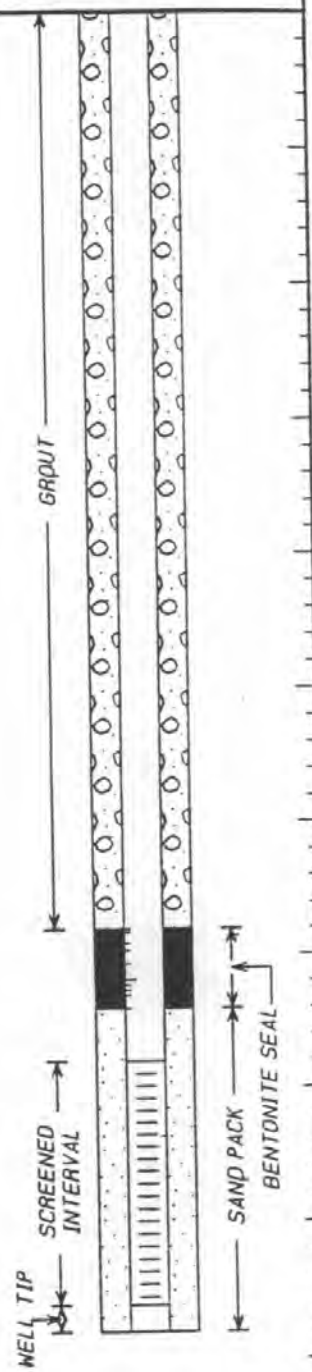


TTL, Inc. PRACTICING IN THE GEOSCIENCES	CYPRESS CREEK C/D LANDFILL	LOG OF BORING PZ-3 AND PIEZOMETER CONSTRUCTION
GEO/ENG: *BRIAN P. SIMS*	LOCATION: *TUSCALOOSA, ALABAMA*	DATE CONSTRUCTED: *5/11/95*
DRILL AGENCY: *TTL, Inc.*	JOB NUMBER: *79-356*	BORING DEPTH: *49 Feet BLS*
DRILLER: *HARRY SIMMONS*	L.S.ELEVATION: *316.90 Feet AMSL*	BORING DIAMETER: 8.25 Inches
DRILLING METHOD: *4-1/4" ID HSA W/5' CONT. SPS, CME-75*		WATER LEVEL: *42.56 Feet BLS*

DEPTH (feet)	GRAPHIC LOG	SOIL CLASS	MATERIALS DESCRIPTION
5		SC	SAND, clayey, silty, gravelly, yellowish red (5YR 4/8)
10		CL	CLAY, silty, mottled, light gray (10YR 7/1)
15			
20			
25		SC	CLAY and SAND, fine-grained, interbedded, yellowish brown (10YR 5/8) ------Moist-------
			CLAY, with sandy laminations, light brownish gray (10YR 6/2)
30		SW	SAND, fine- to medium-grained, micaceous, brownish yellow (10YR 6/8) ------Moist-------
35			SAND, micaceous, strong brown (7.5YR 5/8)
40		SM	SAND, silty, micaceous, yellowish brown (10YR 5/8) -------Saturated-------
45		SW	SAND, micaceous, olive yellow (2.5YR 6/8) ------Saturated-------
50			BORING TERMINATED AT 49 FEET BELOW LAND SURFACE. WATER LEVEL IS HIGHEST MEASURED IN THIS PIEZOMETER, AND WAS MEASURED ON 4/21/97.
55			

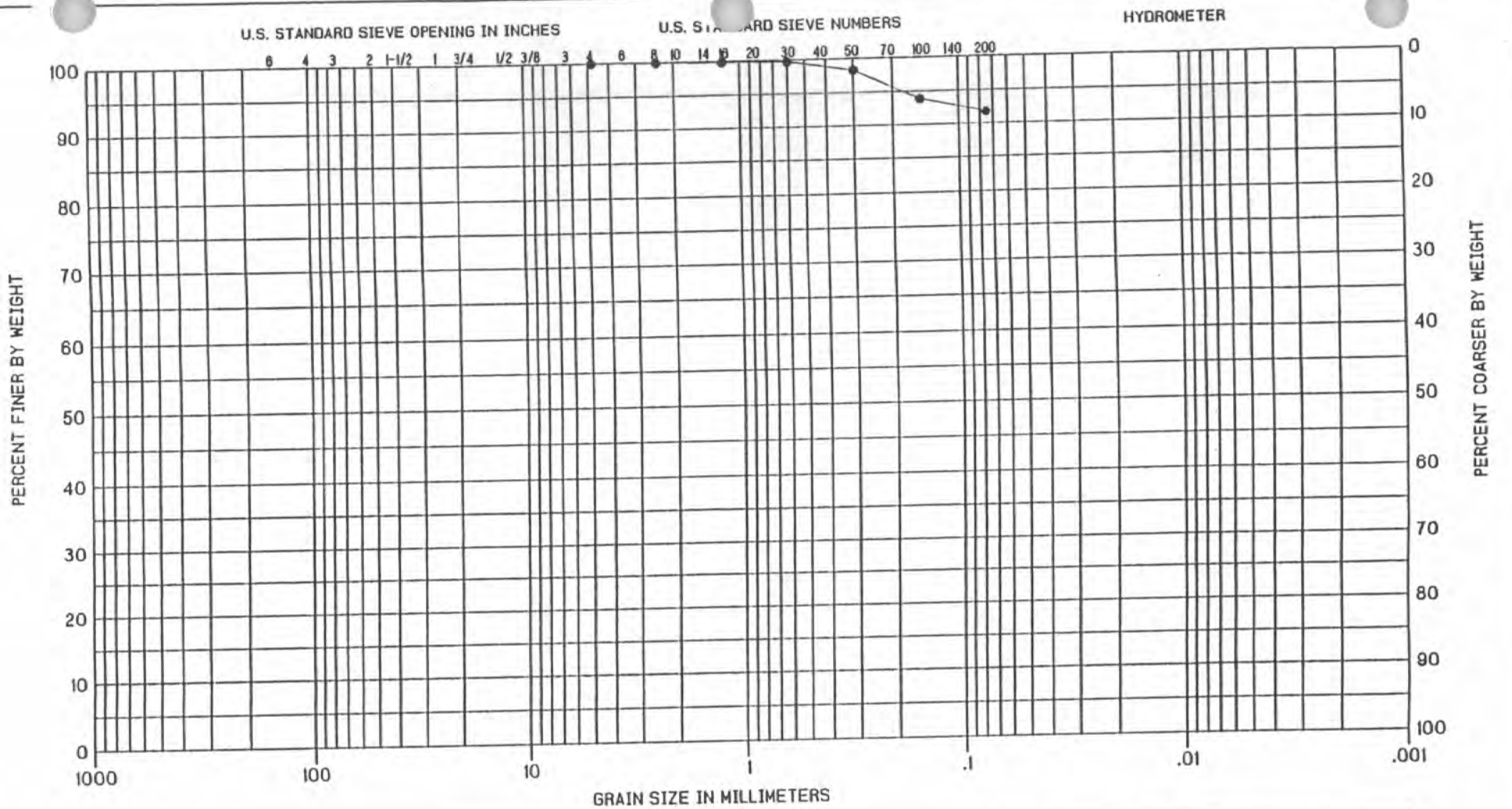
WATER LEVEL

PIEZOMETER CONSTRUCTION (2-inch diameter)



ATTACHMENT 2.2

Laboratory Analyses of Soil/Sediment Samples



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-1	0' – 4'	Dark Yellowish Brown Silty Clay (CH)	26	57	28	29

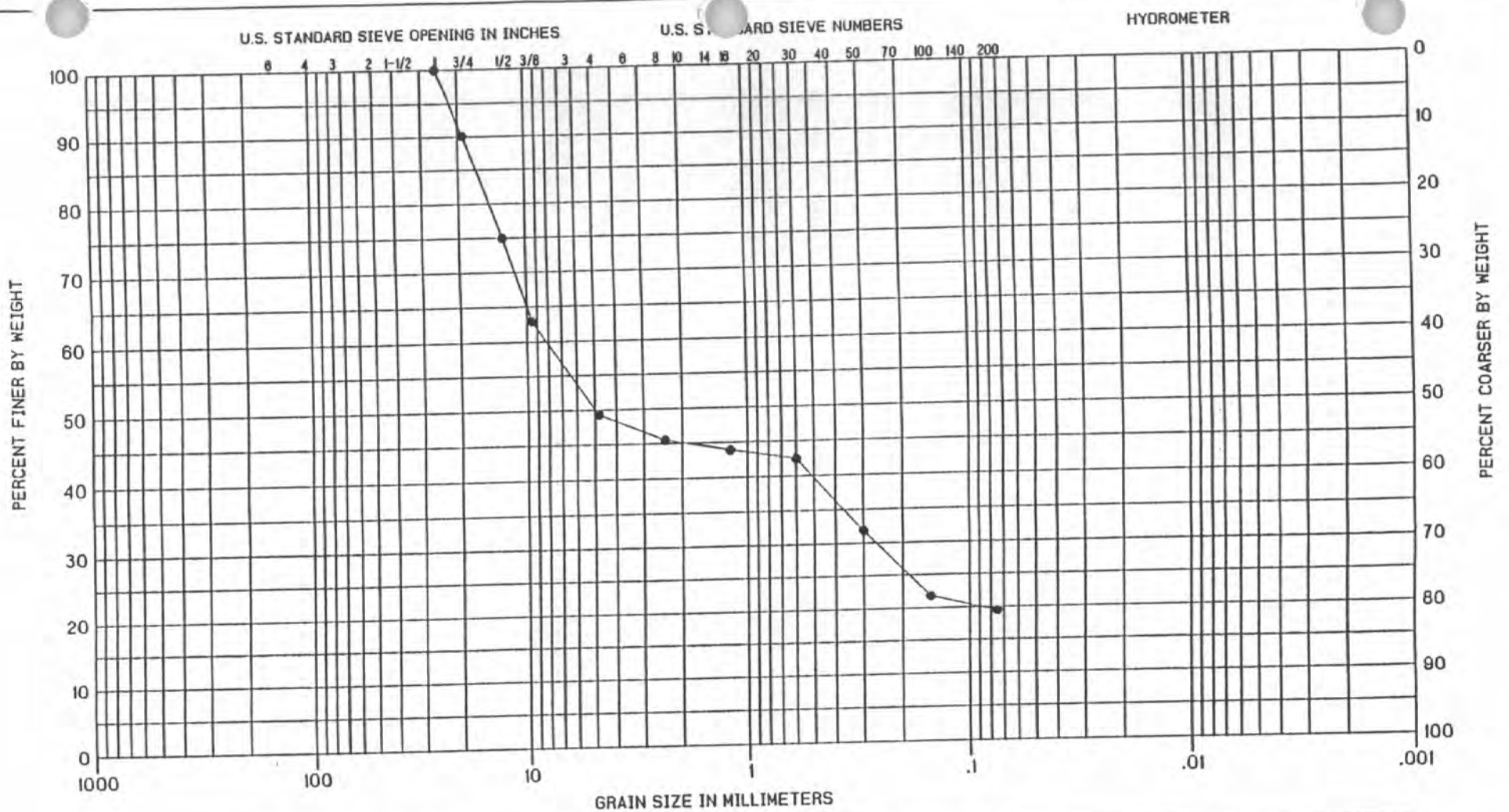
GRADATION CURVES

Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-1
Date : March 17, 1997

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3516 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-5	9' - 14'	Dark Reddish Brown Clayey Sand w/Gravel (SC)	17	36	24	12

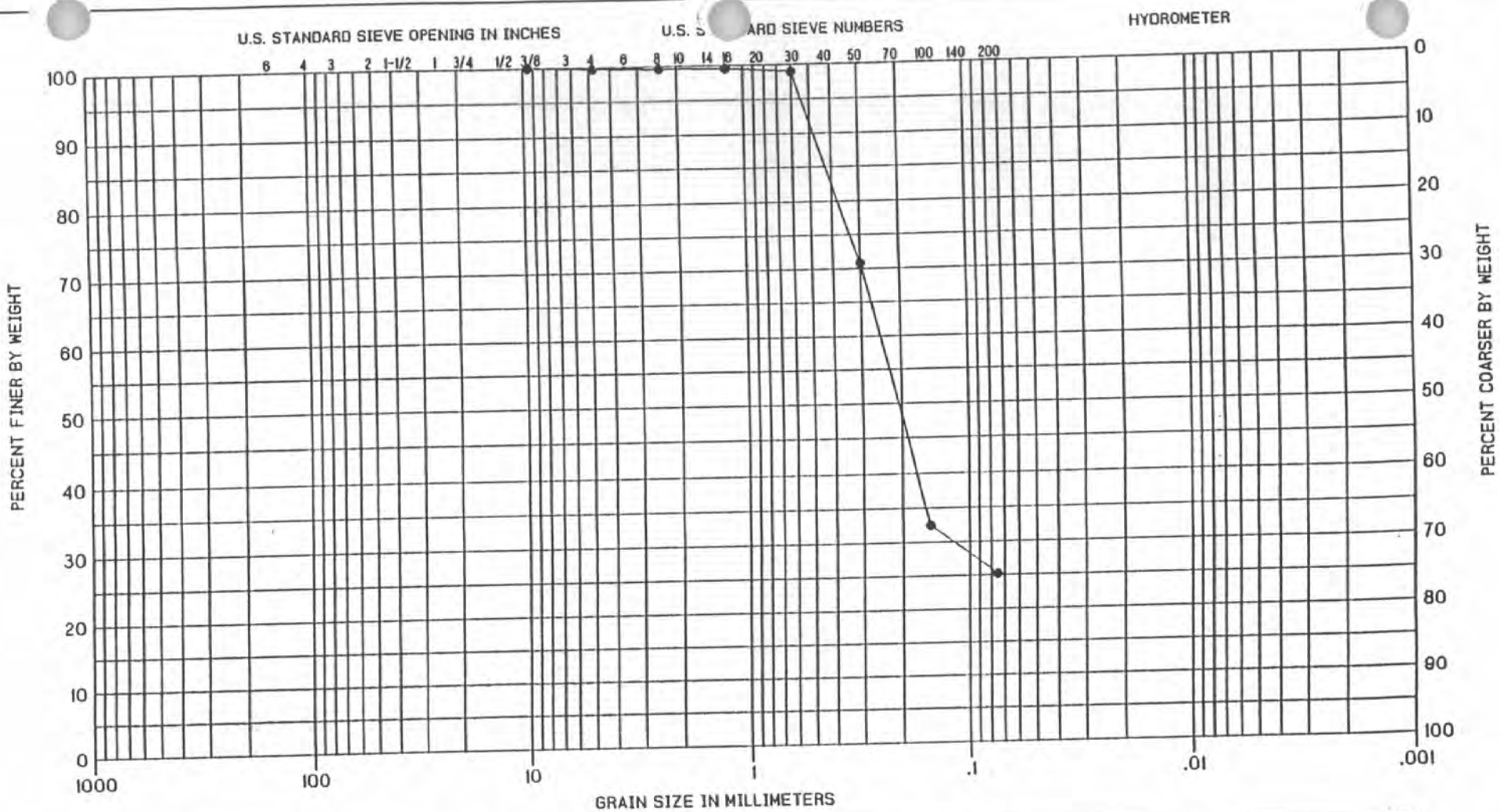
Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-5
Date : March 17, 1997

GRADATION CURVES

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3518 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-5	19' - 24'	Dark Reddish Brown Clayey Silty Sand (SM-SC)	13	25	19	6

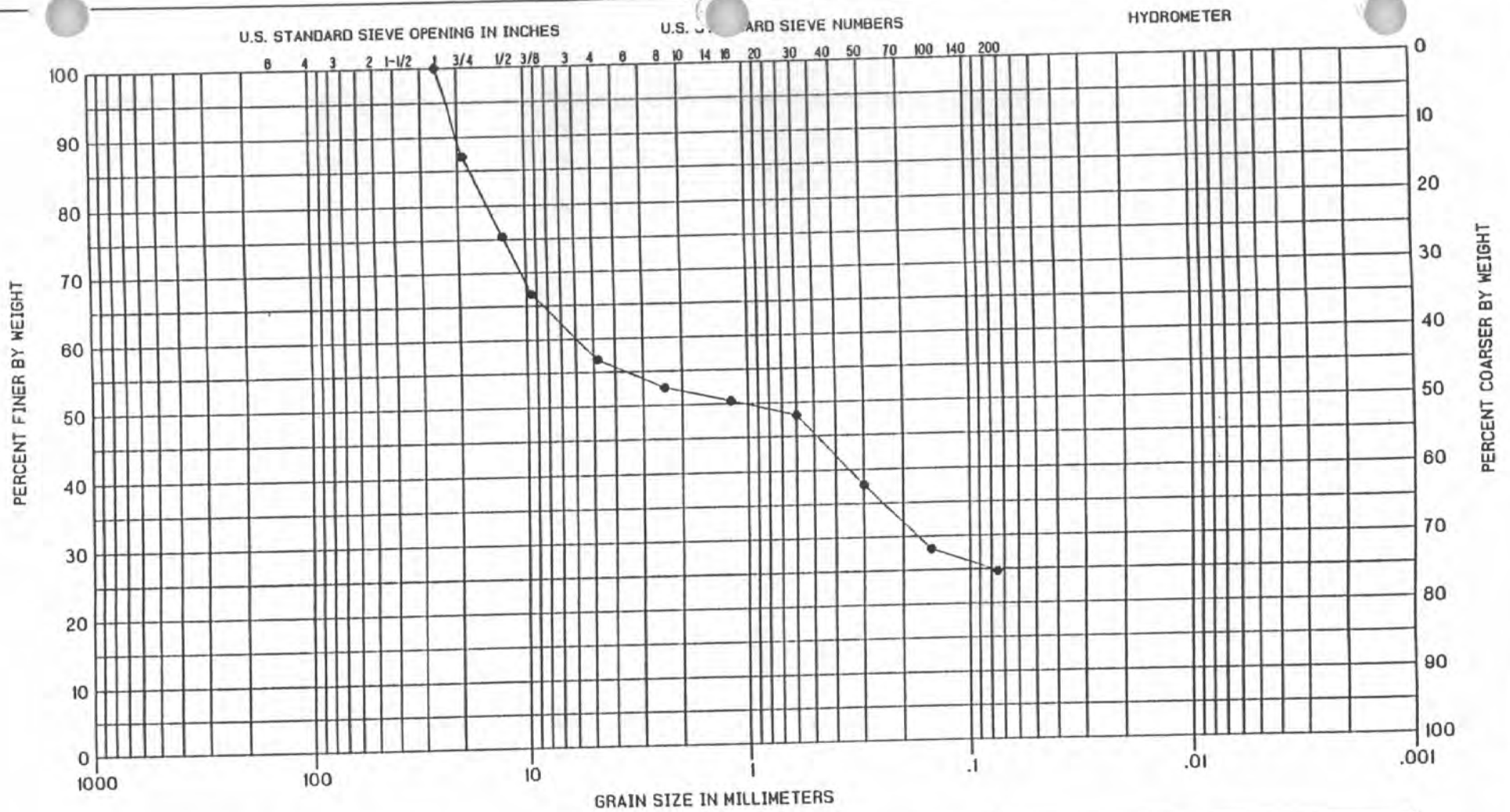
GRADATION CURVES

Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-5
Date : March 17, 1997

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3516 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-6	4' - 9'	Dark Reddish Brown Clayey Sand w/Gravel (SC)	12	35	22	13

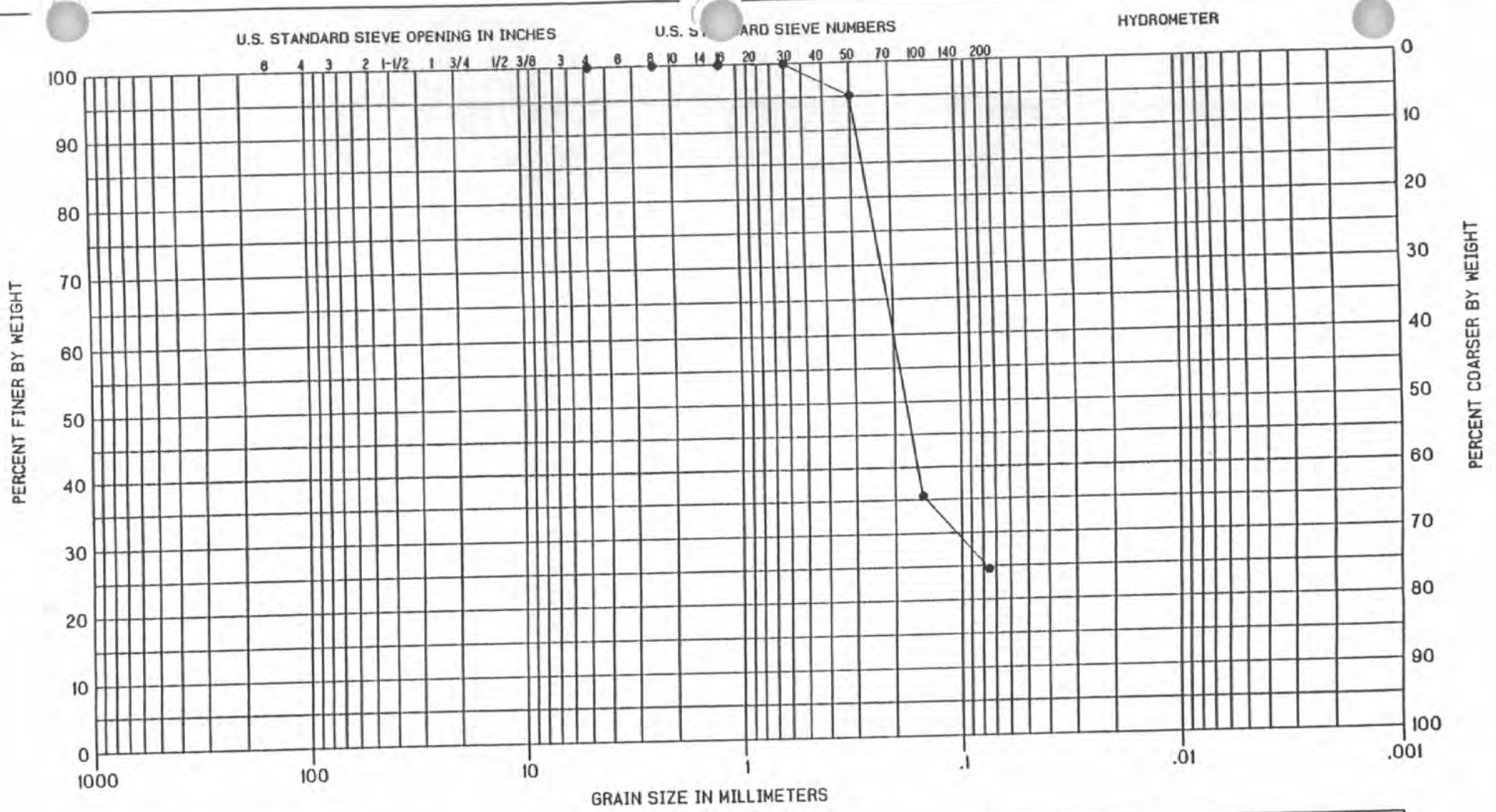
Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-6
Date : March 17, 1997

GRADATION CURVES

TTL, Inc. PRACTICING IN THE GEOSCIENCES

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-6	14' - 19'	Dark Reddish Brown Silty Sand (SM)	13	23	22	1

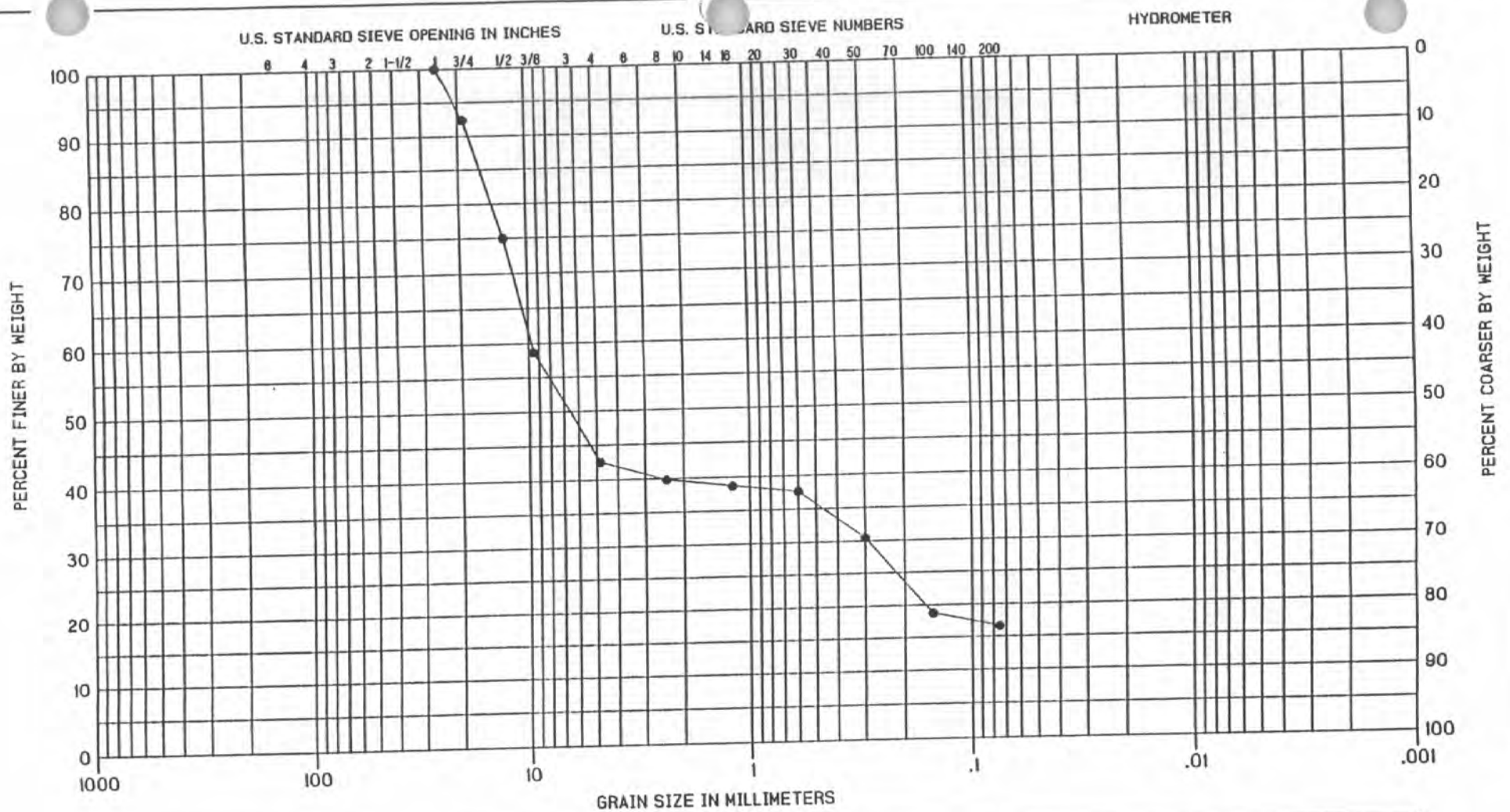
Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-6
Date : March 17, 1997

GRADATION CURVES

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3516 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-7	9' - 14'	Dark Reddish Brown Clayey Sand w/Gravel (SC)	10	39	22	17

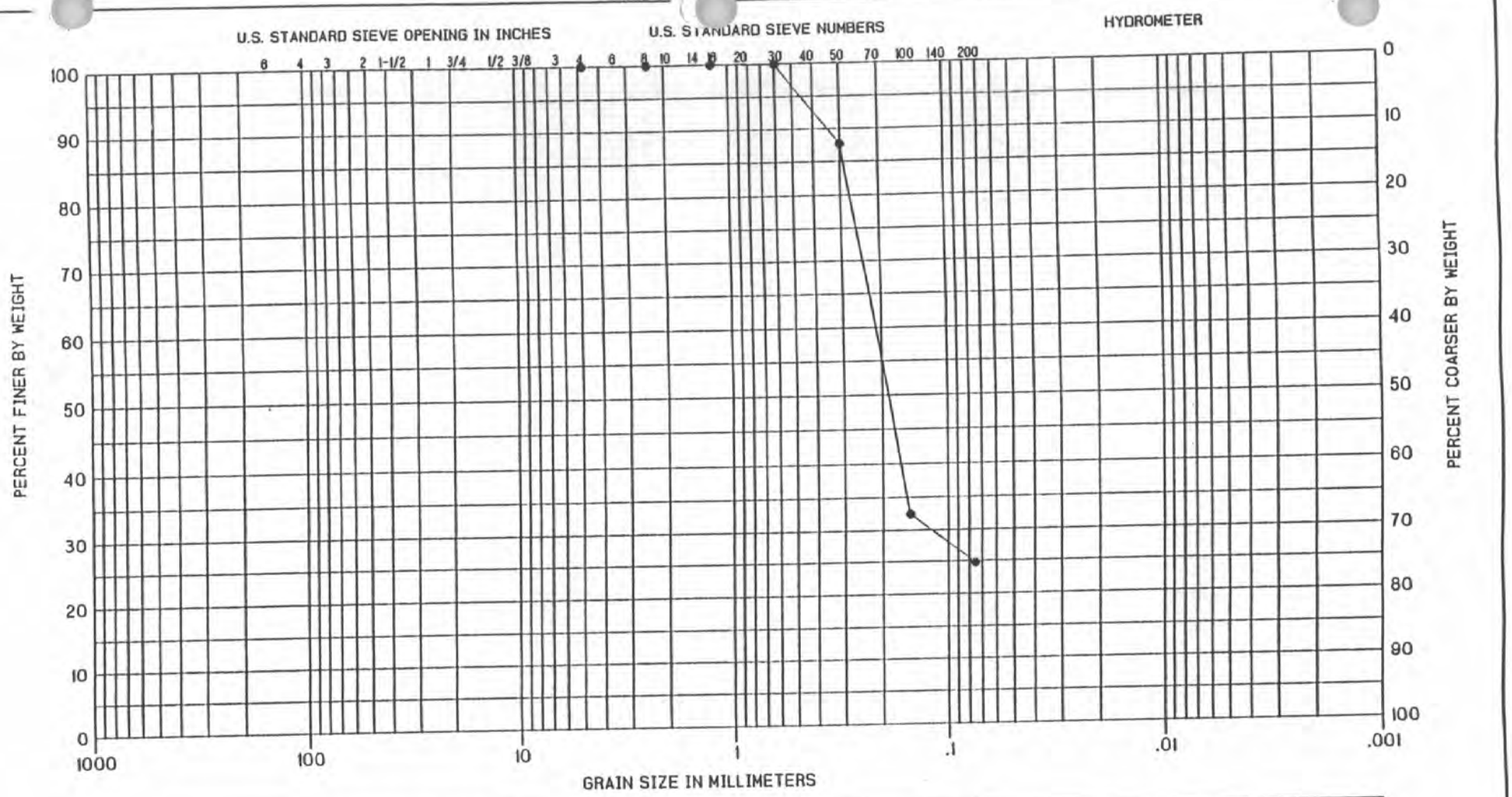
Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-7
Date : March 17, 1997

GRADATION CURVES

TTL, Inc. PRACTICING IN THE GEOSCIENCES

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-7	19' - 24'	Reddish Brown Silty Sand (SM)	16	28	22	6

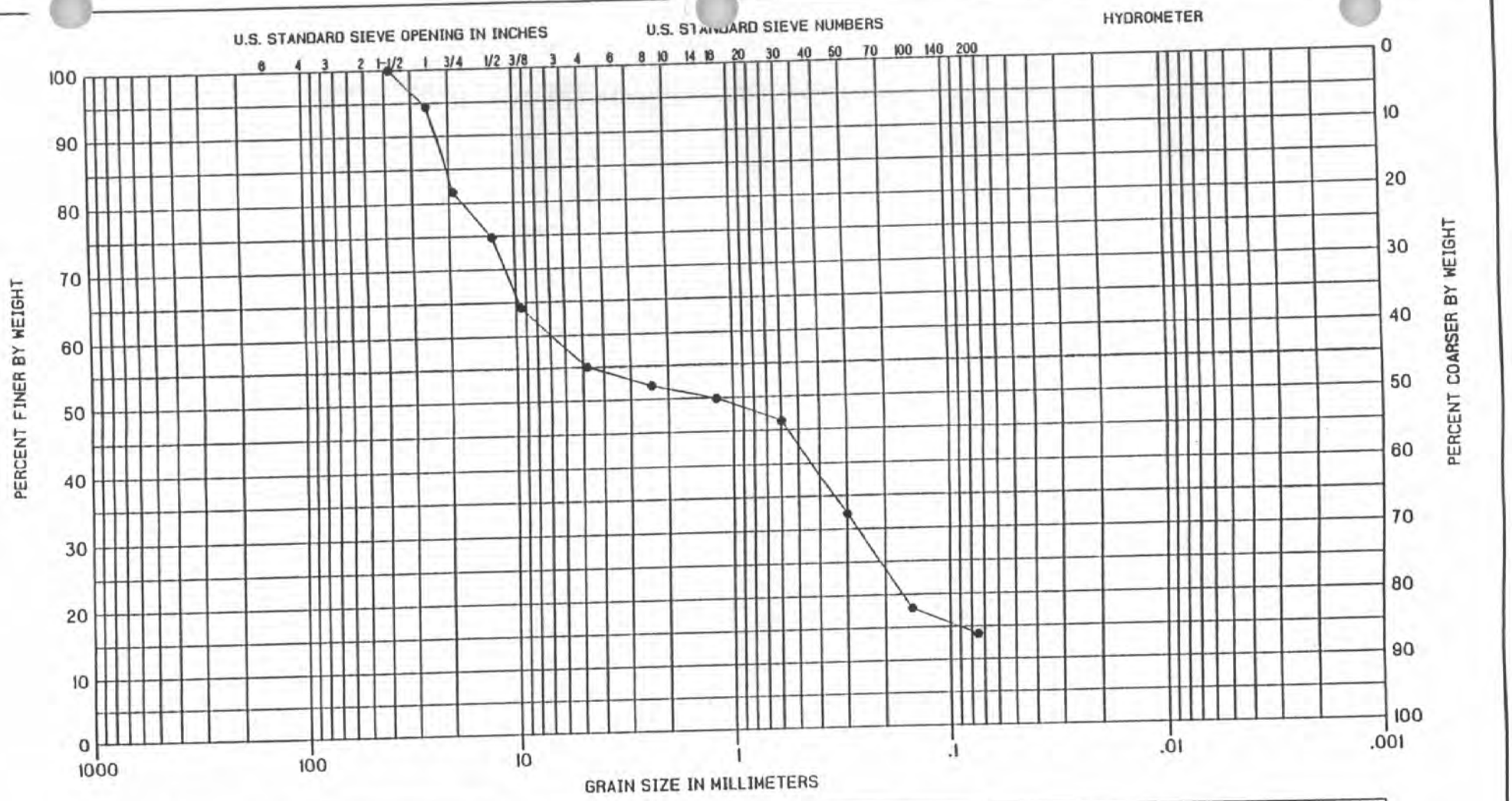
GRADATION CURVES

Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-7
Date : March 17, 1997

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3518 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-8	4' - 9'	Reddish Brown Silty Sand w/Gravel (SM)	10	30	14	6

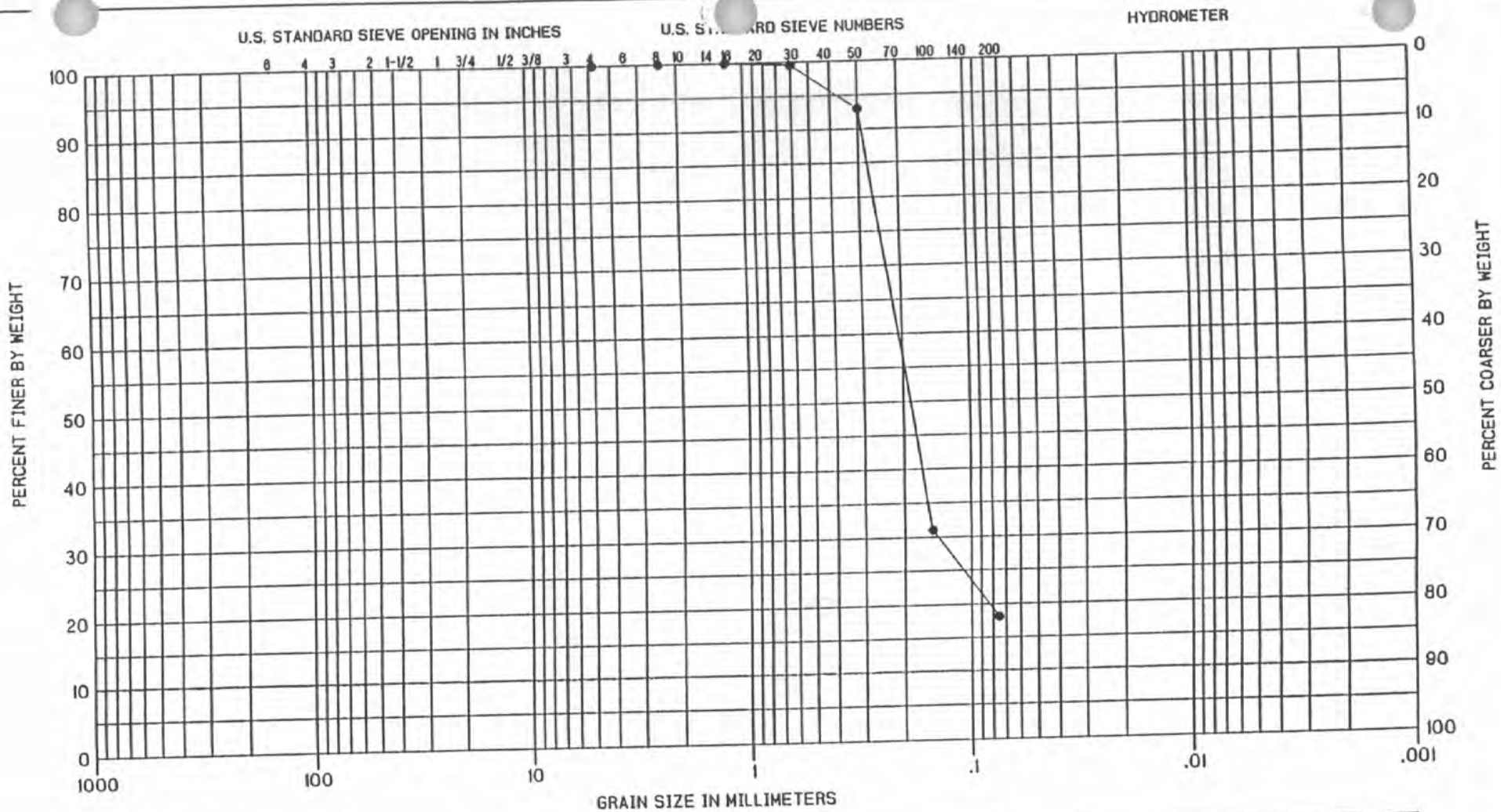
GRADATION CURVES

Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-8
Date : March 17, 1997

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3518 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0902



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-8	24' – 29'	Tan Silty Sand (SM)	12			NP

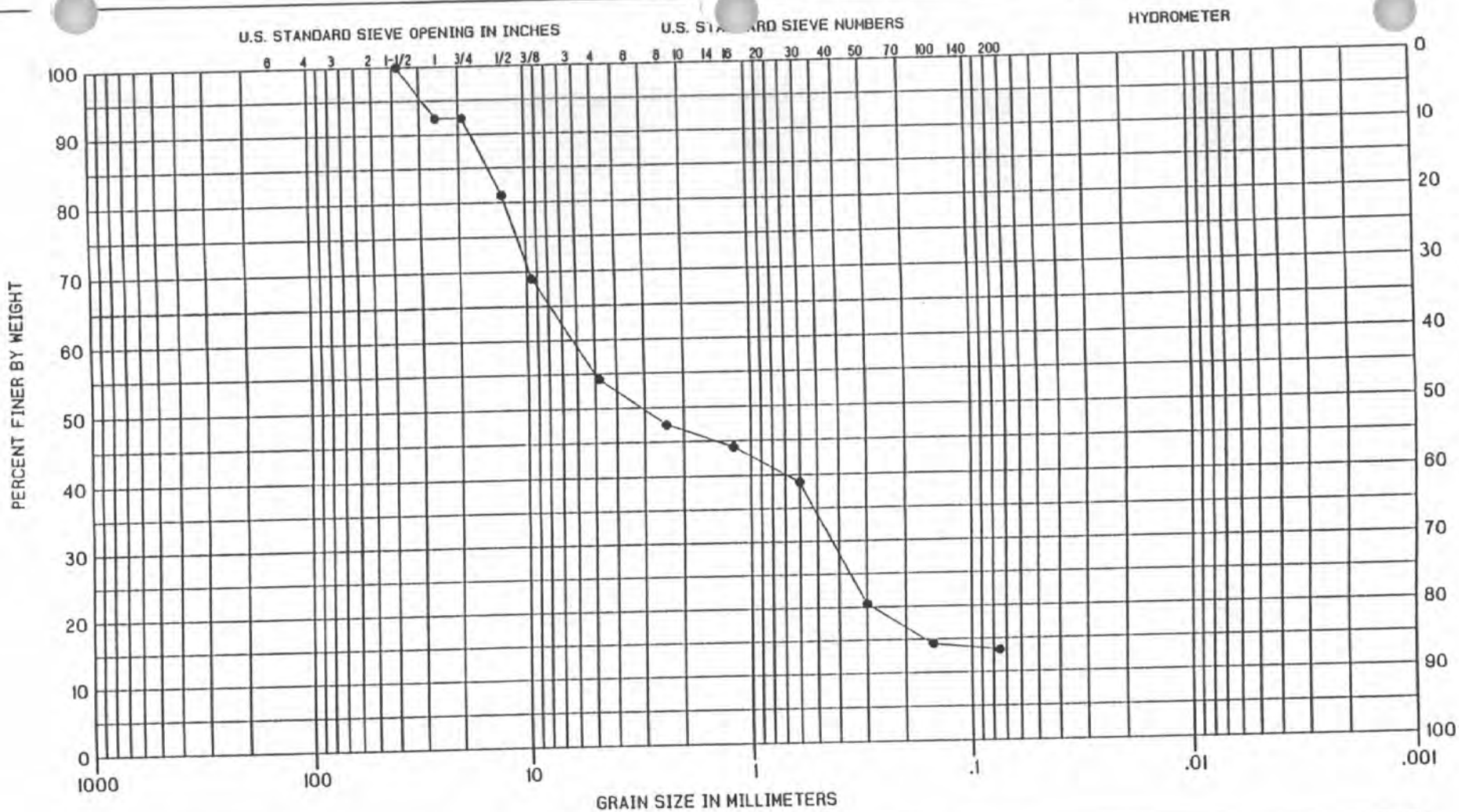
Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-8
Date : March 17, 1997

GRADATION CURVES

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3516 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-9	9' - 14'	Lt. Brown to Olive Gray Clayey Sand w/Gravel (SC)	11	38	23	13

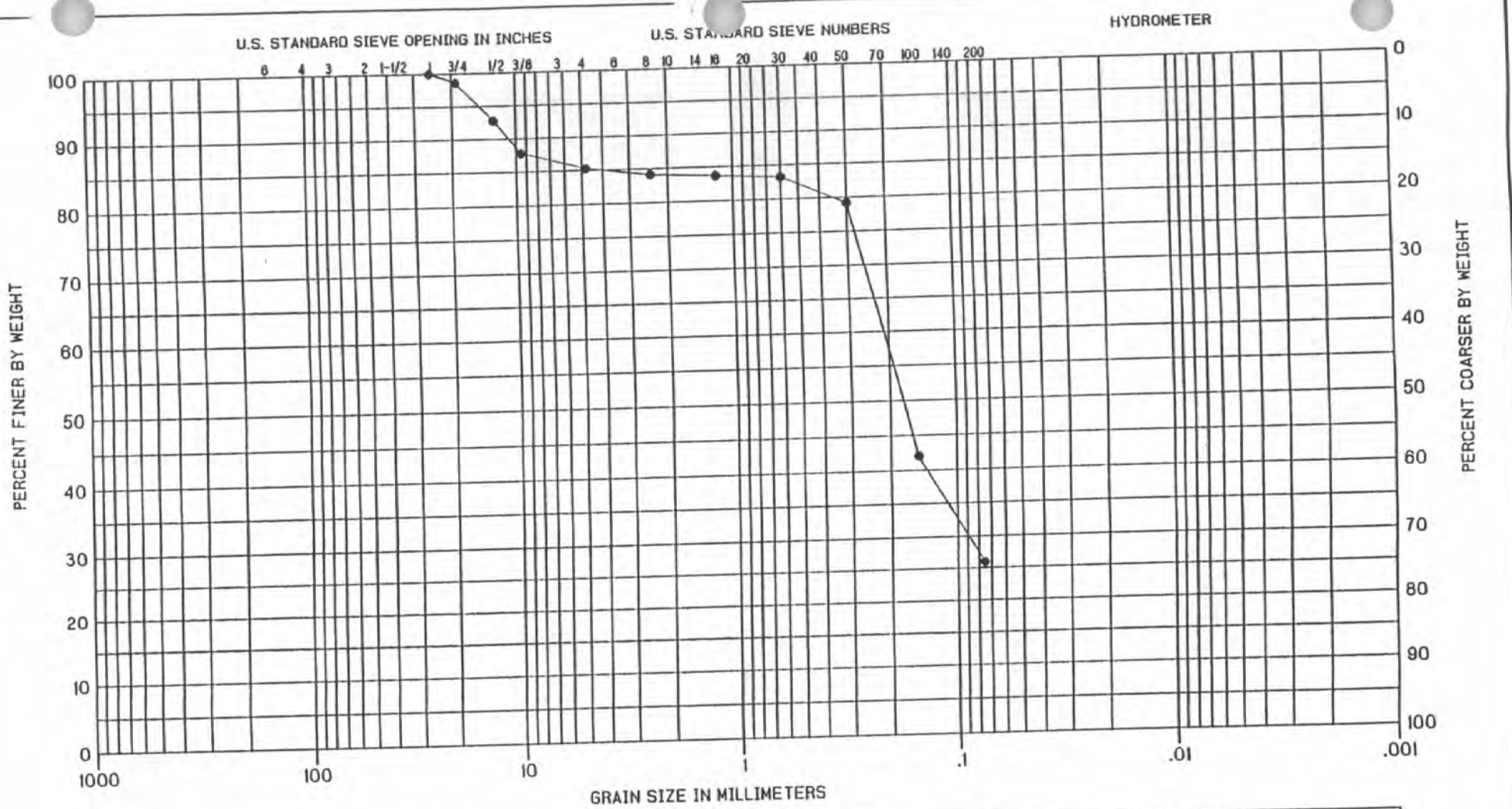
GRADATION CURVES

Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-9
Date : March 17, 1997

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3518 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-10	4' - 9'	Brown Silty Sand w/Gravel (SM)	18	27	23	4

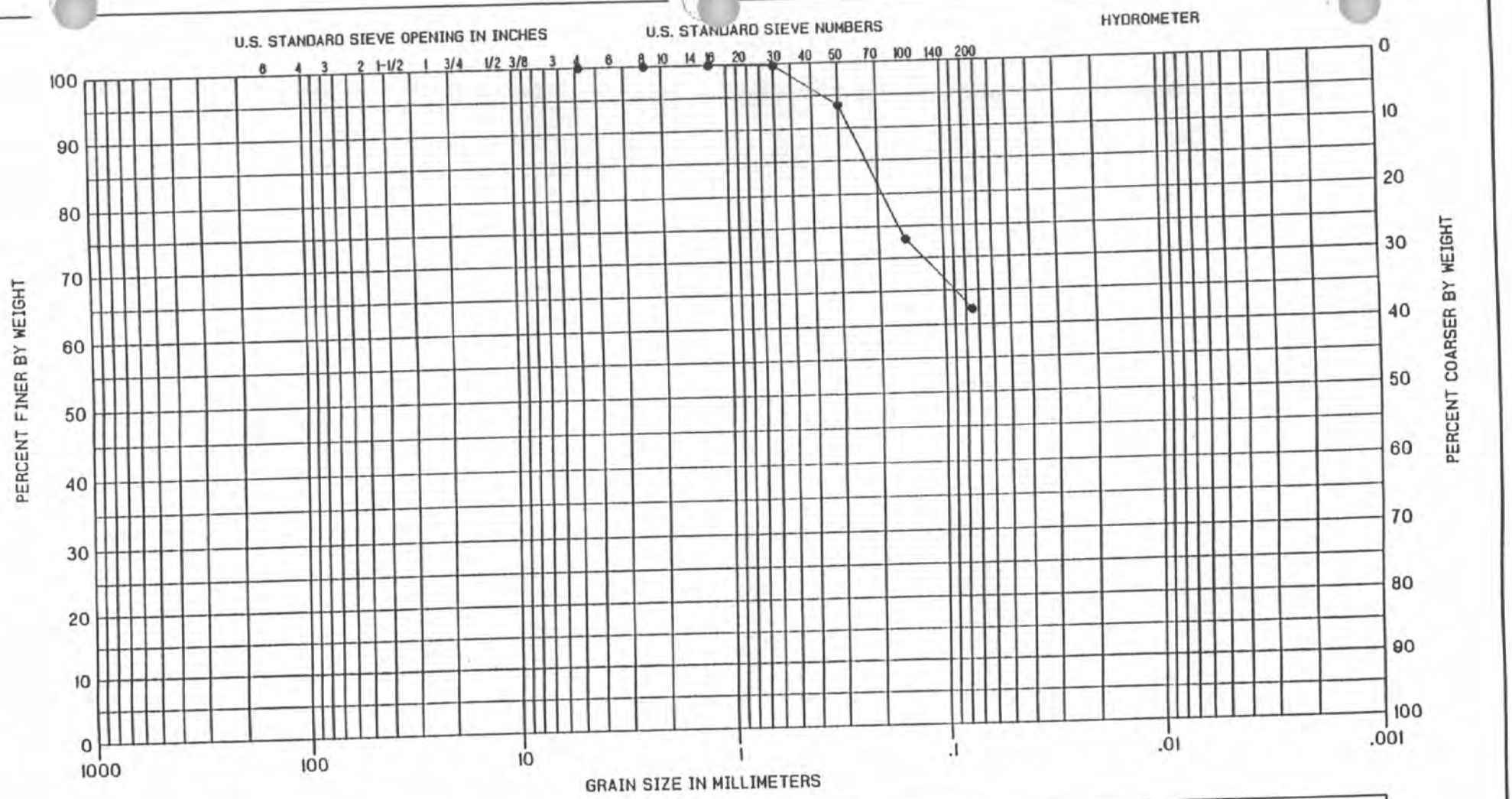
Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-10
Date : March 17, 1997

GRADATION CURVES

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3516 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-11	6' - 8'	Yellowish Gray Sandy Clay (CL)	25	34	18	16

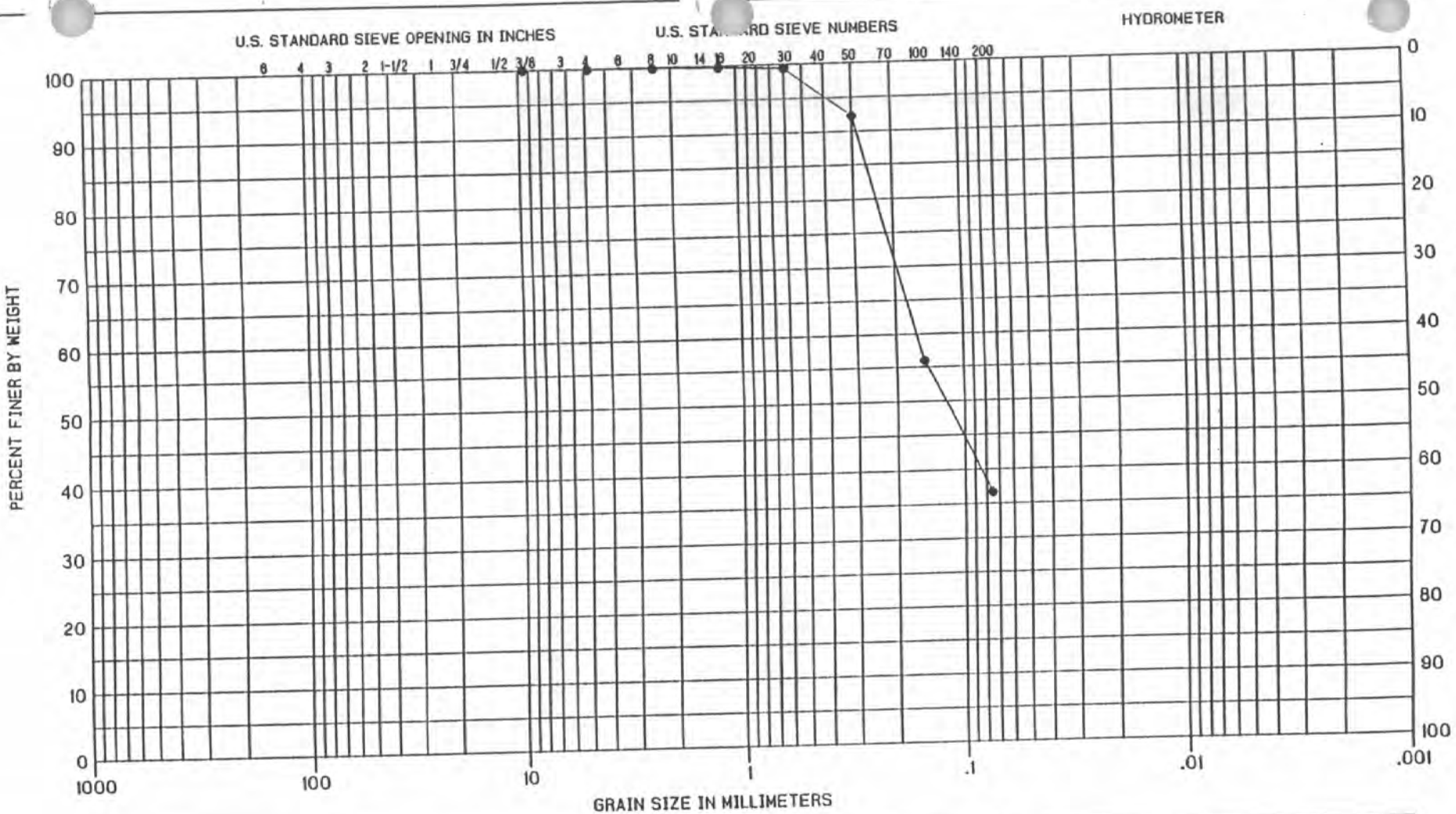
Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-11
Date : March 17, 1997

GRADATION CURVES

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3516 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-11	9.5' - 12'	Olive Gray Clayey Sand (SC)	27	25	15	10

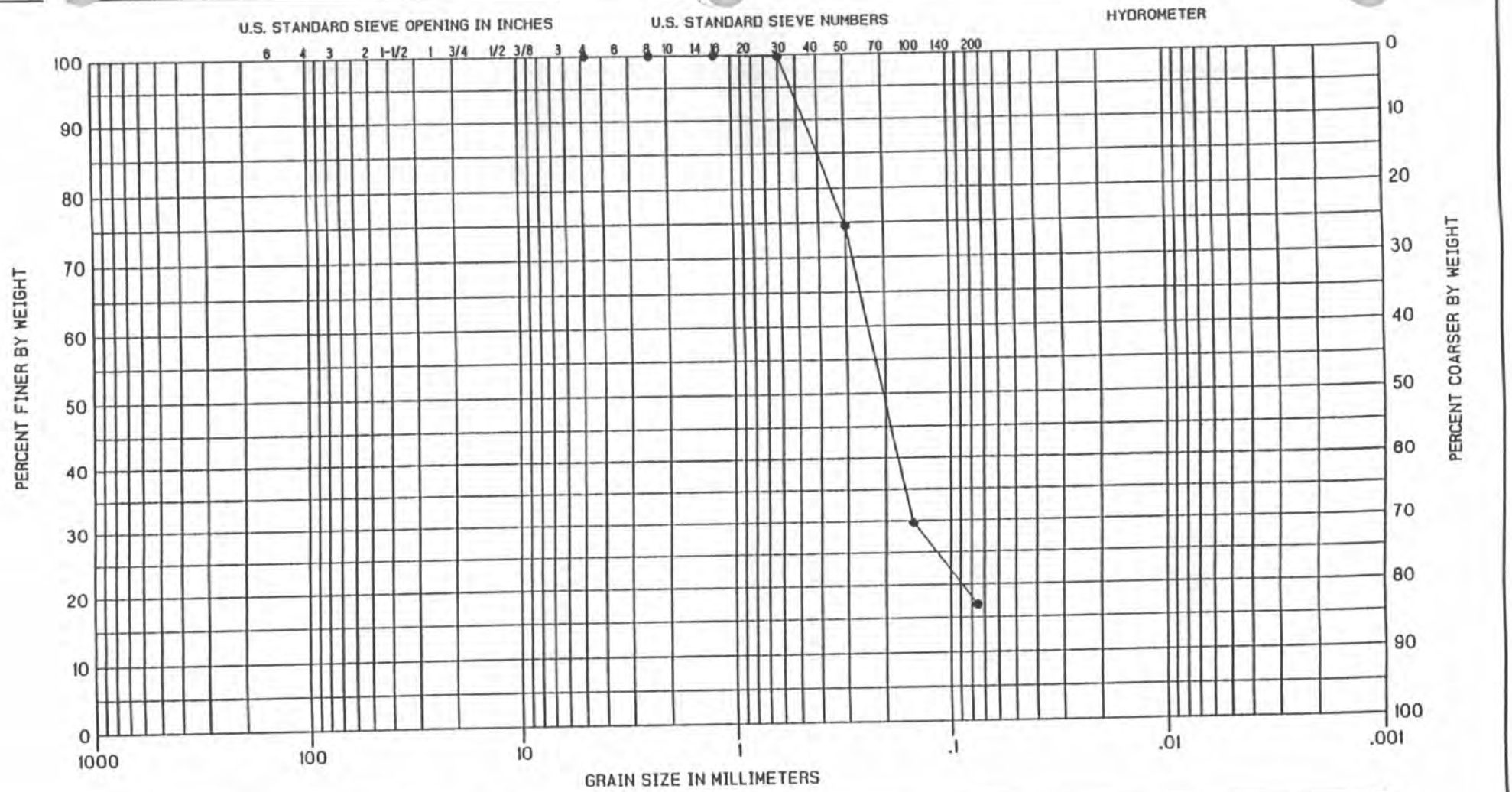
Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-11
Date : March 17, 1997

GRADATION CURVES

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3516 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
97-12	9' - 14'	Reddish Brown, Yellow & Orange Silty Sand (SM)	15			NP

GRADATION CURVES

Project : Cypress Creek Landfill

Area : Tuscaloosa, Alabama
Boring No. : 97-12
Date : March 17, 1997

TTL, Inc. PRACTICING IN THE GEOSCIENCES

3518 Greensboro Avenue, P. O. Drawer 1128, Tuscaloosa, Alabama 35403 Telephone 205-345-0816 FAX 205-345-0992

APPENDIX I

Stormwater Best Management Practices (BMP) Plan and NPDES Permit

BEST MANAGEMENET PRACTICES AND STORMWATER POLLUTION PREVENTION PLAN

Cypress Creek Landfill

Tuscaloosa, Alabama

April 2022

Promus Project No. 210207

Prepared for:

Cypress Creek Landfill, LLC

Prepared by:

PROMUS ENGINEERING

1200 Mountain Creek Road, Suite 102 | Chattanooga, Tennessee 37405

www.promusengineering.com

SIGNATURES

The signature below certifies that this document has been prepared by a qualified professional.
I hereby certify that I have examined this facility and this Best Management Practices (BMP) and Stormwater Pollution Prevention Plan (SWPPP) and find it to have been prepared in accordance with good engineering practices. Further, I certify that this document was prepared by me or under my personal supervision and that I am a duly Registered Professional Engineer under the laws of the State of Alabama.



Signature

April 25, 2022
Date

Name: C. Rob Witcher, PE – AL# 31552
Title: Principal Engineer
Firm: Promus Engineering, LLC

The Cypress Creek Landfill Responsible Party functions as the Pollution Prevention Manager. This individual has the responsibility for implementation of this plan. The Pollution Prevention Manager reviews and evaluates the effectiveness of the overall program and makes recommendations to improve plan. If a significant spill or leak to storm water occurs, the Pollution Prevention Manager will immediately review the incident and make adjustments as necessary. The signature below identifies the designated Responsible Party and certifies that the plan has been reviewed by Cypress Creek Landfill management and will be implemented as outlined herein.

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 gathered and evaluated 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 submitted false information, including the possibility of fine and imprisonment for knowing violations.

Signature:
Name: Matt Belden
Title: District Landfill Manager
Work Phone: (205) 750-0553

BMP and SWPP Plan Review Log

The BMP and SWPPP is a "living" document and must be reviewed on a regular basis, at least annually, and updated to address changes in site conditions (e.g., operational activities, modification and/or addition of new BMPs) and new or revised government regulations.

This Table should be used to document that the plan is reviewed on a regular basis, and to document corrections, revisions, or updates to the plan as they occur.

Revision #	Date	Revisions Made to Plan	Revision Prepared by (Name and Title)
0	April 2022	Initial Plan Preparation	C. Rob Witcher, PE Principal Engineer

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1.0 FACILITY DESCRIPTION AND CONTACT INFORMATION

1.1. Facility Information

Site Location and Mailing Address:

Cypress Creek Landfill
6315 12th Avenue East
Tuscaloosa, Alabama 35405
Tel.: (205) 750-0553
Latitude: 33° 08' 59" Longitude: 87° 31' 23"

Discharge Information:

Permitted Discharges:

DSN001: Storm water runoff, not containing leachate, from active and inactive landfills; from transfer stations; including storm water runoff from land disturbing activities associated with opening and closing cells at landfills;

DSN003: Uncontaminated storm water from equipment maintenance and storage, fueling, petroleum storage, and handling areas.

DSN004: exterior vehicle and equipment wash water that do not contain solvents and has not come in direct contact with solid waste;

Estimated area of industrial activity exposed to stormwater: 120 acres

Does this facility discharge storm water into a Municipal Separate Storm Sewer System (MS4)? No

Name of receiving water(s): Unnamed tributary to Rum Creek

Are any discharges into any segment of an "impaired" water? No

Are any discharges subject to effluent guidelines? Yes

If yes, name the parameters: Oil and Grease, Turbidity, Benzene, Ethylbenzene, Toluene, Napthalene, pH, Phosphorous, and Total Suspended Solids.

1.2. Facility Contact Information

Landfill District Manager:

Mr. Matt Belden
District Landfill Manager
Cypress Creek Landfill
Tel.: (205) 750-0553
Email Address: Matthew.Belden@WasteConnections.com

Region Engineer:

Mr. Joe Vieceli
Senior Engineer
Waste Connections
Tel.: (817) 371-0582

Operations Manager:

Mr. Matt Belden
District Landfill Manager
Cypress Creek Landfill
Tel.: (205) 750-0553
Email Address: Matthew.Belden@WasteConnections.com

1.3. Stormwater Pollution Prevention Team

The stormwater pollution prevention team is responsible for assisting the facility manager in developing and revising the Facility's BMP and SWPP Plan, implementing and maintaining control measures/BMPs, and taking corrective actions where required. Each member of the storm water pollution prevention team must have ready access to either an electronic or paper copy of applicable portions of the Permit and the BMP and SWPP Plan.

Table 1: Stormwater Pollution Prevention Team

Staff Title	Individual Responsibilities
District Landfill Manager (Pollution Prevention Manager)	▪ Coordinate BMP implementation and erosion and sediment control ▪ Review BMP and SWPPP annually and update as needed ▪ Oversee employee training annually ▪ Identify and correct noncompliance issues ▪ Conduct semi-annual stormwater sampling by June 30th and December 30th each year (DSN001) ▪ Conduct weekly flow monitoring and monthly stormwater sampling (DSN004) ▪ Conduct twice weekly facility inspections on Form in Appendix B ▪ Conduct twice weekly inspections of the petroleum tank area(s) on Form in Appendix B
Region Engineer	▪ Submit sampling eDMRs by July 28th and January 28th ▪ Submit Annual Compliance Certification by January 28th ▪ Submit Noncompliance Notification Form by July 28th or January 28th (if required)

1.4. Activities at the Facility

The facility is currently permitted to dispose of non-putrescible and non-hazardous construction and demolition waste and rubbish under the Alabama Department of Environmental Management (ADEM) Land Division – Solid Waste Program Rules.

Cypress Creek Landfill (Facility) is a Construction/Demolition Landfill that is owned and operated by Cypress Creek Landfill, LLC (Owner). The Standard Industrial Code (SIC) for the Facility is 4953, Sanitary Services-Refuse Systems.

Activities Performed at the Facility:

Solid Waste Handling: The facility is authorized to accept non-putrescible and non-hazardous construction and demolition waste and rubbish as defined by ADEM Rule 335-13-1-.03, discarded tires, off-spec rubber material generated by BF Goodrich located in Tuscaloosa, AL, and nylon screens generated by Phifer Wire located in Tuscaloosa, AL.

Earth Handling: The site uses soil for site infrastructure construction, landfill construction, daily cover operations, and final closure construction. Soil is excavated from areas located on the property and stockpiled for use.

Vehicle/Equipment Parking: Vehicles are parked in the gravel lot at the office trailer area, and equipment is parked either near the working area within the landfill footprint or at designated laydown/staging areas outside of the landfill footprint.

Equipment Fueling: Onsite equipment fueling is performed within the landfill waste footprint or within other designated areas. Fueling is performed from an approximately 1,000-gallon mobile fuel tank, and the location of the truck will vary depending on the location of the landfill working area. Routine scheduled equipment maintenance is conducted offsite.

Vehicle/Equipment Washing: Vehicle and equipment washing is performed regularly within the waste footprint area. Wash water runs through diversion berms, ditches, channels, and culverts into one of the onsite sediment/detention ponds prior to discharging from the site.

1.5. General Location Map

The facility is located on multiple tracts totaling ± 120 acres situated within Section 7, Township 22 South, Range 9 West of Tuscaloosa County, Alabama. The site boundaries and general features are illustrated on a portion of the Tuscaloosa, AL USGS 7.5' Topographic map, presented as Figure 1.

1.6. Site Map

A site map showing the outfall locations is included as Figure 2.

2.0 DEFINITIONS

The following definitions refer to terms used in this BMP and SWPPP:

Best Management Practices (BMPs)

The schedule of activities, prohibition of practices, maintenance procedures and other management practices to prevent or reduce the pollution of waters of the United States. Best management practices include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

De Minimis Losses

Includes those from normal material handling operations (i.e., spills from the unloading or the transfer of materials from trucks, bins, compactors or other containers and leaks from pipes, valves, or other devices used to transfer material); minor leaks from process equipment storage tanks, vehicles, or containers; leaks from well-maintained equipment and other minor leaks and spills that occur during normal operations. De Minimis leaks typically contribute little to total pollutant loadings.

Non-Storm Water Discharge

Any discharge to storm water systems that is not composed entirely of storm water except discharges pursuant to an NPDES permit and discharges resulting from firefighting activities.

Process Wastewater

Any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Responsible Party

The individual selected by the Owner as being responsible for implementing this BMP and SWPP Plan and ensuring that all aspects of the landfill operations are considered. Duties include: Signatory authority, overall landfill maintenance and operation, implementation of BMPs, periodic review and update of the plan, employee training program implementation, and periodic evaluation for consistency with other plans.

Sedimentation Basin/Retention Structure

Sedimentation Basin/Retention Structures are used to store excess runoff on-site prior to discharge at a slow rate through outlets. The structures maintain a permanent pool of water to aid in the reduction of pollutant discharges.

Significant Materials

Raw materials, finished materials, fuels, detergents, fertilizers, pesticides, waste products, or others that have the potential to be released with storm water discharges.

Significant Quantities

Is the volume, concentrations, or mass of a pollutant in storm water discharge that can cause or threaten to cause pollution, contamination, or nuisance, adversely impact human health or

the environment, and cause or contribute to a violation of any applicable water quality standards for the receiving water.

Significant Spills and Leaks

Includes but is not limited to releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21), Section 102 of CERCLA (see 40 CFR 302.4) and Toxic Chemicals listed in 40 CFR Part 372 as reported on EPA Form R.

Storm Water

Surface runoff from a natural precipitation event (rain, snow, sleet, etc.).

Storm Water Detention Structures

Storm water detention structures store excess runoff on-site prior to discharge through a gradual release.

Waters of the United States

All waters which are currently used or may be susceptible for use in interstate commerce including; storm sewers, storm drainage, creeks, flood control ditches, bayous, lakes, rivers, wetlands, bays, oceans, estuaries and any water bodies subject to tidal changes.

3.0 POTENTIAL POLLUTION SOURCES

This BMP and SWPPP identifies all activities and Significant Materials that may be potential pollutant sources. Potential sources which may be expected to impact storm water, result in the discharge of pollutants during dry weather, or result in non-storm water discharges from the facility are managed in accordance with this BMP and SWPPP.

3.1. Industrial Activity and Associated Pollutants

Table 2: Industrial Activity and Associated Pollutants

Facility Activity	Potential Pollutant Source	Potential Pollutant
Solid Waste Handling	Spilled waste	Highly variable – may include total suspended solids, nitrate, petroleum and grease, phosphorus, iron
Earth Handling	Storm water runoff from soil stockpile and excavation areas	Sediments
Vehicle / Equipment Parking	Leaking vehicle fluids including hydraulic lines and radiators	Sediments, petroleum, hydraulic fluids, heavy metals, organics (ethylene glycol-antifreeze), fuel
Vehicle / Equipment Fueling	Spills and leaks during delivery Spills caused by "topping off" storage tanks Rainfall falling on fuel area, or storm water running onto the fuel area Hosing or washing down fuel area Leaking truck tank	Fuel Fuel, oil, and grease Fuel, petroleum, heavy metals Fuel, petroleum, heavy metals Fuel, petroleum, heavy metals
Vehicle / Equipment Washing	Leaking vehicle fluids including hydraulic lines and radiators	Sediments, petroleum, hydraulic fluids, heavy metals, organics (ethylene glycol-antifreeze), fuel

3.2. Spills and Leaks

The following Significant Materials are stored, treated, or disposed of on-site and are present at the Facility are potential pollutants from spills or leaks.

- Construction/Demolition Waste and Rubbish (as defined in ADEM Rule 335-13-1-.03)
- Soil/Sediment
- Diesel Fuel

Construction/Demolition waste and rubbish, and soil/sediment are created and/or used in the operation of the landfill. Diesel fuel is used in the operation of trucks and heavy equipment and is part of the landfill operations. An inventory of storage tanks is presented in the following table:

Table 3: Bulk Storage Tanks

Contents	Capacity (gallons)	Material	Location	Secondary Containment	Tank Condition
Diesel Fuel	1,000 (approx.)	Steel	Mobile tank location varies	No	Good

The above-ground tank will be moved based on the location of the landfill working area and may be modified by the supplier.

Bulk materials are handled in accordance with the appropriate state, federal and local regulations. Because the tanks do not meet the minimum volume threshold of 1,320 gallons, a spill prevention control and countermeasures plan (SPCC Plan) is not required. Should the capacity of the tanks exceed the threshold volume, an SPCC Plan for the facility will be implemented. Additionally, if any underground storage tanks (UST) are installed, they would be registered in accordance with Alabama Department of Environmental Management regulations.

Table 4: Areas of Potential Spills/Leaks

Location	Outfalls
Active landfill	DSN001-1, DSN001-2, DSN003-1, DSN003-2, DSN004-1, and DSN004-2

3.3. Non-Stormwater Discharge Documentation

In general, the NPDES Permit allows the following non-storm water discharges at the facility:

- Discharges from fire-fighting activities
- Fire hydrant flushing
- Potable water sources (including water line flushing and drinking fountain sources)
- Landscape irrigation drainage
- Lawn watering
- Routine external building wash water (without detergents or other contaminants)

- Air conditioning condensate (but not including cooling water from cooling towers, heat exchangers or other sources)
- Springs and uncontaminated ground water
- Foundation or footing drains where flows are not contaminated with process materials such as solvents
- Pavement and wash rack wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
- Seepage from Sediment Ponds.

An annual assessment is conducted to identify if any unpermitted non-storm water discharge is present, such as domestic wastewater, non-contact cooling water, or process wastewater. This is documented on the Non-Storm Water Discharge Assessment Form included in Appendix C.

3.4. Certification of Illicit Discharges

In the three years prior to submittal of the facility's NPDES renewal application, there were no known significant spills or leaks of oil or potentially hazardous substances at this facility. Management practices are described in the following section.

3.5. Security

Security systems include fencing, vehicular traffic control, security camera(s), guardhouse or main entrance gate, and sign in and out. Facility security systems reduce the likelihood of vandalism, theft, and sabotage. Security measures also assist in identifying spills, as well as detecting potential spill situations.

4.0 STORMWATER CONTROL MEASURES

The Significant Materials identified above in Section 3 are managed to minimize the potential for contact with storm water. The following narratives further describe the facility's operational practices and describe the management practices employed to minimize contact of Significant Materials with storm water.

4.1. Minimize Exposure of Significant Materials

Construction/Demolition Waste and Rubbish

The primary potential source of surface water contamination at the facility is through contact with exposed construction/demolition waste and rubbish. Construction/Demolition waste and rubbish is delivered to the site by a variety of truck types that are directed to the active face of the landfill where the waste is unloaded. This is the only location within the landfill where waste is unloaded from containers. The active area of the landfill is maintained as small as practicable to reduce the potential for storm water contamination.

Soil/Sediment

Operation of the landfill requires the excavation and/or stockpiling of natural soil for use as intermediate and final cover. These stockpiles are susceptible to erosion. Erosion of the stockpiled soil is minimized with the control measures presented below and in Section 4.6.

Preventative measures to limit the erosion of stockpiles may include any or a combination of: compacting the soil to prevent excessive moistening and softening of the fill due to rainfall; maintaining slopes as shallow as possible; seeding to prevent erosion; and/or placing silt fences and/or hay bales around the perimeter of the stockpile. Off-site sedimentation from on-site erosion is minimized by collecting the runoff into one of the two sedimentation ponds.

The final landfill side slopes, designed at a grade of three horizontal to one vertical (3H:1V), create a potential for soil erosion. The final cover will be vegetated to provide long-term protection from erosion. In addition, a number of preventative measures may be implemented to minimize the potential for erosion including: run-off control structures such as diversion berms, letdown channels or pipes and energy dissipaters (rip-rap) installed on and around the landfill to control erosion on the landfill, diversion berms placed on side-slopes and drained toward letdown channels. These berms and channels reduce the effective run-off length thereby reducing the potential for erosion. Typically, these side-slope berms are two to three feet in height and lined with erosion matting and/or vegetation. Letdown channels are typically constructed the width of a bulldozer blade and lined with erosion control measures. Riprap, concrete, or other energy dissipation measures may be placed at the base of the letdown channels to reduce the energy of the run-off water.

Diesel Fuel

Diesel fuel used in construction/operation equipment is stored onsite in an approximately 1,000-gallon mobile tank. The tank location will vary based on the location of the active landfill area.

Wash Water

Wash water from cleansing operations of portions of vehicles or containers which contact solid waste is collected and treated with the leachate. Wash operations are performed within catch basins to facilitate this collection. Wash down may also occur at the active face of the landfill where runoff is directed into the landfill.

4.2. Significant Materials Loading/Unloading Areas

Loading/unloading of Significant Materials occur at the active area of the landfill. This loading/unloading area and the operations are further discussed in the following paragraphs.

Solid Waste

Solid waste is unloaded from trucks at the active area of the landfill area. The active area is maintained to reduce the potential for storm water that contacts this area from entering the storm water conveyance system.

Diesel Fuel

Loading of diesel fuel into the mobile refueling tank is completed by a bulk truck which fills the tank as needed. Diesel is pumped into construction/operation equipment by landfill site personnel. This facility is equipped with the necessary supervision and equipment to ensure the security and prevention of spills in the loading and unloading of petroleum fuels and oils. During loading and unloading of the refueling tank, facility personnel will be present to monitor the process and are trained to respond to an uncontrolled release.

4.3. Good Housekeeping

Good housekeeping is necessary to maintain a clean and orderly environment at the site. Housekeeping is often the most effective first step towards controlling storm water contamination. Examples of good housekeeping practices include:

- Prompt attention to leaks and spills of contaminants (liquid or solid) from site operations that may occur on any exposed soil, vegetation, or paved area;
- Prevention of accumulation of liquid or solid chemicals on the ground near storage areas;
- Neat and orderly storage of waste materials, aggregates, and chemicals;
- Maintaining a clean facility;
- Removing unneeded products and materials from the site;
- Minimizing the potential for exposure of storm water to significant materials;
- Cleaning paved areas of the site on a regular basis;
- Cleaning vehicles and equipment regularly;
- Emptying toters, drop boxes, and other waste containers prior to storage, and storing them covered; if equipped with lid to prevent accumulation of storm water;
- Parking vehicles and equipment in assigned spaces, allowing personnel to identify and correct leaks as they occur;
- Covering materials and equipment stored outside that may pollute storm water;

- The maintenance of containers used for outdoor chemical/significant materials/ recyclables storage to prevent leaking; and
- The integrity and effectiveness of any intermediate or final cover.

Effective facility housekeeping measures are used to minimize potential pollution from on-site sources. Housekeeping measures include keeping the facility neat and orderly. Key elements of the facility's good housekeeping program are adequate storage of Significant Materials, rapid cleanup of de minimis spills with absorbent material that can be properly disposed and controlling any litter from the working face with fences. Detailed housekeeping recommendations of Significant Materials are presented below:

Solid Waste

To prevent the contamination of storm water from contact with stray litter around the landfill, litter blown from the disposal cell is collected and disposed of in the cell. The frequency of litter pickup around the cell is dependent upon wind conditions, disposal volumes, and waste type.

Diesel Fuel

The mobile refueling tank is inspected periodically for integrity. Employees responsible for fueling vehicles and equipment are instructed to remain in the immediate area during fueling operations and to refrain from topping-off fuel tanks. This procedural BMP helps to minimize leaks and/or spills of fuel, which could contaminate storm water run-off. In the event a leak or spill is detected, facility personnel will shut-off pumps and clean-up the affected area using absorbent material and disposing pursuant to applicable regulations.

4.4. Maintenance

Vehicles, powered industrial trucks, and site equipment are subject to a scheduled program of preventive maintenance, which is conducted offsite. All commercial motor vehicles are inspected before and after each use to readily identify maintenance needs in addition to normally scheduled activities. All powered industrial truck and site equipment is inspected at least once each use to identify maintenance needs in addition to normally scheduled activities.

Table 5: Maintenance Requirements

Activity or Control Measure	Maintenance Requirements	Maintenance Frequency
Catch Basin / Storm Sewer inserts	Inlet filters should be inspected at least monthly and following each significant rainfall event. In many cases, if the yard (tributary area) is not well maintained you will find a significant amount of debris in each drop inlet that needs to be removed prior to the next rainfall event. The weight of the sediment may be significant therefore make sure to use vacuum trucks or other mechanical means for assistance.	Monthly, more often as needed

Table 5: Maintenance Requirements

Activity or Control Measure	Maintenance Requirements	Maintenance Frequency
Silt Logs / Waddles / Traps	Replace stakes and/or logs as needed to keep the overall system functioning properly. Intimate contact should be maintained between all points of the logs and the ground. These structures are considered disposable with regards to channel scenarios and should be replaced when sediment accumulation exceeds the mid-height point. For slope scenarios, these BMPs are typically permanent. Vegetation is applied directly over the silt logs and adjacent structures and becomes one with the slope.	Weekly in disturbed areas, monthly in newly vegetated areas, more often as needed
Snakes & Booms	These BMP's are intended to be temporary in nature, they should be closely monitored following each significant rainfall event. Units should be replaced or adjusted as necessary to ensure leakage, overtopping or short-circuiting do not occur. To the extent necessary, silt removal should occur to ensure maximum BMP efficiencies.	Weekly in disturbed areas, monthly in newly vegetated areas, more often as needed
Grass Filters/Vegetation	The only required maintenance is ensuring a healthy stand of vegetation (i.e., mowing, fertilizing, etc.). If it becomes necessary to remove silt buildup then alternative BMP's should be evaluated (i.e., the filter strip may be the wrong application).	Weekly in disturbed areas, monthly in newly vegetated areas, more often as needed
Dust Control	Dust control measures require periodic and diligent maintenance. Mechanical equipment should be operated according to the manufacturers' recommendations and inspected regularly.	Weekly in disturbed areas, more often as needed

The preventive maintenance program is an extension of the general housekeeping program and includes inspection of facility equipment and systems and storm water management devices to detect conditions which may cause breakdowns or failures resulting in the discharge of Significant Materials into storm water. The various control measures will be inspected routinely. Inspection of these measures will include checking the structural integrity, checking the performance of the control measure, checking the deterioration of the control measure, and recommended upgrades.

The preventive maintenance program applies to the following storm water systems and Significant Material areas used on-site to minimize Significant Materials from entering storm water:

Solid Waste

To minimize the amount of litter around the site, moveable litter fences may be used as a temporary structural BMP around the working face during periods of high winds.

Contamination of storm water due to contact with the in-place solid waste is minimized by covering the waste with a soil and/or alternative cover at the end of each day. Areas of the landfill which have previously received daily or intermediate cover are routinely inspected

and any exposed waste is immediately covered or re-covered with a minimum of 6 inches of soil cover.

Storm water run-on/run-off from covered portions of the landfill is managed through the facility's surface water management system. See Section 4.6 and 4.7 of this plan for more information concerning the site's surface water management system.

Preservation of Natural Vegetation

By preserving natural vegetation, erosion potential is minimized, water quality is protected, and it provides aesthetic benefits.

Temporary Seeding

Temporary seeded areas should be inspected for bare or stressed areas. Bare areas may require reseeding to establish adequate growth. Bare areas and stressed vegetation may require improvement with fertilizers or other mineral supplements.

Permanent Seeding

Permanently seeded areas should be inspected for bare or stressed areas. Bare areas may require reseeding to establish adequate growth. Bare areas and stressed vegetation may require improvement with fertilizers or other mineral supplements.

Sedimentation Ponds

Sedimentation Ponds should be inspected for adequate storage volume. That is, retained sediments should be removed periodically to provide the design storage capacity. The outfall structure should be inspected for integrity and blockage. Vegetation should be inspected and maintained on the levees and embankments.

Check Dams

Check dams should be observed for structural integrity and blockage. Inadequate check dams should be repaired to provide for adequate storm water control. Silt should be removed when it reaches the mid-height of the check dam.

Berms/Dikes

Berms and dikes should be inspected for proper grade, structural integrity and adequate vegetative cover (if applicable). Berms and dikes found to be inadequate should be repaired to provide for adequate storm water control.

Curbs

Curbs should be inspected for structural and hydraulic integrity. Damaged curbs should be repaired to provide adequate storm water control.

Silt Fence

Silt fences should be inspected for overtopping, undercutting or collapsing as well as sediment buildup. Inadequate silt fences should be repaired / replaced as necessary to provide for adequate storm water control.

Straw Bale Barrier

Straw bale barriers should be inspected or overtopping, undercutting or collapsing as well as sediment buildup. Inadequate straw bale barriers should be repaired/replaced as necessary to provide for adequate storm water control.

Dust Control

Irrigating can help control dust during construction and operation. Additionally, silt fencing and or straw bale barriers can be constructed to prevent the collection of loose sediments on construction roadways.

Diesel Fuel

To avoid releases of gasoline and diesel fuel as a result of equipment leaks or failure, all equipment associated with the transfer and/or use of diesel fuel is subject to regularly scheduled preventive maintenance checks. During this inspection, valves, connections, and other points having a potential for developing leaks should be inspected and tightened or replaced as needed.

Preventive maintenance work also includes the replacement of gaskets and seals on a regular basis before leaks or failures occur.

In addition to the preventive maintenance steps described above, any signs of leakage or failure in equipment associated with the transfer and/or use of diesel fuel should be corrected immediately upon being discovered.

4.5. Spill Prevention and Response

Spill response activities will vary according to the nature, type, and severity of the release event. Response to minor spills (1 or 2 drum equivalents) are typically performed by facility personnel who are knowledgeable of proper handling methods, hazards, and spill response techniques associated with oil products. The facility operator maintains agreements with the local fire department to assist in securing the area and evaluating hazards. In the event of a major spill event (e.g., tanker accident, tank breach), a fire department team will provide initial response and support, as needed, until a spill response contractor arrives. Facility personnel will have a limited role in actual response and cleanup action taken because of a major spill at the facility.

Any absorbent materials or contaminated soil generated from spill cleanup activities will be containerized (e.g., shoveled into drums or loaded into containers), sampled for chemical characterization purposes, labeled, and properly stored while disposal approvals are obtained. After removal of the gross spill residues, the containment structure or affected plant areas will be cleaned with an appropriate detergent or solvent to remove any residual contamination. Aqueous decontamination wastes (wash and rinse water) will be properly characterized (i.e., sampled and analyzed) and approved prior to disposal.

A spill that is not retained in a containment structure and intercepts the storm water handling system will trigger several response actions. In such event, the Facility will commit resources (e.g., trained employees and/or contract personnel, and equipment) to recover spilled product, mitigate

environmental and human health hazards, and remediate any areas affected by the spill. Cleanup measures could include:

- Placement of spill barriers or sandbags to control or direct the overland flow;
- Isolation of a spill to the nearest sedimentation pond by closing the discharge valves;
- Flushing of ditches and/or below grade piping to remove spill residues;
- Application of flash-point suppression agents to enable solidification of the spill liquids;
- Collection and proper disposal of spill residues; or
- Excavation and stockpiling (on a suitable liner) or containerization of contaminated soil, if generated from clean-up activities.

All spill response procedures, immediate removal actions, and follow-up corrective actions will be coordinated through and supervised by the Facility Responsible Party. Certain incidents may also require the involvement of other qualified personnel including qualified emergency response contractors and environmental consultants.

Spill response procedures for each Significant Material listed earlier are summarized below.

Solid Waste

If spills are observed during operations or routine inspections, the materials will be recovered by personnel and properly disposed of in accordance with ADEM regulations and Facility policies and procedures. Equipment used in the cleanup of this material could include loaders and/or shovels. These material handling procedures will help prevent solid waste from entering a storm water conveyance or drainage point.

Soil

Specific material handling procedures to minimize soil from entering drainage points will include vegetative swales/ditches, possibly other control structures such as silt fences, straw bales, etc., and sedimentation basins. Any recovered solids in the sedimentation basins or swales/ditches may be removed and properly disposed.

Diesel Fuel

Spilled diesel will be recovered with absorbent material. That which is not capable of being recovered with absorbent material will be over-excavated if possible and then properly disposed.

The Facility maintains records of Significant Material spills. Spills are recorded on a suitable form (see example form in Appendix D). These records are kept to minimize re-occurrence and comply with applicable federal, state, local regulations.

4.5.1. Procedures for Controlling and Cleaning Up Leaks, Spills, and Other Releases

Discovery of a Release

The person discovering a release of material from a container, tank, or operating equipment must initiate the following immediately, provided that these measures can be enacted safely:

- Extinguish any sources of ignition. Until the material is identified as nonflammable and noncombustible, all potential sources of ignition in the area should be removed. Vehicles should be turned off. Avoid sparks and movement that create static electricity.
- Attempt to stop the release at its source. Assure that no danger to human health exists first, then use simple procedures (turning valves, plugging leaks, etc.) if there is no health or safety hazard, and this is likely to stop the leak.
- Initiate spill notification and reporting procedures. Report the incident immediately to the Supervisor and/or the Pollution Prevention Team. If there is an immediate threat to human life (e.g., a fire in progress or fumes overcoming workers), an immediate announcement should be made to evacuate the building or area, and the local emergency response officials should be called at 911.

Containment of a Release

If material is released outside of containment areas, it is critical that the material is accurately identified, and appropriate control measures are taken. To contain a release, the following procedures should be followed:

- Attempt to stop the release at the source. If the source of the release has not been found; if special protective equipment is necessary to approach the release area; or if assistance is required to stop the release, the fire department should be called to halt the discharge at its source. Site personnel should be available to guide the fire department's efforts.
- Contain the material released into the environment. Following proper safety procedures, the spill should be contained by absorbent materials and dikes using shovels and brooms. Spill Kits are maintained in the maintenance shop and tank area and are available for use. Consult applicable MSDSs for material compatibility, safety, and environmental precautions.
- Continue the notification procedure. The District Manager is responsible for spill notification and responding to the incident.

Spill Cleanup

Appropriate personal protective equipment and cleanup procedures can be found on MSDSs. Care must be taken when cleaning up spills in order to minimize the generation of waste. At a minimum, the Pollution Prevention Team must be made aware of all reportable quantity spills, as well as any that reach a sanitary sewer or surface water.

- Recover or clean up the material spilled - As much material as possible should be recovered and reused where appropriate. Material that cannot be reused must be declared waste. Solid materials that have absorbed liquids may be shoveled into containers or drums. When such containers or drums are filled after a cleanup, the lids should be secured and the containers should be appropriately labeled (or relabeled) identifying the substance(s), the date of the spill/cleanup, and the facility name and location. Combining non-compatible materials can cause potentially dangerous chemical and/or physical reactions or may severely limit disposal options. Compatibility information can be found on MSDSs.

- Cleanup of the spill area - Surfaces contaminated by the release should be cleaned using dry cleanup methods, water that is subsequently contained and treated, or substances specific to the spilled material. Cleanup liquids should be minimized, contained, and properly disposed. Occasionally, porous materials (such as wood, soil, or oil-dry) may be contaminated. Such materials may require special handling for disposal.
- Decontaminate reusable tools and equipment used in cleanup. Even if reusable tools and equipment are dedicated to cleanup efforts, once they have been used, they should be decontaminated before replacing them in the spill control kit.

Post-Cleanup Procedures

- Notification and reports to outside agencies - The Pollution Prevention Team must determine if a reportable spill has occurred (see "Primary Notification Points for Spills" Table below. Notifications to federal, state, and/or local agencies must be executed, if necessary.
- Arrange for proper disposal of any waste materials - waste materials from the cleanup must be properly characterized. Representative sampling and analysis may be necessary to make this determination. The Pollution Prevention Team should assure that the waste is transported and disposed of in compliance with applicable laws and regulations by coordinating with the District Manager.
- Review the contingency and spill plans - Management should review spill response efforts, notification procedures, and cleanup equipment usage to evaluate their adequacy. Where deficiencies are found, the plan must be revised and amended.

Reporting

In the event a spill occurs, it must be reported as described in the Primary Notification Table below. In the event of a spill, persons must notify the internal and external contacts upon knowledge of the spill. Spills should be documented and filed. The report at a minimum should document the following items:

- Date, time, and duration of release;
- Source and total volume of the release;
- Spill cleanup procedures;
- Personnel who discovered and/or participated in the spill remediation;
- Equipment used during the cleanup;
- Waste disposal method; and
- Unusual events, injuries, or agency inspections.

The following table describes the primary notification points for various categories of spills.

Table 6: Primary Notification Points for Spill

If the Spill Involves	THEN Notify as Follows:	Contact Information
On-site or off-site releases smaller than the reportable quantity (RQ), which are cleaned up immediately and DO NOT enter a water body or drain. *NOTE: Use the following website to find RQs for substances:* https://www.ecfr.gov/cgi-bin/text-idx?node=se40.28.302_14&rgn=div8	David Green, District Manager	(662) 750-8110
Any release greater than the reportable quantity (RQ), or that enters a water body or a drain. *NOTE: The RQ varies for different materials, and changes as the law changes. The Environmental Manager can help determine the RQ of a spilled material.*	National Response Center	(800) 424-8802
	EPA Region IV	(404) 562-8768
	Alabama Department of Environmental Management	(800) 843-0699
	Tuscaloosa Fire Department	911 or (205) 248-5420
	Alabama Emergency Management Agency	(800) 843-0699 or (205) 280-2312

4.6. Erosion and Sediment Controls

☐ The facility is fully paved and erosion is not expected, therefore sediment controls are not needed.

☒ The facility maintains erosion and sediment controls for unpaved portions of the site, as described below:

Sediment and erosion controls are implemented at the site to reduce the potential for and effect of erosion of the site. These controls consist of temporary and permanent measures. Temporary measures are placed in service before and during construction. Permanent measures remain in service during the active life of the site.

This plan does not attempt to detail construction for these sediment and erosion controls. However, the sediment and erosion controls shall be employed in general accordance with the *Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas* as developed in part by the Alabama Soil and Water Conservation Committee. Sediment and erosion controls may include, but may not be limited to:

Temporary Seeding

Planting temporary seeding reduces erosion and sedimentation by stabilizing disturbed areas that will be stabilized for long periods of time or where permanent plant growth is not

appropriate. This practice uses fast-growing grasses whose root systems hold down the soils so that they are less apt to be carried offsite by storm water runoff or wind.

Permanent Seeding

Planting permanent seeding provides for a long-term reduction in erosion and sedimentation by stabilizing disturbed areas. This practice uses hearty grasses whose root systems hold down the soils so that they are less apt to be carried offsite by storm water runoff or wind. Areas that have been final graded must be seeded within 30 days of final grading unless temporary seeding has been provided.

Sedimentation Ponds

Sedimentation ponds provide storage of storm water runoff from disturbed areas. The ponds increase the detention time of the storm water and allow for sediments to be removed from suspension. The current facility design calls for two (2) sedimentation ponds to be constructed, both of which have been constructed. Storm water from the site is routed through the sedimentation ponds to provide sufficient detention to allow suspended particles to settle out. Storm water in the sedimentation ponds is then discharged into an unnamed tributary to Rum Creek, at a controlled rate. The ponds have been engineered to provide adequate storage of storm water and sediment in accordance with design requirements.

Check Dams

Check dams are small obstructions/impediments placed across a drainage ditch (including riprap), swale, or channel. Installing check dams lowers the speed of concentrated flows. Reduced runoff speed reduces erosion and gullying in the ditch or channel.

Berms/Dikes

Constructing berms/dikes helps channel and control runoff by diverting storm water from steep areas which create high velocity runoff to gentler sloped areas. Berms/dikes may also be used to divert storm water to control structures such as sedimentation ponds.

Curbs

Concrete curbs trap water in designated areas and allows it to be channeled to collection areas.

Sediment Traps

Constructing sediment traps (2 to 3 ft deep excavations) within channels or ditches allows accumulated solids to settle and collect in these traps.

Silt Fence

A silt fence is a permeable barrier erected on small, disturbed areas to capture sediment from sheet flow. Generally, two or more posts are driven at a spacing of not greater than 10 feet and a commercial filter fabric is stretched between and fastened to the posts.

4.7. Management of Runoff

Regional drainage features in the vicinity of the facility are shown on Figure 1. Storm water and surface runoff sheet flow to the perimeter ditch system that directs runoff to the sedimentation ponds

prior to discharge via outfalls. The locations of the sedimentation ponds and outfalls are illustrated in greater detail on Figure 2.

4.8. Employee Training

Employee training programs have been developed to inform facility personnel of the components and goals of this BMP and SWPPP. The training covers practices for preventing spills and the procedures for responding properly and rapidly to spills. Facility personnel related to any aspect of the BMP and SWPPP are trained annually to ensure they are familiar with the provisions of this BMP and SWPPP. Employee training will be documented and retained in the Facility's site files.

Training of appropriate employees and reinforcement on the importance of storm water management is crucial to minimizing the chance of unacceptable discharges. Without a raised awareness BMPs aren't implemented (or implemented correctly), maintenance isn't performed (or performed to minimum standards), and opportunities for improvement are missed.

Appropriate employees receive initial and refresher training. At a minimum, training includes an overview of what is in the BMP and SWPPP and how employees make a difference in complying with the BMP and SWPPP and preventing contamination of storm water. The training addresses spill response procedures, good housekeeping, and material management practices. Training records are maintained for 3 years. An example training form has been included as Appendix E.

4.9. Recordkeeping

All records, reports, and information related to this BMP and SWPPP will be retained for a minimum of three (3) years.

4.10. Dust Generation and Vehicle Tracking of Industrial Materials

When conditions exist that generate dust at the facility, procedures will be followed that have been set forth as part of the facility's erosion control plan to maintain eroded materials on site. Water trucks may be used to wet the ground until temporary or permanent erosion control measures can be installed in disturbed areas. All attempts will be made to limit disturbance to areas necessary for landfill daily activities in active cells.

5.0 SAMPLING PROCEDURES

The Facility discharges storm water runoff from two (2) outfalls, designated DSN001-1/DSN003-1/DSN004-1, and DSN001-2/DSN003-2/DSN004-2. Below are sampling requirements for each outfall.

The sample type for all required monitoring is called a grab sample. Grab samples will be obtained by partially submerging the mouth of the container below the water surface to allow slow filling of the container. All required monitoring will be performed during a storm event that is greater than 0.1 inches of rainfall and that follows the preceding measurable storm event by at least 72 hours. The grab sample shall be taken during the first 30 minutes of the discharge. If it is not practicable to take the sample during the first 30 minutes, the sample may be taken as soon as possible, provided that the permittee explains why a grab sample during the first 30 minutes was impracticable.

Records of monitoring information shall include:

- Rainfall measurement (in inches) for the storm event;
- The date, time, and location of sampling or measurements;
- The individual(s) who performed the sampling or measurements;
- The date(s) and time(s) analyses were performed;
- The individual(s) who performed the analyses;
- The analytical techniques or methods used; and
- The results of analyses.

Dilution water shall not be added to achieve compliance with discharge limitations except when the Director or his designee has granted prior written authorization for dilution to meet water quality requirements.

5.1. Semi-Annual Sampling

Cypress Creek Landfill will sample Outfalls DSN001-1 and DSN001-2 for the effluent characteristics listed in Part I. A. of the Permit under discharge category DSN001. The only parameter that is not sampled semi-annually is Chemical Oxygen Demand, which is only required to be sampled annually.

Semi-annual sampling shall be performed during the first complete January through June or July through December period following authorization under this Permit and during each subsequent six (6) month period.

The annual parameter may be sampled during the first or second six months of the monitoring period.

5.2. Construction Sampling

Part I.A., DSN001 requires three additional parameters to be sampled when land disturbing activities are occurring, such as opening and closing of landfill cells. During these times, settleable solids, upstream turbidity, and downstream turbidity must be monitored semi-annually for Outfalls DSN001-1 and DSN001-2. Sampling is only required at the outfall in the associated drainage boundary in which construction activity is occurring.

5.3. Monthly Sampling

Cypress Creek Landfill will sample Outfalls DSN004-1 and DSN004-2 for the effluent characteristics listed in Part I. A. of the Permit under discharge category DSN004. The only parameter that is not sampled/measured monthly is flow, which is required to be measured weekly. For outfall DSN004-1, which will most likely be intermittent flow from the sediment pond, the Facility may estimate the flow volume.

Monthly sampling shall be performed during the first complete month following authorization under this Permit and during each subsequent month.

6.0 REPORTING PROCEDURES

6.1. Electronic Discharge Monitoring Report

Storm water sampling results must be submitted to the Department on an electronic Discharge Monitoring Report (eDMR) via the electronic environmental (E2) reporting system. The eDMRs are due semi-annually by July 28th and January 28th. If no sampling was conducted during a semi-annual monitoring period, a "No Discharge" eDMR should be submitted. The annual parameter (Chemical Oxygen Demand) should be reported on the semi-annual report that is applicable to the date the annual parameter sample was taken. The monthly and weekly parameters for DSN004 should be reported on the semi-annual report that is applicable to the dates the monthly and weekly parameter samples were taken.

The E2 reporting system can be accessed at the following website: https://e2.adem.alabama.gov/NPDES/Pages/Main/login.aspx?ReturnUrl=%2fnpdes%2fDefault.aspx

6.2. Annual Compliance Certification

The Permittee shall submit an Annual Certification by January 28th of each year that all discharges during the previous year associated with DSN003 (uncontaminated storm water from equipment maintenance and storage and petroleum storage and handling areas) were in accordance with the conditions of the Permit. This form certifies that no sheen, visible oil, floating solids, or visible foam was present in the discharges. The Annual Certification form can be uploaded to the E2 reporting system and should be attached to the January 28th eDMR.

6.3. Report of Noncompliance or Unauthorized Discharge

If for any reason, the permittee's discharge:

- Does not comply with any daily minimum or maximum discharge limitation for an effluent characteristic specified in Provision 1.A. of the Permit which is denoted by an "(X)",
- Threatens human health or welfare, fish or aquatic life, or water quality standards,
- Does not comply with an applicable toxic pollutant effluent standard or prohibition established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a),
- Contains a quantity of a hazardous substance which has been determined may be harmful to public health or welfare under Section 311(b)(4) of the FWPCA, 33 U.S.C. Section 1321(b)(4),
- Exceeds any discharge limitation for an effluent characteristic as a result of an unanticipated bypass, upset, or
- Is an unpermitted direct or indirect discharge of a pollutant to a water of the state (unpermitted discharges properly reported to the Department under any other requirement are not required to be reported under this provision)

Then the permittee shall orally report the occurrence and circumstances of such discharge to the Director within 24 hours after the permittee becomes aware of the occurrence of such discharge.

In addition to the oral report, the permittee shall submit to the Director electronically a report (or if acceptable to the Department, a written report) as provided in Provision 1.C.2.c. of the Permit no later than five (5) days after becoming aware of the occurrence of such discharge.

- Director's Office: (334) 271-7710
- Emergency Response After-Hours: (800) 843-0699
- Mailing Address:P.O. Box 301463, Montgomery, AL 36130-1463

7.0 INSPECTIONS

7.1. Twice Weekly Inspections

Visual inspections shall be conducted at least twice weekly at the facility for evidence of pollutants or the potential for pollutants to enter the storm water drainage system. Significant material areas, loading and unloading areas, and storm water control structures are subject to inspection. Observations will include searching for leaks, spills, poor housekeeping, and corrosion/cracks or foundation problems.

Areas contributing to storm water discharges shall be inspected twice weekly during normal operations. Additionally, the areas shall be inspected within 24 hours of a 2-year, 24-hour storm event (4.1 inches of rainfall). The inspection evaluates whether the BMP and SWPPP adequately minimizes pollutant loading, is properly implemented, and whether additional control measures are needed. These inspections are performed by designated inspector(s) familiar with all operations and the BMP and SWPPP goals and requirements.

Problems noted during the inspection will be addressed as soon as possible. Based on the results of the inspection, the BMP and SWPPP will be revised to address changes in the description of the potential pollutant sources and pollutant prevention measures and controls identified in the BMP and SWPPP. Plan amendments will be made in accordance with Section 9.0.

Specific details concerning visual inspections of Significant Material areas are as follows:

Solid Waste

The landfill is inspected routinely to ensure that no blowing litter is left on the site where storm water contamination could result. Covered areas of the landfill and the convenience center area are periodically inspected for litter and daily cover integrity. Any identified issues will be promptly corrected pursuant to ADEM Regulations and facilities Solid Waste Permit.

Diesel Fuel

In addition to periodic inspections performed at the site, the equipment associated with the transfer and/or use of diesel fuel is visually inspected during each vehicle/equipment fueling event. Site personnel are instructed to immediately report, to the Operations Manager, any noticeable releases, leaks, etc. from the refueling tank, piping, fuel pumps, nozzles, etc. Releases, leaks, etc. from equipment are also to be reported immediately.

7.2. Annual Inspection

Additionally, detailed inspections of the entire sedimentation and erosion control measures are required at least annually. Inspections of temporary control measures and potential problem areas or controls shall be made on a regular basis. During construction periods and for eight weeks thereafter, the erosion and sedimentation controls, which affect the storm water outfalls are required to be inspected weekly and after a two-year, 24-hour rainfall event as previously detailed in Section 7.1. An *Inspection and Visual Evaluation Report Form* shall be completed and signed and maintained on site. An example copy of this inspection form is presented in Appendix C. Inspections are

documented as part of routine inspection protocol. Problems noted during the inspection will be addressed as soon as possible. Based on the results of the inspection, the BMP and SWPPP might need to be revised to address changes in the description of the potential pollutant sources, pollutant prevention measures and controls identified in the BMP and SWPPP. Plan amendments will be made in accordance with Section 9.0.

8.0 CORRECTIVE ACTION

8.1. Inspections

Any deficiencies in the implementation of the BMP and SWPPP that are found during the inspections shall be corrected as soon as practicable. Corrective actions taken should be documented on an inspection form, found in Appendix A.

8.2. Data Exceeding a Discharge Limit

In accordance with Part I.C.2.b. and c. of the Permit, if any storm water sampling results do not comply with the discharge limits of Part I.A., then a Noncompliance Notification Form should be completed and uploaded to the E2 reporting system to be attached with the next eDMR. The form should include the following information:

- A description of the discharge and cause of noncompliance;
- The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
- A description of the steps taken and/or being taken to reduce or eliminate the noncomplying discharge and to prevent its recurrence.

9.0 PLAN AMENDMENT

BMP and SWPPPs, certifications, or other information requested by U.S. EPA and ADEM shall be reviewed, approved, signed and certified by the Facility Responsible Party, or his designee. A new signature authorization will be submitted to the applicable permit authority if the signature authorization is no longer valid due to changes in personnel, responsibilities, or position.

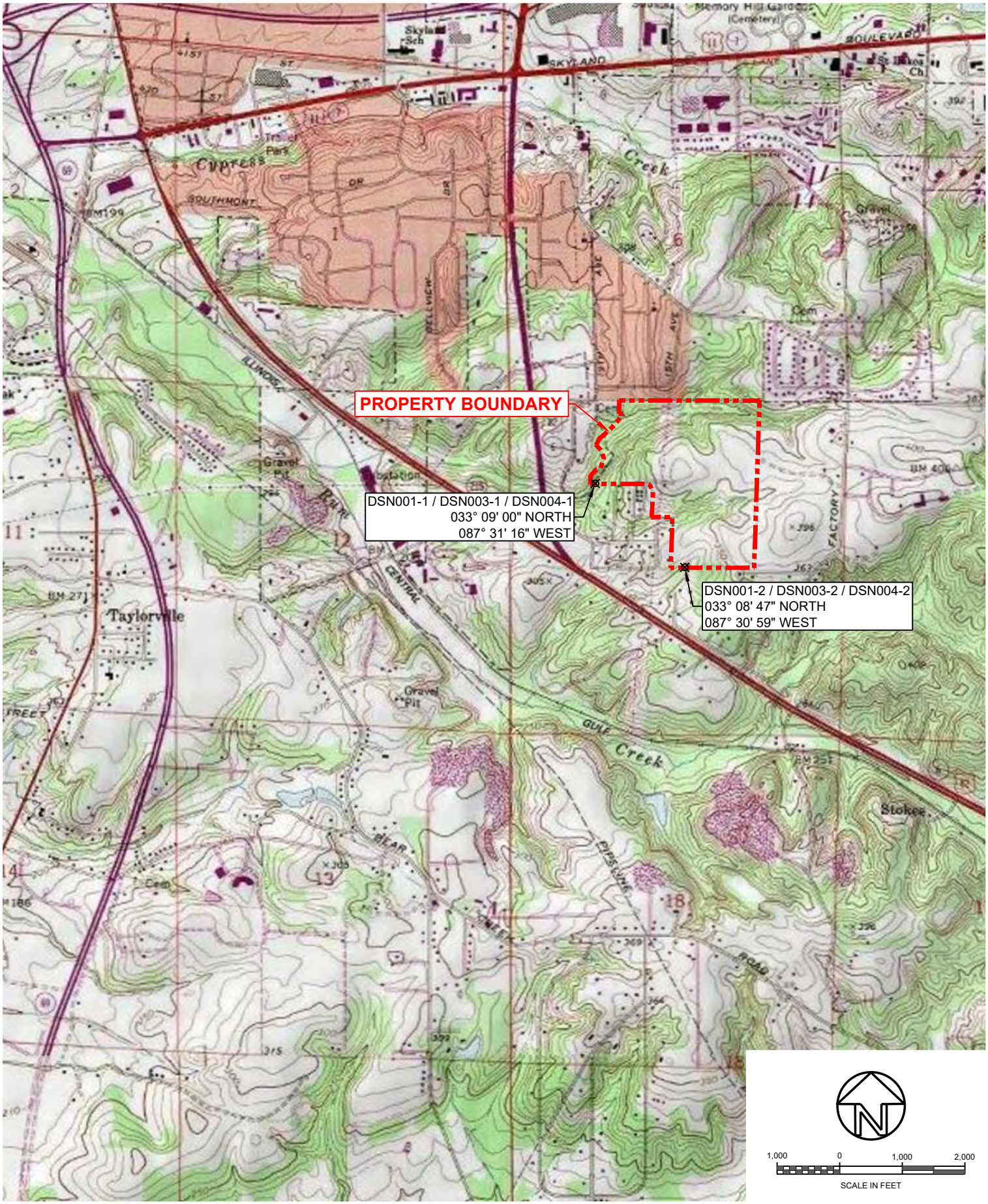
Should the EPA, ADEM, or regional agency determine the plan does not meet specified requirements; the facility will amend the plan within 30 days. The amended plan may include a schedule for implementation of the amended controls at the facility.

Amendments will be made to the BMP and SWPPP whenever there is a change in design, construction, operation, or maintenance which influences the potential for discharge of pollutants to State waters or the plan proves to be ineffective in controlling storm water pollutants. This amended plan shall be submitted to the ADEM within 30 days of the amendment.

Plan amendments shall be documented in writing in the BMP and SWPPP review log on page ii. After each plan amendment, the Facility Responsible Party shall review the plan and document his review by signing on page i.

A written copy of this BMP and SWPPP and associated documents will remain at the facility. Upon request, the BMP and SWPPP will be made available for review by the EPA, ADEM and/or local storm water management representatives.

FIGURES



DESCRIPTION	APPR. BY	DRA. BY	DATE	REV
ISSUED FOR OWNER IMPLEMENTATION	CRW	CRW	11/2021	0

PREPARED FOR:

CYPRESS CREEK LANDFILL, LLC
6315 12th AVENUE EAST
TUSCALOOSA, ALABAMA 35405

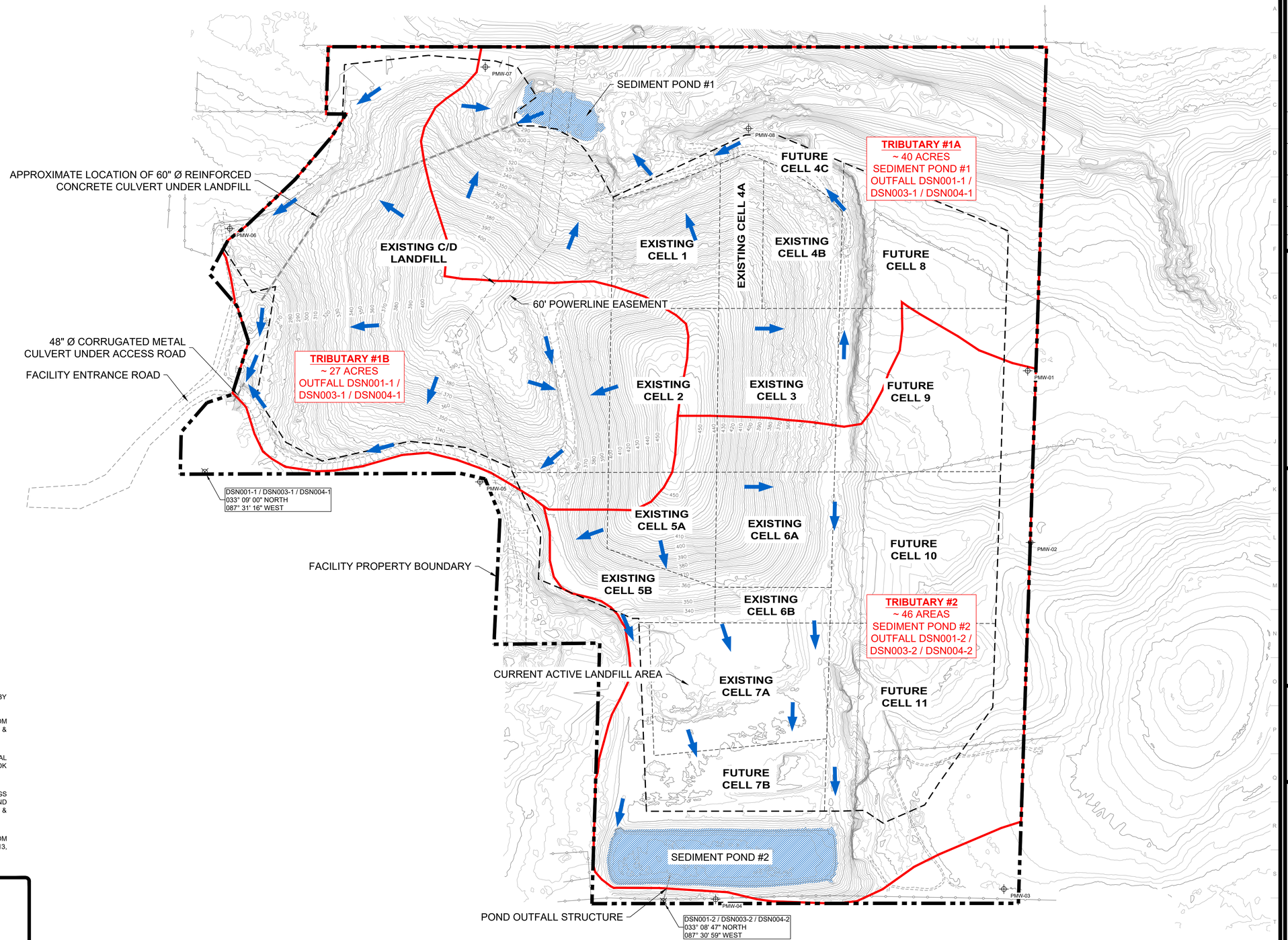
PREPARED BY:

PROMUS ENGINEERING
www.promusengineering.com

SITE LOCATION MAP

BMP & SWPP PLAN
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA

FIGURE NO.
1



150 0 150 300

SCALE IN FEET

NOTES

1. TOPOGRAPHIC SURVEY OBTAINED FROM AERIAL MAPPING CONDUCTED BY FIRMATEK DATED OCTOBER 27, 2021.
2. PROPERTY BOUNDARY AND PROPERTY LINE BUFFER OBTAINED FROM PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
3. POWERLINE RIGHT-OF-WAY OBTAINED FROM METES AND BOUNDS LEGAL DESCRIPTION IN DEED OBTAINED FROM TUSCALOOSA COUNTY DEED BOOK 2012, PAGE 4833.
4. PERMITTED LIMIT OF DISPOSAL OBTAINED FROM PERMIT DRAWINGS PREPARED BY CDG ENGINEERS & ASSOCIATES DATED MARCH 10, 2004 AND PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
5. GROUNDWATER MONITORING WELL LOCATIONS OBTAINED FROM GROUNDWATER MONITORING REPORT BY TTL, INC. DATED OCTOBER 13, 2020.

LEGEND

- PROPERTY BOUNDARY
- ACCESS/UTILITY EASEMENT
- PERMITTED DISPOSAL AREA
- 400 — EXISTING 2'/10' CONTOUR - OCTOBER 27, 2021
- PMW-03 — GROUNDWATER MONITORING WELL
- SEDIMENT POND
- SEDIMENT POND / OUTFALL TRIBUTARY BOUNDARY
- STORMWATER FLOW DIRECTION

REV	DATE	DES. BY	DRA. BY	APPR. BY	DESCRIPTION
0	11/2021	CRW	CRW	CRW	DRAFT - OWNER REVIEW

PREPARED FOR:

CYPRESS CREEK LANDFILL, LLC
4515 15th AVENUE EAST
TUSCALOOSA, ALABAMA 35405

PREPARED BY:

PROMUS ENGINEERING
1200 MOUNTAIN CREEK RD, SUITE 102 CHATTANOOGA, TENNESSEE 37405

DRAFT

SITE PLAN

BMP & SWPP PLAN
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA 35405

PROJECT NO.: 210207
SHEET NUMBER
2

File Path: M:\DROPBOX (PROMUS ENGINEERING)\PROJECTS-ACTIVE\210207-NCCC-NPDES-PERMITTING\DOCUMENTS\BMP-PLAN\FIGURES\210207-FIGURE.DWG
Date: 11/23/2021 11:31 AM
Last Saved By:ROBWITCHER

APPENDIX A

Notice of Intent (NOI)

Digitally signed by:
GlobalSign RSA OV SSL CA 2018
Date: 2021.12.14 17:10:47 -06:00
Reason: Submission Data
Location: State of Alabama

NPDES General Permit - Landfills (ALG160000) - Mod/Reissue - (Form 384)

version 2.2

(Submission #: HPD-Z9WH-1QGJC, version 1)

Details

Submission ID HPD-Z9WH-1QGJC

Form Input

General Instructions

Notice Of Intent • NPDES General Permit Number ALG160000 (Form 384) - Modification/Reissuance

NPDES General Permit Number ALG160000, which is the general permit authorizing discharges associated with storm water runoff, not containing leachate, from active and inactive landfills and from transfer stations including storm water runoff from maintenance operations and expansion construction activities at landfills; vehicle and equipment washwater; and storm water associated with fueling, petroleum storage and handling, equipment storage, and maintenance areas.

This form should be used to submit the following permit requests:

- Permit Transfers
- Permittee/Facility Name Changes
- Modifications
- Reissuances (Reissuance of a permit on or after the current permit•s expiration date)

Please complete all questions and attach all necessary documentation as prompted throughout the application process. Incomplete or incorrect information will delay processing.

Applicable Fees:

- Permit Transfers and/or Permittee/Facility Name Changes
o $800
- Modifications
o $800
- Reissuances
o $1,385
For assistance, please click here to determine the permit staff responsible for the site or call (334) 271-7799/(334) 274-4203.

Processing Information

Purpose of Application (Select all that apply):
Reissuance of Permit Due to Approaching Expiration

Action Type
Reissuance

Briefly describe any planned changes at the facility that are included in this reissuance application:
No changes are proposed

Industrial Activity Information

For each industrial activity listed, please select 'Yes' if discharges from the activity will continue to need coverage under this permit or if you are requesting coverage be added for discharges under the activity:

Industrial Activity	Continue/Add Permit Coverage
DSN001: Storm Water Discharges Associated with Landfill Operations	Yes
DSN002 and DSN003: Storm Water Discharges Associated with Fueling, Petroleum Storage and Handling, Equipment Storage, and Maintenance Areas	Yes
DSN004: Discharges Associated with Vehicle and Equipment Exterior Washing Operations	Yes

Are any discharges above combined?
Yes

Please indicate which discharges are combined:
All discharges will be combined

Does any discharge or runoff from the facility reach an Outstanding Alabama Water or Outstanding Natural Resource Water stream segment as defined by ADEM Administrative Code r. 335-6-11-.02?
No

Does the storm water contain any leachate?
No

Is treated or untreated water from tank bottoms or water draws discharged on site?
No

Is hydrostatic testing of petroleum handling equipment done on site?
No

Do you wash interior of tank rail cars or tank trailers?
No

Does your facility use organic or petroleum based solvents in its washing operations?
No

Description of industrial activity and land use at the facility:
Construction and Demolition Landfill

Permit Information

Permit Number
ALG160073

Current Permittee Name
Cypress Creek Landfill, LLC

Permittee

Permittee Name (Legal Business Name)
Cypress Creek Landfill, LLC

Mailing Address

3 Waterway Square Place

Suite 550

The Woodlands, TX 77380

To look up your company's legal business name, please refer to the Secretary of State's website:
Click here

Responsible Official

Prefix
Mr.

First Name	Last Name
Brett	*O'Connor*

Title
Region Engineering Manager

Organization Name
Cypress Creek Landfill, LLC

Phone Type	Number	Extension
Business	832-442-2920	

Email
BrettO@wasteconnections.com

Fax
NONE PROVIDED

Mailing Address

3 WATERWAY SQUARE PL

STE 550

THE WOODLANDS, TX 77380

Existing Permit Contacts

Affiliation Type	Contact Information	Remove?
Notification Recipient,Responsible Official	Brett O'Connor, Cypress Creek Landfill, LLC	Keep
Permittee	Cypress Creek Landfill, LLC	Keep
DMR Contact	Joseph Vieceli, Cypress Creek Landfill, LLC	Keep

DMR Contact(s) (1 of 3)

DMR Contact

Prefix
Mr.

First Name	Last Name
Brett	*O'Connor*

Title
NONE PROVIDED

Phone Type	Number	Extension
Other	832-442-2920	

Email
bretto@wasteconnections.com

Address

3 WATERWAY SQUARE PL

STE 550

THE WOODLANDS, TX 77380

DMR Contact(s) (2 of 3)

DMR Contact

Prefix
Mr.

First Name	Last Name
Joseph	*Vieceli*

Title
NONE PROVIDED

Phone Type	Number	Extension
Business	832-442-2906	

Email
joe.vieceli@wasteconnections.com

Address
3 WATERWAY SQUARE PL
STE 550
THE WOODLANDS, TX 77380

DMR Contact(s) (3 of 3)

DMR Contact

Prefix
Mr.

First Name	Last Name
Charles	*Witcher*

Title
NONE PROVIDED

Phone Type	Number	Extension
Mobile	4235806763	

Email
rwitcher@promusengineering.com

Address
1200 MOUNTAIN CREEK RD
STE 102
CHATTANOOGA, TN 37405

Delegation Letter

Please attach Delegation Letter here.
Delegation_O'Connor.pdf - 12/14/2021 04:21 PM
Comment
NONE PROVIDED

Facility/Site Information

Current Facility/Site Name
Cypress Creek Landfill, LLC

Permittee Organization Type
LLC

Facility/Site Contact

Prefix
Mr.

First Name	Last Name
David	*Green*

Title
District Manager

Organization Name
Cypress Creek Landfill, LLC

Phone Type	Number	Extension
Mobile	6627508110	

Email
david.green@wasteconnections.com

Facility/Site Address or Location Description

6315 12TH AVE E
TUSCALOOSA, AL 35405

Please indicate if any changes are needed to the Facility/Site Address:
NONE PROVIDED

Facility/Site County
Tuscaloosa

Facility/Site Front Gate Latitude and Longitude
33.14988900000001,-87.52213900000000

6315 12TH AVE E, TUSCALOOSA, AL

If the facility coordinates are not correct, please provide the correct coordinates and provide any other information necessary:
NONE PROVIDED

SIC Code(s) [Please select your primary SIC code first]:
4953-Refuse Systems

NAICS Code(s) [Please select your primary NAICS code first]:
562212-Solid Waste Landfill

Has the facility been issued an NPDES INDIVIDUAL permit?
No

Has the facility been issued a State Indirect Discharge (SID) Permit?
No

Are any outfalls being added to this general permit that will be discharging to a municipal storm sewer?
No

Date facility started operations:
1/1/1984

What is the size of the site in acres?
120

Do you discharge to any waters of the State that are impaired (303(d) or TMDL)?
No

A list of the 303(d) impaired waters can be found at: http://adem.alabama.gov/programs/water/303d.cnt and waters subject to a TMDL can be found at: http://adem.alabama.gov/programs/water/approvedTMDLs.htm

Does any discharge or runoff from the facility reach a public water supply stream segment as defined by ADEM Administrative Code r. 335-6-11-.02?
No

Please indicate which of the following control measures the facility has to prevent pollution. Check all that apply or select "None".
Structural control measures (basins, etc.)

Do you have additional contacts associated with this site?
No

Best Management Practices (BMP) Plan

Note

This permit requires the development and implementation of a Best Management Practices (BMP) Plan. This includes maintaining inspection and training records.

BMP Acknowledgment
I acknowledge that a BMP plan developed in accordance with Part IV of the General Permit is being implemented.

Provide the date the BMP plan was last updated.
11/23/2021

Attach BMP Plan (optional)
NONE PROVIDED
Comment
NONE PROVIDED

DSN001: Storm Water Discharges Associated with Landfill Operations (1 of 2)

Outfall: 0011

Please click below if this discharge no longer exists or is no longer required:
NONE PROVIDED

Feature Type
DSN001

Outfall Identifier
0011

Receiving Stream
Rum Creek

Does the discharge enter the named receiving water via an unnamed tributary and/or a storm sewer system? Please also indicate if the storm sewer system is under an MS4 permit.
Unnamed Tributary

For help on how to place a point on the map, click here.

Location of the Point Where Each Discharge Exits the Property
33.15005600000000, -87.52111100000001

For the purposes of monitoring, if outfalls from similar industrial activities have storm water runoff with characteristics that are essentially the same, the applicant can request that the monitoring of an outfall be representative of other storm water outfalls (i.e. monitoring would only be required for the representative storm water outfall(s)).

Is discharge from this location monitored by a representative outfall?
No

DSN001: Storm Water Discharges Associated with Landfill Operations (2 of 2)

Outfall: 0012

Please click below if this discharge no longer exists or is no longer required:
NONE PROVIDED

Feature Type
DSN001

Outfall Identifier
0012

Receiving Stream
Rum Creek

Does the discharge enter the named receiving water via an unnamed tributary and/or a storm sewer system? Please also indicate if the storm sewer system is under an MS4 permit.
Unnamed Tributary

For help on how to place a point on the map, click here.

Location of the Point Where Each Discharge Exits the Property
33.14647200000000, -87.51644400000001

For the purposes of monitoring, if outfalls from similar industrial activities have storm water runoff with characteristics that are essentially the same, the applicant can request that the monitoring of an outfall be representative of other storm water outfalls (i.e. monitoring would only be required for the representative storm water outfall(s)).

Is discharge from this location monitored by a representative outfall?
No

DSN001: Related Information

Has storm water runoff from the facility been analyzed for presence of any known pollutants?
Yes

Please attach the most recent copy of the analysis.
Analytical.pdf - 12/14/2021 04:24 PM
Comment
NONE PROVIDED

Are there any known impacts on the receiving water as a result of any discharges under DSN001?
No

Are any raw materials, finished products, waste products or chemicals exposed to storm water currently or in the last three years?
No

Were there any past industrial activities on the site that would contribute to storm water contamination?
No

Please select the option that best describes the site.
Landfill (may include a transfer station)

Is the landfill closed?
No

DSN002 and DSN003: Storm Water Discharges Associated with Fueling, Petroleum Storage and Handling, Equipment Storage, and Maintenance Areas (1 of 2)

Outfall: 0031

Please click below if this discharge no longer exists or is no longer required:
NONE PROVIDED

Feature Type
DSN003

Outfall Identifier
0031

Receiving Stream
Rum Creek

Does the discharge enter the named receiving water via an unnamed tributary and/or a storm sewer system? Please also indicate if the storm sewer system is under an MS4 permit.
Unnamed Tributary

For help on how to place a point on the map, click here.

Location of the Point Where Each Discharge Exits the Property
33.15000000000000, -87.52111100000001

DSN002 and DSN003: Storm Water Discharges Associated with Fueling, Petroleum Storage and Handling, Equipment Storage, and Maintenance Areas (2 of 2)

Outfall: 0032

Please click below if this discharge no longer exists or is no longer required:
NONE PROVIDED

Feature Type
DSN003

Outfall Identifier
0032

Receiving Stream
Rum Creek

Does the discharge enter the named receiving water via an unnamed tributary and/or a storm sewer system? Please also indicate if the storm sewer system is under an MS4 permit.
Unnamed Tributary

For help on how to place a point on the map, click here.

Location of the Point Where Each Discharge Exits the Property
33.14638900000000, -87.51638900000000

DSN002 and DSN003: Related Information

Does the facility have any Aboveground Storage Tanks to include under this DSN?
Yes

Please identify the Aboveground Storage Tanks (AST) present at the facility. (Note: You may group tanks with the same type, size, contents, and containment on the same row.)

Type	Size (gallons)	Number of Tanks	Contents	Double-walled?	Secondary containment?	Total Volume
AST	1,320	1	Diesel	Yes	No	1,320
						Sum: 1,320

Does the facility have any Underground Storage Tanks to include under this DSN?
No

Has storm water runoff from the facility been analyzed for presence of any known pollutants?
Yes

Please attach the most recent copy of the analysis.
Analytical.pdf - 12/14/2021 04:26 PM
Comment
NONE PROVIDED

Are there any known impacts on the receiving water as a result of any discharges under DSN002 and DSN003?
No

Have any leaks, spills or other instances of storm water contamination occurred within the last 3 years?
No

From which outfalls listed for DSN002 and DSN003 (e.g. 0021, 002A, etc.) is uncontaminated storm water from secondary containment areas discharged (for above ground storage tanks only)?
0031 and 0032

Were there any past industrial activities on the site that would contribute to storm water contamination?
No

Does the facility handle leaded fuels?
No

Does the facility handle aviation fuel, jet fuel, or diesel fuel?
No

Are any trucks or equipment fueled at this facility?
Yes

Is your fueling area protected from storm water, including flowing water?
Yes

Please explain:
Mobile fuel tanks will be located inside the landfill footprint and will be protected by bollards and/or high-visibility markers. The tank area will be protected from run-on stormwater by berms or similar protective measures.

Is storm water from the fueling/loading area treated (oil/water separator, etc.) prior to discharge?
No

Spill Prevention, Control and Countermeasures (SPCC)
A facility is covered by 40 CFR Part 112 if it has an aggregate above ground oil storage capacity greater than 1,320 U.S. gallons or a completely buried storage capacity greater than 42,000 U.S. gallons and there is a reasonable expectation of an oil discharge into or upon navigable waters of the U.S. or adjoining shorelines. Such facilities must prepare, implement, and maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 CFR §112. In accordance with 40 CFR §112.5 (b), such facilities must complete a review and evaluation of the SPCC Plan at least once every five years. Certain on-site changes may require more frequent reviews and amendment(s). Except as provided by §112.6, a professional engineer must certify any technical amendments to the plan in accordance with Section 112.3 (d). Please also be aware that, according to 40 CFR §112.2, any above ground tanks that are not in use and are permanently closed should meet the following conditions to not be included in the Spill Prevention, Control, and Countermeasures (SPCC) requirement: (1) All liquid and sludge has been removed from each container and connecting line; and (2) All connecting lines and piping have been disconnected from the container and blanked off, all valves (except for ventilation valves) have been closed and locked, and conspicuous signs have been posted on each container stating that it is a permanently closed container and noting the date of closure.
Blue Brochure

Is this facility subject to the requirement to prepare and implement a Spill Prevention, Control, and Countermeasure (SPCC) Plan under 40 CFR Part 112?
No

Is storm water from fueling areas allowed to mix with storm water from other industrial activities?
Yes

DSN004: Discharges Associated with Vehicle and Equipment Exterior Washing Operations (1 of 2)

Outfall: 0041

Please click below if this discharge no longer exists or is no longer required:
NONE PROVIDED

Feature Type
DSN004

Outfall Identifier
0041

Receiving Stream
Rum Creek

Does the discharge enter the named receiving water via an unnamed tributary and/or a storm sewer system? Please also indicate if the storm sewer system is under an MS4 permit.
Unnamed Tributary

For help on how to place a point on the map, click here.

Location of the Point Where Each Discharge Exits the Property
33.14988900000000, -87.52111100000001

DSN004: Discharges Associated with Vehicle and Equipment Exterior Washing Operations (2 of 2)

Outfall: 0042

Please click below if this discharge no longer exists or is no longer required:
NONE PROVIDED

Feature Type
DSN004

Outfall Identifier
0042

Receiving Stream
Rum Creek

Does the discharge enter the named receiving water via an unnamed tributary and/or a storm sewer system? Please also indicate if the storm sewer system is under an MS4 permit.
Unnamed Tributary

For help on how to place a point on the map, click here.

Location of the Point Where Each Discharge Exits the Property
33.14638900000000, -87.51638900000000

DSN004: Related Information

Is this process water commingled with storm water prior to discharge?
Yes

Has the process been analyzed for presence of any known pollutants?
Yes

Please attach the most recent copy of the analysis.

Analytical.pdf - 12/14/2021 04:30 PM

Comment

NONE PROVIDED

Give a detailed description of wash water use, additives, location, ultimate disposal, etc.

Landfill vehicles and equipment will be washed inside the landfill footprint using a power washer. The washer will use potable water with no additives. Wash water will flow off the landfill area and into ditches and other perimeter controls before discharging from the facility. The outfall 1 tributary flows through a sediment/detention pond before discharging from the facility.

How do you dispose of spent oil, hydraulic fluids and any other potential pollutants that you handle?

Spent oil, hydraulic fluids, and other petroleum products are stored in 55-gallon drums and hauled off site to an appropriate disposal facility.

Does the facility handle diesel equipment or diesel fuel?

Yes

NOI Preparer

NOI Preparer

Prefix

Mr.

First Name	Last Name
Charles	*Witcher*

Title

NONE PROVIDED

Phone Type	Number	Extension
Mobile	4235806763	

Email

rwitcher@promusengineering.com

Address

1200 MOUNTAIN CREEK RD

STE 102

CHATTANOOGA, TN 37405

Agreements and Signature(s)

SUBMISSION AGREEMENTS

- ☑ I am the owner of the account used to perform the electronic submission and signature.
- ☑ I have the authority to submit the data on behalf of the facility I am representing.
- ☑ I agree that providing the account credentials to sign the submission document constitutes an electronic signature equivalent to my written signature.
- ☑ I have reviewed the electronic form being submitted in its entirety, and agree to the validity and accuracy of the information contained within it to the best of my knowledge.

Responsible Official

I certify under penalty of lawthat 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 or imprisonment for knowing violations.

Signed By Joseph Vieceli on 12/14/2021 at 4:49 PM

APPENDIX B

Inspection Forms

Cypress Creek Landfill
Best Management Practices and Stormwater Pollution Prevention Plan
Facility Inspection Log

Inspector: _____
Date: _____
Rainfall: _____

BMP / Site Feature	Condition	Action Needed
Sediment Pond #1		
Sediment Pond #1 Outfall Structure		
Sediment Pond #2		
Sediment Pond #2 Outfall Structure		
Outfall DSN001-1 / DSN003-1 / DSN004-1		
Outfall DSN001-2 / DSN003-2 / DSN004-2		
Stormwater Culverts		
Stormwater Ditches		
Drop Inlets		
Landfill Downdrain Pipes		
Landfill Diversion Berms		
Check Dams		
Silt Fence		
Riprap Outlet Protection		
Riprap Channel Lining		

BMP / Site Feature	Condition	Action Needed
Sediment Traps		
Gravel Access Roads		
Gravel Parking Area – Scalehouse		
Entrance Road		
Equipment Staging / Laydown Area		
Soil Stockpiles		
Landfill Working Area		
Litter Control		
Liquid Seeps from Landfill		
Other		
Other		
Other		
Other		
Other		
Other		
Other		
Other		
Other		

Cypress Creek Landfill
Best Management Practices and Stormwater Pollution Prevention Plan
Mobile Petroleum Storage Tank Inspection Log

Inspector: _____

Date: _____

Inspection Item	Status	Comments / Date Corrected
Is tank area clearly marked and visible from equipment/vehicles?	☐ Yes ☐ No ☐ N/A	
Is tank area isolated from traffic areas?	☐ Yes ☐ No ☐ N/A	
Is tank in a smooth, relatively level area?	☐ Yes ☐ No ☐ N/A	
Is the tank area isolated from stormwater run-on?	☐ Yes ☐ No ☐ N/A	
Is tank exterior (roof, shell, heads, bottom, connections, fittings, valves, etc.) free of visible leaks?	☐ Yes ☐ No ☐ N/A	
Is the tank liquid level gauge legible and in good working condition?	☐ Yes ☐ No ☐ N/A	
Is the area around the tank (concrete surfaces, ground, containment, etc.) free of visible signs of leakage?	☐ Yes ☐ No ☐ N/A	
For double-wall or double bottom tanks or CE-ASTs, is interstitial monitoring equipment (where applicable) in good working condition?	☐ Yes ☐ No ☐ N/A	
For double-wall tanks or double bottom tanks or CE-ASTs, is interstice free of liquid?	☐ Yes ☐ No ☐ N/A	
For single-wall tanks, is there a secondary containment structure or soil berm?	☐ Yes ☐ No ☐ N/A	
For single-wall tanks, is the secondary containment structure/berm free of cracks, visible leaks, erosion, etc.?	☐ Yes ☐ No ☐ N/A	
If overfill equipment has a “test” button, does it activate the audible horn or light to confirm operation? If battery operated, replace battery if needed.	☐ Yes ☐ No ☐ N/A	
Is overfill prevention equipment in good working condition? If it is equipped with a mechanical test mechanism, actuate the mechanism to confirm operation.	☐ Yes ☐ No ☐ N/A	
Is the spill container (spill bucket) empty, free of visible leaks and in good working condition?	☐ Yes ☐ No ☐ N/A	
Are piping connections to the tank (valves, fittings, pumps, etc.) free of visible leaks? Note: If "No", identify location and describe leak.	☐ Yes ☐ No ☐ N/A	
Do the ladders/platforms/walkways appear to be secure with no sign of severe corrosion or damage?	☐ Yes ☐ No ☐ N/A	

Inspection Item	Status	Comments / Date Corrected
Is the containment free of excess liquid, debris, cracks, corrosion, erosion, fire hazards and other integrity issues?	☐ Yes ☐ No ☐ N/A	
Are dike drain valves closed and in good working condition?	☐ Yes ☐ No ☐ N/A	
Are containment egress pathways clear and any gates/doors operable?	☐ Yes ☐ No ☐ N/A	
Is the system free of any other conditions that need to be addressed for continued safe operation?	☐ Yes ☐ No ☐ N/A	

APPENDIX C

Employee Training Log

Cypress Creek Landfill
Best Management Practices and Stormwater Pollution Prevention Plan
Employee Training Log

Date	Employee Name	Employee Signature	Contents of Training	Initial Training or Refresher

APPENDIX D

Annual Compliance Certification Form

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM)
NPDES ANNUAL PETROLEUM CERTIFICATION
FORM INSTRUCTIONS

PURPOSE:

This form should be used to submit an Annual Petroleum Certification for storm water discharges associated with fueling, petroleum storage and handling, equipment storage, and maintenance areas if required by NPDES Individual or General Permits. **This certification is typically due no later than January 28th of each year for the prior calendar year.** Please check your specific permit requirements for the applicable due date.

COMPLETENESS:

All information requested on the form must be provided. In addition, an Annual Petroleum Certification will be considered **incomplete** for a reporting period if it is submitted prior the end of the reporting period to which it applies (e.g. if the certification is intended to cover the period from January 1st through December 31st of a calendar year, the certification is not valid for the entire reporting period if it is submitted on or before to December 31st of that calendar year).

SIGNATORY REQUIREMENTS:

The information contained in this form must be certified by a responsible official (RO) or a duly authorized representative (DAR) as defined ADEM Administrative Code r. 335-6-6-.09 "Signatories to Permit Applications and Reports." The applicable portions of this rule are provided below:

335-6-6-.09 Signatories to Permit Applications and Reports.

(1) The application for an NPDES permit shall be signed by a responsible official, as indicated below:
   (a) In the case of a corporation, by a principal executive officer of at least the level of vice president, or a manager assigned or delegated in accordance with corporate procedures, with such delegation submitted in writing if required by the Department, who is responsible for manufacturing, production, or operating facilities and is authorized to make management decisions which govern the operation of the regulated facility;
   (b) In the case of a partnership, by a general partner;
   (c) In the case of a sole proprietorship, by the proprietor; or
   (d) In the case of a municipal, state, federal, or other public entity by either a principal executive officer, or ranking elected official.

(2) All reports required by permits and other information requested by the Department shall be signed by a person described in paragraph 335 6 6 .09(1) or by a duly authorized representative of that person. A person is a duly authorized representative only if:
   (a) The authorization is made in writing by a person described in paragraph 335-6-6-.09(1);
   (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity and;
   (c) The written authorization is submitted to the Department.

(3) If an authorization under paragraph 335-6-6-.09(2) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of said paragraph must be submitted to the Department prior to or together with any reports or information signed by the newly authorized representative.

SUBMISSION:

The completed form may be submitted as an attachment to a Discharge Monitoring Report (DMR) submitted via the e-DMR module of the E2 Reporting System. The form may also be submitted via hard copy by mail to the applicable address below:

For NPDES General Permits
ADEM-Water Division
Industrial General Permit Section
PO Box 301463
Montgomery, Alabama 36130-1463

For NPDES Individual Permits
ADEM-Water Division
Industrial Section
PO Box 301463
Montgomery, Alabama 36130-1463

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM)
NPDES ANNUAL PETROLEUM CERTIFICATION

Please review "Form Instructions" page prior to completing form. This certification is typically due no later than January 28th of each year for the prior calendar year. Please check your specific permit requirements for the applicable due date.

SECTION 1: FACILITY IDENTIFICATION INFORMATION

Name of Permittee: Cypress Creek Landfill, LLC NPDES Permit Number: ALG160073

Name of Facility: Cypress Creek Landfill

Facility Location Address (do not list a PO Box number):

Street Address	City	Zip Code	County
6315 12th Avenue East	Tuscaloosa	35405	Tuscaloosa

SECTION 2: REPORTING PERIOD

This certification is being submitted for the period of: _____ through _____
Start Date (MM/DD/YYY) End Date (MM/DD/YYY)

Note: *The reporting period dates must fall within the same calendar year, and the typical reporting period is a full calendar year from January 1st through December 31st. You should not designate a period other than a full calendar year unless the permittee did not have permit coverage for the full calendar year.*

SECTION 3: COMPLIANCE STATEMENT

Please check the appropriate compliance statement below (Select only one):

☐ The permittee certifies compliance with all applicable conditions of the permit for the storm water discharges associated with fueling, petroleum storage and handling, equipment storage, and maintenance areas covered by the permit during the reporting period specified above.

☐ The permittee certifies compliance with the applicable conditions of the permit for the storm water discharges associated with fueling, petroleum storage and handling, equipment storage, and maintenance areas covered by the permit **EXCEPT** for the periods/instances of non-compliance identified on the ADEM Form 421 (NPDES/SID Non-compliance Notification Form) submitted for this reporting period.

SECTION 4: CERTIFICATION

The information contained in this form must be certified by a responsible official (RO) or a duly authorized representative (DAR) as defined in ADEM Administrative Code r. 335-6-6-.09 "Signatories to Permit Applications and Reports" (see Form Instructions page).

"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."

RO/DAR Signature: _____ Date Signed: _____

RO/DAR Name: _____ RO/DAR Title: _____

RO/DAR Mailing Address: _____

RO/DAR Phone Number: _____ RO/DAR Email Address: _____

APPENDIX E

Noncompliance Notification Form

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM)
NPDES/SID NON-COMPLIANCE NOTIFICATION FORM

Instructions: This form should be used to notify the Department of non-compliance with permit requirements in accordance with ADEM Admin. Code r. 335-6-6-.12(1)6.(iii) [NPDES permits] or 335-6-5-.15(12)(f)2. (SID permits) and should be submitted with the Discharge Monitoring Reports (DMR) for the respective monitoring period/reporting period, if applicable. If submitting with a DMR, a separate form should be used for each monitoring period/reporting.

Permittee Name: Cypress Creek Landfill, LLC **Permit No:** ALG160073

Facility Name: Cypress Creek Landfill **County:** Tuscaloosa

Monitoring/Reporting Period:

1. **Description of non-compliance associated with an outfall(s)** (attach additional pages if necessary):

Effluent Violations (if applicable)			
Outfall Number(s)	**Noncompliant Parameters(s)**	**Result Reported (include units)**	**Permit Limit (include units)**

Monitoring / Reporting Violations (if applicable)		
Outfall Number(s)	**Noncompliant Parameter(s)**	**Description of Monitoring / Reporting Violation**

2. **Description of non-compliance that is <u>not</u> associated with an outfall** (i.e. not suitable to be reported in Item 1.):

3. **Cause of non-compliance** (attach additional pages if necessary):

4. **Period of noncompliance** [include exact date(s) and time(s) or, if not corrected, the anticipated duration of the noncompliance]:

5. **Description of steps taken and/or being taken to reduce or eliminate the noncomplying discharge and to prevent its recurrence** (attach additional pages if necessary):

6. **General Comments** (attach additional pages if necessary):

"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."

Responsible Official Signature:_____ Date Signed:_____

Name and Title (type or print):_____

Email Address: _____

APPENDIX F

Spill Documentation Form

Cypress Creek Landfill
Spill Documentation Form

Date	Material	Source	Location	Cause	Corrective Measures	
					Material No Longer Exposed to Storm Water (Y/N)	Preventative Measures

APPENDIX G

NPDES Stormwater Permit

Alabama Department of Environmental Management

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT

DISCHARGE AUTHORIZED: DISCHARGES OF STORM WATER (**NOT** CONTAINING LEACHATE) FROM ACTIVE AND INACTIVE LANDFILLS, TRANSFER STATIONS, AND LAND DISTURBANCE ACTIVITIES ASSOCIATED WITH OPENING AND CLOSING CELLS AT LANDFILLS; DISCHARGES OF VEHICLE AND EQUIPMENT EXTERIOR WASH WATER; AND DISCHARGES OF STORM WATER FROM FUELING, PETROLEUM STORAGE AND HANDLING, EQUIPMENT STORAGE, AND MAINTENANCE AREAS

AREA OF COVERAGE: THE STATE OF ALABAMA

PERMIT NUMBER: ALG160073

RECEIVING WATERS: ALL WATERS OF THE STATE NOT DESIGNATED OUTSTANDING NATIONAL RESOURCE WATERS OR OUTSTANDING ALABAMA WATERS

In accordance with and subject to the provisions of Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251-1388 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, ***Code of Alabama 1975,*** *§§22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended,* ***Code of Alabama 1975****, §§22-22A-1 to 22-22A-17, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the dischargers covered by this permit are hereby authorized to discharge into the above receiving waters.*

ISSUANCE DATE: November 10, 2021

EFFECTIVE DATE: February 1, 2022

EXPIRATION DATE: January 31, 2027

Jeffery W. Kitchen

Alabama Department of Environmental Management

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PART I: DISCHARGE LIMITATIONS, CONDITIONS, AND REQUIREMENTS

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's Notice of Intent (NOI):

DSN001: Discharges of storm water (NOT containing leachate) from active or inactive landfills, transfer stations, and land disturbance activities associated with opening and closing cells at landfills.

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	UNITS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS [1 2 3]	
		Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Rainfall	inches	–	Monitor	1/6 months	[4]
pH	s.u.	Monitor	Monitor	1/6 months	Grab
Biochemical Oxygen Demand, 5-day	mg/l	–	Monitor	1/6 months	Grab
Chemical Oxygen Demand	mg/l	–	Monitor	1/year	Grab
Cadmium, Total	mg/l	–	Monitor	1/6 months	Grab
Chromium, Total	mg/l	–	Monitor	1/6 months	Grab
Copper, Total	mg/l	–	Monitor	1/6 months	Grab
Oil and Grease	mg/l	–	15	1/6 months	Grab
Settleable Solids [5 7]	mg/l	–	Monitor	1/6 months [7]	Grab
Total Dissolved Solids	mg/l	–	Monitor	1/6 months	Grab
Total Suspended Solids	mg/l	–	Monitor	1/6 months	Grab
Downstream Turbidity [5 6 7]	NTU	–	[6]	1/6 months [7]	Grab
Upstream Turbidity [5 6 7]	NTU	–	Monitor	1/6 months [7]	Grab

THERE SHALL BE NO DISCHARGE OF DEBRIS. THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS

Notes:

1 Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment.

2 Semiannual monitoring shall be performed during the first complete January – June, or July – December period following authorization under this permit and during each subsequent six (6) month period. The annual parameter may be taken during the first or second six months of the monitoring period, but must be taken if there is a full six month period or more remaining in the monitoring period. The annual parameter result is reported on the semiannual form that is applicable to the date the annual parameter sample was taken. For the six months period that the facility did not sample the annual parameter, the facility must code the annual parameter on the semiannual electronic report as *9 or on the semiannual hardcopy report as “NODI=9” (monitoring is conditional not required this period). Quarterly monitoring shall be performed during the first complete January – March, April-June, July-September, or October – December period following authorization under this permit and during each subsequent three (3) month period. Monitoring reports shall be submitted semiannually so that they arrive at the Department no later than the 28th day of the month following the six (6) month monitoring period (no later than January 28 and July 28).

3 A storm event is defined as 0.1 inch or greater rainfall and at least 72 hours from the previously measureable (greater than 0.1 inch rainfall) storm event. Monitoring shall be performed during the first thirty minutes of discharge (or as soon thereafter as practicable).

4 See Part IV.A. of the permit.

5 To be monitored only when land disturbance activities (associated with opening and closing cells at landfills) are occurring. These land disturbance activities may include digging for cover material within the permitted landfill area, but not outside of that permitted area. If no such land disturbance activities are occurring, then the landfill must code the discharge monitoring report (DMR) for that period as “NODI=9” (monitoring is conditional not required this period).

6 Downstream turbidity shall not exceed 50 NTUs above the upstream turbidity.

7 If the permittee discharges to impaired waters as identified by an EPA-approved or EPA established TMDL and/or on the State of Alabama’s 303(d) list, then settleable solids, downstream turbidity, and upstream turbidity must be monitored quarterly instead of semi-annually. ADEM reserves the right to require the permittee to obtain an individual permit for any of the reasons listed in Part II. F. 5. a. (1) through (9) of the permit.

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's NOI:

DSN002: Discharges of storm water from petroleum storage and fueling areas[7]

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	UNITS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS [1]	
		Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Rainfall	inches	–	Monitor	1/quarter	[2]
pH	s.u.	Monitor	Monitor	1/quarter	Grab
Benzene [3]	µg/l	–	15.5	1/quarter	Grab
Ethylbenzene [4]	µg/l	–	1,244	1/quarter	Grab
Toluene [5]	µg/l	–	8,723	1/quarter	Grab
Xylene	µg/l	–	Monitor	1/quarter	Grab
Naphthalene [6]	µg/l	–	620	1/quarter	Grab
Oil and Grease	mg/l	–	15	1/quarter	Grab
MTBE (Methyl Tertiary Butyl Ether)	µg/l	–	Monitor	1/quarter	Grab

THERE SHALL BE NO DISCHARGE OF DEBRIS. THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS

Notes:

[1] Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment.

[2] See Part IV.A.

[3] The limit for benzene shall be 1.12 µg/l if the discharge is to a body of water which is designated as a public water supply or within a 24-hour travel time to a body of water designated as a PWS.

[4] The limit for ethylbenzene shall be 448 µg/l if the discharge is to a body of water which is designated as a public water supply or within a 24-hour travel time to a body of water designated as a PWS.

[5] The limit for toluene shall be 1,206 µg/l if the discharge is to a body of water which is designated as a public water supply or within a 24-hour travel time to a body of water designated as a PWS.

[6] To be monitored only at facilities which handle diesel fuel.

[7] If fueling operations are the only industrial activities occurring within the drainage area, then DSN003 applies for the discharge, unless the Department deems it necessary to require monitoring under DSN002 in addition to DSN003.

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's NOI:

DSN003: Discharges of uncontaminated storm water from fueling, petroleum storage and handling, equipment storage, and maintenance areas.

DISCHARGES UNDER DSN003 MAY NOT MIX WITH OTHER DISCHARGES UNLESS THOSE DISCHARGES ARE PERMITTED.

All discharges from DSN003 shall meet the following conditions:

1. The facility will have a valid Spill Prevention, Control, and Countermeasures (SPCC) plan, if required, pursuant to 40 CFR 112.
2. Best Management Practices (BMP) will be used to prevent pollution of storm water by spillage or leakage during petroleum handling and fueling operations and from equipment maintenance and storage areas. The BMP shall include at a minimum:
   a. Twice per week inspections of the area and removal of any leaked petroleum product;
   b. Immediate cleanup of spilled or leaked petroleum product during handling operations, including fueling; and
   c. All cleanup activities shall be conducted using dry sweep or other approaches that do not result in the creation of polluted wastewater or storm water runoff.
3. Records shall be maintained in the form of a log and shall contain the following information, at a minimum:
   a. Date and time of inspections;
   b. Any cleanup accomplished as a result of the inspection;
   c. Time the cleanup was initiated and the time it was completed;
   d. The signature of person making visual inspection and performing any cleanup; and
   e. Description of any spillage occurring during petroleum handling, which shall include the date and time of the spill, estimated volume of spill, name of the person observing the spill, date and time the spill was cleaned up, and name of the person cleaning up the spill.
4. Best Management Practices (BMP) are used in draining the diked area. BMP is defined as use of a portable oil skimmer or similar device or the use of absorbent material to remove oil and grease (as indicated by the presence of a sheen) immediately prior to draining.
5. Monitoring records for dike drainage shall be maintained in the form of a log and shall contain the following information, as a minimum:
   a. Date and time of discharge;
   b. Estimated volume of discharge;
   c. Initials of person making visual inspection and authorizing discharge.
6. The discharge shall have no sheen, and there shall be no discharge of visible oil, floating solids or visible foam in other than trace amounts.
7. The permittee shall submit an **Annual Certification DMR** by January 28th of each year (but no earlier than January 1st) that reports whether all discharges were in accordance with the conditions of this permit for the previous calendar year.

DMR Reporting Instructions

The Annual Certification DMR should be marked "0" (zero) if operations had not changed and all discharges were in accordance with the conditions of the permit. If conditions had changed or all discharges were not in accordance with the conditions of the permit, the DMR should be marked "1" and the facility should contact the department regarding any changes in conditions or discharge/permit noncompliance. Any noncompliance should also be reported in accordance with Part I.C.2.

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's NOI:

DSN004: Discharges from vehicle and equipment exterior washing operations that DO NOT use solvents and have NOT come in direct contact with solid waste at the landfill facility. [3]

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	UNITS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS [1]	
		Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Flow	gal/day	–	Monitor	1/month	Instantaneous [2]
pH	s.u.	6.0	8.5	1/month	Grab
Oil and Grease	mg/l	–	15	1/month	Grab
Phosphorus, Total	mg/l	–	1.0	1/month	Grab
Total Suspended Solids	mg/l	–	50	1/month	Grab

THERE SHALL BE NO DISCHARGE OF DEBRIS. THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS

Notes:

1 Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment.

2 If flows are intermittent, the flow volume may be estimated.

3 This permit does not allow for the discharge of landfill wastewater as defined by 40 CFR Part 445.2(f).

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's NOI:

Discharge Monitoring Requirements applicable to all storm water discharges.

Monitoring of one storm water outfall within a designed drainage area as representative of the remaining outfalls, may be allowed if the applicant submits certification that the discharges are essentially the same. If at a later date the discharges are determined to be dissimilar or if pollutant concentrations are such that water quality standards are contravened, then monitoring of all discharges may be required.

This permit does not allow for the discharge of landfill wastewater as defined by 40 CFR Part 445.2(f).

B. DISCHARGE MONITORING AND RECORD KEEPING REQUIREMENTS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge and shall be in accordance with the provisions of this permit.

2. Test Procedures

For the purpose of reporting and compliance, permittees shall use one of the following procedures:

a. For parameters with an EPA established Minimum Level (ML), report the measured value if the analytical result is at or above the ML and report "0" for values below the ML. Test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and guidelines published pursuant to §304(h) of the FWPCA, 33 U.S.C. §1314(h). If more than one method for analysis of a substance is approved for use, a method having a minimum level lower than the permit limit shall be used. If the minimum level of all methods is higher than the permit limit, the method having the lowest minimum level shall be used and a report of less than the minimum level shall be reported as zero and will constitute compliance, however, should EPA approve a method with a lower minimum level during the term of this permit the permittee shall use the newly approved method.

b. For pollutants parameters without an established ML, an interim ML may be utilized. The interim ML shall be calculated as 3.18 times the Method Detection Level (MDL) calculated pursuant to 40 CFR Part 136, Appendix B.

   Permittees may develop an effluent matrix-specific ML, where an effluent matrix prevents attainment of the established ML. However, a matrix specific ML shall be based upon proper laboratory method and technique. Matrix-specific MLs must be approved by the Department, and may be developed by the permittee during permit issuance, reissuance, modification, or during compliance schedule.

   In either case the measured value should be reported if the analytical result is at or above the ML and "0" reported for values below the ML.

c. For parameters without an EPA established ML, interim ML, or matrix-specific ML, a report of less than the detection limit shall constitute compliance if the detection limit of all analytical methods is higher than the permit limit. For the purpose of calculating a monthly average, "0" shall be used for values reported less than the detection limit.

   The Minimum Level utilized for procedures A and B above shall be reported on the permittee's DMR. When an EPA approved test procedure for analysis of a pollutant does not exist, the Director shall approve the procedure to be used.

3. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The facility name and location, point source number, date, time and exact place of sampling;

b. The name(s) of person(s) who obtained the samples or measurements;

c. The dates and times the analyses were performed;

d. The name(s) of the person(s) who performed the analyses;

e. The analytical techniques or methods used, including source of method and method number; and

f. The results of all required analyses.

4. Records Retention and Production

a. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the above reports or the NOI for this permit, for a period of at least three years from the date of the sample measurement, report or NOI. This period may be extended by request of the Director at any time. If litigation or other enforcement action, under the AWPCA and/or the FWPCA, is ongoing which involves any of the above records, the records shall be kept until the litigation is resolved. Upon the written request of the Director or his designee, the permittee shall provide the Director with a copy of any record required to be retained by this paragraph. Copies of these records shall not be submitted unless requested.

b. All records required to be kept for a period of three years shall be kept at the permitted facility or an alternate location approved by the Department in writing and shall be available for inspection. A complete copy of the permit, the Best Management Practices (BMP) Plan, most recent BMP inspection records, and, if applicable, a Spill Prevention, Control, and Countermeasures (SPCC) Plan shall be maintained at the facility. The past three years of DMRs, laboratory records, and historical BMP inspection and training records may be kept at an alternate Alabama location if approved by the Department.

5. Monitoring Equipment and Instrumentation

All equipment and instrumentation used to determine compliance with the requirements of this permit shall be installed, maintained, and calibrated in accordance with the manufacturer's instructions or, in the absence of manufacturer's instructions, in accordance with accepted practices. At a minimum, flow measurement devices shall be calibrated at least once every 12 months.

C. DISCHARGE REPORTING REQUIREMENTS

1. Reporting of Monitoring Requirements

a. This permit requires weekly, monthly, quarterly, semiannual, and annual self-monitoring. The permittee shall conduct the required monitoring in accordance with the following schedule:

MONITORING REQUIRED MONTHLY AND MORE FREQUENTLY THAN MONTHLY shall be conducted during the first full month following the effective date of initial coverage under this permit and every month thereafter.

QUARTERLY MONITORING shall be conducted at least once during each calendar quarter. Calendar quarters are the periods of January through March, April through June, July through September, and October through December. The permittee shall conduct the quarterly monitoring during the first full quarter following the effective date of initial coverage and each quarter thereafter.

SEMI-ANNUAL MONITORING shall be conducted at least once during the period of January through June and at least once during the period of July through December. The permittee shall conduct the semi-annual monitoring during the first complete six-month period following the effective date of initial coverage and each six-month period thereafter.

ANNUAL MONITORING shall be conducted at least once during the period of January through December. If six or more months are remaining in the first monitoring period after initial coverage the annual monitoring shall be conducted and then once each twelve month period thereafter.

b. The permittee shall submit discharge monitoring reports (DMRs) in accordance with the following schedule:

REPORTS OF MORE FREQUENTLY THAN MONTHLY, MONTHLY, QUARTERLY, AND SEMI-ANNUAL MONITORING shall be submitted on a semiannual basis. The semiannual reports shall be submitted so that they are received by the Department no later than the 28th day of July and the 28th day of January, unless otherwise directed by the Department. Each submittal shall report results of all testing performed during the six-month period preceding the reporting month. For example, the semiannual report due on January 28 should report the results of testing conducted during the months of July through December.

c. Except as allowed by Provision I.C.1.c.(1) or (2), the permittee shall submit all Discharge Monitoring Reports (DMRs) required by Provision I.C.1.b. by utilizing the Department's web-based system.

(1) If the permittee is unable to complete the electronic submittal of DMR data due to technical problems originating with the Department's web-based system (this could include entry/submittal issues with an entire set of DMRs or individual parameters), the permittee is not relieved of their obligation to submit DMR data to the Department by the date specified in Provision I.C.1.b., unless otherwise directed by the Department.

If the Department's web-based system is down on the 28th day of the month in which the DMR is due or is down for an extended period of time, as determined by the Department, when a DMR is required to be submitted, the permittee may submit the data in an alternate manner and format acceptable to the Department. Preapproved alternate acceptable methods include faxing, e-mailing, mailing, or hand-delivery of data such that they are received by the required reporting date. Within five calendar days of the Department's web-based system resuming operation, the permittee shall enter the data into the Department's web-based system, unless an alternate timeframe is approved by the Department.

(2) The permittee may submit a request to the Department for a temporary electronic reporting waiver for DMR submittals. The waiver request should include the permit number; permittee name; facility/site name; facility address; name, address, and contact information for the responsible official or duly authorized representative; a detailed statement regarding the basis for requesting such a waiver; and the duration for which the waiver is requested. Approved electronic reporting waivers are not transferrable.

Permittees with an approved electronic reporting waiver for DMRs may submit hard copy DMRs for the period that the approved electronic reporting waiver request is effective. The permittee shall submit the Department-approved DMR forms to the address listed in Provision I.C.1.e.

(3) If a permittee is allowed to submit a hard copy DMR, the DMR must be legible and bear an original signature. Photo and electronic copies of the signature are not acceptable and shall not satisfy the reporting requirements of this permit.

(4) If the permittee, using approved analytical methods as specified in Provision I.B.2, monitors any discharge from a point source for a limited substance identified in Provision I.A. of this permit more frequently than required by this permit, the results of such monitoring shall be included in the calculation and reporting of values on the DMR and the increased frequency shall be indicated on the DMR.

(5) In the event no discharge from a point source identified in Provision I.A. of this permit and described more fully in the permittee's NOI occurs during a monitoring period, the permittee shall report "No Discharge" for such period on the appropriate DMR.

d. All reports and forms required to be submitted by this permit, the AWPCA and the Department's Rules and Regulations, shall be electronically signed (or, if allowed by the Department, traditionally signed) by a "responsible official" of the permittee as defined in ADEM Administrative Code Rule 335-6-6-.09 or a "duly authorized representative" of such official as defined in ADEM Administrative Code Rule 335-6-6-.09 and shall bear the following 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 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."

e. Discharge Monitoring Reports required by this permit, the AWPCA, and the Department's Rules that are being submitted in hard copy shall be addressed to:

Alabama Department of Environmental Management
Permits and Services Division
Environmental Data Section
Post Office Box 301463
Montgomery, Alabama 36130-1463

Certified and Registered Mail containing Discharge Monitoring Reports shall be addressed to:

Alabama Department of Environmental Management
Permits and Services Division
Environmental Data Section
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

f. All other correspondence and reports required to be submitted by this permit, the AWPCA, and the Department's Rules shall be addressed to:

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

Certified and Registered Mail shall be addressed to:

Alabama Department of Environmental Management
Water Division
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

2. Noncompliance Notification

a. If for any reason, the permittee's discharge (1) does not comply with any daily minimum or maximum discharge limitation for an effluent characteristic specified in Provision I. A. of this permit which is denoted by an "(X)", (2) threatens human health or welfare, fish or aquatic life, or water quality standards, (3) does not comply with an applicable toxic pollutant effluent standard or prohibition established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a), (4) contains a quantity of a hazardous substance which has been determined may be harmful to public health or welfare under Section 311(b)(4) of the FWPCA, 33 U.S.C. Section 1321(b)(4), (5) exceeds any discharge limitation for an effluent characteristic as a result of an unanticipated bypass, upset, (6) is an unpermitted direct or indirect discharge of a pollutant to a water of the state (unpermitted discharges properly reported to the Department under any other requirement are not required to be reported under this provision), the permittee shall orally report the occurrence and circumstances of such discharge to the Director within 24-hours after the permittee becomes aware of the occurrence of such discharge. In addition to the oral report, the permittee shall submit to the Director electronically a report (or if acceptable to the Department a written report) as provided in Provision I. C. 2. c. no later than five (5) days after becoming aware of the occurrence of such discharge.

b. If for any reason, the permittee's discharge does not comply with any limitation of this permit, the permittee shall submit to the Director a report as provided in Provision I. C. 2. c. below, such report shall be submitted with the next Discharge Monitoring Report required to be submitted by Provision I. C. 1. of this permit after becoming aware of the occurrence of such noncompliance.

c. Any electronic report (or if acceptable to the Department a written report) required to be submitted to the Director by Provision I. C. 2 a. or b. shall be submitted using a copy of the Department’s Noncompliance Notification Form and shall include the following information:

(1) A description of the discharge and cause of noncompliance;

(2) The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

(3) A description of the steps taken and/or being taken to reduce or eliminate the noncomplying discharge and to prevent its recurrence.

D. OTHER REPORTING AND NOTIFICATION REQUIREMENTS

1. Anticipated Noncompliance

The permittee shall give the Director written advance notice of any planned changes or other circumstances regarding a facility, which may result in noncompliance with permit requirements. This information must be submitted electronically unless acceptable to the Department to submit otherwise.

2. Termination of Discharge

The permittee shall notify the Director, when any point source discharges authorized by this permit have permanently ceased, by submitting a permit termination request electronically through the Department's web-based system. This notification shall serve as sufficient cause for instituting procedures for termination of the permittee's authority to discharge under this General Permit.

3. Updating Information

a. The permittee shall inform the Director of any change in the permittee's mailing address or telephone number or in the permittee's designation of a facility contact or office having the authority and responsibility to prevent and abate violations of the AWPCA, the Department's Rules and the terms and conditions of this permit, in writing, no later than ten (10) days after such change. Upon request of the Director or his designee, the permittee shall furnish the Director with an update of any information provided in the NOI.

b. If the permittee becomes aware that it failed to submit any relevant facts in the NOI, or submitted incorrect information in the NOI; or in any report to the Director, it shall promptly submit such facts or information with a written explanation for the mistake and/or omission. This information must be submitted electronically unless acceptable to the Department to submit otherwise.

4. Duty to Provide Information

a. Any permittee shall furnish to the Director, within a reasonable time, any information which the Director or his designee may request to determine whether cause exists for suspending or revoking the permittee's authorization to discharge under this General Permit, in whole or in part, or to determine compliance with this permit or to determine if the permittee should be required to apply for an individual permit.

b. Any or all permittees shall furnish to the Director, within a reasonable time, any information which the Director or his designee may request to determine whether cause exists for modifying or terminating this permit.

5. New or Increased Discharges

If there is an increase in pollution potential of the discharges from the permittee's facility the permittee must notify the Director in writing. The Director may at his discretion determine under Part II.F. of this permit what action if any will be taken.

E. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the discharge limitations specified in Provision I. A. in accordance with the following schedule:

COMPLIANCE SHALL BE ACHIEVED ON THE EFFECTIVE DATE OF COVERAGE UNDER THIS PERMIT

2. If required, no later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement. This information must be submitted electronically unless acceptable to the Department to submit otherwise.

PART II: OTHER REQUIREMENTS, RESPONSIBILITIES, AND DUTIES

A. REQUIREMENTS FOR COVERAGE UNDER THIS GENERAL PERMIT

1. Notice of Intent

Any person wishing to be permitted to discharge under this General Permit shall submit a Notice of Intent (NOI) to be covered by this General Permit at least 30 days prior to the date of desired coverage. No discharge authorized under this General Permit may commence until the discharger receives the Director's acknowledgement of the NOI and approval of the coverage of the discharge by this General Permit. The Director's acknowledgement shall include a copy of this General Permit.

The permittee must complete and submit all Departmental forms, including the NOI, utilizing the Department's web-based system unless the permittee submits in writing valid justification as to why the electronic submittal process cannot be utilized and the Department approves in writing utilization of hard copy submittals. For approved hard copy submissions, the Departmental forms are available on ADEM's webpage at http://adem.alabama.gov/DeptForms/default.cnt.

Any person discharging to a municipal storm sewer, sanitary sewer or combination sewer must notify the municipality by letter of the discharge.

2. Content of Notice of Intent

a. A description of the process generating the discharge for which coverage is desired. This description shall be in sufficient detail to allow the Director to determine that the discharge is included in the category permitted by this General Permit;

b. The latitude and longitude of the discharge points for each discharge and the name of the waterbody receiving each discharge for which coverage under this General Permit is desired; and

c. A contact person, address and phone number for the facility or activity to be covered under this General Permit;

(1) The NOI shall be electronically signed (or if acceptable to the Department traditionally signed) by a person meeting the requirements for signatories to permit application under ADEM Administrative Code Rule 335-6-6-.09 and the person signing the NOI shall make the certification required for submission of documents under ADEM Administrative Code Rule 335-6-6.09.

(2) Signatories to reports, discharge monitoring reports and any other submissions required by this General Permit shall be signed in accordance with the requirements of ADEM Administrative Code Rule 335-6-6.09.

B. OPERATIONAL AND MANAGEMENT REQUIREMENTS

1. Facilities Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities only when necessary to achieve compliance with the conditions of the permit.

2. Best Management Practices

a. Dilution water shall not be added to achieve compliance with discharge limitations except when the Director or his designee has granted prior written authorization for dilution to meet water quality requirements.

b. The permittee shall prepare, implement, and maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 CFR Part 112 if required thereby.

c. The permittee shall prepare and implement a Best Management Practices (BMP) Plan according to Part IV of this permit.

3. Spill Prevention, Control, and Management

The permittee shall provide spill prevention, control, and/or management sufficient to prevent any spills of pollutants from entering a water of the state or a publicly or privately owned treatment works. Any containment system used to implement this requirement shall be constructed of materials compatible with the substance(s) contained and which shall prevent the contamination of groundwater and such containment system shall be capable of retaining a volume equal to 110 percent of the capacity of the largest tank for which containment is provided.

C. OTHER RESPONSIBILITIES

1. Duty to Mitigate Adverse Impacts

The permittee shall promptly take all reasonable steps to mitigate and minimize or prevent any adverse impact on human health or the environment resulting from noncompliance with any discharge limitation of this permit, including such accelerated or additional monitoring of the discharge and/or the receiving waterbody as necessary to determine the nature and impact of the noncomplying discharge.

2. Right of Entry and Inspection

The permittee shall allow the Director, or an authorized representative, upon the presentation of proper identification to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the AWPCA, any substances or parameters at any location.

D. BYPASS AND UPSET

1. Bypass

a. Any bypass is prohibited except as provided in b. and c. below:

b. A bypass is not prohibited if:

(1) It does not cause any discharge limitation specified in Provision I. A. of this permit to be exceeded;

(2) It is necessary for essential maintenance of a treatment or control facility or system to assure efficient operation of such facility or system; or

(3) It is part of the storm water control system when the intention of the design, as approved by the Director, is to contain the first flush only.

c. A bypass is not prohibited and need not meet the discharge limitations specified in Provision I. A. of this permit if:

(1) It is unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime (this condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable

engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance); and

(3) The permittee submits a written request for authorization to bypass to the Director at least ten (10) days prior to the anticipated bypass (if possible), the permittee is granted such authorization, and the permittee complies with any conditions imposed by the Director to minimize any adverse impact on human health or the environment resulting from the bypass. This request must be submitted electronically unless acceptable to the Department to submit otherwise.

d. The permittee has the burden of establishing that each of the conditions of Provision II. D. 1. b. or c. have been met to qualify for an exception to the general prohibition against bypassing contained in a. and an exemption, where applicable, from the discharge limitations specified in Provision I. A. of this permit.

2. Upset

a. A discharge which results from an upset need not meet the discharge limitations specified in Provision I. A. of this permit if:

(1) No later than 24-hours after becoming aware of the occurrence of the upset, the permittee orally reports the occurrence and circumstances of the upset to the Director or his designee; and

(2) No later than five (5) days after becoming aware of the occurrence of the upset, the permittee furnishes the Director with evidence, including properly signed, contemporaneous operating logs, or other relevant evidence, demonstrating that (i) an upset occurred; (ii) the permittee can identify the specific cause(s) of the upset; (iii) the permittee's facility was being properly operated at the time of the upset; and (iv) the permittee promptly took all reasonable steps to minimize any adverse impact on human health or the environment resulting from the upset.

b. The permittee has the burden of establishing that each of the conditions of Provision II D. 2. a. of this permit have been met to qualify for an exemption from the discharge limitations specified in Provision I. A. of this permit.

E. DUTY TO COMPLY WITH PERMIT, RULES, AND STATUTES

1. Duty to Comply

a. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the AWPCA and the FWPCA and is grounds for: enforcement action, termination, or suspension of authorization under this permit; denial of a permit reissuance NOI; a requirement that permittee submit an NOI for an individual NPDES permit.

b. The necessity to halt or reduce production or other activities in order to maintain compliance with the conditions of the permit shall not be a defense for a permittee in an enforcement action.

c. The discharge of a pollutant from a source not specifically identified in the NOI to be covered under this General Permit and not specifically included in the description of an outfall in this permit is not authorized and shall constitute noncompliance with this permit.

d. The permittee shall take all reasonable steps, including cessation of production or other activities, to minimize or prevent any violation of this permit or to minimize or prevent any adverse impact of any permit violation.

2. Removed Substances

Solids, sludges, filter backwash, or any other pollutant or other waste removed in the course of treatment or control of storm waters and/or process water shall be disposed of in a manner that complies with all applicable Department Rules.

3. Loss or Failure of Treatment Facilities

Upon the loss or failure of any treatment facility, including but not limited to the loss or failure of the primary source of power of the treatment facility, the permittee shall, where necessary to maintain compliance with the discharge limitations specified in Provision I. A. of this permit, or any other terms or conditions of this permit, cease, reduce, or otherwise control production and/or all discharges until treatment is restored.

4. Compliance with Statutes and Rules

a. This permit has been issued under ADEM Administrative Code, Chapter 335-6-6. All provisions of this chapter, that are applicable to this permit, are hereby made a part of this permit. A copy of this chapter may be obtained on the Department's website or for a small charge from the Office of General Counsel, Alabama Department of Environmental Management, 1400 Coliseum Boulevard, Montgomery, AL 36110.

b. This permit does not authorize the noncompliance with or violation of any Laws of the State of Alabama or the United States of America or any regulations or rules implementing such laws. FWPCA, 33 U.S.C. Section 1319, and Code of Alabama 1975, Section 22-22-14.

F. PERMIT TRANSFER, MODIFICATION, SUSPENSION, REVOCATION, REISSUANCE, AND TERMINATION

1. Duty to Reapply or Notify of Intent to Cease Discharge

a. The permittee authorized to discharge under this General Permit, who wishes to continue to discharge upon the expiration of this permit, shall submit an NOI to request reissuance of coverage under the reissued General Permit. Such NOI shall be submitted at least 90 days prior to the expiration date of this General Permit. The permittee shall electronically submit the NOI utilizing the Department's web-based system, unless the permittee submits in writing valid justification as to why the electronic submittal process cannot be utilized, and the Department approves in writing the utilization of hard copy submittals.

b. Failure of the permittee to submit the appropriate NOI material for reauthorization under this permit at least 90 days prior to the permit's expiration will void the automatic continuation of the authorization to discharge under this permit as provided by ADEM Administrative Code Rule 335-6-6-.06. Should the permit not be reissued for any reason prior to its expiration date, permittees who failed to meet the 90-day submittal deadline will be illegally discharging without a permit after the expiration date of the permit.

2. Change in Discharge

a. The permittee shall give notice to the Director at least 90 days in advance of any facility expansion, production increase, process change, or other action that could result in:

(1) The discharge of additional pollutants;

(2) The increase in the quantity of any discharge such that existing permit limitations would be exceeded;

(3) Or that could result in an additional discharge point.

This requirement applies to pollutants that are or that are not subject to discharge limitations in this permit. No new or increased discharge may begin until the Director has reviewed the information and taken appropriate action to authorize the discharge under this General Permit, or until such time as an appropriate action has been taken to authorize the discharge under an individual permit.

b. The permittee shall notify the Director as soon as it is known or there is reason to believe:

(1) That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(a) One hundred micrograms per liter;

(b) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;

(c) Five times the maximum concentration value reported for that pollutant in the permit NOI; or

(2) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(a) Five hundred micrograms per liter;

(b) One milligram per liter for antimony;

(c) Ten times the maximum concentration value reported for that pollutant in the permit NOI.

3. Transfer of Permit or Change in Name

This permit may not be transferred or the name of the permittee changed without notice to the Director and subsequent modification or revocation and reissuance of the permit to identify the new permittee and to incorporate any other changes as may be required under the FWPCA or AWPCA.

a. In the case of a change in ownership or control of the permittee's premises only, a request for permit transfer must be submitted electronically through the Department's web-based system at least 30 days prior to the change.

b. In the case of a change in ownership or control of the permittee's premises accompanied by a change or proposed change in effluent characteristics, a complete NOI is required to be submitted to the Director electronically through the Department's web-based system at least 90 days prior to the change.

c. In the case of a change in Permittee Name or Facility Name only, a request for permit name change must be submitted electronically through the Department's web-based system at least 30 days prior to the change.

Whenever the Director is notified of a change in ownership or control, he may decide not to modify the existing permit and require the submission of a new permit NOI.

4. Permit Modification, Revocation and Reissuance (of Modified General or Individual), and Termination

a. During the term of this General Permit the Director may, for cause, and subject to the public notice procedure of ADEM Administrative Code, Rule 335-6-6-.21, modify or revoke and reissue this General Permit, or terminate it and require all those authorized under it to apply for individual NPDES permits. The causes for this action include but are not limited to the causes listed below:

(1) There are material and substantial alterations or additions to the facility or activity generating the discharges which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit;

(2) When the Director receives any information that was not available at the time of permit issuance and that would have justified the application of different permit conditions at the time of issuance;

(3) When the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued;

(4) Upon the failure of the state to notify, as required by Section 402(b)(3) of the FWPCA, another state whose waters may be affected by a discharge;

(5) When the level of discharge of any pollutant which is not limited in the permit exceeds the level which can be achieved by the technology based treatment requirements appropriate to discharge under 40 CFR 125.3(c);

(6) To correct technical mistakes, such as errors in calculation, clerical errors or mistaken interpretations of law made in determining permit conditions;

(7) If the permit limitations are found not to be protective of water quality standards;

(8) To incorporate an applicable 307(a) FWPCA toxic effluent standard or prohibition;

(9) When required by the reopener conditions in this permit, and

(10)For any applicable cause set forth in ADEM Administrative Code Rule 335-6-6-.17.

b. Subject to the public notice procedures of ADEM Administrative Code Rule 335-6-6-.21, the Director may terminate this General Permit during its term for any of the causes for modification listed in Part II.F.4.a.

c. The Director may terminate authorization to discharge under this General Permit for cause. Cause shall include but not be limited to:

(1) Noncompliance with the permit;

(2) Noncompliance with Department Rules;

(3) A finding that this General Permit does not control the discharges sufficiently to protect water quality or comply with treatment based limits applicable to the discharge;

(4) The permittee's misrepresentation or failure to disclose fully all relevant facts in the permit NOI or during the permit issuance process or the permittee's misrepresentation of any relevant facts at any time;

(5) Materially false or inaccurate statements or information in the permit NOI or the permit;

(6) A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

(7) The permittee's discharge threatens human life or welfare;

(8) Permanent closure of the facility generating the wastewater permitted to be discharged by this permit or permanent cessation of wastewater discharge; and

(9) New or revised requirements of any applicable standard or limitation that is promulgated under Sections 301(b)(2)(C),(D),(E),and (F), and 307(a)(2) of the FWPCA that the Director determines cannot be complied with by the permittee.

d. If the permittee believes that any past or planned activity would be cause for modification or revocation and reissuance of this General Permit under ADEM Administrative Code Rule 335-6-6-.23 (7), or termination and issuance of an individual permit under ADEM Administrative Code Rule 335-6-6-.23 (9) the permittee must report such information to the Permit Issuing Authority. The submittal of a new NOI may be required of the permittee. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned change, anticipated noncompliance or application for an individual permit, does not stay any permit condition.

5. Issuance by the Director of an Individual NPDES Permit to a Person Eligible for Coverage or Covered by This General Permit.

a. The Director may require any person, otherwise eligible for coverage under this General Permit, to apply for an individual NPDES permit by notifying that person that an application is required. Notification shall consist of a written description of the reason(s) for the decision, appropriate permit application forms and directions, a statement informing the person that upon issuance of the individual permit coverage by this General permit shall automatically terminate. Reasons for this requirement may be:

(1) Noncompliance with the General Permit;

(2) Noncompliance with Department Rules;

(3) A change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the wastewater being discharged;

(4) Effluent guidelines are promulgated for a point source(s) covered by the General Permit;

(5) A water quality management plan applicable to the wastewater being discharged under this General Permit;

(6) Circumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under this General Permit or either a temporary reduction or permanent reduction or elimination of the authorized discharge is necessary;

(7) Standards for sewage sludge use or disposal have been promulgated for the sludge use or disposal practice covered by this General Permit;

(8) The discharge(s) is a significant contributor of pollutants. In making this decision the Director may consider:

(a) the location of the discharges with respect to waters of the state,

(b) the size of the discharger, and

(c) the quantity and nature of the pollutants discharged to waters of the state.

(9) A determination that the water of the state receiving the discharge is not meeting applicable water quality standards.

6. Request for an Individual NPDES Permit by a Person Covered Under This General Permit.

a. Any person covered by this General Permit may apply for termination of coverage by applying for an individual NPDES permit.

b. A permit NOI submitted voluntarily or at the direction of the Director for the purpose of termination of coverage by this General Permit shall be processed in accordance with the rules found in ADEM Administrative Code 335-6-6 applicable to individual permits.

c. Any person may petition the Director for withdrawal of this General Permit authority from a discharger. The Director shall consider the information submitted by the petitioner and any other information he may be aware of and may obtain additional information from the discharger and through inspections by Department staff and shall decide if coverage should be withdrawn. The petitioner shall be informed of the Director's decision and shall be provided a summary of the information considered.

7. Request for Permit Action Does Not Stay Any Permit Requirement

The filing of a request by the permittee for any permit action such as termination, or application for individual permit or any other action, does not stay any permit term or condition.

G. COMPLIANCE WITH TOXIC POLLUTANT STANDARD OR PROHIBITION

If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a), for a toxic pollutant discharged by the permittee and such standard or prohibition is more stringent than any discharge limitation on the pollutant specified in Provision I. A. of this permit, or controls a pollutant not limited in Provision I. A. of this permit, this permit shall be modified to conform to the toxic pollutant effluent standard or prohibition and the permittee shall be notified of such modification. If this permit has not been modified to conform to the toxic pollutant effluent standard or prohibition before the effective date of such standard or prohibition, the permittee shall attain compliance with the requirements of the standard or prohibition within the time period required by the standard or prohibition and shall continue to comply with the standard or prohibition until this permit is modified or reissued.

H. DISCHARGE OF WASTEWATER GENERATED BY OTHERS

The discharge of wastewater, generated by any process, facility, or by any other means not under the operational control of the permittee or not identified in the NOI for this permit or not identified specifically in the description of an outfall in this permit is not authorized by this permit.

PART III: OTHER PERMIT CONDITIONS

A. CIVIL AND CRIMINAL LIABILITY

1. Tampering

Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained or performed under the permit shall, upon conviction, be subject to penalties as provided by the AWPCA.

2. False Statements

Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties as provided by the AWPCA.

3. Permit Enforcement

a. Any NPDES permit issued or reissued by the Department is a permit for the purpose of the AWPCA and the FWPCA and as such any terms, conditions, or limitations of the permit are enforceable under state and federal law and as described under Rule 335-6-6-.18.

b. Any person required to have a NPDES permit pursuant to ADEM Administrative Code Chapter 335-6-6 and who discharges pollutants without said permit, who violates the conditions of said permit, who discharges pollutants in a manner not authorized by the permit, or who violates applicable orders of the Department or any applicable rule or standard of the Department, is subject to any one or combination of the following enforcement actions under applicable state statutes.

(1) An administrative order requiring abatement, compliance, mitigation, cessation, clean-up, and/or penalties;

(2) An action for damages;

(3) An action for injunctive relief; or

(4) An action for penalties.

4. Relief from Liability

Except as provided in Provision II. D. 1. (Bypass) and Provision II. D. 2. (Upset), nothing in this permit shall be construed to relieve the permittee of civil or criminal liability under the AWPCA or FWPCA for noncompliance with any term or condition of this permit.

B. OIL AND HAZARDOUS SUBSTANCE LIABILITY

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the FWPCA, 33 U.S.C. Section 1321.

C. PROPERTY AND OTHER RIGHTS

This permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, or any infringement of federal, state, or local laws or regulations, nor does it authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any waters of the state or of the United States.

D. AVAILABILITY OF REPORTS

Except for data determined to be confidential under Code of Alabama 1975, Section 22-22-9(c), all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. Effluent data shall not be considered confidential.

E. COMPLIANCE WITH WATER QUALITY STANDARDS

1. The permittee may be required by the Director to apply for an individual permit, if the Director determines that discharge under this General Permit causes a violation of a water quality standard or stream use classification.

2. Compliance with permit terms and conditions notwithstanding, if the permittee's discharge(s) from point sources identified in Provision I. A. of this permit cause or contribute to a condition in contravention of state water quality standards, the Department may require the permittee to take abatement action or apply for an individual permit pursuant to the Department's Rules, or both.

3. If the Department determines, on the basis of a notice provided pursuant to this permit or any investigation, inspection or sampling, that a modification of this permit is necessary to assure maintenance of water quality standards or compliance with other provisions of the AWPCA or FWPCA, the Department may require such modification.

F. GROUNDWATER

Unless specifically authorized under this permit, this permit does not authorize the discharge of pollutants to groundwater. Should a threat of groundwater contamination occur, the Director may require groundwater monitoring to properly assess the degree of the problem and the Director may require that the permittee undertake measures to abate any such discharge and/or contamination.

G. DEFINITIONS

1. *Authorization* – means granted the privilege of discharging under the terms of this General Permit.

2. *Average monthly discharge limitation* - means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).

3. *Average weekly discharge limitation* - means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).

4. *AWPCA* - means the Alabama Water Pollution Control Act.

5. *Bypass* - means the intentional diversion of waste streams from any portion of a treatment facility.

6. *Daily discharge* - means the discharge of a pollutant measured during any consecutive 24 hour period in accordance with the sample type and analytical methodology specified by the discharge permit.

7. *Daily maximum* - means the highest value of any individual sample result obtained during a day.

8. *Daily minimum* - means the lowest value of any individual sample result obtained during a day.

9. *Day* - means any consecutive 24-hour period.

10. *Department* - means the Alabama Department of Environmental Management.

11. *Director* - means the Director of the Department.

12. *Discharge* - means "[t]he addition, introduction, leaking, spilling or emitting of any sewage, industrial waste, pollutant or other waste into waters of the state". Code of Alabama 1975, Section 22-22-1(b)(8).

13. *Discharge monitoring report (DMR)* - means the form approved by the Director to accomplish reporting requirements of an NPDES permit.

14. *EPA* - means the United States Environmental Protection Agency.

15. *FWPCA* - means the Federal Water Pollution Control Act.

16. *Landfill Wastewater*, as defined by 40 CFR Part 445.2 (f), means all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated storm water, contaminated ground water, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory derived wastewater, contaminated storm water and contact washwater from washing truck, equipment, and railcar exteriors and surface areas which have come in direct contact with solid waste at the landfill facility.

17. *Notice of Intent* – means forms and additional information that are required by ADEM Administrative Code Rule 335-6-6-.23 and applicable permit fees.

18. *Permit application* - means forms and additional information that is required by ADEM Administrative Code Rule 335-6-6-.08 and applicable permit fees.

19. *Point source* - means "any discernible, confined and discrete conveyance, including but not limited to any pipe, channel, ditch, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged." Section 502(14) of the FWPCA, 33 U.S.C. Section 1362(14).

20. *Pollutant* - includes for purposes of this permit, but is not limited to, those pollutants specified in Code of Alabama 1975, Section 22-22-1(b)(3) and those effluent characteristics specified in Provision I. A. of this permit.

21. *Qualified Credentialed Professiona*l or *QCP* means a professional engineer (PE), or a Certified Professional in Erosion and Sediment Control (CPESC) as determined by CPESC, Inc. Other registered or certified professionals such as registered landscape architect, registered land surveyor, registered geologist, registered forester, Registered Environmental Manager as determined by the National Registry of Environmental Professionals (NREP), or Certified Professional and Soil Scientist (CPSS) as determined by ARCPACS, and other Department accepted professional designations, certifications, and/or accredited university programs that can document requirements regarding proven training, relevant experience, and continuing education, that can enable recognized individuals to prepare CBMPP's to makes sound professional judgments regarding Alabama NPDES rules, the requirements of this chapter, planning, design, implementation, maintenance, and inspection of construction sites, receiving waters, BMPs, remediation/cleanup of accumulated offsite pollutants from the regulated site, and reclamation or effective stormwater quality remediation of construction associated land disturbances, that meet or exceed recognized technical standards and guidelines, effective industry standard practices, and the requirements of this chapter. The QCP shall be in good standing with the authority granting the registration or designation. The design and implementation of certain structural BMPs may involve the practice of engineering and require the certification of a professional engineer pursuant to Alabama law.

22. *Severe property damage* - means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

23. *Shock chlorination* – means the periodic use of chlorine in cooling water systems as a biocide.

24. *Upset* - means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit discharge limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

25. *Waters* - means "[a]ll waters of any river, stream, watercourse, pond, lake, coastal, ground or surface water, wholly or partially within the state, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a single individual, partnership or corporation unless such waters are used in interstate commerce." Code of Alabama 1975, Section 22-22-1(b)(2). Waters "include all navigable waters" as defined in Section 502(7) of the FWPCA, 22 U.S.C. Section 1362(7), which are within the State of Alabama.

26. *Week* - means the period beginning at twelve midnight Saturday and ending at twelve midnight the following Saturday.

H. 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.

PART IV: ADDITIONAL REQUIREMENTS, CONDITIONS, AND LIMITATIONS

A. STORM WATER MEASUREMENT AND SAMPLING

1. Storm Water Measurement

a. All storm water samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches.

b. The storm water event must be monitored, including the date and rainfall (in inches) for the storm event(s) sampled. The duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event must be a minimum of 72 hours. This information must be recorded as part of the sampling procedure and records retained according to Part I.B.4.b. of this permit.

c. During the sampling storm event, rainfall must be reported and may be measured using a rain guage. This information must be recorded as part of the sampling procedure and records retained according to Part I.B.4.b. of this permit.

2. Storm Water Sampling

a. A grab sample, if required by this permit, shall be taken during the first thirty minutes of the discharge (or as soon thereafter as practicable); and a flow weighted composite sample, if required by this permit, shall be taken for the entire event or for the first three hours of the event.

b. All test procedures will be in accordance with Part I.B.2. of this permit.

B. BEST MANAGEMENT PRACTICES (BMP) PLAN

1. Plan Content for Landfill Activities

The permittee shall prepare (or as required have a QCP prepare) and implement a best management practices (BMP) plan which shall:

a. Provide control sufficient to prevent or control pollution of storm water by soil particles to the degree required to prevent violation of the turbidity water quality standard applicable to the waterbody receiving the discharge;

b. Prevent the spillage or loss of fluids, oil, grease, gasoline, etc. from vehicle and equipment maintenance and repair activities and thereby prevent the contamination of storm water from these substances;

c. Prevent or minimize the storm water contact with material stored on site;

d. Designate by position or name the person or persons responsible for the day to day implementation of the BMP;

e. Provide for at a minimum, two inspections a week, on days during which the facility is manned, of any structures that function to prevent storm water pollution or to remove pollutants from storm water and of the facility in general to ensure that the BMP is continually implemented and effective;

f. If spillage is a factor during loading and unloading of bulk material, provide for prevention of the mixing of spillage with discharged storm water;

g. Include a diagram of the facility showing the direction of the storm water flow, the discharge point(s), and the locations of any structures or other mechanisms intended to prevent pollution of storm water or to remove pollutants from storm water, the locations of any collection and handling systems. The site map should also identify the location, size, and contents of any tanks.

h. Prevent the pollution of storm water by animal wastes;

i. Bear the signature of the landfill manager or corporate official;

j. The permittee must implement measures to ensure permanent revegetation or cover of all disturbed areas. The permittee shall perform regular clean-up and proper disposal of floating or submerged trash and garbage resulting from activities authorized by this permit;

k. The permittee shall implement, as necessary, a system for the collection, storage, treatment, and disposal of sewage and other putrescible wastes;

l. Appropriate measures must be taken to prevent the deposition of airborne pollutants such as spray paint, herbicides, excessive road dust, etc. from entering any waterbody.

2. Plan Content for Construction Activities

a. A Qualified Credentialed Professional must prepare the BMP Plan that addresses the land disturbance activities. Permittee shall implement a BMP Plan describing structural and non-structural practices which will be implemented and maintained to prevent/minimize the discharge of all sources of pollution (i.e., sediment, trash, garbage, debris, oil & grease, chemicals, materials, etc.) to State waters in storm water runoff. The Plan must be designed to address the following goals: (1) to divert upslope water around the site; (2) to limit the exposure of disturbed areas to precipitation to the shortest amount of time possible; (3) to minimize the amount of surface area that is disturbed; and (4) to remove sediment, nutrients, and other pollutants from the storm water before it leaves the site.

b. The BMP Plan means implementation and continued maintenance of effective structural and non-structural practices and management strategies to prevent and minimize the introduction of pollutants to stormwater and to treat stormwater to remove pollutants prior to discharge. The Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas, Alabama Soil and Water Conservation Committee (ASWCC) March 2009 edition and current industry standards shall be used as necessary to maintain compliance.

c. Dilution water shall not be added to achieve compliance with discharge limitations except when the Director or his designee has granted prior written authorization for dilution to meet water quality requirements.

d. The permittee must implement measures to ensure permanent revegetation or cover of all disturbed areas. The permittee shall perform regular clean-up and proper disposal of floating or submerged trash and garbage resulting from activities authorized by this permit.

e. The permittee shall implement, as necessary, a system for the collection, storage, treatment, and disposal of sewage and other putrescible wastes.

f. All construction and worker debris (e.g., trash, garbage, etc.) must be immediately removed and disposed on in an approved manner. No rubbish, trash garbage, refuse, or other such materials shall be discharged into waters of the State of Alabama.

g. Appropriate measures must be taken to prevent the deposition of airborne pollutants such as spray paint, herbicides, excessive road dust, etc. from entering any waterbody.

h. All materials used as fill for construction purposes must be non-toxic, non-acid forming and free of solid waste or other debris unless approved by the Department.

i. Include a diagram of the facility showing the direction of the storm water flow, the discharge point(s), and the locations of any structures or other mechanisms intended to prevent pollution of storm water or to remove pollutants from storm water, the locations of any collection and handling systems. The site map should also identify the location, size, and contents of any tanks.

j. Bear the signature of the landfill manager or corporate official.

3. Compliance Schedule

The permittee shall have prepared and fully implemented the BMP upon the date coverage is granted.

4. Department Review

a. When requested by the Director or his designee, the permittee shall make the BMP available for Department review.

b. The Director or his designee may notify the permittee at any time that the BMP is deficient and require correction of the deficiency.

c. The permittee shall correct any BMP deficiency identified by the Director or his designee within 30 days of receipt of notification and shall certify to the Department that the correction has been made and implemented.

5. Administrative Procedures

a. A copy of the BMP shall be maintained at the landfill and shall be available for inspection by representatives of the Department.

b. A log of the twice per week inspections required above shall be maintained at the landfill and shall be available for inspection by representatives of the Department. The log shall contain records of all inspections performed and any corrective actions taken for the last three years and each entry shall be signed by the person performing the inspection.

c. The permittee shall provide training for any personnel required to implement the BMP and shall retain documentation of such training at the facility. This documentation shall be available for inspection by representatives of the Department. Training shall be performed prior to the date that implementation of the BMP is required.

d. BMP Plan Modification. The permittee shall amend the BMP plan whenever there is a change in the facility or change in operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.

C. DISCHARGE(S) TO IMPAIRED WATERS REQUIREMENTS

1. Requirements Applicable to a Facility Eligible for Coverage, or Covered, under this Permit with Discharge(s) to 303(d) Listed Waters

This permit does not authorize new sources or new dischargers of pollutants of concern to impaired waters unless consistent with an EPA-approved or EPA-established Total Maximum Daily Load (TMDL) and applicable State law. Impaired waters are those that do not meet applicable water quality standards and are identified by an EPA-approved or EPA-established TMDL and/or on the State of Alabama's 303(d) list. Pollutants of concern are those pollutants for which the water body is listed as impaired and which contribute to the listed impairment.

a. The facility eligible for coverage, or covered, under this permit must determine whether its discharge(s) contributes directly or indirectly to a waterbody that is included on the latest 303(d) list or otherwise designated by the Department as impaired or is included in an EPA-approved or EPA-established TMDL. If the facility has discharges meeting this criterion, it must comply with Part IV.C., if its discharge does not meet this criterion, Part IV.C. does not apply to the facility.

b. Facilities that discharge into a receiving water which is listed on the State of Alabama's 303(d) list of impaired waters, and with discharges that contain the pollutant(s) for which the waterbody is impaired, must by April 30th of the following year or within 6 months of such approval of the 303(d) list or applicable TMDL or establishment of TMDL by EPA (whichever is longer), document in its BMP plan how the BMPs will control the discharge of the pollutant(s) of concern, and must ensure that there will be no increase of the pollutants of concern. A monitoring plan to assess the effectiveness of the BMPs in achieving the allocations must also be included in the BMP plan.

c. If the facility discharges to a waterbody described above, it must also determine whether a total maximum daily load (TMDL) has been developed and approved or established by EPA for the listed waterbody. If a TMDL is approved or established during this permit cycle by USEPA for any waterbody into which the facility discharges, the facility must review the applicable TMDL to see if it includes requirements for control of storm water

discharges. By April 30th of the following year or within 6 months of such approval of the 303(d) list or applicable TMDL or establishment of TMDL by EPA (whichever is longer), the facility must notify the Department on how it will modify its BMP plan to include best management practices specifically targeted to achieve the allocations prescribed by the TMDL. Revised BMP plans must be submitted to the Department for review. The facility must include a monitoring component in the BMP plan to assess the effectiveness of the BMPs in achieving the allocations. If the facility cannot ensure its discharges will not cause or contribute to impairment, then the facility must apply for and obtain permit coverage under an individual permit.

2. Requirements Applicable to a Facility Eligible for Coverage, or Covered, under this Permit with Discharges into Waters with EPA-Approved or EPA-Established TMDLs

a. The facility must determine whether the EPA-approved or EPA-established TMDL is for a pollutant likely to be found in discharges from its facility.

b. The facility must determine whether the TMDL includes a pollutant allocation or other performance requirements specifically for discharges from its facility.

c. If, after the determinations above have been made and if it is determined that the facility must implement specific allocations provisions of the TMDL, then the facility must assess whether the allocations are being met through implementation of existing control measures or if additional control measures are necessary.

d. The facility must document all control measures currently being implemented or planned to be implemented, to include a schedule of implementation for all planned controls, and must document calculations or other evidence showing that the allocations will be met. Revised BMP plans must be submitted to the Department for review.

e. If a TMDL contains requirements for control of pollutants from the facility's discharges, then the BMP plan must include BMPs specifically targeted to achieve the allocations prescribed by the TMDL. A monitoring plan to assess the effectiveness of the BMPs in achieving the allocations must also be included in the BMP plan. Implementation of the monitoring plan in accordance with Part IV.C.2 will determine whether the controls are adequate to meet the TMDL allocations. If the facility cannot comply with the requirements of the TMDL, then the facility must apply for and obtain permit coverage under an individual permit.

f. If the evaluation shows that additional or modified controls are necessary, the facility must describe the type and schedule for the control additions/revisions in the BMP plan. The facility must also continue Paragraphs IV.C.2.d.-f. until two continuous monitoring cycles, as defined in the monitoring plan in accordance with Part IV.C.2., show that the TMDL allocations are being met or that water quality (WQ) standards are being met.

3. Requirements for New or Revised BMP Plans

New or revised BMP plans developed in accordance with Parts IV.C.1 and IV.C.2 above must be submitted to the Department for review by April 30th of the year following EPA approval of the 303(d) list or EPA establishment/approval of applicable TMDL or within 6 months of such approval of the 303(d) list or applicable TMDL or establishment of TMDL by EPA (whichever is longer).

APPENDIX J

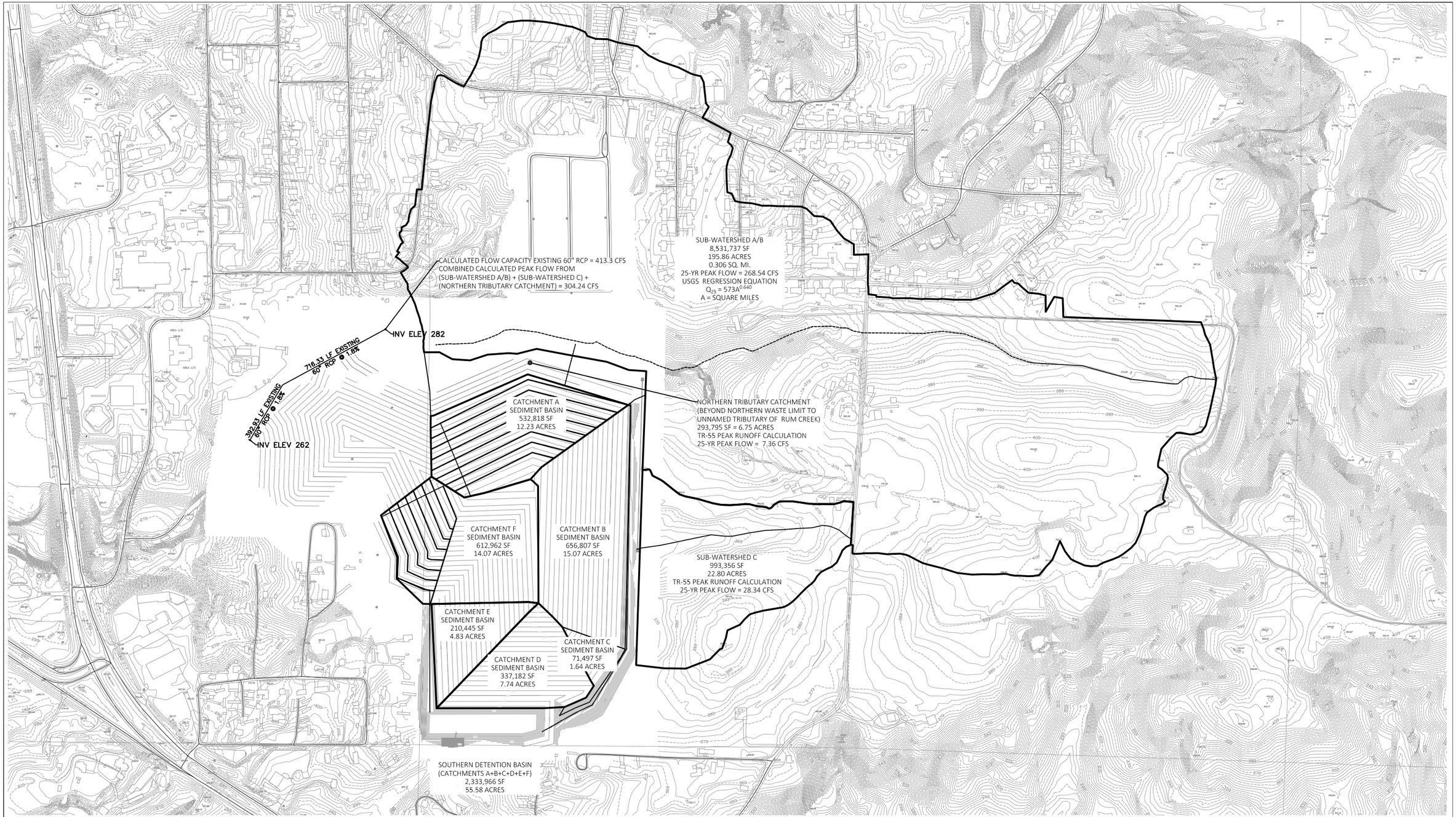
Stormwater Management Calculations
(Quantum Environmental and Engineering Services, LLC, 2017)

APPENDIX B:

Drainage Map and Calculations

APPENDIX B 1-a:

Drainage Map



NOTES:

Quantum Environmental & Engineering Services, LLC
126 Dante Road
Knoxville, TN 37918
PHONE (865) 689-1395, FAX (865) 689-6844

DESIGNED BY:	MDH
CHECKED BY:	GJH
CADQA BY:	GJH
DRAWN BY:	NDH
SCALE:	NTS
DATE:	06-06-2017
REVISION NO.:	0

UNISON ENVIRONMENTAL SERVICES, LLC
6315 12 TH AVENUE EAST
TUSCALOOSA, ALABAMA 35405

CYPRESS CREEK LANDFILL
TUSCALOOSA COUNTY, ALABAMA

DRAINAGE MAP

PROJECT NO.: 501266
FILENAME: 501266-App_A.dwg

APPENDIX B

SHEET 1 OF 1

APPENDIX B 1-b:

NOAA Precipitation – Tuscaloosa

NOAA Atlas 14, Volume 9, Version 2
TUSCALOOSA ACFD
Station ID: 01-8380
Location name: Tuscaloosa, Alabama, USA*
Latitude: 33.2119°, Longitude: -87.6161°
Elevation:
Elevation (station metadata): 169 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.422 (0.344-0.510)	0.490 (0.399-0.592)	0.597 (0.485-0.724)	0.684 (0.553-0.832)	0.799 (0.621-0.991)	0.884 (0.673-1.11)	0.967 (0.712-1.24)	1.05 (0.740-1.37)	1.15 (0.782-1.54)	1.22 (0.814-1.67)
10-min	0.618 (0.504-0.747)	0.717 (0.585-0.868)	0.875 (0.711-1.06)	1.00 (0.809-1.22)	1.17 (0.910-1.45)	1.29 (0.986-1.63)	1.42 (1.04-1.81)	1.53 (1.08-2.01)	1.68 (1.15-2.26)	1.79 (1.19-2.45)
15-min	0.754 (0.615-0.911)	0.875 (0.713-1.06)	1.07 (0.867-1.29)	1.22 (0.987-1.49)	1.43 (1.11-1.77)	1.58 (1.20-1.98)	1.73 (1.27-2.21)	1.87 (1.32-2.45)	2.05 (1.40-2.76)	2.19 (1.45-2.99)
30-min	1.11 (0.905-1.34)	1.29 (1.05-1.56)	1.58 (1.29-1.92)	1.82 (1.47-2.21)	2.12 (1.65-2.62)	2.34 (1.78-2.94)	2.55 (1.88-3.27)	2.76 (1.95-3.61)	3.01 (2.04-4.04)	3.19 (2.12-4.36)
60-min	1.46 (1.19-1.77)	1.71 (1.39-2.06)	2.09 (1.70-2.54)	2.40 (1.94-2.92)	2.81 (2.19-3.49)	3.12 (2.38-3.92)	3.42 (2.52-4.38)	3.71 (2.62-4.86)	4.07 (2.77-5.47)	4.34 (2.89-5.93)
2-hr	1.82 (1.50-2.18)	2.12 (1.74-2.54)	2.60 (2.13-3.12)	2.98 (2.43-3.60)	3.50 (2.75-4.32)	3.90 (2.99-4.86)	4.28 (3.18-5.45)	4.65 (3.31-6.07)	5.14 (3.52-6.86)	5.49 (3.68-7.46)
3-hr	2.04 (1.69-2.44)	2.37 (1.96-2.83)	2.90 (2.39-3.47)	3.35 (2.74-4.02)	3.95 (3.13-4.86)	4.42 (3.42-5.50)	4.89 (3.65-6.21)	5.36 (3.84-6.97)	5.98 (4.12-7.98)	6.46 (4.34-8.73)
6-hr	2.49 (2.08-2.94)	2.86 (2.39-3.39)	3.50 (2.91-4.15)	4.05 (3.35-4.82)	4.84 (3.88-5.96)	5.48 (4.29-6.82)	6.15 (4.65-7.80)	6.85 (4.96-8.90)	7.82 (5.44-10.4)	8.58 (5.80-11.5)
12-hr	3.02 (2.55-3.54)	3.44 (2.90-4.04)	4.20 (3.53-4.94)	4.89 (4.08-5.78)	5.93 (4.83-7.29)	6.80 (5.39-8.44)	7.74 (5.91-9.80)	8.74 (6.40-11.3)	10.2 (7.15-13.5)	11.3 (7.71-15.1)
24-hr	3.59 (3.06-4.17)	4.09 (3.48-4.76)	5.01 (4.25-5.84)	5.87 (4.94-6.87)	7.18 (5.91-8.78)	8.29 (6.63-10.2)	9.50 (7.33-12.0)	10.8 (7.99-14.0)	12.7 (9.01-16.8)	14.3 (9.78-18.9)
2-day	4.15 (3.57-4.79)	4.76 (4.08-5.48)	5.85 (5.01-6.76)	6.86 (5.84-7.96)	8.41 (6.98-10.2)	9.73 (7.85-11.9)	11.1 (8.66-13.9)	12.7 (9.44-16.2)	14.9 (10.6-19.5)	16.7 (11.5-22.0)
3-day	4.50 (3.89-5.16)	5.13 (4.43-5.89)	6.28 (5.41-7.22)	7.34 (6.28-8.48)	8.96 (7.47-10.8)	10.3 (8.37-12.6)	11.8 (9.22-14.7)	13.4 (10.0-17.1)	15.7 (11.3-20.5)	17.6 (12.2-23.1)
4-day	4.83 (4.20-5.52)	5.46 (4.74-6.24)	6.60 (5.71-7.57)	7.66 (6.58-8.81)	9.28 (7.78-11.2)	10.7 (8.68-12.9)	12.2 (9.52-15.1)	13.8 (10.3-17.5)	16.1 (11.6-21.0)	18.0 (12.5-23.6)
7-day	5.84 (5.12-6.63)	6.41 (5.61-7.28)	7.47 (6.51-8.50)	8.47 (7.33-9.67)	10.0 (8.46-12.0)	11.4 (9.32-13.7)	12.8 (10.1-15.8)	14.4 (10.9-18.2)	16.8 (12.1-21.7)	18.7 (13.1-24.3)
10-day	6.71 (5.90-7.58)	7.28 (6.39-8.22)	8.33 (7.29-9.44)	9.33 (8.12-10.6)	10.9 (9.22-12.9)	12.2 (10.1-14.6)	13.7 (10.8-16.7)	15.3 (11.6-19.2)	17.6 (12.7-22.6)	19.5 (13.6-25.3)
20-day	8.93 (7.94-9.99)	9.74 (8.65-10.9)	11.1 (9.85-12.5)	12.4 (10.9-13.9)	14.1 (12.0-16.5)	15.6 (12.9-18.4)	17.1 (13.6-20.7)	18.7 (14.2-23.2)	21.0 (15.3-26.7)	22.7 (16.0-29.3)
30-day	10.8 (9.70-12.1)	11.9 (10.6-13.3)	13.7 (12.2-15.3)	15.1 (13.4-17.0)	17.2 (14.6-19.8)	18.8 (15.6-21.9)	20.4 (16.3-24.4)	22.0 (16.8-27.0)	24.2 (17.6-30.5)	25.8 (18.3-33.2)
45-day	13.5 (12.1-14.9)	14.8 (13.3-16.4)	17.0 (15.2-18.9)	18.8 (16.7-21.0)	21.2 (18.1-24.1)	22.9 (19.1-26.5)	24.6 (19.7-29.2)	26.3 (20.1-32.0)	28.4 (20.7-35.5)	29.9 (21.3-38.2)
60-day	15.8 (14.3-17.5)	17.5 (15.8-19.3)	20.0 (18.0-22.1)	22.0 (19.6-24.4)	24.6 (21.0-27.9)	26.5 (22.1-30.5)	28.2 (22.7-33.3)	29.9 (22.9-36.2)	31.9 (23.4-39.8)	33.4 (23.8-42.5)

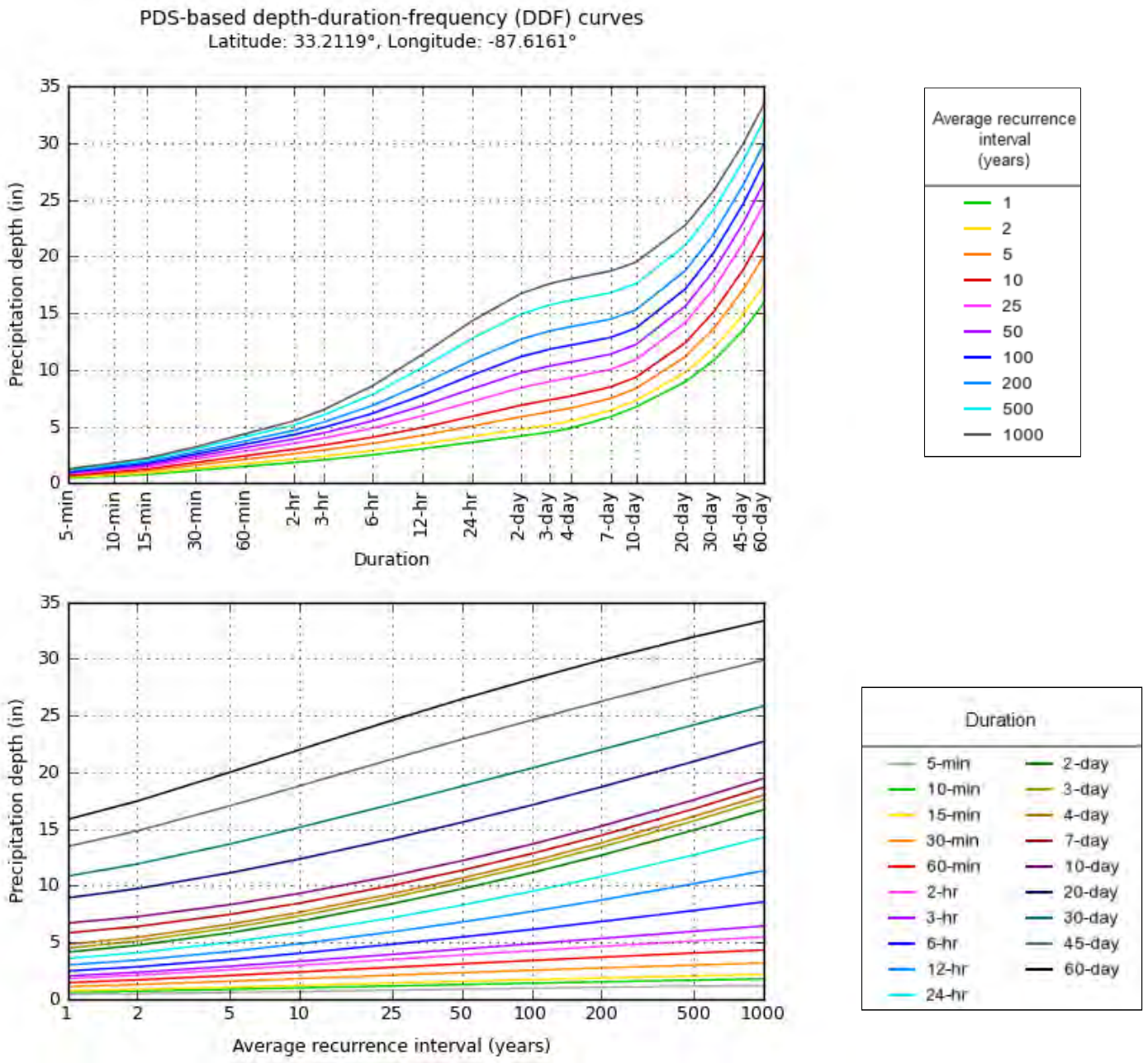
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Wed Mar 15 19:20:16 2017

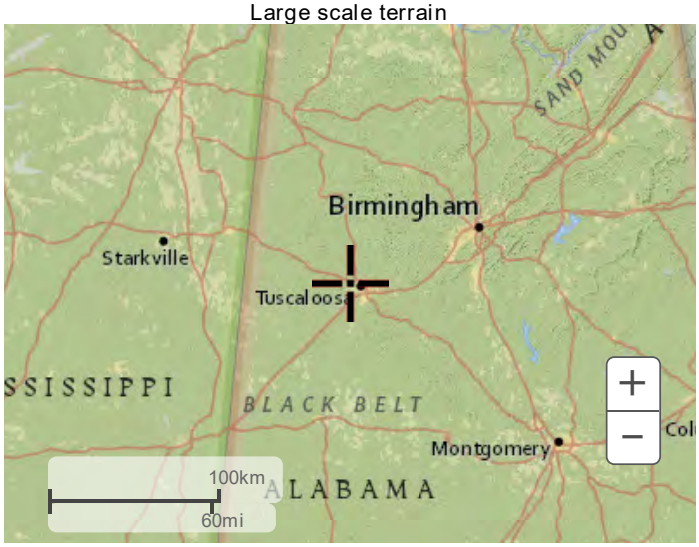
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Maps & aerials

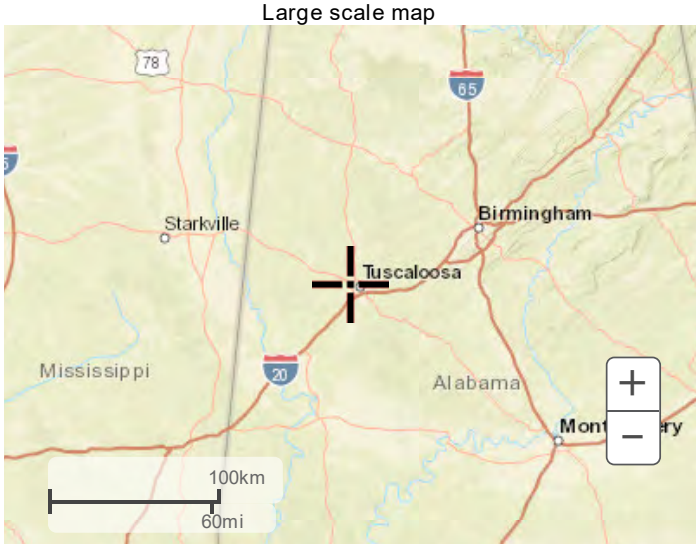
Small scale terrain



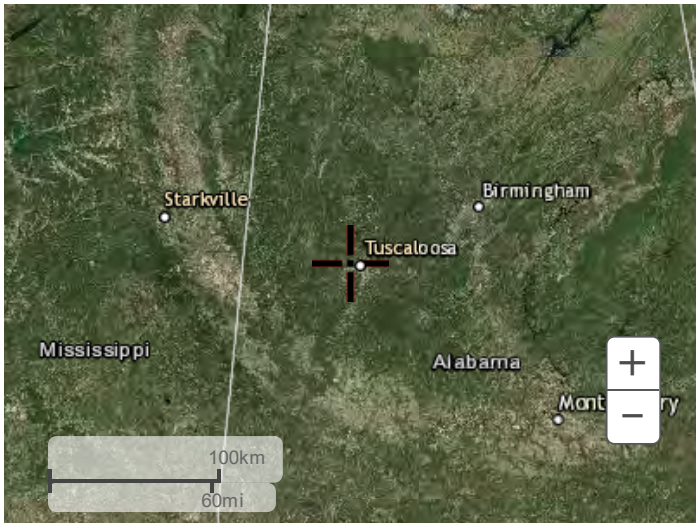
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX B 2a:

Run-On: Sub-Watershed A-B – Alabama Regression Model

Cypress Creek Landfill Sub-Watershed A/B

Run-On Calculation

The National Flood-Frequency Program

Methods for Estimating Flood Magnitude

And

Frequency in Rural and Urban Areas in Alabama

The Cypress Creek Landfill Drainage Map provides areas for Sub-Watershed A/B and Sub-Watershed C, providing input for an off-site run-on calculation. Using these areas, the 25-year Peak Flow for run-on can be calculated. Given the large size of Sub-Watershed A/B, which exceeds the accuracy limitations of the TR-55 Method, employing regression equations from the USGS National Flood-Frequency Program—Methods for Estimating Flood Magnitude and Frequency in Rural and Urban Areas in Alabama is appropriate for peak flow calculation

Per the National Flood-Frequency Program—Methods for Estimating Flood Magnitude and Frequency in Rural and Urban Areas in Alabama, the following formula was selected for calculating peak flow, in cubic feet per second (CFS), for a Region 2 site and 25-year Design Storm:

$\text{Area}_{\text{Sub-Watershed A/B}}$ = 8,531,737 square feet = 195.86 acres

$\text{Area}_{\text{Sub-Watershed A/B}}$ = 0.306 square miles

$Q_{25\ \text{Sub-Watershed A/B}}$ = 25-Year Design Storm Peak Flow

$Q_{25\ \text{Sub-Watershed A/B}} = 573A^{0.640}$

$Q_{25\ \text{Sub-Watershed A/B}} = 573(0.306)^{0.640}$

$Q_{25\ \text{Sub-Watershed A/B}}$ = 268.54 CFS

APPENDIX B 2b:

Run-On: Sub-Watershed A-B

USGS The National Flood-Frequency Program – Methods for Estimating Flood Magnitude and Frequency in Rural and Urban Areas in Alabama

USGS
science for a changing world

The National Flood-Frequency Program—Methods for Estimating Flood Magnitude and Frequency in Rural and Urban Areas in Alabama

Introduction

Estimates of the magnitude and frequency of flood-peak discharges and flood hydrographs are used for a variety of purposes, such as for the design of bridges, culverts, and flood-control structures; and for the management and regulation of flood plains. To provide simple methods of estimating flood-peak discharges, the U.S. Geological Survey (USGS) has developed and published equations for every State, the Commonwealth of Puerto Rico, and a number of metropolitan areas in the United States. In 1993, the USGS, in cooperation with the Federal Emergency Management Agency and the Federal Highway Administration, compiled all current USGS statewide and metropolitan area equations into a computer program, titled "The National Flood-Frequency (NFF) Program" (Jennings and others, 1994).

Since 1993, new or updated equations have been developed by the USGS for various areas of the Nation. These new equations have been incorporated into an updated version of the NFF Program.

Fact sheets that describe application of the updated NFF Program to various areas of the Nation are available. This fact sheet describes the application of the updated NFF Program to streams that drain rural and urban areas in Alabama.

Rural Basins

Alabama is divided into four hydrologic regions (fig. 1) on the basis of geology, physiography, and analyses of flood-frequency distributions. Atkins (1996) developed regression equations for estimating peak discharges (Q_T), in cubic feet per second, that have recurrence intervals (T) that range from 2 to 500 years for ungaged, unregulated, rural streams. The regression equations are not applicable to streams in urban areas, which were defined by Atkins (1996) as sites in which more than 5 percent of the drainage area is covered by impervious surfaces, or regulated or channelized streams.

Contributing drainage area (A) is the most statistically significant explanatory watershed variable and the only explanatory watershed variable that is used in the regression equations. Contributing drainage area is the total area that contributes runoff upstream of the stream site of interest. Contributing drainage areas were measured in square miles for the equations determined by Atkins (1996), but the NFF Program will accept input and report results in either the inch-pound or metric system of units.

The regression equations, the average standard errors of prediction, the equiva-

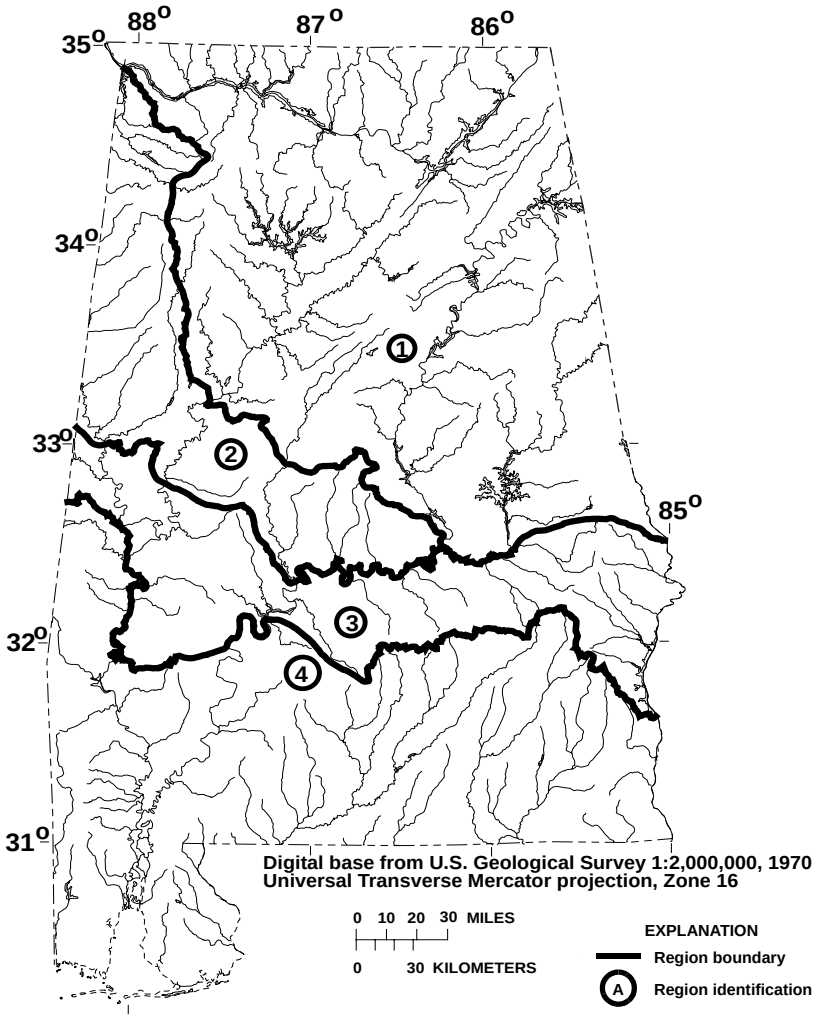


Figure 1. Hydrologic regions for Alabama.

lent years of record, and the range of the drainage area that is applicable for use in the equations are shown in table 1. The average standard error of prediction is a measure of the average accuracy of a regression equations when used to estimate peak-discharge values for ungaged watersheds similar to those that were used to derive the regression equations. The equivalent years of record is the number of years of streamflow record needed to achieve the same accuracy as the regression equation. The standard error of prediction increases appreciably when drainage-area values that are outside the quoted range of data used to develop the equations are applied in the equation.

When the drainage area of the site of interest is in more than one region, a weighted estimate of the peak discharge should be computed. The equations for the appropriate regions should be applied independently using basinwide estimates of the required explanatory variables as if the entire basin was in each region. The weighted estimate is then computed by multiplying each regional estimate against the fraction of the drainage area in that region and summing the products. The NFF Program provides an algorithm for this computation.

The regression equations were developed by using peak-discharge data for streamflow-gaging stations with at least 10 years of record collected through September 1991 at 198 locations in Alabama and 72 locations in Florida, Georgia, Mississippi, and Tennessee. Atkins (1996) summarized observed station-record, peak-discharge estimates, and regression-weighted estimates for 270 streamflow-gaging stations in Alabama and parts of adjacent States. Atkins (1996) also presented graphs of peak discharge as a function of drainage area for selected recurrence intervals for the Alabama, the Black Warrior, the Cahaba, the Choctawhatchee, the Conecuh, and the Tombigbee Rivers.

Urban Basins

Olin and Bingham (1982) developed regression equations for estimating urban peak discharges (Q_T) that have recurrence intervals (T) that range from 2 to 100 years (table 2). The explanatory basin variables used in the equations are contributing drainage area (A), in square miles, and the

Table 1. Flood-peak discharge regression equations and associated statistics for streams that drain rural areas in Alabama (modified from Atkins, 1996)

[Q_T, peak discharge for recurrence interval T, 2 to 500 years, in cubic feet per second; A, contributing drainage area; Do., ditto]

Regression equation	Average standard error of prediction, in percent	Equivalent years of record	Applicable range of drainage area, in square miles
Region 1			
$Q_2 = 227A^{0.672}$	35	3	0.44–1,027
$Q_5 = 374A^{0.669}$	34	4	Do.
$Q_{10} = 482A^{0.669}$	35	5	Do.
$Q_{25} = 627A^{0.668}$	37	7	Do.
$Q_{50} = 739A^{0.667}$	39	7	Do.
$Q_{100} = 855A^{0.667}$	41	8	Do.
$Q_{200} = 974A^{0.666}$	43	9	Do.
$Q_{500} = 1{,}135A^{0.666}$	46	9	Do.
Region 2			
$Q_2 = 163A^{0.664}$	40	3	0.13–831
$Q_5 = 295A^{0.654}$	36	4	Do.
$Q_{10} = 406A^{0.648}$	35	6	Do.
$Q_{25} = 573A^{0.640}$	35	9	Do.
$Q_{50} = 716A^{0.634}$	36	10	Do.
$Q_{100} = 877A^{0.628}$	37	11	Do.
$Q_{200} = 1{,}057A^{0.622}$	39	12	Do.
$Q_{500} = 1{,}327A^{0.614}$	43	12	Do.
Region 3			
$Q_2 = 347A^{0.573}$	37	3	0.44–1,097
$Q_5 = 517A^{0.607}$	35	5	Do.
$Q_{10} = 638A^{0.626}$	34	7	Do.
$Q_{25} = 796A^{0.648}$	33	10	Do.
$Q_{50} = 914A^{0.663}$	33	12	Do.
$Q_{100} = 1{,}032A^{0.677}$	33	15	Do.
$Q_{200} = 1{,}148A^{0.689}$	34	17	Do.
$Q_{500} = 1{,}302A^{0.704}$	35	18	Do.
Region 4			
$Q_2 = 169A^{0.616}$	38	3	1.44–1,344
$Q_5 = 313A^{0.608}$	33	6	Do.
$Q_{10} = 444A^{0.600}$	33	9	Do.
$Q_{25} = 650A^{0.592}$	35	12	Do.
$Q_{50} = 831A^{0.587}$	38	13	Do.
$Q_{100} = 1{,}035A^{0.583}$	42	13	Do.
$Q_{200} = 1{,}262A^{0.579}$	46	13	Do.
$Q_{500} = 1{,}601A^{0.576}$	52	13	Do.

Table 2. Flood-peak discharge regression equations and associated statistics for streams that drain urban areas in Alabama (from Olin and Bingham, 1982)

[Q_T, peak discharge for recurrence interval T, 2 to 100 years, in cubic feet per second; A, contributing drainage area; IA, impervious area; do., Do., ditto]

Regression equation	Average standard error of estimate, in percent	Applicable range of drainage area, in square miles	Applicable range of percent impervious area
$Q_2 = 150A^{0.70}\ IA^{0.36}$	26	0.16–83.5	8.3–42.9
$Q_5 = 210A^{0.70}\ IA^{0.39}$	24	do.	Do.
$Q_{10} = 266A^{0.69}\ IA^{0.39}$	24	do.	Do.
$Q_{25} = 337A^{0.69}\ IA^{0.39}$	24	do.	Do.
$Q_{50} = 396A^{0.69}\ IA^{0.38}$	25	do.	Do.
$Q_{100} = 444A^{0.69}\ IA^{0.39}$	25	do.	Do.

percentage of the basin that is covered by impervious area (IA). These variables can be estimated from topographic maps; IA can also be estimated from aerial photographs. The applicable range of basin variables used to develop the equations and the standard errors of estimate are summarized in table 2. The standard error of estimate is the standard deviation of the regression residuals and is a measure of the accuracy of a regression equation applied to the data used to develop the regression.

The urban equations are not applicable to region 3 (fig. 1), which is underlain by impervious chalk and marl. Caution should be used in estimating flood magnitudes in basins underlain by soluble limestone and in basins with sinkholes, quarries, or storage reservoirs. Such features can be identified by study of geologic and topographic maps or by reconnaissance of the basin. The equations do not apply to urban streams that are subject to temporary in-channel storage or overbank storage. For basins that contain less than 5 percent impervious area, the rural equations should be used.

Prepared by Robert R. Mason, Jr., of the U.S. Geological Survey; and Jeffrey N. King and Wilbert O. Thomas, Jr., of Michael Baker, Jr., Inc.

References

Atkins, J.B., 1996, Magnitude and frequency of floods in Alabama: U.S. Geological Survey Water-Resources Investigations Report 95–4199, 234 p.

Jennings, M.E., Thomas, W.O., Jr., and Riggs, H.C., comps., 1994, Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites, 1993: U.S. Geological Survey Water-Resources Investigations Report 94–4002, 196 p.

Olin, D.A., and Bingham, R.H., 1982, Synthesized flood-frequency of urban streams in Alabama: U.S. Geological Survey Water-Resources Investigations Report 82–683, 23 p.

Fact Sheet FS-088-97
Month and Year

For more information contact:

U.S. Geological Survey
Office of Surface Water
415 National Center
Reston, Virginia 20192
(703) 648-5301

USGS hydrologic analysis software is available for electronic retrieval through the World Wide Web (WWW) at http://water.usgs.gov/software/ and through anonymous File Transfer Protocol (FTP) from water.usgs.gov (directory: /pub/software). The WWW page and anonymous FTP directory from which the National Flood-Frequency software and user documentation can be retrieved are http://water.usgs.gov/software/nff.html and /pub/software/surface_water/nff, respectively.

Additional earth science information is available from the USGS through the WWW at http://www.usgs.gov/ or by calling 1-800-426-9000.

APPENDIX B 2c:

Run-On: Sub-Watershed A-B – Time of Concentration

Measured from East to West in Sub-Watershed A/B:

272.72 LF of Sheet Flow at 4.15% (383.33' - 372' = 11.33)

909.33 LF of Shallow Concentrated Flow at 0.66% (372' - 366' = 6.0')

3802.67 LF of Channelized Flow at 2.19% (366' - 282.8'= 82.3')

APPENDIX B 3a:

Run-On: Sub-Watershed C – WinTR-55

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Sub-Watershed C
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Sedimentation Ponds\CCL - S

Date: 4/7/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Sub-W C	Pasture	Outlet	22.8	51	.624

Total area: 22.80 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Sub-Watershed C
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Sub-Watershed C
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Sub-W C	28.34
REACHES	
OUTLET	28.34

Hogan

Cypress Creek Landfill
Sub-Watershed C
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Sub-W C	28.34 12.31
REACHES	
OUTLET	28.34

Hogan

Cypress Creek Landfill
Sub-Watershed C
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Sub-W C	22.80	0.624	51	Outlet	Pasture

Total Area: 22.80 (ac)

Cypress Creek Landfill
Sub-Watershed C
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Sub-W C							
SHEET	30	0.0167	0.240				0.086
SHALLOW	398	0.0176	0.050				0.052
CHANNEL	922	0.0076	0.240	50.00	52.00	0.527	0.486
					Time of Concentration		.624

Cypress Creek Landfill
Sub-Watershed C
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Sub-W C	Pasture, grassland or range	(good)	A	10.078	39
	Pasture, grassland or range	(good)	B	12.722	61
	Total Area / Weighted Curve Number			22.8	51
				====	==

APPENDIX B 3b:

Run-On: Sub-Watershed C – Soils Report and Curve Number

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Tuscaloosa County, Alabama

CYPRESS CREEK LANDFILL - SUB-WATERSHED C



March 30, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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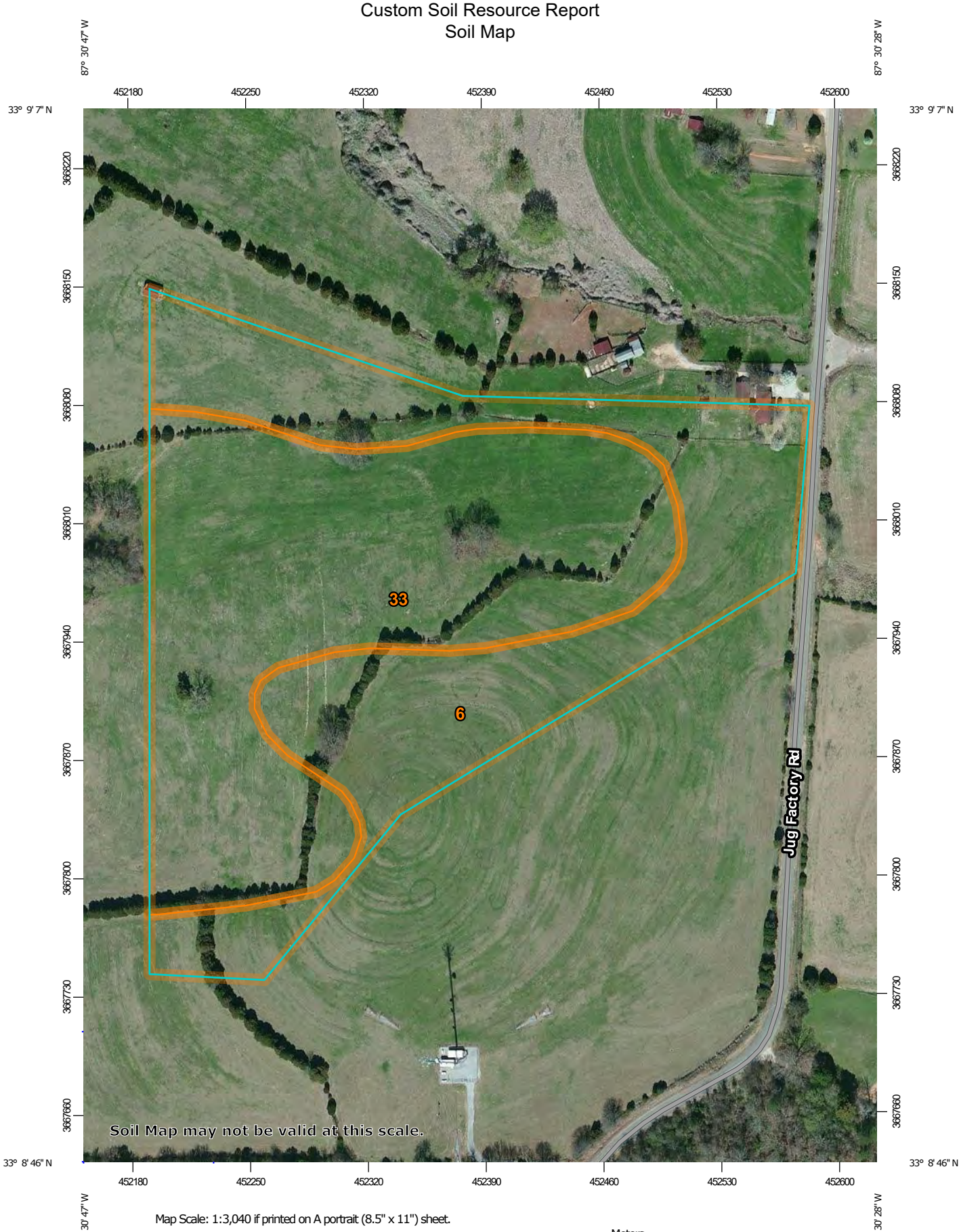
Contents

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33—Smithdale fine sandy loam, 6 to 15 percent slopes..... 11

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,040 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tuscaloosa County, Alabama
Survey Area Data: Version 10, Sep 23, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 22, 2011—Mar 16, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Tuscaloosa County, Alabama (AL125)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
6	Bama fine sandy loam, 2 to 6 percent slopes	10.4	44.2%
33	Smithdale fine sandy loam, 6 to 15 percent slopes	13.1	55.8%
Totals for Area of Interest		**23.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Tuscaloosa County, Alabama

6—Bama fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: c3zs
Elevation: 660 to 1,310 feet
Mean annual precipitation: 40 to 56 inches
Mean annual air temperature: 52 to 75 degrees F
Frost-free period: 200 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bama and similar soils: 85 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bama

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy fluviomarine deposits derived from sedimentary rock

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 54 inches: sandy clay loam
H3 - 54 to 72 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Boswell

Percent of map unit: 3 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

Luverne

Percent of map unit: 2 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ruston

Percent of map unit: 2 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Smithdale

Percent of map unit: 2 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

33—Smithdale fine sandy loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2sh4n
Elevation: 150 to 500 feet
Mean annual precipitation: 40 to 67 inches
Mean annual air temperature: 51 to 72 degrees F
Frost-free period: 190 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Smithdale and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Smithdale

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits derived from sedimentary rock

Typical profile

Ap - 0 to 6 inches: fine sandy loam
Bt1 - 6 to 45 inches: sandy clay loam
Bt2 - 45 to 85 inches: sandy loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Luverne

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Maubila

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Unnamed hydric soils (133dr)

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Saffell

Percent of map unit: 2 percent
Landform: Knolls
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

APPENDIX B 4a:

Run-On: WinTR-55 – Northern Tributary Catchment

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Northern Tributary Catchment
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 6/6/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
N Trib Cat	Pasture	Outlet	6.76	40	0.1

Total area: 6.76 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Northern Tributary Catchment
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Northern Tributary Catchment
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
N Trib Cat	7.36
REACHES	
OUTLET	7.36

Cypress Creek Landfill
Northern Tributary Catchment
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
N Trib Cat	7.36 12.02
REACHES	
OUTLET	7.36

Hogan

Cypress Creek Landfill
Northern Tributary Catchment
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
N Trib Cat	6.76	0.100	40	Outlet	Pasture

Total Area: 6.76 (ac)

Cypress Creek Landfill
Northern Tributary Catchment
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
N Trib Cat							
SHEET	30	0.3333	0.400				0.039
SHALLOW	230	0.2261	0.050				0.008
						Time of Concentration	0.1

Cypress Creek Landfill
Northern Tributary Catchment
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
N Trib Cat	Woods - grass combination	(good)	A	4.806	32
	Woods - grass combination	(good)	B	1.951	58
	Total Area / Weighted Curve Number			6.76	40

APPENDIX B 4b:

Run-On: Northern Tributary Catchment – Curve Number

Composite Curve Number Calculation was based on the overall Soils Map for Cypress Creek Landfill

Northern Tributary Catchment = 6.75 Acres

Bama 26.1% HSG: A = 1.76175 Acres

Ruston 0.1% HSG: B = .00675 Acres

Smithdale fine 28.8% HSG: B = 1.944 Acres

Smithdale-Flomaton 45.1% HSG: A = 3.04425 Acres

HSG: A = 4.806 Acres

HSG: B = 1.95075 Acres

APPENDIX B 5:

Run-On: Pipe Flow Capacities

PROJECT: CYPRESS CREEK
PROJ NO: 501266
DATE: 6/6/2017
CALCULATED BY: MDH
DESIGN STORM: 25 YR.

PIPE FLOW - CALCULATED BY MANNINGS EQUATION

OUTLET PIPE	PIPE MATERIAL	PIPE LENGTH (FT) L	INLET WATER SURFACE ELEV	OUTLET WATER SURFACE ELEV	ELEV DIFF. (FT) H	HYD SLOPE (%) S	MANNINGS COEF (n) n	PIPE DIAM. (FT) D	FLOW AREA (SQ FT) A	WETTED PERIM (FT) WP	HYD RADIUS (FT) HR	PIPE VELOCITY (FPS) V	CAPACITY FLOW (CFS) Q	REQUIRED FLOW (CFS) Qr
Sub-Watershed C	36" HDPE CPP	1030	349	330	19.0	1.84%	0.012	3	7.06858	9.4	0.75	13.88	98.1	28.34
Run-On Discharge	EXISTING 60" RCP	1109	282	262	20.0	1.80%	0.011	5	19.635	15.7	1.25	21.05	413.3	304.24

APPENDIX B 6a:

Run-Off: Cypress Creek Landfill Soils Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Tuscaloosa County, Alabama

CYPRESS CREEK LANDFILL



March 30, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:6,030 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tuscaloosa County, Alabama
Survey Area Data: Version 10, Sep 23, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 22, 2011—Mar 16, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Tuscaloosa County, Alabama (AL125)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
6	Bama fine sandy loam, 2 to 6 percent slopes	30.2	26.1%
28	Ruston fine sandy loam, 2 to 5 percent slopes	0.1	0.1%
33	Smithdale fine sandy loam, 6 to 15 percent slopes	33.3	28.8%
35	Smithdale-Flomaton complex, 15 to 35 percent slopes	52.1	45.1%
Totals for Area of Interest		**115.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Tuscaloosa County, Alabama

6—Bama fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: c3zs
Elevation: 660 to 1,310 feet
Mean annual precipitation: 40 to 56 inches
Mean annual air temperature: 52 to 75 degrees F
Frost-free period: 200 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bama and similar soils: 85 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bama

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy fluviomarine deposits derived from sedimentary rock

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 54 inches: sandy clay loam
H3 - 54 to 72 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Boswell

Percent of map unit: 3 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

Luverne

Percent of map unit: 2 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ruston

Percent of map unit: 2 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Smithdale

Percent of map unit: 2 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

28—Ruston fine sandy loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tjks
Elevation: 150 to 460 feet
Mean annual precipitation: 55 to 68 inches
Mean annual air temperature: 59 to 70 degrees F
Frost-free period: 200 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ruston and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ruston

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy fluviomarine deposits derived from sedimentary rock

Typical profile

Ap - 0 to 4 inches: fine sandy loam
E - 4 to 8 inches: sandy loam
Bt - 8 to 23 inches: sandy clay loam
Bt/E - 23 to 36 inches: sandy loam
B't - 36 to 84 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Bama

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Smithdale

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

33—Smithdale fine sandy loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2sh4n
Elevation: 150 to 500 feet
Mean annual precipitation: 40 to 67 inches
Mean annual air temperature: 51 to 72 degrees F
Frost-free period: 190 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Smithdale and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Smithdale

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits derived from sedimentary rock

Typical profile

Ap - 0 to 6 inches: fine sandy loam
Bt1 - 6 to 45 inches: sandy clay loam
Bt2 - 45 to 85 inches: sandy loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Luverne

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Maubila

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Unnamed hydric soils (133dr)

Percent of map unit: 2 percent
Landform: Drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Saffell

Percent of map unit: 2 percent
Landform: Knolls
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

35—Smithdale-Flomaton complex, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: c3zh
Elevation: 660 to 2,160 feet
Mean annual precipitation: 40 to 56 inches
Mean annual air temperature: 52 to 75 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Smithdale and similar soils: 45 percent
Flomaton and similar soils: 20 percent
Minor components: 7 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Smithdale

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits derived from sedimentary rock

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 42 inches: loam
H3 - 42 to 72 inches: sandy loam

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Flomaton

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly fluviomarine deposits derived from sedimentary rock

Typical profile

H1 - 0 to 27 inches: gravelly loamy sand
H2 - 27 to 72 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Bama

Percent of map unit: 3 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Montevallo

Percent of map unit: 2 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Nauvoo

Percent of map unit: 2 percent
Landform: Ridges
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

APPENDIX B 6b:

Run-Off: Catchments A, B, C, D, E & F Curve Number

Composite Curve Number Calculation was based on the overall Soils Map for Cypress Creek Landfill

****
EASTERN SWALE
****

Catchment A = 12.23 Acres

Bama 26.1% HSG: A = 3.19203 Acres

Ruston 0.1% HSG: B = .01223 Acres

Smithdale fine 28.8% HSG: B = 3.5224 Acres

Smithdale-Flomaton 45.1% HSG: A = 5.51573 Acres

HSG: A = 8.71 Acres

HSG: B = 3.53 Acres

Catchment B = 15.07 Acres

Bama 26.1% HSG: A = 3.93327 Acres

Ruston 0.1% HSG: B = 0.01507 Acres

Smithdale fine 28.8% HSG: B = 4.34016 Acres

Smithdale-Flomaton 45.1% HSG: A = 6.79657 Acres

HSG: A = 10.73 Acres

HSG: B = 4.36 Acres

Catchment c = 1.64 Acres

Bama 26.1% HSG: A = 0.42804 Acres

Ruston 0.1% HSG: B = 0.00164 Acres

Smithdale fine 28.8% HSG: B = 0.47232 Acres

Smithdale-Flomaton 45.1% HSG: A = 0.73964 Acres

HSG: A = 1.17 Acres

HSG: B = 0.47 Acres

Catchment A + B = 27.33 Acres

HSG: A = 19.44 Acres

HSG: B = 7.89 Acres

Catchment A + B + C = 28.97 Acres

HSG: A = 20.61 Acres

HSG: B = 8.36 Acres

****
DIRECT SURFACE RUN-OFF FLOW TO POND
****

Catchment D = 7.74 Acres

Bama 26.1% HSG: A = 2.02014 Acres

Ruston 0.1% HSG: B = .00774 Acres

Smithdale fine 28.8% HSG: B = 2.22912 Acres

Smithdale-Flomaton 45.1% HSG: A = 3.49074 Acres

HSG: A = 5.51 Acres

HSG: B = 2.24 Acres

****
WESTERN SWALE
****

Catchment E = 4.83 Acres

Bama 26.1% HSG: A = 1.26063 Acres

Ruston 0.1% HSG: B = .00483 Acres

Smithdale fine 28.8% HSG: B = 1.39104 Acres

Smithdale-Flomaton 45.1% HSG: A = 2.17833 Acres

HSG: A = 3.44 Acres

HSG: B = 1.40 Acres

Catchment F = 14.07 Acres

Bama 26.1% HSG: A = 3.67227 Acres

Ruston 0.1% HSG: B = .01407 Acres

Smithdale fine 28.8% HSG: B = 4.05216 Acres

Smithdale-Flomaton 45.1% HSG: A = 6.34557 Acres

HSG: A = 10.02 Acres

HSG: B = 4.07 Acres

Catchment F + E

HSG: A = 13.46 Acres

HSG: B = 5.47 Acres

APPENDIX B 7:

Run-Off: Conveyance Geometry

Catchment A

Terraces:

Cross-sectional Area = (2 sides of v-shaped terrace ditch) x (0.5)(10.0' base)(1.0' depth)
Cross-sectional Area = 10 SF

Wetted Perimeter => side slope length = sqrt((1^2) + (10^2)) = 10.05'
Wetted Perimeter = (2 sides) x (10.05')
Wetted Perimeter = 20.1'

Eastern Swale (From Sheet C-2, Section A-A'):
Assume 3.0' depth with 1.0' freeboard

Cross-Sectional Area = (6.0' x 3.0') + {(2 sides) x (0.5)(9.0' base)(3.0' depth)}
Cross-sectional Area = (18 SF) + (27 SF)
Cross-sectional Area = 45 SF

Wetted Perimeter => side slope length = sqrt((3^2) + (9^2)) = 9.4868'
Wetted Perimeter = (2 sides) x (9.4868')
Wetted Perimeter = 18.974'

APPENDIX B 8:

Run-Off: WinTR-55 – Catchment A

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Catchment A
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 4/20/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Catch A	Landfill	Outlet	12.24	80	0.1

Total area: 12.24 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Catch A	90.36
REACHES	
OUTLET	90.36

Hogan

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Catch A	90.36 11.93
REACHES	
OUTLET	90.36

Hogan

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Catch A	12.24	0.100	80	Outlet	Landfill

Total Area: 12.24 (ac)

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Catch A							
SHEET	30	0.3333	0.011				0.002
SHALLOW	453	0.3333	0.050				0.014
CHANNEL	600	0.0167	0.011	10.00	20.10	11.111	0.015
CHANNEL	650	0.0154	0.011	10.00	20.10	10.621	0.017
					Time of Concentration		0.1

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Catch A	Newly graded area (pervious only)	A	8.71	77
	Newly graded area (pervious only)	B	3.53	86
	Total Area / Weighted Curve Number		12.24	80

APPENDIX B 9:

Run-Off: WinTR-55 – Catchments A & B

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Catchment A+B
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 4/20/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Catch A+B	Landfill	Outlet	27.33	80	0.1

Total area: 27.33 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment A+B
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment A+B
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Catch A+B	201.70
REACHES	
OUTLET	201.70

Cypress Creek Landfill
Catchment A+B
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Catch A+B	201.70 11.93
REACHES	
OUTLET	201.70

Cypress Creek Landfill
Catchment A+B
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Catch A+B	27.33	0.100	80	Outlet	Landfill

Total Area: 27.33 (ac)

Cypress Creek Landfill
Catchment A+B
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Catch A+B							
SHEET	30	0.3333	0.011				0.002
SHALLOW	453	0.3333	0.050				0.014
CHANNEL	1250	0.0161	0.011	10.00	20.10	10.851	0.032
CHANNEL	1490	0.0050	0.011	45.00	18.97	17.245	0.024
					Time of Concentration		0.1

Cypress Creek Landfill
Catchment A+B
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Catch A+B	Newly graded area (pervious only)	A	19.44	77
	Newly graded area (pervious only)	B	7.89	86
	Total Area / Weighted Curve Number		27.33	80

APPENDIX B 10:

Run-Off: WinTR-55 – Catchments A, B & C

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Catchment A
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 4/20/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Cat A+B+C	Landfill	Outlet	28.97	80	0.1

Total area: 28.97 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Cat A+B+C	213.84
REACHES	
OUTLET	213.84

Hogan

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Cat A+B+C	213.84 11.93
REACHES	
OUTLET	213.84

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Cat A+B+C	28.97	0.100	80	Outlet	Landfill

Total Area: 28.97 (ac)

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Cat A+B+C							
SHEET	30	0.3333	0.011				0.002
SHALLOW	453	0.3333	0.050				0.014
CHANNEL	1250	0.0160	0.011	10.00	20.10	10.851	0.032
CHANNEL	2239	0.0094	0.011	45.00	18.97	23.035	0.027
					Time of Concentration		0.1

Cypress Creek Landfill
Catchment A
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Cat A+B+C	Newly graded area (pervious only)	A	20.61	77
	Newly graded area (pervious only)	B	8.36	86
	Total Area / Weighted Curve Number		28.97	80

APPENDIX B 11:

Run-Off: WinTR-55 – Catchment D

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Catchment D
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 4/20/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Catch D	Landfill	Outlet	7.75	80	0.1

Total area: 7.75 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment D
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment D
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Catch D	57.20
REACHES	
OUTLET	57.20

Hogan

Cypress Creek Landfill
Catchment D
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Catch D	57.20 11.93
REACHES	
OUTLET	57.20

Hogan

Cypress Creek Landfill
Catchment D
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Catch D	7.75	0.100	80	Outlet	Landfill

Total Area: 7.75 (ac)

Cypress Creek Landfill
Catchment D
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Catch D							
SHEET	30	0.3333	0.011				0.002
SHALLOW	614	0.0176	0.050				0.080
						Time of Concentration	0.1

Cypress Creek Landfill
Catchment D
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Catch D	Newly graded area (pervious only)	A	5.51	77
	Newly graded area (pervious only)	B	2.24	86
	Total Area / Weighted Curve Number		7.75	80

APPENDIX B 12:

Run-Off: WinTR-55 – Catchment F

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Catchment F
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 4/20/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Catch F	Landfill	Outlet	14.09	80	0.1

Total area: 14.09 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment F
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment F
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Catch F	104.01
REACHES	
OUTLET	104.01

Hogan

Cypress Creek Landfill
Catchment F
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Catch F	104.01 11.93
REACHES	
OUTLET	104.01

Cypress Creek Landfill
Catchment F
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Catch F	14.09	0.100	80	Outlet	Landfill

Total Area: 14.09 (ac)

Cypress Creek Landfill
Catchment F
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Catch F							
SHEET	30	0.3333	0.011				0.002
SHALLOW	390	0.3333	4.09				0.012
CHANNEL	609	0.0164	0.011	10.00	20.10	10.573	0.016
CHANNEL	79	0.3777	0.011	45.00	18.97		0.000
					Time of Concentration		0.1

Cypress Creek Landfill
Catchment F
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Catch F	Newly graded area (pervious only)	A	10.02	77
	Newly graded area (pervious only)	B	4.07	86
	Total Area / Weighted Curve Number		14.09	80

APPENDIX B 13:

Run-Off: WinTR-55 – Catchments F & E

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Catchment F+E
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 4/20/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Catch F+E	Landfill	Outlet	18.93	80	0.1

Total area: 18.93 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment F+E
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment F+E
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Catch F+E	139.73
REACHES	
OUTLET	139.73

Hogan

Cypress Creek Landfill
Catchment F+E
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Catch F+E	139.73 11.93
REACHES	
OUTLET	139.73

Cypress Creek Landfill
Catchment F+E
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Catch F+E	18.93	0.100	80	Outlet	Landfill

Total Area: 18.93 (ac)

Cypress Creek Landfill
Catchment F+E
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Catch F+E							
SHEET	30	0.3333	0.011				0.002
SHALLOW	390	0.3333	0.050				0.012
CHANNEL	609	0.0164	0.011	10.00	20.10	10.573	0.016
CHANNEL	743	0.0485	0.011	45.00	18.97	51.597	0.004
					Time of Concentration		0.1

Cypress Creek Landfill
Catchment F+E
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Catch F+E	Newly graded area (pervious only)	A	13.46	77
	Newly graded area (pervious only)	B	5.47	86
	Total Area / Weighted Curve Number		18.93	80

APPENDIX B 14:

Run-Off: Southern Sediment Basin Channel Flow Capacities

PROJECT: SHAMROCK
PROJ NO: 501266
DATE: 6/6/2017
CALCULATED BY: MDH
DESIGN STORM: 25 YR.

STORM CHANNEL DESIGN DATA

STORM CHANNEL	LENGTH (FT) L	ELEV DIFF (FT) H	SLOPE (%) SL	MANNINGS COEF (n) n	FLOW DEPTH (FT) D	CHANNEL DEPTH (FT) D@FB	BOTTOM WIDTH (FT) B	SIDE SLOPE (FT/FT) Z	FLOW AREA (SQ FT) A	TOP WIDTH (FT) T	WETTED PERIM (FT) WP	HYD RADIUS HR	CHANNEL VELOCITY (FPS) V	CAPACITY FLOW (CFS) Q	REQUIRED FLOW (CFS) Qr
EASTERN SWALE CATCHMENT A	1490.30	8.50	0.57%	0.0275	3.50	4.00	5.00	0.3333	21.58	7.67	12.38	1.74	5.91	127.60	90.36
EASTERN SWALE CATCHMENT A+B	1490.30	8.50	0.57%	0.0275	4.50	5.00	5.33	0.3333	30.73	8.66	14.82	2.07	6.64	204.01	201.70
EASTERN SWALE CATCHMENT A+B+C	748.71	13.50	1.80%	0.0275	3.50	4.00	6.00	0.3333	25.08	8.67	13.38	1.87	11.03	276.74	213.84
WESTERN SWALE CATCHMENT F	590.50	10.50	1.78%	0.0275	5.00	5.50	6.00	0.3333	38.33	9.67	16.54	2.32	12.62	483.72	104.01
WESTERN SWALE CATCHMENT F+E	590.50	10.50	1.78%	0.0275	5.00	5.50	6.00	0.3333	38.33	9.67	16.54	2.32	12.62	483.72	139.73

APPENDIX B 15a:

Run-Off: WinTR-55 – Southern Sediment Basin

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Southern Sediment Basin Storage
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 6/6/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Cat A+B+C	Catchments A+B+C	E. Swale	28.97	80	0.100
Cat D	Catchment D	Outlet	7.76	80	0.100
Cat F+E	Catchments F+E	W. Swale	18.93	80	0.100

Total area: 55.66 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Southern Sediment Basin Storage
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Southern Sediment Basin Storage
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	100-Yr (cfs)
SUBAREAS		
Cat A+B+C	213.84	304.96
Cat D	57.30	81.71
Cat F+E	139.73	199.26
REACHES		
W. Swale	139.73	199.26
Down	137.74	196.85
E. Swale	213.84	304.96
Down	213.53	304.62
OUTLET	387.85	559.92

Hogan

Cypress Creek Landfill
Southern Sediment Basin Storage
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS				
Cat A+B+C	213.84	11.93	304.96	11.93
Cat D	57.30	11.93	81.71	11.93
Cat F+E	139.73	11.93	199.26	11.93
REACHES				
W. Swale	139.73	11.93	199.26	11.93
Down	137.74	12.00	196.85	11.99
E. Swale	213.84	11.93	304.96	11.93
Down	213.53	11.94	304.62	11.94
OUTLET	387.85		559.92	

Cypress Creek Landfill
Southern Sediment Basin Storage
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Cat A+B+C	28.97	0.100	80	E. Swale	Catchments A+B+C
Cat D	7.76	0.100	80	Outlet	Catchment D
Cat F+E	18.93	0.100	80	W. Swale	Catchments F+E

Total Area: 55.66 (ac)

Cypress Creek Landfill
Southern Sediment Basin Storage
Tuscaloosa County, Alabama

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
W. Swale	Outlet	2239	CHANNEL
E. Swale	Outlet	590	CHANNEL

Cypress Creek Landfill
Southern Sediment Basin Storage
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Cat A+B+C							
SHEET	30	0.3333	0.011				0.002
SHALLOW	453	0.3333	0.050				0.014
CHANNEL	1250	0.0160	0.011	10.00	20.10	10.851	0.032
CHANNEL	2239	0.0094	0.011	45.00	18.97	23.035	0.027
					Time of Concentration		0.100
Cat D							
SHEET	30	0.3333	0.011				0.002
SHALLOW	614	0.3333	0.050				0.018
					Time of Concentration		0.100
Cat F+E							
SHEET	30	0.3333	0.011				0.002
SHALLOW	390	0.3333	0.050				0.012
CHANNEL	609	0.0164	0.011	10.00	20.10	10.573	0.016
CHANNEL	743	0.0485	0.011	45.00	18.97	51.597	0.004
					Time of Concentration		0.100

Cypress Creek Landfill
Southern Sediment Basin Storage
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Cat A+B+C	Newly graded area (pervious only)	A	20.61	77
	Newly graded area (pervious only)	B	8.36	86
	Total Area / Weighted Curve Number		28.97	80
Cat D	Newly graded area (pervious only)	A	5.51	77
	Newly graded area (pervious only)	B	2.25	86
	Total Area / Weighted Curve Number		7.76	80
Cat F+E	Newly graded area (pervious only)	A	13.46	77
	Newly graded area (pervious only)	B	5.47	86
	Total Area / Weighted Curve Number		18.93	80

Cypress Creek Landfill
Southern Sediment Basin Storage
Tuscaloosa County, Alabama

Reach Channel Rating Details

Reach Identifier	Reach Length (ft)	Reach Manning's n	Friction Slope (ft/ft)	Bottom Width (ft)	Side Slope
W. Swale	2239	0.027	0.0098	5.5	3 :1
E. Swale	590	0.027	0.0178	6	3 :1

Reach Identifier	Stage (ft)	Flow (cfs)	End Area (sq ft)	Top Width (ft)	Friction Slope (ft/ft)
W. Swale	0.0	0.000	0	5.5	0.0098
	0.5	10.422	3.5	8.5	
	1.0	37.163	8.5	11.5	
	2.0	146.750	23	17.5	
	5.0	1099.126	102.5	35.5	
	10.0	5778.551	355	65.5	
	20.0	32962.777	1310	125.5	
E. Swale	0.0	0.000	0	6	0.0178
	0.5	15.179	3.8	9	
	1.0	53.591	9	12	
	2.0	208.503	24	18	
	5.0	1528.317	105	36	
	10.0	7933.070	360	66	
	20.0	44877.685	1320	126	

APPENDIX B 15b:

Run-Off: WinTR-20 – Southern Sediment Basin Storage

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Cat F+E	0.030		4.836		11.93	139.73	4723.64

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.388	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.432	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.476	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.520	0.5	0.5	0.5	0.5	0.5	0.5	0.6
7.565	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.609	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.653	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.697	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.741	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.786	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.830	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.874	0.6	0.7	0.7	0.7	0.7	0.7	0.7
7.918	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.963	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.007	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.051	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.095	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.139	0.7	0.8	0.8	0.8	0.8	0.8	0.8
8.184	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.228	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.272	0.8	0.8	0.8	0.8	0.8	0.9	0.9
8.316	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.360	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.405	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.449	0.9	1.0	1.0	1.0	1.0	1.0	1.0
8.493	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.537	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.581	1.0	1.1	1.1	1.1	1.1	1.1	1.1
8.626	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.670	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.714	1.1	1.1	1.2	1.2	1.2	1.2	1.2
8.758	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.803	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.847	1.2	1.3	1.3	1.3	1.3	1.3	1.3
8.891	1.3	1.3	1.3	1.3	1.3	1.3	1.3
8.935	1.3	1.3	1.3	1.3	1.3	1.4	1.4
8.979	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9.024	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9.068	1.4	1.4	1.4	1.4	1.4	1.5	1.5
9.112	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.156	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.200	1.5	1.5	1.5	1.5	1.5	1.5	1.5

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STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
9.245	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.289	1.5	1.5	1.5	1.5	1.6	1.6	1.6
9.333	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.377	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.421	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.466	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.510	1.6	1.6	1.6	1.6	1.6	1.7	1.7
9.554	1.7	1.7	1.7	1.7	1.7	1.7	1.7
9.598	1.7	1.7	1.7	1.7	1.7	1.7	1.7
9.643	1.7	1.7	1.8	1.8	1.8	1.8	1.8
9.687	1.8	1.8	1.8	1.8	1.8	1.8	1.8
9.731	1.8	1.9	1.9	1.9	1.9	1.9	1.9
9.775	1.9	1.9	1.9	1.9	1.9	2.0	2.0
9.819	2.0	2.0	2.0	2.0	2.0	2.0	2.0
9.864	2.0	2.0	2.1	2.1	2.1	2.1	2.1
9.908	2.1	2.1	2.1	2.1	2.1	2.1	2.1
9.952	2.2	2.2	2.2	2.2	2.2	2.2	2.2
9.996	2.2	2.2	2.2	2.2	2.2	2.3	2.3
10.040	2.3	2.3	2.3	2.3	2.3	2.3	2.4
10.085	2.4	2.4	2.4	2.4	2.4	2.4	2.4
10.129	2.4	2.4	2.5	2.5	2.5	2.5	2.5
10.173	2.5	2.5	2.6	2.6	2.6	2.6	2.6
10.217	2.6	2.6	2.6	2.6	2.7	2.7	2.7
10.261	2.7	2.7	2.7	2.8	2.8	2.8	2.8
10.306	2.8	2.8	2.8	2.8	2.8	2.9	2.9
10.350	2.9	2.9	2.9	2.9	3.0	3.0	3.0
10.394	3.0	3.0	3.0	3.0	3.0	3.1	3.1
10.438	3.1	3.1	3.1	3.1	3.2	3.2	3.2
10.483	3.2	3.2	3.2	3.2	3.3	3.3	3.3
10.527	3.3	3.3	3.3	3.3	3.4	3.4	3.4
10.571	3.4	3.5	3.5	3.5	3.5	3.5	3.5
10.615	3.5	3.6	3.6	3.6	3.6	3.7	3.7
10.659	3.7	3.7	3.8	3.8	3.8	3.8	3.8
10.704	3.9	3.9	3.9	3.9	3.9	4.0	4.0
10.748	4.0	4.0	4.1	4.1	4.1	4.2	4.2
10.792	4.2	4.2	4.2	4.3	4.3	4.3	4.3
10.836	4.3	4.4	4.4	4.4	4.5	4.5	4.5
10.880	4.5	4.6	4.6	4.6	4.6	4.6	4.7
10.925	4.7	4.7	4.7	4.8	4.8	4.8	4.9
10.969	4.9	4.9	4.9	5.0	5.0	5.0	5.0
11.013	5.1	5.1	5.1	5.1	5.2	5.2	5.3
11.057	5.3	5.4	5.4	5.5	5.5	5.5	5.6
11.101	5.6	5.6	5.7	5.7	5.7	5.8	5.8
11.146	5.9	6.0	6.0	6.1	6.2	6.2	6.3
11.190	6.3	6.4	6.4	6.5	6.5	6.6	6.6
11.234	6.7	6.7	6.8	6.9	6.9	7.0	7.1
11.278	7.1	7.2	7.3	7.3	7.4	7.4	7.4
11.323	7.5	7.5	7.6	7.7	7.7	7.8	7.9
11.367	8.0	8.0	8.1	8.2	8.2	8.3	8.3

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

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STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
11.411	8.4	8.4	8.5	8.5	8.6	8.7	8.7
11.455	8.8	8.9	9.0	9.1	9.1	9.2	9.3
11.499	9.3	9.4	9.5	9.7	9.9	10.3	10.9
11.544	11.5	12.3	13.1	13.9	14.7	15.5	16.2
11.588	16.9	17.5	18.0	18.5	19.0	19.6	20.4
11.632	21.4	22.7	24.2	25.9	27.7	29.5	31.2
11.676	32.9	34.4	35.9	37.1	38.2	39.2	40.3
11.720	41.5	42.9	44.5	46.5	48.8	51.2	53.8
11.765	56.3	58.8	61.1	63.3	65.3	67.1	68.7
11.809	70.3	72.2	74.4	77.1	80.6	85.0	89.9
11.853	95.3	100.8	106.3	111.8	116.9	121.7	126.0
11.897	129.9	133.1	135.8	137.8	139.1	139.7	139.5
11.941	138.4	136.8	134.6	132.2	129.7	127.2	124.9
11.986	122.7	120.8	119.2	117.8	116.3	114.4	111.9
12.030	108.5	103.9	98.3	92.0	85.2	78.3	71.4
12.074	64.9	58.9	53.4	48.5	44.5	41.1	38.3
12.118	35.9	33.8	32.0	30.4	29.0	27.7	26.6
12.163	25.7	24.8	24.1	23.4	22.9	22.4	22.0
12.207	21.7	21.4	21.1	20.8	20.6	20.3	20.0
12.251	19.7	19.4	19.1	18.9	18.6	18.4	18.2
12.295	18.0	17.9	17.8	17.7	17.6	17.5	17.3
12.339	17.1	16.9	16.7	16.5	16.2	16.0	15.8
12.384	15.6	15.5	15.3	15.2	15.1	15.0	14.9
12.428	14.8	14.6	14.4	14.2	14.0	13.7	13.5
12.472	13.3	13.1	12.9	12.8	12.6	12.5	12.4
12.516	12.3	12.2	12.1	12.0	11.8	11.7	11.5
12.560	11.4	11.2	11.1	11.0	10.9	10.8	10.7
12.605	10.6	10.5	10.5	10.4	10.4	10.3	10.3
12.649	10.2	10.1	10.1	10.0	9.9	9.9	9.9
12.693	9.8	9.8	9.8	9.7	9.7	9.7	9.6
12.737	9.6	9.5	9.5	9.4	9.4	9.3	9.3
12.781	9.2	9.2	9.2	9.1	9.1	9.1	9.1
12.826	9.0	9.0	9.0	8.9	8.9	8.8	8.8
12.870	8.7	8.7	8.6	8.6	8.6	8.5	8.5
12.914	8.5	8.4	8.4	8.4	8.3	8.3	8.2
12.958	8.2	8.1	8.1	8.0	8.0	8.0	7.9
13.003	7.9	7.9	7.9	7.8	7.8	7.8	7.7
13.047	7.7	7.7	7.6	7.6	7.5	7.5	7.5
13.091	7.4	7.4	7.4	7.4	7.4	7.3	7.3
13.135	7.3	7.3	7.2	7.2	7.2	7.1	7.1
13.179	7.1	7.1	7.1	7.0	7.0	7.0	7.0
13.224	7.0	7.0	6.9	6.9	6.9	6.9	6.8
13.268	6.8	6.8	6.8	6.7	6.7	6.7	6.7
13.312	6.7	6.7	6.6	6.6	6.6	6.6	6.5
13.356	6.5	6.5	6.5	6.4	6.4	6.4	6.4
13.400	6.4	6.3	6.3	6.3	6.3	6.3	6.3
13.445	6.2	6.2	6.2	6.2	6.1	6.1	6.1
13.489	6.1	6.0	6.0	6.0	6.0	6.0	6.0
13.533	5.9	5.9	5.9	5.9	5.9	5.8	5.8
13.577	5.8	5.8	5.7	5.7	5.7	5.7	5.7
13.621	5.7	5.7	5.7	5.6	5.6	5.6	5.6

Cypress Creek Landfill
Southern Sediment Basin Storage

Line
Start Time ---------- Flow Values @ time increment of 0.006 hr ----------

Name of printed page file:
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STORM 25-Yr

Area or Reach Identifier (hr)	Drainage Area (sq mi) (cfs)	Rain Gage ID or Location (cfs)	Runoff Amount (in) (cfs)	Peak Flow Elevation (ft) (cfs)	Peak Flow Time (hr) (cfs)	Peak Flow Rate (cfs) (cfs)	Peak Flow Rate (csm) (cfs)
13.666	5.6	5.5	5.5	5.5	5.5	5.5	5.5
13.710	5.5	5.4	5.4	5.4	5.4	5.4	5.4
13.754	5.4	5.3	5.3	5.3	5.3	5.3	5.2
13.798	5.2	5.2	5.2	5.2	5.2	5.2	5.2
13.843	5.1	5.1	5.1	5.1	5.1	5.0	5.0
13.887	5.0	5.0	5.0	5.0	5.0	5.0	4.9
13.931	4.9	4.9	4.9	4.9	4.9	4.8	4.8
13.975	4.8	4.8	4.8	4.8	4.7	4.7	4.7
14.019	4.7	4.7	4.7	4.7	4.7	4.7	4.6
14.064	4.6	4.6	4.6	4.6	4.6	4.6	4.6
14.108	4.6	4.6	4.5	4.5	4.5	4.5	4.5
14.152	4.5	4.5	4.5	4.5	4.5	4.5	4.5
14.196	4.5	4.5	4.5	4.4	4.4	4.4	4.4
14.240	4.4	4.4	4.4	4.4	4.4	4.4	4.4
14.285	4.4	4.4	4.4	4.4	4.4	4.4	4.4
14.329	4.4	4.4	4.4	4.3	4.3	4.3	4.3
14.373	4.3	4.3	4.3	4.3	4.3	4.3	4.3
14.417	4.3	4.3	4.3	4.3	4.3	4.3	4.2
14.461	4.2	4.2	4.2	4.2	4.2	4.2	4.2
14.506	4.2	4.2	4.2	4.2	4.2	4.2	4.2
14.550	4.2	4.2	4.2	4.1	4.1	4.1	4.1
14.594	4.1	4.1	4.1	4.1	4.1	4.1	4.1
14.638	4.1	4.1	4.1	4.1	4.1	4.1	4.1
14.683	4.1	4.0	4.0	4.0	4.0	4.0	4.0
14.727	4.0	4.0	4.0	4.0	4.0	4.0	4.0
14.771	4.0	4.0	4.0	4.0	4.0	4.0	3.9
14.815	3.9	3.9	3.9	3.9	3.9	3.9	3.9
14.859	3.9	3.9	3.9	3.9	3.9	3.9	3.9
14.904	3.9	3.9	3.9	3.9	3.9	3.9	3.8
14.948	3.8	3.8	3.8	3.8	3.8	3.8	3.8
14.992	3.8	3.8	3.8	3.8	3.8	3.8	3.8
15.036	3.8	3.8	3.7	3.7	3.7	3.7	3.7
15.080	3.7	3.7	3.7	3.7	3.7	3.7	3.7
15.125	3.7	3.7	3.7	3.7	3.7	3.7	3.7
15.169	3.6	3.6	3.6	3.6	3.6	3.6	3.6
15.213	3.6	3.6	3.6	3.6	3.6	3.6	3.6
15.257	3.6	3.6	3.6	3.6	3.5	3.5	3.5
15.301	3.5	3.5	3.5	3.5	3.5	3.5	3.5
15.346	3.5	3.5	3.5	3.5	3.5	3.5	3.5
15.390	3.5	3.4	3.4	3.4	3.4	3.4	3.4
15.434	3.4	3.4	3.4	3.4	3.4	3.4	3.4
15.478	3.4	3.4	3.4	3.4	3.4	3.4	3.4
15.523	3.4	3.3	3.3	3.3	3.3	3.3	3.3
15.567	3.3	3.3	3.3	3.3	3.3	3.3	3.3
15.611	3.3	3.3	3.3	3.3	3.2	3.2	3.2
15.655	3.2	3.2	3.2	3.2	3.2	3.2	3.2
15.699	3.2	3.2	3.2	3.2	3.2	3.2	3.2
15.744	3.2	3.2	3.1	3.1	3.1	3.1	3.1
15.788	3.1	3.1	3.1	3.1	3.1	3.1	3.1
15.832	3.1	3.1	3.1	3.1	3.1	3.1	3.0
15.876	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier Line	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
15.920	3.0	3.0	3.0	3.0	3.0	3.0	3.0
15.965	3.0	3.0	2.9	2.9	2.9	2.9	2.9
16.009	2.9	2.9	2.9	2.9	2.9	2.9	2.9
16.053	2.9	2.9	2.9	2.9	2.9	2.9	2.9
16.097	2.9	2.9	2.9	2.9	2.9	2.9	2.9
16.141	2.9	2.9	2.8	2.8	2.8	2.8	2.8
16.186	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.230	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.274	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.318	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.363	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.407	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.451	2.8	2.8	2.8	2.7	2.7	2.7	2.7
16.495	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.539	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.584	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.628	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.672	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.716	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.760	2.7	2.7	2.7	2.7	2.7	2.6	2.6
16.805	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.849	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.893	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.937	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.981	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.026	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.070	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.114	2.6	2.6	2.6	2.6	2.5	2.5	2.5
17.158	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.203	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.247	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.291	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.335	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.379	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.424	2.5	2.5	2.5	2.5	2.5	2.4	2.4
17.468	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.512	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.556	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.600	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.645	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.689	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.733	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.777	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.821	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.866	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.910	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.954	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.998	2.3	2.3	2.3	2.3	2.3	2.3	2.3
18.043	2.3	2.3	2.3	2.3	2.3	2.3	2.3
18.087	2.3	2.3	2.3	2.3	2.3	2.3	2.2
18.131	2.2	2.2	2.2	2.2	2.2	2.2	2.2

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Southern Sediment Basin Storage							

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
18.175	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.219	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.264	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.308	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.352	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.396	2.2	2.2	2.2	2.2	2.2	2.2	2.1
18.440	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.485	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.529	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.573	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.617	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.661	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.706	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.750	2.1	2.1	2.0	2.0	2.0	2.0	2.0
18.794	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.838	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.883	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.927	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.971	2.0	2.0	2.0	2.0	2.0	2.0	2.0
19.015	2.0	2.0	2.0	2.0	2.0	2.0	2.0
19.059	2.0	2.0	2.0	1.9	1.9	1.9	1.9
19.104	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.148	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.192	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.236	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.280	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.325	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.369	1.9	1.9	1.9	1.9	1.8	1.8	1.8
19.413	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.457	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.501	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.546	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.590	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.634	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.678	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.723	1.8	1.8	1.7	1.7	1.7	1.7	1.7
19.767	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.811	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.855	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.899	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.944	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.988	1.7	1.7	1.7	1.7	1.7	1.7	1.7
20.032	1.7	1.7	1.7	1.7	1.6	1.6	1.6
20.076	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.120	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.165	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.209	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.253	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.297	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.341	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.386	1.6	1.6	1.6	1.6	1.6	1.6	1.6

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
20.430	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.474	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.518	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.563	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.607	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.651	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.695	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.739	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.784	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.828	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.872	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.916	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.960	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.005	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.049	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.093	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.137	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.181	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.226	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.270	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.314	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.358	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.403	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.447	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.491	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.535	1.6	1.6	1.6	1.6	1.6	1.5	1.5
21.579	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.624	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.668	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.712	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.756	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.800	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.845	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.889	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.933	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.977	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.021	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.066	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.110	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.154	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.198	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.243	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.287	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.331	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.375	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.419	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.464	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.508	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.552	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.596	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.640	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
22.685	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.729	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.773	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.817	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.861	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.906	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.950	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.994	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.038	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.083	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.127	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.171	1.5	1.5	1.4	1.4	1.4	1.4	1.4
23.215	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.259	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.304	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.348	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.392	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.436	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.480	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.525	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.569	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.613	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.657	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.701	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.746	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.790	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.834	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.878	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.923	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.967	1.4	1.4	1.4	1.4	1.4	1.4	1.4
24.011	1.4	1.4	1.3	1.3	1.2	1.2	1.1
24.055	1.0	0.8	0.7	0.6	0.6		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
W. Swale	0.030	Upstream	4.836	1.94	11.93	139.73	4723.64

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.388	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.432	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.476	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.520	0.5	0.5	0.5	0.5	0.5	0.5	0.6
7.565	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.609	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
7.653	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.697	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.741	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.786	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.830	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.874	0.6	0.7	0.7	0.7	0.7	0.7	0.7
7.918	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.963	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.007	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.051	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.095	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.139	0.7	0.8	0.8	0.8	0.8	0.8	0.8
8.184	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.228	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.272	0.8	0.8	0.8	0.8	0.8	0.9	0.9
8.316	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.360	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.405	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.449	0.9	1.0	1.0	1.0	1.0	1.0	1.0
8.493	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.537	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.581	1.0	1.1	1.1	1.1	1.1	1.1	1.1
8.626	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.670	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.714	1.1	1.1	1.2	1.2	1.2	1.2	1.2
8.758	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.803	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.847	1.2	1.3	1.3	1.3	1.3	1.3	1.3
8.891	1.3	1.3	1.3	1.3	1.3	1.3	1.3
8.935	1.3	1.3	1.3	1.3	1.3	1.4	1.4
8.979	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9.024	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9.068	1.4	1.4	1.4	1.4	1.4	1.5	1.5
9.112	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.156	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.200	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.245	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.289	1.5	1.5	1.5	1.5	1.6	1.6	1.6
9.333	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.377	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.421	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.466	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.510	1.6	1.6	1.6	1.6	1.6	1.7	1.7
9.554	1.7	1.7	1.7	1.7	1.7	1.7	1.7
9.598	1.7	1.7	1.7	1.7	1.7	1.7	1.7
9.643	1.7	1.7	1.8	1.8	1.8	1.8	1.8
9.687	1.8	1.8	1.8	1.8	1.8	1.8	1.8
9.731	1.8	1.9	1.9	1.9	1.9	1.9	1.9
9.775	1.9	1.9	1.9	1.9	1.9	2.0	2.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
9.819	2.0	2.0	2.0	2.0	2.0	2.0	2.0
9.864	2.0	2.0	2.1	2.1	2.1	2.1	2.1
9.908	2.1	2.1	2.1	2.1	2.1	2.1	2.1
9.952	2.2	2.2	2.2	2.2	2.2	2.2	2.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.996	2.2	2.2	2.2	2.2	2.2	2.3	2.3
10.040	2.3	2.3	2.3	2.3	2.3	2.3	2.4
10.085	2.4	2.4	2.4	2.4	2.4	2.4	2.4
10.129	2.4	2.4	2.5	2.5	2.5	2.5	2.5
10.173	2.5	2.5	2.6	2.6	2.6	2.6	2.6
10.217	2.6	2.6	2.6	2.6	2.7	2.7	2.7
10.261	2.7	2.7	2.7	2.8	2.8	2.8	2.8
10.306	2.8	2.8	2.8	2.8	2.8	2.9	2.9
10.350	2.9	2.9	2.9	2.9	3.0	3.0	3.0
10.394	3.0	3.0	3.0	3.0	3.0	3.1	3.1
10.438	3.1	3.1	3.1	3.1	3.2	3.2	3.2
10.483	3.2	3.2	3.2	3.2	3.3	3.3	3.3
10.527	3.3	3.3	3.3	3.3	3.4	3.4	3.4
10.571	3.4	3.5	3.5	3.5	3.5	3.5	3.5
10.615	3.5	3.6	3.6	3.6	3.6	3.7	3.7
10.659	3.7	3.7	3.8	3.8	3.8	3.8	3.8
10.704	3.9	3.9	3.9	3.9	3.9	4.0	4.0
10.748	4.0	4.0	4.1	4.1	4.1	4.2	4.2
10.792	4.2	4.2	4.2	4.3	4.3	4.3	4.3
10.836	4.3	4.4	4.4	4.4	4.5	4.5	4.5
10.880	4.5	4.6	4.6	4.6	4.6	4.6	4.7
10.925	4.7	4.7	4.7	4.8	4.8	4.8	4.9
10.969	4.9	4.9	4.9	5.0	5.0	5.0	5.0
11.013	5.1	5.1	5.1	5.1	5.2	5.2	5.3
11.057	5.3	5.4	5.4	5.5	5.5	5.5	5.6
11.101	5.6	5.6	5.7	5.7	5.7	5.8	5.8
11.146	5.9	6.0	6.0	6.1	6.2	6.2	6.3
11.190	6.3	6.4	6.4	6.5	6.5	6.6	6.6
11.234	6.7	6.7	6.8	6.9	6.9	7.0	7.1
11.278	7.1	7.2	7.3	7.3	7.4	7.4	7.4
11.323	7.5	7.5	7.6	7.7	7.7	7.8	7.9
11.367	8.0	8.0	8.1	8.2	8.2	8.3	8.3
11.411	8.4	8.4	8.5	8.5	8.6	8.7	8.7
11.455	8.8	8.9	9.0	9.1	9.1	9.2	9.3
11.499	9.3	9.4	9.5	9.7	9.9	10.3	10.9
11.544	11.5	12.3	13.1	13.9	14.7	15.5	16.2
11.588	16.9	17.5	18.0	18.5	19.0	19.6	20.4
11.632	21.4	22.7	24.2	25.9	27.7	29.5	31.2
11.676	32.9	34.4	35.9	37.1	38.2	39.2	40.3
11.720	41.5	42.9	44.5	46.5	48.8	51.2	53.8
11.765	56.3	58.8	61.1	63.3	65.3	67.1	68.7
11.809	70.3	72.2	74.4	77.1	80.6	85.0	89.9
11.853	95.3	100.8	106.3	111.8	116.9	121.7	126.0
11.897	129.9	133.1	135.8	137.8	139.1	139.7	139.5
11.941	138.4	136.8	134.6	132.2	129.7	127.2	124.9

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
11.986	122.7	120.8	119.2	117.8	116.3	114.4	111.9
12.030	108.5	103.9	98.3	92.0	85.2	78.3	71.4
12.074	64.9	58.9	53.4	48.5	44.5	41.1	38.3
12.118	35.9	33.8	32.0	30.4	29.0	27.7	26.6
12.163	25.7	24.8	24.1	23.4	22.9	22.4	22.0
12.207	21.7	21.4	21.1	20.8	20.6	20.3	20.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.251	19.7	19.4	19.1	18.9	18.6	18.4	18.2
12.295	18.0	17.9	17.8	17.7	17.6	17.5	17.3
12.339	17.1	16.9	16.7	16.5	16.2	16.0	15.8
12.384	15.6	15.5	15.3	15.2	15.1	15.0	14.9
12.428	14.8	14.6	14.4	14.2	14.0	13.7	13.5
12.472	13.3	13.1	12.9	12.8	12.6	12.5	12.4
12.516	12.3	12.2	12.1	12.0	11.8	11.7	11.5
12.560	11.4	11.2	11.1	11.0	10.9	10.8	10.7
12.605	10.6	10.5	10.5	10.4	10.4	10.3	10.3
12.649	10.2	10.1	10.1	10.0	9.9	9.9	9.9
12.693	9.8	9.8	9.8	9.7	9.7	9.7	9.6
12.737	9.6	9.5	9.5	9.4	9.4	9.3	9.3
12.781	9.2	9.2	9.2	9.1	9.1	9.1	9.1
12.826	9.0	9.0	9.0	8.9	8.9	8.8	8.8
12.870	8.7	8.7	8.6	8.6	8.6	8.5	8.5
12.914	8.5	8.4	8.4	8.4	8.3	8.3	8.2
12.958	8.2	8.1	8.1	8.0	8.0	8.0	7.9
13.003	7.9	7.9	7.9	7.8	7.8	7.8	7.7
13.047	7.7	7.7	7.6	7.6	7.5	7.5	7.5
13.091	7.4	7.4	7.4	7.4	7.4	7.3	7.3
13.135	7.3	7.3	7.2	7.2	7.2	7.1	7.1
13.179	7.1	7.1	7.1	7.0	7.0	7.0	7.0
13.224	7.0	7.0	6.9	6.9	6.9	6.9	6.8
13.268	6.8	6.8	6.8	6.7	6.7	6.7	6.7
13.312	6.7	6.7	6.6	6.6	6.6	6.6	6.5
13.356	6.5	6.5	6.5	6.4	6.4	6.4	6.4
13.400	6.4	6.3	6.3	6.3	6.3	6.3	6.3
13.445	6.2	6.2	6.2	6.2	6.1	6.1	6.1
13.489	6.1	6.0	6.0	6.0	6.0	6.0	6.0
13.533	5.9	5.9	5.9	5.9	5.9	5.8	5.8
13.577	5.8	5.8	5.7	5.7	5.7	5.7	5.7
13.621	5.7	5.7	5.7	5.6	5.6	5.6	5.6
13.666	5.6	5.5	5.5	5.5	5.5	5.5	5.5
13.710	5.5	5.4	5.4	5.4	5.4	5.4	5.4
13.754	5.4	5.3	5.3	5.3	5.3	5.3	5.2
13.798	5.2	5.2	5.2	5.2	5.2	5.2	5.2
13.843	5.1	5.1	5.1	5.1	5.1	5.0	5.0
13.887	5.0	5.0	5.0	5.0	5.0	5.0	4.9
13.931	4.9	4.9	4.9	4.9	4.9	4.8	4.8
13.975	4.8	4.8	4.8	4.8	4.7	4.7	4.7
14.019	4.7	4.7	4.7	4.7	4.7	4.7	4.6
14.064	4.6	4.6	4.6	4.6	4.6	4.6	4.6
14.108	4.6	4.6	4.5	4.5	4.5	4.5	4.5

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
14.152	4.5	4.5	4.5	4.5	4.5	4.5	4.5
14.196	4.5	4.5	4.5	4.4	4.4	4.4	4.4
14.240	4.4	4.4	4.4	4.4	4.4	4.4	4.4
14.285	4.4	4.4	4.4	4.4	4.4	4.4	4.4
14.329	4.4	4.4	4.4	4.3	4.3	4.3	4.3
14.373	4.3	4.3	4.3	4.3	4.3	4.3	4.3
14.417	4.3	4.3	4.3	4.3	4.3	4.3	4.2
14.461	4.2	4.2	4.2	4.2	4.2	4.2	4.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.506	4.2	4.2	4.2	4.2	4.2	4.2	4.2
14.550	4.2	4.2	4.2	4.1	4.1	4.1	4.1
14.594	4.1	4.1	4.1	4.1	4.1	4.1	4.1
14.638	4.1	4.1	4.1	4.1	4.1	4.1	4.1
14.683	4.1	4.0	4.0	4.0	4.0	4.0	4.0
14.727	4.0	4.0	4.0	4.0	4.0	4.0	4.0
14.771	4.0	4.0	4.0	4.0	4.0	4.0	3.9
14.815	3.9	3.9	3.9	3.9	3.9	3.9	3.9
14.859	3.9	3.9	3.9	3.9	3.9	3.9	3.9
14.904	3.9	3.9	3.9	3.9	3.9	3.9	3.8
14.948	3.8	3.8	3.8	3.8	3.8	3.8	3.8
14.992	3.8	3.8	3.8	3.8	3.8	3.8	3.8
15.036	3.8	3.8	3.7	3.7	3.7	3.7	3.7
15.080	3.7	3.7	3.7	3.7	3.7	3.7	3.7
15.125	3.7	3.7	3.7	3.7	3.7	3.7	3.7
15.169	3.6	3.6	3.6	3.6	3.6	3.6	3.6
15.213	3.6	3.6	3.6	3.6	3.6	3.6	3.6
15.257	3.6	3.6	3.6	3.6	3.5	3.5	3.5
15.301	3.5	3.5	3.5	3.5	3.5	3.5	3.5
15.346	3.5	3.5	3.5	3.5	3.5	3.5	3.5
15.390	3.5	3.4	3.4	3.4	3.4	3.4	3.4
15.434	3.4	3.4	3.4	3.4	3.4	3.4	3.4
15.478	3.4	3.4	3.4	3.4	3.4	3.4	3.4
15.523	3.4	3.3	3.3	3.3	3.3	3.3	3.3
15.567	3.3	3.3	3.3	3.3	3.3	3.3	3.3
15.611	3.3	3.3	3.3	3.3	3.2	3.2	3.2
15.655	3.2	3.2	3.2	3.2	3.2	3.2	3.2
15.699	3.2	3.2	3.2	3.2	3.2	3.2	3.2
15.744	3.2	3.2	3.1	3.1	3.1	3.1	3.1
15.788	3.1	3.1	3.1	3.1	3.1	3.1	3.1
15.832	3.1	3.1	3.1	3.1	3.1	3.1	3.0
15.876	3.0	3.0	3.0	3.0	3.0	3.0	3.0
15.920	3.0	3.0	3.0	3.0	3.0	3.0	3.0
15.965	3.0	3.0	2.9	2.9	2.9	2.9	2.9
16.009	2.9	2.9	2.9	2.9	2.9	2.9	2.9
16.053	2.9	2.9	2.9	2.9	2.9	2.9	2.9
16.097	2.9	2.9	2.9	2.9	2.9	2.9	2.9
16.141	2.9	2.9	2.8	2.8	2.8	2.8	2.8
16.186	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.230	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.274	2.8	2.8	2.8	2.8	2.8	2.8	2.8

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
16.318	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.363	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.407	2.8	2.8	2.8	2.8	2.8	2.8	2.8
16.451	2.8	2.8	2.8	2.7	2.7	2.7	2.7
16.495	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.539	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.584	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.628	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.672	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.716	2.7	2.7	2.7	2.7	2.7	2.7	2.7

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.760	2.7	2.7	2.7	2.7	2.7	2.6	2.6
16.805	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.849	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.893	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.937	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.981	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.026	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.070	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.114	2.6	2.6	2.6	2.6	2.5	2.5	2.5
17.158	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.203	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.247	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.291	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.335	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.379	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.424	2.5	2.5	2.5	2.5	2.5	2.4	2.4
17.468	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.512	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.556	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.600	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.645	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.689	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.733	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.777	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.821	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.866	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.910	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.954	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.998	2.3	2.3	2.3	2.3	2.3	2.3	2.3
18.043	2.3	2.3	2.3	2.3	2.3	2.3	2.3
18.087	2.3	2.3	2.3	2.3	2.3	2.3	2.2
18.131	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.175	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.219	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.264	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.308	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.352	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.396	2.2	2.2	2.2	2.2	2.2	2.2	2.1
18.440	2.1	2.1	2.1	2.1	2.1	2.1	2.1

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
18.485	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.529	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.573	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.617	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.661	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.706	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.750	2.1	2.1	2.0	2.0	2.0	2.0	2.0
18.794	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.838	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.883	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.927	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.971	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
19.015	2.0	2.0	2.0	2.0	2.0	2.0	2.0
19.059	2.0	2.0	2.0	1.9	1.9	1.9	1.9
19.104	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.148	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.192	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.236	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.280	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.325	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.369	1.9	1.9	1.9	1.9	1.8	1.8	1.8
19.413	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.457	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.501	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.546	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.590	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.634	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.678	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.723	1.8	1.8	1.7	1.7	1.7	1.7	1.7
19.767	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.811	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.855	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.899	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.944	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.988	1.7	1.7	1.7	1.7	1.7	1.7	1.7
20.032	1.7	1.7	1.7	1.7	1.6	1.6	1.6
20.076	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.120	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.165	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.209	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.253	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.297	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.341	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.386	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.430	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.474	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.518	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.563	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.607	1.6	1.6	1.6	1.6	1.6	1.6	1.6

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
20.651	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.695	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.739	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.784	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.828	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.872	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.916	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.960	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.005	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.049	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.093	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.137	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.181	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.226	1.6	1.6	1.6	1.6	1.6	1.6	1.6

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
21.270	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.314	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.358	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.403	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.447	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.491	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.535	1.6	1.6	1.6	1.6	1.6	1.5	1.5
21.579	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.624	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.668	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.712	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.756	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.800	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.845	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.889	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.933	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.977	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.021	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.066	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.110	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.154	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.198	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.243	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.287	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.331	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.375	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.419	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.464	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.508	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.552	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.596	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.640	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.685	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.729	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.773	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
22.817	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.861	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.906	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.950	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.994	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.038	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.083	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.127	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.171	1.5	1.5	1.4	1.4	1.4	1.4	1.4
23.215	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.259	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.304	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.348	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.392	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.436	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.480	1.4	1.4	1.4	1.4	1.4	1.4	1.4

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.525	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.569	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.613	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.657	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.701	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.746	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.790	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.834	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.878	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.923	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.967	1.4	1.4	1.4	1.4	1.4	1.4	1.4
24.011	1.4	1.4	1.3	1.3	1.2	1.2	1.1
24.055	1.0	0.8	0.7	0.6	0.6		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
W. Swale	0.030	Downstream	4.828	1.92	12.00	137.74	4656.37

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.710	0.5	0.6	0.6	0.6	0.6	0.6	0.6
7.754	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.798	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.843	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.887	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.931	0.6	0.6	0.6	0.7	0.7	0.7	0.7
7.975	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.019	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.064	0.7	0.7	0.7	0.7	0.7	0.7	0.7

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
8.108	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.152	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.196	0.7	0.7	0.7	0.8	0.8	0.8	0.8
8.240	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.285	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.329	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.373	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.417	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.461	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.506	0.9	0.9	0.9	1.0	1.0	1.0	1.0
8.550	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.594	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.638	1.0	1.0	1.0	1.1	1.1	1.1	1.1
8.683	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.727	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.771	1.1	1.1	1.1	1.1	1.2	1.2	1.2
8.815	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.859	1.2	1.2	1.2	1.2	1.2	1.2	1.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.904	1.2	1.2	1.2	1.3	1.3	1.3	1.3
8.948	1.3	1.3	1.3	1.3	1.3	1.3	1.3
8.992	1.3	1.3	1.3	1.3	1.3	1.3	1.3
9.036	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9.080	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9.125	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9.169	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.213	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.257	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.301	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.346	1.5	1.5	1.5	1.5	1.5	1.5	1.6
9.390	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.434	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.478	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.523	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.567	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9.611	1.7	1.7	1.7	1.7	1.7	1.7	1.7
9.655	1.7	1.7	1.7	1.7	1.7	1.7	1.7
9.699	1.7	1.7	1.7	1.7	1.8	1.8	1.8
9.744	1.8	1.8	1.8	1.8	1.8	1.8	1.8
9.788	1.8	1.8	1.8	1.9	1.9	1.9	1.9
9.832	1.9	1.9	1.9	1.9	1.9	1.9	1.9
9.876	2.0	2.0	2.0	2.0	2.0	2.0	2.0
9.920	2.0	2.0	2.0	2.0	2.0	2.1	2.1
9.965	2.1	2.1	2.1	2.1	2.1	2.1	2.1
10.009	2.1	2.1	2.1	2.2	2.2	2.2	2.2
10.053	2.2	2.2	2.2	2.2	2.2	2.2	2.2
10.097	2.3	2.3	2.3	2.3	2.3	2.3	2.3
10.141	2.3	2.4	2.4	2.4	2.4	2.4	2.4
10.186	2.4	2.4	2.4	2.4	2.5	2.5	2.5
10.230	2.5	2.5	2.5	2.5	2.6	2.6	2.6

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
10.274	2.6	2.6	2.6	2.6	2.6	2.6	2.7
10.318	2.7	2.7	2.7	2.7	2.7	2.8	2.8
10.363	2.8	2.8	2.8	2.8	2.8	2.8	2.8
10.407	2.9	2.9	2.9	2.9	2.9	2.9	3.0
10.451	3.0	3.0	3.0	3.0	3.0	3.0	3.0
10.495	3.1	3.1	3.1	3.1	3.1	3.1	3.1
10.539	3.2	3.2	3.2	3.2	3.2	3.2	3.3
10.584	3.3	3.3	3.3	3.3	3.3	3.3	3.4
10.628	3.4	3.4	3.4	3.4	3.5	3.5	3.5
10.672	3.5	3.5	3.5	3.6	3.6	3.6	3.6
10.716	3.7	3.7	3.7	3.7	3.8	3.8	3.8
10.760	3.8	3.8	3.9	3.9	3.9	3.9	3.9
10.805	4.0	4.0	4.0	4.0	4.1	4.1	4.1
10.849	4.1	4.2	4.2	4.2	4.2	4.3	4.3
10.893	4.3	4.3	4.3	4.4	4.4	4.4	4.5
10.937	4.5	4.5	4.5	4.6	4.6	4.6	4.6
10.981	4.6	4.7	4.7	4.7	4.7	4.8	4.8
11.026	4.8	4.9	4.9	4.9	4.9	5.0	5.0
11.070	5.0	5.0	5.1	5.1	5.1	5.1	5.2
11.114	5.2	5.3	5.3	5.4	5.4	5.4	5.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.158	5.5	5.6	5.6	5.6	5.7	5.7	5.7
11.203	5.8	5.8	5.9	6.0	6.0	6.1	6.2
11.247	6.2	6.3	6.3	6.4	6.4	6.5	6.5
11.291	6.6	6.6	6.7	6.7	6.8	6.9	6.9
11.335	7.0	7.1	7.1	7.2	7.2	7.3	7.3
11.379	7.4	7.4	7.5	7.5	7.6	7.7	7.7
11.424	7.8	7.9	8.0	8.0	8.1	8.2	8.2
11.468	8.3	8.3	8.4	8.4	8.5	8.5	8.6
11.512	8.7	8.7	8.8	8.9	9.0	9.0	9.1
11.556	9.2	9.3	9.4	9.5	9.6	9.9	10.2
11.600	10.6	11.1	11.7	12.3	13.0	13.8	14.5
11.645	15.3	16.0	16.6	17.3	17.9	18.5	19.1
11.689	19.9	20.8	21.8	23.0	24.4	25.9	27.5
11.733	29.2	30.8	32.4	33.9	35.3	36.6	37.9
11.777	39.1	40.4	41.7	43.2	44.9	46.8	48.9
11.821	51.1	53.4	55.8	58.1	60.4	62.6	64.6
11.866	66.6	68.5	70.5	72.7	75.3	78.2	81.7
11.910	85.7	90.2	95.1	100.1	105.3	110.4	115.3
11.954	119.9	124.1	127.9	131.1	133.7	135.7	137.1
11.998	137.7	137.7	137.0	135.8	134.1	132.2	130.0
12.043	127.8	125.6	123.5	121.6	119.7	117.8	115.7
12.087	113.3	110.3	106.7	102.4	97.4	91.7	85.7
12.131	79.4	73.0	66.9	61.1	55.8	51.0	46.7
12.175	43.1	39.9	37.2	34.9	32.9	31.2	29.6
12.219	28.3	27.1	26.1	25.2	24.4	23.8	23.2
12.264	22.6	22.2	21.8	21.5	21.2	20.9	20.6
12.308	20.3	20.0	19.7	19.5	19.2	19.0	18.7
12.352	18.5	18.3	18.1	18.0	17.8	17.7	17.6
12.396	17.4	17.3	17.1	16.9	16.7	16.5	16.3

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
12.440	16.1	15.9	15.7	15.5	15.4	15.3	15.1
12.485	15.0	14.9	14.7	14.6	14.4	14.2	14.0
12.529	13.8	13.6	13.4	13.2	13.0	12.8	12.7
12.573	12.6	12.4	12.3	12.2	12.1	12.0	11.8
12.617	11.7	11.6	11.4	11.3	11.1	11.0	10.9
12.661	10.8	10.7	10.6	10.6	10.5	10.4	10.4
12.706	10.3	10.3	10.2	10.1	10.1	10.0	10.0
12.750	9.9	9.9	9.8	9.8	9.8	9.7	9.7
12.794	9.7	9.6	9.6	9.5	9.5	9.4	9.4
12.838	9.4	9.3	9.3	9.2	9.2	9.2	9.1
12.883	9.1	9.1	9.0	9.0	9.0	8.9	8.9
12.927	8.8	8.8	8.7	8.7	8.6	8.6	8.6
12.971	8.5	8.5	8.5	8.4	8.4	8.4	8.3
13.015	8.3	8.2	8.2	8.1	8.1	8.1	8.0
13.059	8.0	7.9	7.9	7.9	7.9	7.8	7.8
13.104	7.8	7.7	7.7	7.7	7.6	7.6	7.5
13.148	7.5	7.5	7.4	7.4	7.4	7.4	7.4
13.192	7.3	7.3	7.3	7.3	7.2	7.2	7.2
13.236	7.2	7.1	7.1	7.1	7.1	7.0	7.0
13.280	7.0	7.0	7.0	7.0	6.9	6.9	6.9
13.325	6.9	6.8	6.8	6.8	6.8	6.7	6.7
13.369	6.7	6.7	6.7	6.7	6.6	6.6	6.6

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
13.413	6.6	6.5	6.5	6.5	6.5	6.4	6.4
13.457	6.4	6.4	6.4	6.3	6.3	6.3	6.3
13.501	6.3	6.3	6.2	6.2	6.2	6.2	6.1
13.546	6.1	6.1	6.1	6.0	6.0	6.0	6.0
13.590	6.0	6.0	5.9	5.9	5.9	5.9	5.9
13.634	5.8	5.8	5.8	5.8	5.8	5.7	5.7
13.678	5.7	5.7	5.7	5.7	5.7	5.6	5.6
13.723	5.6	5.6	5.6	5.5	5.5	5.5	5.5
13.767	5.5	5.5	5.5	5.4	5.4	5.4	5.4
13.811	5.4	5.4	5.4	5.3	5.3	5.3	5.3
13.855	5.3	5.2	5.2	5.2	5.2	5.2	5.2
13.899	5.2	5.2	5.1	5.1	5.1	5.1	5.1
13.944	5.1	5.0	5.0	5.0	5.0	5.0	5.0
13.988	5.0	4.9	4.9	4.9	4.9	4.9	4.9
14.032	4.8	4.8	4.8	4.8	4.8	4.8	4.7
14.076	4.7	4.7	4.7	4.7	4.7	4.7	4.7
14.120	4.7	4.6	4.6	4.6	4.6	4.6	4.6
14.165	4.6	4.6	4.6	4.6	4.5	4.5	4.5
14.209	4.5	4.5	4.5	4.5	4.5	4.5	4.5
14.253	4.5	4.5	4.5	4.5	4.5	4.4	4.4
14.297	4.4	4.4	4.4	4.4	4.4	4.4	4.4
14.341	4.4	4.4	4.4	4.4	4.4	4.4	4.4
14.386	4.4	4.4	4.4	4.4	4.3	4.3	4.3
14.430	4.3	4.3	4.3	4.3	4.3	4.3	4.3
14.474	4.3	4.3	4.3	4.3	4.3	4.3	4.3
14.518	4.3	4.2	4.2	4.2	4.2	4.2	4.2
14.563	4.2	4.2	4.2	4.2	4.2	4.2	4.2

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
14.607	4.2	4.2	4.2	4.2	4.2	4.2	4.1
14.651	4.1	4.1	4.1	4.1	4.1	4.1	4.1
14.695	4.1	4.1	4.1	4.1	4.1	4.1	4.1
14.739	4.1	4.1	4.1	4.1	4.0	4.0	4.0
14.784	4.0	4.0	4.0	4.0	4.0	4.0	4.0
14.828	4.0	4.0	4.0	4.0	4.0	4.0	4.0
14.872	4.0	3.9	3.9	3.9	3.9	3.9	3.9
14.916	3.9	3.9	3.9	3.9	3.9	3.9	3.9
14.960	3.9	3.9	3.9	3.9	3.9	3.9	3.9
15.005	3.9	3.8	3.8	3.8	3.8	3.8	3.8
15.049	3.8	3.8	3.8	3.8	3.8	3.8	3.8
15.093	3.8	3.8	3.8	3.8	3.7	3.7	3.7
15.137	3.7	3.7	3.7	3.7	3.7	3.7	3.7
15.181	3.7	3.7	3.7	3.7	3.7	3.7	3.7
15.226	3.7	3.7	3.6	3.6	3.6	3.6	3.6
15.270	3.6	3.6	3.6	3.6	3.6	3.6	3.6
15.314	3.6	3.6	3.6	3.6	3.6	3.6	3.5
15.358	3.5	3.5	3.5	3.5	3.5	3.5	3.5
15.403	3.5	3.5	3.5	3.5	3.5	3.5	3.5
15.447	3.5	3.5	3.5	3.4	3.4	3.4	3.4
15.491	3.4	3.4	3.4	3.4	3.4	3.4	3.4
15.535	3.4	3.4	3.4	3.4	3.4	3.4	3.4
15.579	3.4	3.4	3.4	3.3	3.3	3.3	3.3
15.624	3.3	3.3	3.3	3.3	3.3	3.3	3.3

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.668	3.3	3.3	3.3	3.3	3.3	3.2	
15.712	3.2	3.2	3.2	3.2	3.2	3.2	
15.756	3.2	3.2	3.2	3.2	3.2	3.2	
15.800	3.2	3.2	3.2	3.2	3.1	3.1	
15.845	3.1	3.1	3.1	3.1	3.1	3.1	
15.889	3.1	3.1	3.1	3.1	3.1	3.1	
15.933	3.1	3.0	3.0	3.0	3.0	3.0	
15.977	3.0	3.0	3.0	3.0	3.0	3.0	
16.021	3.0	3.0	3.0	3.0	3.0	2.9	
16.066	2.9	2.9	2.9	2.9	2.9	2.9	
16.110	2.9	2.9	2.9	2.9	2.9	2.9	
16.154	2.9	2.9	2.9	2.9	2.9	2.9	
16.198	2.9	2.9	2.9	2.9	2.8	2.8	
16.243	2.8	2.8	2.8	2.8	2.8	2.8	
16.287	2.8	2.8	2.8	2.8	2.8	2.8	
16.331	2.8	2.8	2.8	2.8	2.8	2.8	
16.375	2.8	2.8	2.8	2.8	2.8	2.8	
16.419	2.8	2.8	2.8	2.8	2.8	2.8	
16.464	2.8	2.8	2.8	2.8	2.8	2.8	
16.508	2.8	2.8	2.8	2.8	2.8	2.7	
16.552	2.7	2.7	2.7	2.7	2.7	2.7	
16.596	2.7	2.7	2.7	2.7	2.7	2.7	
16.640	2.7	2.7	2.7	2.7	2.7	2.7	
16.685	2.7	2.7	2.7	2.7	2.7	2.7	
16.729	2.7	2.7	2.7	2.7	2.7	2.7	

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
16.773	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.817	2.7	2.7	2.7	2.7	2.7	2.7	2.7
16.861	2.7	2.6	2.6	2.6	2.6	2.6	2.6
16.906	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.950	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16.994	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.038	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.083	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.127	2.6	2.6	2.6	2.6	2.6	2.6	2.6
17.171	2.6	2.6	2.6	2.6	2.6	2.6	2.5
17.215	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.259	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.304	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.348	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.392	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.436	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.480	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17.525	2.5	2.4	2.4	2.4	2.4	2.4	2.4
17.569	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.613	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.657	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.701	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.746	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.790	2.4	2.4	2.4	2.4	2.4	2.4	2.4
17.834	2.4	2.4	2.4	2.3	2.3	2.3	2.3
17.878	2.3	2.3	2.3	2.3	2.3	2.3	2.3

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.923	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17.967	2.3	2.3	2.3	2.3	2.3	2.3	2.3
18.011	2.3	2.3	2.3	2.3	2.3	2.3	2.3
18.055	2.3	2.3	2.3	2.3	2.3	2.3	2.3
18.099	2.3	2.3	2.3	2.3	2.3	2.3	2.3
18.144	2.3	2.3	2.3	2.3	2.3	2.3	2.3
18.188	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.232	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.276	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.320	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.365	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.409	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.453	2.2	2.2	2.2	2.2	2.2	2.2	2.2
18.497	2.2	2.1	2.1	2.1	2.1	2.1	2.1
18.541	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.586	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.630	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.674	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.718	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.763	2.1	2.1	2.1	2.1	2.1	2.1	2.1
18.807	2.1	2.1	2.1	2.1	2.0	2.0	2.0
18.851	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.895	2.0	2.0	2.0	2.0	2.0	2.0	2.0

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
18.939	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18.984	2.0	2.0	2.0	2.0	2.0	2.0	2.0
19.028	2.0	2.0	2.0	2.0	2.0	2.0	2.0
19.072	2.0	2.0	2.0	2.0	2.0	2.0	2.0
19.116	2.0	2.0	2.0	2.0	2.0	2.0	1.9
19.160	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.205	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.249	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.293	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.337	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.381	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.426	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19.470	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.514	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.558	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.603	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.647	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.691	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.735	1.8	1.8	1.8	1.8	1.8	1.8	1.8
19.779	1.8	1.8	1.8	1.8	1.7	1.7	1.7
19.824	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.868	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.912	1.7	1.7	1.7	1.7	1.7	1.7	1.7
19.956	1.7	1.7	1.7	1.7	1.7	1.7	1.7
20.000	1.7	1.7	1.7	1.7	1.7	1.7	1.7
20.045	1.7	1.7	1.7	1.7	1.7	1.7	1.7
20.089	1.7	1.7	1.7	1.7	1.7	1.7	1.6
20.133	1.6	1.6	1.6	1.6	1.6	1.6	1.6

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
20.177	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.221	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.266	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.310	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.354	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.398	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.443	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.487	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.531	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.575	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.619	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.664	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.708	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.752	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.796	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.840	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.885	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.929	1.6	1.6	1.6	1.6	1.6	1.6	1.6
20.973	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.017	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.061	1.6	1.6	1.6	1.6	1.6	1.6	1.6

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
21.106	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.150	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.194	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.238	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.283	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.327	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.371	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.415	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.459	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.504	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.548	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.592	1.6	1.6	1.6	1.6	1.6	1.6	1.6
21.636	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.680	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.725	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.769	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.813	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.857	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.901	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.946	1.5	1.5	1.5	1.5	1.5	1.5	1.5
21.990	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.034	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.078	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.123	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.167	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.211	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.255	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.299	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.344	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.388	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
22.432	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.476	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.520	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.565	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.609	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.653	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.697	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.741	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.786	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.830	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.874	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.918	1.5	1.5	1.5	1.5	1.5	1.5	1.5
22.963	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.007	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.051	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.095	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.139	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.184	1.5	1.5	1.5	1.5	1.5	1.5	1.5
23.228	1.5	1.5	1.5	1.5	1.4	1.4	1.4

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
23.272	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.316	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.360	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.405	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.449	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.493	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.537	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.581	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.626	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.670	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.714	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.758	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.803	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.847	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.891	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.935	1.4	1.4	1.4	1.4	1.4	1.4	1.4
23.979	1.4	1.4	1.4	1.4	1.4	1.4	1.4
24.024	1.4	1.4	1.4	1.4	1.4	1.4	1.4
24.068	1.4	1.4	1.4	1.3	1.3	1.3	1.2
24.112	1.1	0.8					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Cat D	0.012		4.776		11.93	57.30	4723.64

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.809	0.5	0.5	0.5	0.5	0.5	0.5	0.5
8.853	0.5	0.5	0.5	0.5	0.5	0.5	0.5
8.897	0.5	0.5	0.5	0.5	0.5	0.5	0.5
8.941	0.5	0.5	0.5	0.6	0.6	0.6	0.6
8.986	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9.030	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9.074	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9.118	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9.163	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9.207	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9.251	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9.295	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9.339	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9.384	0.6	0.6	0.6	0.7	0.7	0.7	0.7
9.428	0.7	0.7	0.7	0.7	0.7	0.7	0.7
9.472	0.7	0.7	0.7	0.7	0.7	0.7	0.7
9.516	0.7	0.7	0.7	0.7	0.7	0.7	0.7

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
9.560	0.7	0.7	0.7	0.7	0.7	0.7	0.7
9.605	0.7	0.7	0.7	0.7	0.7	0.7	0.7
9.649	0.7	0.7	0.7	0.7	0.7	0.7	0.7
9.693	0.7	0.7	0.7	0.7	0.8	0.8	0.8
9.737	0.8	0.8	0.8	0.8	0.8	0.8	0.8
9.781	0.8	0.8	0.8	0.8	0.8	0.8	0.8
9.826	0.8	0.8	0.8	0.8	0.8	0.8	0.8
9.870	0.8	0.8	0.8	0.8	0.9	0.9	0.9
9.914	0.9	0.9	0.9	0.9	0.9	0.9	0.9
9.958	0.9	0.9	0.9	0.9	0.9	0.9	0.9
10.003	0.9	0.9	0.9	0.9	0.9	0.9	0.9
10.047	0.9	0.9	1.0	1.0	1.0	1.0	1.0
10.091	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10.135	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10.179	1.0	1.0	1.1	1.1	1.1	1.1	1.1
10.224	1.1	1.1	1.1	1.1	1.1	1.1	1.1
10.268	1.1	1.1	1.1	1.1	1.1	1.1	1.1
10.312	1.2	1.2	1.2	1.2	1.2	1.2	1.2
10.356	1.2	1.2	1.2	1.2	1.2	1.2	1.2
10.400	1.2	1.2	1.2	1.2	1.3	1.3	1.3
10.445	1.3	1.3	1.3	1.3	1.3	1.3	1.3
10.489	1.3	1.3	1.3	1.3	1.3	1.3	1.3
10.533	1.4	1.4	1.4	1.4	1.4	1.4	1.4
10.577	1.4	1.4	1.4	1.4	1.4	1.4	1.5
10.621	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10.666	1.5	1.5	1.6	1.6	1.6	1.6	1.6
10.710	1.6	1.6	1.6	1.6	1.6	1.6	1.6
10.754	1.7	1.7	1.7	1.7	1.7	1.7	1.7
10.798	1.7	1.7	1.7	1.8	1.8	1.8	1.8
10.843	1.8	1.8	1.8	1.8	1.8	1.9	1.9
10.887	1.9	1.9	1.9	1.9	1.9	1.9	1.9
10.931	1.9	1.9	2.0	2.0	2.0	2.0	2.0
10.975	2.0	2.0	2.0	2.0	2.1	2.1	2.1
11.019	2.1	2.1	2.1	2.1	2.1	2.2	2.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.064	2.2	2.2	2.2	2.3	2.3	2.3	2.3
11.108	2.3	2.3	2.3	2.4	2.4	2.4	2.4
11.152	2.4	2.5	2.5	2.5	2.6	2.6	2.6
11.196	2.6	2.6	2.7	2.7	2.7	2.7	2.7
11.240	2.8	2.8	2.8	2.8	2.9	2.9	2.9
11.285	3.0	3.0	3.0	3.0	3.0	3.1	3.1
11.329	3.1	3.1	3.1	3.2	3.2	3.2	3.3
11.373	3.3	3.3	3.4	3.4	3.4	3.4	3.4
11.417	3.5	3.5	3.5	3.5	3.6	3.6	3.6
11.461	3.7	3.7	3.7	3.7	3.8	3.8	3.8
11.506	3.8	3.9	4.0	4.1	4.2	4.5	4.7
11.550	5.0	5.4	5.7	6.0	6.4	6.7	6.9
11.594	7.2	7.4	7.6	7.8	8.0	8.4	8.8
11.638	9.3	9.9	10.6	11.4	12.1	12.8	13.5
11.683	14.1	14.7	15.2	15.7	16.1	16.5	17.0

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
11.727	17.6	18.3	19.1	20.0	21.0	22.0	23.1
11.771	24.1	25.1	26.0	26.8	27.5	28.2	28.8
11.815	29.6	30.5	31.6	33.1	34.8	36.9	39.1
11.859	41.3	43.6	45.8	47.9	49.9	51.7	53.3
11.904	54.6	55.7	56.5	57.1	57.3	57.2	56.8
11.948	56.1	55.2	54.2	53.2	52.2	51.2	50.3
11.992	49.5	48.9	48.3	47.7	46.9	45.9	44.5
12.036	42.6	40.3	37.7	34.9	32.1	29.3	26.6
12.080	24.1	21.9	19.9	18.2	16.9	15.7	14.7
12.125	13.9	13.1	12.5	11.9	11.4	10.9	10.5
12.169	10.2	9.9	9.6	9.4	9.2	9.0	8.9
12.213	8.8	8.6	8.5	8.4	8.3	8.2	8.1
12.257	8.0	7.8	7.7	7.6	7.5	7.5	7.4
12.301	7.3	7.3	7.3	7.2	7.2	7.1	7.0
12.346	6.9	6.8	6.8	6.7	6.6	6.5	6.4
12.390	6.3	6.3	6.2	6.2	6.2	6.1	6.1
12.434	6.0	5.9	5.8	5.7	5.6	5.5	5.5
12.478	5.4	5.3	5.2	5.2	5.1	5.1	5.0
12.523	5.0	5.0	4.9	4.9	4.8	4.7	4.7
12.567	4.6	4.6	4.5	4.5	4.4	4.4	4.3
12.611	4.3	4.3	4.3	4.3	4.2	4.2	4.2
12.655	4.2	4.1	4.1	4.1	4.1	4.0	4.0
12.699	4.0	4.0	4.0	4.0	4.0	4.0	3.9
12.744	3.9	3.9	3.9	3.9	3.8	3.8	3.8
12.788	3.8	3.8	3.7	3.7	3.7	3.7	3.7
12.832	3.7	3.7	3.7	3.6	3.6	3.6	3.6
12.876	3.6	3.5	3.5	3.5	3.5	3.5	3.5
12.920	3.5	3.5	3.4	3.4	3.4	3.4	3.4
12.965	3.3	3.3	3.3	3.3	3.3	3.3	3.2
13.009	3.2	3.2	3.2	3.2	3.2	3.2	3.2
13.053	3.1	3.1	3.1	3.1	3.1	3.1	3.0
13.097	3.0	3.0	3.0	3.0	3.0	3.0	3.0
13.141	3.0	3.0	3.0	2.9	2.9	2.9	2.9
13.186	2.9	2.9	2.9	2.9	2.9	2.9	2.9
13.230	2.9	2.8	2.8	2.8	2.8	2.8	2.8
13.274	2.8	2.8	2.8	2.8	2.7	2.7	2.7

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
13.318	2.7	2.7	2.7	2.7	2.7	2.7	2.7
13.363	2.7	2.7	2.6	2.6	2.6	2.6	2.6
13.407	2.6	2.6	2.6	2.6	2.6	2.6	2.6
13.451	2.5	2.5	2.5	2.5	2.5	2.5	2.5
13.495	2.5	2.5	2.5	2.5	2.5	2.4	2.4
13.539	2.4	2.4	2.4	2.4	2.4	2.4	2.4
13.584	2.4	2.4	2.3	2.3	2.3	2.3	2.3
13.628	2.3	2.3	2.3	2.3	2.3	2.3	2.3
13.672	2.3	2.3	2.3	2.3	2.2	2.2	2.2
13.716	2.2	2.2	2.2	2.2	2.2	2.2	2.2
13.760	2.2	2.2	2.2	2.2	2.2	2.2	2.1
13.805	2.1	2.1	2.1	2.1	2.1	2.1	2.1
13.849	2.1	2.1	2.1	2.1	2.1	2.1	2.1

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
13.893	2.1	2.0	2.0	2.0	2.0	2.0	2.0
13.937	2.0	2.0	2.0	2.0	2.0	2.0	2.0
13.981	2.0	2.0	1.9	1.9	1.9	1.9	1.9
14.026	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14.070	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14.114	1.9	1.9	1.9	1.9	1.9	1.9	1.8
14.158	1.8	1.8	1.8	1.8	1.8	1.8	1.8
14.203	1.8	1.8	1.8	1.8	1.8	1.8	1.8
14.247	1.8	1.8	1.8	1.8	1.8	1.8	1.8
14.291	1.8	1.8	1.8	1.8	1.8	1.8	1.8
14.335	1.8	1.8	1.8	1.8	1.8	1.8	1.8
14.379	1.8	1.8	1.8	1.8	1.8	1.8	1.8
14.424	1.8	1.8	1.7	1.7	1.7	1.7	1.7
14.468	1.7	1.7	1.7	1.7	1.7	1.7	1.7
14.512	1.7	1.7	1.7	1.7	1.7	1.7	1.7
14.556	1.7	1.7	1.7	1.7	1.7	1.7	1.7
14.600	1.7	1.7	1.7	1.7	1.7	1.7	1.7
14.645	1.7	1.7	1.7	1.7	1.7	1.7	1.7
14.689	1.7	1.7	1.7	1.7	1.7	1.7	1.7
14.733	1.6	1.6	1.6	1.6	1.6	1.6	1.6
14.777	1.6	1.6	1.6	1.6	1.6	1.6	1.6
14.821	1.6	1.6	1.6	1.6	1.6	1.6	1.6
14.866	1.6	1.6	1.6	1.6	1.6	1.6	1.6
14.910	1.6	1.6	1.6	1.6	1.6	1.6	1.6
14.954	1.6	1.6	1.6	1.6	1.6	1.6	1.6
14.998	1.6	1.6	1.5	1.5	1.5	1.5	1.5
15.043	1.5	1.5	1.5	1.5	1.5	1.5	1.5
15.087	1.5	1.5	1.5	1.5	1.5	1.5	1.5
15.131	1.5	1.5	1.5	1.5	1.5	1.5	1.5
15.175	1.5	1.5	1.5	1.5	1.5	1.5	1.5
15.219	1.5	1.5	1.5	1.5	1.5	1.5	1.5
15.264	1.5	1.5	1.5	1.5	1.5	1.5	1.4
15.308	1.4	1.4	1.4	1.4	1.4	1.4	1.4
15.352	1.4	1.4	1.4	1.4	1.4	1.4	1.4
15.396	1.4	1.4	1.4	1.4	1.4	1.4	1.4
15.440	1.4	1.4	1.4	1.4	1.4	1.4	1.4
15.485	1.4	1.4	1.4	1.4	1.4	1.4	1.4
15.529	1.4	1.4	1.4	1.4	1.4	1.4	1.4

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.573	1.4	1.3	1.3	1.3	1.3	1.3	1.3
15.617	1.3	1.3	1.3	1.3	1.3	1.3	1.3
15.661	1.3	1.3	1.3	1.3	1.3	1.3	1.3
15.706	1.3	1.3	1.3	1.3	1.3	1.3	1.3
15.750	1.3	1.3	1.3	1.3	1.3	1.3	1.3
15.794	1.3	1.3	1.3	1.3	1.3	1.3	1.3
15.838	1.3	1.3	1.3	1.3	1.3	1.2	1.2
15.883	1.2	1.2	1.2	1.2	1.2	1.2	1.2
15.927	1.2	1.2	1.2	1.2	1.2	1.2	1.2
15.971	1.2	1.2	1.2	1.2	1.2	1.2	1.2
16.015	1.2	1.2	1.2	1.2	1.2	1.2	1.2

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
16.059	1.2	1.2	1.2	1.2	1.2	1.2	1.2
16.104	1.2	1.2	1.2	1.2	1.2	1.2	1.2
16.148	1.2	1.2	1.2	1.2	1.2	1.2	1.2
16.192	1.2	1.2	1.2	1.2	1.2	1.2	1.2
16.236	1.2	1.2	1.2	1.2	1.2	1.2	1.2
16.280	1.2	1.1	1.1	1.1	1.1	1.1	1.1
16.325	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.369	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.413	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.457	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.501	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.546	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.590	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.634	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.678	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.723	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.767	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.811	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.855	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.899	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.944	1.1	1.1	1.1	1.1	1.1	1.1	1.1
16.988	1.1	1.1	1.1	1.1	1.1	1.1	1.1
17.032	1.1	1.1	1.1	1.1	1.1	1.1	1.1
17.076	1.1	1.1	1.1	1.0	1.0	1.0	1.0
17.120	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.165	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.209	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.253	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.297	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.341	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.386	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.430	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.474	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.518	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.563	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.607	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.651	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.695	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.739	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.784	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.828	1.0	1.0	1.0	1.0	1.0	1.0	1.0
17.872	1.0	1.0	1.0	0.9	0.9	0.9	0.9
17.916	0.9	0.9	0.9	0.9	0.9	0.9	0.9
17.960	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.005	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.049	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.093	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.137	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.181	0.9	0.9	0.9	0.9	0.9	0.9	0.9

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
18.226	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.270	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.314	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.358	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.403	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.447	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.491	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.535	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.579	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.624	0.9	0.9	0.9	0.9	0.9	0.9	0.9
18.668	0.9	0.9	0.8	0.8	0.8	0.8	0.8
18.712	0.8	0.8	0.8	0.8	0.8	0.8	0.8
18.756	0.8	0.8	0.8	0.8	0.8	0.8	0.8
18.800	0.8	0.8	0.8	0.8	0.8	0.8	0.8
18.845	0.8	0.8	0.8	0.8	0.8	0.8	0.8
18.889	0.8	0.8	0.8	0.8	0.8	0.8	0.8
18.933	0.8	0.8	0.8	0.8	0.8	0.8	0.8
18.977	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.021	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.066	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.110	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.154	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.198	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.243	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.287	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.331	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.375	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.419	0.8	0.8	0.8	0.8	0.8	0.8	0.8
19.464	0.8	0.7	0.7	0.7	0.7	0.7	0.7
19.508	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.552	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.596	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.640	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.685	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.729	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.773	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.817	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.861	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.906	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.950	0.7	0.7	0.7	0.7	0.7	0.7	0.7
19.994	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.038	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
20.083	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.127	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.171	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.215	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.259	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.304	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.348	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
20.392	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.436	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.480	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.525	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.569	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.613	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.657	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.701	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.746	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.790	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.834	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.878	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.923	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20.967	0.7	0.6	0.6	0.6	0.6	0.6	0.6
21.011	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.055	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.099	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.144	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.188	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.232	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.276	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.320	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.365	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.409	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.453	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.497	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.541	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.586	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.630	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.674	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.718	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.763	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.807	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.851	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.895	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.939	0.6	0.6	0.6	0.6	0.6	0.6	0.6
21.984	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.028	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.072	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.116	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.160	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.205	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.249	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.293	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
22.337	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.381	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.426	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.470	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.514	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
22.558	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.603	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.647	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.691	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.735	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.779	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.824	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.868	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.912	0.6	0.6	0.6	0.6	0.6	0.6	0.6
22.956	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.000	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.045	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.089	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.133	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.177	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.221	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.266	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.310	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.354	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.398	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.443	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.487	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.531	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.575	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.619	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.664	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.708	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.752	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.796	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.840	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.885	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.929	0.6	0.6	0.6	0.6	0.6	0.6	0.6
23.973	0.6	0.6	0.6	0.6	0.6	0.6	0.6
24.017	0.6	0.5	0.5	0.5			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Cat A+B+C	0.045		4.850		11.93	213.84	4723.64

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.788	0.5	0.5	0.5	0.5	0.5	0.5	0.5
6.832	0.5	0.5	0.5	0.5	0.5	0.5	0.5
6.876	0.5	0.5	0.5	0.5	0.6	0.6	0.6

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
6.920	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.965	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.009	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.053	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.097	0.6	0.6	0.6	0.6	0.6	0.6	0.7
7.141	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.186	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.230	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.274	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.318	0.7	0.7	0.7	0.7	0.7	0.7	0.8
7.363	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.407	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.451	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.495	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.539	0.8	0.8	0.8	0.8	0.8	0.9	0.9
7.584	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.628	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.672	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.716	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.760	0.9	0.9	0.9	0.9	1.0	1.0	1.0
7.805	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.849	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.893	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.937	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.981	1.0	1.0	1.1	1.1	1.1	1.1	1.1
8.026	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.070	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.114	1.1	1.1	1.1	1.1	1.1	1.2	1.2
8.158	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.203	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.247	1.2	1.3	1.3	1.3	1.3	1.3	1.3
8.291	1.3	1.3	1.3	1.3	1.3	1.3	1.3
8.335	1.3	1.3	1.3	1.4	1.4	1.4	1.4
8.379	1.4	1.4	1.4	1.4	1.4	1.4	1.4
8.424	1.4	1.4	1.4	1.4	1.5	1.5	1.5
8.468	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.512	1.5	1.5	1.5	1.5	1.5	1.6	1.6
8.556	1.6	1.6	1.6	1.6	1.6	1.6	1.6
8.600	1.6	1.6	1.6	1.6	1.6	1.7	1.7
8.645	1.7	1.7	1.7	1.7	1.7	1.7	1.7
8.689	1.7	1.7	1.7	1.7	1.8	1.8	1.8
8.733	1.8	1.8	1.8	1.8	1.8	1.8	1.8
8.777	1.8	1.8	1.8	1.9	1.9	1.9	1.9
8.821	1.9	1.9	1.9	1.9	1.9	1.9	1.9
8.866	1.9	1.9	2.0	2.0	2.0	2.0	2.0
8.910	2.0	2.0	2.0	2.0	2.0	2.0	2.0
8.954	2.1	2.1	2.1	2.1	2.1	2.1	2.1
8.998	2.1	2.1	2.1	2.1	2.1	2.1	2.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.043	2.2	2.2	2.2	2.2	2.2	2.2	2.2

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
9.087	2.2	2.2	2.2	2.2	2.2	2.2	2.2
9.131	2.2	2.3	2.3	2.3	2.3	2.3	2.3
9.175	2.3	2.3	2.3	2.3	2.3	2.3	2.3
9.219	2.3	2.3	2.3	2.3	2.3	2.3	2.3
9.264	2.3	2.3	2.3	2.4	2.4	2.4	2.4
9.308	2.4	2.4	2.4	2.4	2.4	2.4	2.4
9.352	2.4	2.4	2.4	2.4	2.4	2.4	2.4
9.396	2.4	2.4	2.4	2.4	2.4	2.4	2.4
9.440	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9.485	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9.529	2.5	2.5	2.5	2.5	2.5	2.6	2.6
9.573	2.6	2.6	2.6	2.6	2.6	2.6	2.6
9.617	2.6	2.6	2.6	2.6	2.7	2.7	2.7
9.661	2.7	2.7	2.7	2.7	2.8	2.8	2.8
9.706	2.8	2.8	2.8	2.8	2.8	2.8	2.9
9.750	2.9	2.9	2.9	2.9	2.9	2.9	3.0
9.794	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9.838	3.0	3.1	3.1	3.1	3.1	3.1	3.1
9.883	3.2	3.2	3.2	3.2	3.2	3.2	3.2
9.927	3.2	3.2	3.3	3.3	3.3	3.3	3.3
9.971	3.3	3.4	3.4	3.4	3.4	3.4	3.4
10.015	3.4	3.4	3.5	3.5	3.5	3.5	3.5
10.059	3.5	3.6	3.6	3.6	3.6	3.6	3.7
10.104	3.7	3.7	3.7	3.7	3.7	3.7	3.8
10.148	3.8	3.8	3.8	3.9	3.9	3.9	3.9
10.192	3.9	4.0	4.0	4.0	4.0	4.0	4.0
10.236	4.0	4.1	4.1	4.1	4.1	4.2	4.2
10.280	4.2	4.2	4.3	4.3	4.3	4.3	4.3
10.325	4.3	4.4	4.4	4.4	4.4	4.5	4.5
10.369	4.5	4.5	4.6	4.6	4.6	4.6	4.6
10.413	4.6	4.7	4.7	4.7	4.7	4.7	4.8
10.457	4.8	4.8	4.9	4.9	4.9	4.9	4.9
10.501	5.0	5.0	5.0	5.0	5.0	5.1	5.1
10.546	5.1	5.2	5.2	5.2	5.3	5.3	5.3
10.590	5.3	5.4	5.4	5.4	5.4	5.5	5.5
10.634	5.5	5.5	5.6	5.6	5.7	5.7	5.8
10.678	5.8	5.8	5.9	5.9	5.9	5.9	6.0
10.723	6.0	6.0	6.1	6.1	6.1	6.2	6.2
10.767	6.3	6.3	6.4	6.4	6.4	6.5	6.5
10.811	6.5	6.5	6.6	6.6	6.6	6.7	6.7
10.855	6.8	6.8	6.9	6.9	7.0	7.0	7.0
10.899	7.1	7.1	7.1	7.1	7.2	7.2	7.2
10.944	7.3	7.3	7.4	7.4	7.5	7.5	7.6
10.988	7.6	7.6	7.7	7.7	7.7	7.8	7.8
11.032	7.9	7.9	8.0	8.1	8.1	8.2	8.3
11.076	8.4	8.4	8.5	8.5	8.6	8.6	8.7
11.120	8.7	8.8	8.8	8.9	9.0	9.1	9.2
11.165	9.3	9.4	9.5	9.6	9.7	9.8	9.8
11.209	9.9	10.0	10.0	10.1	10.2	10.3	10.4
11.253	10.5	10.6	10.7	10.8	10.9	11.0	11.1

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
11.297	11.2	11.3	11.3	11.4	11.5	11.5	11.6
11.341	11.7	11.8	12.0	12.1	12.2	12.3	12.4
11.386	12.5	12.6	12.7	12.8	12.8	12.9	13.0
11.430	13.1	13.2	13.3	13.4	13.5	13.6	13.8
11.474	13.9	14.0	14.1	14.2	14.3	14.4	14.5
11.518	14.8	15.2	15.8	16.6	17.6	18.8	20.0
11.563	21.3	22.5	23.7	24.8	25.8	26.7	27.5
11.607	28.2	29.1	30.0	31.2	32.8	34.8	37.1
11.651	39.7	42.4	45.1	47.8	50.3	52.7	54.9
11.695	56.8	58.5	60.1	61.7	63.5	65.6	68.1
11.739	71.2	74.7	78.4	82.3	86.2	89.9	93.5
11.784	96.9	100.0	102.7	105.1	107.6	110.4	113.8
11.828	118.0	123.4	130.0	137.6	145.8	154.3	162.8
11.872	171.1	178.9	186.2	192.9	198.8	203.7	207.8
11.916	210.9	212.9	213.8	213.5	211.9	209.3	206.0
11.960	202.3	198.5	194.7	191.1	187.8	184.9	182.5
12.005	180.4	178.0	175.1	171.2	166.0	159.0	150.5
12.049	140.8	130.4	119.8	109.3	99.4	90.1	81.7
12.093	74.3	68.1	63.0	58.6	54.9	51.8	49.0
12.137	46.5	44.3	42.4	40.7	39.3	38.0	36.8
12.181	35.8	35.0	34.3	33.7	33.1	32.7	32.3
12.226	31.9	31.5	31.0	30.6	30.1	29.7	29.3
12.270	28.9	28.5	28.2	27.9	27.6	27.4	27.2
12.314	27.1	26.9	26.7	26.5	26.2	25.9	25.5
12.358	25.2	24.9	24.5	24.2	23.9	23.7	23.5
12.403	23.3	23.1	23.0	22.8	22.6	22.3	22.0
12.447	21.7	21.4	21.0	20.7	20.3	20.0	19.8
12.491	19.5	19.3	19.1	19.0	18.8	18.7	18.5
12.535	18.3	18.1	17.9	17.7	17.4	17.2	17.0
12.579	16.8	16.6	16.5	16.3	16.2	16.1	16.0
12.624	16.0	15.9	15.8	15.7	15.6	15.5	15.4
12.668	15.3	15.2	15.1	15.1	15.0	15.0	14.9
12.712	14.9	14.8	14.8	14.7	14.7	14.6	14.5
12.756	14.4	14.4	14.3	14.2	14.2	14.1	14.0
12.800	14.0	14.0	13.9	13.9	13.8	13.8	13.7
12.845	13.6	13.6	13.5	13.4	13.3	13.3	13.2
12.889	13.1	13.1	13.0	13.0	13.0	12.9	12.9
12.933	12.8	12.8	12.7	12.6	12.5	12.5	12.4
12.977	12.3	12.2	12.2	12.1	12.1	12.1	12.0
13.021	12.0	11.9	11.9	11.8	11.8	11.7	11.6
13.066	11.6	11.5	11.5	11.4	11.4	11.3	11.3
13.110	11.3	11.3	11.2	11.2	11.2	11.1	11.1
13.154	11.0	11.0	10.9	10.9	10.9	10.8	10.8
13.198	10.8	10.7	10.7	10.7	10.7	10.7	10.6
13.243	10.6	10.5	10.5	10.5	10.4	10.4	10.3
13.287	10.3	10.3	10.2	10.2	10.2	10.2	10.2
13.331	10.1	10.1	10.1	10.0	10.0	9.9	9.9
13.375	9.9	9.8	9.8	9.8	9.7	9.7	9.7
13.419	9.7	9.6	9.6	9.6	9.5	9.5	9.5
13.464	9.4	9.4	9.3	9.3	9.3	9.2	9.2
13.508	9.2	9.2	9.2	9.1	9.1	9.1	9.0

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Area or Reach Identifier Start Time (hr)	Drainage Area (sq mi) (cfs)	Rain Gage ID or Location (cfs)	Runoff Amount (in) (cfs)	Peak Flow Elevation (ft) (cfs)	Time (hr) (cfs)	Rate (cfs) (cfs)	Rate (csm) (cfs)
		Flow Values @ time increment of 0.006 hr					
13.552	9.0	9.0	8.9	8.9	8.9	8.8	8.8
13.596	8.8	8.8	8.7	8.7	8.7	8.7	8.7
13.640	8.6	8.6	8.6	8.5	8.5	8.5	8.4
13.685	8.4	8.4	8.4	8.4	8.3	8.3	8.3
13.729	8.3	8.3	8.2	8.2	8.2	8.2	8.1
13.773	8.1	8.1	8.0	8.0	8.0	8.0	8.0
13.817	8.0	7.9	7.9	7.9	7.9	7.8	7.8
13.861	7.8	7.8	7.7	7.7	7.7	7.7	7.6
13.906	7.6	7.6	7.6	7.6	7.6	7.5	7.5
13.950	7.5	7.4	7.4	7.4	7.3	7.3	7.3
13.994	7.3	7.3	7.2	7.2	7.2	7.2	7.2
14.038	7.2	7.1	7.1	7.1	7.1	7.1	7.0
14.083	7.0	7.0	7.0	7.0	7.0	7.0	7.0
14.127	7.0	6.9	6.9	6.9	6.9	6.9	6.9
14.171	6.9	6.9	6.8	6.8	6.8	6.8	6.8
14.215	6.8	6.8	6.8	6.8	6.8	6.8	6.8
14.259	6.7	6.7	6.7	6.7	6.7	6.7	6.7
14.304	6.7	6.7	6.7	6.7	6.7	6.7	6.7
14.348	6.6	6.6	6.6	6.6	6.6	6.6	6.6
14.392	6.6	6.6	6.6	6.6	6.5	6.5	6.5
14.436	6.5	6.5	6.5	6.5	6.5	6.5	6.5
14.480	6.5	6.5	6.5	6.4	6.4	6.4	6.4
14.525	6.4	6.4	6.4	6.4	6.4	6.4	6.4
14.569	6.4	6.3	6.3	6.3	6.3	6.3	6.3
14.613	6.3	6.3	6.3	6.3	6.3	6.3	6.2
14.657	6.2	6.2	6.2	6.2	6.2	6.2	6.2
14.701	6.2	6.2	6.2	6.2	6.2	6.2	6.1
14.746	6.1	6.1	6.1	6.1	6.1	6.1	6.1
14.790	6.1	6.1	6.0	6.0	6.0	6.0	6.0
14.834	6.0	6.0	6.0	6.0	6.0	6.0	6.0
14.878	6.0	5.9	5.9	5.9	5.9	5.9	5.9
14.923	5.9	5.9	5.9	5.9	5.9	5.9	5.9
14.967	5.8	5.8	5.8	5.8	5.8	5.8	5.8
15.011	5.8	5.8	5.8	5.8	5.8	5.7	5.7
15.055	5.7	5.7	5.7	5.7	5.7	5.7	5.7
15.099	5.7	5.7	5.7	5.7	5.7	5.6	5.6
15.144	5.6	5.6	5.6	5.6	5.6	5.6	5.6
15.188	5.5	5.5	5.5	5.5	5.5	5.5	5.5
15.232	5.5	5.5	5.5	5.5	5.5	5.5	5.4
15.276	5.4	5.4	5.4	5.4	5.4	5.4	5.4
15.320	5.4	5.4	5.4	5.4	5.4	5.3	5.3
15.365	5.3	5.3	5.3	5.3	5.3	5.3	5.3
15.409	5.3	5.3	5.2	5.2	5.2	5.2	5.2
15.453	5.2	5.2	5.2	5.2	5.2	5.2	5.2
15.497	5.2	5.1	5.1	5.1	5.1	5.1	5.1
15.541	5.1	5.1	5.1	5.1	5.1	5.0	5.0
15.586	5.0	5.0	5.0	5.0	5.0	5.0	5.0
15.630	5.0	5.0	5.0	5.0	4.9	4.9	4.9
15.674	4.9	4.9	4.9	4.9	4.9	4.9	4.9
15.718	4.9	4.9	4.9	4.9	4.8	4.8	4.8
15.763	4.8	4.8	4.8	4.8	4.8	4.8	4.7

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.807	4.7	4.7	4.7	4.7	4.7	4.7	4.7
15.851	4.7	4.7	4.7	4.7	4.7	4.6	4.6
15.895	4.6	4.6	4.6	4.6	4.6	4.6	4.6
15.939	4.6	4.6	4.6	4.5	4.5	4.5	4.5
15.984	4.5	4.5	4.5	4.5	4.5	4.5	4.5
16.028	4.5	4.5	4.4	4.4	4.4	4.4	4.4
16.072	4.4	4.4	4.4	4.4	4.4	4.4	4.4
16.116	4.4	4.4	4.4	4.4	4.4	4.4	4.4
16.160	4.4	4.3	4.3	4.3	4.3	4.3	4.3
16.205	4.3	4.3	4.3	4.3	4.3	4.3	4.3
16.249	4.3	4.3	4.3	4.3	4.3	4.3	4.3
16.293	4.3	4.3	4.3	4.3	4.3	4.3	4.3
16.337	4.3	4.3	4.3	4.3	4.3	4.3	4.2
16.381	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.426	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.470	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.514	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.558	4.2	4.2	4.2	4.2	4.2	4.1	4.1
16.603	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.647	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.691	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.735	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.779	4.1	4.1	4.1	4.1	4.0	4.0	4.0
16.824	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.868	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.912	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.956	4.0	4.0	4.0	4.0	4.0	4.0	4.0
17.000	4.0	4.0	4.0	4.0	3.9	3.9	3.9
17.045	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.089	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.133	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.177	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.221	3.9	3.9	3.9	3.9	3.8	3.8	3.8
17.266	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.310	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.354	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.398	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.443	3.8	3.8	3.7	3.7	3.7	3.7	3.7
17.487	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.531	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.575	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.619	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.664	3.7	3.6	3.6	3.6	3.6	3.6	3.6
17.708	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.752	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.796	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.840	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.885	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.929	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.973	3.5	3.5	3.5	3.5	3.5	3.5	3.5
18.017	3.5	3.5	3.5	3.5	3.5	3.5	3.5

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Cypress Creek Landfill Southern Sediment Basin Storage							

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
18.061	3.5	3.5	3.5	3.5	3.5	3.5	3.4
18.106	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.150	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.194	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.238	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.283	3.4	3.4	3.4	3.4	3.4	3.4	3.3
18.327	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.371	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.415	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.459	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.504	3.3	3.3	3.3	3.3	3.3	3.2	3.2
18.548	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.592	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.636	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.680	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.725	3.2	3.2	3.2	3.1	3.1	3.1	3.1
18.769	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.813	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.857	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.901	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.946	3.1	3.0	3.0	3.0	3.0	3.0	3.0
18.990	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.034	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.078	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.123	3.0	3.0	3.0	3.0	3.0	3.0	2.9
19.167	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.211	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.255	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.299	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.344	2.9	2.9	2.9	2.8	2.8	2.8	2.8
19.388	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.432	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.476	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.520	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.565	2.8	2.7	2.7	2.7	2.7	2.7	2.7
19.609	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.653	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.697	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.741	2.7	2.7	2.7	2.7	2.7	2.7	2.6
19.786	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.830	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.874	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.918	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.963	2.6	2.6	2.6	2.6	2.5	2.5	2.5
20.007	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.051	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.095	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.139	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.184	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.228	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.272	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
20.316	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.360	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.405	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.449	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.493	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.537	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.581	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.626	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.670	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.714	2.5	2.5	2.5	2.5	2.5	2.4	2.4
20.758	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.803	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.847	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.891	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.935	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.979	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.024	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.068	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.112	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.156	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.200	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.245	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.289	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.333	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.377	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.421	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.466	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.510	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.554	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.598	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.643	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.687	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.731	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.775	2.4	2.3	2.3	2.3	2.3	2.3	2.3
21.819	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.864	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.908	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.952	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.996	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.040	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.085	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.129	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.173	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.217	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.261	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.306	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.350	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.394	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.438	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.483	2.3	2.3	2.3	2.3	2.3	2.3	2.3

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
22.527	2.3	2.3	2.3	2.3	2.3	2.3	2.3

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
22.571	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.615	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.659	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.704	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.748	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.792	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.836	2.3	2.3	2.3	2.2	2.2	2.2	2.2
22.880	2.2	2.2	2.2	2.2	2.2	2.2	2.2
22.925	2.2	2.2	2.2	2.2	2.2	2.2	2.2
22.969	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.013	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.057	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.101	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.146	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.190	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.234	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.278	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.323	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.367	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.411	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.455	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.499	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.544	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.588	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.632	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.676	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.720	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.765	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.809	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.853	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.897	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.941	2.2	2.2	2.1	2.1	2.1	2.1	2.1
23.986	2.1	2.1	2.1	2.1	2.1	2.1	2.1
24.030	2.0	1.9	1.8	1.6	1.5	1.3	1.1
24.074	1.0	0.8	0.7	0.6	0.5		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
E. Swale	0.045	Upstream	4.850	2.01	11.93	213.84	4723.64

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.788	0.5	0.5	0.5	0.5	0.5	0.5	0.5
6.832	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
6.876	0.5	0.5	0.5	0.5	0.6	0.6	0.6
6.920	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.965	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.009	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.053	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.097	0.6	0.6	0.6	0.6	0.6	0.6	0.7
7.141	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.186	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.230	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.274	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.318	0.7	0.7	0.7	0.7	0.7	0.7	0.8
7.363	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.407	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.451	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.495	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.539	0.8	0.8	0.8	0.8	0.8	0.9	0.9
7.584	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.628	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.672	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.716	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.760	0.9	0.9	0.9	0.9	1.0	1.0	1.0
7.805	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.849	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.893	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.937	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.981	1.0	1.0	1.1	1.1	1.1	1.1	1.1
8.026	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.070	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.114	1.1	1.1	1.1	1.1	1.1	1.2	1.2
8.158	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.203	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.247	1.2	1.3	1.3	1.3	1.3	1.3	1.3
8.291	1.3	1.3	1.3	1.3	1.3	1.3	1.3
8.335	1.3	1.3	1.3	1.4	1.4	1.4	1.4
8.379	1.4	1.4	1.4	1.4	1.4	1.4	1.4
8.424	1.4	1.4	1.4	1.4	1.5	1.5	1.5
8.468	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.512	1.5	1.5	1.5	1.5	1.5	1.6	1.6
8.556	1.6	1.6	1.6	1.6	1.6	1.6	1.6
8.600	1.6	1.6	1.6	1.6	1.6	1.7	1.7
8.645	1.7	1.7	1.7	1.7	1.7	1.7	1.7
8.689	1.7	1.7	1.7	1.7	1.8	1.8	1.8
8.733	1.8	1.8	1.8	1.8	1.8	1.8	1.8
8.777	1.8	1.8	1.8	1.9	1.9	1.9	1.9
8.821	1.9	1.9	1.9	1.9	1.9	1.9	1.9
8.866	1.9	1.9	2.0	2.0	2.0	2.0	2.0
8.910	2.0	2.0	2.0	2.0	2.0	2.0	2.0
8.954	2.1	2.1	2.1	2.1	2.1	2.1	2.1
8.998	2.1	2.1	2.1	2.1	2.1	2.1	2.2

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
9.043	2.2	2.2	2.2	2.2	2.2	2.2	2.2
9.087	2.2	2.2	2.2	2.2	2.2	2.2	2.2
9.131	2.2	2.3	2.3	2.3	2.3	2.3	2.3
9.175	2.3	2.3	2.3	2.3	2.3	2.3	2.3
9.219	2.3	2.3	2.3	2.3	2.3	2.3	2.3

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.264	2.3	2.3	2.3	2.4	2.4	2.4	2.4
9.308	2.4	2.4	2.4	2.4	2.4	2.4	2.4
9.352	2.4	2.4	2.4	2.4	2.4	2.4	2.4
9.396	2.4	2.4	2.4	2.4	2.4	2.4	2.4
9.440	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9.485	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9.529	2.5	2.5	2.5	2.5	2.5	2.6	2.6
9.573	2.6	2.6	2.6	2.6	2.6	2.6	2.6
9.617	2.6	2.6	2.6	2.6	2.7	2.7	2.7
9.661	2.7	2.7	2.7	2.7	2.8	2.8	2.8
9.706	2.8	2.8	2.8	2.8	2.8	2.8	2.9
9.750	2.9	2.9	2.9	2.9	2.9	2.9	3.0
9.794	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9.838	3.0	3.1	3.1	3.1	3.1	3.1	3.1
9.883	3.2	3.2	3.2	3.2	3.2	3.2	3.2
9.927	3.2	3.2	3.3	3.3	3.3	3.3	3.3
9.971	3.3	3.4	3.4	3.4	3.4	3.4	3.4
10.015	3.4	3.4	3.5	3.5	3.5	3.5	3.5
10.059	3.5	3.6	3.6	3.6	3.6	3.6	3.7
10.104	3.7	3.7	3.7	3.7	3.7	3.7	3.8
10.148	3.8	3.8	3.8	3.9	3.9	3.9	3.9
10.192	3.9	4.0	4.0	4.0	4.0	4.0	4.0
10.236	4.0	4.1	4.1	4.1	4.1	4.2	4.2
10.280	4.2	4.2	4.3	4.3	4.3	4.3	4.3
10.325	4.3	4.4	4.4	4.4	4.4	4.5	4.5
10.369	4.5	4.5	4.6	4.6	4.6	4.6	4.6
10.413	4.6	4.7	4.7	4.7	4.7	4.7	4.8
10.457	4.8	4.8	4.9	4.9	4.9	4.9	4.9
10.501	5.0	5.0	5.0	5.0	5.0	5.1	5.1
10.546	5.1	5.2	5.2	5.2	5.3	5.3	5.3
10.590	5.3	5.4	5.4	5.4	5.4	5.5	5.5
10.634	5.5	5.5	5.6	5.6	5.7	5.7	5.8
10.678	5.8	5.8	5.9	5.9	5.9	5.9	6.0
10.723	6.0	6.0	6.1	6.1	6.1	6.2	6.2
10.767	6.3	6.3	6.4	6.4	6.4	6.5	6.5
10.811	6.5	6.5	6.6	6.6	6.6	6.7	6.7
10.855	6.8	6.8	6.9	6.9	7.0	7.0	7.0
10.899	7.1	7.1	7.1	7.1	7.2	7.2	7.2
10.944	7.3	7.3	7.4	7.4	7.5	7.5	7.6
10.988	7.6	7.6	7.7	7.7	7.7	7.8	7.8
11.032	7.9	7.9	8.0	8.1	8.1	8.2	8.3
11.076	8.4	8.4	8.5	8.5	8.6	8.6	8.7
11.120	8.7	8.8	8.8	8.9	9.0	9.1	9.2
11.165	9.3	9.4	9.5	9.6	9.7	9.8	9.8

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
11.209	9.9	10.0	10.0	10.1	10.2	10.3	10.4
11.253	10.5	10.6	10.7	10.8	10.9	11.0	11.1
11.297	11.2	11.3	11.3	11.4	11.5	11.5	11.6
11.341	11.7	11.8	12.0	12.1	12.2	12.3	12.4
11.386	12.5	12.6	12.7	12.8	12.8	12.9	13.0
11.430	13.1	13.2	13.3	13.4	13.5	13.6	13.8
11.474	13.9	14.0	14.1	14.2	14.3	14.4	14.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.518	14.8	15.2	15.8	16.6	17.6	18.8	20.0
11.563	21.3	22.5	23.7	24.8	25.8	26.7	27.5
11.607	28.2	29.1	30.0	31.2	32.8	34.8	37.1
11.651	39.7	42.4	45.1	47.8	50.3	52.7	54.9
11.695	56.8	58.5	60.1	61.7	63.5	65.6	68.1
11.739	71.2	74.7	78.4	82.3	86.2	89.9	93.5
11.784	96.9	100.0	102.7	105.1	107.6	110.4	113.8
11.828	118.0	123.4	130.0	137.6	145.8	154.3	162.8
11.872	171.1	178.9	186.2	192.9	198.8	203.7	207.8
11.916	210.9	212.9	213.8	213.5	211.9	209.3	206.0
11.960	202.3	198.5	194.7	191.1	187.8	184.9	182.5
12.005	180.4	178.0	175.1	171.2	166.0	159.0	150.5
12.049	140.8	130.4	119.8	109.3	99.4	90.1	81.7
12.093	74.3	68.1	63.0	58.6	54.9	51.8	49.0
12.137	46.5	44.3	42.4	40.7	39.3	38.0	36.8
12.181	35.8	35.0	34.3	33.7	33.1	32.7	32.3
12.226	31.9	31.5	31.0	30.6	30.1	29.7	29.3
12.270	28.9	28.5	28.2	27.9	27.6	27.4	27.2
12.314	27.1	26.9	26.7	26.5	26.2	25.9	25.5
12.358	25.2	24.9	24.5	24.2	23.9	23.7	23.5
12.403	23.3	23.1	23.0	22.8	22.6	22.3	22.0
12.447	21.7	21.4	21.0	20.7	20.3	20.0	19.8
12.491	19.5	19.3	19.1	19.0	18.8	18.7	18.5
12.535	18.3	18.1	17.9	17.7	17.4	17.2	17.0
12.579	16.8	16.6	16.5	16.3	16.2	16.1	16.0
12.624	16.0	15.9	15.8	15.7	15.6	15.5	15.4
12.668	15.3	15.2	15.1	15.1	15.0	15.0	14.9
12.712	14.9	14.8	14.8	14.7	14.7	14.6	14.5
12.756	14.4	14.4	14.3	14.2	14.2	14.1	14.0
12.800	14.0	14.0	13.9	13.9	13.8	13.8	13.7
12.845	13.6	13.6	13.5	13.4	13.3	13.3	13.2
12.889	13.1	13.1	13.0	13.0	13.0	12.9	12.9
12.933	12.8	12.8	12.7	12.6	12.5	12.5	12.4
12.977	12.3	12.2	12.2	12.1	12.1	12.1	12.0
13.021	12.0	11.9	11.9	11.8	11.8	11.7	11.6
13.066	11.6	11.5	11.5	11.4	11.4	11.3	11.3
13.110	11.3	11.3	11.2	11.2	11.2	11.1	11.1
13.154	11.0	11.0	10.9	10.9	10.9	10.8	10.8
13.198	10.8	10.7	10.7	10.7	10.7	10.7	10.6
13.243	10.6	10.5	10.5	10.5	10.4	10.4	10.3
13.287	10.3	10.3	10.2	10.2	10.2	10.2	10.2
13.331	10.1	10.1	10.1	10.0	10.0	9.9	9.9

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
13.375	9.9	9.8	9.8	9.8	9.7	9.7	9.7
13.419	9.7	9.6	9.6	9.6	9.5	9.5	9.5
13.464	9.4	9.4	9.3	9.3	9.3	9.2	9.2
13.508	9.2	9.2	9.2	9.1	9.1	9.1	9.0
13.552	9.0	9.0	8.9	8.9	8.9	8.8	8.8
13.596	8.8	8.8	8.7	8.7	8.7	8.7	8.7
13.640	8.6	8.6	8.6	8.5	8.5	8.5	8.4
13.685	8.4	8.4	8.4	8.4	8.3	8.3	8.3
13.729	8.3	8.3	8.2	8.2	8.2	8.2	8.1

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
13.773	8.1	8.1	8.0	8.0	8.0	8.0	8.0
13.817	8.0	7.9	7.9	7.9	7.9	7.8	7.8
13.861	7.8	7.8	7.7	7.7	7.7	7.7	7.6
13.906	7.6	7.6	7.6	7.6	7.6	7.5	7.5
13.950	7.5	7.4	7.4	7.4	7.3	7.3	7.3
13.994	7.3	7.3	7.2	7.2	7.2	7.2	7.2
14.038	7.2	7.1	7.1	7.1	7.1	7.1	7.0
14.083	7.0	7.0	7.0	7.0	7.0	7.0	7.0
14.127	7.0	6.9	6.9	6.9	6.9	6.9	6.9
14.171	6.9	6.9	6.8	6.8	6.8	6.8	6.8
14.215	6.8	6.8	6.8	6.8	6.8	6.8	6.8
14.259	6.7	6.7	6.7	6.7	6.7	6.7	6.7
14.304	6.7	6.7	6.7	6.7	6.7	6.7	6.7
14.348	6.6	6.6	6.6	6.6	6.6	6.6	6.6
14.392	6.6	6.6	6.6	6.6	6.5	6.5	6.5
14.436	6.5	6.5	6.5	6.5	6.5	6.5	6.5
14.480	6.5	6.5	6.5	6.4	6.4	6.4	6.4
14.525	6.4	6.4	6.4	6.4	6.4	6.4	6.4
14.569	6.4	6.3	6.3	6.3	6.3	6.3	6.3
14.613	6.3	6.3	6.3	6.3	6.3	6.3	6.2
14.657	6.2	6.2	6.2	6.2	6.2	6.2	6.2
14.701	6.2	6.2	6.2	6.2	6.2	6.2	6.1
14.746	6.1	6.1	6.1	6.1	6.1	6.1	6.1
14.790	6.1	6.1	6.0	6.0	6.0	6.0	6.0
14.834	6.0	6.0	6.0	6.0	6.0	6.0	6.0
14.878	6.0	5.9	5.9	5.9	5.9	5.9	5.9
14.923	5.9	5.9	5.9	5.9	5.9	5.9	5.9
14.967	5.8	5.8	5.8	5.8	5.8	5.8	5.8
15.011	5.8	5.8	5.8	5.8	5.8	5.7	5.7
15.055	5.7	5.7	5.7	5.7	5.7	5.7	5.7
15.099	5.7	5.7	5.7	5.7	5.7	5.6	5.6
15.144	5.6	5.6	5.6	5.6	5.6	5.6	5.6
15.188	5.5	5.5	5.5	5.5	5.5	5.5	5.5
15.232	5.5	5.5	5.5	5.5	5.5	5.5	5.4
15.276	5.4	5.4	5.4	5.4	5.4	5.4	5.4
15.320	5.4	5.4	5.4	5.4	5.4	5.3	5.3
15.365	5.3	5.3	5.3	5.3	5.3	5.3	5.3
15.409	5.3	5.3	5.2	5.2	5.2	5.2	5.2
15.453	5.2	5.2	5.2	5.2	5.2	5.2	5.2
15.497	5.2	5.1	5.1	5.1	5.1	5.1	5.1

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
15.541	5.1	5.1	5.1	5.1	5.1	5.0	5.0
15.586	5.0	5.0	5.0	5.0	5.0	5.0	5.0
15.630	5.0	5.0	5.0	5.0	4.9	4.9	4.9
15.674	4.9	4.9	4.9	4.9	4.9	4.9	4.9
15.718	4.9	4.9	4.9	4.9	4.8	4.8	4.8
15.763	4.8	4.8	4.8	4.8	4.8	4.8	4.7
15.807	4.7	4.7	4.7	4.7	4.7	4.7	4.7
15.851	4.7	4.7	4.7	4.7	4.7	4.6	4.6
15.895	4.6	4.6	4.6	4.6	4.6	4.6	4.6
15.939	4.6	4.6	4.6	4.5	4.5	4.5	4.5
15.984	4.5	4.5	4.5	4.5	4.5	4.5	4.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.028	4.5	4.5	4.4	4.4	4.4	4.4	4.4
16.072	4.4	4.4	4.4	4.4	4.4	4.4	4.4
16.116	4.4	4.4	4.4	4.4	4.4	4.4	4.4
16.160	4.4	4.3	4.3	4.3	4.3	4.3	4.3
16.205	4.3	4.3	4.3	4.3	4.3	4.3	4.3
16.249	4.3	4.3	4.3	4.3	4.3	4.3	4.3
16.293	4.3	4.3	4.3	4.3	4.3	4.3	4.3
16.337	4.3	4.3	4.3	4.3	4.3	4.3	4.2
16.381	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.426	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.470	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.514	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.558	4.2	4.2	4.2	4.2	4.2	4.1	4.1
16.603	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.647	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.691	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.735	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.779	4.1	4.1	4.1	4.1	4.0	4.0	4.0
16.824	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.868	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.912	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.956	4.0	4.0	4.0	4.0	4.0	4.0	4.0
17.000	4.0	4.0	4.0	4.0	3.9	3.9	3.9
17.045	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.089	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.133	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.177	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.221	3.9	3.9	3.9	3.9	3.8	3.8	3.8
17.266	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.310	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.354	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.398	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.443	3.8	3.8	3.7	3.7	3.7	3.7	3.7
17.487	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.531	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.575	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.619	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.664	3.7	3.6	3.6	3.6	3.6	3.6	3.6

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
17.708	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.752	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.796	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.840	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.885	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.929	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.973	3.5	3.5	3.5	3.5	3.5	3.5	3.5
18.017	3.5	3.5	3.5	3.5	3.5	3.5	3.5
18.061	3.5	3.5	3.5	3.5	3.5	3.5	3.4
18.106	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.150	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.194	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.238	3.4	3.4	3.4	3.4	3.4	3.4	3.4

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
18.283	3.4	3.4	3.4	3.4	3.4	3.4	3.3
18.327	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.371	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.415	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.459	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.504	3.3	3.3	3.3	3.3	3.3	3.2	3.2
18.548	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.592	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.636	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.680	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.725	3.2	3.2	3.2	3.1	3.1	3.1	3.1
18.769	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.813	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.857	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.901	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.946	3.1	3.0	3.0	3.0	3.0	3.0	3.0
18.990	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.034	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.078	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.123	3.0	3.0	3.0	3.0	3.0	3.0	2.9
19.167	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.211	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.255	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.299	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.344	2.9	2.9	2.9	2.8	2.8	2.8	2.8
19.388	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.432	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.476	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.520	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.565	2.8	2.7	2.7	2.7	2.7	2.7	2.7
19.609	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.653	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.697	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.741	2.7	2.7	2.7	2.7	2.7	2.7	2.6
19.786	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.830	2.6	2.6	2.6	2.6	2.6	2.6	2.6

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
19.874	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.918	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.963	2.6	2.6	2.6	2.6	2.5	2.5	2.5
20.007	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.051	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.095	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.139	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.184	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.228	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.272	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.316	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.360	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.405	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.449	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.493	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
20.537	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.581	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.626	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.670	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.714	2.5	2.5	2.5	2.5	2.5	2.4	2.4
20.758	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.803	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.847	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.891	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.935	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.979	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.024	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.068	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.112	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.156	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.200	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.245	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.289	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.333	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.377	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.421	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.466	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.510	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.554	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.598	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.643	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.687	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.731	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.775	2.4	2.3	2.3	2.3	2.3	2.3	2.3
21.819	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.864	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.908	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.952	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.996	2.3	2.3	2.3	2.3	2.3	2.3	2.3

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STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
22.040	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.085	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.129	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.173	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.217	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.261	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.306	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.350	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.394	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.438	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.483	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.527	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.571	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.615	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.659	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.704	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.748	2.3	2.3	2.3	2.3	2.3	2.3	2.3

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
22.792	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.836	2.3	2.3	2.3	2.2	2.2	2.2	2.2
22.880	2.2	2.2	2.2	2.2	2.2	2.2	2.2
22.925	2.2	2.2	2.2	2.2	2.2	2.2	2.2
22.969	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.013	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.057	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.101	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.146	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.190	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.234	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.278	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.323	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.367	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.411	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.455	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.499	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.544	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.588	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.632	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.676	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.720	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.765	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.809	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.853	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.897	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.941	2.2	2.2	2.1	2.1	2.1	2.1	2.1
23.986	2.1	2.1	2.1	2.1	2.1	2.1	2.1
24.030	2.0	1.9	1.8	1.6	1.5	1.3	1.1
24.074	1.0	0.8	0.7	0.6	0.5		

Area or Drainage Rain Gage Runoff ---------- Peak Flow ----------

STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Reach Identifier	Area (sq mi)	ID or Location	Amount (in)	Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
E. Swale	0.045	Downstream	4.848	2.01	11.94	213.53	4716.80

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.851	0.5	0.0	0.7	0.0	0.6	0.5	0.5
6.895	0.5	0.5	0.5	0.5	0.6	0.6	0.6
6.939	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.984	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.028	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.072	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.116	0.6	0.6	0.6	0.6	0.6	0.7	0.7
7.160	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.205	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.249	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.293	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.337	0.7	0.7	0.7	0.7	0.7	0.8	0.8
7.381	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.426	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.470	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.514	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.558	0.8	0.8	0.8	0.8	0.9	0.9	0.9
7.603	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.647	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.691	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.735	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.779	0.9	0.9	0.9	1.0	1.0	1.0	1.0
7.824	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.868	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.912	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.956	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.000	1.0	1.1	1.1	1.1	1.1	1.1	1.1
8.045	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.089	1.1	1.1	1.1	1.1	1.1	1.1	1.1
8.133	1.1	1.1	1.1	1.1	1.2	1.2	1.2
8.177	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.221	1.2	1.2	1.2	1.2	1.2	1.2	1.2
8.266	1.3	1.3	1.3	1.3	1.3	1.3	1.3
8.310	1.3	1.3	1.3	1.3	1.3	1.3	1.3
8.354	1.3	1.3	1.4	1.4	1.4	1.4	1.4
8.398	1.4	1.4	1.4	1.4	1.4	1.4	1.4
8.443	1.4	1.4	1.4	1.5	1.5	1.5	1.5
8.487	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.531	1.5	1.5	1.5	1.5	1.6	1.6	1.6
8.575	1.6	1.6	1.6	1.6	1.6	1.6	1.6

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
8.619	1.6	1.6	1.6	1.6	1.7	1.7	1.7
8.664	1.7	1.7	1.7	1.7	1.7	1.7	1.7
8.708	1.7	1.7	1.7	1.8	1.8	1.8	1.8
8.752	1.8	1.8	1.8	1.8	1.8	1.8	1.8
8.796	1.8	1.8	1.9	1.9	1.9	1.9	1.9
8.840	1.9	1.9	1.9	1.9	1.9	1.9	1.9
8.885	1.9	2.0	2.0	2.0	2.0	2.0	2.0
8.929	2.0	2.0	2.0	2.0	2.0	2.0	2.1
8.973	2.1	2.1	2.1	2.1	2.1	2.1	2.1
9.017	2.1	2.1	2.1	2.1	2.1	2.2	2.2
9.061	2.2	2.2	2.2	2.2	2.2	2.2	2.2
9.106	2.2	2.2	2.2	2.2	2.2	2.2	2.2
9.150	2.3	2.3	2.3	2.3	2.3	2.3	2.3
9.194	2.3	2.3	2.3	2.3	2.3	2.3	2.3
9.238	2.3	2.3	2.3	2.3	2.3	2.3	2.3
9.283	2.3	2.3	2.4	2.4	2.4	2.4	2.4
9.327	2.4	2.4	2.4	2.4	2.4	2.4	2.4
9.371	2.4	2.4	2.4	2.4	2.4	2.4	2.4
9.415	2.4	2.4	2.4	2.4	2.4	2.4	2.5
9.459	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9.504	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.548	2.5	2.5	2.5	2.5	2.6	2.6	2.6
9.592	2.6	2.6	2.6	2.6	2.6	2.6	2.6
9.636	2.6	2.6	2.6	2.7	2.7	2.7	2.7
9.680	2.7	2.7	2.7	2.8	2.8	2.8	2.8
9.725	2.8	2.8	2.8	2.8	2.8	2.9	2.9
9.769	2.9	2.9	2.9	2.9	2.9	3.0	3.0
9.813	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9.857	3.1	3.1	3.1	3.1	3.1	3.1	3.2
9.901	3.2	3.2	3.2	3.2	3.2	3.2	3.2
9.946	3.2	3.3	3.3	3.3	3.3	3.3	3.3
9.990	3.4	3.4	3.4	3.4	3.4	3.4	3.4
10.034	3.4	3.5	3.5	3.5	3.5	3.5	3.5
10.078	3.6	3.6	3.6	3.6	3.6	3.6	3.7
10.123	3.7	3.7	3.7	3.7	3.7	3.8	3.8
10.167	3.8	3.8	3.8	3.9	3.9	3.9	3.9
10.211	3.9	4.0	4.0	4.0	4.0	4.0	4.0
10.255	4.1	4.1	4.1	4.1	4.2	4.2	4.2
10.299	4.2	4.3	4.3	4.3	4.3	4.3	4.3
10.344	4.4	4.4	4.4	4.4	4.4	4.5	4.5
10.388	4.5	4.5	4.6	4.6	4.6	4.6	4.6
10.432	4.7	4.7	4.7	4.7	4.7	4.8	4.8
10.476	4.8	4.8	4.9	4.9	4.9	4.9	5.0
10.520	5.0	5.0	5.0	5.0	5.1	5.1	5.1
10.565	5.1	5.2	5.2	5.2	5.3	5.3	5.3
10.609	5.4	5.4	5.4	5.4	5.5	5.5	5.5
10.653	5.5	5.6	5.6	5.7	5.7	5.7	5.8
10.697	5.8	5.9	5.9	5.9	5.9	6.0	6.0
10.741	6.0	6.1	6.1	6.1	6.2	6.2	6.3

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STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
10.786	6.3	6.4	6.4	6.4	6.5	6.5	6.5
10.830	6.5	6.6	6.6	6.6	6.7	6.7	6.8
10.874	6.8	6.9	6.9	6.9	7.0	7.0	7.1
10.918	7.1	7.1	7.1	7.2	7.2	7.2	7.3
10.963	7.3	7.4	7.4	7.5	7.5	7.6	7.6
11.007	7.6	7.7	7.7	7.7	7.8	7.8	7.9
11.051	7.9	8.0	8.1	8.1	8.2	8.3	8.3
11.095	8.4	8.5	8.5	8.6	8.6	8.7	8.7
11.139	8.8	8.8	8.9	9.0	9.1	9.2	9.3
11.184	9.4	9.5	9.6	9.7	9.8	9.8	9.9
11.228	10.0	10.0	10.1	10.2	10.3	10.4	10.5
11.272	10.6	10.7	10.8	10.9	11.0	11.1	11.2
11.316	11.3	11.3	11.4	11.5	11.5	11.6	11.7
11.360	11.8	12.0	12.1	12.2	12.3	12.4	12.5
11.405	12.6	12.7	12.8	12.8	12.9	13.0	13.1
11.449	13.1	13.3	13.4	13.5	13.6	13.7	13.9
11.493	14.0	14.1	14.2	14.3	14.4	14.5	14.8
11.537	15.2	15.8	16.6	17.5	18.7	19.9	21.1
11.581	22.4	23.6	24.7	25.7	26.6	27.4	28.2
11.626	29.0	30.0	31.2	32.7	34.6	36.9	39.4
11.670	42.1	44.8	47.5	50.0	52.4	54.6	56.6
11.714	58.3	59.9	61.5	63.3	65.4	67.9	70.9
11.758	74.3	78.0	81.8	85.7	89.5	93.1	96.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.803	99.6	102.4	104.9	107.4	110.2	113.6	117.8
11.847	123.0	129.4	136.8	144.9	153.3	161.8	170.0
11.891	177.9	185.3	192.0	198.0	203.0	207.2	210.3
11.935	212.5	213.5	213.3	211.9	209.5	206.3	202.7
11.979	199.0	195.2	191.6	188.2	185.3	182.8	180.5
12.024	178.1	175.2	171.4	166.3	159.6	151.3	141.8
12.068	131.5	121.0	110.6	100.6	91.3	82.8	75.3
12.112	68.9	63.6	59.2	55.4	52.2	49.3	46.8
12.156	44.6	42.7	41.0	39.5	38.1	37.0	36.0
12.200	35.1	34.4	33.7	33.2	32.7	32.3	31.9
12.245	31.5	31.1	30.6	30.2	29.7	29.3	28.9
12.289	28.5	28.2	27.9	27.7	27.4	27.3	27.1
12.333	26.9	26.7	26.5	26.2	25.9	25.6	25.2
12.377	24.9	24.6	24.3	24.0	23.7	23.5	23.3
12.421	23.1	23.0	22.8	22.6	22.4	22.1	21.8
12.466	21.4	21.1	20.7	20.4	20.1	19.8	19.6
12.510	19.3	19.2	19.0	18.8	18.7	18.5	18.3
12.554	18.1	17.9	17.7	17.5	17.2	17.0	16.8
12.598	16.6	16.5	16.4	16.2	16.1	16.1	16.0
12.643	15.9	15.8	15.7	15.6	15.5	15.4	15.3
12.687	15.2	15.2	15.1	15.0	15.0	14.9	14.9
12.731	14.8	14.8	14.7	14.7	14.6	14.5	14.5
12.775	14.4	14.3	14.2	14.2	14.1	14.0	14.0
12.819	14.0	13.9	13.9	13.8	13.8	13.7	13.7
12.864	13.6	13.5	13.4	13.3	13.3	13.2	13.1
12.908	13.1	13.0	13.0	13.0	12.9	12.9	12.8

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STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
12.952	12.8	12.7	12.6	12.5	12.5	12.4	12.3
12.996	12.2	12.2	12.1	12.1	12.1	12.0	12.0
13.040	11.9	11.9	11.8	11.8	11.7	11.7	11.6
13.085	11.5	11.5	11.4	11.4	11.3	11.3	11.3
13.129	11.3	11.2	11.2	11.2	11.1	11.1	11.0
13.173	11.0	10.9	10.9	10.9	10.8	10.8	10.8
13.217	10.7	10.7	10.7	10.7	10.7	10.6	10.6
13.261	10.5	10.5	10.5	10.4	10.4	10.3	10.3
13.306	10.3	10.2	10.2	10.2	10.2	10.2	10.1
13.350	10.1	10.1	10.0	10.0	9.9	9.9	9.9
13.394	9.8	9.8	9.8	9.7	9.7	9.7	9.7
13.438	9.6	9.6	9.6	9.5	9.5	9.5	9.4
13.483	9.4	9.3	9.3	9.3	9.2	9.2	9.2
13.527	9.2	9.2	9.1	9.1	9.1	9.0	9.0
13.571	9.0	8.9	8.9	8.9	8.8	8.8	8.8
13.615	8.8	8.7	8.7	8.7	8.7	8.7	8.6
13.659	8.6	8.6	8.5	8.5	8.5	8.4	8.4
13.704	8.4	8.4	8.4	8.3	8.3	8.3	8.3
13.748	8.3	8.3	8.2	8.2	8.2	8.1	8.1
13.792	8.1	8.0	8.0	8.0	8.0	8.0	8.0
13.836	7.9	7.9	7.9	7.9	7.8	7.8	7.8
13.880	7.8	7.7	7.7	7.7	7.7	7.6	7.6
13.925	7.6	7.6	7.6	7.6	7.5	7.5	7.5
13.969	7.4	7.4	7.4	7.4	7.3	7.3	7.3
14.013	7.3	7.2	7.2	7.2	7.2	7.2	7.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.057	7.2	7.1	7.1	7.1	7.1	7.0	7.0
14.101	7.0	7.0	7.0	7.0	7.0	7.0	7.0
14.146	6.9	6.9	6.9	6.9	6.9	6.9	6.9
14.190	6.9	6.8	6.8	6.8	6.8	6.8	6.8
14.234	6.8	6.8	6.8	6.8	6.8	6.8	6.8
14.278	6.7	6.7	6.7	6.7	6.7	6.7	6.7
14.323	6.7	6.7	6.7	6.7	6.7	6.7	6.6
14.367	6.6	6.6	6.6	6.6	6.6	6.6	6.6
14.411	6.6	6.6	6.6	6.5	6.5	6.5	6.5
14.455	6.5	6.5	6.5	6.5	6.5	6.5	6.5
14.499	6.5	6.5	6.4	6.4	6.4	6.4	6.4
14.544	6.4	6.4	6.4	6.4	6.4	6.4	6.4
14.588	6.3	6.3	6.3	6.3	6.3	6.3	6.3
14.632	6.3	6.3	6.3	6.3	6.3	6.3	6.2
14.676	6.2	6.2	6.2	6.2	6.2	6.2	6.2
14.720	6.2	6.2	6.2	6.2	6.2	6.1	6.1
14.765	6.1	6.1	6.1	6.1	6.1	6.1	6.1
14.809	6.1	6.0	6.0	6.0	6.0	6.0	6.0
14.853	6.0	6.0	6.0	6.0	6.0	6.0	6.0
14.897	5.9	5.9	5.9	5.9	5.9	5.9	5.9
14.941	5.9	5.9	5.9	5.9	5.9	5.9	5.8
14.986	5.8	5.8	5.8	5.8	5.8	5.8	5.8
15.030	5.8	5.8	5.8	5.8	5.7	5.7	5.7
15.074	5.7	5.7	5.7	5.7	5.7	5.7	5.7

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
15.118	5.7	5.7	5.7	5.7	5.6	5.6	5.6
15.163	5.6	5.6	5.6	5.6	5.6	5.6	5.5
15.207	5.5	5.5	5.5	5.5	5.5	5.5	5.5
15.251	5.5	5.5	5.5	5.5	5.5	5.4	5.4
15.295	5.4	5.4	5.4	5.4	5.4	5.4	5.4
15.339	5.4	5.4	5.4	5.4	5.3	5.3	5.3
15.384	5.3	5.3	5.3	5.3	5.3	5.3	5.3
15.428	5.3	5.3	5.2	5.2	5.2	5.2	5.2
15.472	5.2	5.2	5.2	5.2	5.2	5.2	5.2
15.516	5.1	5.1	5.1	5.1	5.1	5.1	5.1
15.560	5.1	5.1	5.1	5.1	5.0	5.0	5.0
15.605	5.0	5.0	5.0	5.0	5.0	5.0	5.0
15.649	5.0	5.0	5.0	4.9	4.9	4.9	4.9
15.693	4.9	4.9	4.9	4.9	4.9	4.9	4.9
15.737	4.9	4.9	4.9	4.8	4.8	4.8	4.8
15.781	4.8	4.8	4.8	4.8	4.8	4.7	4.7
15.826	4.7	4.7	4.7	4.7	4.7	4.7	4.7
15.870	4.7	4.7	4.7	4.7	4.6	4.6	4.6
15.914	4.6	4.6	4.6	4.6	4.6	4.6	4.6
15.958	4.6	4.6	4.6	4.5	4.5	4.5	4.5
16.003	4.5	4.5	4.5	4.5	4.5	4.5	4.5
16.047	4.5	4.4	4.4	4.4	4.4	4.4	4.4
16.091	4.4	4.4	4.4	4.4	4.4	4.4	4.4
16.135	4.4	4.4	4.4	4.4	4.4	4.4	4.4
16.179	4.3	4.3	4.3	4.3	4.3	4.3	4.3
16.224	4.3	4.3	4.3	4.3	4.3	4.3	4.3
16.268	4.3	4.3	4.3	4.3	4.3	4.3	4.3

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.312	4.3	4.3	4.3	4.3	4.3	4.3	4.3
16.356	4.3	4.3	4.3	4.3	4.3	4.2	4.2
16.400	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.445	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.489	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.533	4.2	4.2	4.2	4.2	4.2	4.2	4.2
16.577	4.2	4.2	4.2	4.2	4.1	4.1	4.1
16.621	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.666	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.710	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.754	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.798	4.1	4.1	4.1	4.0	4.0	4.0	4.0
16.843	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.887	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.931	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.975	4.0	4.0	4.0	4.0	4.0	4.0	4.0
17.019	4.0	4.0	4.0	3.9	3.9	3.9	3.9
17.064	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.108	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.152	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.196	3.9	3.9	3.9	3.9	3.9	3.9	3.9
17.240	3.9	3.9	3.9	3.8	3.8	3.8	3.8

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
17.285	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.329	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.373	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.417	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17.461	3.8	3.7	3.7	3.7	3.7	3.7	3.7
17.506	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.550	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.594	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.638	3.7	3.7	3.7	3.7	3.7	3.7	3.7
17.683	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.727	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.771	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.815	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.859	3.6	3.6	3.6	3.6	3.6	3.6	3.5
17.904	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.948	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.992	3.5	3.5	3.5	3.5	3.5	3.5	3.5
18.036	3.5	3.5	3.5	3.5	3.5	3.5	3.5
18.080	3.5	3.5	3.5	3.5	3.5	3.4	3.4
18.125	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.169	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.213	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.257	3.4	3.4	3.4	3.4	3.4	3.4	3.4
18.301	3.4	3.4	3.4	3.4	3.4	3.3	3.3
18.346	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.390	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.434	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.478	3.3	3.3	3.3	3.3	3.3	3.3	3.3
18.523	3.3	3.3	3.3	3.3	3.2	3.2	3.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
18.567	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.611	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.655	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.699	3.2	3.2	3.2	3.2	3.2	3.2	3.2
18.744	3.2	3.2	3.1	3.1	3.1	3.1	3.1
18.788	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.832	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.876	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.920	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.965	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.009	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.053	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.097	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19.141	3.0	3.0	3.0	3.0	3.0	2.9	2.9
19.186	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.230	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.274	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.318	2.9	2.9	2.9	2.9	2.9	2.9	2.9
19.363	2.9	2.9	2.9	2.8	2.8	2.8	2.8
19.407	2.8	2.8	2.8	2.8	2.8	2.8	2.8

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
19.451	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.495	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.539	2.8	2.8	2.8	2.8	2.8	2.8	2.8
19.584	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.628	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.672	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.716	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.760	2.7	2.7	2.7	2.7	2.7	2.6	2.6
19.805	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.849	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.893	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.937	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.981	2.6	2.6	2.6	2.5	2.5	2.5	2.5
20.026	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.070	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.114	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.158	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.203	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.247	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.291	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.335	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.379	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.424	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.468	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.512	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.556	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.600	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.645	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.689	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20.733	2.5	2.5	2.5	2.5	2.4	2.4	2.4
20.777	2.4	2.4	2.4	2.4	2.4	2.4	2.4

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
20.821	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.866	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.910	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.954	2.4	2.4	2.4	2.4	2.4	2.4	2.4
20.998	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.043	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.087	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.131	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.175	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.219	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.264	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.308	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.352	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.396	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.440	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.485	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.529	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.573	2.4	2.4	2.4	2.4	2.4	2.4	2.4

STORM 25-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
21.617	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.661	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.706	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.750	2.4	2.4	2.4	2.4	2.4	2.4	2.4
21.794	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.838	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.883	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.927	2.3	2.3	2.3	2.3	2.3	2.3	2.3
21.971	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.015	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.059	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.104	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.148	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.192	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.236	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.280	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.325	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.369	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.413	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.457	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.501	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.546	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.590	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.634	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.678	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.723	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.767	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.811	2.3	2.3	2.3	2.3	2.3	2.3	2.3
22.855	2.3	2.3	2.2	2.2	2.2	2.2	2.2
22.899	2.2	2.2	2.2	2.2	2.2	2.2	2.2
22.944	2.2	2.2	2.2	2.2	2.2	2.2	2.2
22.988	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.032	2.2	2.2	2.2	2.2	2.2	2.2	2.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.076	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.120	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.165	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.209	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.253	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.297	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.341	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.386	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.430	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.474	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.518	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.563	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.607	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.651	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.695	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.739	2.2	2.2	2.2	2.2	2.2	2.2	2.2

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
23.784	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.828	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.872	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.916	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.960	2.2	2.1	2.1	2.1	2.1	2.1	2.1
24.005	2.1	2.1	2.1	2.1	2.1	2.1	2.0
24.049	1.9	1.8	1.6	1.5	1.3	1.2	1.0
24.093	0.9	0.7					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.087		4.831		11.96	387.85	4459.03

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.851	0.5	0.0	0.7	0.0	0.6	0.5	0.5
6.895	0.5	0.5	0.5	0.5	0.6	0.6	0.6
6.939	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.984	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.028	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.072	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.116	0.6	0.6	0.6	0.6	0.6	0.7	0.7
7.160	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.205	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.249	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.293	0.7	0.7	0.7	0.7	0.7	0.7	0.7
7.337	0.7	0.7	0.7	0.7	0.7	0.8	0.8
7.381	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.426	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.470	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7.514	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.558	0.8	0.8	0.8	0.8	0.9	0.9	0.9
7.603	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.647	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.691	0.9	0.9	0.9	1.4	1.5	1.5	1.5
7.735	1.5	1.5	1.5	1.5	1.5	1.5	1.5
7.779	1.5	1.5	1.6	1.6	1.6	1.6	1.6
7.824	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7.868	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7.912	1.6	1.6	1.7	1.7	1.7	1.7	1.7
7.956	1.7	1.7	1.7	1.7	1.7	1.7	1.7
8.000	1.7	1.7	1.7	1.7	1.7	1.7	1.7
8.045	1.8	1.8	1.8	1.8	1.8	1.8	1.8
8.089	1.8	1.8	1.8	1.8	1.8	1.8	1.8
8.133	1.8	1.9	1.9	1.9	1.9	1.9	1.9

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
8.177	1.9	1.9	1.9	1.9	1.9	2.0	2.0
8.221	2.0	2.0	2.0	2.0	2.0	2.0	2.0
8.266	2.0	2.0	2.1	2.1	2.1	2.1	2.1
8.310	2.1	2.1	2.1	2.1	2.1	2.2	2.2
8.354	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.398	2.3	2.3	2.3	2.3	2.3	2.3	2.3
8.443	2.3	2.3	2.4	2.4	2.4	2.4	2.4
8.487	2.4	2.4	2.4	2.4	2.5	2.5	2.5
8.531	2.5	2.5	2.5	2.5	2.5	2.5	2.6
8.575	2.6	2.6	2.6	2.6	2.6	2.6	2.6
8.619	2.6	2.7	2.7	2.7	2.7	2.7	2.7
8.664	2.7	2.7	2.8	2.8	2.8	2.8	2.8
8.708	2.8	2.8	2.8	2.9	2.9	2.9	2.9
8.752	2.9	2.9	2.9	2.9	3.0	3.0	3.0
8.796	3.0	3.0	3.5	3.5	3.5	3.6	3.6
8.840	3.6	3.6	3.6	3.6	3.7	3.7	3.7
8.885	3.7	3.7	3.7	3.7	3.8	3.8	3.8
8.929	3.8	3.8	3.8	3.8	3.9	3.9	3.9
8.973	3.9	3.9	3.9	4.0	4.0	4.0	4.0
9.017	4.0	4.0	4.1	4.1	4.1	4.1	4.1
9.061	4.1	4.1	4.2	4.2	4.2	4.2	4.2
9.106	4.2	4.2	4.2	4.3	4.3	4.3	4.3
9.150	4.3	4.3	4.3	4.3	4.3	4.3	4.4
9.194	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9.238	4.4	4.4	4.4	4.5	4.5	4.5	4.5
9.283	4.5	4.5	4.5	4.5	4.5	4.5	4.5
9.327	4.5	4.5	4.6	4.6	4.6	4.6	4.6
9.371	4.6	4.6	4.6	4.6	4.6	4.6	4.6
9.415	4.6	4.7	4.7	4.7	4.7	4.7	4.7
9.459	4.7	4.7	4.7	4.7	4.7	4.7	4.7
9.504	4.8	4.8	4.8	4.8	4.8	4.8	4.8
9.548	4.8	4.8	4.8	4.9	4.9	4.9	4.9
9.592	4.9	4.9	4.9	4.9	5.0	5.0	5.0
9.636	5.0	5.0	5.0	5.1	5.1	5.1	5.1
9.680	5.2	5.2	5.2	5.2	5.2	5.3	5.3
9.725	5.3	5.3	5.3	5.4	5.4	5.4	5.4
9.769	5.5	5.5	5.5	5.6	5.6	5.6	5.6

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.813	5.6	5.7	5.7	5.7	5.7	5.8	5.8
9.857	5.8	5.8	5.9	5.9	5.9	6.0	6.0
9.901	6.0	6.0	6.0	6.1	6.1	6.1	6.1
9.946	6.2	6.2	6.2	6.3	6.3	6.3	6.3
9.990	6.4	6.4	6.4	6.4	6.5	6.5	6.5
10.034	6.5	6.6	6.6	6.6	6.7	6.7	6.7
10.078	6.8	6.8	6.8	6.9	6.9	6.9	6.9
10.123	7.0	7.0	7.0	7.1	7.1	7.1	7.2
10.167	7.2	7.3	7.3	7.3	7.4	7.4	7.4
10.211	7.5	7.5	7.5	7.6	7.6	7.6	7.7
10.255	7.7	7.8	7.8	7.9	7.9	7.9	8.0
10.299	8.0	8.1	8.1	8.1	8.2	8.2	8.2

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
10.344	8.3	8.3	8.4	8.4	8.4	8.5	8.5
10.388	8.6	8.6	8.7	8.7	8.7	8.8	8.8
10.432	8.8	8.9	8.9	9.0	9.0	9.1	9.1
10.476	9.1	9.2	9.2	9.3	9.3	9.4	9.4
10.520	9.4	9.5	9.5	9.6	9.6	9.7	9.7
10.565	9.8	9.8	9.9	9.9	10.0	10.0	10.1
10.609	10.1	10.2	10.2	10.3	10.3	10.4	10.5
10.653	10.5	10.6	10.7	10.7	10.8	10.9	10.9
10.697	11.0	11.0	11.1	11.2	11.2	11.3	11.3
10.741	11.4	11.5	11.6	11.6	11.7	11.8	11.9
10.786	11.9	12.0	12.1	12.1	12.2	12.2	12.3
10.830	12.4	12.4	12.5	12.6	12.7	12.7	12.8
10.874	12.9	13.0	13.1	13.1	13.2	13.3	13.3
10.918	13.4	13.5	13.5	13.6	13.7	13.7	13.8
10.963	13.9	14.0	14.1	14.2	14.2	14.3	14.4
11.007	14.4	14.5	14.6	14.7	14.7	14.8	14.9
11.051	15.0	15.1	15.2	15.4	15.5	15.6	15.7
11.095	15.8	15.9	16.0	16.1	16.2	16.3	16.4
11.139	16.6	16.7	16.9	17.0	17.2	17.3	17.5
11.184	17.7	17.8	18.0	18.1	18.3	18.4	18.6
11.228	18.7	18.8	19.0	19.2	19.4	19.5	19.7
11.272	19.9	20.1	20.3	20.5	20.6	20.8	20.9
11.316	21.1	21.2	21.4	21.6	21.7	21.9	22.1
11.360	22.3	22.5	22.7	22.9	23.1	23.3	23.5
11.405	23.6	23.8	23.9	24.1	24.3	24.4	24.6
11.449	24.8	25.0	25.2	25.5	25.7	25.9	26.1
11.493	26.3	26.4	26.6	26.8	27.1	27.4	27.9
11.537	28.6	29.6	30.7	32.1	33.6	35.3	37.0
11.581	38.7	40.4	42.0	43.7	45.3	46.9	48.6
11.626	50.4	52.5	55.0	57.9	61.2	64.9	68.8
11.670	72.8	76.8	80.7	84.6	88.4	92.1	95.7
11.714	99.2	102.8	106.6	110.8	115.3	120.3	125.8
11.758	131.7	137.7	143.8	149.9	155.8	161.6	167.2
11.803	172.6	178.0	183.4	189.0	195.3	202.5	210.8
11.847	220.3	231.0	242.8	255.1	267.6	280.2	292.7
11.891	304.9	316.8	328.3	339.4	349.7	359.3	367.8
11.935	375.0	380.7	384.7	387.0	387.8	387.4	386.0
11.979	383.9	381.2	378.2	374.9	371.3	367.5	363.2
12.024	358.2	351.9	344.0	334.4	322.9	309.8	295.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.068	280.5	265.4	250.4	235.8	221.5	207.8	194.6
12.112	182.0	170.1	158.7	147.9	137.7	128.1	119.3
12.156	111.3	104.1	97.9	92.4	87.6	83.6	80.0
12.200	77.0	74.4	72.1	70.2	68.4	66.9	65.4
12.245	64.1	62.9	61.7	60.7	59.7	58.8	57.9
12.289	57.2	56.5	55.8	55.3	54.7	54.2	53.7
12.333	53.2	52.7	52.1	51.6	51.0	50.4	49.8
12.377	49.2	48.7	48.2	47.7	47.2	46.8	46.4
12.421	46.0	45.5	45.1	44.6	44.1	43.5	42.9
12.466	42.4	41.8	41.2	40.7	40.2	39.7	39.2

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
12.510	38.8	38.4	38.0	37.6	37.2	36.7	36.3
12.554	35.9	35.4	35.0	34.6	34.2	33.8	33.4
12.598	33.1	32.8	32.5	32.2	32.0	31.7	31.5
12.643	31.2	31.0	30.8	30.5	30.3	30.1	29.9
12.687	29.8	29.6	29.5	29.3	29.2	29.1	29.0
12.731	28.9	28.8	28.6	28.5	28.4	28.2	28.1
12.775	27.9	27.8	27.7	27.6	27.5	27.4	27.3
12.819	27.2	27.1	27.0	26.9	26.8	26.6	26.5
12.864	26.4	26.2	26.1	26.0	25.9	25.7	25.6
12.908	25.5	25.4	25.3	25.2	25.1	25.0	24.9
12.952	24.8	24.7	24.5	24.4	24.3	24.1	24.0
12.996	23.9	23.8	23.7	23.6	23.5	23.4	23.3
13.040	23.2	23.1	23.0	22.9	22.8	22.7	22.5
13.085	22.4	22.4	22.3	22.2	22.1	22.0	21.9
13.129	21.9	21.8	21.7	21.6	21.6	21.5	21.4
13.173	21.3	21.2	21.2	21.1	21.0	21.0	20.9
13.217	20.8	20.8	20.7	20.7	20.6	20.5	20.5
13.261	20.4	20.3	20.3	20.2	20.1	20.1	20.0
13.306	20.0	19.9	19.8	19.8	19.7	19.7	19.6
13.350	19.5	19.5	19.4	19.3	19.3	19.2	19.1
13.394	19.1	19.0	19.0	18.9	18.9	18.8	18.7
13.438	18.7	18.6	18.6	18.5	18.4	18.3	18.3
13.483	18.2	18.1	18.1	18.0	18.0	17.9	17.9
13.527	17.8	17.7	17.7	17.6	17.6	17.5	17.4
13.571	17.4	17.3	17.2	17.2	17.1	17.1	17.0
13.615	17.0	16.9	16.9	16.9	16.8	16.8	16.7
13.659	16.6	16.6	16.5	16.5	16.4	16.4	16.3
13.704	16.3	16.3	16.2	16.2	16.1	16.1	16.1
13.748	16.0	16.0	15.9	15.8	15.8	15.7	15.7
13.792	15.7	15.6	15.6	15.5	15.5	15.5	15.4
13.836	15.4	15.3	15.3	15.2	15.2	15.1	15.1
13.880	15.0	15.0	14.9	14.9	14.9	14.8	14.8
13.925	14.7	14.7	14.7	14.6	14.6	14.5	14.5
13.969	14.4	14.4	14.3	14.3	14.2	14.2	14.1
14.013	14.1	14.1	14.0	14.0	14.0	13.9	13.9
14.057	13.8	13.8	13.8	13.7	13.7	13.6	13.6
14.101	13.6	13.6	13.5	13.5	13.5	13.5	13.4
14.146	13.4	13.4	13.3	13.3	13.3	13.3	13.3
14.190	13.2	13.2	13.2	13.2	13.2	13.1	13.1
14.234	13.1	13.1	13.1	13.1	13.0	13.0	13.0
14.278	13.0	13.0	13.0	13.0	12.9	12.9	12.9

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.323	12.9	12.9	12.9	12.9	12.8	12.8	12.8
14.367	12.8	12.8	12.8	12.7	12.7	12.7	12.7
14.411	12.7	12.7	12.6	12.6	12.6	12.6	12.6
14.455	12.6	12.5	12.5	12.5	12.5	12.5	12.5
14.499	12.5	12.4	12.4	12.4	12.4	12.4	12.4
14.544	12.4	12.3	12.3	12.3	12.3	12.3	12.3
14.588	12.2	12.2	12.2	12.2	12.2	12.2	12.1
14.632	12.1	12.1	12.1	12.1	12.1	12.0	12.0

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
14.676	12.0	12.0	12.0	12.0	12.0	11.9	11.9
14.720	11.9	11.9	11.9	11.9	11.9	11.8	11.8
14.765	11.8	11.8	11.8	11.8	11.7	11.7	11.7
14.809	11.7	11.7	11.7	11.6	11.6	11.6	11.6
14.853	11.6	11.6	11.5	11.5	11.5	11.5	11.5
14.897	11.5	11.5	11.4	11.4	11.4	11.4	11.4
14.941	11.4	11.4	11.3	11.3	11.3	11.3	11.3
14.986	11.3	11.2	11.2	11.2	11.2	11.2	11.2
15.030	11.1	11.1	11.1	11.1	11.1	11.1	11.0
15.074	11.0	11.0	11.0	11.0	11.0	11.0	10.9
15.118	10.9	10.9	10.9	10.9	10.9	10.9	10.8
15.163	10.8	10.8	10.8	10.8	10.7	10.7	10.7
15.207	10.7	10.7	10.7	10.7	10.6	10.6	10.6
15.251	10.6	10.6	10.6	10.5	10.5	10.5	10.5
15.295	10.5	10.5	10.5	10.4	10.4	10.4	10.4
15.339	10.4	10.4	10.4	10.3	10.3	10.3	10.3
15.384	10.3	10.2	10.2	10.2	10.2	10.2	10.2
15.428	10.1	10.1	10.1	10.1	10.1	10.1	10.0
15.472	10.0	10.0	10.0	10.0	10.0	10.0	9.9
15.516	9.9	9.9	9.9	9.9	9.9	9.9	9.8
15.560	9.8	9.8	9.8	9.8	9.7	9.7	9.7
15.605	9.7	9.7	9.7	9.7	9.6	9.6	9.6
15.649	9.6	9.6	9.6	9.5	9.5	9.5	9.5
15.693	9.5	9.5	9.5	9.4	9.4	9.4	9.4
15.737	9.4	9.4	9.4	9.3	9.3	9.3	9.3
15.781	9.3	9.2	9.2	9.2	9.2	9.2	9.2
15.826	9.1	9.1	9.1	9.1	9.1	9.1	9.0
15.870	9.0	9.0	9.0	9.0	9.0	9.0	8.9
15.914	8.9	8.9	8.9	8.9	8.9	8.9	8.8
15.958	8.8	8.8	8.8	8.8	8.7	8.7	8.7
16.003	8.7	8.7	8.7	8.7	8.6	8.6	8.6
16.047	8.6	8.6	8.6	8.6	8.5	8.5	8.5
16.091	8.5	8.5	8.5	8.5	8.5	8.5	8.4
16.135	8.4	8.4	8.4	8.4	8.4	8.4	8.4
16.179	8.4	8.4	8.4	8.4	8.3	8.3	8.3
16.224	8.3	8.3	8.3	8.3	8.3	8.3	8.3
16.268	8.3	8.3	8.3	8.3	8.3	8.3	8.3
16.312	8.3	8.3	8.2	8.2	8.2	8.2	8.2
16.356	8.2	8.2	8.2	8.2	8.2	8.2	8.2
16.400	8.2	8.2	8.2	8.2	8.2	8.1	8.1
16.445	8.1	8.1	8.1	8.1	8.1	8.1	8.1
16.489	8.1	8.1	8.1	8.1	8.1	8.1	8.1
16.533	8.1	8.1	8.1	8.0	8.0	8.0	8.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
16.577	8.0	8.0	8.0	8.0	8.0	8.0	8.0
16.621	8.0	8.0	8.0	8.0	8.0	7.9	7.9
16.666	7.9	7.9	7.9	7.9	7.9	7.9	7.9
16.710	7.9	7.9	7.9	7.9	7.9	7.9	7.9
16.754	7.9	7.9	7.9	7.8	7.8	7.8	7.8
16.798	7.8	7.8	7.8	7.8	7.8	7.8	7.8

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
16.843	7.8	7.8	7.8	7.8	7.8	7.7	7.7
16.887	7.7	7.7	7.7	7.7	7.7	7.7	7.7
16.931	7.7	7.7	7.7	7.7	7.7	7.7	7.7
16.975	7.7	7.7	7.7	7.6	7.6	7.6	7.6
17.019	7.6	7.6	7.6	7.6	7.6	7.6	7.6
17.064	7.6	7.6	7.6	7.6	7.6	7.6	7.5
17.108	7.5	7.5	7.5	7.5	7.5	7.5	7.5
17.152	7.5	7.5	7.5	7.5	7.5	7.5	7.5
17.196	7.5	7.5	7.5	7.4	7.4	7.4	7.4
17.240	7.4	7.4	7.4	7.4	7.4	7.4	7.4
17.285	7.4	7.4	7.4	7.4	7.4	7.4	7.4
17.329	7.4	7.3	7.3	7.3	7.3	7.3	7.3
17.373	7.3	7.3	7.3	7.3	7.3	7.3	7.3
17.417	7.3	7.3	7.3	7.2	7.2	7.2	7.2
17.461	7.2	7.2	7.2	7.2	7.2	7.2	7.2
17.506	7.2	7.2	7.2	7.2	7.2	7.2	7.2
17.550	7.2	7.1	7.1	7.1	7.1	7.1	7.1
17.594	7.1	7.1	7.1	7.1	7.1	7.1	7.1
17.638	7.1	7.1	7.1	7.0	7.0	7.0	7.0
17.683	7.0	7.0	7.0	7.0	7.0	7.0	7.0
17.727	7.0	7.0	7.0	7.0	7.0	7.0	7.0
17.771	6.9	6.9	6.9	6.9	6.9	6.9	6.9
17.815	6.9	6.9	6.9	6.9	6.9	6.9	6.9
17.859	6.9	6.9	6.9	6.8	6.8	6.8	6.8
17.904	6.8	6.8	6.8	6.8	6.8	6.8	6.8
17.948	6.8	6.8	6.8	6.8	6.8	6.8	6.8
17.992	6.7	6.7	6.7	6.7	6.7	6.7	6.7
18.036	6.7	6.7	6.7	6.7	6.7	6.7	6.7
18.080	6.7	6.7	6.7	6.7	6.6	6.6	6.6
18.125	6.6	6.6	6.6	6.6	6.6	6.6	6.6
18.169	6.6	6.6	6.6	6.6	6.6	6.6	6.6
18.213	6.5	6.5	6.5	6.5	6.5	6.5	6.5
18.257	6.5	6.5	6.5	6.5	6.5	6.5	6.5
18.301	6.5	6.5	6.5	6.5	6.5	6.4	6.4
18.346	6.4	6.4	6.4	6.4	6.4	6.4	6.4
18.390	6.4	6.4	6.4	6.4	6.4	6.4	6.4
18.434	6.3	6.3	6.3	6.3	6.3	6.3	6.3
18.478	6.3	6.3	6.3	6.3	6.3	6.3	6.3
18.523	6.3	6.3	6.3	6.3	6.3	6.2	6.2
18.567	6.2	6.2	6.2	6.2	6.2	6.2	6.2
18.611	6.2	6.2	6.2	6.2	6.2	6.2	6.2
18.655	6.1	6.1	6.1	6.1	6.1	6.1	6.1
18.699	6.1	6.1	6.1	6.1	6.1	6.1	6.1
18.744	6.1	6.1	6.1	6.1	6.0	6.0	6.0
18.788	6.0	6.0	6.0	6.0	6.0	6.0	6.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
18.832	6.0	6.0	6.0	6.0	6.0	6.0	5.9
18.876	5.9	5.9	5.9	5.9	5.9	5.9	5.9
18.920	5.9	5.9	5.9	5.9	5.9	5.9	5.9
18.965	5.9	5.9	5.9	5.8	5.8	5.8	5.8

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
19.009	5.8	5.8	5.8	5.8	5.8	5.8	5.8
19.053	5.8	5.8	5.8	5.8	5.8	5.8	5.7
19.097	5.7	5.7	5.7	5.7	5.7	5.7	5.7
19.141	5.7	5.7	5.7	5.7	5.7	5.7	5.7
19.186	5.7	5.7	5.7	5.6	5.6	5.6	5.6
19.230	5.6	5.6	5.6	5.6	5.6	5.6	5.6
19.274	5.6	5.6	5.6	5.6	5.6	5.6	5.6
19.318	5.5	5.5	5.5	5.5	5.5	5.5	5.5
19.363	5.5	5.5	5.5	5.5	5.5	5.5	5.5
19.407	5.5	5.5	5.4	5.4	5.4	5.4	5.4
19.451	5.4	5.4	5.4	5.4	5.4	5.4	5.4
19.495	5.4	5.4	5.4	5.4	5.4	5.4	5.4
19.539	5.3	5.3	5.3	5.3	5.3	5.3	5.3
19.584	5.3	5.3	5.3	5.3	5.3	5.3	5.3
19.628	5.3	5.3	5.2	5.2	5.2	5.2	5.2
19.672	5.2	5.2	5.2	5.2	5.2	5.2	5.2
19.716	5.2	5.2	5.2	5.2	5.2	5.2	5.2
19.760	5.1	5.1	5.1	5.1	5.1	5.1	5.1
19.805	5.1	5.1	5.1	5.1	5.1	5.1	5.1
19.849	5.1	5.1	5.0	5.0	5.0	5.0	5.0
19.893	5.0	5.0	5.0	5.0	5.0	5.0	5.0
19.937	5.0	5.0	5.0	5.0	5.0	5.0	4.9
19.981	4.9	4.9	4.9	4.9	4.9	4.9	4.9
20.026	4.9	4.9	4.9	4.9	4.9	4.9	4.9
20.070	4.9	4.9	4.9	4.9	4.8	4.8	4.8
20.114	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20.158	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20.203	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20.247	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20.291	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20.335	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20.379	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20.424	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20.468	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20.512	4.8	4.8	4.7	4.7	4.7	4.7	4.7
20.556	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.600	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.645	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.689	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.733	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.777	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.821	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.866	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.910	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.954	4.7	4.7	4.7	4.7	4.7	4.7	4.7
20.998	4.7	4.7	4.7	4.7	4.7	4.7	4.7
21.043	4.7	4.6	4.6	4.6	4.6	4.6	4.6

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
21.087	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.131	4.6	4.6	4.6	4.6	4.6	4.6	4.6

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
21.175	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.219	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.264	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.308	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.352	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.396	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.440	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.485	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.529	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.573	4.6	4.6	4.6	4.6	4.6	4.6	4.6
21.617	4.5	4.5	4.5	4.5	4.5	4.5	4.5
21.661	4.5	4.5	4.5	4.5	4.5	4.5	4.5
21.706	4.5	4.5	4.5	4.5	4.5	4.5	4.5
21.750	4.5	4.5	4.5	4.5	4.5	4.5	4.5
21.794	4.5	4.5	4.5	4.5	4.5	4.5	4.5
21.838	4.5	4.5	4.5	4.5	4.5	4.5	4.5
21.883	4.5	4.5	4.5	4.5	4.5	4.5	4.5
21.927	4.5	4.5	4.5	4.5	4.5	4.5	4.5
21.971	4.5	4.5	4.5	4.5	4.5	4.5	4.5
22.015	4.5	4.5	4.5	4.5	4.5	4.5	4.5
22.059	4.5	4.5	4.5	4.5	4.5	4.5	4.5
22.104	4.5	4.5	4.5	4.5	4.5	4.5	4.5
22.148	4.5	4.5	4.5	4.5	4.5	4.5	4.5
22.192	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.236	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.280	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.325	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.369	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.413	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.457	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.501	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.546	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.590	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.634	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.678	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.723	4.4	4.4	4.4	4.4	4.4	4.4	4.4
22.767	4.3	4.3	4.3	4.3	4.3	4.3	4.3
22.811	4.3	4.3	4.3	4.3	4.3	4.3	4.3
22.855	4.3	4.3	4.3	4.3	4.3	4.3	4.3
22.899	4.3	4.3	4.3	4.3	4.3	4.3	4.3
22.944	4.3	4.3	4.3	4.3	4.3	4.3	4.3
22.988	4.3	4.3	4.3	4.3	4.3	4.3	4.3
23.032	4.3	4.3	4.3	4.3	4.3	4.3	4.3
23.076	4.3	4.3	4.3	4.3	4.3	4.3	4.3
23.120	4.3	4.3	4.3	4.3	4.3	4.3	4.3
23.165	4.3	4.3	4.3	4.3	4.3	4.3	4.3
23.209	4.3	4.3	4.3	4.3	4.3	4.3	4.3
23.253	4.3	4.3	4.3	4.3	4.3	4.3	4.3
23.297	4.3	4.3	4.3	4.3	4.2	4.2	4.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
23.341	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.386	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.430	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.474	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.518	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.563	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.607	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.651	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.695	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.739	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.784	4.2	4.2	4.2	4.2	4.2	4.2	4.2
23.828	4.2	4.2	4.1	4.1	4.1	4.1	4.1
23.872	4.1	4.1	4.1	4.1	4.1	4.1	4.1
23.916	4.1	4.1	4.1	4.1	4.1	4.1	4.1
23.960	4.1	4.1	4.1	4.1	4.1	4.1	4.1
24.005	4.1	4.1	4.1	4.1	4.0	4.0	3.9
24.049	3.3	3.2	3.0	2.9	2.7	2.5	2.4
24.093	2.2	2.0	1.2	1.1	0.8		

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Cat F+E	0.030		7.024		11.93	199.26	6736.40

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.864	0.5	0.5	0.5	0.5	0.5	0.5	0.5
5.908	0.5	0.5	0.5	0.5	0.5	0.5	0.5
5.953	0.5	0.5	0.5	0.5	0.5	0.5	0.6
5.997	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.041	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.085	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.130	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.174	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.218	0.6	0.6	0.6	0.6	0.7	0.7	0.7
6.262	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.306	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.351	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.395	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.439	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.483	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.527	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.572	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.616	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.660	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.704	0.8	0.8	0.8	0.9	0.9	0.9	0.9

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr

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Area or Reach Identifier (hr)	Drainage Area (sq mi) (cfs)	Rain Gage ID or Location (cfs)	Runoff Amount (in) (cfs)	Peak Flow Elevation (ft) (cfs)	Peak Flow Time (hr) (cfs)	Peak Flow Rate (cfs) (cfs)	Peak Flow Rate (csm) (cfs)
6.748	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.793	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.837	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.881	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.925	0.9	0.9	0.9	0.9	0.9	1.0	1.0
6.970	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.014	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.058	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.102	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.146	1.0	1.0	1.0	1.0	1.0	1.0	1.1
7.191	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.235	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.279	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.323	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.367	1.1	1.1	1.1	1.1	1.1	1.1	1.2
7.412	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.456	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.500	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.544	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.589	1.2	1.2	1.2	1.2	1.2	1.2	1.3
7.633	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.677	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.721	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.765	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.810	1.3	1.3	1.3	1.3	1.3	1.3	1.4
7.854	1.4	1.4	1.4	1.4	1.4	1.4	1.4
7.898	1.4	1.4	1.4	1.4	1.4	1.4	1.4
7.942	1.4	1.4	1.4	1.4	1.4	1.4	1.4
7.986	1.4	1.4	1.4	1.4	1.4	1.4	1.4
8.031	1.4	1.4	1.4	1.5	1.5	1.5	1.5
8.075	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.119	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.163	1.5	1.6	1.6	1.6	1.6	1.6	1.6
8.207	1.6	1.6	1.6	1.6	1.6	1.6	1.6
8.252	1.6	1.6	1.7	1.7	1.7	1.7	1.7
8.296	1.7	1.7	1.7	1.7	1.7	1.7	1.7
8.340	1.7	1.7	1.7	1.8	1.8	1.8	1.8
8.384	1.8	1.8	1.8	1.8	1.8	1.8	1.8
8.429	1.8	1.8	1.8	1.9	1.9	1.9	1.9
8.473	1.9	1.9	1.9	1.9	1.9	1.9	1.9
8.517	1.9	1.9	1.9	2.0	2.0	2.0	2.0
8.561	2.0	2.0	2.0	2.0	2.0	2.0	2.0
8.605	2.0	2.1	2.1	2.1	2.1	2.1	2.1
8.650	2.1	2.1	2.1	2.1	2.1	2.1	2.1
8.694	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.738	2.2	2.2	2.2	2.2	2.2	2.3	2.3
8.782	2.3	2.3	2.3	2.3	2.3	2.3	2.3
8.826	2.3	2.3	2.3	2.3	2.4	2.4	2.4
8.871	2.4	2.4	2.4	2.4	2.4	2.4	2.4
8.915	2.4	2.4	2.4	2.5	2.5	2.5	2.5
8.959	2.5	2.5	2.5	2.5	2.5	2.5	2.6

Cypress Creek Landfill
Southern Sediment Basin Storage

STORM 100-Yr

Area or Reach Identifier Line	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
9.003	2.6	2.6	2.6	2.6	2.6	2.6	2.6
9.047	2.6	2.6	2.6	2.6	2.6	2.6	2.6
9.092	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9.136	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9.180	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9.224	2.7	2.7	2.7	2.7	2.8	2.8	2.8
9.269	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.313	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.357	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.401	2.8	2.8	2.8	2.8	2.8	2.8	2.9
9.445	2.9	2.9	2.9	2.9	2.9	2.9	2.9
9.490	2.9	2.9	2.9	2.9	2.9	2.9	2.9
9.534	2.9	2.9	2.9	2.9	2.9	2.9	3.0
9.578	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9.622	3.0	3.0	3.0	3.0	3.1	3.1	3.1
9.666	3.1	3.1	3.1	3.1	3.2	3.2	3.2
9.711	3.2	3.2	3.2	3.2	3.2	3.2	3.3
9.755	3.3	3.3	3.3	3.3	3.3	3.4	3.4
9.799	3.4	3.4	3.4	3.4	3.4	3.4	3.4
9.843	3.5	3.5	3.5	3.5	3.5	3.5	3.6
9.887	3.6	3.6	3.6	3.6	3.6	3.6	3.6
9.932	3.6	3.7	3.7	3.7	3.7	3.7	3.7
9.976	3.8	3.8	3.8	3.8	3.8	3.8	3.8
10.020	3.8	3.9	3.9	3.9	3.9	3.9	3.9
10.064	4.0	4.0	4.0	4.0	4.0	4.1	4.1
10.109	4.1	4.1	4.1	4.1	4.1	4.2	4.2
10.153	4.2	4.2	4.3	4.3	4.3	4.3	4.3
10.197	4.4	4.4	4.4	4.4	4.4	4.4	4.5
10.241	4.5	4.5	4.5	4.6	4.6	4.6	4.6
10.285	4.6	4.7	4.7	4.7	4.7	4.7	4.7
10.330	4.8	4.8	4.8	4.8	4.9	4.9	4.9
10.374	4.9	5.0	5.0	5.0	5.0	5.0	5.0
10.418	5.1	5.1	5.1	5.1	5.1	5.2	5.2
10.462	5.2	5.3	5.3	5.3	5.3	5.3	5.4
10.506	5.4	5.4	5.4	5.4	5.5	5.5	5.5
10.551	5.5	5.6	5.6	5.7	5.7	5.7	5.7
10.595	5.8	5.8	5.8	5.8	5.9	5.9	5.9
10.639	5.9	6.0	6.0	6.1	6.1	6.1	6.2
10.683	6.2	6.3	6.3	6.3	6.3	6.4	6.4
10.727	6.4	6.4	6.5	6.5	6.6	6.6	6.7
10.772	6.7	6.7	6.8	6.8	6.8	6.9	6.9
10.816	6.9	7.0	7.0	7.0	7.1	7.1	7.2
10.860	7.2	7.2	7.3	7.3	7.4	7.4	7.4
10.904	7.5	7.5	7.5	7.5	7.6	7.6	7.7
10.948	7.7	7.7	7.8	7.8	7.9	7.9	8.0
10.993	8.0	8.0	8.1	8.1	8.1	8.2	8.2
11.037	8.3	8.3	8.4	8.5	8.5	8.6	8.7
11.081	8.8	8.8	8.9	8.9	9.0	9.0	9.0
11.125	9.1	9.2	9.2	9.3	9.4	9.5	9.6
11.170	9.8	9.8	9.9	10.0	10.1	10.2	10.2
11.214	10.3	10.3	10.4	10.5	10.6	10.7	10.8

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Southern Sediment Basin Storage							

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.258	10.9	11.0	11.1	11.2	11.3	11.4	11.5
11.302	11.5	11.6	11.7	11.7	11.8	11.9	12.0
11.346	12.1	12.2	12.3	12.4	12.5	12.6	12.7
11.391	12.8	12.9	13.0	13.0	13.1	13.2	13.3
11.435	13.3	13.4	13.6	13.7	13.8	13.9	14.0
11.479	14.1	14.2	14.3	14.4	14.5	14.6	14.9
11.523	15.3	15.8	16.6	17.5	18.7	19.9	21.1
11.567	22.4	23.5	24.7	25.7	26.6	27.4	28.1
11.612	28.9	29.8	30.9	32.3	34.2	36.4	38.8
11.656	41.5	44.1	46.7	49.2	51.6	53.7	55.6
11.700	57.2	58.7	60.2	61.8	63.7	66.0	68.8
11.744	72.0	75.5	79.2	82.8	86.4	89.8	93.0
11.788	95.9	98.5	100.7	102.9	105.3	108.3	111.9
11.833	116.6	122.4	129.3	136.7	144.5	152.3	160.0
11.877	167.2	174.0	180.1	185.5	190.1	193.8	196.6
11.921	198.4	199.3	198.9	197.5	195.0	191.8	188.3
11.965	184.5	180.8	177.2	173.9	171.0	168.5	166.3
12.010	164.1	161.4	157.9	153.3	147.2	139.6	130.9
12.054	121.4	111.7	102.0	92.8	84.2	76.3	69.3
12.098	63.3	58.4	54.3	50.8	47.8	45.2	42.8
12.142	40.8	39.0	37.4	36.0	34.8	33.7	32.8
12.186	32.0	31.3	30.7	30.2	29.8	29.4	29.0
12.231	28.6	28.3	27.9	27.4	27.0	26.7	26.3
12.275	25.9	25.6	25.3	25.1	24.9	24.7	24.6
12.319	24.4	24.3	24.1	23.8	23.5	23.2	22.9
12.363	22.6	22.3	22.0	21.7	21.5	21.3	21.1
12.407	21.0	20.8	20.7	20.5	20.3	20.0	19.7
12.452	19.4	19.1	18.8	18.5	18.2	17.9	17.7
12.496	17.5	17.3	17.2	17.1	16.9	16.8	16.6
12.540	16.4	16.2	16.0	15.8	15.6	15.4	15.2
12.584	15.1	14.9	14.8	14.7	14.6	14.5	14.4
12.628	14.4	14.3	14.2	14.1	14.0	13.9	13.9
12.673	13.8	13.7	13.6	13.6	13.5	13.5	13.5
12.717	13.4	13.4	13.3	13.3	13.2	13.1	13.1
12.761	13.0	12.9	12.9	12.8	12.7	12.7	12.6
12.805	12.6	12.6	12.5	12.5	12.5	12.4	12.3
12.850	12.3	12.2	12.1	12.0	12.0	11.9	11.9
12.894	11.8	11.8	11.7	11.7	11.7	11.6	11.6
12.938	11.5	11.5	11.4	11.3	11.2	11.2	11.1
12.982	11.1	11.0	11.0	10.9	10.9	10.8	10.8
13.026	10.8	10.7	10.7	10.6	10.6	10.5	10.5
13.071	10.4	10.4	10.3	10.3	10.2	10.2	10.2
13.115	10.1	10.1	10.1	10.1	10.0	10.0	9.9
13.159	9.9	9.9	9.8	9.8	9.8	9.7	9.7
13.203	9.7	9.7	9.6	9.6	9.6	9.6	9.5
13.247	9.5	9.5	9.4	9.4	9.3	9.3	9.3
13.292	9.3	9.2	9.2	9.2	9.2	9.2	9.1
13.336	9.1	9.1	9.0	9.0	9.0	8.9	8.9
13.380	8.8	8.8	8.8	8.8	8.7	8.7	8.7
13.424	8.7	8.7	8.6	8.6	8.6	8.5	8.5
13.469	8.4	8.4	8.4	8.3	8.3	8.3	8.3

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
13.513	8.3	8.2	8.2	8.2	8.2	8.1	8.1
13.557	8.1	8.0	8.0	8.0	7.9	7.9	7.9
13.601	7.9	7.9	7.8	7.8	7.8	7.8	7.8
13.645	7.7	7.7	7.7	7.7	7.6	7.6	7.6
13.690	7.6	7.5	7.5	7.5	7.5	7.5	7.5
13.734	7.4	7.4	7.4	7.4	7.3	7.3	7.3
13.778	7.3	7.2	7.2	7.2	7.2	7.2	7.2
13.822	7.1	7.1	7.1	7.1	7.1	7.0	7.0
13.866	7.0	6.9	6.9	6.9	6.9	6.9	6.9
13.911	6.8	6.8	6.8	6.8	6.8	6.7	6.7
13.955	6.7	6.7	6.6	6.6	6.6	6.6	6.5
13.999	6.5	6.5	6.5	6.5	6.5	6.5	6.4
14.043	6.4	6.4	6.4	6.4	6.4	6.3	6.3
14.087	6.3	6.3	6.3	6.3	6.3	6.3	6.2
14.132	6.2	6.2	6.2	6.2	6.2	6.2	6.2
14.176	6.2	6.1	6.1	6.1	6.1	6.1	6.1
14.220	6.1	6.1	6.1	6.1	6.1	6.1	6.1
14.264	6.1	6.0	6.0	6.0	6.0	6.0	6.0
14.309	6.0	6.0	6.0	6.0	6.0	6.0	6.0
14.353	6.0	5.9	5.9	5.9	5.9	5.9	5.9
14.397	5.9	5.9	5.9	5.9	5.9	5.9	5.9
14.441	5.9	5.8	5.8	5.8	5.8	5.8	5.8
14.485	5.8	5.8	5.8	5.8	5.8	5.8	5.8
14.530	5.8	5.8	5.7	5.7	5.7	5.7	5.7
14.574	5.7	5.7	5.7	5.7	5.7	5.7	5.6
14.618	5.6	5.6	5.6	5.6	5.6	5.6	5.6
14.662	5.6	5.6	5.6	5.6	5.6	5.6	5.6
14.706	5.5	5.5	5.5	5.5	5.5	5.5	5.5
14.751	5.5	5.5	5.5	5.5	5.5	5.4	5.4
14.795	5.4	5.4	5.4	5.4	5.4	5.4	5.4
14.839	5.4	5.4	5.4	5.4	5.4	5.3	5.3
14.883	5.3	5.3	5.3	5.3	5.3	5.3	5.3
14.927	5.3	5.3	5.3	5.3	5.3	5.2	5.2
14.972	5.2	5.2	5.2	5.2	5.2	5.2	5.2
15.016	5.2	5.2	5.2	5.2	5.2	5.1	5.1
15.060	5.1	5.1	5.1	5.1	5.1	5.1	5.1
15.104	5.1	5.1	5.1	5.1	5.1	5.1	5.0
15.149	5.0	5.0	5.0	5.0	5.0	5.0	5.0
15.193	5.0	5.0	5.0	4.9	4.9	4.9	4.9
15.237	4.9	4.9	4.9	4.9	4.9	4.9	4.9
15.281	4.9	4.9	4.9	4.8	4.8	4.8	4.8
15.325	4.8	4.8	4.8	4.8	4.8	4.8	4.8
15.370	4.8	4.8	4.7	4.7	4.7	4.7	4.7
15.414	4.7	4.7	4.7	4.7	4.7	4.7	4.7
15.458	4.7	4.7	4.6	4.6	4.6	4.6	4.6
15.502	4.6	4.6	4.6	4.6	4.6	4.6	4.6
15.546	4.6	4.6	4.5	4.5	4.5	4.5	4.5
15.591	4.5	4.5	4.5	4.5	4.5	4.5	4.5
15.635	4.5	4.4	4.4	4.4	4.4	4.4	4.4
15.679	4.4	4.4	4.4	4.4	4.4	4.4	4.4
15.723	4.4	4.4	4.3	4.3	4.3	4.3	4.3

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.767	4.3	4.3	4.3	4.3	4.3	4.2	4.2
15.812	4.2	4.2	4.2	4.2	4.2	4.2	4.2
15.856	4.2	4.2	4.2	4.2	4.2	4.2	4.1
15.900	4.1	4.1	4.1	4.1	4.1	4.1	4.1
15.944	4.1	4.1	4.1	4.1	4.1	4.0	4.0
15.989	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.033	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.077	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.121	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.165	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.210	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.254	3.9	3.9	3.8	3.8	3.8	3.8	3.8
16.298	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.342	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.386	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.431	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.475	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.519	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.563	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.607	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.652	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.696	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.740	3.7	3.7	3.6	3.6	3.6	3.6	3.6
16.784	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.829	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.873	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.917	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.961	3.6	3.6	3.6	3.5	3.5	3.5	3.5
17.005	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.050	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.094	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.138	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.182	3.5	3.5	3.5	3.5	3.5	3.5	3.4
17.226	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.271	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.315	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.359	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.403	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.447	3.4	3.4	3.3	3.3	3.3	3.3	3.3
17.492	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.536	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.580	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.624	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.669	3.3	3.3	3.3	3.3	3.3	3.2	3.2
17.713	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.757	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.801	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.845	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.890	3.2	3.2	3.2	3.2	3.2	3.2	3.2

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
17.934	3.2	3.2	3.1	3.1	3.1	3.1	3.1
17.978	3.1	3.1	3.1	3.1	3.1	3.1	3.1

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
18.022	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.066	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.111	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.155	3.1	3.1	3.0	3.0	3.0	3.0	3.0
18.199	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.243	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.287	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.332	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.376	3.0	3.0	3.0	2.9	2.9	2.9	2.9
18.420	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.464	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.509	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.553	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.597	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.641	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.685	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.730	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.774	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.818	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.862	2.8	2.8	2.7	2.7	2.7	2.7	2.7
18.906	2.7	2.7	2.7	2.7	2.7	2.7	2.7
18.951	2.7	2.7	2.7	2.7	2.7	2.7	2.7
18.995	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.039	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.083	2.7	2.7	2.7	2.7	2.7	2.7	2.6
19.127	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.172	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.216	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.260	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.304	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.349	2.6	2.5	2.5	2.5	2.5	2.5	2.5
19.393	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.437	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.481	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.525	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.570	2.5	2.4	2.4	2.4	2.4	2.4	2.4
19.614	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.658	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.702	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.746	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.791	2.4	2.4	2.4	2.3	2.3	2.3	2.3
19.835	2.3	2.3	2.3	2.3	2.3	2.3	2.3
19.879	2.3	2.3	2.3	2.3	2.3	2.3	2.3
19.923	2.3	2.3	2.3	2.3	2.3	2.3	2.3
19.967	2.3	2.3	2.3	2.3	2.3	2.3	2.3
20.012	2.3	2.3	2.3	2.3	2.3	2.3	2.3
20.056	2.3	2.2	2.2	2.2	2.2	2.2	2.2

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
20.100	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.144	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.188	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.233	2.2	2.2	2.2	2.2	2.2	2.2	2.2

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
20.277	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.321	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.365	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.410	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.454	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.498	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.542	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.586	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.631	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.675	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.719	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.763	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.807	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.852	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.896	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.940	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.984	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.028	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.073	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.117	2.2	2.2	2.2	2.2	2.2	2.1	2.1
21.161	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.205	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.250	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.294	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.338	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.382	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.426	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.471	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.515	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.559	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.603	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.647	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.692	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.736	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.780	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.824	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.868	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.913	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.957	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.001	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.045	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.090	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.134	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.178	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.222	2.1	2.1	2.1	2.1	2.1	2.1	2.1

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
22.266	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.311	2.1	2.1	2.1	2.1	2.1	2.0	2.0
22.355	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.399	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.443	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.487	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
22.532	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.576	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.620	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.664	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.708	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.753	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.797	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.841	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.885	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.930	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.974	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.018	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.062	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.106	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.151	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.195	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.239	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.283	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.327	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.372	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.416	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.460	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.504	2.0	2.0	2.0	2.0	2.0	1.9	1.9
23.549	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.593	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.637	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.681	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.725	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.770	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.814	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.858	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.902	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.946	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.991	1.9	1.9	1.9	1.9	1.9	1.8	1.8
24.035	1.7	1.6	1.5	1.3	1.2	1.0	0.9
24.079	0.8	0.7	0.6				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
W. Swale	0.030	Upstream	7.024	2.17	11.93	199.26	6736.40

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.864	0.5	0.5	0.5	0.5	0.5	0.5	0.5
5.908	0.5	0.5	0.5	0.5	0.5	0.5	0.5
5.953	0.5	0.5	0.5	0.5	0.5	0.5	0.6
5.997	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.041	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.085	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.130	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.174	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.218	0.6	0.6	0.6	0.6	0.7	0.7	0.7
6.262	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.306	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.351	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.395	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.439	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.483	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.527	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.572	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.616	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.660	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.704	0.8	0.8	0.8	0.9	0.9	0.9	0.9
6.748	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.793	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.837	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.881	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.925	0.9	0.9	0.9	0.9	0.9	1.0	1.0
6.970	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.014	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.058	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.102	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.146	1.0	1.0	1.0	1.0	1.0	1.0	1.1
7.191	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.235	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.279	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.323	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.367	1.1	1.1	1.1	1.1	1.1	1.1	1.2
7.412	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.456	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.500	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.544	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.589	1.2	1.2	1.2	1.2	1.2	1.2	1.3
7.633	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.677	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.721	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.765	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.810	1.3	1.3	1.3	1.3	1.3	1.3	1.4

STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
7.854	1.4	1.4	1.4	1.4	1.4	1.4	1.4
7.898	1.4	1.4	1.4	1.4	1.4	1.4	1.4
7.942	1.4	1.4	1.4	1.4	1.4	1.4	1.4
7.986	1.4	1.4	1.4	1.4	1.4	1.4	1.4
8.031	1.4	1.4	1.4	1.5	1.5	1.5	1.5
8.075	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.119	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.163	1.5	1.6	1.6	1.6	1.6	1.6	1.6
8.207	1.6	1.6	1.6	1.6	1.6	1.6	1.6
8.252	1.6	1.6	1.7	1.7	1.7	1.7	1.7

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.296	1.7	1.7	1.7	1.7	1.7	1.7	1.7
8.340	1.7	1.7	1.7	1.8	1.8	1.8	1.8
8.384	1.8	1.8	1.8	1.8	1.8	1.8	1.8
8.429	1.8	1.8	1.8	1.9	1.9	1.9	1.9
8.473	1.9	1.9	1.9	1.9	1.9	1.9	1.9
8.517	1.9	1.9	1.9	2.0	2.0	2.0	2.0
8.561	2.0	2.0	2.0	2.0	2.0	2.0	2.0
8.605	2.0	2.1	2.1	2.1	2.1	2.1	2.1
8.650	2.1	2.1	2.1	2.1	2.1	2.1	2.1
8.694	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.738	2.2	2.2	2.2	2.2	2.2	2.3	2.3
8.782	2.3	2.3	2.3	2.3	2.3	2.3	2.3
8.826	2.3	2.3	2.3	2.3	2.4	2.4	2.4
8.871	2.4	2.4	2.4	2.4	2.4	2.4	2.4
8.915	2.4	2.4	2.4	2.5	2.5	2.5	2.5
8.959	2.5	2.5	2.5	2.5	2.5	2.5	2.6
9.003	2.6	2.6	2.6	2.6	2.6	2.6	2.6
9.047	2.6	2.6	2.6	2.6	2.6	2.6	2.6
9.092	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9.136	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9.180	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9.224	2.7	2.7	2.7	2.7	2.8	2.8	2.8
9.269	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.313	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.357	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.401	2.8	2.8	2.8	2.8	2.8	2.8	2.9
9.445	2.9	2.9	2.9	2.9	2.9	2.9	2.9
9.490	2.9	2.9	2.9	2.9	2.9	2.9	2.9
9.534	2.9	2.9	2.9	2.9	2.9	2.9	3.0
9.578	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9.622	3.0	3.0	3.0	3.0	3.1	3.1	3.1
9.666	3.1	3.1	3.1	3.1	3.2	3.2	3.2
9.711	3.2	3.2	3.2	3.2	3.2	3.2	3.3
9.755	3.3	3.3	3.3	3.3	3.3	3.4	3.4
9.799	3.4	3.4	3.4	3.4	3.4	3.4	3.4
9.843	3.5	3.5	3.5	3.5	3.5	3.5	3.6
9.887	3.6	3.6	3.6	3.6	3.6	3.6	3.6
9.932	3.6	3.7	3.7	3.7	3.7	3.7	3.7
9.976	3.8	3.8	3.8	3.8	3.8	3.8	3.8

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
10.020	3.8	3.9	3.9	3.9	3.9	3.9	3.9
10.064	4.0	4.0	4.0	4.0	4.0	4.1	4.1
10.109	4.1	4.1	4.1	4.1	4.1	4.2	4.2
10.153	4.2	4.2	4.3	4.3	4.3	4.3	4.3
10.197	4.4	4.4	4.4	4.4	4.4	4.4	4.5
10.241	4.5	4.5	4.5	4.6	4.6	4.6	4.6
10.285	4.6	4.7	4.7	4.7	4.7	4.7	4.7
10.330	4.8	4.8	4.8	4.8	4.9	4.9	4.9
10.374	4.9	5.0	5.0	5.0	5.0	5.0	5.0
10.418	5.1	5.1	5.1	5.1	5.1	5.2	5.2
10.462	5.2	5.3	5.3	5.3	5.3	5.3	5.4
10.506	5.4	5.4	5.4	5.4	5.5	5.5	5.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.551	5.5	5.6	5.6	5.7	5.7	5.7	5.7
10.595	5.8	5.8	5.8	5.8	5.9	5.9	5.9
10.639	5.9	6.0	6.0	6.1	6.1	6.1	6.2
10.683	6.2	6.3	6.3	6.3	6.3	6.4	6.4
10.727	6.4	6.4	6.5	6.5	6.6	6.6	6.7
10.772	6.7	6.7	6.8	6.8	6.8	6.9	6.9
10.816	6.9	7.0	7.0	7.0	7.1	7.1	7.2
10.860	7.2	7.2	7.3	7.3	7.4	7.4	7.4
10.904	7.5	7.5	7.5	7.5	7.6	7.6	7.7
10.948	7.7	7.7	7.8	7.8	7.9	7.9	8.0
10.993	8.0	8.0	8.1	8.1	8.1	8.2	8.2
11.037	8.3	8.3	8.4	8.5	8.5	8.6	8.7
11.081	8.8	8.8	8.9	8.9	9.0	9.0	9.0
11.125	9.1	9.2	9.2	9.3	9.4	9.5	9.6
11.170	9.8	9.8	9.9	10.0	10.1	10.2	10.2
11.214	10.3	10.3	10.4	10.5	10.6	10.7	10.8
11.258	10.9	11.0	11.1	11.2	11.3	11.4	11.5
11.302	11.5	11.6	11.7	11.7	11.8	11.9	12.0
11.346	12.1	12.2	12.3	12.4	12.5	12.6	12.7
11.391	12.8	12.9	13.0	13.0	13.1	13.2	13.3
11.435	13.3	13.4	13.6	13.7	13.8	13.9	14.0
11.479	14.1	14.2	14.3	14.4	14.5	14.6	14.9
11.523	15.3	15.8	16.6	17.5	18.7	19.9	21.1
11.567	22.4	23.5	24.7	25.7	26.6	27.4	28.1
11.612	28.9	29.8	30.9	32.3	34.2	36.4	38.8
11.656	41.5	44.1	46.7	49.2	51.6	53.7	55.6
11.700	57.2	58.7	60.2	61.8	63.7	66.0	68.8
11.744	72.0	75.5	79.2	82.8	86.4	89.8	93.0
11.788	95.9	98.5	100.7	102.9	105.3	108.3	111.9
11.833	116.6	122.4	129.3	136.7	144.5	152.3	160.0
11.877	167.2	174.0	180.1	185.5	190.1	193.8	196.6
11.921	198.4	199.3	198.9	197.5	195.0	191.8	188.3
11.965	184.5	180.8	177.2	173.9	171.0	168.5	166.3
12.010	164.1	161.4	157.9	153.3	147.2	139.6	130.9
12.054	121.4	111.7	102.0	92.8	84.2	76.3	69.3
12.098	63.3	58.4	54.3	50.8	47.8	45.2	42.8
12.142	40.8	39.0	37.4	36.0	34.8	33.7	32.8

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
12.186	32.0	31.3	30.7	30.2	29.8	29.4	29.0
12.231	28.6	28.3	27.9	27.4	27.0	26.7	26.3
12.275	25.9	25.6	25.3	25.1	24.9	24.7	24.6
12.319	24.4	24.3	24.1	23.8	23.5	23.2	22.9
12.363	22.6	22.3	22.0	21.7	21.5	21.3	21.1
12.407	21.0	20.8	20.7	20.5	20.3	20.0	19.7
12.452	19.4	19.1	18.8	18.5	18.2	17.9	17.7
12.496	17.5	17.3	17.2	17.1	16.9	16.8	16.6
12.540	16.4	16.2	16.0	15.8	15.6	15.4	15.2
12.584	15.1	14.9	14.8	14.7	14.6	14.5	14.4
12.628	14.4	14.3	14.2	14.1	14.0	13.9	13.9
12.673	13.8	13.7	13.6	13.6	13.5	13.5	13.5
12.717	13.4	13.4	13.3	13.3	13.2	13.1	13.1
12.761	13.0	12.9	12.9	12.8	12.7	12.7	12.6

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.805	12.6	12.6	12.5	12.5	12.5	12.4	12.3
12.850	12.3	12.2	12.1	12.0	12.0	11.9	11.9
12.894	11.8	11.8	11.7	11.7	11.7	11.6	11.6
12.938	11.5	11.5	11.4	11.3	11.2	11.2	11.1
12.982	11.1	11.0	11.0	10.9	10.9	10.8	10.8
13.026	10.8	10.7	10.7	10.6	10.6	10.5	10.5
13.071	10.4	10.4	10.3	10.3	10.2	10.2	10.2
13.115	10.1	10.1	10.1	10.1	10.0	10.0	9.9
13.159	9.9	9.9	9.8	9.8	9.8	9.7	9.7
13.203	9.7	9.7	9.6	9.6	9.6	9.6	9.5
13.247	9.5	9.5	9.4	9.4	9.3	9.3	9.3
13.292	9.3	9.2	9.2	9.2	9.2	9.2	9.1
13.336	9.1	9.1	9.0	9.0	9.0	8.9	8.9
13.380	8.8	8.8	8.8	8.8	8.7	8.7	8.7
13.424	8.7	8.7	8.6	8.6	8.6	8.5	8.5
13.469	8.4	8.4	8.4	8.3	8.3	8.3	8.3
13.513	8.3	8.2	8.2	8.2	8.2	8.1	8.1
13.557	8.1	8.0	8.0	8.0	7.9	7.9	7.9
13.601	7.9	7.9	7.8	7.8	7.8	7.8	7.8
13.645	7.7	7.7	7.7	7.7	7.6	7.6	7.6
13.690	7.6	7.5	7.5	7.5	7.5	7.5	7.5
13.734	7.4	7.4	7.4	7.4	7.3	7.3	7.3
13.778	7.3	7.2	7.2	7.2	7.2	7.2	7.2
13.822	7.1	7.1	7.1	7.1	7.1	7.0	7.0
13.866	7.0	6.9	6.9	6.9	6.9	6.9	6.9
13.911	6.8	6.8	6.8	6.8	6.8	6.7	6.7
13.955	6.7	6.7	6.6	6.6	6.6	6.6	6.5
13.999	6.5	6.5	6.5	6.5	6.5	6.5	6.4
14.043	6.4	6.4	6.4	6.4	6.4	6.3	6.3
14.087	6.3	6.3	6.3	6.3	6.3	6.3	6.2
14.132	6.2	6.2	6.2	6.2	6.2	6.2	6.2
14.176	6.2	6.1	6.1	6.1	6.1	6.1	6.1
14.220	6.1	6.1	6.1	6.1	6.1	6.1	6.1
14.264	6.1	6.0	6.0	6.0	6.0	6.0	6.0
14.309	6.0	6.0	6.0	6.0	6.0	6.0	6.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
14.353	6.0	5.9	5.9	5.9	5.9	5.9	5.9
14.397	5.9	5.9	5.9	5.9	5.9	5.9	5.9
14.441	5.9	5.8	5.8	5.8	5.8	5.8	5.8
14.485	5.8	5.8	5.8	5.8	5.8	5.8	5.8
14.530	5.8	5.8	5.7	5.7	5.7	5.7	5.7
14.574	5.7	5.7	5.7	5.7	5.7	5.7	5.6
14.618	5.6	5.6	5.6	5.6	5.6	5.6	5.6
14.662	5.6	5.6	5.6	5.6	5.6	5.6	5.6
14.706	5.5	5.5	5.5	5.5	5.5	5.5	5.5
14.751	5.5	5.5	5.5	5.5	5.5	5.4	5.4
14.795	5.4	5.4	5.4	5.4	5.4	5.4	5.4
14.839	5.4	5.4	5.4	5.4	5.4	5.3	5.3
14.883	5.3	5.3	5.3	5.3	5.3	5.3	5.3
14.927	5.3	5.3	5.3	5.3	5.3	5.2	5.2
14.972	5.2	5.2	5.2	5.2	5.2	5.2	5.2
15.016	5.2	5.2	5.2	5.2	5.2	5.1	5.1

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.060	5.1	5.1	5.1	5.1	5.1	5.1	5.1
15.104	5.1	5.1	5.1	5.1	5.1	5.1	5.0
15.149	5.0	5.0	5.0	5.0	5.0	5.0	5.0
15.193	5.0	5.0	5.0	4.9	4.9	4.9	4.9
15.237	4.9	4.9	4.9	4.9	4.9	4.9	4.9
15.281	4.9	4.9	4.9	4.8	4.8	4.8	4.8
15.325	4.8	4.8	4.8	4.8	4.8	4.8	4.8
15.370	4.8	4.8	4.7	4.7	4.7	4.7	4.7
15.414	4.7	4.7	4.7	4.7	4.7	4.7	4.7
15.458	4.7	4.7	4.6	4.6	4.6	4.6	4.6
15.502	4.6	4.6	4.6	4.6	4.6	4.6	4.6
15.546	4.6	4.6	4.5	4.5	4.5	4.5	4.5
15.591	4.5	4.5	4.5	4.5	4.5	4.5	4.5
15.635	4.5	4.4	4.4	4.4	4.4	4.4	4.4
15.679	4.4	4.4	4.4	4.4	4.4	4.4	4.4
15.723	4.4	4.4	4.3	4.3	4.3	4.3	4.3
15.767	4.3	4.3	4.3	4.3	4.3	4.2	4.2
15.812	4.2	4.2	4.2	4.2	4.2	4.2	4.2
15.856	4.2	4.2	4.2	4.2	4.2	4.2	4.1
15.900	4.1	4.1	4.1	4.1	4.1	4.1	4.1
15.944	4.1	4.1	4.1	4.1	4.1	4.0	4.0
15.989	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.033	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.077	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.121	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.165	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.210	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.254	3.9	3.9	3.8	3.8	3.8	3.8	3.8
16.298	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.342	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.386	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.431	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.475	3.8	3.8	3.8	3.8	3.8	3.8	3.8

STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
16.519	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.563	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.607	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.652	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.696	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.740	3.7	3.7	3.6	3.6	3.6	3.6	3.6
16.784	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.829	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.873	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.917	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.961	3.6	3.6	3.6	3.5	3.5	3.5	3.5
17.005	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.050	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.094	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.138	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.182	3.5	3.5	3.5	3.5	3.5	3.5	3.4
17.226	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.271	3.4	3.4	3.4	3.4	3.4	3.4	3.4

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.315	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.359	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.403	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.447	3.4	3.4	3.3	3.3	3.3	3.3	3.3
17.492	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.536	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.580	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.624	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.669	3.3	3.3	3.3	3.3	3.3	3.2	3.2
17.713	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.757	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.801	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.845	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.890	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.934	3.2	3.2	3.1	3.1	3.1	3.1	3.1
17.978	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.022	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.066	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.111	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.155	3.1	3.1	3.0	3.0	3.0	3.0	3.0
18.199	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.243	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.287	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.332	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.376	3.0	3.0	3.0	2.9	2.9	2.9	2.9
18.420	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.464	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.509	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.553	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.597	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.641	2.8	2.8	2.8	2.8	2.8	2.8	2.8

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
18.685	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.730	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.774	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.818	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.862	2.8	2.8	2.7	2.7	2.7	2.7	2.7
18.906	2.7	2.7	2.7	2.7	2.7	2.7	2.7
18.951	2.7	2.7	2.7	2.7	2.7	2.7	2.7
18.995	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.039	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.083	2.7	2.7	2.7	2.7	2.7	2.7	2.6
19.127	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.172	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.216	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.260	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.304	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.349	2.6	2.5	2.5	2.5	2.5	2.5	2.5
19.393	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.437	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.481	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.525	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
19.570	2.5	2.4	2.4	2.4	2.4	2.4	2.4
19.614	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.658	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.702	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.746	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.791	2.4	2.4	2.4	2.3	2.3	2.3	2.3
19.835	2.3	2.3	2.3	2.3	2.3	2.3	2.3
19.879	2.3	2.3	2.3	2.3	2.3	2.3	2.3
19.923	2.3	2.3	2.3	2.3	2.3	2.3	2.3
19.967	2.3	2.3	2.3	2.3	2.3	2.3	2.3
20.012	2.3	2.3	2.3	2.3	2.3	2.3	2.3
20.056	2.3	2.2	2.2	2.2	2.2	2.2	2.2
20.100	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.144	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.188	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.233	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.277	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.321	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.365	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.410	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.454	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.498	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.542	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.586	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.631	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.675	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.719	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.763	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.807	2.2	2.2	2.2	2.2	2.2	2.2	2.2

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
20.852	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.896	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.940	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.984	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.028	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.073	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.117	2.2	2.2	2.2	2.2	2.2	2.1	2.1
21.161	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.205	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.250	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.294	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.338	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.382	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.426	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.471	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.515	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.559	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.603	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.647	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.692	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.736	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.780	2.1	2.1	2.1	2.1	2.1	2.1	2.1

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
21.824	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.868	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.913	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.957	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.001	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.045	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.090	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.134	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.178	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.222	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.266	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.311	2.1	2.1	2.1	2.1	2.1	2.0	2.0
22.355	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.399	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.443	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.487	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.532	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.576	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.620	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.664	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.708	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.753	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.797	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.841	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.885	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.930	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.974	2.0	2.0	2.0	2.0	2.0	2.0	2.0

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
23.018	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.062	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.106	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.151	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.195	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.239	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.283	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.327	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.372	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.416	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.460	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.504	2.0	2.0	2.0	2.0	2.0	1.9	1.9
23.549	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.593	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.637	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.681	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.725	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.770	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.814	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.858	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.902	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.946	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.991	1.9	1.9	1.9	1.9	1.9	1.8	1.8
24.035	1.7	1.6	1.5	1.3	1.2	1.0	0.9

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
24.079	0.8	0.7	0.6				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
W. Swale	0.030	Downstream	7.017	2.16	11.99	196.85	6654.67

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.123	0.5	0.6	0.6	0.6	0.6	0.6	0.6
6.167	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.212	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.256	0.6	0.6	0.6	0.6	0.6	0.6	0.6
6.300	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.344	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.388	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.433	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.477	0.7	0.7	0.7	0.7	0.7	0.7	0.7
6.521	0.7	0.7	0.7	0.7	0.8	0.8	0.8
6.565	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.610	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.654	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
6.698	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.742	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.786	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.831	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.875	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.919	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.963	0.9	0.9	0.9	0.9	0.9	0.9	0.9
7.007	0.9	1.0	1.0	1.0	1.0	1.0	1.0
7.052	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.096	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.140	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.184	1.0	1.0	1.0	1.0	1.0	1.0	1.0
7.228	1.0	1.0	1.1	1.1	1.1	1.1	1.1
7.273	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.317	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.361	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.405	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.450	1.1	1.1	1.1	1.2	1.2	1.2	1.2
7.494	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.538	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.582	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.626	1.2	1.2	1.2	1.2	1.2	1.2	1.2
7.671	1.2	1.2	1.2	1.3	1.3	1.3	1.3
7.715	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.759	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.803	1.3	1.3	1.3	1.3	1.3	1.3	1.3

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.847	1.3	1.3	1.3	1.3	1.3	1.3	1.3
7.892	1.3	1.3	1.4	1.4	1.4	1.4	1.4
7.936	1.4	1.4	1.4	1.4	1.4	1.4	1.4
7.980	1.4	1.4	1.4	1.4	1.4	1.4	1.4
8.024	1.4	1.4	1.4	1.4	1.4	1.4	1.4
8.068	1.4	1.4	1.4	1.4	1.4	1.4	1.5
8.113	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.157	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8.201	1.5	1.5	1.5	1.5	1.6	1.6	1.6
8.245	1.6	1.6	1.6	1.6	1.6	1.6	1.6
8.290	1.6	1.6	1.6	1.6	1.6	1.6	1.7
8.334	1.7	1.7	1.7	1.7	1.7	1.7	1.7
8.378	1.7	1.7	1.7	1.7	1.7	1.7	1.8
8.422	1.8	1.8	1.8	1.8	1.8	1.8	1.8
8.466	1.8	1.8	1.8	1.8	1.8	1.8	1.8
8.511	1.9	1.9	1.9	1.9	1.9	1.9	1.9
8.555	1.9	1.9	1.9	1.9	1.9	1.9	2.0
8.599	2.0	2.0	2.0	2.0	2.0	2.0	2.0
8.643	2.0	2.0	2.0	2.0	2.0	2.1	2.1
8.687	2.1	2.1	2.1	2.1	2.1	2.1	2.1
8.732	2.1	2.1	2.1	2.1	2.2	2.2	2.2
8.776	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.820	2.2	2.2	2.3	2.3	2.3	2.3	2.3

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
8.864	2.3	2.3	2.3	2.3	2.3	2.3	2.3
8.908	2.3	2.4	2.4	2.4	2.4	2.4	2.4
8.953	2.4	2.4	2.4	2.4	2.4	2.4	2.5
8.997	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9.041	2.5	2.5	2.5	2.6	2.6	2.6	2.6
9.085	2.6	2.6	2.6	2.6	2.6	2.6	2.6
9.130	2.6	2.6	2.6	2.6	2.7	2.7	2.7
9.174	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9.218	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9.262	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9.306	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.351	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.395	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.439	2.8	2.8	2.8	2.8	2.8	2.8	2.8
9.483	2.8	2.8	2.9	2.9	2.9	2.9	2.9
9.527	2.9	2.9	2.9	2.9	2.9	2.9	2.9
9.572	2.9	2.9	2.9	2.9	2.9	2.9	2.9
9.616	2.9	2.9	3.0	3.0	3.0	3.0	3.0
9.660	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9.704	3.1	3.1	3.1	3.1	3.1	3.1	3.1
9.748	3.1	3.2	3.2	3.2	3.2	3.2	3.2
9.793	3.2	3.2	3.3	3.3	3.3	3.3	3.3
9.837	3.3	3.3	3.4	3.4	3.4	3.4	3.4
9.881	3.4	3.4	3.4	3.4	3.5	3.5	3.5
9.925	3.5	3.5	3.5	3.6	3.6	3.6	3.6
9.970	3.6	3.6	3.6	3.6	3.6	3.7	3.7
10.014	3.7	3.7	3.7	3.7	3.8	3.8	3.8
10.058	3.8	3.8	3.8	3.8	3.8	3.9	3.9

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.102	3.9	3.9	3.9	4.0	4.0	4.0	4.0
10.146	4.0	4.0	4.1	4.1	4.1	4.1	4.1
10.191	4.1	4.1	4.2	4.2	4.2	4.2	4.3
10.235	4.3	4.3	4.3	4.3	4.4	4.4	4.4
10.279	4.4	4.4	4.4	4.5	4.5	4.5	4.5
10.323	4.6	4.6	4.6	4.6	4.6	4.7	4.7
10.367	4.7	4.7	4.7	4.8	4.8	4.8	4.8
10.412	4.8	4.9	4.9	4.9	4.9	5.0	5.0
10.456	5.0	5.0	5.0	5.1	5.1	5.1	5.1
10.500	5.1	5.2	5.2	5.2	5.2	5.3	5.3
10.544	5.3	5.3	5.3	5.4	5.4	5.4	5.4
10.589	5.4	5.5	5.5	5.5	5.6	5.6	5.6
10.633	5.7	5.7	5.7	5.7	5.8	5.8	5.8
10.677	5.8	5.9	5.9	5.9	6.0	6.0	6.0
10.721	6.1	6.1	6.2	6.2	6.2	6.3	6.3
10.765	6.3	6.3	6.4	6.4	6.4	6.5	6.5
10.810	6.5	6.6	6.6	6.7	6.7	6.7	6.8
10.854	6.8	6.9	6.9	6.9	6.9	7.0	7.0
10.898	7.0	7.1	7.1	7.2	7.2	7.2	7.3
10.942	7.3	7.4	7.4	7.4	7.5	7.5	7.5
10.986	7.6	7.6	7.6	7.7	7.7	7.8	7.8

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
11.031	7.8	7.9	7.9	8.0	8.0	8.0	8.1
11.075	8.1	8.1	8.2	8.2	8.3	8.4	8.4
11.119	8.5	8.6	8.6	8.7	8.8	8.8	8.9
11.163	8.9	9.0	9.0	9.1	9.1	9.2	9.3
11.207	9.4	9.5	9.6	9.7	9.8	9.9	9.9
11.252	10.0	10.1	10.2	10.2	10.3	10.4	10.4
11.296	10.5	10.6	10.7	10.8	10.9	11.0	11.1
11.340	11.2	11.3	11.4	11.5	11.5	11.6	11.7
11.384	11.8	11.8	11.9	12.0	12.1	12.2	12.3
11.429	12.5	12.6	12.7	12.7	12.8	12.9	13.0
11.473	13.1	13.1	13.2	13.3	13.4	13.5	13.6
11.517	13.7	13.8	13.9	14.0	14.1	14.2	14.4
11.561	14.5	14.7	14.9	15.3	15.8	16.4	17.2
11.605	18.1	19.1	20.3	21.4	22.6	23.7	24.7
11.650	25.7	26.6	27.5	28.4	29.4	30.5	31.9
11.694	33.5	35.4	37.5	39.8	42.2	44.7	47.1
11.738	49.5	51.7	53.7	55.6	57.4	59.1	60.9
11.782	62.9	65.1	67.5	70.3	73.4	76.7	80.1
11.826	83.5	86.9	90.1	93.2	96.0	98.7	101.4
11.871	104.1	107.2	110.8	115.1	120.1	125.9	132.3
11.915	139.3	146.5	153.8	161.0	167.8	174.1	179.9
11.959	184.9	189.1	192.4	194.9	196.4	196.8	196.4
12.003	195.0	192.8	190.1	186.9	183.6	180.2	177.0
12.047	173.9	171.0	168.2	165.4	162.3	158.7	154.4
12.092	149.1	142.7	135.3	127.2	118.5	109.5	100.5
12.136	91.9	83.8	76.4	69.8	64.1	59.1	54.8
12.180	51.2	48.0	45.3	43.0	40.9	39.1	37.5
12.224	36.1	34.9	33.8	32.9	32.1	31.4	30.8
12.269	30.2	29.8	29.3	28.9	28.5	28.1	27.8
12.313	27.4	27.0	26.6	26.3	25.9	25.6	25.4

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.357	25.1	24.9	24.7	24.5	24.4	24.2	23.9
12.401	23.7	23.4	23.1	22.8	22.5	22.3	22.0
12.445	21.7	21.5	21.3	21.1	20.9	20.8	20.6
12.490	20.4	20.1	19.9	19.6	19.3	19.0	18.7
12.534	18.5	18.2	17.9	17.7	17.5	17.3	17.2
12.578	17.0	16.9	16.7	16.5	16.4	16.2	16.0
12.622	15.8	15.6	15.4	15.2	15.1	14.9	14.8
12.666	14.7	14.6	14.5	14.4	14.3	14.3	14.2
12.711	14.1	14.0	13.9	13.8	13.8	13.7	13.6
12.755	13.6	13.5	13.5	13.4	13.4	13.4	13.3
12.799	13.2	13.2	13.1	13.0	13.0	12.9	12.8
12.843	12.8	12.7	12.7	12.6	12.6	12.6	12.5
12.887	12.5	12.4	12.4	12.3	12.2	12.2	12.1
12.932	12.0	12.0	11.9	11.9	11.8	11.8	11.7
12.976	11.7	11.7	11.6	11.6	11.5	11.4	11.4
13.020	11.3	11.2	11.2	11.1	11.1	11.0	11.0
13.064	10.9	10.9	10.8	10.8	10.8	10.7	10.7
13.109	10.6	10.6	10.5	10.4	10.4	10.4	10.3
13.153	10.3	10.2	10.2	10.2	10.1	10.1	10.1

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
13.197	10.0	10.0	10.0	9.9	9.9	9.9	9.8
13.241	9.8	9.8	9.7	9.7	9.7	9.7	9.6
13.285	9.6	9.6	9.6	9.5	9.5	9.5	9.4
13.330	9.4	9.3	9.3	9.3	9.3	9.2	9.2
13.374	9.2	9.2	9.1	9.1	9.1	9.1	9.0
13.418	9.0	8.9	8.9	8.9	8.8	8.8	8.8
13.462	8.8	8.7	8.7	8.7	8.7	8.6	8.6
13.506	8.6	8.5	8.5	8.5	8.4	8.4	8.4
13.551	8.3	8.3	8.3	8.3	8.3	8.2	8.2
13.595	8.2	8.2	8.1	8.1	8.1	8.0	8.0
13.639	8.0	7.9	7.9	7.9	7.9	7.9	7.8
13.683	7.8	7.8	7.8	7.8	7.7	7.7	7.7
13.727	7.6	7.6	7.6	7.6	7.6	7.5	7.5
13.772	7.5	7.5	7.5	7.5	7.4	7.4	7.4
13.816	7.4	7.3	7.3	7.3	7.3	7.2	7.2
13.860	7.2	7.2	7.2	7.2	7.1	7.1	7.1
13.904	7.1	7.0	7.0	7.0	7.0	6.9	6.9
13.948	6.9	6.9	6.9	6.8	6.8	6.8	6.8
13.993	6.8	6.8	6.7	6.7	6.7	6.7	6.6
14.037	6.6	6.6	6.6	6.5	6.5	6.5	6.5
14.081	6.5	6.5	6.5	6.4	6.4	6.4	6.4
14.125	6.4	6.3	6.3	6.3	6.3	6.3	6.3
14.170	6.3	6.3	6.3	6.2	6.2	6.2	6.2
14.214	6.2	6.2	6.2	6.2	6.2	6.1	6.1
14.258	6.1	6.1	6.1	6.1	6.1	6.1	6.1
14.302	6.1	6.1	6.1	6.1	6.1	6.0	6.0
14.346	6.0	6.0	6.0	6.0	6.0	6.0	6.0
14.391	6.0	6.0	6.0	6.0	6.0	5.9	5.9
14.435	5.9	5.9	5.9	5.9	5.9	5.9	5.9
14.479	5.9	5.9	5.9	5.9	5.9	5.8	5.8
14.523	5.8	5.8	5.8	5.8	5.8	5.8	5.8
14.567	5.8	5.8	5.8	5.8	5.8	5.7	5.7

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.612	5.7	5.7	5.7	5.7	5.7	5.7	5.7
14.656	5.7	5.7	5.7	5.6	5.6	5.6	5.6
14.700	5.6	5.6	5.6	5.6	5.6	5.6	5.6
14.744	5.6	5.6	5.6	5.6	5.5	5.5	5.5
14.788	5.5	5.5	5.5	5.5	5.5	5.5	5.5
14.833	5.5	5.5	5.4	5.4	5.4	5.4	5.4
14.877	5.4	5.4	5.4	5.4	5.4	5.4	5.4
14.921	5.4	5.4	5.3	5.3	5.3	5.3	5.3
14.965	5.3	5.3	5.3	5.3	5.3	5.3	5.3
15.010	5.3	5.3	5.2	5.2	5.2	5.2	5.2
15.054	5.2	5.2	5.2	5.2	5.2	5.2	5.2
15.098	5.2	5.1	5.1	5.1	5.1	5.1	5.1
15.142	5.1	5.1	5.1	5.1	5.1	5.1	5.1
15.186	5.1	5.1	5.0	5.0	5.0	5.0	5.0
15.231	5.0	5.0	5.0	5.0	5.0	5.0	5.0
15.275	4.9	4.9	4.9	4.9	4.9	4.9	4.9
15.319	4.9	4.9	4.9	4.9	4.9	4.9	4.9

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
15.363	4.8	4.8	4.8	4.8	4.8	4.8	4.8
15.407	4.8	4.8	4.8	4.8	4.8	4.8	4.7
15.452	4.7	4.7	4.7	4.7	4.7	4.7	4.7
15.496	4.7	4.7	4.7	4.7	4.7	4.6	4.6
15.540	4.6	4.6	4.6	4.6	4.6	4.6	4.6
15.584	4.6	4.6	4.6	4.6	4.6	4.6	4.5
15.628	4.5	4.5	4.5	4.5	4.5	4.5	4.5
15.673	4.5	4.5	4.5	4.5	4.5	4.4	4.4
15.717	4.4	4.4	4.4	4.4	4.4	4.4	4.4
15.761	4.4	4.4	4.4	4.4	4.4	4.3	4.3
15.805	4.3	4.3	4.3	4.3	4.3	4.3	4.3
15.850	4.3	4.3	4.3	4.2	4.2	4.2	4.2
15.894	4.2	4.2	4.2	4.2	4.2	4.2	4.2
15.938	4.2	4.2	4.2	4.1	4.1	4.1	4.1
15.982	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16.026	4.1	4.1	4.0	4.0	4.0	4.0	4.0
16.071	4.0	4.0	4.0	4.0	4.0	4.0	4.0
16.115	4.0	4.0	4.0	3.9	3.9	3.9	3.9
16.159	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.203	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.247	3.9	3.9	3.9	3.9	3.9	3.9	3.9
16.292	3.9	3.9	3.9	3.9	3.9	3.9	3.8
16.336	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.380	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.424	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.469	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.513	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16.557	3.8	3.8	3.8	3.7	3.7	3.7	3.7
16.601	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.645	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.690	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.734	3.7	3.7	3.7	3.7	3.7	3.7	3.7
16.778	3.7	3.7	3.7	3.7	3.7	3.7	3.6
16.822	3.6	3.6	3.6	3.6	3.6	3.6	3.6

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.866	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.911	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.955	3.6	3.6	3.6	3.6	3.6	3.6	3.6
16.999	3.6	3.6	3.6	3.6	3.6	3.6	3.6
17.043	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.087	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.132	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.176	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.220	3.5	3.5	3.5	3.5	3.5	3.5	3.5
17.264	3.5	3.5	3.4	3.4	3.4	3.4	3.4
17.309	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.353	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.397	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.441	3.4	3.4	3.4	3.4	3.4	3.4	3.4
17.485	3.4	3.4	3.4	3.4	3.4	3.3	3.3

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
17.530	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.574	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.618	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.662	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.706	3.3	3.3	3.3	3.3	3.3	3.3	3.3
17.751	3.3	3.3	3.2	3.2	3.2	3.2	3.2
17.795	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.839	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.883	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.927	3.2	3.2	3.2	3.2	3.2	3.2	3.2
17.972	3.2	3.2	3.2	3.2	3.2	3.1	3.1
18.016	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.060	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.104	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.149	3.1	3.1	3.1	3.1	3.1	3.1	3.1
18.193	3.1	3.1	3.1	3.1	3.1	3.1	3.0
18.237	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.281	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.325	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.370	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.414	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18.458	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.502	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.546	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.591	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.635	2.9	2.9	2.9	2.9	2.9	2.9	2.9
18.679	2.9	2.9	2.9	2.9	2.8	2.8	2.8
18.723	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.767	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.812	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.856	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18.900	2.8	2.8	2.8	2.8	2.8	2.8	2.7
18.944	2.7	2.7	2.7	2.7	2.7	2.7	2.7
18.989	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.033	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.077	2.7	2.7	2.7	2.7	2.7	2.7	2.7

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
19.121	2.7	2.7	2.7	2.7	2.7	2.7	2.7
19.165	2.7	2.7	2.7	2.6	2.6	2.6	2.6
19.210	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.254	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.298	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.342	2.6	2.6	2.6	2.6	2.6	2.6	2.6
19.386	2.6	2.6	2.6	2.6	2.5	2.5	2.5
19.431	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.475	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.519	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.563	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19.607	2.5	2.5	2.5	2.5	2.5	2.4	2.4
19.652	2.4	2.4	2.4	2.4	2.4	2.4	2.4

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
19.696	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.740	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.784	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.829	2.4	2.4	2.4	2.4	2.4	2.4	2.4
19.873	2.3	2.3	2.3	2.3	2.3	2.3	2.3
19.917	2.3	2.3	2.3	2.3	2.3	2.3	2.3
19.961	2.3	2.3	2.3	2.3	2.3	2.3	2.3
20.005	2.3	2.3	2.3	2.3	2.3	2.3	2.3
20.050	2.3	2.3	2.3	2.3	2.3	2.3	2.3
20.094	2.3	2.3	2.3	2.3	2.3	2.2	2.2
20.138	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.182	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.226	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.271	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.315	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.359	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.403	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.447	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.492	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.536	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.580	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.624	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.669	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.713	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.757	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.801	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.845	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.890	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.934	2.2	2.2	2.2	2.2	2.2	2.2	2.2
20.978	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.022	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.066	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.111	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.155	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21.199	2.2	2.1	2.1	2.1	2.1	2.1	2.1
21.243	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.287	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.332	2.1	2.1	2.1	2.1	2.1	2.1	2.1

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
21.376	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.420	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.464	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.509	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.553	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.597	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.641	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.685	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.730	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.774	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.818	2.1	2.1	2.1	2.1	2.1	2.1	2.1

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
21.862	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.906	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.951	2.1	2.1	2.1	2.1	2.1	2.1	2.1
21.995	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.039	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.083	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.127	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.172	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.216	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.260	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.304	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.349	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.393	2.1	2.1	2.0	2.0	2.0	2.0	2.0
22.437	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.481	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.525	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.570	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.614	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.658	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.702	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.746	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.791	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.835	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.879	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.923	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22.967	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.012	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.056	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.100	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.144	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.188	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.233	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.277	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.321	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.365	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.410	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.454	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.498	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.542	2.0	2.0	2.0	2.0	2.0	2.0	2.0
23.586	2.0	1.9	1.9	1.9	1.9	1.9	1.9

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.631	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.675	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.719	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.763	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.807	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.852	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.896	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.940	1.9	1.9	1.9	1.9	1.9	1.9	1.9
23.984	1.9	1.9	1.9	1.9	1.9	1.9	1.9

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
24.028	1.9	1.9	1.9	1.9	1.9	1.9	1.9
24.073	1.9	1.8	1.8	1.7	1.6	1.5	1.4
24.117	1.3	1.1	0.6				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Cat D	0.012		6.947		11.93	81.71	6736.40

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.557	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.601	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.645	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.690	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.734	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.778	0.5	0.5	0.5	0.5	0.5	0.5	0.5
7.822	0.5	0.6	0.6	0.6	0.6	0.6	0.6
7.866	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.911	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.955	0.6	0.6	0.6	0.6	0.6	0.6	0.6
7.999	0.6	0.6	0.6	0.6	0.6	0.6	0.6
8.043	0.6	0.6	0.6	0.6	0.6	0.6	0.6
8.087	0.6	0.6	0.6	0.6	0.6	0.6	0.6
8.132	0.6	0.6	0.6	0.6	0.6	0.6	0.6
8.176	0.6	0.6	0.6	0.6	0.7	0.7	0.7
8.220	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.264	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.308	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.353	0.7	0.7	0.7	0.7	0.7	0.7	0.7
8.397	0.7	0.7	0.7	0.7	0.7	0.8	0.8
8.441	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.485	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.530	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.574	0.8	0.8	0.8	0.8	0.8	0.8	0.8
8.618	0.8	0.8	0.8	0.9	0.9	0.9	0.9
8.662	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.706	0.9	0.9	0.9	0.9	0.9	0.9	0.9
8.751	0.9	0.9	0.9	0.9	0.9	0.9	0.9

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.795	0.9	0.9	0.9	0.9	0.9	0.9	1.0
8.839	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.883	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.927	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8.972	1.0	1.0	1.0	1.0	1.0	1.0	1.1
9.016	1.1	1.1	1.1	1.1	1.1	1.1	1.1
9.060	1.1	1.1	1.1	1.1	1.1	1.1	1.1

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
9.104	1.1	1.1	1.1	1.1	1.1	1.1	1.1
9.148	1.1	1.1	1.1	1.1	1.1	1.1	1.1
9.193	1.1	1.1	1.1	1.1	1.1	1.1	1.1
9.237	1.1	1.1	1.1	1.1	1.1	1.1	1.1
9.281	1.1	1.1	1.1	1.1	1.1	1.1	1.1
9.325	1.1	1.1	1.1	1.1	1.2	1.2	1.2
9.370	1.2	1.2	1.2	1.2	1.2	1.2	1.2
9.414	1.2	1.2	1.2	1.2	1.2	1.2	1.2
9.458	1.2	1.2	1.2	1.2	1.2	1.2	1.2
9.502	1.2	1.2	1.2	1.2	1.2	1.2	1.2
9.546	1.2	1.2	1.2	1.2	1.2	1.2	1.2
9.591	1.2	1.2	1.2	1.2	1.2	1.2	1.2
9.635	1.2	1.2	1.3	1.3	1.3	1.3	1.3
9.679	1.3	1.3	1.3	1.3	1.3	1.3	1.3
9.723	1.3	1.3	1.3	1.3	1.3	1.3	1.4
9.767	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9.812	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9.856	1.4	1.4	1.4	1.5	1.5	1.5	1.5
9.900	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.944	1.5	1.5	1.5	1.5	1.5	1.5	1.5
9.988	1.6	1.6	1.6	1.6	1.6	1.6	1.6
10.033	1.6	1.6	1.6	1.6	1.6	1.6	1.6
10.077	1.6	1.6	1.7	1.7	1.7	1.7	1.7
10.121	1.7	1.7	1.7	1.7	1.7	1.7	1.7
10.165	1.7	1.8	1.8	1.8	1.8	1.8	1.8
10.210	1.8	1.8	1.8	1.8	1.8	1.8	1.8
10.254	1.9	1.9	1.9	1.9	1.9	1.9	1.9
10.298	1.9	1.9	1.9	1.9	1.9	2.0	2.0
10.342	2.0	2.0	2.0	2.0	2.0	2.0	2.0
10.386	2.0	2.1	2.1	2.1	2.1	2.1	2.1
10.431	2.1	2.1	2.1	2.1	2.1	2.1	2.2
10.475	2.2	2.2	2.2	2.2	2.2	2.2	2.2
10.519	2.2	2.2	2.2	2.2	2.3	2.3	2.3
10.563	2.3	2.3	2.3	2.3	2.4	2.4	2.4
10.607	2.4	2.4	2.4	2.4	2.4	2.4	2.5
10.652	2.5	2.5	2.5	2.5	2.5	2.6	2.6
10.696	2.6	2.6	2.6	2.6	2.6	2.6	2.6
10.740	2.7	2.7	2.7	2.7	2.7	2.7	2.8
10.784	2.8	2.8	2.8	2.8	2.8	2.8	2.9
10.828	2.9	2.9	2.9	2.9	2.9	3.0	3.0
10.873	3.0	3.0	3.0	3.0	3.0	3.1	3.1
10.917	3.1	3.1	3.1	3.1	3.1	3.2	3.2
10.961	3.2	3.2	3.2	3.3	3.3	3.3	3.3
11.005	3.3	3.3	3.3	3.3	3.4	3.4	3.4

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.050	3.4	3.5	3.5	3.5	3.6	3.6	3.6
11.094	3.6	3.7	3.7	3.7	3.7	3.7	3.8
11.138	3.8	3.8	3.9	3.9	4.0	4.0	4.0
11.182	4.1	4.1	4.1	4.2	4.2	4.2	4.2
11.226	4.3	4.3	4.3	4.4	4.4	4.5	4.5

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
11.271	4.6	4.6	4.6	4.7	4.7	4.7	4.8
11.315	4.8	4.8	4.8	4.9	4.9	5.0	5.0
11.359	5.1	5.1	5.1	5.2	5.2	5.3	5.3
11.403	5.3	5.3	5.4	5.4	5.4	5.5	5.5
11.447	5.6	5.6	5.7	5.7	5.8	5.8	5.8
11.492	5.9	5.9	5.9	6.0	6.1	6.3	6.5
11.536	6.8	7.2	7.7	8.1	8.7	9.2	9.7
11.580	10.1	10.5	10.9	11.2	11.5	11.8	12.2
11.624	12.7	13.3	14.0	14.9	15.9	17.0	18.1
11.668	19.2	20.2	21.1	22.0	22.8	23.5	24.1
11.713	24.7	25.4	26.1	27.1	28.2	29.5	31.0
11.757	32.5	34.0	35.4	36.8	38.1	39.3	40.4
11.801	41.3	42.2	43.2	44.4	45.9	47.8	50.2
11.845	53.0	56.1	59.3	62.5	65.6	68.6	71.3
11.890	73.9	76.1	78.0	79.5	80.6	81.4	81.7
11.934	81.6	81.0	80.0	78.7	77.2	75.7	74.1
11.978	72.7	71.3	70.1	69.1	68.2	67.3	66.2
12.022	64.8	62.9	60.4	57.3	53.7	49.8	45.8
12.066	41.8	38.0	34.5	31.3	28.4	26.0	24.0
12.111	22.3	20.8	19.6	18.5	17.6	16.7	16.0
12.155	15.3	14.8	14.3	13.8	13.4	13.1	12.8
12.199	12.6	12.4	12.2	12.1	11.9	11.7	11.6
12.243	11.4	11.3	11.1	10.9	10.8	10.6	10.5
12.287	10.4	10.3	10.2	10.1	10.1	10.0	10.0
12.332	9.9	9.8	9.6	9.5	9.4	9.3	9.1
12.376	9.0	8.9	8.8	8.7	8.7	8.6	8.5
12.420	8.5	8.4	8.3	8.2	8.1	8.0	7.8
12.464	7.7	7.6	7.5	7.4	7.3	7.2	7.1
12.509	7.1	7.0	6.9	6.9	6.8	6.7	6.7
12.553	6.6	6.5	6.4	6.3	6.2	6.2	6.1
12.597	6.1	6.0	6.0	6.0	5.9	5.9	5.9
12.641	5.8	5.8	5.7	5.7	5.7	5.6	5.6
12.685	5.6	5.6	5.5	5.5	5.5	5.5	5.5
12.730	5.5	5.4	5.4	5.4	5.4	5.3	5.3
12.774	5.3	5.2	5.2	5.2	5.2	5.2	5.2
12.818	5.1	5.1	5.1	5.1	5.1	5.0	5.0
12.862	5.0	4.9	4.9	4.9	4.9	4.8	4.8
12.906	4.8	4.8	4.8	4.8	4.8	4.7	4.7
12.951	4.7	4.6	4.6	4.6	4.6	4.5	4.5
12.995	4.5	4.5	4.5	4.4	4.4	4.4	4.4
13.039	4.4	4.4	4.3	4.3	4.3	4.3	4.2
13.083	4.2	4.2	4.2	4.2	4.2	4.2	4.2
13.127	4.1	4.1	4.1	4.1	4.1	4.1	4.0
13.172	4.0	4.0	4.0	4.0	4.0	4.0	4.0
13.216	4.0	3.9	3.9	3.9	3.9	3.9	3.9
13.260	3.9	3.8	3.8	3.8	3.8	3.8	3.8

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
13.304	3.8	3.8	3.8	3.8	3.7	3.7	3.7
13.348	3.7	3.7	3.7	3.7	3.6	3.6	3.6
13.393	3.6	3.6	3.6	3.6	3.6	3.6	3.6

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
13.437	3.5	3.5	3.5	3.5	3.5	3.5	3.4
13.481	3.4	3.4	3.4	3.4	3.4	3.4	3.4
13.525	3.4	3.4	3.3	3.3	3.3	3.3	3.3
13.570	3.3	3.3	3.3	3.2	3.2	3.2	3.2
13.614	3.2	3.2	3.2	3.2	3.2	3.2	3.2
13.658	3.2	3.1	3.1	3.1	3.1	3.1	3.1
13.702	3.1	3.1	3.1	3.1	3.1	3.1	3.0
13.746	3.0	3.0	3.0	3.0	3.0	3.0	3.0
13.791	3.0	3.0	2.9	2.9	2.9	2.9	2.9
13.835	2.9	2.9	2.9	2.9	2.9	2.9	2.8
13.879	2.8	2.8	2.8	2.8	2.8	2.8	2.8
13.923	2.8	2.8	2.8	2.8	2.8	2.7	2.7
13.967	2.7	2.7	2.7	2.7	2.7	2.7	2.7
14.012	2.7	2.7	2.7	2.6	2.6	2.6	2.6
14.056	2.6	2.6	2.6	2.6	2.6	2.6	2.6
14.100	2.6	2.6	2.6	2.6	2.6	2.6	2.6
14.144	2.5	2.5	2.5	2.5	2.5	2.5	2.5
14.188	2.5	2.5	2.5	2.5	2.5	2.5	2.5
14.233	2.5	2.5	2.5	2.5	2.5	2.5	2.5
14.277	2.5	2.5	2.5	2.5	2.5	2.5	2.5
14.321	2.5	2.5	2.5	2.5	2.4	2.4	2.4
14.365	2.4	2.4	2.4	2.4	2.4	2.4	2.4
14.410	2.4	2.4	2.4	2.4	2.4	2.4	2.4
14.454	2.4	2.4	2.4	2.4	2.4	2.4	2.4
14.498	2.4	2.4	2.4	2.4	2.4	2.4	2.4
14.542	2.4	2.4	2.3	2.3	2.3	2.3	2.3
14.586	2.3	2.3	2.3	2.3	2.3	2.3	2.3
14.631	2.3	2.3	2.3	2.3	2.3	2.3	2.3
14.675	2.3	2.3	2.3	2.3	2.3	2.3	2.3
14.719	2.3	2.3	2.3	2.3	2.3	2.3	2.2
14.763	2.2	2.2	2.2	2.2	2.2	2.2	2.2
14.807	2.2	2.2	2.2	2.2	2.2	2.2	2.2
14.852	2.2	2.2	2.2	2.2	2.2	2.2	2.2
14.896	2.2	2.2	2.2	2.2	2.2	2.2	2.2
14.940	2.2	2.2	2.2	2.2	2.1	2.1	2.1
14.984	2.1	2.1	2.1	2.1	2.1	2.1	2.1
15.028	2.1	2.1	2.1	2.1	2.1	2.1	2.1
15.073	2.1	2.1	2.1	2.1	2.1	2.1	2.1
15.117	2.1	2.1	2.1	2.1	2.1	2.1	2.1
15.161	2.1	2.1	2.0	2.0	2.0	2.0	2.0
15.205	2.0	2.0	2.0	2.0	2.0	2.0	2.0
15.250	2.0	2.0	2.0	2.0	2.0	2.0	2.0
15.294	2.0	2.0	2.0	2.0	2.0	2.0	2.0
15.338	2.0	2.0	2.0	2.0	2.0	2.0	1.9
15.382	1.9	1.9	1.9	1.9	1.9	1.9	1.9
15.426	1.9	1.9	1.9	1.9	1.9	1.9	1.9
15.471	1.9	1.9	1.9	1.9	1.9	1.9	1.9
15.515	1.9	1.9	1.9	1.9	1.9	1.9	1.9

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.559	1.9	1.9	1.9	1.9	1.8	1.8	1.8

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
15.603	1.8	1.8	1.8	1.8	1.8	1.8	1.8
15.647	1.8	1.8	1.8	1.8	1.8	1.8	1.8
15.692	1.8	1.8	1.8	1.8	1.8	1.8	1.8
15.736	1.8	1.8	1.8	1.8	1.8	1.8	1.8
15.780	1.8	1.7	1.7	1.7	1.7	1.7	1.7
15.824	1.7	1.7	1.7	1.7	1.7	1.7	1.7
15.868	1.7	1.7	1.7	1.7	1.7	1.7	1.7
15.913	1.7	1.7	1.7	1.7	1.7	1.7	1.7
15.957	1.7	1.7	1.7	1.7	1.7	1.7	1.6
16.001	1.6	1.6	1.6	1.6	1.6	1.6	1.6
16.045	1.6	1.6	1.6	1.6	1.6	1.6	1.6
16.090	1.6	1.6	1.6	1.6	1.6	1.6	1.6
16.134	1.6	1.6	1.6	1.6	1.6	1.6	1.6
16.178	1.6	1.6	1.6	1.6	1.6	1.6	1.6
16.222	1.6	1.6	1.6	1.6	1.6	1.6	1.6
16.266	1.6	1.6	1.6	1.6	1.6	1.6	1.6
16.311	1.6	1.6	1.6	1.6	1.6	1.6	1.6
16.355	1.6	1.6	1.6	1.6	1.6	1.6	1.6
16.399	1.6	1.6	1.6	1.6	1.6	1.6	1.5
16.443	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.487	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.532	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.576	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.620	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.664	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.708	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.753	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.797	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.841	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.885	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.930	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16.974	1.5	1.5	1.5	1.5	1.5	1.5	1.4
17.018	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.062	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.106	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.151	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.195	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.239	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.283	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.327	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.372	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.416	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.460	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.504	1.4	1.4	1.4	1.4	1.4	1.4	1.4
17.549	1.4	1.4	1.4	1.4	1.4	1.4	1.3
17.593	1.3	1.3	1.3	1.3	1.3	1.3	1.3
17.637	1.3	1.3	1.3	1.3	1.3	1.3	1.3
17.681	1.3	1.3	1.3	1.3	1.3	1.3	1.3
17.725	1.3	1.3	1.3	1.3	1.3	1.3	1.3
17.770	1.3	1.3	1.3	1.3	1.3	1.3	1.3

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
17.814	1.3	1.3	1.3	1.3	1.3	1.3	1.3
17.858	1.3	1.3	1.3	1.3	1.3	1.3	1.3
17.902	1.3	1.3	1.3	1.3	1.3	1.3	1.3
17.946	1.3	1.3	1.3	1.3	1.3	1.3	1.3
17.991	1.3	1.3	1.3	1.3	1.3	1.3	1.3
18.035	1.3	1.3	1.3	1.3	1.3	1.3	1.3
18.079	1.3	1.3	1.3	1.3	1.3	1.3	1.3
18.123	1.3	1.3	1.3	1.3	1.3	1.3	1.3
18.167	1.3	1.2	1.2	1.2	1.2	1.2	1.2
18.212	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.256	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.300	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.344	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.389	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.433	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.477	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.521	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.565	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.610	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.654	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.698	1.2	1.2	1.2	1.2	1.2	1.2	1.2
18.742	1.2	1.2	1.1	1.1	1.1	1.1	1.1
18.786	1.1	1.1	1.1	1.1	1.1	1.1	1.1
18.831	1.1	1.1	1.1	1.1	1.1	1.1	1.1
18.875	1.1	1.1	1.1	1.1	1.1	1.1	1.1
18.919	1.1	1.1	1.1	1.1	1.1	1.1	1.1
18.963	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.007	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.052	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.096	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.140	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.184	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.229	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.273	1.1	1.1	1.1	1.1	1.1	1.1	1.1
19.317	1.1	1.1	1.1	1.0	1.0	1.0	1.0
19.361	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.405	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.450	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.494	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.538	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.582	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.626	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.671	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.715	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.759	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.803	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.847	1.0	1.0	1.0	1.0	1.0	1.0	1.0
19.892	0.9	0.9	0.9	0.9	0.9	0.9	0.9
19.936	0.9	0.9	0.9	0.9	0.9	0.9	0.9
19.980	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.024	0.9	0.9	0.9	0.9	0.9	0.9	0.9

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Area or Reach Identifier Start Time (hr)	Drainage Area (sq mi) (cfs)	Rain Gage ID or Location (cfs)	Runoff Amount (in) (cfs)	Peak Flow Elevation (ft) (cfs)	Time (hr) (cfs)	Rate (cfs) (cfs)	Rate (csm) (cfs)
		Flow Values @ time increment of 0.006 hr					
20.069	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.113	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.157	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.201	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.245	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.290	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.334	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.378	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.422	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.466	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.511	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.555	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.599	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.643	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.687	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.732	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.776	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.820	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.864	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.909	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.953	0.9	0.9	0.9	0.9	0.9	0.9	0.9
20.997	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.041	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.085	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.130	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.174	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.218	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.262	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.306	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.351	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.395	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.439	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.483	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.527	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.572	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.616	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.660	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.704	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.749	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.793	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.837	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.881	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.925	0.9	0.9	0.9	0.9	0.9	0.9	0.9
21.970	0.9	0.9	0.9	0.9	0.9	0.9	0.8
22.014	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.058	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.102	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.146	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.191	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.235	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.279	0.8	0.8	0.8	0.8	0.8	0.8	0.8

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Cat A+B+C	0.045		7.035		11.93	304.96	6736.40

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
22.323	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.367	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.412	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.456	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.500	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.544	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.588	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.633	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.677	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.721	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.765	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.810	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.854	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.898	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.942	0.8	0.8	0.8	0.8	0.8	0.8	0.8
22.986	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.031	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.075	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.119	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.163	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.207	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.252	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.296	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.340	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.384	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.428	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.473	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.517	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.561	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.605	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.650	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.694	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.738	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.782	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.826	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.871	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.915	0.8	0.8	0.8	0.8	0.8	0.8	0.8
23.959	0.8	0.8	0.8	0.8	0.8	0.8	0.8
24.003	0.8	0.8	0.8	0.8	0.7	0.7	0.7
24.047	0.6	0.5					

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Cypress Creek Landfill Southern Sediment Basin Storage							

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.397	0.5	0.5	0.5	0.5	0.5	0.5	0.5
5.441	0.5	0.5	0.5	0.5	0.5	0.5	0.5
5.485	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.530	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.574	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.618	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.662	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.706	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.751	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.795	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.839	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.883	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.927	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.972	0.8	0.8	0.8	0.8	0.8	0.9	0.9
6.016	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.060	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.104	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.148	0.9	0.9	0.9	1.0	1.0	1.0	1.0
6.193	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6.237	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6.281	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6.325	1.0	1.1	1.1	1.1	1.1	1.1	1.1
6.370	1.1	1.1	1.1	1.1	1.1	1.1	1.1
6.414	1.1	1.1	1.1	1.1	1.1	1.1	1.1
6.458	1.1	1.1	1.1	1.1	1.1	1.2	1.2
6.502	1.2	1.2	1.2	1.2	1.2	1.2	1.2
6.546	1.2	1.2	1.2	1.2	1.2	1.2	1.2
6.591	1.2	1.2	1.2	1.2	1.2	1.2	1.2
6.635	1.2	1.2	1.3	1.3	1.3	1.3	1.3
6.679	1.3	1.3	1.3	1.3	1.3	1.3	1.3
6.723	1.3	1.3	1.3	1.3	1.3	1.3	1.3
6.767	1.3	1.3	1.3	1.3	1.3	1.4	1.4
6.812	1.4	1.4	1.4	1.4	1.4	1.4	1.4
6.856	1.4	1.4	1.4	1.4	1.4	1.4	1.4
6.900	1.4	1.4	1.4	1.4	1.4	1.4	1.4
6.944	1.4	1.5	1.5	1.5	1.5	1.5	1.5
6.988	1.5	1.5	1.5	1.5	1.5	1.5	1.5
7.033	1.5	1.5	1.5	1.5	1.5	1.5	1.5
7.077	1.5	1.5	1.5	1.6	1.6	1.6	1.6
7.121	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7.165	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7.210	1.6	1.6	1.6	1.6	1.6	1.6	1.7
7.254	1.7	1.7	1.7	1.7	1.7	1.7	1.7
7.298	1.7	1.7	1.7	1.7	1.7	1.7	1.7
7.342	1.7	1.7	1.7	1.7	1.7	1.7	1.7
7.386	1.7	1.8	1.8	1.8	1.8	1.8	1.8
7.431	1.8	1.8	1.8	1.8	1.8	1.8	1.8
7.475	1.8	1.8	1.8	1.8	1.8	1.8	1.8
7.519	1.8	1.8	1.8	1.9	1.9	1.9	1.9
7.563	1.9	1.9	1.9	1.9	1.9	1.9	1.9
7.607	1.9	1.9	1.9	1.9	1.9	1.9	1.9

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
7.652	1.9	1.9	1.9	1.9	2.0	2.0	2.0
7.696	2.0	2.0	2.0	2.0	2.0	2.0	2.0
7.740	2.0	2.0	2.0	2.0	2.0	2.0	2.0
7.784	2.0	2.0	2.0	2.0	2.0	2.0	2.1
7.828	2.1	2.1	2.1	2.1	2.1	2.1	2.1
7.873	2.1	2.1	2.1	2.1	2.1	2.1	2.1
7.917	2.1	2.1	2.1	2.1	2.1	2.1	2.1
7.961	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.005	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.050	2.2	2.2	2.2	2.2	2.3	2.3	2.3
8.094	2.3	2.3	2.3	2.3	2.3	2.3	2.3
8.138	2.3	2.3	2.3	2.4	2.4	2.4	2.4
8.182	2.4	2.4	2.4	2.4	2.4	2.4	2.5
8.226	2.5	2.5	2.5	2.5	2.5	2.5	2.5
8.271	2.5	2.6	2.6	2.6	2.6	2.6	2.6
8.315	2.6	2.6	2.6	2.6	2.7	2.7	2.7
8.359	2.7	2.7	2.7	2.7	2.7	2.7	2.8
8.403	2.8	2.8	2.8	2.8	2.8	2.8	2.8
8.447	2.8	2.9	2.9	2.9	2.9	2.9	2.9
8.492	2.9	2.9	2.9	3.0	3.0	3.0	3.0
8.536	3.0	3.0	3.0	3.0	3.0	3.1	3.1
8.580	3.1	3.1	3.1	3.1	3.1	3.1	3.1
8.624	3.2	3.2	3.2	3.2	3.2	3.2	3.2
8.668	3.2	3.3	3.3	3.3	3.3	3.3	3.3
8.713	3.3	3.3	3.3	3.4	3.4	3.4	3.4
8.757	3.4	3.4	3.4	3.5	3.5	3.5	3.5
8.801	3.5	3.5	3.5	3.5	3.5	3.6	3.6
8.845	3.6	3.6	3.6	3.6	3.6	3.7	3.7
8.890	3.7	3.7	3.7	3.7	3.7	3.7	3.7
8.934	3.8	3.8	3.8	3.8	3.8	3.8	3.9
8.978	3.9	3.9	3.9	3.9	3.9	3.9	3.9
9.022	3.9	4.0	4.0	4.0	4.0	4.0	4.0
9.066	4.0	4.0	4.0	4.1	4.1	4.1	4.1
9.111	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9.155	4.1	4.1	4.1	4.1	4.2	4.2	4.2
9.199	4.2	4.2	4.2	4.2	4.2	4.2	4.2
9.243	4.2	4.2	4.2	4.2	4.2	4.2	4.2
9.287	4.2	4.2	4.3	4.3	4.3	4.3	4.3
9.332	4.3	4.3	4.3	4.3	4.3	4.3	4.3
9.376	4.3	4.3	4.3	4.3	4.3	4.3	4.3
9.420	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9.464	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9.509	4.4	4.4	4.4	4.4	4.5	4.5	4.5
9.553	4.5	4.5	4.5	4.5	4.5	4.5	4.6
9.597	4.6	4.6	4.6	4.6	4.6	4.6	4.6
9.641	4.7	4.7	4.7	4.7	4.8	4.8	4.8
9.685	4.8	4.8	4.8	4.9	4.9	4.9	4.9
9.730	4.9	4.9	5.0	5.0	5.0	5.0	5.1
9.774	5.1	5.1	5.1	5.1	5.2	5.2	5.2
9.818	5.2	5.2	5.2	5.3	5.3	5.3	5.3

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
9.862	5.4	5.4	5.4	5.4	5.5	5.5	5.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.906	5.5	5.5	5.5	5.6	5.6	5.6	5.6
9.951	5.6	5.7	5.7	5.7	5.7	5.8	5.8
9.995	5.8	5.8	5.8	5.9	5.9	5.9	5.9
10.039	5.9	6.0	6.0	6.0	6.1	6.1	6.1
10.083	6.2	6.2	6.2	6.2	6.2	6.3	6.3
10.127	6.3	6.3	6.4	6.4	6.4	6.5	6.5
10.172	6.5	6.6	6.6	6.6	6.7	6.7	6.7
10.216	6.7	6.8	6.8	6.8	6.9	6.9	6.9
10.260	7.0	7.0	7.0	7.1	7.1	7.1	7.2
10.304	7.2	7.2	7.2	7.3	7.3	7.3	7.4
10.349	7.4	7.4	7.5	7.5	7.6	7.6	7.6
10.393	7.7	7.7	7.7	7.7	7.8	7.8	7.8
10.437	7.8	7.9	7.9	8.0	8.0	8.0	8.1
10.481	8.1	8.2	8.2	8.2	8.2	8.3	8.3
10.525	8.3	8.4	8.4	8.4	8.5	8.5	8.6
10.570	8.6	8.7	8.7	8.8	8.8	8.9	8.9
10.614	8.9	9.0	9.0	9.0	9.1	9.2	9.2
10.658	9.3	9.3	9.4	9.5	9.5	9.6	9.6
10.702	9.7	9.7	9.7	9.8	9.8	9.9	9.9
10.746	10.0	10.1	10.1	10.2	10.3	10.3	10.4
10.791	10.4	10.5	10.5	10.6	10.6	10.6	10.7
10.835	10.7	10.8	10.9	10.9	11.0	11.1	11.2
10.879	11.2	11.3	11.3	11.4	11.4	11.5	11.5
10.923	11.5	11.6	11.6	11.7	11.8	11.9	11.9
10.967	12.0	12.1	12.1	12.2	12.2	12.3	12.3
11.012	12.4	12.4	12.5	12.6	12.6	12.7	12.9
11.056	13.0	13.1	13.2	13.3	13.4	13.5	13.6
11.100	13.6	13.7	13.8	13.8	13.9	14.0	14.2
11.144	14.3	14.4	14.6	14.8	14.9	15.1	15.2
11.188	15.3	15.4	15.5	15.6	15.7	15.8	15.9
11.233	16.0	16.2	16.3	16.5	16.7	16.8	17.0
11.277	17.2	17.3	17.4	17.6	17.7	17.7	17.8
11.321	17.9	18.1	18.2	18.3	18.5	18.7	18.9
11.365	19.0	19.2	19.4	19.5	19.6	19.8	19.9
11.410	20.0	20.1	20.2	20.3	20.4	20.6	20.7
11.454	20.9	21.1	21.3	21.5	21.6	21.8	21.9
11.498	22.0	22.2	22.4	22.8	23.4	24.2	25.4
11.542	26.8	28.6	30.4	32.3	34.2	36.0	37.7
11.586	39.3	40.7	41.9	43.0	44.2	45.5	47.3
11.631	49.5	52.3	55.7	59.5	63.5	67.5	71.5
11.675	75.3	78.9	82.2	85.1	87.6	89.8	92.1
11.719	94.6	97.5	101.0	105.3	110.2	115.6	121.2
11.763	126.7	132.3	137.5	142.3	146.7	150.7	154.1
11.807	157.5	161.2	165.7	171.3	178.4	187.4	197.8
11.852	209.2	221.2	233.1	244.9	255.9	266.2	275.6
11.896	283.9	290.9	296.5	300.8	303.7	305.0	304.5
11.940	302.2	298.4	293.6	288.1	282.4	276.7	271.3
11.984	266.2	261.7	257.9	254.6	251.1	247.0	241.7

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
12.028	234.7	225.3	213.7	200.3	185.8	170.9	156.2
12.073	142.0	128.8	116.7	106.0	96.9	89.4	83.1
12.117	77.8	73.2	69.1	65.6	62.4	59.7	57.3

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.161	55.1	53.2	51.6	50.2	48.9	47.9	47.0
12.205	46.2	45.6	45.0	44.4	43.8	43.2	42.6
12.250	42.0	41.4	40.8	40.2	39.7	39.2	38.8
12.294	38.4	38.1	37.9	37.6	37.4	37.1	36.8
12.338	36.4	36.0	35.5	35.1	34.6	34.1	33.7
12.382	33.3	32.9	32.6	32.3	32.1	31.9	31.6
12.426	31.4	31.0	30.6	30.2	29.7	29.2	28.8
12.471	28.3	27.9	27.5	27.1	26.8	26.5	26.3
12.515	26.1	25.9	25.7	25.4	25.1	24.8	24.5
12.559	24.2	23.9	23.6	23.3	23.1	22.8	22.6
12.603	22.5	22.3	22.2	22.1	22.0	21.9	21.7
12.647	21.6	21.5	21.3	21.2	21.1	21.0	20.9
12.692	20.8	20.7	20.6	20.6	20.5	20.5	20.4
12.736	20.3	20.2	20.1	20.0	19.9	19.8	19.7
12.780	19.6	19.5	19.4	19.4	19.3	19.2	19.2
12.824	19.1	19.1	19.0	18.9	18.8	18.7	18.5
12.868	18.4	18.3	18.2	18.2	18.1	18.0	18.0
12.913	17.9	17.9	17.8	17.7	17.6	17.5	17.4
12.957	17.3	17.2	17.1	17.0	16.9	16.8	16.8
13.001	16.7	16.6	16.6	16.5	16.5	16.4	16.4
13.045	16.3	16.2	16.1	16.0	15.9	15.8	15.8
13.090	15.7	15.7	15.6	15.6	15.5	15.5	15.4
13.134	15.4	15.3	15.3	15.2	15.2	15.1	15.0
13.178	15.0	14.9	14.9	14.9	14.8	14.8	14.8
13.222	14.7	14.7	14.7	14.6	14.5	14.5	14.4
13.266	14.4	14.3	14.3	14.2	14.2	14.1	14.1
13.311	14.1	14.0	14.0	14.0	13.9	13.9	13.8
13.355	13.8	13.7	13.6	13.6	13.5	13.5	13.4
13.399	13.4	13.4	13.4	13.3	13.3	13.3	13.2
13.443	13.2	13.1	13.0	13.0	12.9	12.9	12.8
13.487	12.8	12.7	12.7	12.7	12.6	12.6	12.6
13.532	12.5	12.5	12.5	12.4	12.3	12.3	12.2
13.576	12.2	12.2	12.1	12.1	12.1	12.0	12.0
13.620	12.0	12.0	11.9	11.9	11.8	11.8	11.8
13.664	11.7	11.7	11.6	11.6	11.6	11.5	11.5
13.708	11.5	11.5	11.5	11.4	11.4	11.4	11.3
13.753	11.3	11.2	11.2	11.2	11.1	11.1	11.0
13.797	11.0	11.0	11.0	11.0	10.9	10.9	10.9
13.841	10.8	10.8	10.8	10.7	10.7	10.6	10.6
13.885	10.6	10.5	10.5	10.5	10.5	10.4	10.4
13.930	10.4	10.4	10.3	10.3	10.2	10.2	10.2
13.974	10.1	10.1	10.0	10.0	10.0	10.0	9.9
14.018	9.9	9.9	9.9	9.9	9.8	9.8	9.8
14.062	9.7	9.7	9.7	9.7	9.6	9.6	9.6
14.106	9.6	9.6	9.6	9.6	9.5	9.5	9.5
14.151	9.5	9.5	9.5	9.4	9.4	9.4	9.4

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
14.195	9.4	9.4	9.4	9.4	9.3	9.3	9.3
14.239	9.3	9.3	9.3	9.3	9.3	9.3	9.2
14.283	9.2	9.2	9.2	9.2	9.2	9.2	9.2
14.327	9.2	9.2	9.2	9.1	9.1	9.1	9.1
14.372	9.1	9.1	9.0	9.0	9.0	9.0	9.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.416	9.0	9.0	9.0	9.0	9.0	8.9	8.9
14.460	8.9	8.9	8.9	8.9	8.9	8.9	8.9
14.504	8.8	8.8	8.8	8.8	8.8	8.8	8.8
14.549	8.8	8.8	8.7	8.7	8.7	8.7	8.7
14.593	8.7	8.7	8.7	8.6	8.6	8.6	8.6
14.637	8.6	8.6	8.6	8.6	8.6	8.5	8.5
14.681	8.5	8.5	8.5	8.5	8.5	8.5	8.5
14.725	8.5	8.5	8.4	8.4	8.4	8.4	8.4
14.770	8.4	8.3	8.3	8.3	8.3	8.3	8.3
14.814	8.3	8.3	8.3	8.3	8.2	8.2	8.2
14.858	8.2	8.2	8.2	8.2	8.2	8.2	8.1
14.902	8.1	8.1	8.1	8.1	8.1	8.1	8.1
14.946	8.1	8.0	8.0	8.0	8.0	8.0	8.0
14.991	8.0	7.9	7.9	7.9	7.9	7.9	7.9
15.035	7.9	7.9	7.9	7.9	7.8	7.8	7.8
15.079	7.8	7.8	7.8	7.8	7.8	7.8	7.8
15.123	7.8	7.7	7.7	7.7	7.7	7.7	7.7
15.167	7.7	7.6	7.6	7.6	7.6	7.6	7.6
15.212	7.6	7.6	7.6	7.5	7.5	7.5	7.5
15.256	7.5	7.5	7.5	7.5	7.4	7.4	7.4
15.300	7.4	7.4	7.4	7.4	7.4	7.4	7.4
15.344	7.4	7.3	7.3	7.3	7.3	7.3	7.3
15.389	7.2	7.2	7.2	7.2	7.2	7.2	7.2
15.433	7.2	7.2	7.2	7.1	7.1	7.1	7.1
15.477	7.1	7.1	7.1	7.1	7.1	7.1	7.0
15.521	7.0	7.0	7.0	7.0	7.0	7.0	7.0
15.565	6.9	6.9	6.9	6.9	6.9	6.9	6.9
15.610	6.9	6.8	6.8	6.8	6.8	6.8	6.8
15.654	6.8	6.8	6.8	6.7	6.7	6.7	6.7
15.698	6.7	6.7	6.7	6.7	6.7	6.7	6.7
15.742	6.6	6.6	6.6	6.6	6.6	6.6	6.5
15.786	6.5	6.5	6.5	6.5	6.5	6.5	6.5
15.831	6.5	6.5	6.4	6.4	6.4	6.4	6.4
15.875	6.4	6.4	6.4	6.3	6.3	6.3	6.3
15.919	6.3	6.3	6.3	6.3	6.3	6.3	6.2
15.963	6.2	6.2	6.2	6.2	6.2	6.1	6.1
16.007	6.1	6.1	6.1	6.1	6.1	6.1	6.1
16.052	6.1	6.1	6.1	6.0	6.0	6.0	6.0
16.096	6.0	6.0	6.0	6.0	6.0	6.0	6.0
16.140	6.0	6.0	6.0	6.0	6.0	6.0	5.9
16.184	5.9	5.9	5.9	5.9	5.9	5.9	5.9
16.229	5.9	5.9	5.9	5.9	5.9	5.9	5.9
16.273	5.9	5.9	5.9	5.9	5.9	5.9	5.9
16.317	5.9	5.9	5.9	5.9	5.8	5.8	5.8

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
16.361	5.8	5.8	5.8	5.8	5.8	5.8	5.8
16.405	5.8	5.8	5.8	5.8	5.8	5.8	5.8
16.450	5.8	5.8	5.8	5.8	5.8	5.8	5.7
16.494	5.7	5.7	5.7	5.7	5.7	5.7	5.7
16.538	5.7	5.7	5.7	5.7	5.7	5.7	5.7
16.582	5.7	5.7	5.7	5.7	5.7	5.7	5.7
16.626	5.7	5.7	5.7	5.6	5.6	5.6	5.6

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.671	5.6	5.6	5.6	5.6	5.6	5.6	5.6
16.715	5.6	5.6	5.6	5.6	5.6	5.6	5.6
16.759	5.6	5.6	5.6	5.6	5.6	5.5	5.5
16.803	5.5	5.5	5.5	5.5	5.5	5.5	5.5
16.847	5.5	5.5	5.5	5.5	5.5	5.5	5.5
16.892	5.5	5.5	5.5	5.5	5.5	5.5	5.5
16.936	5.5	5.5	5.5	5.5	5.4	5.4	5.4
16.980	5.4	5.4	5.4	5.4	5.4	5.4	5.4
17.024	5.4	5.4	5.4	5.4	5.4	5.4	5.4
17.069	5.4	5.4	5.4	5.4	5.4	5.4	5.4
17.113	5.4	5.4	5.3	5.3	5.3	5.3	5.3
17.157	5.3	5.3	5.3	5.3	5.3	5.3	5.3
17.201	5.3	5.3	5.3	5.3	5.3	5.3	5.3
17.245	5.3	5.3	5.3	5.2	5.2	5.2	5.2
17.290	5.2	5.2	5.2	5.2	5.2	5.2	5.2
17.334	5.2	5.2	5.2	5.2	5.2	5.2	5.2
17.378	5.2	5.2	5.2	5.2	5.2	5.2	5.2
17.422	5.1	5.1	5.1	5.1	5.1	5.1	5.1
17.466	5.1	5.1	5.1	5.1	5.1	5.1	5.1
17.511	5.1	5.1	5.1	5.1	5.1	5.1	5.1
17.555	5.1	5.1	5.1	5.0	5.0	5.0	5.0
17.599	5.0	5.0	5.0	5.0	5.0	5.0	5.0
17.643	5.0	5.0	5.0	5.0	5.0	5.0	5.0
17.687	5.0	5.0	5.0	5.0	5.0	5.0	5.0
17.732	5.0	5.0	4.9	4.9	4.9	4.9	4.9
17.776	4.9	4.9	4.9	4.9	4.9	4.9	4.9
17.820	4.9	4.9	4.9	4.9	4.9	4.9	4.9
17.864	4.9	4.9	4.9	4.9	4.8	4.8	4.8
17.909	4.8	4.8	4.8	4.8	4.8	4.8	4.8
17.953	4.8	4.8	4.8	4.8	4.8	4.8	4.8
17.997	4.8	4.8	4.8	4.8	4.8	4.8	4.8
18.041	4.7	4.7	4.7	4.7	4.7	4.7	4.7
18.085	4.7	4.7	4.7	4.7	4.7	4.7	4.7
18.130	4.7	4.7	4.7	4.7	4.7	4.7	4.7
18.174	4.7	4.7	4.6	4.6	4.6	4.6	4.6
18.218	4.6	4.6	4.6	4.6	4.6	4.6	4.6
18.262	4.6	4.6	4.6	4.6	4.6	4.6	4.6
18.306	4.6	4.6	4.6	4.6	4.6	4.6	4.6
18.351	4.6	4.5	4.5	4.5	4.5	4.5	4.5
18.395	4.5	4.5	4.5	4.5	4.5	4.5	4.5
18.439	4.5	4.5	4.5	4.5	4.5	4.5	4.5
18.483	4.5	4.5	4.5	4.5	4.5	4.4	4.4

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
18.527	4.4	4.4	4.4	4.4	4.4	4.4	4.4
18.572	4.4	4.4	4.4	4.4	4.4	4.4	4.4
18.616	4.4	4.4	4.4	4.4	4.4	4.4	4.4
18.660	4.3	4.3	4.3	4.3	4.3	4.3	4.3
18.704	4.3	4.3	4.3	4.3	4.3	4.3	4.3
18.749	4.3	4.3	4.3	4.3	4.3	4.3	4.3
18.793	4.3	4.3	4.2	4.2	4.2	4.2	4.2
18.837	4.2	4.2	4.2	4.2	4.2	4.2	4.2
18.881	4.2	4.2	4.2	4.2	4.2	4.2	4.2

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
18.925	4.2	4.2	4.2	4.2	4.2	4.2	4.2
18.970	4.1	4.1	4.1	4.1	4.1	4.1	4.1
19.014	4.1	4.1	4.1	4.1	4.1	4.1	4.1
19.058	4.1	4.1	4.1	4.1	4.1	4.1	4.1
19.102	4.1	4.1	4.1	4.1	4.1	4.0	4.0
19.146	4.0	4.0	4.0	4.0	4.0	4.0	4.0
19.191	4.0	4.0	4.0	4.0	4.0	4.0	4.0
19.235	4.0	4.0	4.0	4.0	4.0	4.0	3.9
19.279	3.9	3.9	3.9	3.9	3.9	3.9	3.9
19.323	3.9	3.9	3.9	3.9	3.9	3.9	3.9
19.367	3.9	3.9	3.9	3.9	3.9	3.9	3.9
19.412	3.9	3.9	3.8	3.8	3.8	3.8	3.8
19.456	3.8	3.8	3.8	3.8	3.8	3.8	3.8
19.500	3.8	3.8	3.8	3.8	3.8	3.8	3.8
19.544	3.8	3.8	3.8	3.8	3.8	3.7	3.7
19.589	3.7	3.7	3.7	3.7	3.7	3.7	3.7
19.633	3.7	3.7	3.7	3.7	3.7	3.7	3.7
19.677	3.7	3.7	3.7	3.7	3.7	3.7	3.7
19.721	3.7	3.7	3.7	3.7	3.6	3.6	3.6
19.765	3.6	3.6	3.6	3.6	3.6	3.6	3.6
19.810	3.6	3.6	3.6	3.6	3.6	3.6	3.6
19.854	3.6	3.6	3.6	3.6	3.6	3.5	3.5
19.898	3.5	3.5	3.5	3.5	3.5	3.5	3.5
19.942	3.5	3.5	3.5	3.5	3.5	3.5	3.5
19.986	3.5	3.5	3.5	3.5	3.5	3.5	3.5
20.031	3.5	3.5	3.5	3.4	3.4	3.4	3.4
20.075	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.119	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.163	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.207	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.252	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.296	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.340	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.384	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.428	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.473	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.517	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.561	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.605	3.4	3.4	3.4	3.3	3.3	3.3	3.3
20.650	3.3	3.3	3.3	3.3	3.3	3.3	3.3

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
20.694	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.738	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.782	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.826	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.871	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.915	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.959	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.003	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.047	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.092	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.136	3.3	3.3	3.3	3.3	3.3	3.3	3.3

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
21.180	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.224	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.268	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.313	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.357	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.401	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.445	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.490	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.534	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.578	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.622	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.666	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.711	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.755	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.799	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.843	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.887	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.932	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.976	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.020	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.064	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.108	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.153	3.2	3.2	3.2	3.2	3.2	3.2	3.1
22.197	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.241	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.285	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.330	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.374	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.418	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.462	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.506	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.551	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.595	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.639	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.683	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.727	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.772	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.816	3.1	3.1	3.1	3.1	3.1	3.1	3.1

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
22.860	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.904	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.948	3.1	3.1	3.1	3.1	3.1	3.0	3.0
22.993	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.037	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.081	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.125	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.170	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.214	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.258	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.302	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.346	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.391	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.435	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.479	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.523	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.567	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.612	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.656	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.700	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.744	3.0	3.0	3.0	2.9	2.9	2.9	2.9
23.788	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.833	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.877	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.921	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.965	2.9	2.9	2.9	2.9	2.9	2.9	2.9
24.010	2.9	2.9	2.8	2.7	2.6	2.4	2.2
24.054	2.0	1.8	1.6	1.4	1.2	1.0	0.9
24.098	0.7	0.6	0.5				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
E. Swale	0.045	Upstream	7.035	2.22	11.93	304.96	6736.40

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.397	0.5	0.5	0.5	0.5	0.5	0.5	0.5
5.441	0.5	0.5	0.5	0.5	0.5	0.5	0.5
5.485	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.530	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.574	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.618	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.662	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.706	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.751	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
5.795	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.839	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.883	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.927	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.972	0.8	0.8	0.8	0.8	0.8	0.9	0.9
6.016	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.060	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.104	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.148	0.9	0.9	0.9	1.0	1.0	1.0	1.0
6.193	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6.237	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6.281	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6.325	1.0	1.1	1.1	1.1	1.1	1.1	1.1
6.370	1.1	1.1	1.1	1.1	1.1	1.1	1.1
6.414	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.458	1.1	1.1	1.1	1.1	1.1	1.2	1.2
6.502	1.2	1.2	1.2	1.2	1.2	1.2	1.2
6.546	1.2	1.2	1.2	1.2	1.2	1.2	1.2
6.591	1.2	1.2	1.2	1.2	1.2	1.2	1.2
6.635	1.2	1.2	1.3	1.3	1.3	1.3	1.3
6.679	1.3	1.3	1.3	1.3	1.3	1.3	1.3
6.723	1.3	1.3	1.3	1.3	1.3	1.3	1.3
6.767	1.3	1.3	1.3	1.3	1.3	1.4	1.4
6.812	1.4	1.4	1.4	1.4	1.4	1.4	1.4
6.856	1.4	1.4	1.4	1.4	1.4	1.4	1.4
6.900	1.4	1.4	1.4	1.4	1.4	1.4	1.4
6.944	1.4	1.5	1.5	1.5	1.5	1.5	1.5
6.988	1.5	1.5	1.5	1.5	1.5	1.5	1.5
7.033	1.5	1.5	1.5	1.5	1.5	1.5	1.5
7.077	1.5	1.5	1.5	1.6	1.6	1.6	1.6
7.121	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7.165	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7.210	1.6	1.6	1.6	1.6	1.6	1.6	1.7
7.254	1.7	1.7	1.7	1.7	1.7	1.7	1.7
7.298	1.7	1.7	1.7	1.7	1.7	1.7	1.7
7.342	1.7	1.7	1.7	1.7	1.7	1.7	1.7
7.386	1.7	1.8	1.8	1.8	1.8	1.8	1.8
7.431	1.8	1.8	1.8	1.8	1.8	1.8	1.8
7.475	1.8	1.8	1.8	1.8	1.8	1.8	1.8
7.519	1.8	1.8	1.8	1.9	1.9	1.9	1.9
7.563	1.9	1.9	1.9	1.9	1.9	1.9	1.9
7.607	1.9	1.9	1.9	1.9	1.9	1.9	1.9
7.652	1.9	1.9	1.9	1.9	2.0	2.0	2.0
7.696	2.0	2.0	2.0	2.0	2.0	2.0	2.0
7.740	2.0	2.0	2.0	2.0	2.0	2.0	2.0
7.784	2.0	2.0	2.0	2.0	2.0	2.0	2.1
7.828	2.1	2.1	2.1	2.1	2.1	2.1	2.1
7.873	2.1	2.1	2.1	2.1	2.1	2.1	2.1
7.917	2.1	2.1	2.1	2.1	2.1	2.1	2.1

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
7.961	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.005	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.050	2.2	2.2	2.2	2.2	2.3	2.3	2.3
8.094	2.3	2.3	2.3	2.3	2.3	2.3	2.3
8.138	2.3	2.3	2.3	2.4	2.4	2.4	2.4
8.182	2.4	2.4	2.4	2.4	2.4	2.4	2.5
8.226	2.5	2.5	2.5	2.5	2.5	2.5	2.5
8.271	2.5	2.6	2.6	2.6	2.6	2.6	2.6
8.315	2.6	2.6	2.6	2.6	2.7	2.7	2.7
8.359	2.7	2.7	2.7	2.7	2.7	2.7	2.8
8.403	2.8	2.8	2.8	2.8	2.8	2.8	2.8
8.447	2.8	2.9	2.9	2.9	2.9	2.9	2.9
8.492	2.9	2.9	2.9	3.0	3.0	3.0	3.0
8.536	3.0	3.0	3.0	3.0	3.0	3.1	3.1
8.580	3.1	3.1	3.1	3.1	3.1	3.1	3.1
8.624	3.2	3.2	3.2	3.2	3.2	3.2	3.2
8.668	3.2	3.3	3.3	3.3	3.3	3.3	3.3

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.713	3.3	3.3	3.3	3.4	3.4	3.4	3.4
8.757	3.4	3.4	3.4	3.5	3.5	3.5	3.5
8.801	3.5	3.5	3.5	3.5	3.5	3.6	3.6
8.845	3.6	3.6	3.6	3.6	3.6	3.7	3.7
8.890	3.7	3.7	3.7	3.7	3.7	3.7	3.7
8.934	3.8	3.8	3.8	3.8	3.8	3.8	3.9
8.978	3.9	3.9	3.9	3.9	3.9	3.9	3.9
9.022	3.9	4.0	4.0	4.0	4.0	4.0	4.0
9.066	4.0	4.0	4.0	4.1	4.1	4.1	4.1
9.111	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9.155	4.1	4.1	4.1	4.1	4.2	4.2	4.2
9.199	4.2	4.2	4.2	4.2	4.2	4.2	4.2
9.243	4.2	4.2	4.2	4.2	4.2	4.2	4.2
9.287	4.2	4.2	4.3	4.3	4.3	4.3	4.3
9.332	4.3	4.3	4.3	4.3	4.3	4.3	4.3
9.376	4.3	4.3	4.3	4.3	4.3	4.3	4.3
9.420	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9.464	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9.509	4.4	4.4	4.4	4.4	4.5	4.5	4.5
9.553	4.5	4.5	4.5	4.5	4.5	4.5	4.6
9.597	4.6	4.6	4.6	4.6	4.6	4.6	4.6
9.641	4.7	4.7	4.7	4.7	4.8	4.8	4.8
9.685	4.8	4.8	4.8	4.9	4.9	4.9	4.9
9.730	4.9	4.9	5.0	5.0	5.0	5.0	5.1
9.774	5.1	5.1	5.1	5.1	5.2	5.2	5.2
9.818	5.2	5.2	5.2	5.3	5.3	5.3	5.3
9.862	5.4	5.4	5.4	5.4	5.5	5.5	5.5
9.906	5.5	5.5	5.5	5.6	5.6	5.6	5.6
9.951	5.6	5.7	5.7	5.7	5.7	5.8	5.8
9.995	5.8	5.8	5.8	5.9	5.9	5.9	5.9
10.039	5.9	6.0	6.0	6.0	6.1	6.1	6.1
10.083	6.2	6.2	6.2	6.2	6.2	6.3	6.3

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
10.127	6.3	6.3	6.4	6.4	6.4	6.5	6.5
10.172	6.5	6.6	6.6	6.6	6.7	6.7	6.7
10.216	6.7	6.8	6.8	6.8	6.9	6.9	6.9
10.260	7.0	7.0	7.0	7.1	7.1	7.1	7.2
10.304	7.2	7.2	7.2	7.3	7.3	7.3	7.4
10.349	7.4	7.4	7.5	7.5	7.6	7.6	7.6
10.393	7.7	7.7	7.7	7.7	7.8	7.8	7.8
10.437	7.8	7.9	7.9	8.0	8.0	8.0	8.1
10.481	8.1	8.2	8.2	8.2	8.2	8.3	8.3
10.525	8.3	8.4	8.4	8.4	8.5	8.5	8.6
10.570	8.6	8.7	8.7	8.8	8.8	8.9	8.9
10.614	8.9	9.0	9.0	9.0	9.1	9.2	9.2
10.658	9.3	9.3	9.4	9.5	9.5	9.6	9.6
10.702	9.7	9.7	9.7	9.8	9.8	9.9	9.9
10.746	10.0	10.1	10.1	10.2	10.3	10.3	10.4
10.791	10.4	10.5	10.5	10.6	10.6	10.6	10.7
10.835	10.7	10.8	10.9	10.9	11.0	11.1	11.2
10.879	11.2	11.3	11.3	11.4	11.4	11.5	11.5
10.923	11.5	11.6	11.6	11.7	11.8	11.9	11.9

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.967	12.0	12.1	12.1	12.2	12.2	12.3	12.3
11.012	12.4	12.4	12.5	12.6	12.6	12.7	12.9
11.056	13.0	13.1	13.2	13.3	13.4	13.5	13.6
11.100	13.6	13.7	13.8	13.8	13.9	14.0	14.2
11.144	14.3	14.4	14.6	14.8	14.9	15.1	15.2
11.188	15.3	15.4	15.5	15.6	15.7	15.8	15.9
11.233	16.0	16.2	16.3	16.5	16.7	16.8	17.0
11.277	17.2	17.3	17.4	17.6	17.7	17.7	17.8
11.321	17.9	18.1	18.2	18.3	18.5	18.7	18.9
11.365	19.0	19.2	19.4	19.5	19.6	19.8	19.9
11.410	20.0	20.1	20.2	20.3	20.4	20.6	20.7
11.454	20.9	21.1	21.3	21.5	21.6	21.8	21.9
11.498	22.0	22.2	22.4	22.8	23.4	24.2	25.4
11.542	26.8	28.6	30.4	32.3	34.2	36.0	37.7
11.586	39.3	40.7	41.9	43.0	44.2	45.5	47.3
11.631	49.5	52.3	55.7	59.5	63.5	67.5	71.5
11.675	75.3	78.9	82.2	85.1	87.6	89.8	92.1
11.719	94.6	97.5	101.0	105.3	110.2	115.6	121.2
11.763	126.7	132.3	137.5	142.3	146.7	150.7	154.1
11.807	157.5	161.2	165.7	171.3	178.4	187.4	197.8
11.852	209.2	221.2	233.1	244.9	255.9	266.2	275.6
11.896	283.9	290.9	296.5	300.8	303.7	305.0	304.5
11.940	302.2	298.4	293.6	288.1	282.4	276.7	271.3
11.984	266.2	261.7	257.9	254.6	251.1	247.0	241.7
12.028	234.7	225.3	213.7	200.3	185.8	170.9	156.2
12.073	142.0	128.8	116.7	106.0	96.9	89.4	83.1
12.117	77.8	73.2	69.1	65.6	62.4	59.7	57.3
12.161	55.1	53.2	51.6	50.2	48.9	47.9	47.0
12.205	46.2	45.6	45.0	44.4	43.8	43.2	42.6
12.250	42.0	41.4	40.8	40.2	39.7	39.2	38.8

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
12.294	38.4	38.1	37.9	37.6	37.4	37.1	36.8
12.338	36.4	36.0	35.5	35.1	34.6	34.1	33.7
12.382	33.3	32.9	32.6	32.3	32.1	31.9	31.6
12.426	31.4	31.0	30.6	30.2	29.7	29.2	28.8
12.471	28.3	27.9	27.5	27.1	26.8	26.5	26.3
12.515	26.1	25.9	25.7	25.4	25.1	24.8	24.5
12.559	24.2	23.9	23.6	23.3	23.1	22.8	22.6
12.603	22.5	22.3	22.2	22.1	22.0	21.9	21.7
12.647	21.6	21.5	21.3	21.2	21.1	21.0	20.9
12.692	20.8	20.7	20.6	20.6	20.5	20.5	20.4
12.736	20.3	20.2	20.1	20.0	19.9	19.8	19.7
12.780	19.6	19.5	19.4	19.4	19.3	19.2	19.2
12.824	19.1	19.1	19.0	18.9	18.8	18.7	18.5
12.868	18.4	18.3	18.2	18.2	18.1	18.0	18.0
12.913	17.9	17.9	17.8	17.7	17.6	17.5	17.4
12.957	17.3	17.2	17.1	17.0	16.9	16.8	16.8
13.001	16.7	16.6	16.6	16.5	16.5	16.4	16.4
13.045	16.3	16.2	16.1	16.0	15.9	15.8	15.8
13.090	15.7	15.7	15.6	15.6	15.5	15.5	15.4
13.134	15.4	15.3	15.3	15.2	15.2	15.1	15.0
13.178	15.0	14.9	14.9	14.9	14.8	14.8	14.8

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
13.222	14.7	14.7	14.7	14.6	14.5	14.5	14.4
13.266	14.4	14.3	14.3	14.2	14.2	14.1	14.1
13.311	14.1	14.0	14.0	14.0	13.9	13.9	13.8
13.355	13.8	13.7	13.6	13.6	13.5	13.5	13.4
13.399	13.4	13.4	13.4	13.3	13.3	13.3	13.2
13.443	13.2	13.1	13.0	13.0	12.9	12.9	12.8
13.487	12.8	12.7	12.7	12.7	12.6	12.6	12.6
13.532	12.5	12.5	12.5	12.4	12.3	12.3	12.2
13.576	12.2	12.2	12.1	12.1	12.1	12.0	12.0
13.620	12.0	12.0	11.9	11.9	11.8	11.8	11.8
13.664	11.7	11.7	11.6	11.6	11.6	11.5	11.5
13.708	11.5	11.5	11.5	11.4	11.4	11.4	11.3
13.753	11.3	11.2	11.2	11.2	11.1	11.1	11.0
13.797	11.0	11.0	11.0	11.0	10.9	10.9	10.9
13.841	10.8	10.8	10.8	10.7	10.7	10.6	10.6
13.885	10.6	10.5	10.5	10.5	10.5	10.4	10.4
13.930	10.4	10.4	10.3	10.3	10.2	10.2	10.2
13.974	10.1	10.1	10.0	10.0	10.0	10.0	9.9
14.018	9.9	9.9	9.9	9.9	9.8	9.8	9.8
14.062	9.7	9.7	9.7	9.7	9.6	9.6	9.6
14.106	9.6	9.6	9.6	9.6	9.5	9.5	9.5
14.151	9.5	9.5	9.5	9.4	9.4	9.4	9.4
14.195	9.4	9.4	9.4	9.4	9.3	9.3	9.3
14.239	9.3	9.3	9.3	9.3	9.3	9.3	9.2
14.283	9.2	9.2	9.2	9.2	9.2	9.2	9.2
14.327	9.2	9.2	9.2	9.1	9.1	9.1	9.1
14.372	9.1	9.1	9.0	9.0	9.0	9.0	9.0
14.416	9.0	9.0	9.0	9.0	9.0	8.9	8.9

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
14.460	8.9	8.9	8.9	8.9	8.9	8.9	8.9
14.504	8.8	8.8	8.8	8.8	8.8	8.8	8.8
14.549	8.8	8.8	8.7	8.7	8.7	8.7	8.7
14.593	8.7	8.7	8.7	8.6	8.6	8.6	8.6
14.637	8.6	8.6	8.6	8.6	8.6	8.5	8.5
14.681	8.5	8.5	8.5	8.5	8.5	8.5	8.5
14.725	8.5	8.5	8.4	8.4	8.4	8.4	8.4
14.770	8.4	8.3	8.3	8.3	8.3	8.3	8.3
14.814	8.3	8.3	8.3	8.3	8.2	8.2	8.2
14.858	8.2	8.2	8.2	8.2	8.2	8.2	8.1
14.902	8.1	8.1	8.1	8.1	8.1	8.1	8.1
14.946	8.1	8.0	8.0	8.0	8.0	8.0	8.0
14.991	8.0	7.9	7.9	7.9	7.9	7.9	7.9
15.035	7.9	7.9	7.9	7.9	7.8	7.8	7.8
15.079	7.8	7.8	7.8	7.8	7.8	7.8	7.8
15.123	7.8	7.7	7.7	7.7	7.7	7.7	7.7
15.167	7.7	7.6	7.6	7.6	7.6	7.6	7.6
15.212	7.6	7.6	7.6	7.5	7.5	7.5	7.5
15.256	7.5	7.5	7.5	7.5	7.4	7.4	7.4
15.300	7.4	7.4	7.4	7.4	7.4	7.4	7.4
15.344	7.4	7.3	7.3	7.3	7.3	7.3	7.3
15.389	7.2	7.2	7.2	7.2	7.2	7.2	7.2
15.433	7.2	7.2	7.2	7.1	7.1	7.1	7.1

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.477	7.1	7.1	7.1	7.1	7.1	7.1	7.0
15.521	7.0	7.0	7.0	7.0	7.0	7.0	7.0
15.565	6.9	6.9	6.9	6.9	6.9	6.9	6.9
15.610	6.9	6.8	6.8	6.8	6.8	6.8	6.8
15.654	6.8	6.8	6.8	6.7	6.7	6.7	6.7
15.698	6.7	6.7	6.7	6.7	6.7	6.7	6.7
15.742	6.6	6.6	6.6	6.6	6.6	6.6	6.5
15.786	6.5	6.5	6.5	6.5	6.5	6.5	6.5
15.831	6.5	6.5	6.4	6.4	6.4	6.4	6.4
15.875	6.4	6.4	6.4	6.3	6.3	6.3	6.3
15.919	6.3	6.3	6.3	6.3	6.3	6.3	6.2
15.963	6.2	6.2	6.2	6.2	6.2	6.1	6.1
16.007	6.1	6.1	6.1	6.1	6.1	6.1	6.1
16.052	6.1	6.1	6.1	6.0	6.0	6.0	6.0
16.096	6.0	6.0	6.0	6.0	6.0	6.0	6.0
16.140	6.0	6.0	6.0	6.0	6.0	6.0	5.9
16.184	5.9	5.9	5.9	5.9	5.9	5.9	5.9
16.229	5.9	5.9	5.9	5.9	5.9	5.9	5.9
16.273	5.9	5.9	5.9	5.9	5.9	5.9	5.9
16.317	5.9	5.9	5.9	5.9	5.8	5.8	5.8
16.361	5.8	5.8	5.8	5.8	5.8	5.8	5.8
16.405	5.8	5.8	5.8	5.8	5.8	5.8	5.8
16.450	5.8	5.8	5.8	5.8	5.8	5.8	5.7
16.494	5.7	5.7	5.7	5.7	5.7	5.7	5.7
16.538	5.7	5.7	5.7	5.7	5.7	5.7	5.7
16.582	5.7	5.7	5.7	5.7	5.7	5.7	5.7

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
16.626	5.7	5.7	5.7	5.6	5.6	5.6	5.6
16.671	5.6	5.6	5.6	5.6	5.6	5.6	5.6
16.715	5.6	5.6	5.6	5.6	5.6	5.6	5.6
16.759	5.6	5.6	5.6	5.6	5.6	5.5	5.5
16.803	5.5	5.5	5.5	5.5	5.5	5.5	5.5
16.847	5.5	5.5	5.5	5.5	5.5	5.5	5.5
16.892	5.5	5.5	5.5	5.5	5.5	5.5	5.5
16.936	5.5	5.5	5.5	5.5	5.4	5.4	5.4
16.980	5.4	5.4	5.4	5.4	5.4	5.4	5.4
17.024	5.4	5.4	5.4	5.4	5.4	5.4	5.4
17.069	5.4	5.4	5.4	5.4	5.4	5.4	5.4
17.113	5.4	5.4	5.3	5.3	5.3	5.3	5.3
17.157	5.3	5.3	5.3	5.3	5.3	5.3	5.3
17.201	5.3	5.3	5.3	5.3	5.3	5.3	5.3
17.245	5.3	5.3	5.3	5.2	5.2	5.2	5.2
17.290	5.2	5.2	5.2	5.2	5.2	5.2	5.2
17.334	5.2	5.2	5.2	5.2	5.2	5.2	5.2
17.378	5.2	5.2	5.2	5.2	5.2	5.2	5.2
17.422	5.1	5.1	5.1	5.1	5.1	5.1	5.1
17.466	5.1	5.1	5.1	5.1	5.1	5.1	5.1
17.511	5.1	5.1	5.1	5.1	5.1	5.1	5.1
17.555	5.1	5.1	5.1	5.0	5.0	5.0	5.0
17.599	5.0	5.0	5.0	5.0	5.0	5.0	5.0
17.643	5.0	5.0	5.0	5.0	5.0	5.0	5.0
17.687	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.732	5.0	5.0	4.9	4.9	4.9	4.9	4.9
17.776	4.9	4.9	4.9	4.9	4.9	4.9	4.9
17.820	4.9	4.9	4.9	4.9	4.9	4.9	4.9
17.864	4.9	4.9	4.9	4.9	4.8	4.8	4.8
17.909	4.8	4.8	4.8	4.8	4.8	4.8	4.8
17.953	4.8	4.8	4.8	4.8	4.8	4.8	4.8
17.997	4.8	4.8	4.8	4.8	4.8	4.8	4.8
18.041	4.7	4.7	4.7	4.7	4.7	4.7	4.7
18.085	4.7	4.7	4.7	4.7	4.7	4.7	4.7
18.130	4.7	4.7	4.7	4.7	4.7	4.7	4.7
18.174	4.7	4.7	4.6	4.6	4.6	4.6	4.6
18.218	4.6	4.6	4.6	4.6	4.6	4.6	4.6
18.262	4.6	4.6	4.6	4.6	4.6	4.6	4.6
18.306	4.6	4.6	4.6	4.6	4.6	4.6	4.6
18.351	4.6	4.5	4.5	4.5	4.5	4.5	4.5
18.395	4.5	4.5	4.5	4.5	4.5	4.5	4.5
18.439	4.5	4.5	4.5	4.5	4.5	4.5	4.5
18.483	4.5	4.5	4.5	4.5	4.5	4.4	4.4
18.527	4.4	4.4	4.4	4.4	4.4	4.4	4.4
18.572	4.4	4.4	4.4	4.4	4.4	4.4	4.4
18.616	4.4	4.4	4.4	4.4	4.4	4.4	4.4
18.660	4.3	4.3	4.3	4.3	4.3	4.3	4.3
18.704	4.3	4.3	4.3	4.3	4.3	4.3	4.3
18.749	4.3	4.3	4.3	4.3	4.3	4.3	4.3

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
18.793	4.3	4.3	4.2	4.2	4.2	4.2	4.2
18.837	4.2	4.2	4.2	4.2	4.2	4.2	4.2
18.881	4.2	4.2	4.2	4.2	4.2	4.2	4.2
18.925	4.2	4.2	4.2	4.2	4.2	4.2	4.2
18.970	4.1	4.1	4.1	4.1	4.1	4.1	4.1
19.014	4.1	4.1	4.1	4.1	4.1	4.1	4.1
19.058	4.1	4.1	4.1	4.1	4.1	4.1	4.1
19.102	4.1	4.1	4.1	4.1	4.1	4.0	4.0
19.146	4.0	4.0	4.0	4.0	4.0	4.0	4.0
19.191	4.0	4.0	4.0	4.0	4.0	4.0	4.0
19.235	4.0	4.0	4.0	4.0	4.0	4.0	3.9
19.279	3.9	3.9	3.9	3.9	3.9	3.9	3.9
19.323	3.9	3.9	3.9	3.9	3.9	3.9	3.9
19.367	3.9	3.9	3.9	3.9	3.9	3.9	3.9
19.412	3.9	3.9	3.8	3.8	3.8	3.8	3.8
19.456	3.8	3.8	3.8	3.8	3.8	3.8	3.8
19.500	3.8	3.8	3.8	3.8	3.8	3.8	3.8
19.544	3.8	3.8	3.8	3.8	3.8	3.7	3.7
19.589	3.7	3.7	3.7	3.7	3.7	3.7	3.7
19.633	3.7	3.7	3.7	3.7	3.7	3.7	3.7
19.677	3.7	3.7	3.7	3.7	3.7	3.7	3.7
19.721	3.7	3.7	3.7	3.7	3.6	3.6	3.6
19.765	3.6	3.6	3.6	3.6	3.6	3.6	3.6
19.810	3.6	3.6	3.6	3.6	3.6	3.6	3.6
19.854	3.6	3.6	3.6	3.6	3.6	3.5	3.5
19.898	3.5	3.5	3.5	3.5	3.5	3.5	3.5
19.942	3.5	3.5	3.5	3.5	3.5	3.5	3.5

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
19.986	3.5	3.5	3.5	3.5	3.5	3.5	3.5
20.031	3.5	3.5	3.5	3.4	3.4	3.4	3.4
20.075	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.119	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.163	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.207	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.252	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.296	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.340	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.384	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.428	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.473	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.517	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.561	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.605	3.4	3.4	3.4	3.3	3.3	3.3	3.3
20.650	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.694	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.738	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.782	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.826	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.871	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.915	3.3	3.3	3.3	3.3	3.3	3.3	3.3

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
20.959	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.003	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.047	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.092	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.136	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.180	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.224	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.268	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.313	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.357	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.401	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.445	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.490	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.534	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.578	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.622	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.666	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.711	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.755	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.799	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.843	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.887	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.932	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.976	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.020	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.064	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.108	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.153	3.2	3.2	3.2	3.2	3.2	3.2	3.1
22.197	3.1	3.1	3.1	3.1	3.1	3.1	3.1

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
22.241	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.285	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.330	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.374	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.418	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.462	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.506	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.551	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.595	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.639	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.683	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.727	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.772	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.816	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.860	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.904	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.948	3.1	3.1	3.1	3.1	3.1	3.0	3.0
22.993	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.037	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.081	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Cypress Creek Landfill
Southern Sediment Basin Storage

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
23.125	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.170	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.214	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.258	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.302	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.346	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.391	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.435	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.479	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.523	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.567	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.612	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.656	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.700	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.744	3.0	3.0	3.0	2.9	2.9	2.9	2.9
23.788	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.833	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.877	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.921	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.965	2.9	2.9	2.9	2.9	2.9	2.9	2.9
24.010	2.9	2.9	2.8	2.7	2.6	2.4	2.2
24.054	2.0	1.8	1.6	1.4	1.2	1.0	0.9
24.098	0.7	0.6	0.5				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
E. Swale	0.045	Downstream	7.033	2.22	11.94	304.62	6728.90

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.473	0.6	0.0	0.7	0.0	0.7	0.5	0.6
5.517	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.561	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.605	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.650	0.6	0.6	0.6	0.6	0.7	0.7	0.7
5.694	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.738	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.782	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.826	0.7	0.7	0.7	0.8	0.8	0.8	0.8
5.871	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.915	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.959	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.003	0.8	0.8	0.9	0.9	0.9	0.9	0.9
6.047	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.092	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.136	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.180	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6.224	1.0	1.0	1.0	1.0	1.0	1.0	1.0

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
6.268	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6.313	1.0	1.0	1.0	1.0	1.0	1.1	1.1
6.357	1.1	1.1	1.1	1.1	1.1	1.1	1.1
6.401	1.1	1.1	1.1	1.1	1.1	1.1	1.1
6.445	1.1	1.1	1.1	1.1	1.1	1.1	1.1
6.490	1.1	1.2	1.2	1.2	1.2	1.2	1.2
6.534	1.2	1.2	1.2	1.2	1.2	1.2	1.2
6.578	1.2	1.2	1.2	1.2	1.2	1.2	1.2
6.622	1.2	1.2	1.2	1.2	1.2	1.3	1.3
6.666	1.3	1.3	1.3	1.3	1.3	1.3	1.3
6.711	1.3	1.3	1.3	1.3	1.3	1.3	1.3
6.755	1.3	1.3	1.3	1.3	1.3	1.3	1.3
6.799	1.3	1.4	1.4	1.4	1.4	1.4	1.4
6.843	1.4	1.4	1.4	1.4	1.4	1.4	1.4
6.887	1.4	1.4	1.4	1.4	1.4	1.4	1.4
6.932	1.4	1.4	1.4	1.4	1.4	1.5	1.5
6.976	1.5	1.5	1.5	1.5	1.5	1.5	1.5
7.020	1.5	1.5	1.5	1.5	1.5	1.5	1.5
7.064	1.5	1.5	1.5	1.5	1.5	1.5	1.5
7.108	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7.153	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7.197	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7.241	1.6	1.6	1.6	1.7	1.7	1.7	1.7
7.285	1.7	1.7	1.7	1.7	1.7	1.7	1.7
7.330	1.7	1.7	1.7	1.7	1.7	1.7	1.7
7.374	1.7	1.7	1.7	1.7	1.7	1.8	1.8
7.418	1.8	1.8	1.8	1.8	1.8	1.8	1.8
7.462	1.8	1.8	1.8	1.8	1.8	1.8	1.8
7.506	1.8	1.8	1.8	1.8	1.8	1.8	1.8
7.551	1.9	1.9	1.9	1.9	1.9	1.9	1.9
7.595	1.9	1.9	1.9	1.9	1.9	1.9	1.9
7.639	1.9	1.9	1.9	1.9	1.9	1.9	1.9
7.683	1.9	2.0	2.0	2.0	2.0	2.0	2.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.727	2.0	2.0	2.0	2.0	2.0	2.0	2.0
7.772	2.0	2.0	2.0	2.0	2.0	2.0	2.0
7.816	2.0	2.0	2.0	2.1	2.1	2.1	2.1
7.860	2.1	2.1	2.1	2.1	2.1	2.1	2.1
7.904	2.1	2.1	2.1	2.1	2.1	2.1	2.1
7.948	2.1	2.1	2.1	2.1	2.2	2.2	2.2
7.993	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.037	2.2	2.2	2.2	2.2	2.2	2.2	2.2
8.081	2.2	2.3	2.3	2.3	2.3	2.3	2.3
8.125	2.3	2.3	2.3	2.3	2.3	2.3	2.4
8.170	2.4	2.4	2.4	2.4	2.4	2.4	2.4
8.214	2.4	2.4	2.4	2.5	2.5	2.5	2.5
8.258	2.5	2.5	2.5	2.5	2.5	2.6	2.6
8.302	2.6	2.6	2.6	2.6	2.6	2.6	2.6
8.346	2.6	2.7	2.7	2.7	2.7	2.7	2.7
8.391	2.7	2.7	2.8	2.8	2.8	2.8	2.8

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
8.435	2.8	2.8	2.8	2.8	2.8	2.9	2.9
8.479	2.9	2.9	2.9	2.9	2.9	2.9	2.9
8.523	3.0	3.0	3.0	3.0	3.0	3.0	3.0
8.567	3.0	3.0	3.1	3.1	3.1	3.1	3.1
8.612	3.1	3.1	3.1	3.1	3.2	3.2	3.2
8.656	3.2	3.2	3.2	3.2	3.3	3.3	3.3
8.700	3.3	3.3	3.3	3.3	3.3	3.3	3.3
8.744	3.4	3.4	3.4	3.4	3.4	3.4	3.4
8.788	3.5	3.5	3.5	3.5	3.5	3.5	3.5
8.833	3.5	3.5	3.6	3.6	3.6	3.6	3.6
8.877	3.6	3.6	3.7	3.7	3.7	3.7	3.7
8.921	3.7	3.7	3.7	3.8	3.8	3.8	3.8
8.965	3.8	3.8	3.8	3.9	3.9	3.9	3.9
9.010	3.9	3.9	3.9	3.9	3.9	4.0	4.0
9.054	4.0	4.0	4.0	4.0	4.0	4.0	4.0
9.098	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9.142	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9.186	4.1	4.2	4.2	4.2	4.2	4.2	4.2
9.231	4.2	4.2	4.2	4.2	4.2	4.2	4.2
9.275	4.2	4.2	4.2	4.2	4.2	4.3	4.3
9.319	4.3	4.3	4.3	4.3	4.3	4.3	4.3
9.363	4.3	4.3	4.3	4.3	4.3	4.3	4.3
9.407	4.3	4.3	4.3	4.3	4.4	4.4	4.4
9.452	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9.496	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9.540	4.4	4.5	4.5	4.5	4.5	4.5	4.5
9.584	4.5	4.5	4.6	4.6	4.6	4.6	4.6
9.628	4.6	4.6	4.6	4.6	4.7	4.7	4.7
9.673	4.7	4.8	4.8	4.8	4.8	4.8	4.9
9.717	4.9	4.9	4.9	4.9	4.9	4.9	5.0
9.761	5.0	5.0	5.0	5.1	5.1	5.1	5.1
9.805	5.2	5.2	5.2	5.2	5.2	5.2	5.2
9.850	5.3	5.3	5.3	5.3	5.4	5.4	5.4
9.894	5.4	5.5	5.5	5.5	5.5	5.5	5.5
9.938	5.6	5.6	5.6	5.6	5.7	5.7	5.7

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.982	5.7	5.8	5.8	5.8	5.8	5.8	5.8
10.026	5.9	5.9	5.9	5.9	6.0	6.0	6.0
10.071	6.0	6.1	6.1	6.1	6.2	6.2	6.2
10.115	6.2	6.2	6.3	6.3	6.3	6.3	6.4
10.159	6.4	6.4	6.5	6.5	6.6	6.6	6.6
10.203	6.6	6.7	6.7	6.7	6.7	6.8	6.8
10.247	6.8	6.9	6.9	6.9	7.0	7.0	7.0
10.292	7.1	7.1	7.1	7.2	7.2	7.2	7.2
10.336	7.3	7.3	7.3	7.4	7.4	7.4	7.5
10.380	7.5	7.6	7.6	7.6	7.7	7.7	7.7
10.424	7.7	7.8	7.8	7.8	7.8	7.9	7.9
10.469	8.0	8.0	8.0	8.1	8.1	8.2	8.2
10.513	8.2	8.2	8.3	8.3	8.3	8.4	8.4
10.557	8.5	8.5	8.6	8.6	8.7	8.7	8.8

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
10.601	8.8	8.8	8.9	8.9	8.9	9.0	9.0
10.645	9.0	9.1	9.2	9.2	9.3	9.4	9.4
10.690	9.5	9.5	9.6	9.6	9.7	9.7	9.7
10.734	9.8	9.8	9.9	9.9	10.0	10.1	10.1
10.778	10.2	10.3	10.3	10.4	10.4	10.5	10.5
10.822	10.6	10.6	10.7	10.7	10.8	10.8	10.9
10.866	11.0	11.0	11.1	11.2	11.2	11.3	11.3
10.911	11.4	11.4	11.5	11.5	11.6	11.6	11.7
10.955	11.7	11.8	11.9	11.9	12.0	12.1	12.1
10.999	12.2	12.3	12.3	12.3	12.4	12.4	12.5
11.043	12.6	12.7	12.8	12.9	13.0	13.1	13.2
11.087	13.3	13.4	13.5	13.6	13.6	13.7	13.8
11.132	13.9	13.9	14.1	14.2	14.3	14.5	14.6
11.176	14.8	14.9	15.1	15.2	15.4	15.5	15.6
11.220	15.7	15.7	15.8	15.9	16.1	16.2	16.4
11.264	16.5	16.7	16.9	17.0	17.2	17.3	17.5
11.309	17.6	17.7	17.8	17.9	18.0	18.1	18.2
11.353	18.4	18.5	18.7	18.9	19.1	19.2	19.4
11.397	19.5	19.7	19.8	19.9	20.0	20.1	20.2
11.441	20.3	20.4	20.6	20.8	21.0	21.1	21.3
11.485	21.5	21.7	21.8	21.9	22.1	22.2	22.5
11.530	22.9	23.5	24.4	25.7	27.2	28.9	30.7
11.574	32.6	34.5	36.3	38.0	39.5	40.9	42.1
11.618	43.2	44.4	45.9	47.7	50.0	52.9	56.4
11.662	60.2	64.2	68.2	72.2	75.9	79.4	82.6
11.706	85.5	88.0	90.2	92.6	95.2	98.2	101.8
11.751	106.2	111.2	116.6	122.1	127.7	133.1	138.3
11.795	143.0	147.4	151.3	154.8	158.2	162.1	166.8
11.839	172.7	180.2	189.3	199.9	211.4	223.2	235.1
11.883	246.7	257.7	267.8	277.0	285.0	291.8	297.2
11.927	301.2	303.7	304.6	303.9	301.4	297.5	292.6
11.972	287.1	281.4	275.8	270.4	265.5	261.1	257.3
12.016	253.9	250.3	245.9	240.2	232.8	223.1	211.2
12.060	197.7	183.2	168.4	153.8	139.8	126.8	115.0
12.104	104.6	95.8	88.4	82.3	77.0	72.5	68.5
12.148	65.1	62.0	59.3	56.9	54.8	53.0	51.4
12.193	50.0	48.8	47.7	46.9	46.1	45.5	44.9

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
12.237	44.3	43.7	43.1	42.5	41.9	41.3	40.7
12.281	40.1	39.6	39.1	38.7	38.4	38.1	37.8
12.325	37.6	37.4	37.1	36.8	36.4	35.9	35.5
12.370	35.0	34.5	34.0	33.6	33.2	32.9	32.6
12.414	32.3	32.1	31.8	31.6	31.3	31.0	30.6
12.458	30.1	29.6	29.2	28.7	28.2	27.8	27.4
12.502	27.1	26.8	26.5	26.3	26.1	25.9	25.6
12.546	25.4	25.1	24.8	24.5	24.1	23.8	23.5
12.591	23.3	23.0	22.8	22.6	22.5	22.3	22.2
12.635	22.1	22.0	21.8	21.7	21.6	21.4	21.3
12.679	21.2	21.1	21.0	20.9	20.8	20.7	20.6
12.723	20.6	20.5	20.5	20.4	20.3	20.2	20.1

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
12.767	20.0	19.9	19.8	19.7	19.6	19.5	19.4
12.812	19.3	19.3	19.2	19.2	19.1	19.0	19.0
12.856	18.9	18.8	18.6	18.5	18.4	18.3	18.2
12.900	18.2	18.1	18.0	18.0	17.9	17.9	17.8
12.944	17.7	17.6	17.5	17.4	17.3	17.2	17.1
12.988	17.0	16.9	16.8	16.7	16.7	16.6	16.6
13.033	16.5	16.5	16.4	16.3	16.3	16.2	16.1
13.077	16.0	15.9	15.8	15.8	15.7	15.6	15.6
13.121	15.6	15.5	15.5	15.4	15.4	15.3	15.3
13.165	15.2	15.1	15.1	15.0	15.0	14.9	14.9
13.210	14.8	14.8	14.8	14.8	14.7	14.7	14.6
13.254	14.6	14.5	14.5	14.4	14.4	14.3	14.2
13.298	14.2	14.2	14.1	14.1	14.1	14.0	14.0
13.342	14.0	13.9	13.9	13.8	13.8	13.7	13.6
13.386	13.6	13.5	13.5	13.4	13.4	13.4	13.4
13.431	13.3	13.3	13.2	13.2	13.1	13.1	13.0
13.475	13.0	12.9	12.9	12.8	12.8	12.7	12.7
13.519	12.7	12.6	12.6	12.6	12.5	12.5	12.4
13.563	12.4	12.3	12.3	12.2	12.2	12.1	12.1
13.607	12.1	12.0	12.0	12.0	12.0	11.9	11.9
13.652	11.9	11.8	11.8	11.8	11.7	11.7	11.6
13.696	11.6	11.6	11.5	11.5	11.5	11.5	11.4
13.740	11.4	11.4	11.4	11.3	11.3	11.2	11.2
13.784	11.1	11.1	11.1	11.0	11.0	11.0	11.0
13.828	11.0	10.9	10.9	10.9	10.8	10.8	10.8
13.873	10.7	10.7	10.6	10.6	10.6	10.5	10.5
13.917	10.5	10.5	10.4	10.4	10.4	10.4	10.3
13.961	10.3	10.2	10.2	10.1	10.1	10.1	10.0
14.005	10.0	10.0	10.0	9.9	9.9	9.9	9.9
14.050	9.9	9.8	9.8	9.8	9.7	9.7	9.7
14.094	9.7	9.6	9.6	9.6	9.6	9.6	9.6
14.138	9.6	9.5	9.5	9.5	9.5	9.5	9.5
14.182	9.4	9.4	9.4	9.4	9.4	9.4	9.4
14.226	9.4	9.3	9.3	9.3	9.3	9.3	9.3
14.271	9.3	9.3	9.3	9.2	9.2	9.2	9.2
14.315	9.2	9.2	9.2	9.2	9.2	9.2	9.1
14.359	9.1	9.1	9.1	9.1	9.1	9.1	9.0
14.403	9.0	9.0	9.0	9.0	9.0	9.0	9.0
14.447	9.0	9.0	8.9	8.9	8.9	8.9	8.9

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.492	8.9	8.9	8.9	8.9	8.8	8.8	8.8
14.536	8.8	8.8	8.8	8.8	8.8	8.8	8.7
14.580	8.7	8.7	8.7	8.7	8.7	8.7	8.7
14.624	8.6	8.6	8.6	8.6	8.6	8.6	8.6
14.668	8.6	8.6	8.5	8.5	8.5	8.5	8.5
14.713	8.5	8.5	8.5	8.5	8.5	8.5	8.4
14.757	8.4	8.4	8.4	8.4	8.4	8.3	8.3
14.801	8.3	8.3	8.3	8.3	8.3	8.3	8.3
14.845	8.3	8.2	8.2	8.2	8.2	8.2	8.2
14.890	8.2	8.2	8.1	8.1	8.1	8.1	8.1

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
14.934	8.1	8.1	8.1	8.1	8.1	8.0	8.0
14.978	8.0	8.0	8.0	8.0	8.0	7.9	7.9
15.022	7.9	7.9	7.9	7.9	7.9	7.9	7.9
15.066	7.9	7.8	7.8	7.8	7.8	7.8	7.8
15.111	7.8	7.8	7.8	7.8	7.8	7.7	7.7
15.155	7.7	7.7	7.7	7.7	7.6	7.6	7.6
15.199	7.6	7.6	7.6	7.6	7.6	7.6	7.6
15.243	7.5	7.5	7.5	7.5	7.5	7.5	7.5
15.287	7.5	7.4	7.4	7.4	7.4	7.4	7.4
15.332	7.4	7.4	7.4	7.4	7.3	7.3	7.3
15.376	7.3	7.3	7.3	7.3	7.2	7.2	7.2
15.420	7.2	7.2	7.2	7.2	7.2	7.2	7.2
15.464	7.1	7.1	7.1	7.1	7.1	7.1	7.1
15.509	7.1	7.1	7.0	7.0	7.0	7.0	7.0
15.553	7.0	7.0	7.0	7.0	6.9	6.9	6.9
15.597	6.9	6.9	6.9	6.9	6.9	6.8	6.8
15.641	6.8	6.8	6.8	6.8	6.8	6.8	6.8
15.685	6.7	6.7	6.7	6.7	6.7	6.7	6.7
15.730	6.7	6.7	6.7	6.6	6.6	6.6	6.6
15.774	6.6	6.6	6.6	6.5	6.5	6.5	6.5
15.818	6.5	6.5	6.5	6.5	6.5	6.4	6.4
15.862	6.4	6.4	6.4	6.4	6.4	6.4	6.4
15.906	6.3	6.3	6.3	6.3	6.3	6.3	6.3
15.951	6.3	6.3	6.2	6.2	6.2	6.2	6.2
15.995	6.2	6.2	6.1	6.1	6.1	6.1	6.1
16.039	6.1	6.1	6.1	6.1	6.1	6.1	6.1
16.083	6.0	6.0	6.0	6.0	6.0	6.0	6.0
16.127	6.0	6.0	6.0	6.0	6.0	6.0	6.0
16.172	6.0	6.0	5.9	5.9	5.9	5.9	5.9
16.216	5.9	5.9	5.9	5.9	5.9	5.9	5.9
16.260	5.9	5.9	5.9	5.9	5.9	5.9	5.9
16.304	5.9	5.9	5.9	5.9	5.9	5.9	5.9
16.348	5.9	5.8	5.8	5.8	5.8	5.8	5.8
16.393	5.8	5.8	5.8	5.8	5.8	5.8	5.8
16.437	5.8	5.8	5.8	5.8	5.8	5.8	5.8
16.481	5.8	5.8	5.8	5.7	5.7	5.7	5.7
16.525	5.7	5.7	5.7	5.7	5.7	5.7	5.7
16.570	5.7	5.7	5.7	5.7	5.7	5.7	5.7
16.614	5.7	5.7	5.7	5.7	5.7	5.7	5.7
16.658	5.6	5.6	5.6	5.6	5.6	5.6	5.6
16.702	5.6	5.6	5.6	5.6	5.6	5.6	5.6

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.746	5.6	5.6	5.6	5.6	5.6	5.6	5.6
16.791	5.6	5.6	5.5	5.5	5.5	5.5	5.5
16.835	5.5	5.5	5.5	5.5	5.5	5.5	5.5
16.879	5.5	5.5	5.5	5.5	5.5	5.5	5.5
16.923	5.5	5.5	5.5	5.5	5.5	5.5	5.5
16.967	5.5	5.4	5.4	5.4	5.4	5.4	5.4
17.012	5.4	5.4	5.4	5.4	5.4	5.4	5.4
17.056	5.4	5.4	5.4	5.4	5.4	5.4	5.4

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
17.100	5.4	5.4	5.4	5.4	5.4	5.4	5.3
17.144	5.3	5.3	5.3	5.3	5.3	5.3	5.3
17.188	5.3	5.3	5.3	5.3	5.3	5.3	5.3
17.233	5.3	5.3	5.3	5.3	5.3	5.3	5.3
17.277	5.2	5.2	5.2	5.2	5.2	5.2	5.2
17.321	5.2	5.2	5.2	5.2	5.2	5.2	5.2
17.365	5.2	5.2	5.2	5.2	5.2	5.2	5.2
17.410	5.2	5.2	5.2	5.2	5.1	5.1	5.1
17.454	5.1	5.1	5.1	5.1	5.1	5.1	5.1
17.498	5.1	5.1	5.1	5.1	5.1	5.1	5.1
17.542	5.1	5.1	5.1	5.1	5.1	5.1	5.1
17.586	5.0	5.0	5.0	5.0	5.0	5.0	5.0
17.631	5.0	5.0	5.0	5.0	5.0	5.0	5.0
17.675	5.0	5.0	5.0	5.0	5.0	5.0	5.0
17.719	5.0	5.0	5.0	5.0	5.0	5.0	4.9
17.763	4.9	4.9	4.9	4.9	4.9	4.9	4.9
17.807	4.9	4.9	4.9	4.9	4.9	4.9	4.9
17.852	4.9	4.9	4.9	4.9	4.9	4.9	4.9
17.896	4.8	4.8	4.8	4.8	4.8	4.8	4.8
17.940	4.8	4.8	4.8	4.8	4.8	4.8	4.8
17.984	4.8	4.8	4.8	4.8	4.8	4.8	4.8
18.028	4.8	4.8	4.8	4.8	4.7	4.7	4.7
18.073	4.7	4.7	4.7	4.7	4.7	4.7	4.7
18.117	4.7	4.7	4.7	4.7	4.7	4.7	4.7
18.161	4.7	4.7	4.7	4.7	4.7	4.7	4.6
18.205	4.6	4.6	4.6	4.6	4.6	4.6	4.6
18.250	4.6	4.6	4.6	4.6	4.6	4.6	4.6
18.294	4.6	4.6	4.6	4.6	4.6	4.6	4.6
18.338	4.6	4.6	4.6	4.6	4.6	4.5	4.5
18.382	4.5	4.5	4.5	4.5	4.5	4.5	4.5
18.426	4.5	4.5	4.5	4.5	4.5	4.5	4.5
18.471	4.5	4.5	4.5	4.5	4.5	4.5	4.5
18.515	4.5	4.5	4.4	4.4	4.4	4.4	4.4
18.559	4.4	4.4	4.4	4.4	4.4	4.4	4.4
18.603	4.4	4.4	4.4	4.4	4.4	4.4	4.4
18.647	4.4	4.4	4.4	4.4	4.3	4.3	4.3
18.692	4.3	4.3	4.3	4.3	4.3	4.3	4.3
18.736	4.3	4.3	4.3	4.3	4.3	4.3	4.3
18.780	4.3	4.3	4.3	4.3	4.3	4.3	4.2
18.824	4.2	4.2	4.2	4.2	4.2	4.2	4.2
18.868	4.2	4.2	4.2	4.2	4.2	4.2	4.2
18.913	4.2	4.2	4.2	4.2	4.2	4.2	4.2
18.957	4.2	4.2	4.2	4.1	4.1	4.1	4.1

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
19.001	4.1	4.1	4.1	4.1	4.1	4.1	4.1
19.045	4.1	4.1	4.1	4.1	4.1	4.1	4.1
19.090	4.1	4.1	4.1	4.1	4.1	4.1	4.1
19.134	4.1	4.1	4.0	4.0	4.0	4.0	4.0
19.178	4.0	4.0	4.0	4.0	4.0	4.0	4.0
19.222	4.0	4.0	4.0	4.0	4.0	4.0	4.0

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
19.266	4.0	4.0	4.0	3.9	3.9	3.9	3.9
19.311	3.9	3.9	3.9	3.9	3.9	3.9	3.9
19.355	3.9	3.9	3.9	3.9	3.9	3.9	3.9
19.399	3.9	3.9	3.9	3.9	3.9	3.9	3.8
19.443	3.8	3.8	3.8	3.8	3.8	3.8	3.8
19.487	3.8	3.8	3.8	3.8	3.8	3.8	3.8
19.532	3.8	3.8	3.8	3.8	3.8	3.8	3.8
19.576	3.8	3.8	3.7	3.7	3.7	3.7	3.7
19.620	3.7	3.7	3.7	3.7	3.7	3.7	3.7
19.664	3.7	3.7	3.7	3.7	3.7	3.7	3.7
19.708	3.7	3.7	3.7	3.7	3.7	3.7	3.7
19.753	3.6	3.6	3.6	3.6	3.6	3.6	3.6
19.797	3.6	3.6	3.6	3.6	3.6	3.6	3.6
19.841	3.6	3.6	3.6	3.6	3.6	3.6	3.6
19.885	3.6	3.6	3.5	3.5	3.5	3.5	3.5
19.930	3.5	3.5	3.5	3.5	3.5	3.5	3.5
19.974	3.5	3.5	3.5	3.5	3.5	3.5	3.5
20.018	3.5	3.5	3.5	3.5	3.5	3.5	3.5
20.062	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.106	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.151	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.195	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.239	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.283	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.327	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.372	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.416	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.460	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.504	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.549	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.593	3.4	3.4	3.4	3.4	3.4	3.4	3.4
20.637	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.681	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.725	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.770	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.814	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.858	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.902	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.946	3.3	3.3	3.3	3.3	3.3	3.3	3.3
20.991	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.035	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.079	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.123	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.167	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.212	3.3	3.3	3.3	3.3	3.3	3.3	3.3

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
21.256	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.300	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.344	3.3	3.3	3.3	3.3	3.3	3.3	3.3
21.389	3.3	3.3	3.3	3.3	3.2	3.2	3.2

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
21.433	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.477	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.521	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.565	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.610	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.654	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.698	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.742	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.786	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.831	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.875	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.919	3.2	3.2	3.2	3.2	3.2	3.2	3.2
21.963	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.007	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.052	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.096	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.140	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22.184	3.2	3.2	3.2	3.1	3.1	3.1	3.1
22.229	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.273	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.317	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.361	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.405	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.450	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.494	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.538	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.582	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.626	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.671	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.715	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.759	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.803	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.847	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.892	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.936	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.980	3.1	3.0	3.0	3.0	3.0	3.0	3.0
23.024	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.069	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.113	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.157	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.201	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.245	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.290	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.334	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.378	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.422	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.466	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.511	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.555	3.0	3.0	3.0	3.0	3.0	3.0	3.0

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
23.599	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.643	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.687	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.732	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.776	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.820	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.864	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.909	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.953	2.9	2.9	2.9	2.9	2.9	2.9	2.9
23.997	2.9	2.9	2.9	2.9	2.9	2.9	2.8
24.041	2.7	2.6	2.4	2.2	2.0	1.8	1.6
24.085	1.4	1.2	1.0	0.8	0.7		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.087		7.016		11.95	559.92	6437.35

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.473	0.6	0.953E-05	0.7	0.867E-05	0.7	0.5	0.6
5.517	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.561	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.605	0.6	0.6	0.6	0.6	0.6	0.6	0.6
5.650	0.6	0.6	0.6	0.6	0.7	0.7	0.7
5.694	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.738	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.782	0.7	0.7	0.7	0.7	0.7	0.7	0.7
5.826	0.7	0.7	0.7	0.8	0.8	0.8	0.8
5.871	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.915	0.8	0.8	0.8	0.8	0.8	0.8	0.8
5.959	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6.003	0.8	0.8	0.9	0.9	0.9	0.9	0.9
6.047	0.9	0.9	0.9	0.9	0.9	0.9	0.9
6.092	0.9	0.9	0.9	0.9	0.9	1.4	1.5
6.136	1.5	1.5	1.5	1.5	1.5	1.5	1.5
6.180	1.6	1.6	1.6	1.6	1.6	1.6	1.6
6.224	1.6	1.6	1.6	1.6	1.6	1.6	1.6
6.268	1.6	1.7	1.7	1.7	1.7	1.7	1.7
6.313	1.7	1.7	1.7	1.7	1.7	1.7	1.7
6.357	1.7	1.7	1.7	1.8	1.8	1.8	1.8
6.401	1.8	1.8	1.8	1.8	1.8	1.8	1.8
6.445	1.8	1.8	1.8	1.8	1.9	1.9	1.9
6.490	1.9	1.9	1.9	1.9	1.9	1.9	1.9
6.534	1.9	1.9	1.9	1.9	1.9	2.0	2.0
6.578	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
6.622	2.0	2.0	2.0	2.0	2.0	2.0	2.1
6.666	2.1	2.1	2.1	2.1	2.1	2.1	2.1
6.711	2.1	2.1	2.1	2.1	2.1	2.1	2.1
6.755	2.2	2.2	2.2	2.2	2.2	2.2	2.2
6.799	2.2	2.2	2.2	2.2	2.2	2.2	2.2
6.843	2.3	2.3	2.3	2.3	2.3	2.3	2.3
6.887	2.3	2.3	2.3	2.3	2.3	2.3	2.3
6.932	2.3	2.4	2.4	2.4	2.4	2.4	2.4
6.976	2.4	2.4	2.4	2.4	2.4	2.4	2.4
7.020	2.4	2.5	2.5	2.5	2.5	2.5	2.5
7.064	2.5	2.5	2.5	2.5	2.5	2.5	2.5
7.108	2.5	2.5	2.6	2.6	2.6	2.6	2.6
7.153	2.6	2.6	2.6	2.6	2.6	2.6	2.6
7.197	2.6	2.6	2.7	2.7	2.7	2.7	2.7
7.241	2.7	2.7	2.7	2.7	2.7	2.7	2.7
7.285	2.7	2.7	2.8	2.8	2.8	2.8	2.8
7.330	2.8	2.8	2.8	2.8	2.8	2.8	2.8
7.374	2.8	2.8	2.9	2.9	2.9	2.9	2.9
7.418	2.9	2.9	2.9	2.9	2.9	2.9	2.9
7.462	2.9	2.9	3.0	3.0	3.0	3.0	3.0
7.506	3.0	3.0	3.0	3.0	3.0	3.0	3.0
7.551	3.0	3.5	3.6	3.6	3.6	3.6	3.6
7.595	3.6	3.6	3.6	3.6	3.6	3.6	3.7
7.639	3.7	3.7	3.7	3.7	3.7	3.7	3.7
7.683	3.7	3.7	3.7	3.7	3.8	3.8	3.8
7.727	3.8	3.8	3.8	3.8	3.8	3.8	3.8
7.772	3.8	3.8	3.9	3.9	3.9	3.9	3.9
7.816	3.9	3.9	3.9	3.9	3.9	3.9	3.9
7.860	4.0	4.0	4.0	4.0	4.0	4.0	4.0
7.904	4.0	4.0	4.0	4.0	4.1	4.1	4.1
7.948	4.1	4.1	4.1	4.1	4.1	4.1	4.1
7.993	4.1	4.1	4.2	4.2	4.2	4.2	4.2
8.037	4.2	4.2	4.2	4.2	4.3	4.3	4.3
8.081	4.3	4.3	4.3	4.3	4.3	4.4	4.4
8.125	4.4	4.4	4.4	4.4	4.4	4.5	4.5
8.170	4.5	4.5	4.5	4.6	4.6	4.6	4.6
8.214	4.6	4.6	4.7	4.7	4.7	4.7	4.7
8.258	4.8	4.8	4.8	4.8	4.8	4.9	4.9
8.302	4.9	4.9	4.9	5.0	5.0	5.0	5.0
8.346	5.0	5.1	5.1	5.1	5.1	5.1	5.2
8.391	5.2	5.2	5.2	5.2	5.3	5.3	5.3
8.435	5.3	5.3	5.4	5.4	5.4	5.4	5.5
8.479	5.5	5.5	5.5	5.5	5.6	5.6	5.6
8.523	5.6	5.6	5.7	5.7	5.7	5.7	5.8
8.567	5.8	5.8	5.8	5.9	5.9	5.9	5.9
8.612	5.9	6.0	6.0	6.0	6.0	6.0	6.1
8.656	6.1	6.1	6.1	6.2	6.2	6.2	6.2
8.700	6.3	6.3	6.3	6.3	6.3	6.4	6.4
8.744	6.4	6.4	6.5	6.5	6.5	6.5	6.6
8.788	6.6	6.6	6.6	6.7	6.7	6.7	6.7
8.833	6.7	6.8	6.8	6.8	6.8	6.9	6.9

Line
Start Time ---------- Flow Values @ time increment of 0.006 hr ----------

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Area or Reach Identifier (hr)	Drainage Area (sq mi) (cfs)	Rain Gage ID or Location (cfs)	Runoff Amount (in) (cfs)	Peak Flow Elevation (ft) (cfs)	Peak Flow Time (hr) (cfs)	Peak Flow Rate (cfs) (cfs)	Peak Flow Rate (csm) (cfs)
8.877	6.9	6.9	7.0	7.0	7.0	7.0	7.1
8.921	7.1	7.1	7.1	7.2	7.2	7.2	7.2
8.965	7.3	7.3	7.3	7.3	7.4	7.4	7.4
9.010	7.4	7.5	7.5	7.5	7.5	7.5	7.6
9.054	7.6	7.6	7.6	7.7	7.7	7.7	7.7
9.098	7.7	7.8	7.8	7.8	7.8	7.8	7.8
9.142	7.9	7.9	7.9	7.9	7.9	7.9	7.9
9.186	7.9	8.0	8.0	8.0	8.0	8.0	8.0
9.231	8.0	8.0	8.0	8.1	8.1	8.1	8.1
9.275	8.1	8.1	8.1	8.1	8.1	8.1	8.2
9.319	8.2	8.2	8.2	8.2	8.2	8.2	8.2
9.363	8.2	8.2	8.3	8.3	8.3	8.3	8.3
9.407	8.3	8.3	8.3	8.3	8.3	8.3	8.4
9.452	8.4	8.4	8.4	8.4	8.4	8.4	8.4
9.496	8.4	8.4	8.5	8.5	8.5	8.5	8.5
9.540	8.5	8.5	8.5	8.6	8.6	8.6	8.6
9.584	8.6	8.7	8.7	8.7	8.7	8.7	8.8
9.628	8.8	8.8	8.8	8.9	8.9	8.9	9.0
9.673	9.0	9.1	9.1	9.1	9.2	9.2	9.2
9.717	9.3	9.3	9.3	9.4	9.4	9.4	9.5
9.761	9.5	9.6	9.6	9.6	9.7	9.7	9.8
9.805	9.8	9.8	9.9	9.9	9.9	10.0	10.0
9.850	10.0	10.1	10.1	10.2	10.2	10.3	10.3
9.894	10.3	10.4	10.4	10.5	10.5	10.5	10.6
9.938	10.6	10.6	10.7	10.7	10.8	10.8	10.9
9.982	10.9	10.9	11.0	11.0	11.1	11.1	11.1
10.026	11.2	11.2	11.3	11.3	11.3	11.4	11.4
10.071	11.5	11.6	11.6	11.7	11.7	11.7	11.8
10.115	11.8	11.9	11.9	12.0	12.0	12.1	12.1
10.159	12.2	12.3	12.3	12.4	12.4	12.5	12.6
10.203	12.6	12.7	12.7	12.8	12.8	12.9	12.9
10.247	13.0	13.1	13.1	13.2	13.3	13.3	13.4
10.292	13.4	13.5	13.6	13.6	13.7	13.7	13.8
10.336	13.8	13.9	14.0	14.0	14.1	14.2	14.2
10.380	14.3	14.4	14.4	14.5	14.5	14.6	14.7
10.424	14.7	14.8	14.8	14.9	15.0	15.0	15.1
10.469	15.2	15.2	15.3	15.4	15.4	15.5	15.5
10.513	15.6	15.7	15.7	15.8	15.9	15.9	16.0
10.557	16.1	16.2	16.3	16.3	16.4	16.5	16.6
10.601	16.7	16.7	16.8	16.9	17.0	17.0	17.1
10.645	17.2	17.3	17.4	17.5	17.6	17.7	17.8
10.690	17.9	18.0	18.1	18.2	18.3	18.4	18.5
10.734	18.6	18.7	18.8	18.9	19.0	19.1	19.2
10.778	19.3	19.5	19.6	19.7	19.8	19.9	20.0
10.822	20.0	20.1	20.2	20.3	20.5	20.6	20.7
10.866	20.8	20.9	21.0	21.2	21.3	21.4	21.5
10.911	21.6	21.7	21.8	21.9	22.0	22.1	22.2
10.955	22.3	22.4	22.5	22.7	22.8	22.9	23.0
10.999	23.1	23.2	23.3	23.4	23.5	23.7	23.8
11.043	23.9	24.1	24.2	24.4	24.6	24.8	24.9
11.087	25.1	25.3	25.4	25.6	25.8	25.9	26.1

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
11.132	26.2	26.4	26.6	26.9	27.1	27.3	27.6
11.176	27.9	28.1	28.3	28.6	28.8	29.0	29.2
11.220	29.5	29.7	29.9	30.1	30.4	30.7	30.9
11.264	31.2	31.5	31.8	32.0	32.3	32.6	32.8
11.309	33.0	33.3	33.5	33.7	34.0	34.2	34.5
11.353	34.8	35.1	35.3	35.6	35.9	36.2	36.5
11.397	36.7	37.0	37.2	37.5	37.7	38.0	38.2
11.441	38.5	38.8	39.0	39.3	39.7	40.0	40.3
11.485	40.5	40.8	41.1	41.4	41.7	42.1	42.6
11.530	43.3	44.4	45.8	47.6	49.7	52.0	54.6
11.574	57.2	59.9	62.6	65.3	67.9	70.5	73.1
11.618	75.7	78.5	81.7	85.4	89.7	94.6	100.0
11.662	105.8	111.7	117.8	123.8	129.8	135.7	141.5
11.706	147.0	152.4	157.8	163.4	169.4	175.9	183.0
11.751	190.9	199.2	207.9	216.7	225.5	234.1	242.6
11.795	251.0	259.0	266.9	274.7	282.7	291.5	301.5
11.839	313.1	326.4	341.4	357.8	375.2	393.0	410.9
11.883	428.8	446.6	464.0	480.8	496.8	511.7	525.1
11.927	536.7	546.3	553.4	558.0	559.9	559.6	557.4
11.972	553.7	549.0	543.5	537.4	530.9	524.3	517.4
12.016	510.1	502.0	492.4	480.8	467.0	450.6	432.0
12.060	411.7	390.4	368.8	347.0	325.5	304.3	283.7
12.104	263.9	245.2	227.7	211.3	196.1	182.0	169.1
12.148	157.5	147.2	138.1	130.3	123.5	117.6	112.5
12.193	108.1	104.3	101.0	98.2	95.7	93.5	91.5
12.237	89.7	88.0	86.4	85.0	83.6	82.3	81.1
12.281	80.0	78.9	78.0	77.1	76.3	75.5	74.8
12.325	74.2	73.5	72.8	72.0	71.3	70.5	69.6
12.370	68.8	68.1	67.3	66.6	65.9	65.2	64.6
12.414	64.0	63.4	62.8	62.2	61.5	60.8	60.0
12.458	59.3	58.5	57.7	56.9	56.2	55.4	54.7
12.502	54.1	53.4	52.8	52.3	51.7	51.1	50.6
12.546	50.0	49.4	48.8	48.2	47.6	47.1	46.6
12.591	46.1	45.6	45.2	44.8	44.4	44.0	43.7
12.635	43.3	43.0	42.7	42.4	42.1	41.8	41.5
12.679	41.3	41.1	40.9	40.7	40.5	40.3	40.1
12.723	40.0	39.8	39.7	39.5	39.3	39.1	39.0
12.767	38.8	38.6	38.4	38.2	38.1	37.9	37.8
12.812	37.6	37.5	37.3	37.2	37.1	36.9	36.7
12.856	36.5	36.4	36.2	36.0	35.8	35.7	35.5
12.900	35.3	35.2	35.1	34.9	34.8	34.6	34.5
12.944	34.3	34.2	34.0	33.8	33.6	33.4	33.3
12.988	33.1	32.9	32.8	32.6	32.5	32.4	32.2
13.033	32.1	32.0	31.8	31.7	31.5	31.4	31.2
13.077	31.1	30.9	30.8	30.7	30.5	30.4	30.3
13.121	30.2	30.1	30.0	29.9	29.8	29.7	29.6
13.165	29.5	29.3	29.2	29.1	29.0	29.0	28.9
13.210	28.8	28.7	28.6	28.6	28.5	28.4	28.3
13.254	28.2	28.1	28.0	27.9	27.8	27.7	27.6
13.298	27.5	27.5	27.4	27.3	27.2	27.2	27.1
13.342	27.0	26.9	26.8	26.7	26.6	26.5	26.4

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Southern Sediment Basin Storage							

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
13.386	26.3	26.2	26.2	26.1	26.0	25.9	25.9
13.431	25.8	25.7	25.6	25.5	25.4	25.3	25.2
13.475	25.1	25.0	25.0	24.9	24.8	24.7	24.6
13.519	24.6	24.5	24.4	24.3	24.2	24.2	24.1
13.563	24.0	23.9	23.8	23.7	23.6	23.6	23.5
13.607	23.4	23.4	23.3	23.2	23.2	23.1	23.0
13.652	23.0	22.9	22.8	22.7	22.7	22.6	22.5
13.696	22.5	22.4	22.3	22.3	22.2	22.2	22.1
13.740	22.1	22.0	21.9	21.9	21.8	21.7	21.7
13.784	21.6	21.5	21.5	21.4	21.3	21.3	21.2
13.828	21.2	21.1	21.1	21.0	20.9	20.9	20.8
13.873	20.7	20.7	20.6	20.5	20.5	20.4	20.4
13.917	20.3	20.2	20.2	20.1	20.1	20.0	19.9
13.961	19.9	19.8	19.7	19.7	19.6	19.5	19.5
14.005	19.4	19.4	19.3	19.3	19.2	19.2	19.1
14.050	19.1	19.0	18.9	18.9	18.8	18.8	18.7
14.094	18.7	18.7	18.6	18.6	18.5	18.5	18.5
14.138	18.4	18.4	18.4	18.3	18.3	18.3	18.2
14.182	18.2	18.2	18.2	18.1	18.1	18.1	18.1
14.226	18.0	18.0	18.0	18.0	17.9	17.9	17.9
14.271	17.9	17.9	17.8	17.8	17.8	17.8	17.8
14.315	17.7	17.7	17.7	17.7	17.7	17.6	17.6
14.359	17.6	17.6	17.5	17.5	17.5	17.5	17.4
14.403	17.4	17.4	17.4	17.4	17.3	17.3	17.3
14.447	17.3	17.3	17.2	17.2	17.2	17.2	17.1
14.492	17.1	17.1	17.1	17.1	17.0	17.0	17.0
14.536	17.0	17.0	17.0	16.9	16.9	16.9	16.8
14.580	16.8	16.8	16.8	16.7	16.7	16.7	16.7
14.624	16.7	16.6	16.6	16.6	16.6	16.6	16.5
14.668	16.5	16.5	16.5	16.4	16.4	16.4	16.4
14.713	16.4	16.4	16.3	16.3	16.3	16.3	16.3
14.757	16.2	16.2	16.2	16.2	16.1	16.1	16.1
14.801	16.1	16.0	16.0	16.0	16.0	16.0	15.9
14.845	15.9	15.9	15.9	15.8	15.8	15.8	15.8
14.890	15.8	15.7	15.7	15.7	15.7	15.7	15.6
14.934	15.6	15.6	15.6	15.6	15.5	15.5	15.5
14.978	15.5	15.4	15.4	15.4	15.4	15.3	15.3
15.022	15.3	15.3	15.3	15.2	15.2	15.2	15.2
15.066	15.1	15.1	15.1	15.1	15.1	15.0	15.0
15.111	15.0	15.0	15.0	15.0	14.9	14.9	14.9
15.155	14.9	14.8	14.8	14.8	14.8	14.7	14.7
15.199	14.7	14.7	14.6	14.6	14.6	14.6	14.6
15.243	14.5	14.5	14.5	14.5	14.4	14.4	14.4
15.287	14.4	14.4	14.3	14.3	14.3	14.3	14.3
15.332	14.3	14.2	14.2	14.2	14.2	14.1	14.1
15.376	14.1	14.1	14.0	14.0	14.0	14.0	13.9
15.420	13.9	13.9	13.9	13.9	13.8	13.8	13.8
15.464	13.8	13.7	13.7	13.7	13.7	13.7	13.6
15.509	13.6	13.6	13.6	13.6	13.6	13.5	13.5
15.553	13.5	13.5	13.4	13.4	13.4	13.4	13.3
15.597	13.3	13.3	13.3	13.2	13.2	13.2	13.2

STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)						
15.641	13.2	13.1	13.1	13.1	13.1	13.0	13.0
15.685	13.0	13.0	13.0	12.9	12.9	12.9	12.9
15.730	12.9	12.9	12.8	12.8	12.8	12.8	12.7
15.774	12.7	12.7	12.7	12.6	12.6	12.6	12.6
15.818	12.5	12.5	12.5	12.5	12.5	12.4	12.4
15.862	12.4	12.4	12.3	12.3	12.3	12.3	12.3
15.906	12.2	12.2	12.2	12.2	12.2	12.2	12.1
15.951	12.1	12.1	12.1	12.0	12.0	12.0	12.0
15.995	11.9	11.9	11.9	11.9	11.8	11.8	11.8
16.039	11.8	11.8	11.7	11.7	11.7	11.7	11.7
16.083	11.7	11.6	11.6	11.6	11.6	11.6	11.6
16.127	11.6	11.6	11.5	11.5	11.5	11.5	11.5
16.172	11.5	11.5	11.5	11.5	11.4	11.4	11.4
16.216	11.4	11.4	11.4	11.4	11.4	11.4	11.4
16.260	11.4	11.3	11.3	11.3	11.3	11.3	11.3
16.304	11.3	11.3	11.3	11.3	11.3	11.3	11.3
16.348	11.3	11.3	11.2	11.2	11.2	11.2	11.2
16.393	11.2	11.2	11.2	11.2	11.2	11.2	11.1
16.437	11.1	11.1	11.1	11.1	11.1	11.1	11.1
16.481	11.1	11.1	11.1	11.1	11.1	11.1	11.0
16.525	11.0	11.0	11.0	11.0	11.0	11.0	11.0
16.570	11.0	11.0	11.0	11.0	10.9	10.9	10.9
16.614	10.9	10.9	10.9	10.9	10.9	10.9	10.9
16.658	10.9	10.9	10.9	10.8	10.8	10.8	10.8
16.702	10.8	10.8	10.8	10.8	10.8	10.8	10.8
16.746	10.8	10.8	10.8	10.7	10.7	10.7	10.7
16.791	10.7	10.7	10.7	10.7	10.7	10.7	10.7
16.835	10.7	10.6	10.6	10.6	10.6	10.6	10.6
16.879	10.6	10.6	10.6	10.6	10.6	10.6	10.6
16.923	10.6	10.5	10.5	10.5	10.5	10.5	10.5
16.967	10.5	10.5	10.5	10.5	10.5	10.4	10.4
17.012	10.4	10.4	10.4	10.4	10.4	10.4	10.4
17.056	10.4	10.4	10.4	10.4	10.3	10.3	10.3
17.100	10.3	10.3	10.3	10.3	10.3	10.3	10.3
17.144	10.3	10.3	10.3	10.3	10.2	10.2	10.2
17.188	10.2	10.2	10.2	10.2	10.2	10.2	10.2
17.233	10.2	10.2	10.1	10.1	10.1	10.1	10.1
17.277	10.1	10.1	10.1	10.1	10.1	10.1	10.1
17.321	10.1	10.1	10.0	10.0	10.0	10.0	10.0
17.365	10.0	10.0	10.0	10.0	10.0	10.0	9.9
17.410	9.9	9.9	9.9	9.9	9.9	9.9	9.9
17.454	9.9	9.9	9.9	9.9	9.9	9.8	9.8
17.498	9.8	9.8	9.8	9.8	9.8	9.8	9.8
17.542	9.8	9.8	9.8	9.8	9.8	9.7	9.7
17.586	9.7	9.7	9.7	9.7	9.7	9.7	9.7
17.631	9.7	9.7	9.7	9.6	9.6	9.6	9.6
17.675	9.6	9.6	9.6	9.6	9.6	9.6	9.6
17.719	9.6	9.6	9.6	9.5	9.5	9.5	9.5
17.763	9.5	9.5	9.5	9.5	9.5	9.5	9.5
17.807	9.4	9.4	9.4	9.4	9.4	9.4	9.4
17.852	9.4	9.4	9.4	9.4	9.4	9.4	9.3

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.896	9.3	9.3	9.3	9.3	9.3	9.3	9.3
17.940	9.3	9.3	9.3	9.3	9.3	9.2	9.2
17.984	9.2	9.2	9.2	9.2	9.2	9.2	9.2
18.028	9.2	9.2	9.2	9.1	9.1	9.1	9.1
18.073	9.1	9.1	9.1	9.1	9.1	9.1	9.1
18.117	9.1	9.1	9.1	9.0	9.0	9.0	9.0
18.161	9.0	9.0	9.0	9.0	9.0	9.0	9.0
18.205	9.0	8.9	8.9	8.9	8.9	8.9	8.9
18.250	8.9	8.9	8.9	8.9	8.9	8.9	8.8
18.294	8.8	8.8	8.8	8.8	8.8	8.8	8.8
18.338	8.8	8.8	8.8	8.8	8.8	8.8	8.7
18.382	8.7	8.7	8.7	8.7	8.7	8.7	8.7
18.426	8.7	8.7	8.7	8.7	8.6	8.6	8.6
18.471	8.6	8.6	8.6	8.6	8.6	8.6	8.6
18.515	8.6	8.6	8.6	8.6	8.5	8.5	8.5
18.559	8.5	8.5	8.5	8.5	8.5	8.5	8.5
18.603	8.5	8.4	8.4	8.4	8.4	8.4	8.4
18.647	8.4	8.4	8.4	8.4	8.4	8.4	8.4
18.692	8.3	8.3	8.3	8.3	8.3	8.3	8.3
18.736	8.3	8.3	8.3	8.3	8.3	8.3	8.2
18.780	8.2	8.2	8.2	8.2	8.2	8.2	8.2
18.824	8.2	8.2	8.2	8.2	8.1	8.1	8.1
18.868	8.1	8.1	8.1	8.1	8.1	8.1	8.1
18.913	8.1	8.1	8.1	8.1	8.0	8.0	8.0
18.957	8.0	8.0	8.0	8.0	8.0	8.0	8.0
19.001	8.0	7.9	7.9	7.9	7.9	7.9	7.9
19.045	7.9	7.9	7.9	7.9	7.9	7.9	7.9
19.090	7.8	7.8	7.8	7.8	7.8	7.8	7.8
19.134	7.8	7.8	7.8	7.8	7.8	7.8	7.8
19.178	7.7	7.7	7.7	7.7	7.7	7.7	7.7
19.222	7.7	7.7	7.7	7.7	7.6	7.6	7.6
19.266	7.6	7.6	7.6	7.6	7.6	7.6	7.6
19.311	7.6	7.6	7.6	7.6	7.6	7.5	7.5
19.355	7.5	7.5	7.5	7.5	7.5	7.5	7.5
19.399	7.5	7.5	7.4	7.4	7.4	7.4	7.4
19.443	7.4	7.4	7.4	7.4	7.4	7.4	7.4
19.487	7.3	7.3	7.3	7.3	7.3	7.3	7.3
19.532	7.3	7.3	7.3	7.3	7.3	7.3	7.3
19.576	7.2	7.2	7.2	7.2	7.2	7.2	7.2
19.620	7.2	7.2	7.2	7.2	7.2	7.1	7.1
19.664	7.1	7.1	7.1	7.1	7.1	7.1	7.1
19.708	7.1	7.1	7.1	7.1	7.1	7.0	7.0
19.753	7.0	7.0	7.0	7.0	7.0	7.0	7.0
19.797	7.0	7.0	6.9	6.9	6.9	6.9	6.9
19.841	6.9	6.9	6.9	6.9	6.9	6.9	6.9
19.885	6.8	6.8	6.8	6.8	6.8	6.8	6.8
19.930	6.8	6.8	6.8	6.8	6.8	6.8	6.8
19.974	6.7	6.7	6.7	6.7	6.7	6.7	6.7
20.018	6.7	6.7	6.7	6.7	6.7	6.6	6.6

Cypress Creek Landfill
Southern Sediment Basin Storage

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
20.062	6.6	6.6	6.6	6.6	6.6	6.6	6.6
20.106	6.6	6.6	6.6	6.6	6.6	6.6	6.6

Cypress Creek Landfill
Southern Sediment Basin Storage

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
20.151	6.6	6.6	6.6	6.6	6.6	6.6	6.6
20.195	6.6	6.6	6.6	6.5	6.5	6.5	6.5
20.239	6.5	6.5	6.5	6.5	6.5	6.5	6.5
20.283	6.5	6.5	6.5	6.5	6.5	6.5	6.5
20.327	6.5	6.5	6.5	6.5	6.5	6.5	6.5
20.372	6.5	6.5	6.5	6.5	6.5	6.5	6.5
20.416	6.5	6.5	6.5	6.5	6.5	6.5	6.5
20.460	6.5	6.5	6.5	6.5	6.5	6.5	6.5
20.504	6.5	6.5	6.5	6.5	6.5	6.5	6.5
20.549	6.5	6.5	6.5	6.5	6.5	6.5	6.5
20.593	6.5	6.5	6.5	6.4	6.4	6.4	6.4
20.637	6.4	6.4	6.4	6.4	6.4	6.4	6.4
20.681	6.4	6.4	6.4	6.4	6.4	6.4	6.4
20.725	6.4	6.4	6.4	6.4	6.4	6.4	6.4
20.770	6.4	6.4	6.4	6.4	6.4	6.4	6.4
20.814	6.4	6.4	6.4	6.4	6.4	6.4	6.4
20.858	6.4	6.4	6.4	6.4	6.4	6.4	6.4
20.902	6.4	6.4	6.4	6.4	6.4	6.4	6.4
20.946	6.4	6.4	6.4	6.4	6.4	6.4	6.4
20.991	6.4	6.4	6.4	6.4	6.3	6.3	6.3
21.035	6.3	6.3	6.3	6.3	6.3	6.3	6.3
21.079	6.3	6.3	6.3	6.3	6.3	6.3	6.3
21.123	6.3	6.3	6.3	6.3	6.3	6.3	6.3
21.167	6.3	6.3	6.3	6.3	6.3	6.3	6.3
21.212	6.3	6.3	6.3	6.3	6.3	6.3	6.3
21.256	6.3	6.3	6.3	6.3	6.3	6.3	6.3
21.300	6.3	6.3	6.3	6.3	6.3	6.3	6.3
21.344	6.3	6.3	6.3	6.3	6.3	6.3	6.3
21.389	6.3	6.3	6.3	6.3	6.3	6.2	6.2
21.433	6.2	6.2	6.2	6.2	6.2	6.2	6.2
21.477	6.2	6.2	6.2	6.2	6.2	6.2	6.2
21.521	6.2	6.2	6.2	6.2	6.2	6.2	6.2
21.565	6.2	6.2	6.2	6.2	6.2	6.2	6.2
21.610	6.2	6.2	6.2	6.2	6.2	6.2	6.2
21.654	6.2	6.2	6.2	6.2	6.2	6.2	6.2
21.698	6.2	6.2	6.2	6.2	6.2	6.2	6.2
21.742	6.2	6.2	6.2	6.2	6.2	6.2	6.2
21.786	6.2	6.2	6.2	6.2	6.2	6.2	6.1
21.831	6.1	6.1	6.1	6.1	6.1	6.1	6.1
21.875	6.1	6.1	6.1	6.1	6.1	6.1	6.1
21.919	6.1	6.1	6.1	6.1	6.1	6.1	6.1
21.963	6.1	6.1	6.1	6.1	6.1	6.1	6.1
22.007	6.1	6.1	6.1	6.1	6.1	6.1	6.1
22.052	6.1	6.1	6.1	6.1	6.1	6.1	6.1
22.096	6.1	6.1	6.1	6.1	6.1	6.1	6.1
22.140	6.1	6.1	6.1	6.1	6.1	6.1	6.1
22.184	6.1	6.1	6.1	6.1	6.1	6.1	6.1

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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
22.229	6.0	6.0	6.0	6.0	6.0	6.0	6.0
22.273	6.0	6.0	6.0	6.0	6.0	6.0	6.0
22.317	6.0	6.0	6.0	6.0	6.0	6.0	6.0
22.361	6.0	6.0	6.0	6.0	6.0	6.0	6.0

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
22.405	6.0	6.0	6.0	6.0	6.0	6.0	6.0
22.450	6.0	6.0	6.0	6.0	6.0	6.0	6.0
22.494	6.0	6.0	6.0	6.0	6.0	6.0	6.0
22.538	6.0	6.0	6.0	6.0	6.0	6.0	6.0
22.582	6.0	6.0	6.0	6.0	6.0	6.0	6.0
22.626	6.0	5.9	5.9	5.9	5.9	5.9	5.9
22.671	5.9	5.9	5.9	5.9	5.9	5.9	5.9
22.715	5.9	5.9	5.9	5.9	5.9	5.9	5.9
22.759	5.9	5.9	5.9	5.9	5.9	5.9	5.9
22.803	5.9	5.9	5.9	5.9	5.9	5.9	5.9
22.847	5.9	5.9	5.9	5.9	5.9	5.9	5.9
22.892	5.9	5.9	5.9	5.9	5.9	5.9	5.9
22.936	5.9	5.9	5.9	5.9	5.9	5.9	5.9
22.980	5.9	5.9	5.9	5.9	5.9	5.9	5.9
23.024	5.9	5.9	5.8	5.8	5.8	5.8	5.8
23.069	5.8	5.8	5.8	5.8	5.8	5.8	5.8
23.113	5.8	5.8	5.8	5.8	5.8	5.8	5.8
23.157	5.8	5.8	5.8	5.8	5.8	5.8	5.8
23.201	5.8	5.8	5.8	5.8	5.8	5.8	5.8
23.245	5.8	5.8	5.8	5.8	5.8	5.8	5.8
23.290	5.8	5.8	5.8	5.8	5.8	5.8	5.8
23.334	5.8	5.8	5.8	5.8	5.8	5.8	5.8
23.378	5.8	5.8	5.8	5.8	5.8	5.8	5.8
23.422	5.8	5.8	5.7	5.7	5.7	5.7	5.7
23.466	5.7	5.7	5.7	5.7	5.7	5.7	5.7
23.511	5.7	5.7	5.7	5.7	5.7	5.7	5.7
23.555	5.7	5.7	5.7	5.7	5.7	5.7	5.7
23.599	5.7	5.7	5.7	5.7	5.7	5.7	5.7
23.643	5.7	5.7	5.7	5.7	5.7	5.7	5.7
23.687	5.7	5.7	5.7	5.7	5.7	5.7	5.7
23.732	5.7	5.7	5.7	5.7	5.7	5.7	5.7
23.776	5.7	5.7	5.7	5.7	5.7	5.7	5.7
23.820	5.7	5.7	5.7	5.6	5.6	5.6	5.6
23.864	5.6	5.6	5.6	5.6	5.6	5.6	5.6
23.909	5.6	5.6	5.6	5.6	5.6	5.6	5.6
23.953	5.6	5.6	5.6	5.6	5.6	5.6	5.6
23.997	5.6	5.6	5.6	5.6	5.6	5.5	5.4
24.041	5.3	5.1	4.8	4.1	3.9	3.6	3.4
24.085	3.1	2.9	2.6	2.4	2.1	1.3	1.1
24.130	0.6						

Cypress Creek Landfill
Southern Sediment Basin Storage

Name of printed page file:
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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

Cypress Creek Landfill
Southern Sediment Basin Storage

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm 25-Yr (cfs)	100-Yr (cfs)	(cfs)	(cfs)	(cfs)
Cat A+B+C	0.05		213.8	305.0			
Cat D	0.01		57.3	81.7			
Cat F+E	0.03		139.7	199.3			
W. Swale	0.03		139.7	199.3			
DOWNSTREAM			137.7	196.8			
E. Swale	0.05		213.8	305.0			
DOWNSTREAM			213.5	304.6			
OUTLET	0.09		387.8	559.9			

Cypress Creek Landfill
Southern Sediment Basin Storage

Name of printed page file:
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STORM 100-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

APPENDIX B 16a:

Run-Off: WinTR-55 – Southern Sediment Basin Emergency Spillway

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Southern Sediment Basin Emergency Spillway
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 6/6/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Cat A+B+C	Catchments A+B+C	E. Swale	28.97	80	0.100
Cat D	Catchment D	SED BASIN	7.76	80	0.100
Cat F+E	Catchments F+E	W. Swale	18.93	80	0.100

Total area: 55.66 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Watershed Peak Table (Trial #1)

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	100-Yr (cfs)
SUBAREAS		
Cat A+B+C	213.84	304.96
Cat D	57.30	81.71
Cat F+E	139.73	199.26
REACHES		
W. Swale	139.73	199.26
Down	137.74	196.85
E. Swale	213.84	304.96
Down	213.53	304.62
SED BASIN	387.85	559.92
Down	325.35	481.98
OUTLET	325.35	481.98

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Watershed Peak Table (Trial #2)

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	100-Yr (cfs)
SUBAREAS		
Cat A+B+C	213.84	304.96
Cat D	57.30	81.71
Cat F+E	139.73	199.26
REACHES		
W. Swale	139.73	199.26
Down	137.74	196.85
E. Swale	213.84	304.96
Down	213.53	304.62
SED BASIN	387.85	559.92
Down	337.72	501.76
OUTLET	337.72	501.76

Hogan

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Watershed Peak Table (Trial #3)

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)	100-Yr (cfs)
SUBAREAS		
Cat A+B+C	213.84	304.96
Cat D	57.30	81.71
Cat F+E	139.73	199.26
REACHES		
W. Swale	139.73	199.26
Down	137.74	196.85
E. Swale	213.84	304.96
Down	213.53	304.62
SED BASIN	387.85	559.92
Down	349.62	509.77
OUTLET	349.62	509.77

Hogan

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table (Trial #1)

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS				
Cat A+B+C	213.84	11.93	304.96	11.93
Cat D	57.30	11.93	81.71	11.93
Cat F+E	139.73	11.93	199.26	11.93
REACHES				
W. Swale	139.73	11.93	199.26	11.93
Down	137.74	12.00	196.85	11.99
E. Swale	213.84	11.93	304.96	11.93
Down	213.53	11.94	304.62	11.94
SED BASIN	387.85	11.96	559.92	11.95
Down	325.35	12.05	481.98	12.03
OUTLET	325.35		481.98	

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Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table (Trial #2)

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period			
	25-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS				
Cat A+B+C	213.84	11.93	304.96	11.93
Cat D	57.30	11.93	81.71	11.93
Cat F+E	139.73	11.93	199.26	11.93
REACHES				
W. Swale	139.73	11.93	199.26	11.93
Down	137.74	12.00	196.85	11.99
E. Swale	213.84	11.93	304.96	11.93
Down	213.53	11.94	304.62	11.94
SED BASIN	387.85	11.96	559.92	11.95
Down	337.72	12.04	501.76	12.02
OUTLET	337.72		501.76	

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table (Trial #3)

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS				
Cat A+B+C	213.84	11.93	304.96	11.93
Cat D	57.30	11.93	81.71	11.93
Cat F+E	139.73	11.93	199.26	11.93
REACHES				
W. Swale	139.73	11.93	199.26	11.93
Down	137.74	12.00	196.85	11.99
E. Swale	213.84	11.93	304.96	11.93
Down	213.53	11.94	304.62	11.94
SED BASIN	387.85	11.96	559.92	11.95
Down	349.62	12.03	509.77	12.02
OUTLET	349.62		509.77	

Hogan

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Structure Output Table

Reach Identifier / Structure Identifier	Peak Flow (PF), Storage Volume (SV), Stage (STG) by Rainfall Return Period 25-Yr	100-Yr
Reach: SED BASIN		
Weir : Sed. Basin		
100(ft)		
PF (cfs)	325.35	481.98
SV (ac ft)	3.43	4.43
STG (ft)	1.09	1.39
135(ft)		
PF (cfs)	337.72	501.76
SV (ac ft)	2.88	3.73
STG (ft)	.92	1.18
170(ft)		
PF (cfs)	349.62	509.77
SV (ac ft)	2.49	3.27
STG (ft)	.79	1.04

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Cat A+B+C	28.97	0.100	80	E. Swale	Catchments A+B+C
Cat D	7.76	0.100	80	SED BASIN	Catchment D
Cat F+E	18.93	0.100	80	W. Swale	Catchments F+E

Total Area: 55.66 (ac)

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Reach Summary Table

Reach Identifier	Receiving Reach Identifier	Reach Length (ft)	Routing Method
W. Swale	SED BASIN	2239	CHANNEL
E. Swale	SED BASIN	590	CHANNEL
SED BASIN	Outlet		STRUCTURE(Sed. Basin)

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Cat A+B+C							
SHEET	30	0.3333	0.011				0.002
SHALLOW	453	0.3333	0.050				0.014
CHANNEL	1250	0.0160	0.011	10.00	20.10	10.851	0.032
CHANNEL	2239	0.0094	0.011	45.00	18.97	23.035	0.027
					Time of Concentration		0.100
Cat D							
SHEET	30	0.3333	0.011				0.002
SHALLOW	614	0.3333	0.050				0.018
					Time of Concentration		0.100
Cat F+E							
SHEET	30	0.3333	0.011				0.002
SHALLOW	390	0.3333	0.050				0.012
CHANNEL	609	0.0164	0.011	10.00	20.10	10.573	0.016
CHANNEL	743	0.0485	0.011	45.00	18.97	51.597	0.004
					Time of Concentration		0.100

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Cat A+B+C	Newly graded area (pervious only)	A	20.61	77
	Newly graded area (pervious only)	B	8.36	86
	Total Area / Weighted Curve Number		28.97	80
Cat D	Newly graded area (pervious only)	A	5.51	77
	Newly graded area (pervious only)	B	2.25	86
	Total Area / Weighted Curve Number		7.76	80
Cat F+E	Newly graded area (pervious only)	A	13.46	77
	Newly graded area (pervious only)	B	5.47	86
	Total Area / Weighted Curve Number		18.93	80

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Reach Channel Rating Details

Reach Identifier	Reach Length (ft)	Reach Manning's n	Friction Slope (ft/ft)	Bottom Width (ft)	Side Slope
W. Swale	2239	0.027	0.0098	5.5	3 :1
E. Swale	590	0.027	0.0178	6	3 :1
SED BASIN	(This reach is a structure: Sed. Basin)				

Reach Identifier	Stage (ft)	Flow (cfs)	End Area (sq ft)	Top Width (ft)	Friction Slope (ft/ft)
W. Swale	0.0	0.000	0	5.5	0.0098
	0.5	10.422	3.5	8.5	
	1.0	37.163	8.5	11.5	
	2.0	146.750	23	17.5	
	5.0	1099.126	102.5	35.5	
	10.0	5778.551	355	65.5	
	20.0	32962.777	1310	125.5	
E. Swale	0.0	0.000	0	6	0.0178
	0.5	15.179	3.8	9	
	1.0	53.591	9	12	
	2.0	208.503	24	18	
	5.0	1528.317	105	36	
	10.0	7933.070	360	66	
	20.0	44877.685	1320	126	
SED BASIN	(This reach is a structure: Sed. Basin)				

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Structure Description - User Entered

Reach Identifier	Surface Area @ Crest (ac)	Height Above Crest (ft)	Surface Area @ Ht Above (ac)	Pipe Diameter (in)	Head on Pipe (ft)	Weir Length (ft)
SED BASIN						
	3.079	1.3	3.244			100
						135
						170

Cypress Creek Landfill
Southern Sediment Basin Emergency Spillway
Tuscaloosa County, Alabama

Structure Rating Details - Computed

Reach Idendifier	Stage (ft)	Pool Storage (ac ft)	Flows (cfs) @ Weir Length Length #1 100ft	Length #2 135ft	Length #3 170ft
Sed. Basin	0	0.00	0.000	0.000	0.000
	0.5	1.56	98.995	133.643	168.291
	1	3.14	280.000	378.000	476.000
	2	6.41	791.960	1069.145	1346.331
	5	16.98	3130.495	4226.168	5321.842
	10	37.14	8854.377	11953.410	15052.442
	20	86.96	25043.961	33809.348	42574.734

APPENDIX B 16b:

Run-Off: Southern Sediment Basin Emergency Spillway

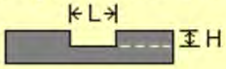
Blue Numbers	= Input data
Red Numbers	= Answers

Weir Calculations

Rectangular Weir

Coefficient of discharge - C is calculated from table 5-3 on page 5-40 in the sixth edition of Brater and King's Handbook of Hydraulics and is based on a 6" weir crest width.

Weir Coefficient (C) =	3.32		3.32		3.30		
	Find the Length		Find the Q		Find the Height		
Discharge (Q) =	559.92	cfs	565.91	cfs	559.92	cfs	
Height above Weir (H) =	1.30	feet	1.30	feet	1.30	feet	
Weir Crest Length (L) =	113.78	feet	115.00	feet	115.00	feet	

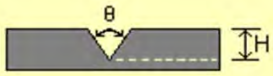


Horizontal Broad Crested Weir Equation

$Q = C\ L\ H^{3/2}$

V-Notch Weir

Weir coefficient (C) =	2.50	(2.50 considered to be a standard value for v-notched weirs)					
	Find the Angle (θ)		Find the Q		Find the Height		
Discharge (Q) =	0.12	cfs	0.12	cfs	0.12	cfs	
Height above weir (H) =	0.50	feet	0.50	feet	0.50	feet	
Theta (θ) in degrees =	29.9	degrees	30.0	degrees	30.0	degrees	



V-notch Weir Equation

$Q = C \tan(\theta/2)\ H^{5/2}$

APPENDIX B 17:

Run-Off: Faircloth Skimmer Sizing – Southern Sediment Basin

Calculate Skimmer Size

Basin Volume in Cubic Feet	487,500	Cu.Ft	**Skimmer Size**	**8.0**	Inch
Days to Drain*	5	Days	Orifice Radius	**4.0**	Inch[es]
			Orifice Diameter	**7.9**	Inch[es]

*In NC assume 3 days to drain

Estimate Volume of Basin

	Length	Width				
Top of water surface in feet			Feet	**VOLUME**	**0**	**Cu. Ft.**
Bottom dimensions in feet			Feet			
Depth in feet			Feet			

FLOW CAPACITIES (IN CU. FT.) FOR THE FAIRCLOTH SKIMMER®

Skimmer size	1.5"	2"	2.5"	3"	4"	5"	6"	8"
24 hours	1,728	3,283	6,234	9,774	20,109	32,832	51,840	97,978
2 day	3,456	6,566	12,468	19,548	40,218	65,664	103,680	195,956
3 day	5,184	9,849	18,702	29,322	60,327	98,496	155,520	293,934
4 day	6,912	13,132	24,936	39,096	80,436	131,328	207,360	391,912
5 day	8,640	16,415	31,170	48,870	100,545	164,160	259,200	489,890
6 day	10,368	19,698	37,404	58,644	120,654	196,992	311,040	587,868
7 day	12,096	22,981	43,638	68,418	140,763	229,824	362,880	685,846

APPENDIX B 18a:

Run-Off: WinTR-55 – Typical Slope Drain

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Slope Drain - Typical Catchment Area
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 6/9/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
SD Typ Cat	Typical Slope Drain Area	Outlet	2.5	80	0.1

Total area: 2.50 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Slope Drain - Typical Catchment Area
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Slope Drain - Typical Catchment Area
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
SD Typ Cat	18.47
REACHES	
OUTLET	18.47

Hogan

Cypress Creek Landfill
Slope Drain - Typical Catchment Area
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
SD Typ Cat	18.47 11.93
REACHES	
OUTLET	18.47

Hogan

Cypress Creek Landfill
Slope Drain - Typical Catchment Area
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
SD Typ Cat	2.50	0.100	80	Outlet	Typical Slope Drain Area

Total Area: 2.50 (ac)

Cypress Creek Landfill
Slope Drain - Typical Catchment Area
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
SD Typ Cat							
SHEET	30	0.3333	0.011				0.002
SHALLOW	30	0.3333	0.050				0.001
CHANNEL	200	0.0160	0.027	4.16	10.57	3.704	0.015
CHANNEL	420	0.3333	0.012	0.79	3.10	29.167	0.004
					Time of Concentration		0.1

Cypress Creek Landfill
Slope Drain - Typical Catchment Area
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
SD Typ Cat	Newly graded area (pervious only)	A	1.78	77
	Newly graded area (pervious only)	B	.723	86
	Total Area / Weighted Curve Number		2.5	80

APPENDIX B 18b:

Run-Off: Typical Slope Drain Curve Number

Composite Curve Number Calculation was based on the overall Soils Map for Cypress Creek Landfill

****
TYPICAL SLOPE DRAIN ITERATIONS
****

Terrace Contributing Area = 2.0 Acres

Bama 26.1% HSG: A = 0.522 Acres

Ruston 0.1% HSG: B = 0.002 Acres

Smithdale fine 28.8% HSG: B = 0.576 Acres

Smithdale-Flomaton 45.1% HSG: A = 0.902 Acres

HSG: A = 1.424 Acres

HSG: B = 0.578 Acres

Terrace Contributing Area = 2.5 Acres

Bama 26.1% HSG: A = 0.6525 Acres

Ruston 0.1% HSG: B = 0.0025 Acres

Smithdale fine 28.8% HSG: B = 0.72 Acres

Smithdale-Flomaton 45.1% HSG: A = 1.1275 Acres

HSG: A = 1.78 Acres

HSG: B = 0.723 Acres

APPENDIX B 19a:

Run-Off: WinTR-55 – Northern Slope Drain

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Northern Slope Drain Header Pipe
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 6/9/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
N Slope Dr	Landfill	Outlet	12.24	80	0.1

Total area: 12.24 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Northern Slope Drain Header Pipe
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Hogan

Cypress Creek Landfill
Northern Slope Drain Header Pipe
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
N Slope Dr	90.36
REACHES	
OUTLET	90.36

Hogan

Cypress Creek Landfill
Northern Slope Drain Header Pipe
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
N Slope Dr	90.36 11.93
REACHES	
OUTLET	90.36

Hogan

Cypress Creek Landfill
Northern Slope Drain Header Pipe
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
N Slope Dr	12.24	0.100	80	Outlet	Landfill

Total Area: 12.24 (ac)

Cypress Creek Landfill
Northern Slope Drain Header Pipe
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
N Slope Dr							
SHEET	30	0.3333	0.011				0.002
SHALLOW	30	0.3333	0.050				0.001
CHANNEL	596	0.0164	0.027	4.16	10.57	3.763	0.044
CHANNEL	550	0.3333	0.012	7.07	9.40	50.926	0.003
					Time of Concentration		0.1

Cypress Creek Landfill
Northern Slope Drain Header Pipe
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
N Slope Dr	Newly graded area (pervious only)	A	8.71	77
	Newly graded area (pervious only)	B	3.53	86
	Total Area / Weighted Curve Number		12.24	80

APPENDIX B 19b:

Run-Off: Northern Slope Drain Curve Number

Composite Curve Number Calculation was based on the overall Soils Map for Cypress Creek Landfill

****
CATCHMENT A SLOPE DRAIN
****

Catchment A Bottom Terrace = 1.64 Acres

Bama 26.1% HSG: A = 0.427 Acres

Ruston 0.1% HSG: B = .001636 Acres

Smithdale fine 28.8% HSG: B = 0.471 Acres

Smithdale-Flomaton 45.1% HSG: A = 0.738 Acres

HSG: A = 1.165 Acres

HSG: B = 0.473 Acres

Catchment A = 12.23 Acres

Bama 26.1% HSG: A = 3.19203 Acres

Ruston 0.1% HSG: B = .01223 Acres

Smithdale fine 28.8% HSG: B = 3.5224 Acres

Smithdale-Flomaton 45.1% HSG: A = 5.51573 Acres

HSG: A = 8.71 Acres

HSG: B = 3.53 Acres

APPENDIX B 20a:

Run-Off: WinTR-55 – Western Slope Drain

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Catchment F Slope Drain Header Pipe
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 6/9/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Cat F Pipe	Landfill	Outlet	4.69	80	0.1

Total area: 4.69 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment F Slope Drain Header Pipe
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Hogan

Cypress Creek Landfill
Catchment F Slope Drain Header Pipe
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Cat F Pipe	34.62
REACHES	
OUTLET	34.62

Hogan

Cypress Creek Landfill
Catchment F Slope Drain Header Pipe
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Cat F Pipe	34.62 11.93
REACHES	
OUTLET	34.62

Hogan

Cypress Creek Landfill
Catchment F Slope Drain Header Pipe
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Cat F Pipe	4.69	0.100	80	Outlet	Landfill

Total Area: 4.69 (ac)

Cypress Creek Landfill
Catchment F Slope Drain Header Pipe
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Cat F Pipe							
SHEET	30	0.3333	0.011				0.002
SHALLOW	30	0.3333	0.050				0.001
CHANNEL	300	0.0162	0.027	4.16	10.57	3.788	0.022
CHANNEL	495	0.3333	0.012	7.07	9.40	68.750	0.002
					Time of Concentration		0.1

Cypress Creek Landfill
Catchment F Slope Drain Header Pipe
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Cat F Pipe	Newly graded area (pervious only)	A	3.334	77
	Newly graded area (pervious only)	B	1.354	86
	Total Area / Weighted Curve Number		4.69	80

APPENDIX B 20b:

Run-Off: Northern Slope Drain Curve Number

Composite Curve Number Calculation was based on the overall Soils Map for Cypress Creek Landfill

****
CATCHMENT F SLOPE DRAIN
****

Catchment F Bottom Terrace = 0.88 Acres

Bama 26.1% HSG: A = 0.231 Acres

Ruston 0.1% HSG: B = 0.0009 Acres

Smithdale fine 28.8% HSG: B = 0.2545 Acres

Smithdale-Flomaton 45.1% HSG: A = 0.398 Acres

HSG: A = 0.629 Acres

HSG: B = 0.255 Acres

Catchment F = 4.68 Acres

Bama 26.1% HSG: A = 1.222 Acres

Ruston 0.1% HSG: B = 0.0047 Acres

Smithdale fine 28.8% HSG: B = 1.349 Acres

Smithdale-Flomaton 45.1% HSG: A = 2.112 Acres

HSG: A = 3.334 Acres

HSG: B = 1.354 Acres

APPENDIX B 21:

Run-Off: Slope Drain Pipe Flow Capacities

PROJECT: CYPRESS CREEK
PROJ NO: 501266
DATE: 6/9/2017
CALCULATED BY: MDH
DESIGN STORM: 25 YR.

PIPE FLOW - CALCULATED BY MANNINGS EQUATION

OUTLET PIPE	PIPE MATERIAL	PIPE LENGTH (FT) L	INLET WATER SURFACE ELEV	OUTLET WATER SURFACE ELEV	ELEV DIFF. (FT) H	HYD SLOPE (%) S	MANNINGS COEF (n) n	PIPE DIAM. (FT) D	FLOW AREA (SQ FT) A	WETTED PERIM (FT) WP	HYD RADIUS (FT) HR	PIPE VELOCITY (FPS) V	CAPACITY FLOW (CFS) Q	REQUIRED FLOW (CFS) Qr
Typical Slope Drain	12" HDPE CPP	420	500	360	140.0	33.33%	0.012	1	0.7854	3.1	0.25	28.37	22.3	18.47
Northern Slope Drain	24" HDPE CPP	559	507.25	360	147.3	26.35%	0.012	2	3.14159	6.3	0.50	40.04	125.8	90.36
Western Slope Drain	24" HDPE CPP	560	496	314	182.0	32.50%	0.012	2	3.14159	6.3	0.50	44.47	139.7	34.62

Typical Slope Drain ≈ 2.5 Acres = 200.0' (slope drain spacing) x 540.0' (longest landfill face)

APPENDIX B 22a:

Run-Off: WinTR-55 – Northern Slope Bottom (Largest) Terrace

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Catchment A Slope Drain 1-T (Bottom)
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 6/12/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Cat A 1-T	Landfill	Outlet	1.64	80	0.1

Total area: 1.64 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Cat A 1-T	12.09
REACHES	
OUTLET	12.09

Hogan

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Cat A 1-T	12.09 11.93
REACHES	
OUTLET	12.09

Hogan

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Cat A 1-T	1.64	0.100	80	Outlet	Landfill

Total Area: 1.64 (ac)

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Cat A 1-T							
SHEET	30	0.3333	0.011				0.002
SHALLOW	30	0.3333	0.050				0.001
CHANNEL	600	0.0167	0.011	10.00	20.10	11.111	0.015
CHANNEL	650	0.0154	0.011	10.00	20.10	10.621	0.017
					Time of Concentration		0.1

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Cat A 1-T	Newly graded area (pervious only)	A	1.165	77
	Newly graded area (pervious only)	B	.473	86
	Total Area / Weighted Curve Number		1.64	80

APPENDIX B 22b:

Run-Off: WinTR-55 – Western Slope Bottom (Largest) Terrace

WinTR-55 Current Data Description

--- Identification Data ---

User: Hogan
Project: Cypress Creek Landfill
SubTitle: Catchment A Slope Drain 1-T (Bottom)
State: Alabama
County: Tuscaloosa
Filename: W:\Projects\501266 Unison - Cypress Creek Landfill\Stormwater Design\Stormwater Management Syste

Date: 6/12/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Cat A 1-T	Landfill	Outlet	0.88	80	0.1

Total area: .88 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.09	5.01	5.87	7.18	8.29	9.5	3.59

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Hogan

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 25-Yr (cfs)
SUBAREAS	
Cat A 1-T	6.52
REACHES	
OUTLET	6.52

Hogan

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 25-Yr (cfs) (hr)
SUBAREAS	
Cat A 1-T	6.52 11.93
REACHES	
OUTLET	6.52

Hogan

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Cat A 1-T	.88	0.100	80	Outlet	Landfill

Total Area: .88 (ac)

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Cat A 1-T							
SHEET	30	0.3333	0.011				0.002
SHALLOW	30	0.3333	0.050				0.001
CHANNEL	645	0.0155	0.027	4.16	10.57	3.656	0.049
CHANNEL	96	0.3542	0.012	3.14	6.30	26.667	0.001
					Time of Concentration		0.1

Cypress Creek Landfill
Catchment A Slope Drain 1-T (Bottom)
Tuscaloosa County, Alabama

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Cat A 1-T	Newly graded area (pervious only)	A	.629	77
	Newly graded area (pervious only)	B	.255	86
	Total Area / Weighted Curve Number		.88	80

APPENDIX B 22c:

Run-Off: Terrace Flow Capacity

MANNING'S EQUATION for OPEN CHANNEL FLOW

Project: **Cypress Creek Landfill** Location: Tuscaloosa County, Alabama

By: MDH Date: 6/9/2017

Chk By: Date: version 12-2004

Mannings Formula

$Q = (1.486/n)AR_h^{2/3}S^{1/2}$

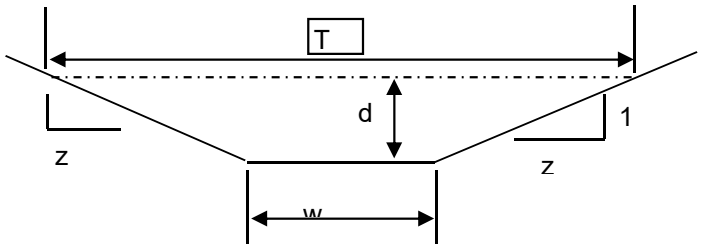
R = A/P

A = cross sectional area

P= wetted perimeter

S = slope of channel

n = Manning's roughness coefficient



$V = (1.49/n)R_h^{2/3}S^{1/2}$

Q = V x A

INPUT	
z (sideslope)=	3
z (sideslope)=	10
b (btm width, ft)=	0
d (depth, ft)=	0.8
S (slope, ft/ft)	0.016
n_{low} =	0.012
n_{high} =	0.0275

Clear Data Entry Cells

				Low N		High N			
Depth, ft	Area, sf	Wetted Perimeter, ft	Hydraulic Radius, ft	Velocity, fps	Flow, cfs	Velocity, fps	Flow, cfs		
0.8	4.16	10.57	0.39	8.41208946	34.9943	3.67073	15.2702	T =	10.4
								Dm =	0.400
				Sc low =	0.0029	Sc high =	0.0153		
				.7 Sc	1.3 Sc	.7 Sc	1.3 Sc		
				0.0020	0.0038	0.0107	0.0199		

s_c = critical slope ft / ft

T = top width of the stream

d_m = a/T = mean depth of flow

Created by: Mike O'Shea

APPENDIX B 22d:

Run-Off: Slope Drain Pipes Flow Capacities

PROJECT: CYPRESS CREEK
PROJ NO: 501266
DATE: 6/9/2017
CALCULATED BY: MDH
DESIGN STORM: 25 YR.

PIPE FLOW - CALCULATED BY MANNINGS EQUATION

OUTLET PIPE	PIPE MATERIAL	PIPE LENGTH (FT) L	INLET WATER SURFACE ELEV	OUTLET WATER SURFACE ELEV	ELEV DIFF. (FT) H	HYD SLOPE (%) S	MANNINGS COEF (n) n	PIPE DIAM. (FT) D	FLOW AREA (SQ FT) A	WETTED PERIM (FT) WP	HYD RADIUS (FT) HR	PIPE VELOCITY (FPS) V	CAPACITY FLOW (CFS) Q	REQUIRED FLOW (CFS) Qr
Typical Slope Drain	12" HDPE CPP	420	500	360	140.0	33.33%	0.012	1	0.7854	3.1	0.25	28.37	22.3	18.47
Northern Slope Drain	24" HDPE CPP	559	507.25	360	147.3	26.35%	0.012	2	3.14159	6.3	0.50	40.04	125.8	90.36
Western Slope Drain	24" HDPE CPP	560	496	314	182.0	32.50%	0.012	2	3.14159	6.3	0.50	44.47	139.7	34.62

Typical Slope Drain ≈ 2.5 Acres = 200.0' (slope drain spacing) x 540.0' (longest landfill face)

APPENDIX K

Buffer Waiver Variance

Quantum Environmental &
Engineering Services, LLC

S. Scott Story
Chief of Solid Waste Branch
Land Division
Alabama Department of Environmental Management
Montgomery, AL 36130-1463

Re: Unison Cypress Creek Landfill ADEM Permit No. 63-18
Minor Permit Modification Request

Dear Mr. Story

On behalf of Unison Environmental Services, LLC, Quantum Environmental and Engineering Services, LLC (QE2), is requesting a minor modification to the Unison Cypress Creek Landfill Permit (No. 63-18). The purpose of this minor-mod request to the permit is to remove the 100 ft (one hundred ft) buffer zone requirement on the northwest corner of the landfill, along a common property line owned by the Taylors. Attachment 1 contains the drawing package which shows the property with the buffer zone removed along the subject property line. The "blow up" of this area (sheet 3) demonstrates that the buffer zone requirements in the vicinity of the property line remain intact.

Attachment 2 contains the "Waiver of Buffer Zone" document executed between the Taylors and Unison Environmental Services, LLC waiving the requirement for the buffer zone along the joint property line.

Attachment 3 contains an executed "Reciprocal Easement Agreement", which among other things, allows Unison access to Groundwater monitoring well PMW-6. The easement area is indicated on Sheet 3 of Attachment 1.

Please feel free to call me if you have any questions or require additional information. My cell is (865) 607-8919

Best Regards,

George J. Hyfantis, Jr., Ph.D., P.E.
President

C:
Knox Horner, CCL
QE2 file 501506

ATTACHMENT 1

DRAWINGS

CYPRESS CREEK LANDFILL
MINOR PERMIT MODIFICATION
TUSCALOOSA COUNTY, ALABAMA
ADEM Permit No. 63-18

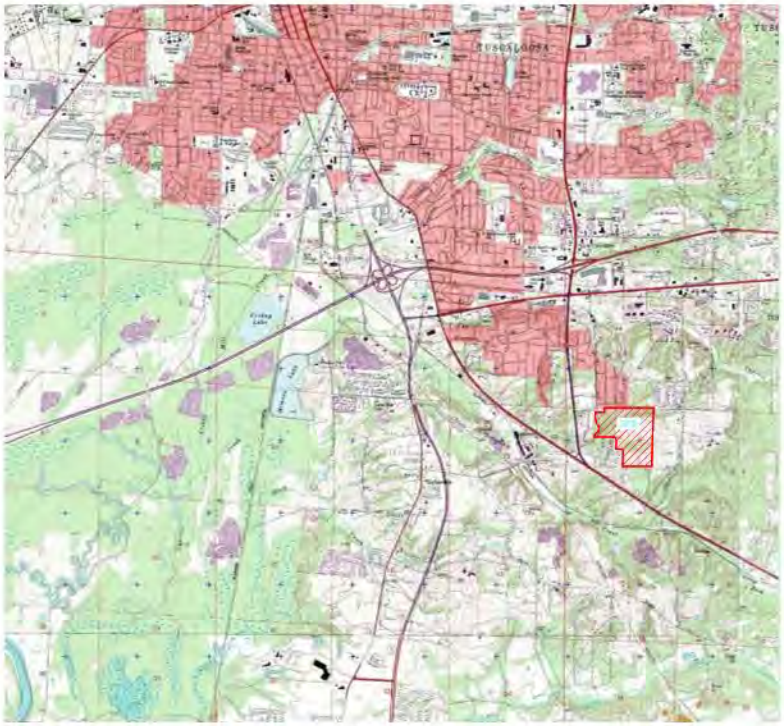
DRAWING INDEX

DWG	SHEET	TITLE
SHEET 1	1 OF 3	COVER SHEET
SHEET 2	2 OF 3	REVISED BUFFER ZONES
SHEET 3	3 OF 3	TAYLOR PROPERTY

SHEET 3 SURVEY PERFORMED BY:

HERNDON, HICKS & ASSOCIATES, INC.
Professional Land Surveyors

NOTES:
1. BEARINGS SHOWN HEREON ARE BASED ON STATE PLANE COORDINATES, NAD 83, ALABAMA WEST ZONE.
2. ELEVATION AND CONTOUR DATUM IS NAVD88.
3. BY GRAPHIC PLOTTING ALONE, WE FIND THE SUBJECT PROPERTY LIES WITHIN UNSHADED ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP NUMBER 01125C0515F, EFFECTIVE DATE SEPTEMBER 29, 2007.



VICINITY MAP

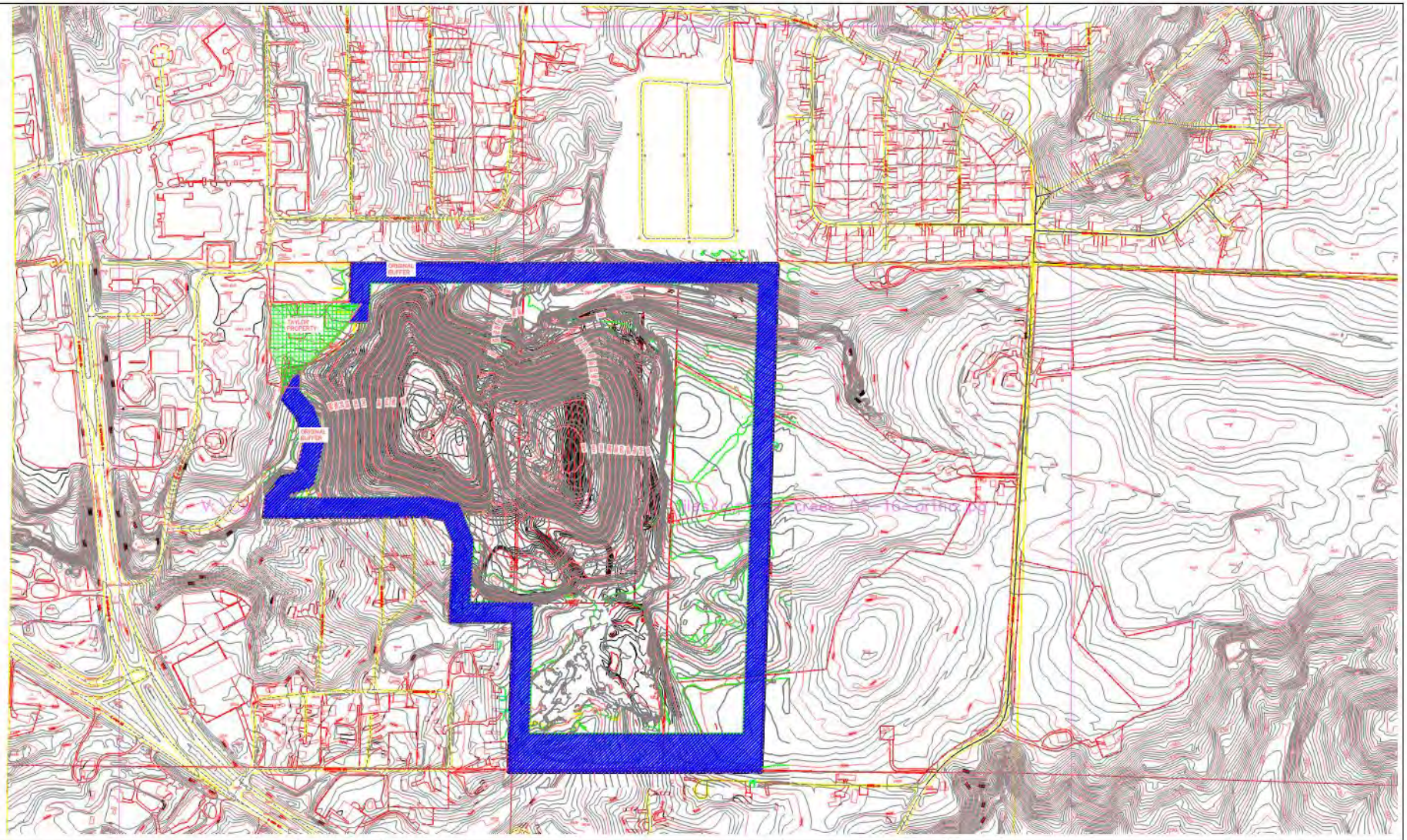
GRAPHIC SCALE

SHEET 2 LEGEND

PROPERTY LINE
INDEX CONTOURS
INTERMEDIATE CONTOURS
100' BUFFER LIMITS
200' BUFFER LIMITS
BUFFER ZONE
TAYLOR PROPERTY
ELECTRIC POWER LINE
EXISTING/PROPOSED ACCESS ROAD
BUILDING/STRUCTURE
SILT FENCE
FLOW PATH
VEGETATIVE BUFFER
MATTING & SEED

SHEET 3 LEGEND

Iron Pipe Found - size
Concrete Monument Found
Pine Knot or other monument Found
1/2" Rebar and Cap Set
Calculated Point - Not Monumented
Section Corner
Boundary Line
Government Survey
Adjacent Property Line or Right-of-Way Line
P.O.C. Point of Commencement
P.O.B. Point of Beginning
(S 33° 29'56" W) Data in Parentheses taken From Deed
Utility Pole w/Guy Anchor
Overhead Power Line
Overhead Phone Line
Overhead TV Cable
Underground Power Line
Underground Phone Line
Water Line
Gas Line
Sanitary Sewer Manhole
Sanitary Sewer Cleanout
Sanitary Sewer Line
Storm Drain Manhole
Storm Drain Line
Telephone Manhole
Electrical Manhole
Fence Line
Building Footprint
Concrete Surface
FF. El. = 100.00
Finish Floor Elevation at "X"
El. = 100.00
Spot Elevation at "X"
Fire Hydrant
Ramp or Stairs Up
Monitoring Well
Water Meter
Lamp
Water valve
Storm Drain Inlet
Telephone Box
Sign
Hose Bibb
Mailbox



NOTES:

DESIGNED BY:	GJH
CHECKED BY:	GJH
CADQA BY:	GJH
DRAWN BY:	CAO
SCALE:	1" = 500'
DATE:	9/17/2021
REVISION NO.:	XX

Quantum Environmental & Engineering Services, LLC
126 Dante Road
Knoxville, TN 37918
PHONE (865) 689-1395, FAX (865) 689-6844

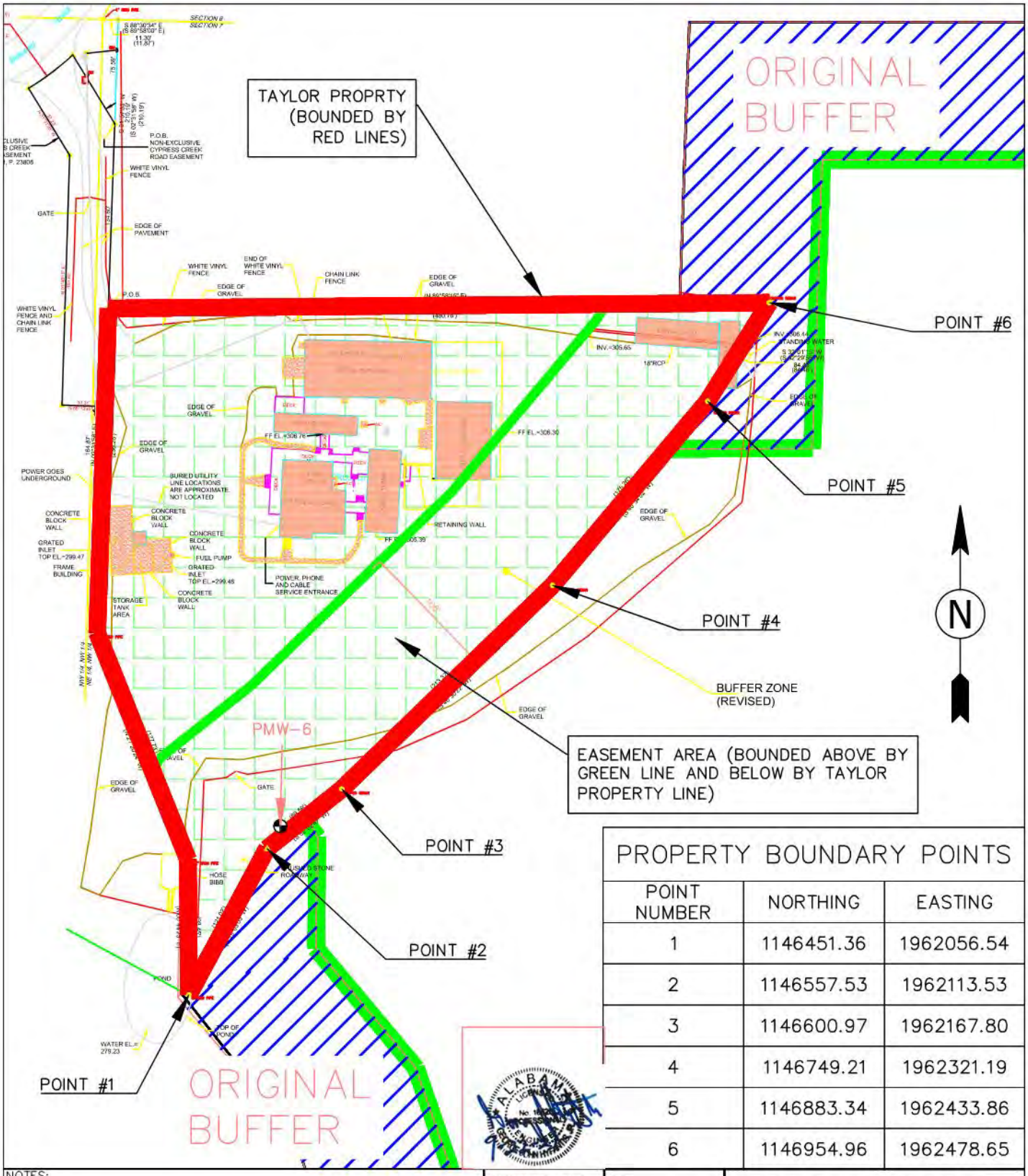
UNISON ENVIRONMENTAL SERVICES, LLC
6315 12 TH AVENUE EAST
TUSCALOOSA, ALABAMA 35405

CYPRESS CREEK LANDFILL

REVISED BUFFER ZONES

PROJECT NO.: 501266
FILENAME: 500XXX-X-X-XX.DWG

SHEET 2



PROPERTY BOUNDARY POINTS

POINT NUMBER	NORTHING	EASTING
1	1146451.36	1962056.54
2	1146557.53	1962113.53
3	1146600.97	1962167.80
4	1146749.21	1962321.19
5	1146883.34	1962433.86
6	1146954.96	1962478.65

NOTES:

Quantum Environmental & Engineering Services, LLC
126 Dante Road
Knoxville, TN 37918
PHONE (865) 689-1395, FAX (865) 689-6844

PROJECT MGR.:	GJH
GEOLOGIST:	MST
ENGINEER:	GJH
DRAWN BY:	CAO
SCALE:	1"=100'
DATE:	09-22-2021
REVISION NO.:	6

CYPRESS CREEK LANDFILL

SHEET 3
TAYLOR PROPERTY

PROJECT NO.: 501506

FILENAME: UNISON_BIND-Cyp-Crk-LF-Topo.DWG

ATTACHMENT 2

WAIVER OF BUFFER ZONE

THIS INSTRUMENT WAS PREPARED BY:

Shartsis Friese LLP
One Maritime Plaza, 18th Floor
San Francisco, CA 94111
Attention: Tess S. Brandwein, Esq

(Space above this line for Recorder's use)

SOURCE OF TITLE:
Deed Book 2008, Page 23808
Deed Book 2012, Page 4833

WAIVER OF BUFFER ZONE

THIS WAIVER OF BUFFER ZONE ("**Waiver**") is made and executed as of September 20th, 2021, by and between CONNIE TAYLOR AND RONNIE TAYLOR, husband and wife ("**Taylors**"), and UNISON ENVIRONMENTAL SERVICES, LLC, an Alabama limited liability company ("**Unison**").

RECITALS

A. The Taylors are the owners of certain real property located in the County of Tuscaloosa, State of Alabama, as more particularly described in **Exhibit A** attached hereto and incorporated herein by this reference (the "**Taylor Property**").

B. Unison is the owner of certain real property located in the County of Tuscaloosa, State of Alabama, more particularly described in **Exhibit B** attached hereto and incorporated herein by this reference ("**Unison Property**").

C. The Taylors and Unison are entering into this Waiver to provide for certain agreements with respect to the existing buffer zone.

NOW THEREFORE, for good and valuable consideration, the Taylors hereby agree to waive the one hundred foot (100') buffer zone related to the common property boundary line between the Taylor Property and the Unison Property.

Unison is concurrently with the mutual execution and acknowledgment of this Waiver delivering the same to the Alabama Department of Environmental Management in order to modify existing landfill permitted boundaries pursuant to that certain Permit #63-18 and exclude the Taylor Property from the buffer zone.

[Signatures and Notary Acknowledgments Appear on the Following Pages]

IN WITNESS WHEREOF, the parties hereto have caused this Waiver of Buffer Zone to be executed as of the day and year first set forth above.

TAYLORS:

UNISON:

Connie Taylor

Ronnie Taylor

UNISON ENVIRONMENTAL SERVICES, LLC,
an Alabama limited liability company

By: _____
Name: _____
Title: _____

STATE OF ALABAMA

COUNTY OF TUSCALOOSA

I, the undersigned authority, a Notary Public in and for the State of Alabama at Large, hereby certify that Connie Taylor and Ronnie Taylor, whose name is signed to the foregoing conveyance, and who is known to me, acknowledged before me on this day that, being informed of the contents of the conveyance, he/she executed the same voluntarily on the day the same bears date.

GIVEN under my hand and official seal this 17th day of September, 2021.

Frances Hunt
Notary Public

My commission expires:

MY COMMISSION EXPIRES JUNE 7, 2022



05119\686\9051203

STATE OF ALABAMA

COUNTY OF TUSCALOOSA

I, the undersigned authority, a Notary Public in and for the State of Alabama at Large, hereby certify that J. Knox Horner, whose name as President of UNISON ENVIRONMENTAL SERVICES, LLC, a limited liability company, is signed to the foregoing conveyance, and who is known to me, acknowledged before me on this day that, being informed of the contents of the conveyance, he/she, as such officer and with full authority, executed the same voluntarily for and as the act of said corporation.

GIVEN under my hand and official seal this 20th day of ~~August,~~ September 2021.

Megan Pauline Richards
Notary Public

My commission expires:
8/14/2022

MEGAN PAULINE RICHARDS
My Commission Expires
August 14, 2022

MEGAN PAULINE RICHARDS NOTARY PUBLIC STATE OF ALABAMA

EXHIBIT A

LEGAL DESCRIPTION
(Taylor Property)

A parcel of land lying and being in the Northeast Quarter of the Northwest Quarter of Section 7, Township 22 South, Range 9 West, Tuscaloosa County, Alabama, and being part of that property as described in Deed Book 1217, Page 633 recorded in the Probate Office of Tuscaloosa County, Alabama, and being more particularly described as follows: Commence at the Northwest corner of the said Northeast Quarter of the Northwest Quarter; thence South 89 degrees 58 minutes 00 seconds East a distance of 11.87 feet; thence South 02 degrees 31 minutes 58 seconds West a distance of210.19 feet to the point of beginning; thence South 89 degrees 58 minutes 15 seconds East a distance of 480.76 feet; thence South 32 degrees 29 minutes 56 seconds West a distance of 84.46 feet; thence South 40 degrees 34 minutes 52 seconds West a distance of 175 .26 feet; thence South 46 degrees 30 minutes 22 seconds West a distance of 213.32 feet; thence South 52 degrees 02 minutes 47 seconds West a distance of 69.59 feet; thence South 29 degrees 03 minutes 03 seconds West a distance of 121.02 feet; thence North 00 degrees 44 minutes 25 seconds East a distance of 98.45 feet; thence North 21 degrees 20 minutes 24 seconds West a distance of 177.73 feet; thence North 02 degrees 31 minutes 58 seconds East a distance of 236.26 feet to the point of beginning.

Non-Exclusive Cypress Creek Road Easement:

A parcel of land lying and being in the Northwest Quarter of Section 7, Township 22 South, Range 9 West, of the Huntsville Meridian Tuscaloosa County, Alabama, being a part of that property deeded to the County of Tuscaloosa, Alabama, and described in Deed Book 8 I 7, Page 184 as recorded in the Probate Office of Tuscaloosa County and being more particularly described as follows: Commence at the Northwest corner of the Northeast Quarter of the Northwest Quarter of said Section 7; thence South 89 degrees 58 minutes 00 seconds East along the North boundary of said Northeast Quarter of Northwest Quarter a distance of 11 .87 feet; thence South 02 degrees 31 minutes 58 seconds West a distance of 75.59 feet to the Point of Beginning, said point being on the East boundary of said "The County of Tuscaloosa, Alabama" property; continue thence along said East boundary South 02 degrees 3 I minutes 58 seconds West a distance of 205.94 feet; thence North 87 degrees 39 minutes 40 seconds West a distance of 31.31 feet; thence North 02 degrees 20 minutes 20 seconds East a distance of 181.80 feet; thence North 30 degrees 57 minutes 23 seconds West a distance of 57.23 feet to the Southeasterly right of way margin of the Old Boswell Road (25 feet from centerline) thence along the said curving Southeasterly right of way margin of Boswell Road (said curve concave Northwesterly having a radius of212.15 feet) a distance of 40.25 feet; thence South 30 degrees 57 minutes 24 seconds East a distance of 58.53 feet to the Point of Beginning.

EXHIBIT B

LEGAL DESCRIPTION
(Unison Property)

ALL THAT CERTAIN LOT OR PARCEL OF LAND SITUATED IN THE COUNTY OF TUSCALOOSA, STATE OF ALABAMA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

Tract III, Parcel 3:

PARCEL 3:

A PART OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, IN TUSCALOOSA COUNTY, ALABAMA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: AS A POINT OF BEGINNING, START AT THE NORTHEAST CORNER OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SAID SECTION 7, SAID POINT LYING ON THE SOUTH BOUNDARY OF JERUSALEM HEIGHTS, AS RECORDED IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA, IN PLAT BOOK 6 AT PAGE 22; THENCE RUN IN A WESTERLY DIRECTION ALONG THE NORTH BOUNDARY OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 AND THE SOUTH BOUNDARY OF JERUSALEM HEIGHTS FOR A DISTANCE OF 907.36 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 88 DEGREES 04 MINUTES 05 SECONDS TO THE LEFT, RUN IN A SOUTHERLY DIRECTION FOR A DISTANCE OF 210.00 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 88 DEGREES 03 MINUTES 41 SECONDS TO THE RIGHT, RUN IN A WESTERLY DIRECTION FOR A DISTANCE OF 417.83 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 87 DEGREES 30 MINUTES 11 SECONDS TO THE LEFT, RUN IN A SOUTHERLY DIRECTION FOR A DISTANCE OF 236.33 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 23 DEGREES 51 MINUTES 50 SECONDS TO THE LEFT, RUN IN A SOUTHEASTERLY DIRECTION FOR A DISTANCE OF 177.71 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 21 DEGREES 22 MINUTES 18 SECONDS TO THE RIGHT, RUN IN A SOUTHERLY DIRECTION FOR A DISTANCE OF 98.44 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 40 DEGREES 35 MINUTES 35 SECONDS TO THE LEFT, RUN IN A SOUTHEASTERLY DIRECTION FOR A DISTANCE OF 132.00 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 22 DEGREES 50 MINUTES 55 SECONDS TO THE RIGHT, CONTINUE IN A SOUTHEASTERLY DIRECTION FOR A DISTANCE OF 116.80 FEET TO A POINT ON A TRAVERSE LINE ALONG THE WEST BOUNDARY OF AN EXISTING DRAINAGE COURSE, SAID DRAINAGE COURSE BEING THE TRUE PROPERTY LINE; THENCE RUN ALONG SAID TRAVERSE LINE THE FOLLOWING COURSE CALLED: 1.) THENCE WITH A DEFLECTION ANGLE OF 35 DEGREES 01 MINUTES 35 SECONDS TO THE RIGHT, RUN IN A SOUTHWESTERLY DIRECTION FOR A DISTANCE OF 171.90 FEET TO A POINT; 2.) THENCE WITH A DEFLECTION ANGLE OF 54 DEGREES 41 MINUTES 45 SECONDS TO THE RIGHT, CONTINUE IN A SOUTHWESTERLY DIRECTION FOR A DISTANCE OF 82.55 FEET TO A POINT; 3.) THENCE WITH A DEFLECTION ANGLE OF 30 DEGREES 48 MINUTES 20 SECONDS TO THE LEFT, CONTINUE IN A SOUTHWESTERLY DIRECTION FOR A DISTANCE OF 121.85 FEET TO A POINT ON THE WEST BOUNDARY OF THE NORTHEAST 1/4

OF THE NORTHWEST 1/4 OF SAID SECTION 7; THENCE DEPARTING SAID TRAVERSE LINE AND DRAINAGE COURSE WITH A DEFLECTION ANGLE OF 39 DEGREES 41 MINUTES 29 SECONDS TO THE LEFT, RUN IN A SOUTHERLY DIRECTION ALONG THE WEST BOUNDARY OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 FOR A DISTANCE OF 131.97 FEET TO THE SOUTHWEST CORNER OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4; THENCE WITH A DEFLECTION ANGLE OF 91 DEGREES 41 MINUTES 42 SECONDS TO THE LEFT, RUN IN AN EASTERLY DIRECTION ALONG THE SOUTH BOUNDARY OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 FOR A DISTANCE OF 1326.72 FEET TO THE SOUTHEAST CORNER OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4; THENCE WITH A DEFLECTION ANGLE OF 87 DEGREES 56 MINUTES 35 SECONDS TO THE LEFT, RUN IN A NORTHERLY DIRECTION ALONG THE EAST BOUNDARY OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 FOR A DISTANCE OF 1330.45 FEET TO THE POINT OF BEGINNING.

LESS AND EXCEPT THE FOLLOWING:

A PARCEL OF LAND LYING AND BEING IN THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, TUSCALOOSA COUNTY. ALABAMA AND BEING PART OF THAT PROPERTY AS DESCRIBED IN DEED BOOK 1217, PAGE 633, RECORDED IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF THE SAID NORTHEAST QUARTER OF THE NORTHWEST QUARTER; THENCE SOUTH 89 DEGREES 58 MINUTES 00 SECONDS EAST A DISTANCE OF 11.87 FEET; THENCE SOUTH 02 DEGREES 31 MINUTES 58 SECONDS WEST A DISTANCE OF 210.19 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 89 DEGREES 58 MINUTES 15 SECONDS EAST A DISTANCE OF 480.76 FEET; THENCE SOUTH 32 DEGREES 29 MINUTES 56 SECONDS WEST A DISTANCE OF 84.46 FEET; THENCE SOUTH 40 DEGREES 34 MINUTES 52 SECONDS WEST A DISTANCE OF 175.26 FEET; THENCE SOUTH 46 DEGREES 30 MINUTES 22 SECONDS WEST A DISTANCE OF 213.32 FEET; THENCE SOUTH 52 DEGREES 02 MINUTES 47 SECONDS WEST A DISTANCE OF 69.59 FEET; THENCE SOUTH 29 DEGREES 03 MINUTES 03 SECONDS WEST A DISTANCE OF 121.02 FEET; THENCE NORTH 00 DEGREES 44 MINUTES 25 SECONDS EAST A DISTANCE OF 98.45 FEET; THENCE NORTH 21 DEGREES 20 MINUTES 24 SECONDS WEST A DISTANCE OF 177.73 FEET; THENCE NORTH 02 DEGREES 31 MINUTES 58 SECONDS EAST A DISTANCE OF 236.26 FEET TO THE POINT OF BEGINNING.

ALSO LESS AND EXCEPT PARCEL 1 AS DESCRIBED IN THE QUIT CLAIM DEED RECORDED FEBRUARY 23, 1994 IN BOOK 1171 PAGE 599 MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A PART OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, IN TUSCALOOSA COUNTY, ALABAMA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: START AT THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 7; THENCE RUN IN AN EASTERLY DIRECTION ALONG THE SOUTH LIKE OF SAID NORTHEAST QUARTER FOR A DISTANCE OF 621.30 FEET TO THE POINT OF BEGINNING; THENCE CONTINUE EASTERLY ALONG THE SOUTH LINE OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER FOR A DISTANCE OF 252.19 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 167 DEGREES 18 MINUTES TO THE LEFT, RUN IN A

NORTHWESTERLY DIRECTION FOR A DISTANCE OF 10.94 FEET TO A POINT, THENCE WITH A DEFLECTION ANGLE OF 13 DEGREES 17 MINUTES TO THE LEFT, RUN IN A WESTERLY DIRECTION FOR A DISTANCE OF 241.53 FEET TO THE POINT OF BEGINNING, SAID PARCEL CONTAINING .007 ACRES MORE OR LESS.

ATTACHMENT 3

RECIPROCAL EASEMENT AGREEMENT

THIS INSTRUMENT WAS PREPARED BY:

Shartsis Friese LLP
One Maritime Plaza, 18th Floor
San Francisco, CA 94111
Attention: Tess S. Brandwein, Esq

(Space above this line for Recorder's use)

SOURCE OF TITLE:
Deed Book 2008, Page 23808
Deed Book 2012, Page 4833

RECIPROCAL EASEMENT AGREEMENT
(Tuscaloosa, Alabama)

This RECIPROCAL EASEMENT AGREEMENT (this "**Agreement**") is entered into effective as of September 20 2021 (the "**Effective Date**"), by and between **CONNIE TAYLOR** and **RONNIE TAYLOR**, as husband and wife (collectively, the "**Taylors**"), and **UNISON ENVIRONMENTAL SERVICES, LLC**, an Alabama limited liability company ("**Unison**", and together with the Taylors, collectively, the "**Owners**" and each an "**Owner**").

RECITALS

A. The Taylors are the owners of certain real property located in the County of Tuscaloosa, State of Alabama, as more particularly described in **Exhibit A** attached hereto and incorporated herein by this reference (the "**Taylor Property**").

B. Unison is the owner of certain real property located in the County of Tuscaloosa, State of Alabama, more particularly described in **Exhibit B** attached hereto and incorporated herein by this reference ("**Unison Property**"; and together with the Taylor Property, collectively, the "**Properties**" and each a "**Property**").

C. The Owners are entering into this Agreement to provide for certain non-exclusive access easements burdening and benefiting each Property, and otherwise address certain matters related to the Properties, all as provided herein.

NOW THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each Owner, and in consideration of the mutual promises contained herein, the Owners hereby agree as follows:

1. GRANT OF EASEMENTS

1.1 Access Easements

(a) The Taylors hereby grant and convey to Unison, for the benefit of the Unison Property, a non-exclusive easement on, over and across that certain portion of the Taylor Property as more particularly described on **Exhibit C** attached hereto (the "**Taylor Easement**") for the purpose of access, ingress and egress to and from the Taylor Property.

(b) Unison hereby grants and conveys to the Taylors, for the benefit of the Taylor Property, a non-exclusive easement on, over and across that certain portion of the Unison Property as more particularly described on **Exhibit D** attached hereto (the "**Unison Easement**") for the purpose of access, ingress and egress to and from the Unison Property.

The Taylor Easement and the Unison Easement are collectively referred to herein as the "**Access Easements**".

1.2 Permitted Users

. The Access Easements shall be available for use only by the Owners and the tenants, occupants and licensees of the improvements, if any, located on the Properties, including employees, customers, invitees and guests thereof (collectively, "**Permitted Users**"). Any reference to the Permitted Users of an Owner shall mean the Permitted Users of the improvements located on the Property owned by such Owner.

2. CHARACTER OF EASEMENTS

Except as limited or otherwise provided herein, the easements created herein are non-exclusive easements appurtenant to and for the benefit of the Properties, and shall be perpetual and shall constitute easements and covenants running with the land.

3. USE OF EASEMENTS

3.1 No Interference

. No Permitted User shall avail itself of rights under the easements created herein in such a manner as to unreasonably interfere with the rights of any Owner to use and enjoy both the easements and such Owner's property. Except for emergencies, an Owner shall notify the other Owner in writing at least ten (10) days prior to the commencement of any construction or repair of the Access Easements. No Owner, or such Owner's members, employees, guests, visitors, tenants, subtenants, patrons, vendors and invitees, shall have the right to install, construct, maintain, or shall permit the installation, construction or maintenance of, any additional fence, wall or other improvement following the Effective Date that would block the access rights granted herein.

3.2 Rules and Regulations

. Each Owner shall have the right to establish such reasonable rules and regulations affecting such Owner's Property as are consistent with the terms of this Agreement, as such Owner may deem desirable for the proper and efficient operation and maintenance of such Owner's Property. The Permitted Users shall comply with such reasonable rules and regulations.

3.3 No Hazardous Materials

. In exercising its rights hereunder, no Owner or its Permitted Users shall use, or permit the use of, Hazardous Materials on, about, under or in any other Owner's Property; provided, that the foregoing shall not prohibit the waste associated with Unison's landfill operations potentially containing Hazardous Materials. Each Owner shall indemnify, protect, defend and hold harmless the other Owner from and against all claims, suits, actions, demands, costs, damages and losses of any kind, including, without limitation, attorneys' fees, costs of investigation, litigation and remedial response, arising out of any Hazardous Material used or permitted to be used by the indemnifying Owner or its Permitted Users on, about, under or in any other Owner's Property. For the purpose of this Section, the term (i) **"Hazardous Materials"** shall mean petroleum products, asbestos, polychlorinated biphenyls, radioactive materials and all other dangerous, toxic or hazardous pollutants, contaminants, chemicals, materials or substances listed or identified in, or regulated by, any Environmental Law, and (ii) **"Environmental Laws"** shall mean all federal, state, county, municipal, local and other statutes, laws, ordinances and regulations which relate to or deal with human health or the environment, all as may be amended from time to time.

3.4 Compliance with Laws

. Each Owner hereby agrees that all use of the easements provided herein shall be in compliance with all applicable governmental laws, rules, regulations, orders and ordinances.

3.5 Taxes

. All property taxes and assessments for a Property shall be the obligation of the Owner of such Property.

4. CONSTRUCTION, MAINTENANCE AND REPAIR

As part of any construction of improvements, repairs or maintenance on its Property, an Owner may temporarily close certain portions of its Property for short periods of time (not to exceed thirty (30) days), so long as limited access to each Property shall remain open at all times.

5. DEFAULT

If an Owner fails to perform any of its obligations under this Agreement, then the other Owner shall, upon Reasonable Notice (as hereinafter defined) to such defaulting Owner, have the right, but not the obligation (in addition to all of the other rights and remedies available to such non-defaulting Owner, at law or in equity, including, but not limited to, damages and/or injunctive relief) to repair or maintain, or cause to be repaired or maintained, the area of the easement which the defaulting Owner failed to maintain or repair, including the right to enter upon the property of the defaulting Owner as may reasonably be necessary or convenient in connection therewith. The defaulting Owner shall, upon written demand by the non-defaulting Owner performing such corrective work, reimburse the non-defaulting Owner for all of its costs and expenses incurred by such non-defaulting Owner in connection therewith. Any such notice sent to a defaulting Owner shall be given in the manner provided in Section 7 below. As used herein, **"Reasonable Notice"** means thirty (30) days' prior written notice; provided, however, that if due to the nature of the default, a period of greater than thirty (30) days is required to cure the same, then the defaulting Owner shall have such additional time as shall be reasonably required to cure the default,

provided that the defaulting Owner commences such cure within the aforesaid thirty (30) day period and thereafter diligently proceeds to complete such cure.

6. INDEMNITY

To the fullest extent permitted by law, each Owner shall defend, indemnify and save the other Owner harmless from and against any and all liability whatsoever on account of any damage, injury, lien, claim, demands or causes of action related to the use by the indemnifying Owner or its Permitted Users of the easements, or to the breach by the indemnifying Owner or its Permitted Users of its duties and obligations under this Agreement. The obligations to indemnify set forth above shall include reasonable attorneys' fees and investigation costs and all other reasonable costs, expenses and liabilities incurred.

7. NOTICES

All notices given pursuant to this Agreement shall be in writing and shall be given by personal delivery, by United States mail or United States express mail postage or delivery charge prepaid, return receipt requested, or by an established express delivery service (such as Federal Express or United Parcel Service), sent to the person and address shown on the then current real property tax rolls of Tuscaloosa County. The parties expressly agree that notices given by attorneys on behalf of their client(s) in the manner provided in this subsection are effective and recognized notice pursuant to this Agreement. For the purpose of this Agreement, the term "receipt" shall mean the earlier of any of the following: (a) the date of delivery of the notice or other document to the address specified pursuant to this Section as shown on the return receipt, (b) the date of actual receipt of the notice or other document by the person or entity specified pursuant to this Section, or (c) in the case of refusal to accept delivery or inability to deliver the notice or other document, the earlier of (1) the date of the attempted delivery or refusal to accept delivery, (2) the date of the postmark on the return receipt, or (3) the date of receipt of notice of refusal or notice of non-delivery by the sending party.

8. MISCELLANEOUS

8.1 Owner

. **"Owner"** shall mean the person holding fee simple interest of record to any Property, excluding those having an interest of record merely as security for the performance of an obligation. Each Owner shall have liability under this Agreement only with respect to events, activities or occurrences during the period of time when it owns a Property, which liability shall survive the sale of a Property by an Owner but only with respect to events, activities or occurrences prior to such sale.

8.2 Not a Public Dedication

. Nothing contained herein shall be deemed to be a gift or dedication of any portion of the Properties to the general public or for the general public or for any public purposes whatsoever, it being the intention of the Owners that this Agreement shall be strictly limited to and for the purposes herein expressed. The right of the public or any person to make any use whatsoever of the properties and the Access Easements described herein is by permission only, and subject to control of the Owners, unless otherwise provided in a written or recorded map, agreement, deed or dedication.

8.3 Attorneys' Fees

. If any Owner shall institute an action or proceeding against the any other Owner, including any arbitration or mediation proceedings, relating to the provisions of this Agreement, or any default or alleged default hereunder, then the unsuccessful Owner in such action or proceeding shall reimburse the successful Owner therein for the reasonable costs (including court costs and reasonable attorneys' and experts' fees) incurred therein by such successful Owner.

8.4 Successors and Assigns

. This Agreement shall bind and inure to the benefit of and burden the respective heirs, personal representatives, successors and assigns of each Owner. No Permitted User other than the Owners shall have the right to enforce any obligations under this Agreement against any Owner. The only rights that any Permitted User other than an Owner shall have are those rights granted to such Permitted User under the lease or occupancy agreement between such Permitted User and an Owner, which rights may only be exercised against the Owner that is a party to such lease or occupancy agreement.

8.5 Headings

. The headings, captions and numbering system provided herein are included only for convenience of reference and under no circumstances shall they be considered in interpreting the provisions of this Agreement.

8.6 Singular and Plural/Gender

. Where required for proper interpretation, words in the singular tense shall include the plural, and vice versa; the masculine gender shall include the neuter and the feminine, and vice versa.

8.7 Severability

. Invalidation of any of the provisions contained in this Agreement, or of the application thereof to any Owner or circumstance by judgment or court order, shall in no way affect any of the other provisions hereof or the application thereof to any other Owner or circumstance, as applicable, and the other provisions herein shall continue in full force and effect in the same manner as if such unenforceable provision had never been contained herein.

8.8 Amendments

. This Agreement may be amended only by a written agreement signed by all of the then current Owners of the property and shall be effective only when recorded in the Official Records of the County of Tuscaloosa.

8.9 No Waiver

. The failure of any Owner to insist upon strict performance of any of the terms, covenants or conditions hereof shall not be deemed a waiver of any rights or remedies which that Owner may have hereunder, or at law or in equity, and shall not be deemed a waiver of any subsequent breach or default of any of such terms, covenants or conditions. No waiver by any Owner of any default under this Agreement shall be effective or be binding on such Owner unless made in writing by such Owner, and no such waiver shall be implied from any omission by such Owner to take action with respect to a default.

No express written waiver of any default shall affect any other default or cover any other period of time other than any default and/or period of time specified in such express waiver. One or more written waivers of any default under any provision of this Agreement shall not be deemed to be a waiver of any subsequent default in the performance of the same provision or any other term or provision contained in this Agreement.

8.10 Governing Law

. This Agreement shall be governed by the laws of the State of Alabama.

8.11 Mortgagee Protection

. No portion of this Agreement or any amendment thereof shall operate to defeat or render invalid, in whole or in part, the rights of the beneficiary, insurer, guarantor or holder of a mortgage or deed of trust encumbering any portion of the Properties; provided that after foreclosure of any mortgage or deed of trust, the foreclosed property shall remain subject to this Agreement.

8.12 Enforcement

. Each Owner hereby acknowledges that the rights granted hereunder are of a special and unique kind and character and that if there is a breach of any covenant, condition or restriction contained herein by any Owner, the other Owner would not have any adequate remedy at law. Therefore, in addition to any remedies at law or as provided herein, this Agreement may be enforced by an action for specific performance and such other equitable relief as is provided under the laws of the State of Alabama.

8.13 Estoppel

. Each Owner hereby covenants that within ten (10) business days after written request of any other Owner, it will issue to such other Owner or to any mortgagee, prospective mortgagee, or prospective purchaser of such Owner's Property an estoppel certificate stating: (a) whether the Owner to whom the request has been directed knows of any default under this Agreement and if there are known defaults specifying the nature thereof; (b) whether, to such Owner's knowledge, this Agreement has been modified or amended in any way (and if it has, then stating the nature thereof); and (c) whether, to such Owner's knowledge, this Agreement as of that date is in full force and effect.

[*Signatures Appear on the Following Page(s)*]

STATE OF ALABAMA

COUNTY OF TUSCALOOSA

I, the undersigned authority, a Notary Public in and for the State of Alabama at Large, hereby certify that V. Knox Horner, whose name as President of Unison Environmental Services, LLC, a limited liability company, is signed to the foregoing conveyance, and who is known to me, acknowledged before me on this day that, being informed of the contents of the conveyance, he/she, as such officer and with full authority, executed the same voluntarily for and as the act of said corporation.

GIVEN under my hand and official seal this 20th day of September, 2021.

Megan Pauline Richards
Notary Public

My commission expires:
8/14/2022

MEGAN PAULINE RICHARDS
My Commission Expires
August 14, 2022

NOTARY PUBLIC
MEGAN PAULINE RICHARDS
STATE OF ALABAMA

05119\686\9051203

IN WITNESS WHEREOF, this Agreement has been executed as of the Effective Date.

TAYLORS:

Connie Taylor, an individual

Ronnie Taylor, an individual

UNISON:

UNISON ENVIRONMENTAL SERVICES, LLC,
an Alabama limited liability company

By:
Name:
Title:

[*NOTARY ACKNOWLEDGMENT PAGES FOLLOW*]

STATE OF ALABAMA

COUNTY OF TUSCALOOSA

I, the undersigned authority, a Notary Public in and for the State of Alabama at Large, hereby certify that Connie Taylor and Ronnie Taylor, whose name is signed to the foregoing conveyance, and who is known to me, acknowledged before me on this day that, being informed of the contents of the conveyance, he/she executed the same voluntarily on the day the same bears date.

GIVEN under my hand and official seal this 17th day of August, 2021.

Frances Hunt
Notary Public

My commission expires:

MY COMMISSION EXPIRES JUNE 7, 2022



EXHIBIT A

LEGAL DESCRIPTION
(Taylor Property)

A parcel of land lying and being in the Northeast Quarter of the Northwest Quarter of Section 7, Township 22 South, Range 9 West, Tuscaloosa County, Alabama, and being part of that property as described in Deed Book 1217, Page 633 recorded in the Probate Office of Tuscaloosa County, Alabama, and being more particularly described as follows: Commence at the Northwest corner of the said Northeast Quarter of the Northwest Quarter; thence South 89 degrees 58 minutes 00 seconds East a distance of 11.87 feet; thence South 02 degrees 31 minutes 58 seconds West a distance of210.19 feet to the point of beginning; thence South 89 degrees 58 minutes 15 seconds East a distance of 480.76 feet; thence South 32 degrees 29 minutes 56 seconds West a distance of 84.46 feet; thence South 40 degrees 34 minutes 52 seconds West a distance of 175 .26 feet; thence South 46 degrees 30 minutes 22 seconds West a distance of 213.32 feet; thence South 52 degrees 02 minutes 47 seconds West a distance of 69.59 feet; thence South 29 degrees 03 minutes 03 seconds West a distance of 121.02 feet; thence North 00 degrees 44 minutes 25 seconds East a distance of 98.45 feet; thence North 21 degrees 20 minutes 24 seconds West a distance of 177.73 feet; thence North 02 degrees 31 minutes 58 seconds East a distance of 236.26 feet to the point of beginning.

Non-Exclusive Cypress Creek Road Easement:

A parcel of land lying and being in the Northwest Quarter of Section 7, Township 22 South, Range 9 West, of the Huntsville Meridian Tuscaloosa County, Alabama, being a part of that property deeded to the County of Tuscaloosa, Alabama, and described in Deed Book 8 I 7, Page 184 as recorded in the Probate Office of Tuscaloosa County and being more particularly described as follows: Commence at the Northwest corner of the Northeast Quarter of the Northwest Quarter of said Section 7; thence South 89 degrees 58 minutes 00 seconds East along the North boundary of said Northeast Quarter of Northwest Quarter a distance of 11 .87 feet; thence South 02 degrees 31 minutes 58 seconds West a distance of 75.59 feet to the Point of Beginning, said point being on the East boundary of said "The County of Tuscaloosa, Alabama" property; continue thence along said East boundary South 02 degrees 3 I minutes 58 seconds West a distance of 205.94 feet; thence North 87 degrees 39 minutes 40 seconds West a distance of 31.31 feet; thence North 02 degrees 20 minutes 20 seconds East a distance of 181.80 feet; thence North 30 degrees 57 minutes 23 seconds West a distance of 57.23 feet to the Southeasterly right of way margin of the Old Boswell Road (25 feet from centerline) thence along the said curving Southeasterly right of way margin of Boswell Road (said curve concave Northwesterly having a radius of212.15 feet) a distance of 40.25 feet; thence South 30 degrees 57 minutes 24 seconds East a distance of 58.53 feet to the Point of Beginning.

EXHIBIT B

LEGAL DESCRIPTION
(Unison Property)

ALL THAT CERTAIN LOT OR PARCEL OF LAND SITUATED IN THE COUNTY OF TUSCALOOSA, STATE OF ALABAMA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

Tract III, Parcel 3:

PARCEL 3:

A PART OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST, IN TUSCALOOSA COUNTY, ALABAMA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: AS A POINT OF BEGINNING, START AT THE NORTHEAST CORNER OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SAID SECTION 7, SAID POINT LYING ON THE SOUTH BOUNDARY OF JERUSALEM HEIGHTS, AS RECORDED IN THE PROBATE OFFICE OF TUSCALOOSA COUNTY, ALABAMA, IN PLAT BOOK 6 AT PAGE 22; THENCE RUN IN A WESTERLY DIRECTION ALONG THE NORTH BOUNDARY OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 AND THE SOUTH BOUNDARY OF JERUSALEM HEIGHTS FOR A DISTANCE OF 907.36 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 88 DEGREES 04 MINUTES 05 SECONDS TO THE LEFT, RUN IN A SOUTHERLY DIRECTION FOR A DISTANCE OF 210.00 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 88 DEGREES 03 MINUTES 41 SECONDS TO THE RIGHT, RUN IN A WESTERLY DIRECTION FOR A DISTANCE OF 417.83 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 87 DEGREES 30 MINUTES 11 SECONDS TO THE LEFT, RUN IN A SOUTHERLY DIRECTION FOR A DISTANCE OF 236.33 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 23 DEGREES 51 MINUTES 50 SECONDS TO THE LEFT, RUN IN A SOUTHEASTERLY DIRECTION FOR A DISTANCE OF 177.71 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 21 DEGREES 22 MINUTES 18 SECONDS TO THE RIGHT, RUN IN A SOUTHERLY DIRECTION FOR A DISTANCE OF 98.44 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 40 DEGREES 35 MINUTES 35 SECONDS TO THE LEFT, RUN IN A SOUTHEASTERLY DIRECTION FOR A DISTANCE OF 132.00 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 22 DEGREES 50 MINUTES 55 SECONDS TO THE RIGHT, CONTINUE IN A SOUTHEASTERLY DIRECTION FOR A DISTANCE OF 116.80 FEET TO A POINT ON A TRAVERSE LINE ALONG THE WEST BOUNDARY OF AN EXISTING DRAINAGE COURSE, SAID DRAINAGE COURSE BEING THE TRUE PROPERTY LINE; THENCE RUN ALONG SAID TRAVERSE LINE THE FOLLOWING COURSE CALLED: 1.) THENCE WITH A DEFLECTION ANGLE OF 35 DEGREES 01 MINUTES 35 SECONDS TO THE RIGHT, RUN IN A SOUTHWESTERLY DIRECTION FOR A DISTANCE OF 171.90 FEET TO A POINT; 2.) THENCE WITH A DEFLECTION ANGLE OF 54 DEGREES 41 MINUTES 45 SECONDS TO THE RIGHT, CONTINUE IN A SOUTHWESTERLY DIRECTION FOR A DISTANCE OF 82.55 FEET TO A POINT; 3.) THENCE WITH A DEFLECTION ANGLE OF 30 DEGREES 48 MINUTES 20 SECONDS TO THE LEFT, CONTINUE IN A SOUTHWESTERLY DIRECTION FOR A

OF THE NORTHWEST QUARTER FOR A DISTANCE OF 252.19 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 167 DEGREES 18 MINUTES TO THE LEFT, RUN IN A NORTHWESTERLY DIRECTION FOR A DISTANCE OF 10.94 FEET TO A POINT; THENCE WITH A DEFLECTION ANGLE OF 13 DEGREES 17 MINUTES TO THE LEFT, RUN IN A WESTERLY DIRECTION FOR A DISTANCE OF 241.53 FEET TO THE POINT OF BEGINNING; SAID PARCEL CONTAINING .007 ACRES MORE OR LESS.

EXHIBIT C

LEGAL DESCRIPTION
(Taylor Easement)

ALL THAT CERTAIN LOT OR PARCEL OF LAND SITUATED IN THE COUNTY OF TUSCALOOSA, STATE OF ALABAMA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

TRACT VI:

A PARCEL OF LAND LYING AND BEING IN THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST OF THE HUNTSVILLE MERIDIAN TUSCALOOSA COUNTY, ALABAMA, CONTAINING 0.15 ACRES, MORE OR LESS, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF NORTHWEST QUARTER OF SAID SECTION 7; THENCE SOUTH 07 DEGREES 36 MINUTES 53 SECONDS EAST A DISTANCE OF 558.97 FEET TO THE POINT OF BEGINNING; THENCE NORTH 86 DEGREES 00 MINUTES 52 SECONDS EAST A DISTANCE OF 11.80 FEET; THENCE NORTH 85 DEGREES 30 MINUTES 36 SECONDS EAST A DISTANCE OF 19.86 FEET; THENCE NORTH 68 DEGREES 24 MINUTES 41 SECONDS EAST A DISTANCE OF 10.39 FEET; CONTINUE THENCE NORTH 82 DEGREES 07 MINUTES 06 SECONDS EAST A DISTANCE OF 83.17 FEET; THENCE SOUTH 46 DEGREES 28 MINUTES 05 SECONDS WEST A DISTANCE OF 36.76 FEET; THENCE SOUTH 52 DEGREES 00 MINUTES 50 SECONDS WEST A DISTANCE OF 69.59 FEET; THENCE SOUTH 28 DEGREES 30 MINUTES 19 SECONDS WEST A DISTANCE OF 101.71 FEET; THENCE NORTH 02 DEGREES 37 MINUTES 24 SECONDS EAST A DISTANCE OF 140.08 FEET TO THE POINT OF BEGINNING.

EXHIBIT D

LEGAL DESCRIPTION
(Unison Easement)

ALL THAT CERTAIN LOT OR PARCEL OF LAND SITUATED IN THE COUNTY OF TUSCALOOSA, STATE OF ALABAMA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

TRACT V:

A PARCEL OF LAND LYING AND BEING IN THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 22 SOUTH, RANGE 9 WEST OF THE HUNTSVILLE MERIDIAN TUSCALOOSA COUNTY, ALABAMA, CONTAINING 0.36 ACRES, MORE OR LESS, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF NORTHWEST QUARTER OF SAID SECTION 7; THENCE SOUTH 89 DEGREES 58 MINUTES 00 SECONDS EAST ALONG THE NORTH BOUNDARY OF SAID NORTHEAST QUARTER OF NORTHWEST QUARTER A DISTANCE OF 11.87 FEET; THENCE SOUTH 02 DEGREES 05 MINUTES 20 SECONDS WEST A DISTANCE OF 210.57 FEET; THENCE SOUTH 89 DEGREES 56 MINUTES 07 SECONDS EAST A DISTANCE OF 480.37 FEET; THENCE SOUTH 32 DEGREES 27 MINUTES 39 SECONDS WEST A DISTANCE OF 13.63 FEET TO THE POINT OF BEGINNING, SAID POINT BEING ON THE EAST BOUNDARY OF SAID "TRACT III PARCEL 3" PROPERTY; CONTINUE THENCE ALONG SAID EAST BOUNDARY SOUTH 05 DEGREES 03 MINUTES 06 SECONDS WEST A DISTANCE OF 129.51 FEET; THENCE SOUTH 49 DEGREES 06 MINUTES 21 SECONDS WEST A DISTANCE OF 149.26 FEET; THENCE SOUTH 54 DEGREES 57 MINUTES 27 SECONDS WEST A DISTANCE OF 99.20 FEET; THENCE SOUTH 67 DEGREES 01 MINUTES 01 SECONDS WEST A DISTANCE OF 76.03 FEET; THENCE SOUTH 82 DEGREES 07 MINUTES 06 SECONDS WEST A DISTANCE OF 4.15 FEET; THENCE NORTH 46 DEGREES 28 MINUTES 05 SECONDS EAST A DISTANCE OF 176.56 FEET; THENCE NORTH 40 DEGREES 32 MINUTES 35 SECONDS EAST A DISTANCE OF 175.26 FEET;THENCE NORTH 32 DEGREES 27 MINUTES 39 SECONDS EAST A DISTANCE OF 70.10 FEET TO THE POINT OF BEGINNING.

APPENDIX L

Groundwater Monitoring Plan

GROUNDWATER MONITORING PLAN

Cypress Creek Landfill

ADEM Permit No. 63-18

Tuscaloosa County, Alabama

July 2023

Promus Project No. 230087

(revised January 2025)

Prepared for:

Cypress Creek Landfill, LLC

Prepared by:

PROMUS ENGINEERING

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1. INTRODUCTION

This Groundwater Monitoring Plan (GWMP) presents the groundwater sampling and analysis program for Cypress Creek Landfill (the "Facility"). This document supersedes the previous Groundwater Monitoring Plan by QE2, LLC dated August 4, 2017 (amended February 2018). This document has been prepared as part of the Facility's 2023 permit renewal application and revised based on comments provided by the Alabama Department of Environmental Management (ADEM)[1].

This GWMP has been revised from the July 2023 submittal to include inter-well statistical methods. As discussed in a meeting between representatives of Cypress Creek Landfill and ADEM, it was agreed that background monitoring be extended for the facility so that data with historically higher reporting limits may be excluded from statistical analysis. The exclusion of these higher reporting limits will allow for a more precise determination of background levels and a more conservative statistical analysis of future data.

Additionally, several changes to the current groundwater monitoring network are proposed to accommodate future construction and to optimize the monitoring system. These proposed changes are provided in section 1.4.

1.1 Facility Background

The facility is located on several parcels of land totaling approximately 120 acres located in Tuscaloosa County, Alabama near, but outside the city limits of Tuscaloosa, Alabama. More specifically, the facility is described as located in part of the Northeast ¼ of the Northwest ¼ of Section 7, Township 22 South, Range 9 West. The facility mailing and physical address is identified as 6315 12th Avenue E, Tuscaloosa, Alabama 35405. The facility historically was operated by several different owners, most recently Unison Environmental Services, LLC. The permit was transferred to its current owner on October 21, 2021. A Site Location map is provided as **Figure 1**.

1.2 Plan Overview

This GWMP describes the groundwater monitoring network, frequencies of monitoring for each well, monitoring parameters, a sampling and analysis plan, and an appropriate statistical evaluation methodology. All elements of this program comply with Alabama Department of Environmental Management (ADEM) Administrative Code r. 335-13-4-.27 (the "Regulations"). This GWMP will serve as a guidance document for personnel performing site monitoring during the active life of the facility and during closure and post-closure periods. The facility's groundwater monitoring network is shown in **Figure 2**.

1.3 Site Groundwater Characteristics

The groundwater monitoring network was designed based on a comprehensive field investigation documented in a 1997 report, "Hydrogeological Report" by TTL, Inc. (TTL). The site is underlain by the Quaternary aged Terrace deposits and the Cretaceous aged Coker Formation. The Terrace deposits

[1] ADEM letter to Matthew Belden, Cypress Creek Landfill dated September 19, 2024.

consist of sand and gravel, dark-reddish brown, crossbedded with mottled red and white clay lenses. The Coker formation consists of sand, micaceous, crossbedded, flaser-bedded, very fine to medium grained, locally silty and clayey, contains lenses of chert-rich gravel and sand (QE2, 2017).

Based on the 1997 Hydrogeologic Report (TTL), the subsurface consisted of gravelly sands from ground surface to 20 feet below ground surface (bgs). Surficial clayey and gravelly sands are underlain by 10 to at least 40 feet of silty fine-grained sand with interbedded discontinuous 5 to 20 foot thick clayey sands (TTL, 1997). The depth to groundwater varied with topography ranging from approximately 15 to 60 feet below ground surface. The variations groundwater elevation were measured in 14 piezometers from February through May 1997; a maximum variation of 1.19 feet was reported (TTL, 1997).

The 1997 Hydrogeologic Report describes general groundwater flow directions towards surface water present to the north, southeast, and west. Slug tests performed on multiple piezometers were used to estimate an average hydraulic conductivity of approximately 30 feet per day. Hydraulic gradients ranged from 0.003ft/ft to 0.009 ft/ft (TTL, 1997).

1.4 Groundwater Monitoring Network

Groundwater conditions at the facility are currently monitored by eight (8) groundwater monitoring wells (perimeter monitoring network) completed in the uppermost aquifer. The well network consists of two (2) upgradient wells (PMW-1 and PMW-2) and six (6) downgradient compliance (PMW-3, through PMW-8).

Several changes are recommended to the current groundwater monitoring network, including:

- **Abandon PMW-1 and replace with PMW-1R**: This upgradient location is within future construction grading. This well will be properly abandoned prior to construction. If accessible the location will be reinstalled at the property line approximately 20 feet to the east of the current location upon completion of construction activities. If reinstallation at this location is not feasible the well will be reinstalled approximately 150 feet to the north of its current location. If supported by analysis (see Section 3), data from PMW-1R will be appended to PMW-1 for statistical purposes (i.e., either reinstallation location will remain hydraulically upgradient of the waste unit).
- **Install New Location PMW-9:** This location is intended to monitor conditions downgradient from future Cell 8. This location will be installed prior to waste placement in Cell 8.
- **Lower PMW-8 or replace with PMW-8R:** This location is within future construction grading. If possible, the well will be lowered by removing the above grade completion, excavating around the exposed PVC pipe and installing a new completion at grade. If lowering is not feasible the location be abandoned and offset approximately 20 feet to the north. If supported by analysis (see Section 3), the dataset for PMW-8R will be appended to PMW-8 (i.e., re-establishment of background not needed).

The proposed future groundwater monitoring network is shown in **Figure 3**.

In accordance with the Regulations, the monitoring network for the facility is installed within the first saturated zone. These wells were constructed to detect a potential release from the Facility. A well construction summary for this network is included **Table 1**. A well location and potentiometric contour map is included as **Figure 2**.

1.5 Monitoring Well Construction Details

Groundwater monitoring network wells are two-inch diameter, Schedule 40, flush-threaded PVC wells which range in depth from approximately 14 to 65 feet below ground surface. Well screens range from 10 to 25 feet in length and consist of 0.010-inch machine slotted well PVC pipe. The monitor wells are protected by durable locking, protective covers. Each protective cover is firmly embedded into a square concrete slab which slopes downward away from the protective casing. Steel protective posts are installed outside each corner of the concrete pad. A more detailed summary of the monitor well construction details is presented in the following document, which is on file with ADEM:

- TTL, Inc., "Report of Monitoring Well Installation" dated August 2019.

2. GROUNDWATER SAMPLING AND ANALYTICAL ANALYSIS PLAN

The following sections detail procedures and protocols for sampling and analytical analysis of the groundwater monitoring wells within the monitoring network installed at the facility. Procedures for routine detection monitoring as well as assessment monitoring, if required, are provided.

2.1 Groundwater Sampling Procedures

The sampling procedures described in this plan are intended to provide guidelines to ensure the integrity of the groundwater samples. This plan also describes the analytical requirements for the subsequent analysis of the groundwater samples. The level of field and laboratory quality assurance/quality control (QA/QC) and the required laboratory analysis are also detailed in this plan. The groundwater analysis and laboratory QA/QC methods utilized are based upon those set forth in EPA Document SW-846.

Groundwater samples will be collected semiannually and analyzed for the analytes listed in r. 335-13-4-Appendix I. A sample from each well in the monitoring well system will be collected and analyzed during each semiannual sampling event. In addition, groundwater elevations will be measured and recorded on the field information form for each well prior to purging during each semiannual sampling event.

2.2 Field Preparation

Before mobilizing to the facility to sample the monitoring wells, the receiving laboratory should be notified, and bottle order requested. The sample transport container is to be made of a sturdy insulated material (e.g., a plastic cooler) that can hold the samples and sufficient ice to continually maintain the sample temperature at or below 6 degrees Celsius. The coolers are to be provided by the laboratory and should contain the appropriate bottles for the number of sampling points. Each cooler should be checked upon receipt from the laboratory, making sure that the appropriate number

and type of sample containers are present. Any problems noted with the bottles received should be resolved before beginning the sampling procedures.

Upon arrival at a sampling point, it is necessary to record on the sampling form the specifics of the sampling event to help validate, if needed, any unusual data that may be reported by the analytical laboratory. The information in this log will include, at a minimum, an inspection of the sampling point prior to sampling, chronology of events during sampling, field parameter information, and notes concerning any unusual occurrences during sampling.

2.3 Low Flow Sampling Procedures

2.3.1 Introduction

Low-Flow Minimal Drawdown purging is the preferred technique for groundwater sampling at the Facility. The objective of low-flow/minimal drawdown purging is to obtain a representative sample, taking into consideration aquifer heterogeneities and site-specific subsurface conditions, without imparting bias due to excessive pump rates.

The Low-Flow Minimal Drawdown method of purging and sampling involves using a pump to purge water at a constant rate to achieve field parameter stabilization, while minimizing stress on the aquifer. This method has been well documented as a preferred methodology for collecting representative samples from groundwater as documented in *Low-Flow (Minimal Drawdown), Ground-Water Sampling Procedures*, Puls and Barcelona, USEPA, April 1996. The following sections provide a general discussion on each aspect of the Low-Flow Minimal Drawdown Procedure. In certain cases, low flow sampling may not be feasible. For example, the water column in some wells may be inadequate to allow use of the low flow method. In these cases, the use of disposable or dedicated bailers will be allowed. A minimum of three well volumes will be purged from the well casing prior to collection of the groundwater sample where bailing is used. Or if in the event the well purges to dryness after less than three volumes are removed, a recovery period is allowed with subsequent sampling within to occur during the same day that purging was completed.

2.3.2 Equipment

Submersible or peristaltic pumps will be used for low flow sampling (or bailing in cases where insufficient volume is present to allow for pumping). Dedicated or non-dedicated bladder pumps may also be used for low-flow sampling. Prior to each sampling event water quality meter field probes will be calibrated in accordance with the owner's manual provided and the site-specific sampling plan. Field probes may need to be operationally checked for drift during the day if site conditions such as an extreme temperature change could potentially impact the meter's performance.

2.3.3 Decontamination

All non-dedicated equipment used during the purging and sampling process must be decontaminated prior to each use (including tubing, unless it is disposable):

- Downhole equipment, such as a water level indicator, is to be triple-rinsed with deionized water between well locations.

- Discard disposable polyethylene tubing used with non-dedicated pumps after use at each well.
- Field meters are rinsed between well locations and flushed with sample water during measurements. Field meters and flow cells that do not contact the sample do not need to be decontaminated.

Sampling bottles will be provided and properly prepared by the analytical laboratory scheduled to perform the analysis. No cleaning or preparation of sampling bottles by field personnel will be performed.

2.3.4 Purge Volumes and Monitoring Frequency

Purging volume for low-flow sampling is based on indicator parameter stabilization rather than removal of minimum casing volumes (e.g., three well volume purge), therefore well casing volume is used only for reference in the event it is needed due to stabilization issues, well evaluation, etc. Rather, the volume of the tubing, pump, and/or flow cell, if used, are necessary for making calculations needed to determine field measurement frequency and passive sampling system purge volume. Volumes of the sample tubing can be calculated using the table presented below.

Delivery Tube Volumes	
Tubing Diameter	Volume/foot
½" OD	20 ml
⅜" OD	10 ml
¼" OD	5 ml

Well casing volumes should be calculated and recorded on field forms (**Appendix A**). In addition, well casing volumes may be needed in cases where stabilization is not achieved after a three-volume purge. The frequency of field readings is based on the time required to purge at least one volume of the flow cell; readings should be at least three minutes apart.

2.3.5 Purge Rates

The objective of the purging process is to remove stagnant water from the sampling zone in the monitoring well, prior to sampling. The intake is placed within the screened interval at the zone of sampling (within the screened zone). A low flow rate (typically < 500 ml/min) is used to prevent exceedance of the aquifer recharge rate (lower flow rates may be required during sampling, see below). Flow rate is monitored by measuring the time it takes to fill a calibrated container. Drawdown is monitored by measuring the top of the water column with a water level indicator similar device (e.g., transducer) while pumping. Drawdown should be minimized or stabilized during purging.

If possible and where applicable, drawdown should not fall below the top of the screen during purging and sampling. Flow rates and drawdown are recorded on a field log, form or with a data logger.

Parameter Stabilization: Parameter stabilization ensures that stagnant water is purged and sampled groundwater is representative. Groundwater pH, specific conductance, dissolved oxygen, drawdown, and purge rate should be recorded at regular intervals during purging.

According to the ASTM Designation D6771-02, Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Groundwater Quality Investigations, reasonable criteria for stabilization include: pH, specific conductance, dissolved oxygen (DO) and oxidation-reduction potential (ORP). Primary stabilization parameters (pH and specific conductance) are required for sampling. Secondary stabilization parameters (DO and ORP) should be recorded and evaluated but are not required for sampling. Stabilization occurs as follows:

pH (primary stabilization parameter):	+/- 0.2 units
Specific Conductance (primary stabilization parameter):	+/- 3 % of reading
Dissolved oxygen (secondary stabilization parameter):	+/- 10.0% or 0.2 mg/L, whichever is greater
ORP (secondary stabilization parameter)	+/- 20 milli Volts.

Temperature should be measured and recorded but not considered a requirement for stabilization. While turbidity is not a direct measurement of water chemistry and is not used as an indicator parameter of stabilization, it is useful as a measure of the pumping stress on the formation and to establish the proper pumping rates. To avoid artifacts in sample analysis, a final turbidity of 10 NTU or less is desirable. If the initial turbidity reading is high (>50 NTU) and the second reading is not significantly lower, the pump rate should be reduced. The turbidity value measured prior to sampling will be recorded. If turbidity is persistently greater than 10 NTU, procedures should be reviewed, and the source of the elevated turbidity determined (i.e., well redeveloped).

2.3.6 Sampling

Wells will be sampled immediately upon completion of purging operations. Once the water level stabilizes, the purge rate should remain constant during low-flow purging and sampling (generally less than 500 ml/min). For VOCs, lower sampling rates (100 - 200 milliliters/minute) may be required. Sampling will proceed when parameter stabilization is achieved (as discussed above). If the field parameters have not stabilized according to the above criteria after three well volumes have been removed, the sampling team can collect a sample. The conditions of sampling will be noted in the field log or field forms. Final field parameter readings should be recorded prior to sampling.

Groundwater samples will be collected from the discharge line of the pump after disconnecting from the flow-through cell, or directly from bailers as applicable. The sample will be discharged into appropriately labeled laboratory provided containers. The pump discharge line/bailer should not contact the sample container during collection. Samples collected for VOC analysis must not have any headspace. All other sample containers must be filled with sufficient volume to meet laboratory requirements. All samples requiring preservation should be preserved at the time of sample collection. Chemical preservatives required for sample preservation will be supplied by the laboratory. Sample Collection, preservation and holding times are provided in **Appendix B**.

2.3.7 Field Records

Field information must be recorded during purging and sampling. At a minimum, the following information should be included in the field forms for each groundwater monitoring well.

- Purge Information (time, well volume and purge volumes);
- Equipment Specifications (e.g., pump/bailer type);
- Well Data (depth to water, total depth, groundwater elevation);
- Field Measurements during purging and at sample collection; and

This data is to be recorded on field forms and/or in a data logger. A sample field form is attached in **Appendix A**.

2.4 Field Quality Assurance Samples

Each sampling event requires sampling for VOCs; therefore, a trip blank will be necessary for inclusion with each cooler vessel transporting VOC samples. The trip blanks will be provided by the laboratory performing the analysis and will be analyzed for VOCs in accordance with EPA Document SW-846 methods.

Field blanks are not required but may be collected during dusty conditions and/or when volatile organic contamination is likely present in the atmosphere due to a source other than the groundwater being sampled. During such conditions a field blank will be prepared by pouring deionized water into the appropriate sample containers at a location which represents the conditions of concern. Sampling should not be performed when gasoline powered equipment is operating near the sampling operation (landfill equipment, earth moving equipment, lawn mower equipment, etc.). The location of preparation and conditions of concern (i.e., dusty environment or organic vapors) and the source of these conditions will be recorded on the sampling log. The Field QA/QC Program in conjunction with the Laboratory QA/QC Program should provide sufficient QA/QC for the sampling events.

An equipment blank should be collected when nondedicated, non-disposable equipment is used (e.g., a submersible pump) at least once during the event between sample points. Equipment blanks are collected in the same manner as a field blank except that the deionized water must pass through the portable equipment prior to sample collection.

2.5 Chain of Custody

Chain-of-Custody procedures will allow for the possession and handling of samples to be traced from the time of collection through laboratory analysis. All sample containers will be labeled to avoid misidentification, have proper seals, and indicate test parameters required. Chain-of-Custody procedures will ensure that collected samples are representative of the zone being monitored and will prevent cross-contamination or potential tampering with samples collected.

At the time each sample is collected, *Chain-of-Custody* and *Field Information Forms* will be completed and placed in the sample-shipping container. The shipping container will then be sealed with a shipping seal for detection of unauthorized opening or potential tampering with sample containers and with the custody seal provided within the sample container. Upon arrival of the sample shipping

container at the laboratory, it will be opened, and the *Chain-of-Custody* form will be signed and time/dated by the person taking custody of the sample shipping container. If the sample container is shipped to another facility, this person will affix the bill of lading or receipt to the *Chain-of-Custody* form. The laboratory will provide its standard chain-of-custody form for the sampling team to use.

2.6 Analytical Testing Procedures

The following sections provide procedures for analytical analysis of the groundwater samples collected from the monitoring wells at the site. Analytical methodologies as well as field and laboratory QA/QC procedures are discussed.

2.6.1 Analytical Methods/Procedures

Sample preservation, handling, and analysis will meet the specifications described by Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, November 1986 and Its Updates or an equivalent substitute as approved by ADEM. Analytical methods for parameters not listed in SW-846 will also be approved by ADEM. A summary of laboratory methods which are expected to be utilized as a part of the groundwater monitoring program for the facility is included in **Appendix C**.

2.6.2 Quality Assurance/Quality Control

In addition to strict chain-of-custody procedures, field blanks, equipment (rinsate) blanks and/or trip blanks will be used, as necessary, to assure the integrity of the sampling and shipping process. A record of laboratory sample receipt, storage and analysis procedures will be kept for each sample received. A summary of this record will be part of the laboratory analysis report. The analytical laboratory will prepare sufficient blanks and spikes to assure analysis quality in accordance with that laboratory's Quality Assurance/Quality Control Plan. Any internal quality control problem associated with the submitted sample/analyte will be identified on the data qualifier report included with each sample's analytical report.

2.6.2.1 Field Sampling QA/QC

Field Procedures

As quality assurance procedures are an integral part of each segment of field sampling methodology, the quality assurance procedures associated with each step of the field sampling routine (e.g., proper well purging, field sampling and preservation methodologies) have been directly incorporated into each respective field sampling subsection of this GWMP.

Field and Trip Blanks

Trip and field blanks will be utilized during each round of sampling at the site. The trip blank, containing laboratory-grade distilled water, will remain unopened and sent from the laboratory in the same manner as the site environmental samples. The trip blank will be provided by the analytical laboratory supplying the sample container and will be implemented if volatile organic compounds are included in the sampling event. If non-dedicated sampling equipment is utilized, an equipment (rinsate) blank will be prepared by rinsing deionized or distilled water over the sampling equipment

immediately after decontamination and prior to sampling and capturing the rinse water in a sample container.

2.6.2.2 Laboratory QA/QC

Analytical Blanks and Spikes

The selected laboratory will use method quality control procedures that are equivalent to those described in SW-846 or an equivalent substitute as approved by the administrative authority. Duplicate samples, method blanks, instrument/reagent blanks, matrix spikes, blank/water reagent spikes and surrogate spikes are typical quality control checks performed throughout the analytical laboratory. Except for instrument/reagent blanks and surrogate spikes, these checks are performed at frequency of 5% or 10% (i.e., 1 in 20 samples, 1 in 10 samples). Instrument/reagent blanks and surrogate spikes are performed on a daily or per sample (where required by method) frequency. Each of the above-applied Quality Control checks will be compared against the Acceptance Criterion for each QC check to ensure that analytical quality is maintained.

The method blank is a blank solution which is treated as a sample for the parameter being measured, including all pretreatment/preparation procedures, is analyzed in the same manner as the environmental samples to assess analytical accuracy and the potential for sample contamination. Instrument/reagent blanks are used daily (where used) to detect contamination or interferences in the sample treatment solvents and chemicals to ensure that none of these applied chemicals could systematically bias sample results.

Matrix spikes are environmental samples fortified with known concentrations of analytes expected to be in the sample. The percent recovery of any spiked analyte is taken as a measure of the bias of the analytical method caused by the sample matrix. Blank/reagent water spikes are blank solutions fortified with known concentrations of analytes expected to be in environmental samples. These spikes may (reagent water spikes) or may not (blank spike) be taken through the full analytical procedure prior to analysis. The percent recovery of any spiked analyte is taken as a measure of control on the analytical procedure. Volatile Organic Compound analysis uses this type of spike to measure method extraction efficiency. This spike is performed on every sample and QC sample where the analytical method requires it.

Instrument Calibration

Applicable instruments are calibrated using calibration standards and method-specified calibration criteria. A solution containing various compounds of known concentrations is diluted and analyzed to establish calibration curves is performed daily or per the method to monitor the accuracy and precision of the instrument. Instrument calibration is verified by analyzing a solution containing a known concentration of the pure compound(s) of interest and comparing it against the calibration curve. This standard compound is taken from the same stock as that used to develop the calibration curve. Calibration verification is done at a 5% frequency, or as the method requires, to check the stability of the calibration curve as well as the accuracy and precision of the system or analyst.

All standards and reagents used in laboratory procedures will be inventoried, labeled, logged and documented in accordance with Inorganics, Inorganics/chemical Methods and Robotics, Semi-

volatiles and Volatiles documentation procedures. All stock standards shall be purchased as certified primary solutions from reputable, commercial lab suppliers, and prepared from neat chemicals with certified purity. Stock standards shall be combined and/or diluted into secondary dilution standards, which are then diluted into working standards.

Instrument Maintenance

Routine maintenance is performed and documented for all major instruments. In addition, any service agreements for laboratory equipment are renewed annually. The EPA's "Good Automated Laboratory Practices" (GALPs) shall be followed in the laboratory.

Laboratory Practical Quantitation Limits

The quantitation limits implemented at the facility utilize accepted values of precision and accuracy under normal laboratory conditions for data reliability established under SW846 Update III Method 8000B. The standard project reporting limit will be set at the laboratory's practical quantitation limit (PQL) in accordance with r.335-13-4-.27(2)(m)5. The list of routine Appendix I analytes is provided in Table 2.

2.7 Groundwater Sample Analytes

The groundwater monitoring program includes semiannual analysis of all site groundwater monitoring wells for the list of analytes included in r. 335-13-4-Appendix I.

3. GROUNDWATER EVALUATION AND REPORTING

This section presents a summary of the groundwater evaluation and reporting activities to be implemented at the facility. Included is a discussion of groundwater flow regime evaluation, background groundwater quality, detection monitoring, verification re-sampling, reporting, and, if necessary, assessment monitoring activities.

3.1 Background Groundwater Quality

The purpose of obtaining adequate background groundwater data is to approximate the range of concentrations of targeted analytes in the groundwater system being monitored. Background groundwater data should eliminate, to the extent possible, potential causes of statistically significant changes in groundwater chemistry unrelated to the presence of the monitored facility.

USEPA Unified Guidance, recommends a minimum of 8 to 10 independent background observations be collected before running statistical tests. As discussed in the introduction of this plan, the background will be extended so that it will be based on data with reporting limits set to the laboratory PQL. The background data set will begin effective with the first semiannual monitoring event with uniformly low PQLs for all analytes which is the first 2024 monitoring event. Historical ANOVA testing (Kruskal-Wallis) has not identified significant differences in data from either upgradient well (PMW-1 and PMW-2). Following the second 2025 monitoring event, data from the upgradient wells will again be compared by Kruskal-Wallis testing. If significant differences are not identified at that time, the four (4) data sets from each well will be pooled allowing for the minimum required upgradient data set of eight (8) samples for all analytes. If historical trends remain consistent and all data are usable

for background (e.g., no outliers are removed, etc.) statistical analysis can begin following the second 2025 monitoring event. If differences are identified between the two upgradient wells recommendations for additional background data collection will be provided.

Additionally, due to future construction upgradient location PMW-1 will require future abandonment and replacement with a similarly constructed replacement well (PMW-1R). Data from this location should be evaluated when updating background to determine if it is suitable for additional to the pooled background dataset. According to Unified Guidance, pooling of data is acceptable if the following criteria are met.:

- Each background well should be screened at the same hydrostratigraphic position as the other wells.
- The groundwater chemistry at each of these wells should be similar. This can be checked via the use of standard geochemical bars, pie charts, and tri-linear diagrams of the major constituent groundwater ions and cations (Hem, 1989),
- The statistical characteristics of the background wells should be similar – that is they should be spatially stationary, with approximately the same means and variances. These conditions are particularly important for major water quality indicators, which generally reflect aquifer-specific characteristics.

Where supported by data (see statistical analysis section), background may be periodically updated every 2-3 years in accordance with USEPA Guidance[2] for facilities with semiannual groundwater monitoring requirements. If data are found not suitable for pooling background will not be updated and the existing acceptable background data set will continue to be used.

3.2 Detection Monitoring Program

The Detection Monitoring Program will continue to be implemented in accordance with the Regulations upon completion of background monitoring. The Detection Monitoring Program inclusive of monitoring parameters and frequency is discussed in the following subsections.

3.2.1 Groundwater Detection Monitoring Parameters

Parameters that will be monitored during Detection Monitoring include the parameters listed in r. 335-13-.4-Appendix I. Polychlorinated biphenyls (PCBs) were monitored at all locations during the initial eight rounds of background and none were detected in any sample. Therefore, PCBs will not be included during routine semiannual detection monitoring.

3.2.2 Groundwater Detection Monitoring Frequency

Sampling and analysis of all wells within the monitoring system will be conducted on a semi-annual basis for the life of the facility and the duration of the specified post-closure care period.

[2] USEPA Unified Guidance, March 2009, p 5-12.

3.2.3 Reporting Requirements

A report containing the field data, flow regime evaluation, analytical results, and the results of the statistical evaluation from each site sampling event will be submitted to the ADEM on a semiannual basis in accordance with the facility's Solid Waste Management Permit. The report will be presented to ADEM no later than 90 days following each monitoring event.

If an initial statistical exceedance (or ISE, defined as the initial exceedance of a calculated limit prior to verification re-sampling activities) of any monitored constituent is identified from the analytical results, verification re-sampling for those constituents will be conducted in accordance with the verification re-sampling plan discussed in Section 3.3.3. Verification sampling will consist of re-sampling event(s) scheduled at an interval sufficient to ensure sample independence. If the verification sampling results indicate that a source other than the facility being sampled caused the contamination or that the ISE resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality, these conclusions will be documented in the report for the semiannual sampling event. If the exceedance is verified, a notice will be placed in the Operating Record that a statistically significant increase (SSI) has occurred within 14 days of verification. The site will notify the Administrative Authority that this notice has been placed in the Operating Record. Additionally, the site may prepare either an Alternate Source Demonstration in accordance with r. 335-13-4.27(3)(c) of the Regulations or an Assessment Monitoring Program within 90 days of notification of the SSI. Assessment monitoring activities, if required, are proposed to be implemented only in the well(s) that indicated the SSI.

3.3 Statistical Data Evaluation

This section outlines the proposed evaluation methodology that may be used for detection of a release from the facility, by using PQLs as the concentration limits for VOCs (Volatile Organic Compounds), and inter-well statistical limits for metals.

During background sample collection, it will be necessary to examine the data for outliers, anomalies, and trends that might be an indication of a release. Outliers and anomalies are inconsistently large or small values that can occur due to sampling, laboratory, transportation or transcription errors, or even by chance alone. Significant trends indicate a source of systematic error, or an actual contamination occurrence, that must be evaluated and corrected before the detection monitoring program can be implemented. The inclusion of such values in the historical database used for statistical evaluation could cause misinterpretation of the data set, and result in an artificial increase in the magnitude of statistical limits, which could result in an increase in the false negative rate (i.e., a decrease in the sensitivity of the statistical procedure).

To remove the possibility of historical outliers and trends creating false statistical limits, the data for each upgradient well and each constituent will be tested for the existence of outliers. Outliers may be removed from consideration during the establishment of all statistical limits. The statistical outlier and trend detection procedure will be performed when there are at least 4 measurements for a given constituent. Once the background database is established, the outlier procedure described above may

be applied and appropriate statistical limits set in accordance with Section 3.3.1, Statistical Methodology.

3.3.1 Statistical Methodology

The statistical method used to evaluate the groundwater data for each parameter or constituent will be in accordance with the Regulations. The most appropriate method will be inter-well prediction limits in accordance with the USEPA Unified Guidance ("*Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities,* March 2009). Inter-well prediction limits pool upgradient well data to construct statistical limits which are used to evaluate data at downgradient wells. These tests are appropriate when the ANOVA determines that no significant spatial variation exists among the background wells.

The following sections further discuss the selected statistical evaluation methods.

3.3.1.1 Appendix I Volatile Organic Compounds

VOCs represent very effective indicators of a release from a solid waste unit. Because these compounds are rarely detected in background groundwater samples, establishing monitor well-specific limits for VOCs is generally not preferred. Therefore, detection decision rules based on laboratory-specific PQLs will be used.

The use of a PQL in the absence of a measurable background value is supported by r. 335-13-4-.27(2)(m)(5) which states that any RL used in a statistical analysis:

"be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility."

Any VOC detected and verified at a concentration above the PQL would be statistically significant, and therefore trigger assessment monitoring (unless an alternate source is identified). These decision rules apply only in cases where the constituent has rarely, or never, been detected in background.

3.3.1.2 Appendix I Metals

Groundwater quality data will be evaluated through use of inter-well prediction limits, combined with a resampling strategy. Data are generally not assumed to follow a normal distribution. Therefore, non-parametric inter-well prediction limits will reference the highest background value as the upper nonparametric prediction limit. If a statistical exceedance is found, an independent resample will be collected to determine whether the initial exceedance is verified. If the initial finding is not verified by resampling, the resampled value will replace the initial finding. When the resample confirms the initial finding, the exceedance will be reported.

The associated confidence level considers the prospect of additional future compliance values (retests) when there is an initial exceedance. The achieved confidence level is determined based on the background sample size, the number of monitoring wells in the network, and the number of proposed retests, using tables provided in the USEPA Unified Guidance.

The Sen's Slope/Mann Kendall trend test may be used, in addition to prediction limits, to statistically evaluate concentration levels over time and determine whether concentrations are increasing, decreasing, or stabilizing.

Historical data will be provided graphically and/or in tables in routine statistical reports. Constituents not detected in any historical site sample upgradient or downgradient are presumed not to be present in site groundwater do not require statistical analysis.

3.3.2 Statistical Analysis

The statistical analysis for inorganic parameters will utilize appropriate software and will be based on inter-well prediction limits at all compliance point wells. Future upgradient data that do not exhibit a significant trend will be combined with historical data to update background every 2-3 years.

The EPA guidance document entitled "Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities" dated March 2009 recommends that the selected statistical method for multiple constituent comparisons provide a site-wide false positive rate of 5% or less while maintaining a statistical power (1 minus the false negative rate) from the EPA reference power curve (correlating to a statistical power of >50% for a 3-sigma release and >80% for a 4-sigma release). If this cannot be achieved through a parameter or monitoring point reduction, then options available within software can be used. Adjustments to verification re-sampling options, or the use of normal prediction limits (where justified) may be implemented to achieve the statistical standards recommended by USEPA (2009).

3.3.3 Detection Verification Procedure

Once groundwater analysis results have been collected, checked for QA/QC consistency, and determined to be above the appropriate statistical level, the results must be verified in accordance with the objectives of the Regulations. Verification re-sampling is an integral part of the statistical methodology described in USEPA guidance. Without verification re-sampling, much larger statistical limits would be required to achieve site-wide false positive rates of 5% or less. Furthermore, the resulting false negative rate would be greatly increased. The following procedure will be performed for each compound determined to be initially above its statistical limit. Only compounds that initially exceed their statistical limit will be sampled for verification purposes. The use of a "pass 1 of 1" or "pass 1 of 2" verification options will be evaluated on a per event basis based on the calculated site-wide false positive rate.

3.3.3.1 Appendix I VOCs

If one or more VOCs are detected above their statistical limit (i.e., PQL), up to two verification resamples will be scheduled no sooner than 30 days apart to provide sample independence. A statistically significant increase (SSI) will be recorded if any single VOC is verified in each of the scheduled re-sampling events in a concentration greater than the PQL.

3.3.3.2 Appendix I Metals

If one or more of the inorganic parameters are detected above their statistical limit (i.e., prediction limit), a up to two verification resamples will be scheduled no sooner than 30 days apart to provide sample independence. An SSI will be recorded if verification of one or more elevated parameter is confirmed at a concentration greater than the control/prediction limit in each of the discrete verification re-samples. If the re-sampling program confirms that the initial sample represented a laboratory or sampling-induced outlier, the verification sample will replace the original reported value.

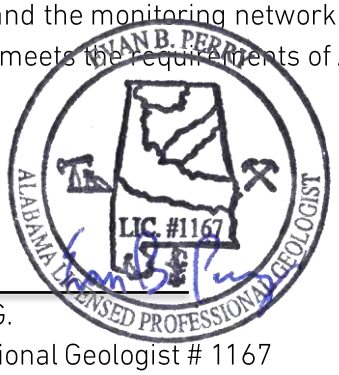
3.4 Assessment Monitoring Procedure

Data evaluation during assessment monitoring will consist of the establishment of Upper and Lower Confidence Limits, if a minimum of four (4) background samples exists for each parameter and well detected during the Assessment Monitoring Program. If inadequate background data do not exist, sufficient background data will be collected to provide adequate sample size for statistical analysis. If the Lower Confidence Limit (LCL) of one parameter exceeds action levels defined as Maximum Contaminant Levels (MCLs), if applicable, or alternate Groundwater Protection Standard (GWPS) as stipulated in the Regulations, the site will conduct an assessment of corrective measures in coordination with ADEM. The well can return to Detection Monitoring if SSIs do not occur for two consecutive events or if approved in writing by ADEM. If the concentrations of Appendix II constituents are above background values but below the GWPS then assessment monitoring well continue unless otherwise approved in writing by ADEM.

4. QUALIFIED GROUNDWATER SCIENTIST APPROVAL

This Groundwater Sampling and Analysis Plan has been prepared by Mr. Evan Perry, P.G., Senior Hydrogeologist as follows:

I have personally examined, and I am familiar with the information submitted in this Groundwater Monitoring Plan and the monitoring network, program, procedures and methodologies as described in this document meets the requirements of ADEM Admin. Code 335-13-4-.27.



Evan B. Perry, P.G.
Alabama Professional Geologist # 1167
Date: January 13, 2025

5. REFERENCES

ASTM D 6312-98, 1998 (2017), Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs.

Promus Engineering, LLC., 2022. Second 2022 Semiannual Groundwater Monitoring Report – Cypress Creek Landfill.

Hem, John D., 1989. USGS Water Supply Paper 2254, Study and Interpretation of the Chemical Characteristics of Natural Water.

Puls, R.W., and Barcelona, M.J., 1996, Low-Flow (Minimal Drawdown) Ground-Water Sampling

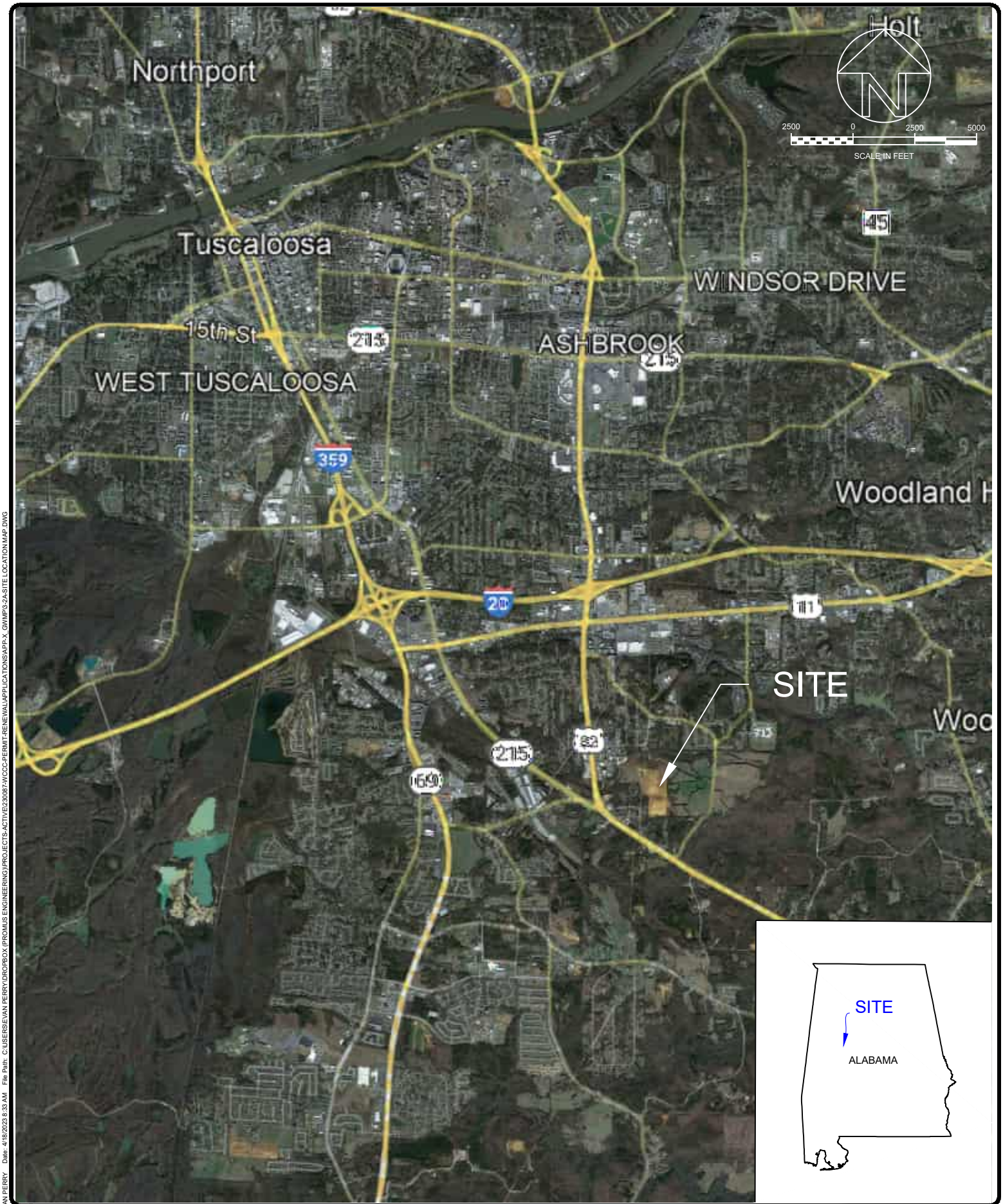
QE2, LLC., 2017. Groundwater Monitoring Plan, Cypress Creek Landfill.

TTL, Inc. 1997. Hydrogeologic Report, Cypress Creek C/D Landfill, Tuscaloosa County, Alabama.

TTL, Inc. 2019. Report of Monitoring Well Installation, Cypress Creek Landfill.

USEPA, 2009, Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities.

FIGURES



DESCRIPTION	APPR. BY	DRA. BY	DATE	REV

PREPARED FOR:
CYPRESS CREEK LANDFILL, LLC

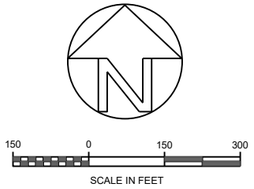
PREPARED BY:
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SITE LOCATION MAP

PERMIT RENEWAL
CYPRESS CREEKLANDFILL
TUSCALOOSA, ALABAMA

FIGURE NO.
1

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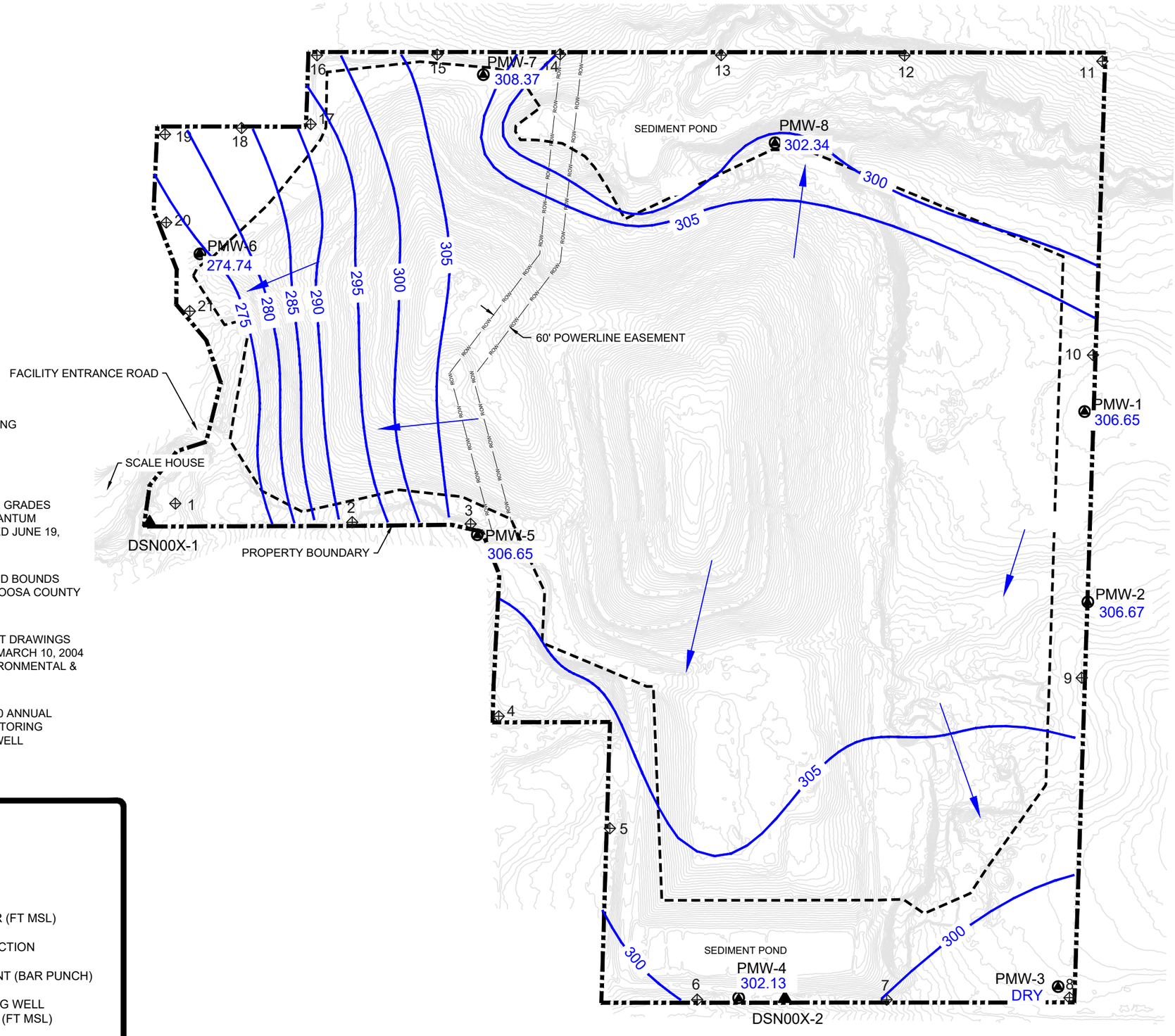


NOTES

1. TOPOGRAPHIC SURVEY OBTAINED FROM AERIAL MAPPING CONDUCTED BY FIRMATEK DATED OCTOBER 4,, 2023.
2. GROUNDWATER LEVELS MEASURED MARCH 14, 2024.
3. PROPERTY BOUNDARY AND PERMITTED TOP OF WASTE GRADES OBTAINED FROM PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
4. POWERLINE RIGHT-OF-WAY OBTAINED FROM METES AND BOUNDS LEGAL DESCRIPTION IN DEED OBTAINED FROM TUSCALOOSA COUNTY DEED BOOK 2012, PAGE 4833.
5. PERMITTED LIMIT OF DISPOSAL OBTAINED FROM PERMIT DRAWINGS PREPARED BY CDG ENGINEERS & ASSOCIATES DATED MARCH 10, 2004 AND PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
6. METHANE MONITORING LOCATIONS FROM TTI, INC., 2020 ANNUAL METHANE MONITORING REPORT. GROUNDWATER MONITORING LOCATIONS FROM TTL, INC. REPORT OF MONITORING WELL INSTALLATION, 2019.

LEGEND

- PROPERTY BOUNDARY
- PERMITTED DISPOSAL AREA
- 295 — POTENTIOMETRIC CONTOUR (FT MSL)
- GROUNDWATER FLOW DIRECTION
- 4 — METHANE MONITORING POINT (BAR PUNCH)
- PMW-4 299.69 — GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION (FT MSL)
- DSN00X-1 — NPDES MONITORING POINT



REV	DATE	DRA. BY	APP. BY	DESCRIPTION

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6315 12th AVENUE EAST
TUSCALOOSA, AL 35405

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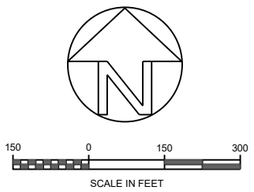
MONITORING WELL LOCATION AND POTENTIOMETRIC SURFACE MAP

ENVIRONMENTAL MONITORING POINT LOCATIONS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA

PROJECT NO.: 230087

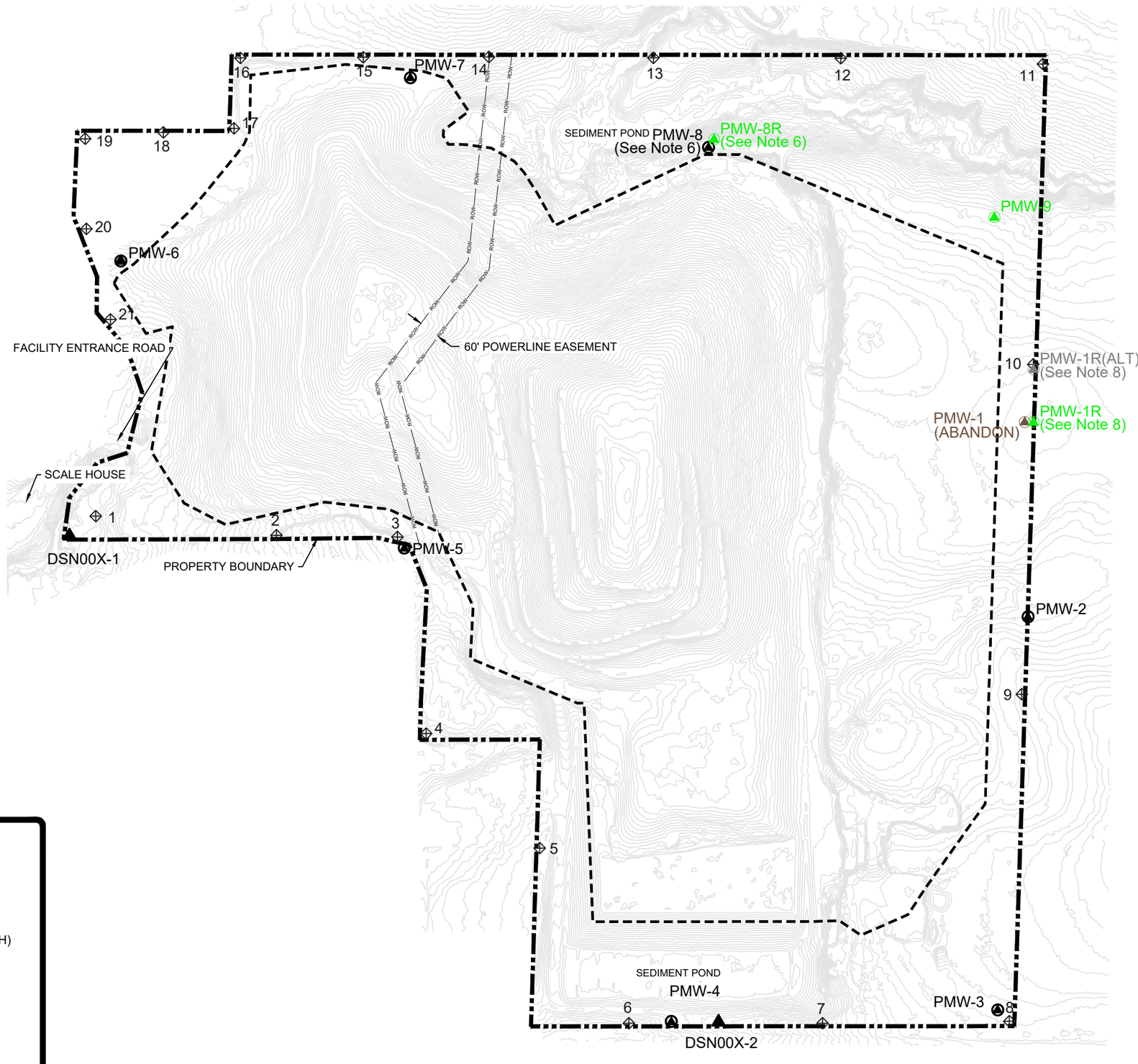
2

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NOTES

1. TOPOGRAPHIC SURVEY OBTAINED FROM AERIAL MAPPING CONDUCTED BY FIRMATEK DATED OCTOBER 5, 2022.
2. PROPERTY BOUNDARY AND PERMITTED TOP OF WASTE GRADES OBTAINED FROM PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
3. POWERLINE RIGHT-OF-WAY OBTAINED FROM METES AND BOUNDS LEGAL DESCRIPTION IN DEED OBTAINED FROM TUSCALOOSA COUNTY DEED BOOK 2012, PAGE 4833.
4. PERMITTED LIMIT OF DISPOSAL OBTAINED FROM PERMIT DRAWINGS PREPARED BY CDG ENGINEERS & ASSOCIATES DATED MARCH 10, 2004 AND PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
5. METHANE MONITORING LOCATIONS FROM TTL, INC., 2020 ANNUAL METHANE MONITORING REPORT. GROUNDWATER MONITORING LOCATIONS FROM TTL, INC. REPORT OF MONITORING WELL INSTALLATION, 2019.
6. PMW-8 IS LOCATED IN AN AREA OF FUTURE CONSTRUCTION GRADING. IF POSSIBLE THE WELL WILL BE LOWERED. IF NOT FEASIBLE THE WELL WILL BE ABANDONED AND REPLACED BY OFFSET LOCATION PMW-8R.
7. PMW-9 TO BE INSTALLED PRIOR TO WASTE PLACEMENT IN FUTURE CELL 8.
8. PMW-1 IS LOCATED IN AN AREA OF FUTURE CONSTRUCTION GRADING. THE UPGRADIEND WELL WILL BE ABANDONED PRIOR TO CONSTRUCTION AND REPLACED UPON COMPLETION OF CONSTRUCTION. IF REINSTALLATION AT THE LOCATION SHOWN FOR PMW-1R IS NOT FEASIBLE, THE WELL MAY BE REINSTALLED APPROXIMATELY 150 FEET TO THE NORTH.



LEGEND

⊕ 4	METHANE MONITORING POINT (BAR PUNCH)
PMW-4	GROUNDWATER MONITORING WELL GREEN = FUTURE NEW WELL BROWN = TO BE ABANDONED
DSN00X-1	NPDES MONITORING POINT

REV	DATE	DRA. BY	APP. BY	DESCRIPTION
0	07/14/2023	EBP	EBP	
1	10/04/2024	EBP	EBP	

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FUTURE GROUNDWATER MONITORING NETWORK

ENVIRONMENTAL MONITORING POINT LOCATIONS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA

PROJECT NO.: 230087

3

Last Saved By:EVAN PERRY Date: 10/4/2024 10:24 AM File Path: C:\USERS\EVAN PERRY\PROMUS ENGINEERING DROPBOX\PROJECTS-ACTIVE\230087-WCCC-PERMIT-RENEWAL\APPLICATION\APPLL_GWMP\DWG\FIGURE 3 - FUTURE MONITORING NETWORK.DWG

TABLES

TABLE 1. Groundwater Monitoring Network Well Summary
Cypress Creek Landfill
Groundwater Monitoring Plan

	Groundwater Monitoring Network Summary							
	PMW-1 (Upgradient)	PMW-2 (Upgradient)	PMW-3 (Downgradient)	PMW-4 (Downgradient)	PMW-5 (Downgradient)	PMW-6 (Downgradient)	PMW-7 (Downgradient)	PMW-8 (Downgradient)
TOC Elevation (ft)	370.06	354.04	373.31	317.29	347.76	291.19	313.44	328.19
Ground Elevation (ft)	367.39	351.51	370.79	314.79	345.26	288.49	310.71	325.74
Screened Interval (ft bgs)	54 - 64	39 - 49	40 - 65	13 – 23	33 - 44	8 – 18	4 - 14	24 - 34
Well Depth (ft bgs)	64	49	65	23	44	18	14.5	34
Bottom of Well Elevation (ft)	303.4	302.5	305.8	291.8	301.3	270.5	296.2	291.7

Notes:

1. Data from Table 1, Report of Monitoring Well Installation, TTL, Inc., 2019.
2. ft = feet relative to Site Datum, ft bgs = feet below ground surface, ft btoc = feet below top of casing

TABLE 2. Appendix I Analytes
Cypress Creek Landfill
Groundwater Monitoring Plan

Common Name

Inorganic Constituents (Total):

(1) Antimony
(2) Arsenic
(3) Barium
(4) Beryllium
(5) Cadmium
(6) Chromium
(7) Cobalt
(8) Copper
(9) Lead
(10) Mercury
(11) Nickel
(12) Selenium
(13) Silver
(14) Thallium
(15) Vanadium
(16) Zinc

Organic Constituents:

(17) Acetone
(18) Acrylonitrile
(19) Benzene
(20) Bromochloromethane
(21) Bromodichloromethane
(22) Bromoform; Tribromomethane
(23) Carbon disulfide
(24) Carbon tetrachloride
(25) Chlorobenzene
(26) Chloroethane; Ethyl chloride
(27) Chloroform; Trichloromethane
(28) Dibromochloromethane; Chlorodibromomethane
(29) 1,2-Dibromo-3-chloropropane; DBCP
(30) 1,2-Dibromoethane; Ethylene dibromide; EDB
(31) o-Dichlorobenzene; 1,2-Dichlorobenzene
(32) p-Dichlorobenzene; 1,4-Dichlorobenzene
(33) trans-1,4-Dichloro-2-butene
(34) 1,1-Dichloroethane;Ethylidene chloride
(35) 1,2-Dichloroethane; Ethylene dichloride
(36) 1,1-Dichloroethylene; 1,1- Dichloroethene; Vinylidene chloride
(37) cis-1,2-Dichloroethylene; cis-1,2- Dichloroethene
(38) trans-1,2-Dichloroethylene; trans-1,2- Dichloroethene
(39) 1,2-Dichloropropane; Propylene dichloride
(40) cis-1,3-Dichloropropene
(41) trans-1,3-Dichloropropene
(42) Ethylbenzene
(43) 2-Hexanone; Methyl butyl ketone
(44) Methyl bromide; Bromomethane
(45) Methyl chloride; Chloromethane

TABLE 2. Appendix I Analytes (continued)
Cypress Creek Landfill
Groundwater Monitoring Plan

Common Name

Organic Constituents(cont'd):

(46) Methylene bromide; Dibromomethane
(47) Methylene chloride; Dichloromethane
(48) Methyl ethyl ketone; MEK; 2-Butanone
(49) Methyl iodide; Iodomethane
(50) 4-Methyl-2-pentanone;Methyl isobutyl ketone
(51) Styrene
(52) 1,1,1,2-Tetrachloroethane
(53) 1,1,2,2-Tetrachloroethane
(54) Tetrachloroethylene;Tetrachloroethene; Perchloroethylene
(55) Toluene
(56) 1,1,1-Trichloroethane; Methylchloroform
(57) 1,1,2-Trichlolroethane
(58) Trichloroethylene; Trichloroethene
(59) Trichlorofluoromethane; CFC-11
(60) 1,2,3-Trichloropropane
(61) Vinyl acetate
(62) Vinyl chloride
(63) Total Xylenes

Sample preservation, handling, and analysis will meet the specifications described by "Test Methods for Evaluating Solid Waste Physical/Chemical Methods, third edition" (EPA Publication Number SW-846, 3rd Edition, November 1986 and Its Updates) or an equivalent substitute as approved by the administrative authority.

Reporting limits will be based on the laboratory's practical quantitation limit (PQL) in accordance with r.335-13-4-.27(2)(m)5.

APPENDIX A

Sample Field Information Form

MONITORING WELL PURGING LOG

Sample ID No.: _____ Well No. _____

Installation: _____ Site: _____

Project No. _____ Purged by: _____

Purge Start Date _____ Purge End Date _____

Purge Start Time _____ Purge End Time _____

Depth Measurement Reference Point* _____ Well Casing Id. 2" 4" 6" Other _____

Equipment used to measure Depth to Water (Make, Model, Etc.)

Depth to Top and Bottom of Screen Interval

Orig. DTW: _____

Final DTW: _____

Measured Well TD _____

(-)Orig. DTW _____

(=) Wtr Col Height _____ X 2" = 0.16 4" = 0.65 6" = 1.47 Other = _____ Gals/Ft

Gal/Ft = Gals/Csg Vol X 1, 2, 3, 4, 5 = Total Purged Gallons

PURGING METHOD

Submersible Pump Bladder Pump Hand Pump Dedicated Submersible Pump

Centrifugal Pump Dedicated Bladder Pump Peristaltic Pump Gas Lift/Displacement Pump

BAILER SS Tef PVC Weather _____

Purging Equipment (Make, Model, Etc.) _____

Purging Equipment Decontaminated Yes No

Average Purge Rate: _____

Actual Time	Elapsed Time	Vol Purged (Gals)	Depth to Water (ft)	Depth of Pump Intake (ft)	Temp (°C)	pH (su)	Spec. Cond. uS/cm	Turbidity (ntu)	ORP (mV)	D.O. (mg/L)

Have GW Parameter met stabilization criteria ____ Yes ____ No Additional Purge ____ Yes ____ No

No. of additional purge volumes _____

*all depths in feet below reference point on wellhead – generally top of casing (TOC), DTW = Depth of Water

APPENDIX B

Sample Collection, Preservation, and Holding Times

APPENDIX B. Sample Collection, Preservation, and Holding Times
Cypress Creek Landfill
Groundwater Monitoring Plan

PARAMETER[1]	SAMPLE COLLECTION[2] AND CONTAINER	SAMPLE[3] PRESERVATION[4]	RECOMMENDED[5] HOLDING TIME
Acid Extractables	1000 ml Glass only (Amber) w/Teflon liner	Cool, 4°C	Extract within 7 days; analyze within 40 days
Alkalinity	100 ml P,G	Cool, 4°C	14 days
Ammonia	125 ml P,G	Cool, 4°C H_2SO_4 to pH <2	28 days
Base/Neutral Extractables (priority pollutants)	1000 ml Glass only (Amber) w/Teflon liner	Cool, 4°C	Extract within 7 days; analyze within 40 days
Biochemical Oxygen demand, 5 day (BOD5)	1000 ml P,G	Cool, 4°C	48 hours
Calcium	500 ml P	HNO3 to pH <2	6 months
Chemical Oxygen demand (COD)	125 ml P,G	Cool, 4°C H2SO4 to pH <2	28 days
Chloride	250 ml P,G	None required	28 days
Coliform, fecal and total	100 ml P,G sterilized	Cool, 4°C	24 hours
Cyanide	1000 ml P,G	Cool, 4°C NaOH to pH >12 0.6g ascorbic acid6	14 days[7]
Fluoride	250 ml P	None required	28 days
Hardness	100 ml P,G	HNO3 to pH <2	6 months
Metals			
Chromium (hexavalent)	200 ml P,G	Cool, 4°C	24 hours
Mercury (dissolved)	250 ml P,G	Filter on site HNO3 to pH <2	28 days
Mercury (total)	250 ml P,G	HNO3 to pH <2	28 days
Other metals, (dissolved) (Arsenic, Barium, Boron, Cadmium, Chromium, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Selenium, Silver, Sodium, Zinc)	250 ml P,G	Filter on site HNO3 to pH <2	6 months
Other metals, (totals) (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc)	250 ml P,G	HNO3 to pH <2	6 months
Nitrate[8]	125 ml P,G	Cool, 4°C	48 hours
Nitrite	125 ml P,G	Cool, 4°C	48 hours
Oil and Grease	1000 ml, G only	Cool, 4°C H2SO4 to pH <2	28 days
PCB (priority pollutant)	1000 ml, Glass only (Amber w/Teflon liner	Cool, 4°C	Extract within 7 days; analyze within 40 days
Pesticides	1000 ml, Glass only (Amber w/Teflon liner	Cool, 4°C pH 5 - 9	Extract within 7 days; analyze within 40 days

APPENDIX B. Sample Collection, Preservation, and Holding Times (cont'd)
Cypress Creek Landfill
Groundwater Sampling and Analysis Plan

PARAMETER[1]	SAMPLE COLLECTION AND CONTAINER[2]	SAMPLE PRESERVATION[3,4]	RECOMMENDED HOLDING TIME[5]
pH (field)	25 ml P,G	None required	Analyze immediately
Phenols	500 ml G only	Cool, 4°C H_2SO_4 to pH <2	28 days
Phosphorous (total)	125 ml P,G	Cool 4°C H_2SO_4 to pH <2	28 days
Semi-volatile Organics	1000 ml, G	Cool, 4°C	Extract within 7 days; Analyze w/in 40 days
Specific Conductance (field)	100 ml P,G	None required	Analyze immediately
Sulfate	50 ml P,G	Cool, 4°C	28 days
Temperature (field)	1000 ml P,G	None required	Analyze immediately
Total Dissolved Solids residue on evaporation (TDS/ROE) 180°C	1000 ml P	Cool, 4°C	7 days
Total Organic Carbon (TOC)	250 ml P	Cool, 4°C HCl to pH <2	28 days
Total Suspended Solids (TSS)	1000 ml P	Cool, 4°C	7 days
Volatile Organic Acids, priority pollutants	4-40 ml glass vial w/septum caps	Cool, 4°C HCl to pH < 2	14 days
Volatile Organics[9]	4-40 ml glass vial w/septum caps	Cool, 4°C HCl to pH < 2	14 days

1. Table may include more parameters than required for groundwater sampling. A general discussion on sampling water and industrial waste water may be found in ASTM, Part 31, pages 72-81 (1976) Method D-3370.
2. Plastic (P) or Glass (G). For metals, polyethylene with a polypropylene cap (no liner) is preferred.
3. Sample preservation should be performed immediately upon sample collection. For composite samples, each aliquot should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each aliquot, then samples may be preserved by maintaining at 4 C until compositing and sample splitting is completed.
4. When any sample is to be shipped by common carrier or sent through the United States mail, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR Part 172). The person offering such material for transportation is responsible for ensuring such compliance. For the preservation requirements of Table 5-4, the Office of Hazardous Materials, Materials Transportation Bureau, Department of Transportation has determined that the Hazardous Materials Regulations do not apply to the following materials: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO_3) in water solutions at concentrations of 0.15% by weight or less (pH about 1.62 or greater); Sulfuric acid (H_2SO_4) in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater); Sodium hydroxide (NaOH) in water solutions at concentrations of 0.080% by weight or less (pH about 12.30 or less).
5. Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still considered valid. Samples may be held for longer periods only if the permittee, or monitoring laboratory, has data on file to show that the specific types of sample under study are stable for the longer time, and has received a variance from the Regional Administrator. Some samples may not be stable for the maximum time period given in the table. A permittee, or monitoring laboratory, is obligated to hold the sample for a shorter time if knowledge exists to show this is necessary to maintain sample stability.
6. Should only be used in the presence of residual chlorine.
7. Maximum holding time is 24 hours when sulfide is present. Optionally, all samples may be tested with lead acetate paper before the pH adjustment in order to determine if sulfide is present. If sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then NaOH is added to pH 12.
8. In accordance with ADEM Regulations, sample preservation, handling, and analysis will meet the specifications described by "Test Methods for Evaluating Solid Waste Physical/Chemical Methods, third edition" (EPA Publication Number SW-846, 3rd Edition, November 1986 and Its Updates) or an equivalent substitute as approved by the administrative authority.
9. Volatile Organic Compounds may be collected without HCL preservative and cooled to 4°, however if this method of preservation is used, the holding time is reduced from 14 to 7 days.

Note: Many tests can be combined in bottles. For example, Alkalinity, Chloride, Fluoride, Nitrate, Nitrite, pH, Sulfate, TDS, TSS will be collected in a 1 liter poly bottle.

APPENDIX C

Methodologies for Testing and Analysis

APPENDIX C. Methodologies for Testing and Analysis
Cypress Creek Landfill
Groundwater Monitoring Plan

PARAMETER	METHOD
Acid Extractables	EPA 625/8270C(D) (priority pollutants)
Alkalinity	(A)310.1/2320B
Ammonia	(A)350.1
Base/Neutral Extractables	EPA 625/8270C(D) (priority pollutants)
Biochemical Oxygen	(A)405.1/5210B demand, 5 day (BOD5)
Calcium	(A)200.7/6010B(D)
Chemical Oxygen demand (COD)	(A)410.4
Chloride	(A)325.3 or 300.0
Coliform (fecal)	(B)909C
Coliform (total)	(B)909A
Cyanide (total)	(A)335.3/9012A(D)
Fluoride	(A)340.2 or 300.0 on Selective Electrode
Hardness	(C)2340B

Metals, total	EPA Method
Antimony	(A)200.7/200.8 or 6010B/6020 (D)
Arsenic	(A)200.7/200.8 or 6010B/6020 (D)
Barium	(A)200.7/200.8 or 6010B/6020 (D)
Beryllium	(A)200.7/200.8 or 6010B/6020 (D)
Boron	(A)200.7/200.8 or 6010B/6020 (D)
Cadmium	(A)200.7/200.8 or 6010B/6020 (D)
Chromium	(A)200.7/200.8 or 6010B/6020 (D)
Cobalt	(A)200.7/200.8 or 6010B/6020 (D)
Copper	(A)200.7/200.8 or 6010B/6020 (D)
Iron	(A)200.7/200.8 or 6010B/6020 (D)
Lead	(A)200.7/200.8 or 6010B/6020 (D)
Magnesium	(A)200.7/200.8 or 6010B/6020 (D)
Manganese	(A)200.7/200.8 or 6010B/6020 (D)
Mercury	(A)245.2/7470(D)
Nickel	(A)200.7/200.8 or 6010B/6020 (D)
Potassium	((A)200.7/200.8 or 6010B/6020 (D)
Selenium	(A)200.7/200.8 or 6010B/6020 (D)
Silver	(A)200.7/200.8 or 6010B/6020 (D)
Sodium	(A)200.7/200.8 or 6010B/6020 (D)
Thallium	(A)200.7/200.8 or 6010B/6020 (D)
Tin	(A)200.7/200.8 or 6010B/6020 (D)
Vanadium	(A)200.7/200.8 or 6010B/6020 (D)
Zinc	(A)200.7/200.8 or 6010B/6020 (D)

APPENDIX C. Methodologies for Testing and Analysis (continued)
Cypress Creek Landfill
Groundwater Monitoring Plan

Nitrate	(A)353.2 / 300.0
Nitrite	(A)353.2 / 300.0
Oil and Grease	(A)413.1/9070(D) or (A)413.2 OR 1664A
PCB (priority pollutants)	608(A) or 8082(D)
Pesticides	608(A)or8081A(D)
pH (field)	(A)150.1
Phenols	(A)420.4/9066(D) with Distillation
Phosphorous	(A)365.3
Semi-volatile Organics	625/8270C(D)
Specific Conductance (field)	(A)120.1
Sulfate	(A)375.4 or 300.0
Temperature (field)	(B)212
Total dissolved solids	(A)160.1/2540C residue on evaporation (TDS/ROE)
Total Organic Carbon (TOC)	(A)415.1/5310B
Total Suspended Solids (TSS)	(A)160.2/2540D
Volatile Organic Acids	624/(D) /8260B(D)(PP/VOA), priority pollutants
Volatile Organics	624/(D) /8260B(D) / 524.2
DBCP, EDB	624/(D) /8260B(D) / 524.2 or 504.1/ 8011(D)

**NOTE: Analytical methods listed above may be substituted for as deemed necessary provided that the alternate methods provide adequate analytical data to fulfill monitoring requirements and meet regulatory standards.*

References:

A: Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-0920, EMSL, Cincinnati, Revision (March 1983)

B: Standard Methods for the Examination of Water and Wastewaters, 15th Edition, APHA-AQWQA-WPCF, 1980

C*: Standard Methods for the Examination of Water and Wastewaters, 18th Edition, APHA-AWWA-WEF, 1992

D: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, November 1986 and Its Updates

* 2340B is the same in the 18th Edition as in the 17th Edition



PROMUS
ENGINEERING

1200 Mountain Creek Rd., Suite 102 | Chattanooga, Tennessee 37405
888-811-9066 | www.promusengineering.com

APPENDIX M

Design Plans

PERMIT DRAWINGS

CYPRESS CREEK LANDFILL

6315 12TH AVENUE EAST
TUSCALOOSA, ALABAMA 35405
SITE ENTRANCE AT:
N 33° 08" 59"
W -87° 31' 23"

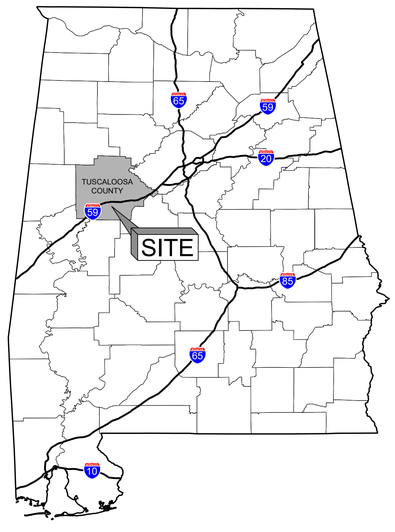
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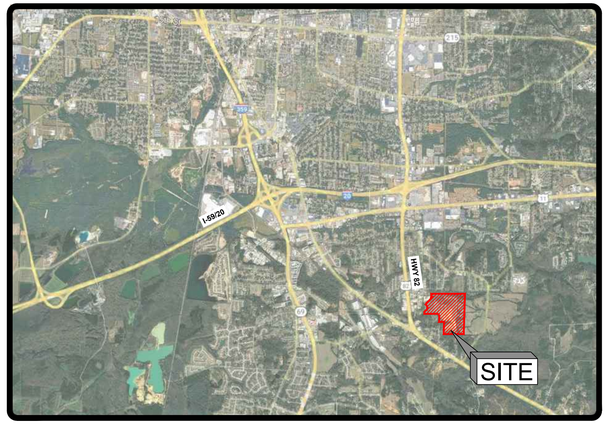
CYPRESS CREEK LANDFILL, LLC
6315 12TH AVENUE EAST
TUSCALOOSA, ALABAMA 35405

PREPARED BY:

PROMUS ENGINEERING
1200 MOUNTAIN CREEK ROAD, SUITE 102
CHATTANOOGA, TENNESSEE 37405
(888) 811-9066



VICINITY MAP



SITE LOCATION MAP

DRAWING SHEETS	
SHEET #	**SHEET TITLE**
1	COVER SHEET
2	EXISTING SITE CONDITIONS
3	SUBGRADE PLAN
4	FINAL COVER PLAN
5	CROSS SECTIONS
6	CROSS SECTION
7	STORMWATER MANAGMENT AND EROSION CONTROL PLAN
8	DETAILS
9	DETAILS
10	DETAILS

REV	DATE	DRA. BY	RVW. BY	APPR. BY	DESCRIPTION
0	07/14/2023	CRW	CRW	CRW	ISSUED FOR PERMITTING

PREPARED FOR:
CYPRESS CREEK LANDFILL, LLC
6315 12TH AVENUE EAST
TUSCALOOSA, AL

PREPARED BY:
PROMUS ENGINEERING
1200 MOUNTAIN CREEK RD, SUITE 102 CHATTANOOGA, TENNESSEE 37405

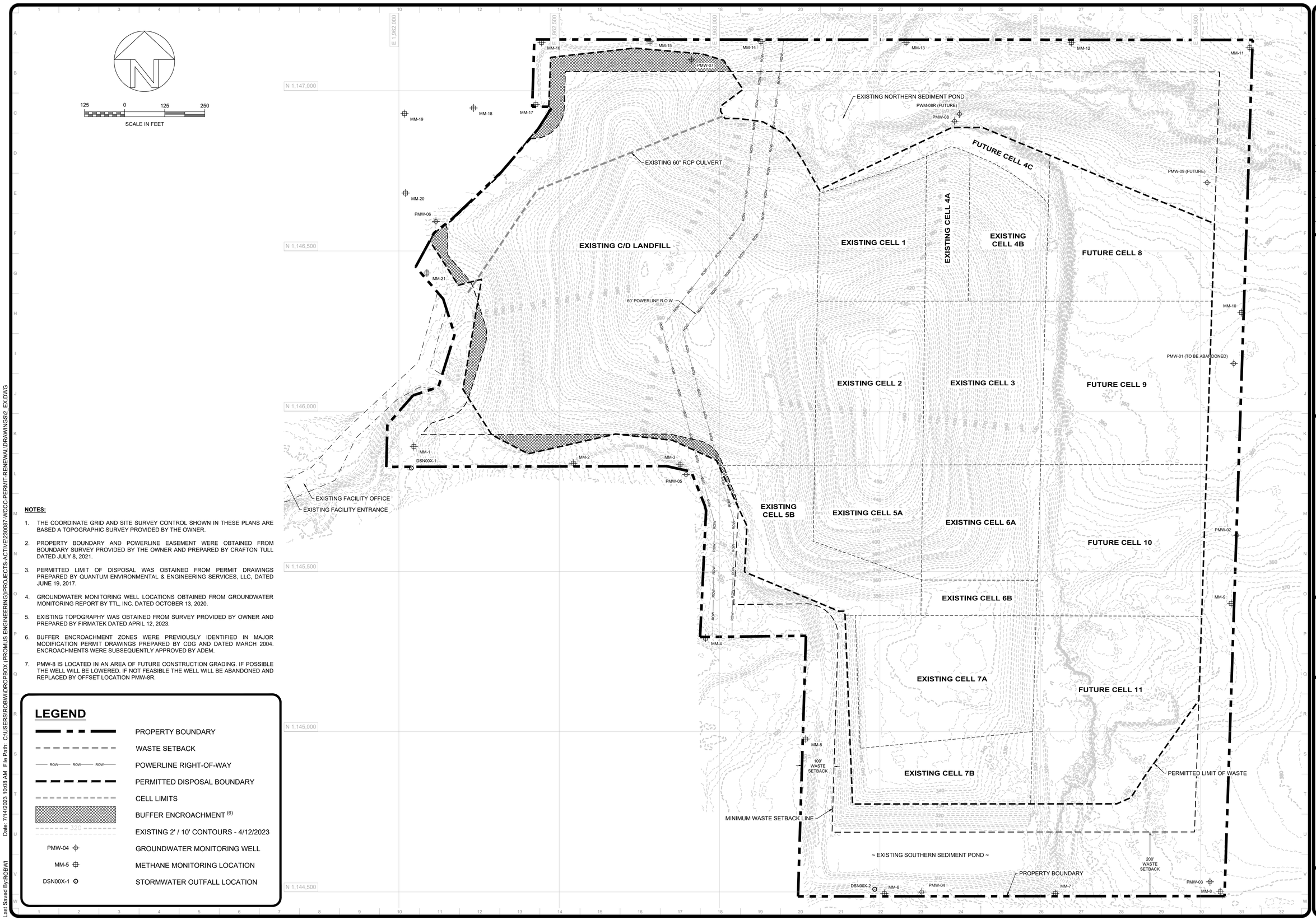
ALABAMA LICENSED PROFESSIONAL ENGINEER No. 37564 CHARLES R. WITCHER 7/14/2023

COVER SHEET

PERMIT DRAWINGS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA 35405

PROJECT NO.: 230087
SHEET NUMBER
1

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NOTES:

1. THE COORDINATE GRID AND SITE SURVEY CONTROL SHOWN IN THESE PLANS ARE BASED A TOPOGRAPHIC SURVEY PROVIDED BY THE OWNER.
2. PROPERTY BOUNDARY AND POWERLINE EASEMENT WERE OBTAINED FROM BOUNDARY SURVEY PROVIDED BY THE OWNER AND PREPARED BY CRAFTON TULL DATED JULY 8, 2021.
3. PERMITTED LIMIT OF DISPOSAL WAS OBTAINED FROM PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
4. GROUNDWATER MONITORING WELL LOCATIONS OBTAINED FROM GROUNDWATER MONITORING REPORT BY TTL, INC. DATED OCTOBER 13, 2020.
5. EXISTING TOPOGRAPHY WAS OBTAINED FROM SURVEY PROVIDED BY OWNER AND PREPARED BY FIRMATEK DATED APRIL 12, 2023.
6. BUFFER ENCROACHMENT ZONES WERE PREVIOUSLY IDENTIFIED IN MAJOR MODIFICATION PERMIT DRAWINGS PREPARED BY CDG AND DATED MARCH 2004. ENCROACHMENTS WERE SUBSEQUENTLY APPROVED BY ADEM.
7. PMW-8 IS LOCATED IN AN AREA OF FUTURE CONSTRUCTION GRADING. IF POSSIBLE THE WELL WILL BE LOWERED. IF NOT FEASIBLE THE WELL WILL BE ABANDONED AND REPLACED BY OFFSET LOCATION PMW-8R.

LEGEND

- PROPERTY BOUNDARY
- WASTE SETBACK
- ROW ROW ROW — POWERLINE RIGHT-OF-WAY
- PERMITTED DISPOSAL BOUNDARY
- CELL LIMITS
- BUFFER ENCROACHMENT (6)
- 320 — EXISTING 2' / 10' CONTOURS - 4/12/2023
- PMW-04 — GROUNDWATER MONITORING WELL
- MM-5 — METHANE MONITORING LOCATION
- DSN00X-1 — STORMWATER OUTFALL LOCATION

REV	DATE	DRA. BY	RVW. BY	APPR. BY	DESCRIPTION
0	07/14/2023	CRW	CRW	CRW	ISSUED FOR PERMITTING

PREPARED FOR:

CYPRESS CREEK LANDFILL, LLC
6315 52ND AVENUE EAST
TUSCALOOSA, AL

PREPARED BY:
PROMUS ENGINEERING
1200 MOUNTAIN CREEK RD, SUITE 102 CHATTANOOGA, TENNESSEE 37405

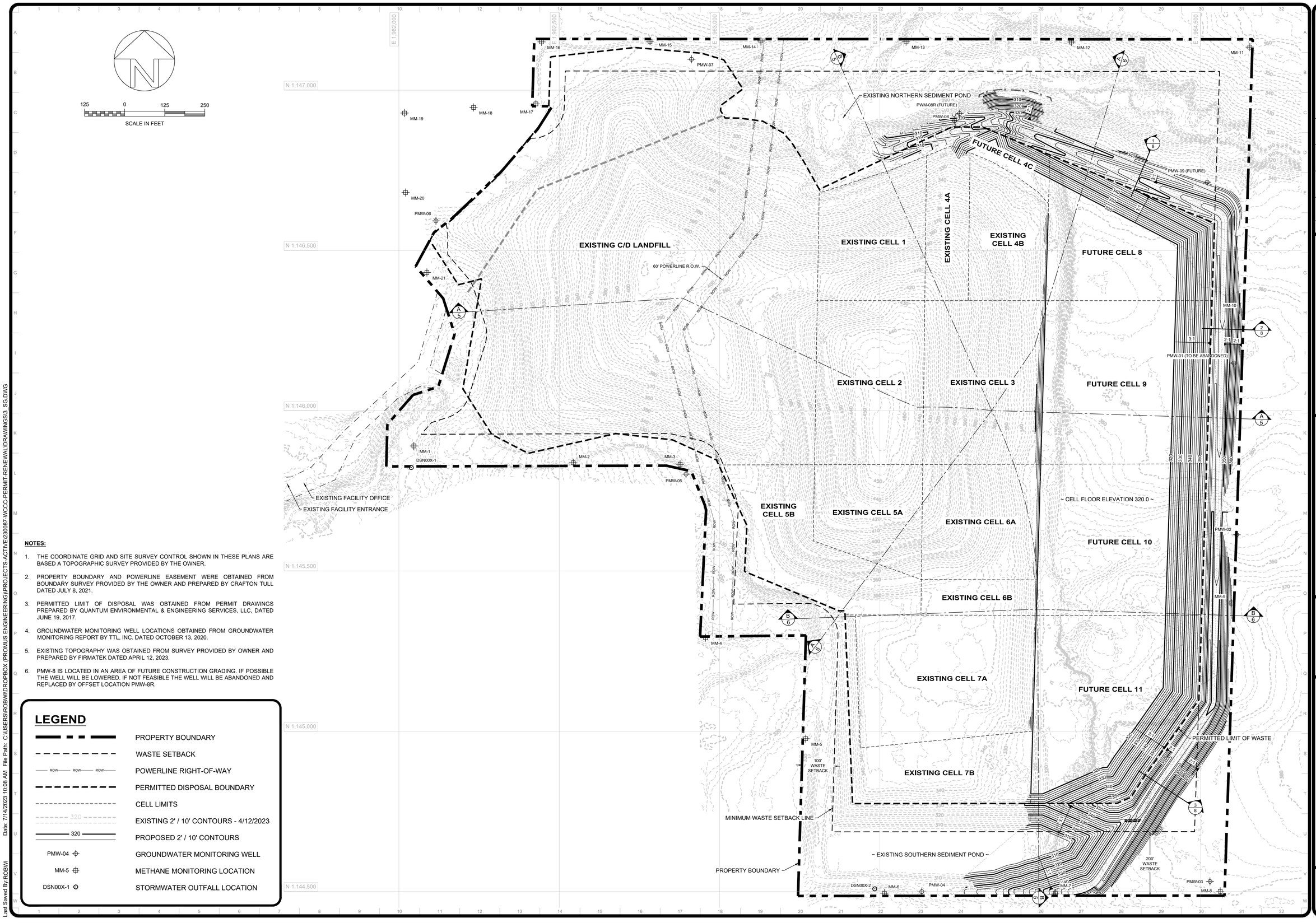
ALABAMA LICENSED No. 31566 PROFESSIONAL ENGINEER 7/14/2023 CHARLES R. WITCHER

EXISTING SITE CONDITIONS

PERMIT DRAWINGS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA 35405

PROJECT NO.: 230087
SHEET NUMBER
2

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NOTES:

1. THE COORDINATE GRID AND SITE SURVEY CONTROL SHOWN IN THESE PLANS ARE BASED A TOPOGRAPHIC SURVEY PROVIDED BY THE OWNER.
2. PROPERTY BOUNDARY AND POWERLINE EASEMENT WERE OBTAINED FROM BOUNDARY SURVEY PROVIDED BY THE OWNER AND PREPARED BY CRAFTON TULL DATED JULY 8, 2021.
3. PERMITTED LIMIT OF DISPOSAL WAS OBTAINED FROM PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
4. GROUNDWATER MONITORING WELL LOCATIONS OBTAINED FROM GROUNDWATER MONITORING REPORT BY TTL, INC. DATED OCTOBER 13, 2020.
5. EXISTING TOPOGRAPHY WAS OBTAINED FROM SURVEY PROVIDED BY OWNER AND PREPARED BY FIRMATEK DATED APRIL 12, 2023.
6. PMW-8 IS LOCATED IN AN AREA OF FUTURE CONSTRUCTION GRADING. IF POSSIBLE THE WELL WILL BE LOWERED. IF NOT FEASIBLE THE WELL WILL BE ABANDONED AND REPLACED BY OFFSET LOCATION PMW-8R.

LEGEND

- PROPERTY BOUNDARY
- WASTE SETBACK
- ROW POWERLINE RIGHT-OF-WAY
- PERMITTED DISPOSAL BOUNDARY
- CELL LIMITS
- 320 EXISTING 2' / 10' CONTOURS - 4/12/2023
- 320 PROPOSED 2' / 10' CONTOURS
- PMW-04 GROUNDWATER MONITORING WELL
- MM-5 METHANE MONITORING LOCATION
- DSN00X-1 STORMWATER OUTFALL LOCATION

REV	DATE	DRA. BY	RVW. BY	APPR. BY	DESCRIPTION
0	07/14/2023	CRW	CRW	CRW	ISSUED FOR PERMITTING

PREPARED FOR:

CYPRESS CREEK LANDFILL, LLC
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PREPARED BY:

PROMUS ENGINEERING
1200 MOUNTAIN CREEK RD. SUITE 102 CHATTANOOGA, TENNESSEE 37405

ALABAMA LICENSED No. 31554 PROFESSIONAL ENGINEER CHARLES R. WITCHER 7/14/2023

SUBGRADE PLAN

PERMIT DRAWINGS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA 35405

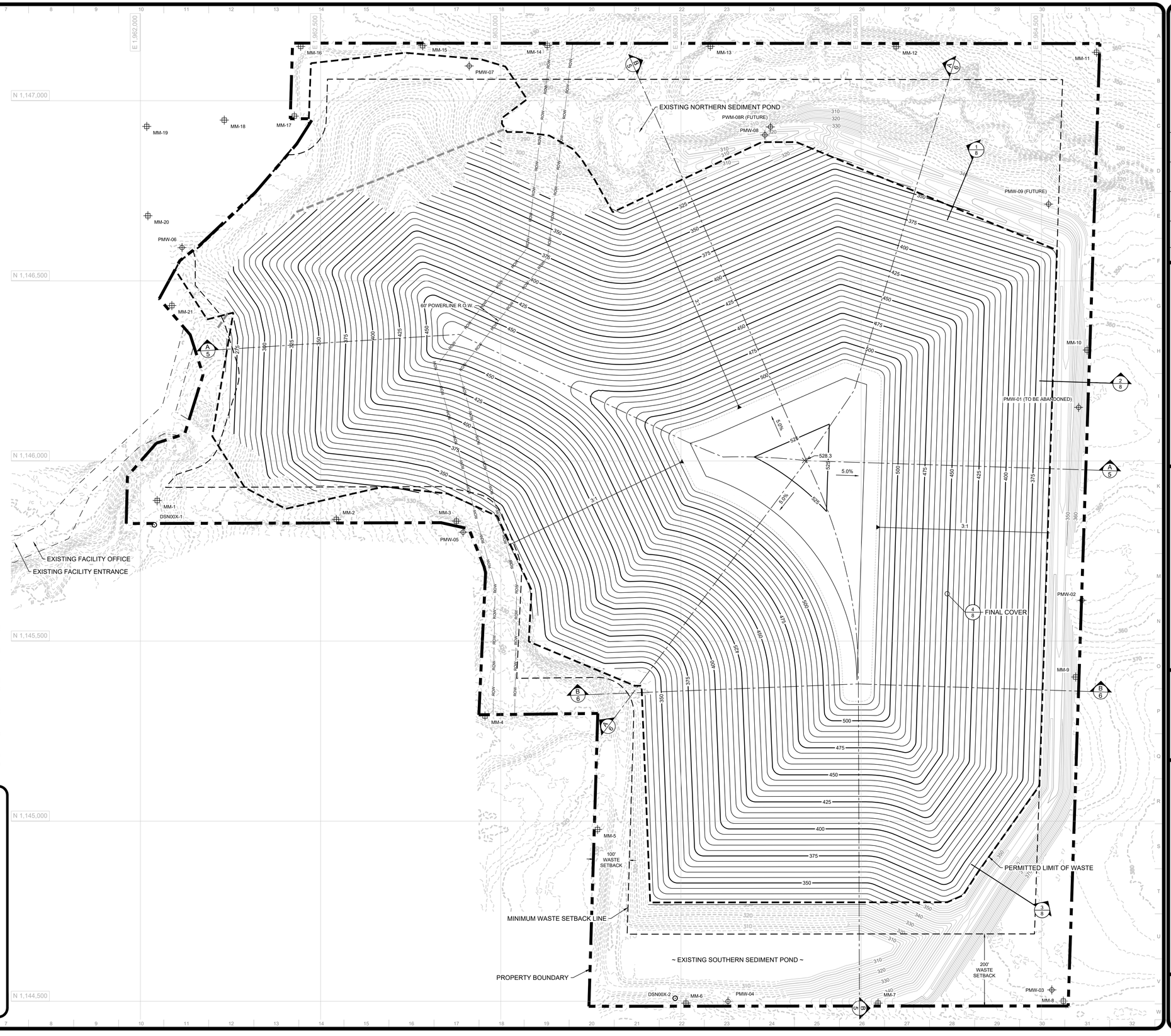
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125 0 125 250

SCALE IN FEET



NOTES:

1. THE COORDINATE GRID AND SITE SURVEY CONTROL SHOWN IN THESE PLANS ARE BASED A TOPOGRAPHIC SURVEY PROVIDED BY THE OWNER.
2. PROPERTY BOUNDARY AND POWERLINE EASEMENT WERE OBTAINED FROM BOUNDARY SURVEY PROVIDED BY THE OWNER AND PREPARED BY CRAFTON TULL DATED JULY 8, 2021.
3. PERMITTED LIMIT OF DISPOSAL WAS OBTAINED FROM PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
4. GROUNDWATER MONITORING WELL LOCATIONS OBTAINED FROM GROUNDWATER MONITORING REPORT BY TTL, INC. DATED OCTOBER 13, 2020.
5. EXISTING TOPOGRAPHY WAS OBTAINED FROM SURVEY PROVIDED BY OWNER AND PREPARED BY FIRMATEK DATED APRIL 12, 2023.
6. PMW-8 IS LOCATED IN AN AREA OF FUTURE CONSTRUCTION GRADING. IF POSSIBLE THE WELL WILL BE LOWERED. IF NOT FEASIBLE THE WELL WILL BE ABANDONED AND REPLACED BY OFFSET LOCATION PMW-8R.

LEGEND

- PROPERTY BOUNDARY
- WASTE SETBACK
- ROW ROW ROW — POWERLINE RIGHT-OF-WAY
- PERMITTED DISPOSAL BOUNDARY
- 320 — EXISTING 2' / 10' CONTOURS - 4/12/2023
- 320 — 2' / 10' SUBGRADE CONTOURS
- 450 — 5' / 25' FINAL COVER CONTOURS
- PMW-04 — GROUNDWATER MONITORING WELL
- MM-5 — METHANE MONITORING LOCATION
- DSN00X-1 — STORMWATER OUTFALL LOCATION

REV	DATE	DRA. BY	RVW. BY	APPR. BY	DESCRIPTION
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6315 52ND AVENUE EAST
TUSCALOOSA, AL

PREPARED BY:

PROMUS ENGINEERING

1200 MOUNTAIN CREEK RD. SUITE 102 CHATTANOOGA, TENNESSEE 37405

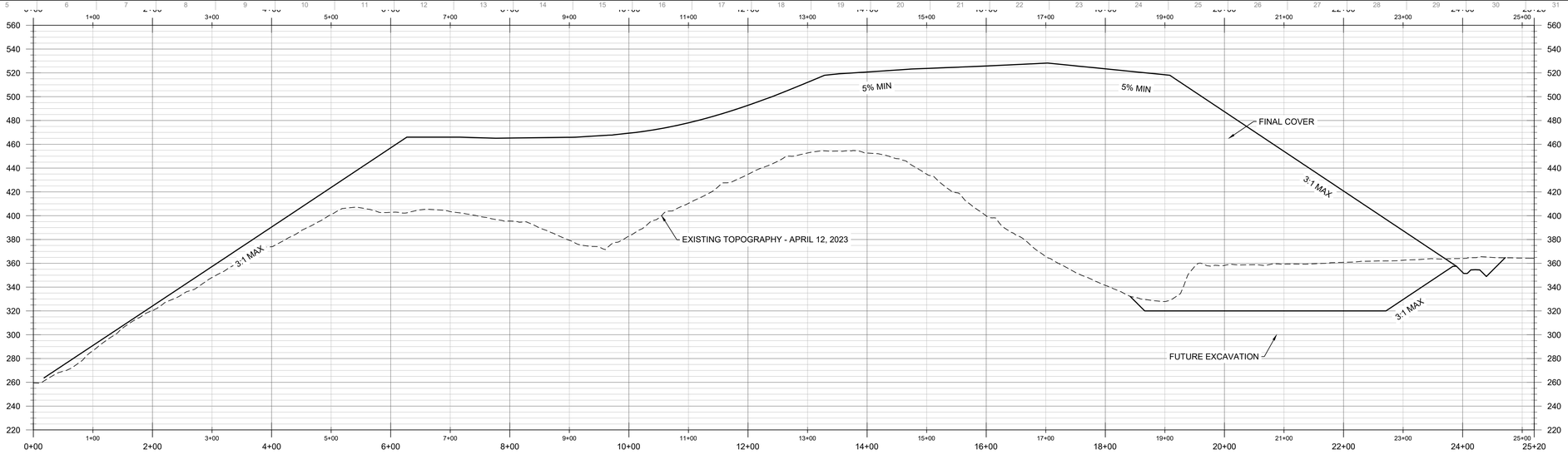
ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 31552
7/14/2023
CHARLES R. WITCHER

FINAL COVER PLAN

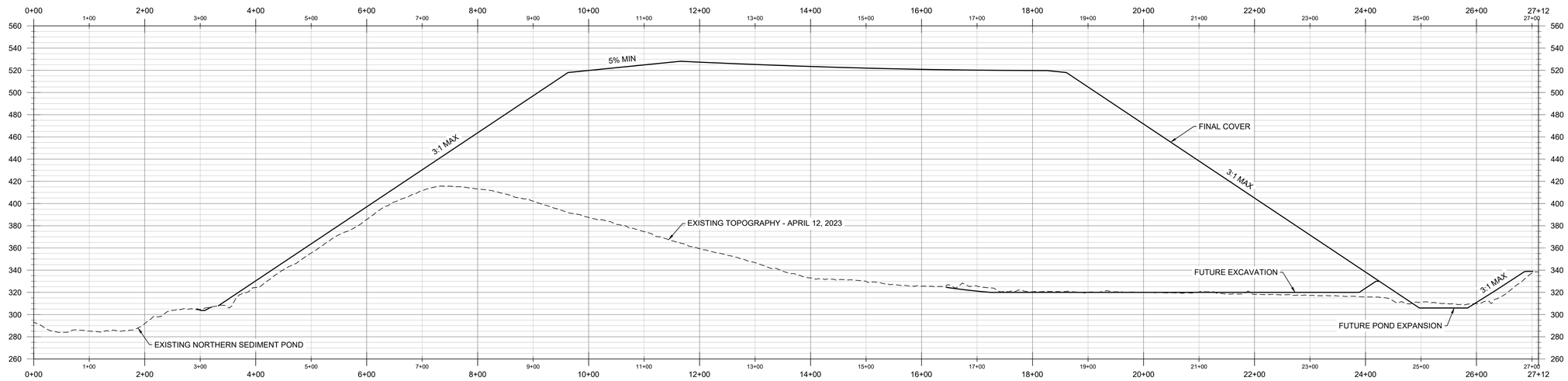
PERMIT DRAWINGS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA 35405

PROJECT NO.: 230087
SHEET NUMBER
4

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SECTION A5



SECTION B5

100 0 100 200

SCALE IN FEET

REV	DATE	DRA. BY	RVW. BY	APPR. BY	DESCRIPTION
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CYPRESS CREEK LANDFILL, LLC
6315 52ND AVENUE EAST
TUSCALOOSA, AL

PREPARED BY:

PROMUS ENGINEERING
1200 MOUNTAIN CREEK RD, SUITE 102 CHATTANOOGA, TENNESSEE 37405

ALABAMA LICENSED No. 37564 PROFESSIONAL ENGINEER CHARLES R. WITCHER 7/14/2023

CROSS SECTIONS

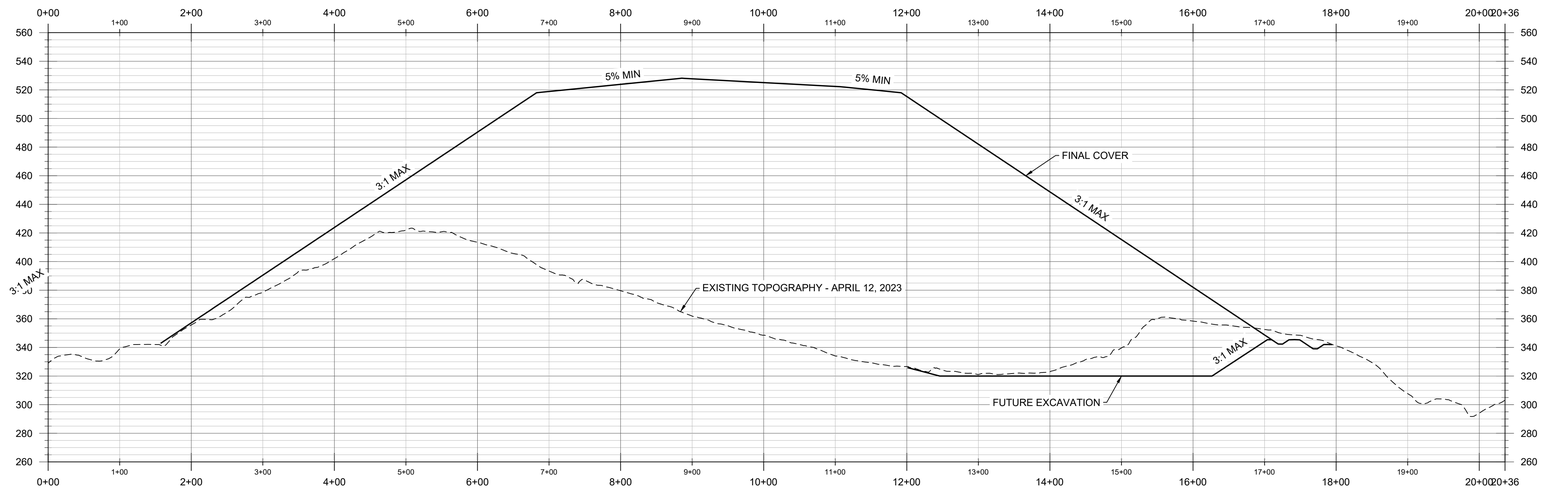
PERMIT DRAWINGS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA 35405

PROJECT NO.: 230087

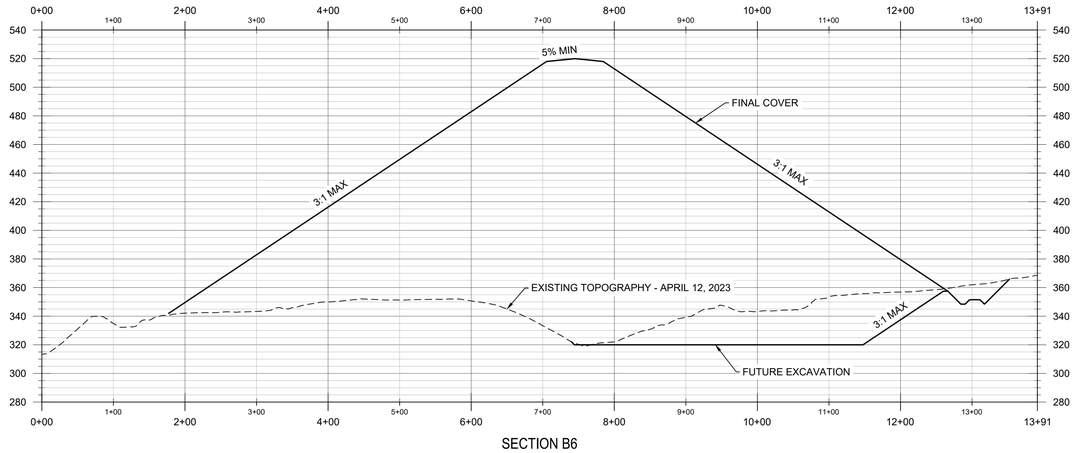
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SECTION A6



SECTION B6

100 0 100 200

SCALE IN FEET

REV	DATE	DRA. BY	RVW. BY	APPR. BY	DESCRIPTION
0	07/14/2023	CRW	CRW	CRW	ISSUED FOR PERMITTING

PREPARED FOR:

CYPRESS CREEK LANDFILL, LLC
6315 52ND AVENUE EAST
TUSCALOOSA, AL

PREPARED BY:

PROMUS ENGINEERING
1200 MOUNTAIN CREEK RD, SUITE 102 CHATTANOOGA, TENNESSEE 37405

ALABAMA LICENSED No. 31564 PROFESSIONAL ENGINEER 7/14/2023 CHARLES R. WITCHER

CROSS SECTION

PERMIT DRAWINGS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA 35405

PROJECT NO.: 230087

SHEET NUMBER

6

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125 0 125 250

SCALE IN FEET

NOTES:

1. THE COORDINATE GRID AND SITE SURVEY CONTROL SHOWN IN THESE PLANS ARE BASED A TOPOGRAPHIC SURVEY PROVIDED BY THE OWNER.
2. PROPERTY BOUNDARY AND POWERLINE EASEMENT WERE OBTAINED FROM BOUNDARY SURVEY PROVIDED BY THE OWNER AND PREPARED BY CRAFTON TULL DATED JULY 8, 2021.
3. PERMITTED LIMIT OF DISPOSAL WAS OBTAINED FROM PERMIT DRAWINGS PREPARED BY QUANTUM ENVIRONMENTAL & ENGINEERING SERVICES, LLC, DATED JUNE 19, 2017.
4. GROUNDWATER MONITORING WELL LOCATIONS OBTAINED FROM GROUNDWATER MONITORING REPORT BY TTL, INC. DATED OCTOBER 13, 2020.
5. EXISTING TOPOGRAPHY WAS OBTAINED FROM SURVEY PROVIDED BY OWNER AND PREPARED BY FIRMATEK DATED APRIL 12, 2023.
6. PMW-8 IS LOCATED IN AN AREA OF FUTURE CONSTRUCTION GRADING. IF POSSIBLE THE WELL WILL BE LOWERED. IF NOT FEASIBLE THE WELL WILL BE ABANDONED AND REPLACED BY OFFSET LOCATION PMW-8R.

EROSION AND SEDIMENT CONTROL NOTES:

1. EROSION AND SEDIMENT CONTROL INSTALLATION AND MAINTENANCE SHALL BE CONDUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND CURRENT EDITION OF THE ALABAMA HANDBOOK FOR EROSION CONTROL, SEDIMENT CONTROL AND STORMWATER MANAGEMENT ON CONSTRUCTION SITES AND URBAN AREAS.
2. ALL ACTIVITY AND EROSION CONTROL MEASURES ARE SUBJECT TO THE INSPECTION OF ADEM. ADDITIONAL MEASURES MAY BE REQUIRED FOR INCLEMENT WEATHER, CHANGE IN FIELD CONDITIONS, OR IF THE ADEM REQUIRES ADJUSTMENTS TO THE PLAN TO MEET LOCAL OR STATE STANDARDS. NOTIFY THE ENGINEER TO COORDINATE REVISION TO THE PLAN TO ACCOMMODATE THESE CHANGES AS NECESSARY.
3. TEMPORARY SOIL STABILIZATION MUST BE APPLIED IN ALL DENUDED AREAS WITHIN 15 DAYS OF INACTIVITY IN ACCORDANCE WITH ADEM.
4. CONSTRUCTION EXITS OR TIRE WASHRACKS MAY BE REQUIRED TO REMOVE DIRT FROM VEHICLE TIRES PRIOR TO USING THE PUBLIC RIGHT-OF-WAY. PERIODIC TOP DRESSING OF THE CONSTRUCTION EXIT WITH ADDITIONAL STONE MAY BE REQUIRED TO MAINTAIN OPTIMAL EFFECTS. SOIL MATERIALS SHALL NOT EXIT THE SITE.
5. DUST CREATED ON SITE SHALL BE CONTROLLED AT ALL TIMES. WATERING OR OTHER METHODS MAY BE REQUIRED.
6. EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE INSPECTED ON A REGULAR BASIS BY AN INDIVIDUAL THAT IS CERTIFIED BY ADEM AS A QUALIFIED CREDENTIALED PROFESSIONAL (QCP) OR A QUALIFIED CREDENTIALED INSPECTOR (QCI) TO CONDUCT REGULAR INSPECTIONS OF REGULATED CONSTRUCTION ACTIVITIES AND ENSURE THAT EFFECTIVE EROSION AND SEDIMENT CONTROLS ARE BEING MAINTAINED.
7. DEVICES SHALL BE CLEANED AND MAINTAINED WHEN SILT ACCUMULATION REACHES A LEVEL THAT DEEMS IT INEFFECTIVE, AS NOTED BY THE INSPECTOR. THE INSPECTOR SHALL ALSO NOTIFY THE OWNER IF ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES ARE NEEDED OR IF ANY OTHER REVISIONS TO THE CURRENT PLAN ARE REQUIRED. THE CONTRACTOR SHALL KEEP AN INSPECTION LOG AND RAIN GAUGE WITH RECORDED RAINFALL MEASUREMENTS ON SITE.
8. UPON FINAL CLOSURE, FURTHER INSPECTION AND MAINTENANCE MAY BE REQUIRED FOR THE OWNER UNTIL ALL DENUDED AREAS ON THE SITE ARE STABILIZED IN ACCORDANCE WITH ADEM STANDARDS.

LEGEND

- PROPERTY BOUNDARY
- PERMITTED DISPOSAL BOUNDARY
- EXISTING 2' / 10' CONTOURS - 4/12/2023
- 2' / 10' SUBGRADE CONTOURS
- 5' / 25' FINAL COVER CONTOURS
- PMW-04 — GROUNDWATER MONITORING WELL
- MM-5 — METHANE MONITORING LOCATION
- DSN00X-1 — STORMWATER OUTFALL LOCATION
- STORMWATER DIVERSION BERM
- STORMWATER DOWNDRAIN PIPE
- STORMWATER CULVERT
- RIPRAP OUTLET PROTECTION
- ROCK CHECK DAM
- EROSION MATTING
- PERMANENT VEGETATION
- GRAVEL PAVING
- SILT FENCE

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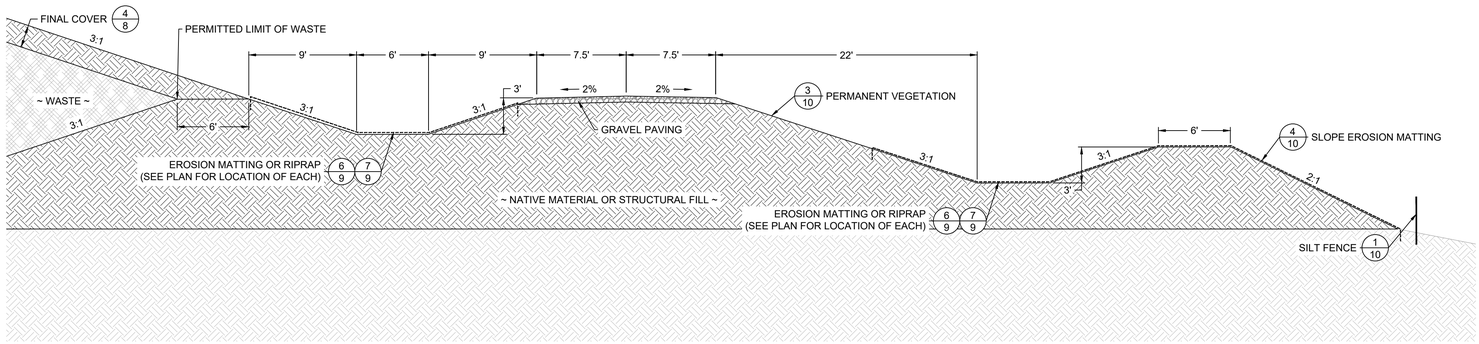
ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 31554
7/14/2023
CHARLES R. WITCHER

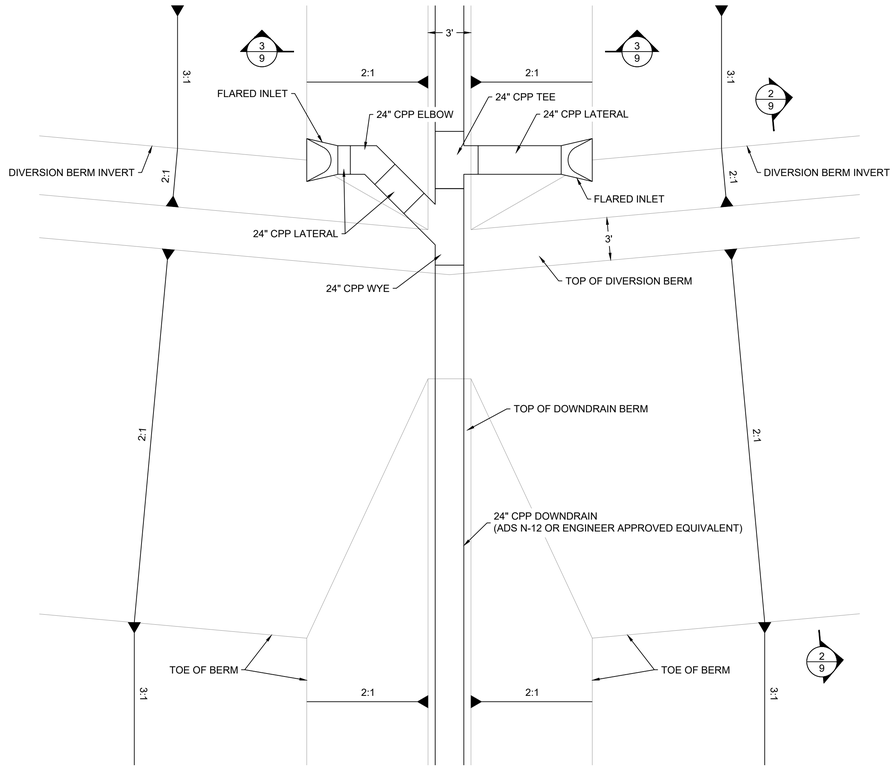
STORMWATER MANAGMENT AND EROSION CONTROL PLAN

PERMIT DRAWINGS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA 35405

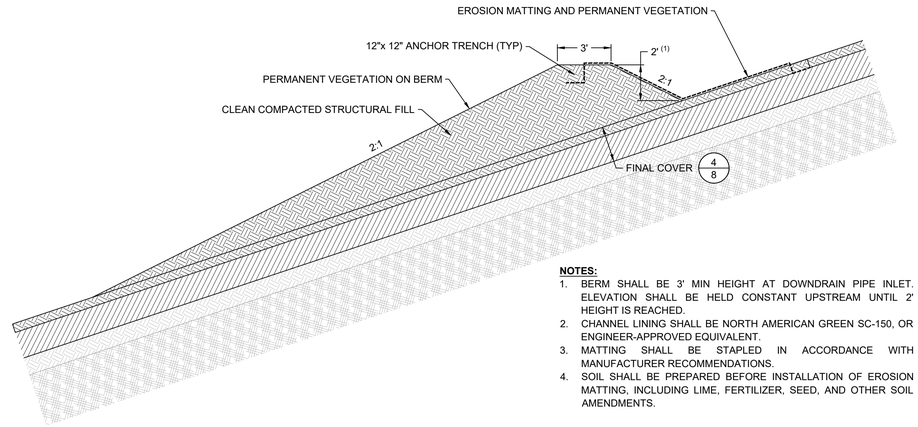
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FINAL COVER 4/8
PERMITTED LIMIT OF WASTE
3:1
~ WASTE ~
9'
6'
9'
7.5'
7.5'
22'
3'
2%
2%
3:1
6'
3:1
3:1
3:1
3:1
3'
3' MIN
3' MIN
3' MIN

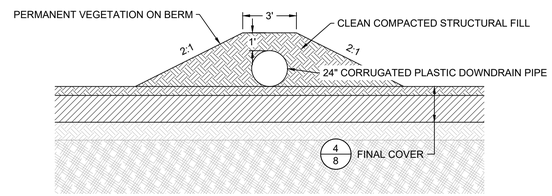


1/9 DIVERSION AND DOWNDRAIN INTERSECTION
NTS

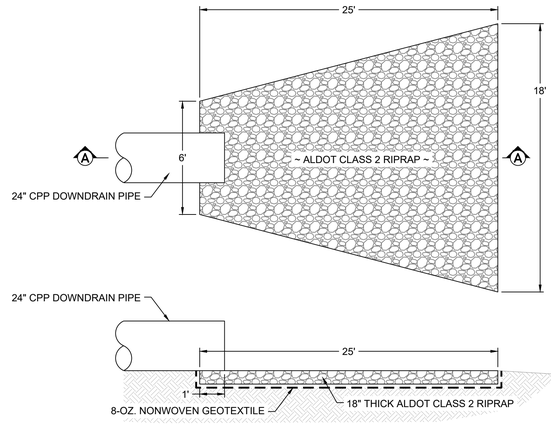


NOTES:
1. BERM SHALL BE 3' MIN HEIGHT AT DOWNDRAIN PIPE INLET. ELEVATION SHALL BE HELD CONSTANT UPSTREAM UNTIL 2' HEIGHT IS REACHED.
2. CHANNEL LINING SHALL BE NORTH AMERICAN GREEN SC-150, OR ENGINEER-APPROVED EQUIVALENT.
3. MATTING SHALL BE STAPLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
4. SOIL SHALL BE PREPARED BEFORE INSTALLATION OF EROSION MATTING, INCLUDING LIME, FERTILIZER, SEED, AND OTHER SOIL AMENDMENTS.

2/9 STORMWATER DIVERSION
NTS

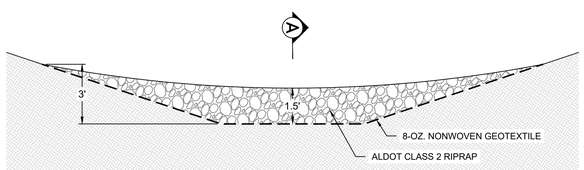


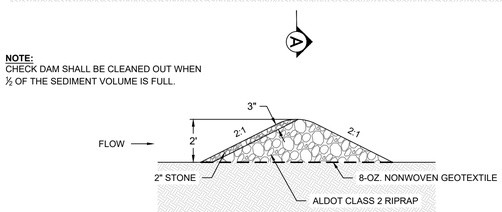
3/9 STORMWATER DOWNDRAIN PIPE
NTS



A CROSS SECTION THROUGH RIPRAP OUTLET PROTECTION

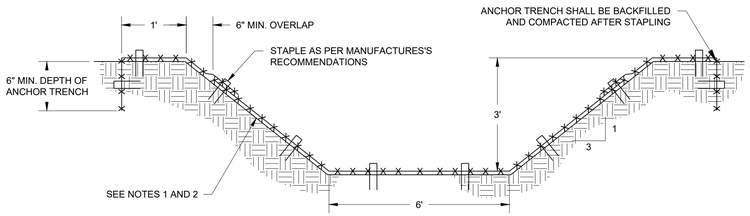
4/9 RIPRAP OUTLET PROTECTION
NTS





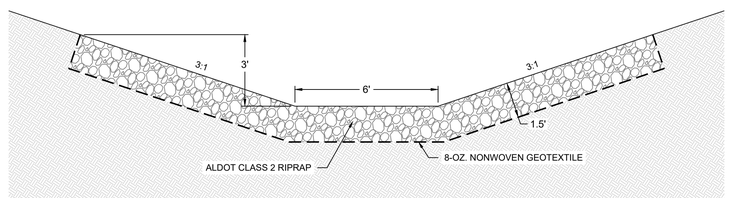
A CROSS SECTION

5/9 CHECK DAM
NTS



NOTES:
1. SOIL SHALL BE PREPARED BEFORE INSTALLATION OF TURF REINFORCEMENT MAT, INCLUDING LIME, FERTILIZER AND SEED.
2. CHANNEL LINING MATERIAL SHALL BE NORTH AMERICAN GREEN SC150 OR ENGINEER-APPROVED EQUIVALENT.

6/9 CHANNEL LINING - MATTING
NTS



7/9 CHANNEL LINING - RIPRAP
NTS

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ALABAMA LICENSED No. 31554 PROFESSIONAL 7/14/2023 ENGINEER CHARLES R. WITCHER

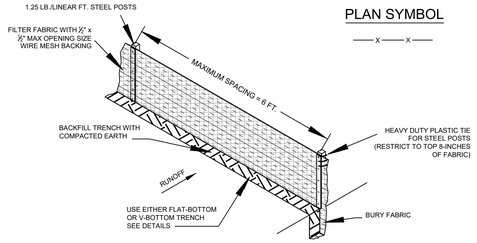
DETAILS

PERMIT DRAWINGS
CYPRESS CREEK LANDFILL
TUSCALOOSA, ALABAMA 35405

PROJECT NO.: 230087
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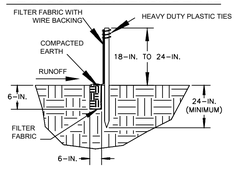
SILT FENCE INSTALLATION



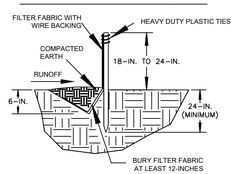
PLAN SYMBOL

—— x —— x ——

FLAT-BOTTOM TRENCH DETAIL



V-SHAPED TRENCH DETAIL



SILT FENCE - GENERAL NOTES

1. DO NOT PLACE SILT FENCE ACROSS CHANNELS OR IN OTHER AREAS SUBJECT TO CONCENTRATED FLOWS. SILT FENCE SHOULD NOT BE USED AS A VELOCITY CONTROL BMP. CONCENTRATED FLOWS ARE ANY FLOWS GREATER THAN 0.5 CFS.
2. MAXIMUM SHEET OR OVERLAND FLOW PATH LENGTH TO THE SILT FENCE SHALL BE 100-FEET.
3. MAXIMUM SLOPE STEEPNESS (NORMAL [PERPENDICULAR] TO THE FENCE LINE) SHALL BE 2:1.
4. SILT FENCE JOINTS, WHEN NECESSARY, SHALL BE COMPLETED BY ONE OF THE FOLLOWING OPTIONS.
   - WRAP EACH FABRIC TOGETHER AT A SUPPORT POST WITH BOTH ENDS FASTENED TO THE POST, WITH A 1-FOOT MINIMUM OVERLAP;
   - OVERLAP SILT FENCE BY INSTALLING 3-FEET PASSED THE SUPPORT POST TO WHICH THE NEW SILT FENCE ROLL IS ATTACHED. ATTACH OLD ROLL TO NEW ROLL WITH HEAVY-DUTY PLASTIC TIES; OR,
   - OVERLAP ENTIRE WIDTH OF EACH SILT FENCE ROLL FROM ONE SUPPORT POST TO THE NEXT SUPPORT POST.
5. ATTACH FILTER FABRIC TO THE STEEL POSTS USING HEAVY-DUTY PLASTIC TIES THAT ARE EVENLY SPACED WITHIN THE TOP 8-INCHES OF THE FABRIC.
6. INSTALL THE SILT FENCE PERPENDICULAR TO THE DIRECTION OF THE STORMWATER FLOW AND PLACE THE SILT FENCE THE PROPER DISTANCE FROM THE TOE OF STEEP SLOPES TO PROVIDE SEDIMENT STORAGE AND ACCESS FOR MAINTENANCE AND CLEANOUT.
7. INSTALL SILT FENCE CHECKS (TIE-BACKS) EVERY 50-100 FEET, DEPENDENT ON SLOPE, ALONG SILT FENCE THAT IS INSTALLED WITH SLOPE AND WHERE CONCENTRATED FLOWS ARE EXPECTED OR ARE DOCUMENTED ALONG THE PROPOSED/INSTALLED SILT FENCE.

SILT FENCE - POST REQUIREMENTS

1. SILT FENCE POSTS MUST BE 48-INCH LONG STEEL POSTS THAT MEET, AT A MINIMUM, THE FOLLOWING PHYSICAL CHARACTERISTICS.
   - COMPOSED OF A HIGH STRENGTH STEEL WITH A MINIMUM YIELD STRENGTH OF 50,000 PSI.
   - INCLUDE A STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-INCHES AND A NOMINAL "T" LENGTH OF 1.48-INCHES.
   - WEIGH 1.25 POUNDS PER FOOT (± 8%)
2. POSTS SHALL BE EQUIPPED WITH PROJECTIONS TO AID IN FASTENING OF FILTER FABRIC.
3. STEEL POSTS MAY NEED TO HAVE A METAL SOIL STABILIZATION PLATE WELDED NEAR THE BOTTOM WHEN INSTALLED ALONG STEEP SLOPES OR INSTALLED IN LOOSE SOILS. THE PLATE SHOULD HAVE A MINIMUM CROSS SECTION OF 17-SQUARE INCHES AND BE COMPOSED OF 15 GAUGE STEEL, AT A MINIMUM. THE METAL SOIL STABILIZATION PLATE SHOULD BE COMPLETELY BURIED.
4. INSTALL POSTS TO A MINIMUM OF 24-INCHES. A MINIMUM HEIGHT OF 1- TO 2- INCHES ABOVE THE FABRIC SHALL BE MAINTAINED, AND A MAXIMUM HEIGHT OF 3 FEET SHALL BE MAINTAINED ABOVE THE GROUND.
5. POST SPACING SHALL BE AT A MAXIMUM OF 6-FEET ON CENTER.

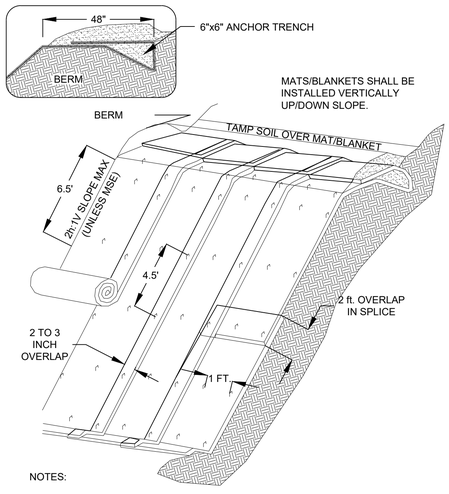
SILT FENCE - FABRIC / WIRE MESH REQUIREMENTS

1. SILT FENCE MUST BE COMPOSED OF WOVEN GEOTEXTILE FILTER FABRIC THAT CONSISTS OF THE FOLLOWING REQUIREMENTS:
   - COMPOSED OF FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS OF AT LEAST 85% BY WEIGHT OF POLYOLEFINS, POLYESTERS, OR POLYAMIDES THAT ARE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER;
   - FREE OF ANY TREATMENT OR COATING WHICH MIGHT ADVERSELY ALTER ITS PHYSICAL PROPERTIES AFTER INSTALLATION;
   - FREE OF ANY DEFECTS OR FLAWS THAT SIGNIFICANTLY AFFECT ITS PHYSICAL AND/OR FILTERING PROPERTIES; AND,
   - HAVE A MINIMUM WIDTH OF 36-INCHES.
2. USE ONLY FABRIC APPEARING ON ALDOT QUALIFIED PRODUCTS LISTING, MEETING THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE ALDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
3. 12-INCHES OF THE FABRIC SHOULD BE PLACED WITHIN EXCAVATED TRENCH AND TOED IN WHEN THE TRENCH IS BACKFILLED.
4. FILTER FABRIC SHALL BE PURCHASED IN CONTINUOUS ROLLS AND CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS.
5. FILTER FABRIC SHALL BE INSTALLED AT A MINIMUM OF 24-INCHES ABOVE THE GROUND.
6. USE HARDWARE FABRIC OR COMPARABLE WIRE MESH WITH MAXIMUM OPENINGS OF 0.5-INCHES x 0.5-INCHES AS THE SUPPORTING MATERIAL.

SILT FENCE - INSPECTION & MAINTENANCE

1. THE KEY TO FUNCTIONAL SILT FENCE IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.
2. REGULAR INSPECTIONS OF SILT FENCE SHALL BE CONDUCTED ONCE EVERY CALENDAR WEEK AND, AS RECOMMENDED, WITHIN 24-HOURS AFTER EACH RAINFALL EVEN THAT PRODUCES 1/2-INCH OR MORE OF PRECIPITATION.
3. ATTENTION TO SEDIMENT ACCUMULATIONS ALONG THE SILT FENCE IS EXTREMELY IMPORTANT. ACCUMULATED SEDIMENT SHOULD BE CONTINUALLY MONITORED AND REMOVED WHEN NECESSARY.
4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES 1/3 THE HEIGHT OF THE SILT FENCE.
5. REMOVED SEDIMENT SHALL BE PLACED IN STOCKPILE STORAGE AREAS OR SPREAD THINLY ACROSS DISTURBED AREA. STABILIZE THE REMOVED SEDIMENT AFTER IT IS RELOCATED.
6. CHECK FOR AREAS WHERE STORMWATER RUNOFF HAS ERODED A CHANNEL BENEATH THE SILT FENCE, OR WHERE THE FENCE HAS SAGGED OR COLLAPSED DUE TO RUNOFF OVERTOPPING THE SILT FENCE. INSTALL CHECKS/TIE-BACKS AND/OR REINSTALL SILT FENCE, AS NECESSARY.
7. CHECK FOR TEARS WITHIN THE SILT FENCE, AREAS WHERE SILT FENCE HAS BEGUN TO DECOMPOSE, AND FOR ANY OTHER CIRCUMSTANCE THAT MAY RENDER THE SILT FENCE INEFFECTIVE. REMOVED DAMAGED SILT FENCE AND REINSTALL NEW SILT FENCE IMMEDIATELY.
8. SILT FENCE SHOULD BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION IS ACHIEVED AND ONCE IT IS REMOVED, THE RESULTING DISTURBED AREA SHALL BE PERMANENTLY STABILIZED.

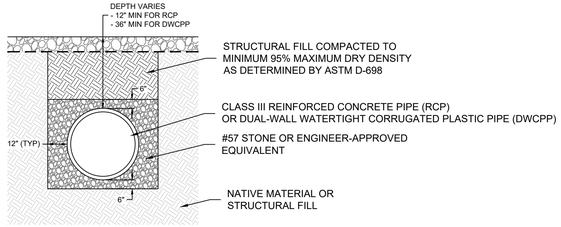
1/10 SILT FENCE
NTS



NOTES:

1. SINGLE-SIDED MATTING SHALL BE NORTH AMERICAN GREEN SC-150, OR ENGINEER-APPROVED EQUIVALENT.
2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL BE INSTALLED IN INTIMATE CONTACT WITH SOIL.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

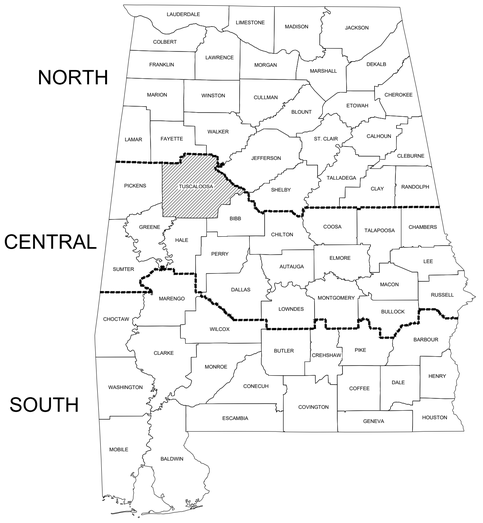
4/10 SLOPE EROSION MATTING
NTS



2/10 CULVERT BEDDING
NTS

SPECIES	SEEDING RATE (PLS per acre)	NORTH	CENTRAL SEEDING DATES	SOUTH
Bahiagrass, Pensecola	40 lbs.	-	Mar 1 - July 1	Feb 1 - Nov 1
Bermudagrass, Common	10 lbs.	Apr 1 - July 1	Mar 15 - July 15	Mar 1 - July 15
Bahiagrass, Pensecola Bermudagrass, Common	30 lbs. 5lbs.	-	Mar 1 - July 1	Mar 1 - July 15
Bermudagrass, Hybrid (Lawn Types)	Solid Sod	Anytime	Anytime	Anytime
Fescue, Tall	40-50 lbs.	Sep 1 - Nov 1	Sep 1 - Nov 1	-
Sericea	40-60 lbs.	Mar 15 - July 15	Mar 1 - July 15	Feb 15 - July 15
Sericea & Common Bermudagrass	40-60 lbs. 10 lbs.	Mar 15 - July 15	Mar 1 - July 15	Feb 15 - July 15
Switchgrass, Alamo	4 lbs.	Apr 1 - June 15	Mar 15 - June 15	Mar 15 - June 15

PLS means pure live seed and is used to adjust seeding rates. For example, to plant 10 lbs. PLS with germination of 80% and 10% inert material, 10 lbs. PLS = 10 lbs / % live seed = 10 / 0.70 = 14.3 lbs.



3/10 PERMANENT VEGETATION
NTS

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ALABAMA LICENSED No. 31004 PROFESSIONAL 7/14/2023 ENGINEER CHARLES R. WITCHER

DETAILS

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