Edward F. Poolos
Director

Jeffery W. Kitchens
Deputy Director

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

Kay Ivey
Governor

September 9, 2026

Mr. John Meuth
Plant Manager
Lhoist North America of Alabama, LLC
14786 Montevallo Road
Brierfield, AL 35035

RE: Draft Permit Modification
Brierfield Quarry
NPDES Permit Number AL0067831
Bibb County (007)

Dear Mr. Meuth:

Transmitted herein is a draft of the above referenced permit. Please review the enclosed draft permit carefully. If previously permitted, the draft may contain additions/revisions to the language in your current permit. Please submit any comments on the draft permit to the Department within 30 days from the date of receipt of this letter.

Since the Department has made a tentative decision to modify the above referenced permit, ADEM Admin. Code r. 335-6-6-.21 requires a public notice of the draft permit followed by a period of at least 30 days for public comment before the permit can be issued. The United States Environmental Protection Agency will also receive the draft permit for review during the 30-day public comment period.

Any mining, processing, construction, land disturbance, or other regulated activity proposed to be authorized by this draft permit is prohibited prior to the effective date of the formal permit. Any mining or processing activity within the drainage basin associated with each permitted outfall which is conducted prior to Departmental receipt of certification from a professional engineer licensed to practice in the State of Alabama, that the Pollution Abatement/Prevention Plan was implemented according to the design plan, or notification from the Alabama Surface Mining Commission that the sediment control structures have been certified, is prohibited.

This permit requires Discharge Monitoring Reports (DMR) to be submitted utilizing the Department's web-based electronic reporting system. Please read Part I.D of the permit carefully and visit https://aepacs.adem.alabama.gov/nviro/ncore/external/home.

Should you have any questions concerning this matter, please contact Ange Boatwright at (334) 274-4208 or maboatwright@adem.alabama.gov.

Sincerely,

William D. McClimans, Chief
Mining and Natural Resource Section
Stormwater Management Branch
Water Division

WDM/mab File: DPER/2791

cc: Ange Boatwright, ADEM
Environmental Protection Agency Region IV
Alabama Department of Conservation and Natural Resources
U.S. Fish and Wildlife Service
Alabama Historical Commission
Advisory Council on Historic Preservation
U.S. Army Corps of Engineers Mobile District
U.S. Army Corps of Engineers Nashville District

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

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

Coastal Office
1615 South Broad Street
Mobile, AL 36605
(251) 450-3400
(251) 479-2593 (FAX)

ADEM
Alabama Department of Environmental Management

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM INDIVIDUAL PERMIT

PERMITTEE: Lhoist North America of Alabama, LLC
14786 Montevallo Road
Brierfield, AL 35035

FACILITY LOCATION: Brierfield Quarry
14786 Montevallo Road
Brierfield, AL
Bibb County
T24S, R11E, S23, 24, 25, 26
T24N, R12E, S19

PERMIT NUMBER: AL0067831

DSN & RECEIVING STREAM: 001-1 Mahan Creek
002-1 Mahan Creek

In accordance with and subject to the provisions of the 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 Permittee is hereby authorized to discharge into the above-named receiving waters.*

ISSUANCE DATE: March 27, 2024

EFFECTIVE DATE: April 1, 2024

EXPIRATION DATE: March 31, 2029

MODIFICATION ISSUANCE DATE:

MODIFICATION EFFECTIVE DATE:

DRAFT

Alabama Department of Environmental Management

MINING AND NATURAL RESOURCE SECTION
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

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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 each point source identified on Page 1 of this Permit and described more fully in the Permittee's application, if the outfalls have been constructed and certified. Discharges shall be limited and monitored by the Permittee as specified below:

Parameter	Discharge Limitations			Monitoring Requirements	
	Daily Minimum	Monthly Average	Daily Maximum	Sample Type	Measurement Frequency[1]
pH 00400	6.0 s.u.	-------	8.5 s.u.	Grab	2/Month
Solids, Total Suspended 00530	-------	25.0 mg/L	45.0 mg/L	Grab	2/Month
Nitrogen, Kjeldahl Total (as N)[2] 00625	-------	Report mg/L	Report mg/L	Grab	1/Month
Nitrite Plus Nitrate Total 1 Det. (as N)[2] 00630	-------	Report mg/L	Report mg/L	Grab	1/Month
Phosphorus, Total (as P)[2] 00665	-------	Report mg/L	Report mg/L	Grab	1/Month
Flow, In Conduit or Thru Treatment Plant[3] 50050	-------	Report MGD	Report MGD	Instantaneous	2/Month

B. REQUIREMENTS TO ACTIVATE A PROPOSED MINING OUTFALL

1. Discharge from any point source identified on Page 1 of this Permit which is a proposed outfall is not authorized by this Permit until the outfall has been constructed and certification received by the Department from a professional engineer, registered in the State of Alabama, certifying that such facility has been constructed according to good engineering practices and in accordance with the Pollution Abatement and/or Prevention (PAP) Plan.

2. Certification required by Part I.B.1. shall be submitted on a completed ADEM Form 432. The certification shall include the latitude and longitude of the constructed and certified outfall.

3. Discharge monitoring and Discharge Monitoring Report (DMR) reporting requirements described in Part I.C. of this Permit do not apply to point sources that have not been constructed and certified.

4. Upon submittal of the certification required by Part I.B.1. to the Department, all monitoring and DMR submittal requirements shall apply to the constructed and certified outfall.

C. DISCHARGE MONITORING AND RECORD KEEPING REQUIREMENTS

1. Sampling Schedule and Frequency

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[1] See Part I.C.2. for further measurement frequency requirements.

[2] Monitoring for Total Phosphorus (as P), Total Kjeldahl Nitrogen (as N), and Total Nitrite plus Nitrate (as N) is applicable only during the months of April, June, August, and October.

[3] Flow must be determined at the time of sample collection by direct measurement, calculation, or other method acceptable to the Department.

a. The Permittee shall collect at least one grab sample of the discharge to surface waters from each constructed and certified point source identified on Page 1 of this Permit and described more fully in the Permittee's application twice per month at a rate of at least every other week if a discharge occurs at any time during the two week period, but need not collect more than two samples per calendar month. Each sample collected shall be analyzed for each parameter specified in Part I.A. of this Permit.

b. If the final effluent is pumped in order to discharge (e.g. from incised ponds, old highwall cuts, old pit areas or depressions, etc.), the Permittee shall collect at least one grab sample of the discharge from each point source identified on Page 1 of this Permit and described more fully in the Permittee's application each quarterly (three month) monitoring period if a discharge occurs at any time during the quarterly monitoring period which results from direct pumped drainage. Each sample collected shall be analyzed for each parameter specified in Part I.A. of this Permit.

c. The Permittee may increase the frequency of sampling listed in Parts I.C.1.a and I.C.1.b; however, all sampling results must be reported to the Department and included in any calculated results submitted to the Department in accordance with this Permit.

2. Measurement Frequency

Measurement frequency requirements found in Part I.A. shall mean:

a. A measurement frequency of one day per week shall mean sample collection on any day of discharge which occurs every calendar week.

b. A measurement frequency of two days per month shall mean sample collection on any day of discharge which occurs every other week, but need not exceed two sample days per month.

c. A measurement frequency of one day per month shall mean sample collection on any day of discharge which occurs during each calendar month.

d. A measurement frequency of one day per quarter shall mean sample collection on any day of discharge which occurs during each calendar quarter.

e. A measurement frequency of one day per six months shall mean sample collection on any day of discharge which occurs during the period of January through June and during the period of July through December.

f. A measurement frequency of one day per year shall mean sample collection on any day of discharge which occurs during each calendar year.

3. Monitoring Schedule

The Permittee shall conduct the monitoring required by Part I.A. in accordance with the following schedule:

a. MONITORING REQUIRED MORE FREQUENTLY THAN MONTHLY AND MONTHLY shall be conducted during the first full month following the effective date of coverage under this Permit and every month thereafter. More frequently than monthly and monthly monitoring may be done anytime during the month, unless restricted elsewhere in this Permit, but the results should be reported on the last Discharge Monitoring Report (DMR) due for the quarter (i.e., with the March, June, September, and December DMRs).

b. 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 complete calendar quarter following the effective date of this Permit and is then required to monitor once during each quarter thereafter. Quarterly monitoring may be done anytime during the quarter, unless restricted elsewhere in this Permit, but the results should be reported on the last DMR due for the quarter (i.e., with the March, June, September, and December DMRs).

c. SEMIANNUAL 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 semiannual monitoring during the first complete semiannual calendar period following the effective date of this Permit and is then required to monitor once during each semiannual period thereafter. Semiannual monitoring may be done anytime during the semiannual period, unless restricted elsewhere in this Permit, but it should be reported on the last DMR due for the month of the semiannual period (i.e., with the June and December DMRs).

d. ANNUAL MONITORING shall be conducted at least once during the period of January through December. The Permittee shall conduct the annual monitoring during the first complete calendar annual period following the effective date of this Permit and is then required to monitor once during each annual period thereafter. Annual monitoring may be done anytime during the year, unless restricted elsewhere in this Permit, but it should be reported on the December DMR.

4. Sampling Location

Unless restricted elsewhere in this Permit, samples collected to comply with the monitoring requirements specified in Part I.A. shall be collected at the nearest accessible location just prior to discharge and after final treatment, or at an alternate location approved in writing by the Department.

5. Representative Sampling

Sample collection and measurement actions 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.

6. 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, guidelines published pursuant to Section 304(h) of the FWPCA, 33 U.S.C. Section 1314(h), and ADEM Standard Operating Procedures. 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 pollutant 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 using the most sensitive EPA approved method. 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 identified in Parts I.C.6.a. and b. 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.

7. 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 or measurements;

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.

8. Routine Inspection by Permittee

a. The Permittee shall inspect all point sources identified on Page 1 of this Permit and described more fully in the Permittee's application and all treatment or control facilities or systems used by the Permittee to achieve compliance with the terms and conditions of this Permit at least as often as the applicable sampling frequency specified in Part I.C.1 of this Permit.

b. The Permittee shall maintain a written log for each point source identified on Page 1 of this Permit and described more fully in the Permittee's application in which the Permittee shall record the following information:

(1) The date and time the point source and any associated treatment or control facilities or systems were inspected by the Permittee;

(2) Whether there was a discharge from the point source at the time of inspection by the Permittee;

(3) Whether a sample of the discharge from the point source was collected at the time of inspection by the Permittee;

(4) Whether all associated treatment or control facilities or systems appeared to be in good working order and operating as efficiently as possible, and if not, a description of the problems or deficiencies; and

(5) The name and signature of the person performing the inspection of the point source and associated treatment or control facilities or systems.

9. 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 this Permit, and records of all data used to complete the above reports or the application for this Permit, for a period of at least three (3) years from the date of the sample collection, measurement, report, or application. This period may be extended by request of the Director at any time. If litigation or other enforcement action, under the AWPCA, AEMA, 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, the Permittee shall provide the Director with a copy of any record required to be retained by this paragraph. Copies of these records should not be submitted unless requested.

b. All records required to be kept for a period of three (3) years shall be kept at the permitted facility or an alternate location approved by the Department in writing and shall be available for inspection.

10. 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. The Permittee shall develop and maintain quality assurance procedures to ensure proper operation and maintenance of all equipment and instrumentation. The quality assurance procedures shall include the proper use, maintenance, and installation, when appropriate, of monitoring equipment at the plant site.

D. DISCHARGE REPORTING REQUIREMENTS

1. Requirements for Reporting of Monitoring

a. Monitoring results obtained during the previous three (3) months shall be summarized for each month on a Discharge Monitoring Report (DMR) Form approved by the Department, and submitted to the Department so that it is received by the Director no later than the 28th day of the month following the quarterly reporting period (i.e., on the 28th day of January, April, July, and October of each year).

b. The Department utilizes a web-based electronic reporting system for submittal of DMRs. **Except as allowed by Part I.D.1.c. or d., the Permittee shall submit all DMRs required by Part I.D.1.a. by utilizing the Department's current electronic reporting system**. The Department's current reporting system, Alabama Environmental Permitting and Compliance System (AEPACS), can be found online at https://aepacs.adem.alabama.gov/nviro/ncore/external/home.

c. If the electronic reporting system is down (i.e. electronic submittal of DMR data is unable to be completed due to technical problems originating with the Department's system; this could include entry/submittal issues with an entire set of DMRs or individual parameters), permittees are not relieved of their obligation to submit DMR data to the Department by the required submittal date. However, if the electronic reporting system is down on the 28th day of the month or is down for an extended period of time as determined by the Department when a DMR is required to be submitted, the facility 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 electronic reporting system resuming operation, the Permittee shall enter the data into the reporting system unless an alternate timeframe is approved by the Department. An attachment should be included with the electronic DMR submittal verifying the original submittal date (date of the fax, copy of dated e-mail, or hand-delivery stamped date).

d. 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 Part I.D.1.j.

e. If the Permittee, using approved analytical methods as specified in Part I.C.6., monitors any discharge from a point source identified on Page 1 of this Permit and describe more fully in the Permittee's application 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 Form, and the increased frequency shall be indicated on the DMR Form.

f. In the event no discharge from a point source identified on Page 1 of this Permit and described more fully in the Permittee's application occurs during a monitoring period, the Permittee shall report "No Discharge" for such period on the appropriate DMR Form.

g. Each DMR Form submitted by the Permittee to the Department in accordance with Part I.D.1. must be legible and bear an original signature or electronic signature. Photo and electronic copies of the signature are not acceptable and shall not satisfy the reporting requirements of this Permit.

h. All reports and forms required to be submitted by this Permit, the AWPCA, and the Department's rules and regulations, shall be signed by a "responsible official" of the Permittee as defined in ADEM Admin. Code r. 335-6-6-.09 or a "duly authorized representative" of such official as defined in ADEM Admin. Code r. 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 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."

i. All DMRs, reports, and forms required to be submitted by this Permit, the AWPCA and the Department's rules and regulations, shall be submitted through the Department's electronic reporting system, AEPACS, or, if in hardcopy, shall be addressed to:

Alabama Department of Environmental Management
Water Division, Mining and Natural Resource Section
Post Office Box 301463
Montgomery, Alabama 36130-1463

Certified and Registered Mail shall be addressed to:

Alabama Department of Environmental Management
Water Division, Mining and Natural Resource Section
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2059

j. Unless authorized in writing by the Department, approved reporting forms required by this Permit or the Department are not to be altered, and if copied or reproduced, must be consistent in format and identical in content to the ADEM approved form. Unauthorized alteration, falsification, or use of incorrectly reproduced forms constitutes noncompliance with the requirements of this Permit and may significantly delay processing of any request, result in denial of the request, result in permit termination, revocation, suspension, modification, or denial of a permit renewal application, or result in other enforcement action.

k. If this Permit is a reissuance, then the Permittee shall continue to submit DMRs in accordance with the requirements of their previous permit until such time as DMRs are due as discussed in Part I.D.1.

2. Noncompliance Notification

a. The Permittee must notify the Department if, for any reason, the Permittee's discharge:

(1) Potentially threatens human health or welfare;

(2) Potentially threatens fish or aquatic life;

(3) Causes an in-stream water quality criterion to be exceeded;

(4) Does not comply with an applicable toxic pollutant effluent standard or prohibition established under Section 307(a) of the FWPCA, 33 U.S.C. §1317(a);

(5) Contains a quantity of a hazardous substance which has been determined may be harmful to the public health or welfare under Section 311(b)(4) of the FWPCA, 33 U.S.C. §1321(b)(4); or

(6) Exceeds any discharge limitation for an effluent parameter as a result of an unanticipated bypass or upset.

The Permittee shall orally or electronically report any of the above occurrences, describing the circumstances and potential effects 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 or electronic report, the Permittee shall submit to the Director a written report as provided in Part I.D.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 a written report to the Director as provided in Part I.D.2.c. This report must be submitted with the next Discharge Monitoring Report required to be submitted by Part I.D.1. of this Permit after becoming aware of the occurrence of such noncompliance.

c. Any written report required to be submitted to the Director in accordance with Parts I.D.2.a. and b. shall be submitted using a Noncompliance Notification Form (ADEM Form 421) available on the Department's website (http://adem.alabama.gov/DeptForms/Form421.pdf) and 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.

1. Reduction, Suspension, or Termination of Monitoring and/or Reporting

a. The Director may, with respect to any point source identified on Page 1 of this Permit and described more fully in the Permittee's application, authorize the Permittee to reduce, suspend, or terminate the monitoring and/or reporting required by this Permit upon the submission of a written request for such reduction, suspension, or termination by the Permittee provided:

(1) All mining, processing, or disturbance in the drainage basin(s) associated with the discharge has ceased and site access is adequately restricted or controlled to preclude unpermitted and unauthorized mining, processing, transportation, or associated operations/activity;

(2) Permanent, perennial vegetation has been re-established on all areas mined or disturbed for at least one year since mining has ceased in the drainage basin(s) associated with the surface discharge, or all areas have been permanently graded such that all drainage is directed back into the mined pit to preclude all surface discharges;

(3) Unless waived in writing by the Department, the Permittee has been granted, in writing, a 100% Bond Release, if applicable, by the Alabama Department of Industrial Relations and, if applicable, by the Surface Mining Commission for all areas mined or disturbed in the drainage basin(s) associated with the discharge;

(4) Unless waived in writing by the Department, the Permittee has submitted inspection reports prepared and certified by a Professional Engineer (PE) registered in the State of Alabama or a qualified professional under the PE's direction which certify that the facility has been fully reclaimed or that water quality remediation has been achieved. The first inspection must be conducted approximately one year prior to and the second inspection must be conducted within thirty days of the Permittee's request for termination of monitoring and reporting requirements;

(5) All surface effects of the mining activity such as fuel or chemical tanks, preparation plants or equipment, old tools or equipment, junk or debris, etc., must be removed and disposed of according to applicable state and federal regulations;

(6) The Permittee's request for termination of monitoring and reporting requirements contained in this Permit has been supported by monitoring data covering a period of at least six consecutive months or such longer period as is necessary to assure that the data reflect discharges occurring during varying seasonal climatological conditions;

(7) The Permittee has stated in its request that the samples collected and reported in the monitoring data submitted in support of the Permittee's request for monitoring termination or suspension are representative of the discharge and were collected in accordance with all Permit terms and conditions respecting sampling times (e.g., rainfall events) and methods and were analyzed in accordance with all Permit terms and conditions respecting analytical methods and procedures;

(8) The Permittee has certified that during the entire period covered by the monitoring data submitted, no chemical treatment of the discharge was provided;

(9) The Permittee's request has included the certification required by Part I.D.1.e. of this Permit; and

(10) The Permittee has certified to the Director in writing as part of the request, its compliance with (1) through (9) above.

b. It remains the responsibility of the Permittee to comply with the monitoring and reporting requirements of this Permit until written authorization to reduce, suspend, or terminate such monitoring and/or reporting is received by the Permittee from the Director.

E. 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.

2. Termination of Discharge

The Permittee shall notify the Director, in writing, when all discharges from any point source(s) identified on Page 1 of this Permit and described more fully in the Permittee's application have permanently ceased.

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 officer(s) having the authority and responsibility to prevent and abate violations of the AWPCA, the AEMA, the Department's rules and regulations, and the terms and conditions of this Permit, in writing, no later than ten (10) days after such change. Upon request of the Director, the Permittee shall furnish the Director with an update of any information provided in the permit application.

b. If the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application 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.

4. Duty to Provide Information

a. The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, suspending, terminating, or revoking and reissuing this Permit, in whole or in part, or to determine compliance with this Permit. The Permittee shall also furnish to the Director upon request, copies of records required to be maintained by this Permit.

b. The Permittee shall furnish to the Director upon request, within a reasonable time, available information (name, phone number, address, and site location) which identifies offsite sources of material or natural resources (mineral, ore, or other material such as iron, coal, coke, dirt, chert, shale, clay, sand, gravel, bauxite, rock, stone, etc.) used in its operation or stored at the facility.

F. SCHEDULE OF COMPLIANCE

The Permittee shall achieve compliance with the discharge limitations specified in Part I.A. of this Permit in accordance with the following schedule:

Compliance must be achieved by the effective date of this Permit.

PART II OTHER REQUIREMENTS, RESPONSIBILITIES, AND DUTIES

A. OPERATIONAL AND MANAGEMENT REQUIREMENTS

1. Facilities Operation and Management

The Permittee shall at all times 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 this 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 this Permit.

2. Pollution Abatement and/or Prevention Plan

a. The Pollution Abatement and/or Prevention (PAP) Plan shall be prepared and certified by a registered PE licensed to practice in the State of Alabama, and shall include, at a minimum:

(1) The information indicated in ADEM Admin. Code ch. 335-6-9 and its Appendices A and B;

(2) A description of methods which will be implemented to prevent offsite vehicle tracking onto roadways and/or into ditches at the entrances and/or exits of the Permittee's operations;

(3) A description of setbacks from waters of the State in units of linear feet on the horizontal plane; a description of the methods taken to visibly delineate setbacks from waters of the State; and a description of any other actions taken to prevent encroachment upon setbacks;

(4) A description of the methods used to delineate the boundaries of coverage under this Permit such that the boundaries are readily visible during the life of the operation;

(5) A description of any other Best Management Practices (BMPs) which will be implemented to provide control of all nonpoint source pollution that is or may be associated with the Permittee's operations;

b. The PAP Plan shall become a part of this Permit and all requirements of the PAP Plan shall become requirements of this Permit pursuant to ADEM Admin Code r. 335-6-9-.05(2). The PAP Plan shall be amended if the Department determines that the existing sediment control measures, erosion control measures, or other site management practices are ineffective or do not meet the requirements of this Permit).

3. Best Management Practices (BMPs)

a. Unless otherwise authorized in writing by the Director, the Permittee shall provide a means of subsurface withdrawal for any discharge from each point source identified on Page 1 of this Permit and described more fully in the Permittee's application. Notwithstanding the above provision, a means of subsurface withdrawal need not be provided for any discharge caused by a 24-hour precipitation event greater than a 10-year, 24-hour precipitation event.

b. Dilution water shall not be added to achieve compliance with discharge limitations except when the Director has granted prior written authorization for dilution to meet water quality requirements.

c. The Permittee shall minimize the contact of water with overburden, including but not limited to stabilizing disturbed areas through grading, diverting runoff, achieving quick growing stands of temporary vegetation, sealing acid-forming and toxic-forming materials, and maximizing placement of waste materials in back-fill areas.

d. The Permittee shall prepare, submit to the Department for approval, and implement a Best Management Practices (BMPs) Plan for containment of any or all process liquids or solids, in a manner such that these materials do not present a potential for discharge, if so required by the Director. When submitted and approved, the BMP Plan shall become a part of this Permit and all requirements of the BMP Plan shall become requirements of this Permit.

e. Spill Prevention, Control, and Management

The Permittee shall prepare, implement, and maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan acceptable to the Department that is prepared and certified by a Professional Engineer (PE), registered in the State of Alabama, for all onsite petroleum product or other pollutant storage tanks or containers as provided by ADEM Admin. Code r. 335-6-6-.08(j)5. The Plan shall describe and the Permittee shall implement appropriate structural and/or non-structural spill prevention, control, and/or management pursuant to ADEM Admin. Code r. 335-6-6-.12 (r) sufficient to prevent any spills of pollutants from entering a ground or surface water of the State or a publicly or privately owned treatment works. The Plan shall include at a minimum, the engineering requirements provided in 40 C.F.R. §§112.1. Any containment system used to implement this requirement shall be constructed of materials compatible with the substance(s) contained and shall prevent the contamination of groundwater. Such containment systems shall be capable of retaining a volume equal to 110 percent of the capacity of the largest tank for which containment is provided. The Plan shall list any materials which the Permittee may utilize to contain and to absorb fuel and chemical spills and leaks. The Permittee shall maintain sufficient amounts of such materials onsite or have sufficient amounts of such materials readily available to contain and/or absorb fuel and chemical spills and leaks. Soil contaminated by chemical spills, oil spills, etc., must be immediately cleaned up or be removed and disposed of in a manner consistent with all State and federal regulations.

f. All surface drainage and storm water runoff which originate within or enters the Permittee's premises and which contains any pollutants or other wastes shall be discharged, if at all, from a point source identified on Page 1 of this Permit and described more fully in the Permittee's application.

g. The Permittee shall take all reasonable precautions to prevent any surface drainage or storm water runoff which originates outside the Permittee's premises and which contains any pollutants or other wastes from entering the Permittee's premises. At no time shall the Permittee discharge any such surface drainage or storm water runoff which enters the Permittee's premises if, either alone or in combination with the Permittee's effluent, the discharge would exceed any applicable discharge limitation specified in Part I.A. of this Permit.

4. Biocide Additives

a. The Permittee shall notify the Director in writing not later than sixty (60) days prior to instituting the use of any biocide corrosion inhibitor or chemical additive in any cooling or boiler system(s) regulated by this Permit. Notification is not required for additives that should not reasonably be expected to cause the cooling water or boiler water to exhibit

toxicity as determined by analysis of manufacturer's data or testing by the Permittee. Such notification shall include:

(a) Name and general composition of biocide or chemical;

(b) 96-hour median tolerance limit data for organisms representative of the biota of the water(s) which the discharge(s) enter(s);

(c) Quantities to be used;

(d) Frequencies of use;

(e) Proposed discharge concentrations; and

(f) EPA registration number, if applicable.

b. The use of any biocide or chemical additive containing tributyl tin, tributyl tin oxide, zinc, chromium, or related compounds in any cooling or boiler system(s) regulated by the Permit is prohibited except as exempted below. The use of a biocide or additive containing zinc, chromium or related compounds may be used in special circumstances if (1) the permit contains limits for these substances, or (2) the applicant demonstrates during the application process that the use of zinc, chromium or related compounds as a biocide or additive will not pose a reasonable potential to violate the applicable State water quality standards for these substances. The use of any additive, not identified in this Permit or in the application for this Permit or not exempted from notification under this Permit is prohibited, prior to a determination by the Department that permit modification to control discharge of the additive is not required or prior to issuance of a permit modification controlling discharge of the additive.

5. Facility Identification

The Permittee shall clearly display prior to commencement of any regulated activity and until permit coverage is properly terminated, the name of the Permittee, entire NPDES permit number, facility or site name, and other descriptive information deemed appropriate by the Permittee at an easily accessible location(s) to adequately identify the site, unless approved otherwise in writing by the Department. The Permittee shall repair or replace the sign(s) as necessary upon becoming aware that the identification is missing or is unreadable due to age, vandalism, theft, weather, or other reason.

6. Removed Substances

Solids, sludges, filter backwash, or any other pollutants or other wastes removed in the course of treatment or control of wastewaters shall be disposed of in a manner that complies with all applicable Department rules and regulations.

7. 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 Part I.A. of this Permit or any other terms or conditions of this Permit, cease, reduce, or otherwise control production and/or discharges until treatment is restored.

8. Duty to Mitigate

The Permittee shall promptly take all reasonable steps to minimize or prevent any violation of this Permit or to mitigate and minimize any adverse impact to waters resulting from noncompliance with any discharge limitation specified in Part I.A. of this Permit, including such accelerated or additional monitoring of the discharge and/or the receiving waterbody as is necessary to determine the nature and impact of the noncomplying discharge.

B. BYPASS AND UPSET

1. Bypass

a. Any bypass is prohibited except as provided in Parts II.B.1.b. and c.

b. A bypass is not prohibited if:

(1) It does not cause any applicable discharge limitation specified in Part I.A. of this Permit to be exceeded;

(2) The discharge resulting from such bypass enters the same receiving water as the discharge from the permitted outfall;

(3) It is necessary for essential maintenance of a treatment or control facility or system to assure efficient operation of such facility or system; and

(4) The Permittee monitors the discharge resulting from such bypass at a frequency, at least daily, sufficient to prove compliance with the discharge limitations specified in Part I.A. of this Permit.

c. A bypass is not prohibited and need not meet the discharge limitations specified in Part 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 the Permittee could have installed adequate backup equipment 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, if possible, prior to the anticipated bypass or within 24 hours of an unanticipated bypass, the Permittee is granted such authorization, and Permittee complies with any conditions imposed by the Director to minimize any adverse impact to waters resulting from the bypass.

d. The Permittee has the burden of establishing that each of the conditions of Parts II.B.1.b. or c. have been met to qualify for an exception to the general prohibition against bypassing contained in Part II.B.1.a. and an exemption, where applicable, from the discharge limitations specified in Part I.A. of this Permit.

2. Upset

a. The Permittee may seek to demonstrate that noncompliance with technology-based effluent limits occurred as a result of an upset if the conditions of Part II.B.2.b are met and if the Permittee complies with the conditions provided in Part II.B.2.c:

(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; 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, design drawings, construction certification, maintenance records, weir flow measurements, dated photographs, rain gauge measurements, 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 treatment 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 to waters resulting from the upset.

b. Notwithstanding the provisions of Part II.B.2.a., a discharge which is an overflow from a treatment facility or system, or an excess discharge from a point source associated with a treatment facility or system and which results from a 24-hour precipitation event larger than a 10-year, 24-hour precipitation event is not exempted from the discharge limitations specified in Part I.A. of this Permit unless:

(1) The treatment facility or system is designed, constructed, and maintained to contain the maximum volume of wastewater which would be generated by the facility during a 24-hour period without an increase in volume from precipitation and the maximum volume of wastewater resulting from a 10-year, 24-hour precipitation event or to treat the maximum flow associated with these volumes.

In computing the maximum volume of wastewater which would result from a 10-year, 24-hour precipitation event, the volume which would result from all areas contributing runoff to the individual treatment facility must be included (i.e., all runoff that is not diverted from the mining area and runoff which is not diverted from the preparation plant area); and

(2) The Permittee takes all reasonable steps to maintain treatment of the wastewater and minimize the amount of overflow or excess discharge.

c. The Permittee has the burden of establishing that each of the conditions of Parts II.B.2.a. and b. have been met to qualify for an exemption from the discharge limitations specified in Part I.A. of this Permit.

C. PERMIT CONDITIONS AND RESTRICTIONS

1. Prohibition against Discharge from Facilities Not Certified

a. Notwithstanding any other provisions of this Permit, if the permitted facility has not obtained or is not required to obtain a permit from the Alabama Surface Mining Commission, any discharge(s) from any point or nonpoint source(s) from the permitted facility which was not certified to the Department on a form approved by the Department by a professional engineer, registered in the State of Alabama, as being designed, constructed, and in accordance with plans and specifications reviewed by the Department is prohibited; or

b. Notwithstanding any other provisions of this Permit, if the permitted facility has obtained or is required to obtain a permit from the Alabama Surface Mining Commission, any discharge(s) from any point or nonpoint source(s) from the permitted facility which is associated with a treatment facility which was not constructed and certified to the Alabama Surface Mining Commission pursuant to applicable provisions of said Commission's regulations, is prohibited until the Permittee submits to the Alabama Surface Mining Commission, certification by a professional engineer, registered in the State of Alabama, certifying that such facility has been constructed in accordance with plans and specifications approved by the Alabama Surface Mining Commission. This requirement shall not apply to pumped discharges from the underground works of underground coal mines where no surface structure is required by the Alabama Surface Mining Commission, provided the Department is notified in writing of the completion or installation of such facilities, and the pumped discharges will meet permit effluent limits without treatment.

2. Permit Modification, Suspension, Termination, and Revocation

a. This Permit may be modified, suspended, terminated, or revoked and reissued, in whole or in part, during its term for cause, including but not limited to, the following:

(1) The violation of any term or condition of this Permit;

(2) The obtaining of this Permit by misrepresentation or the failure to disclose fully all relevant facts;

(3) The submission of materially false or inaccurate statements or information in the permit application or reports required by the Permit;

(4) The need for a change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

(5) The existence of any typographical or clerical errors or of any errors in the calculation of discharge limitations;

(6) The existence of material and substantial alterations or additions to the facility or activity generating wastewater which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit;

(7) The threat of the Permittee's discharge on human health or welfare; or

(8) Any other cause allowed by ADEM Admin. Code ch. 335-6-6.

b. The filing of a request by the Permittee for modification, suspension, termination, or revocation and reissuance of this Permit, in whole or in part, does not stay any Permit term or condition of this Permit.

3. Automatic Expiration of Permits for New or Increased Discharges

a. Except as provided by ADEM Admin. Code r. 335-6-6-.02(h) and 335-6-6-.05, if this Permit was issued for a new discharger or new source, it shall expire eighteen months after the issuance date if construction has not begun during that eighteen month period.

b. Except as provided by ADEM Admin. Code r. 335-6-6-.02(h) and 335-6-6-.05, if any portion of this Permit was issued or modified to authorize the discharge of increased quantities of pollutants to accommodate the modification of an existing facility, that portion of this Permit shall expire eighteen months after this Permit's issuance if construction of the modification has not begun within eighteen month period.

c. Construction has begun when the owner or operator has:

(1) Begun, or caused to begin as part of a continuous on-site construction program:

(i) Any placement, assembly, or installation of facilities or equipment; or

(ii) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

(2) Entered into a binding contractual obligation for the purpose of placement, assembly, or installation of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under the paragraph. The entering into a lease with the State of Alabama for exploration and production of hydrocarbons shall also be considered beginning construction.

d. The automatic expiration of this Permit for new or increased discharges if construction has not begun within the eighteen month period after the issuance of this Permit may be tolled by administrative or judicial stay.

4. Transfer of Permit

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 this Permit to identify the new Permittee and to incorporate any other changes as may be required under the FWPCA or AWPCA. In the case of a change in name, ownership, or control of the Permittee's premises only, a request for permit modification in a format acceptable to the Director is required at least 30 days prior to the change. In the case of a change in name, ownership, or control of the Permittee's premises accompanied by a change or proposed change in effluent characteristics, a complete permit application is required to be submitted to the Director at least 180 days prior to the change. Whenever the Director is notified of a change in name, ownership, or control, he may decide not to modify the existing Permit and require the submission of a new permit application.

5. Groundwater

Unless authorized on page 1 of this Permit, this Permit does not authorize any discharge 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.

6. 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, trespass, 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. RESPONSIBILITIES

1. Duty to Comply

a. The Permittee must comply with all terms and conditions of this Permit. Any permit noncompliance constitutes a violation of the AWPCA, AEMA, and the FWPCA and is grounds for enforcement action, for permit termination, revocation and reissuance, suspension, modification, or denial of a permit renewal application.

b. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the FWPCA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this Permit has not yet been modified to incorporate the effluent standard, prohibition or requirement.

c. For any violation(s) of this Permit, the Permittee is subject to a civil penalty as authorized by the AWPCA, the AEMA, the FWPCA, and Code of Alabama 1975, §§22-22A-1 et. seq., as amended, and/or a criminal penalty as authorized by Code of Alabama 1975, §22-22-1 et. seq., as amended.

d. The necessity to halt or reduce production or other activities in order to maintain compliance with the conditions of this Permit shall not be a defense for a Permittee in an enforcement action.

e. Nothing in this Permit shall be construed to preclude or negate the Permittee's responsibility or liability to apply for, obtain, or comply with other ADEM, federal, state, or local government permits, certifications, licenses, or other approvals.

f. The discharge of a pollutant from a source not specifically identified in the permit application for this Permit and not specifically included in the description of an outfall in this Permit is not authorized and shall constitute noncompliance with this Permit.

g. 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. Change in Discharge

a. The Permittee shall apply for a permit modification at least 180 days in advance of any facility expansion, production increase, process change, or other action that could result in the discharge of additional pollutants, increase the quantity of a discharged pollutant, or

that could result in an additional discharge point. This requirement also applies to pollutants that are not subject to discharge limitations in this Permit. No new or increased discharge may begin until the Director has authorized it by issuance of a permit modification or a reissued permit.

b. The Permittee shall notify the Director as soon as it knows or has reason to believe that it has begun or expects to begin to discharge any pollutant listed as a toxic pollutant pursuant to Section 307(a) of the FWPCA, 33 U.S.C. §1317(a), any substance designated as a hazardous substance pursuant to Section 311(b)(2) of the FWPCA, 33 U.S.C. §1321(b)(2), any waste listed as a hazardous waste pursuant to Code of Alabama 1975, §22-30-10, or any other pollutants or other wastes which is not subject to any discharge limitations specified in Part I.A. of this Permit and was not reported in the Permittee's application, was reported in the Permittee's application in concentrations or mass rates lower than that which the Permittee expects to begin to be discharged, or has reason to believe has begun to be discharged.

3. Compliance with Toxic or Other Pollutant Effluent 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 Sections 301(b)(2)(C),(D),(E) and (F) of the FWPCA, 33 U.S.C. §1311(b)(2)(C),(D),(E), and (F); 304(b)(2) of the FWPCA, 33 U.S.C. §1314(b)(2); or 307(a) of the FWPCA, 33 U.S.C. §1317(a), for a toxic or other pollutant discharged by the Permittee, and such standard or prohibition is more stringent than any discharge limitation on the pollutant specified in Part I.A. of this Permit or controls a pollutant not limited in Part I.A. of this Permit, this Permit shall be modified to conform to the toxic or other 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 or other pollutant effluent standard or prohibition before the effective date of such standard or prohibition, the authorization to discharge in this Permit shall be void to the extent that any discharge limitation on such pollutant in Part I.A. of this Permit exceeds or is inconsistent with the established toxic or other pollutant effluent standard or prohibition.

4. Compliance with Water Quality Standards and Other Provisions

a. On the basis of the Permittee's application, plans, or other available information, the Department has determined that compliance with the terms and conditions of this Permit will assure compliance with applicable water quality standards. However, this Permit does not relieve the Permittee from compliance with applicable State water quality standards established in ADEM Admin. Code ch. 335-6-10, and does not preclude the Department from taking action as appropriate to address the potential for contravention of applicable State water quality standards which could result from discharges of pollutants from the permitted facility.

b. Compliance with Permit terms and conditions notwithstanding, if the Permittee's discharge(s) from point source(s) identified on Page 1 of this Permit cause(s) or contribute(s) to a condition in contravention of State water quality standards, the Department may require abatement action to be taken by the Permittee, modify the Permit pursuant to the Department's rules and regulations, or both.

c. If the Department determines, on the basis of a notice provided pursuant to Part II.C.2. of 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 and, in cases of emergency, the Director may prohibit the noticed act until the Permit has been modified.

5. Compliance with Statutes and Rules

a. This Permit has been issued under ADEM Admin. Code div. 335-6. All provisions of this division, that are applicable to this Permit, are hereby made a part of this Permit. A copy of this division may be obtained for a small charge from the Office of General Counsel, Alabama Department of Environmental Management, 1400 Coliseum Blvd., Montgomery, AL 36110-2059.

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.

6. Right of Entry and Inspection

The Permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law 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 this Permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this 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.

7. Duty to Reapply or Notify of Intent to Cease Discharge

a. If the Permittee intends to continue to discharge beyond the expiration date of this Permit, the Permittee shall file with the Department a complete permit application for reissuance of this Permit at least 180 days prior to its expiration.

b. If the Permittee does not desire to continue the discharge(s) allowed by this Permit, the Permittee shall notify the Department at least 180 days prior to expiration of this Permit of the Permittee's intention not to request reissuance of this Permit. This notification must include the information required in Part I.D.4.a. and be signed by an individual meeting the signatory requirements for a permit application as set forth in ADEM Admin. Code r. 335-6-6-.09.

c. Failure of the Permittee to submit to the Department a complete application for reissuance of this Permit at least 180 days prior to the expiration date of this Permit will void the automatic continuation of this Permit provided by ADEM Admin. Code r. 335-6-6-.06; and should this Permit not be reissued for any reason, any discharge after the expiration of this Permit will be an unpermitted discharge.

PART III ADDITIONAL REQUIREMENTS, CONDITIONS, AND LIMITATIONS

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 this Permit shall, upon conviction, be subject to penalties and/or imprisonment as provided by the AWPCA and/or the AEMA.

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 punished as provided by applicable State and Federal law.

3. Permit Enforcement

This NPDES Permit is a Permit for the purpose of the AWPCA, the AEMA, and the FWPCA, and as such all terms, conditions, or limitations of this Permit are enforceable under State and Federal law.

4. Relief From Liability

Except as provided in Part II.B.1. (Bypass) and Part II.B.2. (Upset), nothing in this Permit shall be construed to relieve the Permittee of civil or criminal liability under the AWPCA, AEMA, 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 to under Section 311 of the FWPCA, 33 U.S.C. §1321.

C. AVAILABILITY OF REPORTS

Except for data determined to be confidential under Code of Alabama 1975, §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. Knowingly making any false statement in any such report may result in the imposition of criminal penalties as provided for in Section 309 of the FWPCA, 33 U.S.C. §1319, and Code of Alabama 1975, §22-22-14.

D. DEFINITIONS

1. Alabama Environmental Management Act (AEMA) - means Code of Alabama 1975, §§22-22A-1 et. seq., as amended.

2. Alabama Water Pollution Control Act (AWPCA) - means Code of Alabama 1975, §§22-22-1 et. seq., as amended.

3. 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).

4. Arithmetic Mean - means the summation of the individual values of any set of values divided by the number of individual values.

5. BOD - means the five-day measure of the pollutant parameter biochemical oxygen demand

6. Bypass - means the intentional diversion of waste streams from any portion of a treatment facility.

7. CBOD - means the five-day measure of the pollutant parameter carbonaceous biochemical oxygen demand.

8. Controlled Surface Mine Drainage – means any surface mine drainage that is pumped or siphoned from the active mining area.

9. Crushed stone mine - means an area on or beneath land which is mined, quarried, or otherwise disturbed in activity related to the extraction, removal, or recovery of stone from natural or artificial deposits, including active mining, reclamation, and mineral storage areas, for production of crushed stone.

10. 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.

11. Daily maximum - means the highest value of any individual sample result obtained during a day.

12. Daily minimum - means the lowest value of any individual sample result obtained during a day.

13. Day - means any consecutive 24-hour period.

14. Department - means the Alabama Department of Environmental Management.

15. Director - means the Director of the Department or his authorized representative or designee.

16. 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, §22-22-1(b)(8).

17. Discharge monitoring report (DMR) - means the form approved by the Director to accomplish monitoring report requirements of an NPDES Permit.

18. DO - means dissolved oxygen.

19. E. coli – means the pollutant parameter Escherichia coli.

20. 8HC - means 8-hour composite sample, including any of the following:

    a. The mixing of at least 5 equal volume samples collected at constant time intervals of not more than 2 hours over a period of not less than 8 hours between the hours of 6:00 a.m. and 6:00 p.m. If the sampling period exceeds 8 hours, sampling may be conducted beyond the 6:00 a.m. to 6:00 p.m. period.

b. A sample continuously collected at a constant rate over period of not less than 8 hours between the hours of 6:00 a.m. and 6:00 p.m. If the sampling period exceeds 8 hours, sampling may be conducted beyond the 6:00 a.m. to 6:00 p.m. period.

21. EPA - means the United States Environmental Protection Agency.

22. Federal Water Pollution Control Act (FWPCA) - means 33 U.S.C. §§1251 et. seq., as amended.

23. Flow – means the total volume of discharge in a 24-hour period.

24. Geometric Mean - means the Nth root of the product of the individual values of any set of values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered one (1).

25. Grab Sample - means a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the discharge.

26. Indirect Discharger - means a nondomestic discharger who discharges pollutants to a publicly owned treatment works or a privately owned treatment facility operated by another person.

27. Industrial User - means those industries identified in the Standard Industrial Classification manual, Bureau of the Budget 1967, as amended and supplemented, under the category "Division D – Manufacturing" and such other classes of significant waste producers as, by regulation, the Director deems appropriate.

28. mg/L - means milligrams per liter of discharge.

29. MGD - means million gallons per day.

30. Monthly Average - means, other than for E. coli bacteria, the arithmetic mean of all the composite or grab samples taken for the daily discharges collected in one month period. The monthly average for E. coli bacteria is the geometric mean of daily discharge samples collected in a one month period. The monthly average for flow is the arithmetic mean of all flow measurements taken in a one month period. (Zero discharges shall not be included in the calculation of monthly averages.)

31. New Discharger - means a person owning or operating any building, structure, facility or installation:

a. From which there is or may be a discharge of pollutants;

b. From which the discharge of pollutants did not commence prior to August 13, 1979, and which is not a new source; and

c. Which has never received a final effective NPDES Permit for dischargers at that site.

32. New Source - means:

a. A new source as defined for coal mines by 40 CFR Part 434.11 (1994); and

b. Any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:

(1) After promulgation of standards of performance under Section 306 of FWPCA which are applicable to such source; or

(2) After proposal of standards of performance in accordance with Section 306 of the FWPCA which are applicable to such source, but only if the standards are promulgated in accordance with Section 206 within 120 days of their proposal.

33. NH3-N - means the pollutant parameter ammonia, measured as nitrogen.

34. 1-year, 24-hour precipitation event - means the maximum 24-hour precipitation event with a probable recurrence interval of once in one year as defined by the National Weather Service and Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.," May 1961, or equivalent regional or rainfall probability information developed therefrom.

35. Permit application - means forms and additional information that are required by ADEM Admin. Code r. 335-6-6-.08 and applicable permit fees.

36. 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. §1362(14).

37. Pollutant - includes for purposes of this Permit, but is not limited to, those pollutants specified in Code of Alabama 1975, §22-22-1(b)(3) and those effluent characteristics, excluding flow, specified in Part I.A. of this Permit.

38. Pollutant of Concern - means those pollutants for which a water body is listed as impaired or which contribute to the listed impairment.

39. Pollution Abatement and/or Prevention Plan (PAP Plan) – mining operations plan developed to minimize impacts on water quality to avoid a contravention of the applicable water quality standards as defined in ADEM Admin. Code r. 335-6-9-.03

40. Preparation, Dry - means a dry preparation facility within which the mineral/material is cleaned, separated, or otherwise processed without use of water or chemical additives before it is shipped to the customer or otherwise utilized. A dry preparation plant includes all ancillary operations and structures necessary to clean, separate, or otherwise process the mineral/material, such as storage areas and loading facilities. Dry preparation also includes minor water spray(s) used solely for dust suppression on equipment and roads to minimize dust emissions.

41. Preparation, Wet - means a wet preparation facility within which the mineral/material is cleaned, separated, or otherwise processed using water or chemical additives before it is shipped to the customer or otherwise utilized. A wet preparation plant includes all ancillary operations and structures necessary to clean, separate, or otherwise process the mineral/material, such as storage areas and loading facilities. Wet preparation also includes mineral extraction/processing by dredging, slurry pumping, etc.

42. Privately Owned Treatment Works - means any devices or system which is used to treat wastes from any facility whose operator is not the operator of the treatment works, and which is not a "POTW".

43. Publicly Owned Treatment Works (POTW) - means a wastewater collection and treatment facility owned by the State, municipality, regional entity composed of two or more municipalities, or another entity created by the State or local authority for the purpose of collecting and treating municipal wastewater.

44. Receiving Stream - means the "waters" receiving a "discharge" from a "point source".

45. 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.

46. 10-year, 24-hour precipitation event - means that amount of precipitation which occurs during the maximum 24-hour precipitation event with a probable recurrence interval of once in ten years as defined by the National Weather Service and Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.," May 1961, or equivalent regional or rainfall probability information developed therefrom.

47. TKN - means the pollutant parameter Total Kjeldahl Nitrogen.

48. TON - means the pollutant parameter Total Organic Nitrogen.

49. TRC - means Total Residual Chlorine.

50. TSS – means the pollutant parameter Total Suspended Solids

51. Treatment facility and treatment system - means all structures which contain, convey, and as necessary, chemically or physically treat mine and/or associated preparation plant drainage, which remove pollutants limited by this Permit from such drainage or wastewater. This includes all pipes, channels, ponds, tanks, and all other equipment serving such structures.

52. 24HC - means 24-hour composite sample, including any of the following:

    a. The mixing of at least 12 equal volume samples collected at constant time intervals of not more than 2 hours over a period of 24 hours;

    b. A sample collected over a consecutive 24-hour period using an automatic sampler composite to one sample. As a minimum, samples shall be collected hourly and each shall be no more than one twenty-fourth (1/24) of the total sample volume collected; or

    c. A sample collected over a consecutive 24-hour period using an automatic composite sampler composited proportional to flow.

53. 24-hour precipitation event - means that amount of precipitation which occurs within any 24-hour period.

54. 2-year, 24-hour precipitation event - means the maximum 24-hour precipitation event with a probable recurrence interval of once in two years as defined by the National Weather Service and Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.," May 1961, or equivalent regional or rainfall probability information developed therefrom.

55. 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 control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate facilities, lack of preventive maintenance, or careless or improper operation.

56. 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, §22-22-1(b)(2). "Waters" include all "navigable waters" as defined in §502(7) of the FWPCA, 33 U.S.C. §1362(7), which are within the State of Alabama.

57. Week - means the period beginning at twelve midnight Saturday and ending at twelve midnight the following Saturday.

58. Weekly (7-day and calendar week) Average – is the arithmetic mean of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. The calendar week is defined as beginning on Sunday and ending on Saturday. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for the calendar week shall be included in the data for the month that contains the Saturday.

E. 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.

F. PROHIBITIONS AND ACTIVIES NOT AUTHORIZED

1. Discharges from disposal or landfill activities as described in ADEM Admin. Code div. 335-13 are not authorized by this Permit unless specifically approved by the Department.

2. Relocation, diversion, or other alteration of a water of the State is not authorized by this Permit unless specifically approved by the Department.

3. Lime or cement manufacturing or production and discharge of process waters from such manufacturing or production is not authorized by this Permit unless specifically approved by the Department.

4. Concrete or asphalt manufacturing or production and discharge of process waters from such manufacturing or production is not authorized by this Permit unless specifically approved by the Department.

5. 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 application for this Permit or not identified specifically in the description of an outfall in this Permit is not authorized by this Permit.

G. DISCHARGES TO IMPAIRED WATERS

1. This Permit does not authorize new sources or new discharges 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, or unless compliance with the limitations and requirements of the Permit ensure that the discharge will not contribute to further degradation of the receiving stream. Impaired waters are those that do not meet applicable water quality standards and are identified on the State of Alabama's §303(d) list or on an EPA-approved or EPA-established TMDL. Pollutants of concern are those pollutants for which the receiving water is listed as impaired or contribute to the listed impairment.

2. Facilities that discharge into a receiving stream 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 waters are impaired, must within six (6) months of the Final §303(d) list approval, 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.

3. If the facility discharges to impaired waters as described above, it must determine whether a TMDL has been developed and approved or established by EPA for the listed waters. If a TMDL is

approved or established during this Permit cycle by EPA for any waters into which the facility discharges, the facility must review the applicable TMDL to see if it includes requirements for control of any water discharged by the Permittee. Within six (6) months of the date of TMDL approval or establishment, 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, if necessary. Any revised BMP plans must be submitted to the Department for review. The facility must include in the BMP plan a monitoring component to assess the effectiveness of the BMPs in achieving the allocations.

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER DIVISION

NPDES INDIVIDUAL PERMIT RATIONALE

Company Name:	Lhoist North America of Alabama, LLC
Facility Name:	Brierfield Quarry
County:	Bibb County
Permit Number:	AL0067831
Prepared by:	Ange Boatwright
Date:	September 9, 2026
Receiving Waters:	Mahan Creek
Permit Coverage:	Crushed and Broken Limestone Quarry, Wet and Dry· Preparation Transportation and Storage, and Associated Areas
SIC Code(s):	1422

The Department has made a tentative determination that the available information is adequate to support the modification of this permit. The modification covers the expansion of the area covered by the permit and the addition of Outfall 002-1.

This proposed permit covers a wet and dry preparation limestone quarry, transportation and storage, and associated areas which discharge to surface waters of the state.

The proposed permit authorizes treated discharges into Mahan Creek classified as Fish and Wildlife (F&W) per ADEM Admin. Code ch. 335-6-11. If the requirements of the proposed permit are fully implemented, the facility will not discharge pollutants at levels that will cause or contribute to a violation of the F&W classification.

Information included in the Permittee's application shows that the Permittee could potentially impact waters of the United States (U.S.) within the area covered by the Permit. Any impacts to waters of the U.S. must be appropriately permitted through the U.S. Army Corps of Engineers (USACE) before any impacts may occur. Any surface waters not covered under a USACE Permit must maintain the required setbacks of 50 feet or other distance as determined necessary to protect water quality in accordance with ADEM Admin. Code r. 335-6-9-.07

Full compliance with the proposed permit terms and conditions is expected to be protective of instream water quality and ensure consistency with applicable instream State water quality standards for the receiving stream.

Technology Based Effluent Limits (TBELs) for crushed stone mining facilities can be found in 40 CFR 436.22(1) and (2) for facilities that recycle waste water for use in processing and mine dewatering, respectively. The TBELs were promulgated for existing dischargers using the Best Practicable Control Technology Available (BPT). New Source Performance Standards (NSPS) have not yet been developed by the EPA for the Crushed Stone Subcategory. Therefore, the Department is considering this facility to be an existing source discharger.

The TBELs for the Crushed Stone Subcategory do not include limitations for Total Suspended Solids (TSS). TSS is classified as a conventional pollutant in 40 CFR 401.16 and is expected to be discharged from this type of facility. Therefore, monthly average and daily maximum effluent limitations for TSS are those proposed by the EPA for crushed stone mine drainage in the *Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Mineral Mining and Processing Point Source Category* (July 1979).

40 CFR 436.22 includes the TBEL of 6.0 – 9.0 s.u. for pH. However, the applicable State water quality criteria for pH in streams classified as F&W is 6.0 – 8.5 s.u. per ADEM Admin. Code r. 335-6-10-.09 and is therefore used in the proposed permit. Also, under no circumstances may the discharge from any outfall cause the in-stream pH to deviate more than 1.0 s.u. from the normal or natural pH, nor be less than 6.0 s.u. nor greater than 8.5 s.u.

Monitoring and reporting of the nutrient-related parameters Total Kjeldahl Nitrogen (TKN), Total Phosphorus (TP), and Nitrite plus Nitrate-Nitrogen (NO_2+NO_3-N) are imposed on all outfalls for the months of April, June, August and October due to the Nutrient TMDL for the Cahaba River Watershed. The monitoring is being required so that sufficient information will be available regarding the nutrient contribution from this point source, should it be necessary at some later time to impose additional nutrient limits on this discharge. No limitations are proposed at this time as the levels of nutrient pollutants are expected to be controlled through BMP implementation.

The applicant has requested, in accordance with 40 CFR Part 122.21 and their NPDES permit application, a waiver from testing for the Part A, B, and C pollutants listed in the EPA Form 2C and 2D that are not addressed in their application. They have also certified that due to the processes involved in their mining activity these pollutants are believed to be not present in the waste stream.

The Pollution Abatement/Prevention (PAP) plan for this facility has been prepared by a professional engineer (PE) registered in the State of Alabama and is designed to ensure reduction of pollutants in the waste stream to a level that, if operated properly, the discharge will not contribute to or cause a violation of applicable State water quality standards. The proposed permit terms and conditions are predicated on the basis of ensuring a reduction of pollutants in the discharge to a level that reduces the potential of contributing to or causing a violation of applicable State water quality standards.

In accordance with ADEM Admin. Code r. 335-6-3-.07 the design professional engineer, as evidenced by their seal and/or signature on the application, has accepted full responsibility for the effectiveness of the waste treatment facility to treat the Permittee's effluent to meet NPDES permit limitations and requirements, and to fully comply with Alabama's water quality standards, when such treatment facilities are properly operated.

If there is a reasonable potential that a pollutant present in the treated discharges from a facility could cause or contribute to a contravention of applicable State water quality standards above numeric or narrative criteria, 40 CFR Part 122 requires the Department to establish effluent limits using calculated water quality criterion, establish effluent limits on a case-by-case basis using criteria established by EPA, or establish effluent limits based on an indicator parameter. Based on available information, potential pollutants discharged from this facility, if discharged within the concentrations allowed by this permit, would not have a reasonable potential to cause or contribute to a contravention of applicable State water quality standards.

Pursuant to ADEM Admin. Code r. 335-6-6-.12(r) this permit requires the Permittee to design and implement a Spill Prevention Control and Countermeasures (SPCC) plan for all stored chemicals, fuels and/or stored pollutants that have the potential to discharge to a water of the State. This plan must meet the minimum engineering requirements as defined in 40 CFR Part 112 and must provide for secondary containment adequate to control a potential spill.

The applicant is proposing discharges of pollutants to the Cahaba River Watershed, a water of the State with approved Total Maximum Daily Loads (TMDLs). The segment of the Cahaba River that would be potentially affected by the proposed discharges has approved TMDL for Siltation and Nutrients. Discharges of Siltation and Nutrients are expected to be controlled through the proposed permit limitations of TSS, TP, TKN and NO_2+NO_3-N. If the requirements of the proposed permit and pollution abatement plan are fully implemented, there is reasonable assurance that the facility will not discharge pollutants at levels that will cause or contribute to a violation of the approved TMDLs set forth by the Alabama Department of Environmental Management.

The applicant is proposing discharges into a stream segment or other State water that is included on Alabama's current CWA §303(d) list. Mahan Creek is a State water that is on the current CWA §303(d) list for pathogens (E. coli). Pathogens (E. coli) are not a pollutant that is expected in significant concentrations for this type of operation. If the requirements of the proposed permit and pollution abatement plan are fully implemented, there is reasonable assurance that the facility will not discharge pollutants at levels that will cause or contribute to any further impairment of Mahan Creek.

The applicant is proposing discharges of pollutants to an ADEM identified Tier 1 water. If the requirements of the proposed permit and pollution abatement plan are fully implemented, there is reasonable assurance that discharges from the facility will not contain pollutants of concern contributing to the Tier 1 condition, pollutants causing or contributing to the Tier 1 condition will not be present in the discharge at significant levels, and/or the facility will not discharge pollutants at levels that will cause or contribute to a violation of applicable State WQS in the Tier 1 water.

The proposed permit does not authorize new or increased discharges of pollutants to a Tier II water. Therefore, the Antidegradation Policy (ADEM Admin. Code 335-6-10-.04) does not apply to this permit.

Digitally signed by:
AEPACS
Date: 2026.08.21 12:31:54 -05:00
Reason: Submission Data
Location: State of Alabama

NPDES Individual Permit - Modification/Reissuance - Mining (Form 315)

version 4.9

(Submission #: HQN-0GVE-7WZTX, version 2)

Details

Submission ID HQN-0GVE-7WZTX

Form Input

General Instructions

NPDES Individual Application - Mining and Coalbed Methane Operations - Mod/Reissuance (Form 315/549)

PLEASE CONTACT YOUR ASSIGNED PERMIT CONTACT TO DISCUSS THE TYPE OF MODIFICATION YOU SHOULD APPLY FOR BEFORE COMPLETING THIS FORM.

This form should be used to submit the following permit requests for individually permitted Mining and Coalbed Methane Operations:

Modifications/Reissuances that include Permit Transfers and/or Permittee/Facility Name Changes
Minor Modifications
Major Modifications
Reissuances
Reissuance of a permit on or after the current permit's expiration date
Revocation and Reissuance before 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:
Minor Modifications
$3,400 (Mineral/Resource Extraction Mining, Storage Transloading, Dry Processing)
$3.940 (Wet Preparation, Processing, Beneficiation)
$3,940 (Coalbed Methane Operations)
Major Modifications
$5,820 (Mineral/Resource Extraction Mining, Storage Transloading, Dry Processing)
$6,860 (Wet Preparation, Processing, Beneficiation)
$6,860 (Coalbed Methane Operations)
Reissuances
$5,820 (Mineral/Resource Extraction Mining, Storage Transloading, Dry Processing)
$6,860 (Wet Preparation, Processing, Beneficiation)
$6,860 (Coalbed Methane Operations)
Potential Add-on Fees for Major Modifications and Reissuances
$1,015 (Biomonitoring & Toxicity Limits)
$2,705 (Review of Model Performed by Others)
$4,855 (Modeling – desktop)
For assistance, please click here to determine the permit staff responsible for the site or call (334) 394-4372.

Processing Information

Purpose of Application
Major Modification

Please indicate if the Permittee is applying for a permit transfer and/or name change in addition to permit modification or reissuance:
None

Action Type
Major Modification

Brief description of the action/change that has resulted in the request for this permit modification:
Expansion of Site Boundary from acquired properties.
Proposed Outfall (002P) for the expansion of the Overburden Management Area southeast of the active quarry with sedimentation pond.

Is this a coalbed methane operation?
No

Permit Information

Permit Number
AL0067831

Current Permittee Name
Lhoist North America of Alabama, LLC

Permittee

Permittee Name
Lhoist North America of Alabama, LLC

Mailing Address

14786 Montevallo Road

Brierfield, AL 35035

Responsible Official

Prefix
Mr.

First Name	Last Name
John	Meuth

Title
Plant Manager

Organization Name
Lhoist North America of Alabama, LLC

Phone Type	Number	Extension
Other	2056609041	

Email
John.Meuth@lhoist.com

Mailing Address

14786 Montevallo Road

Brierfield, AL 35035

Existing Permit Contacts

Affiliation Type	Contact Information	Remove?
Notification Recipient,Responsible Official	John Meuth	Keep
Notification Recipient,Application Preparer	Keith Jackson	Keep
Permittee,Applicant,Notification Recipient	Lhoist North America of Alabama, LLC	Keep
Professional Engineer	Nakia Addison	Keep

Facility/Operations Information

Facility/Operations Name
Brierfield Quarry

Permittee Organization Type
LLC

Parent Corporation and Subsidiary Corporations of Applicant, if any:
Lhoist North America, LLC

Landowner(s) Name, Address and Phone Number:
Lhoist North America of Alabama, LLC
14786 Montevallo Road
Brierfield, AL 35035

Sub-contractor(s)/Operator(s), if known:
Saiia Construction Company; Nelson Brothers

Is the ﷺ properly registered and in good standing with the Alabama Secretary of State ﷺs office?
Yes

Facility/Operations Address or Location Description

> 14786 Montevallo Road
> Brierfield, AL 35035

Facility/Operations County (Front Gate)
Bibb

Do the operations span multiple counties?
Yes

Additional Counties
Shelby

Detailed Directions to the Facility/Operations
Access to the Site is gained from Alabama Highway 25 via Rock Plant Road.
(Exit 228 on I-65, South on State Highway 25 for approximately 13 miles, facility entrance on left)

Please refer to the link below for Lat/Long map instruction help:
Map Instruction Help

Facility/Operations Front Gate Latitude and Longitude
33.05171838231978,-86.94081434936524

14786 Montevallo Road, Brierfield, AL

Township(s), Range(s), Section(s) (Note: If you are submitting multiple TRSs, please separate each TRS by a semicolon. Example: T19S,R1E,S15; T20S,R2E,S16)
T24N,R11E,S18; S19; S30
T24N,R12E,S22; S23; S24; S25; S26; S27; S35

SIC Code(s) [Please select your primary SIC code first]:
1422-Crushed and Broken Limestone

NAICS Code(s) [Please select your primary NAICS code first]:
212312-Crushed and Broken Limestone Mining and Quarrying

Facility/Operations Contact

Prefix
Mr.

First Name	Last Name
John	Meuth

Title
Plant Manager

Organization Name
Lhoist North America of Alabama, LLC

Phone Type	Number	Extension
Other	2056609041	

Email
john.meuth@lhoist.com

Member Information

Identify the name, title/position, and unless waived in writing by the Department, the resident address of every officer (a PO Box is not acceptable), general partner, LLP partner, LLC member, investor, director, or person performing a function similar to a director, of the applicant, and each person who is the record or beneficial owner of 10 percent or more of any class of voting stock of the applicant, or any other responsible official(s) of the applicant with legal or decision making responsibility or authority for the facility/operations (if this does not apply, then enter N/A after selecting "Manually Enter in Table"):

List of Names/Titles/Addresses will be entered by:
Manually Entering in Table

Name	Title/Position	Physical Address of Residence
Tobias Konzmann	Vice President/General Manager	3309 Highway 31, Calera AL 35040

Other than the ◆Company/Permittee", identify the name of each corporation, partnership, association, and single proprietorship for which any individual identified above is or was an officer, general partner, LLP partner, LLC member, investor, director, or individual performing a function similar to a director, or principal (10% or more) stockholder, that had an Alabama NPDES permit at any time during the five year (60 month) period immediately preceding the date on which this form is signed (if this does not apply, then enter N/A after selecting "Manually Enter in Table"):

List of Corporations/Partnerships/etc, Names and Titles will be entered by:
Manually Entering in Table

Name of Corporation, Partnership, Association, or Single Proprietorship	Name of Individual	Title/Position in Corporation, Partnership, Association, or Single Proprietorship
N/A	N/A	N/A

Additional Contacts (1 of 1)

ADDITIONAL CONTACTS:

Contact Type
NONE PROVIDED

Contact

First Name **Last Name**
NONE PROVIDED *NONE PROVIDED*

Title
NONE PROVIDED

Organization Name
NONE PROVIDED

Phone Type **Number** **Extension**
NONE PROVIDED

Email
NONE PROVIDED

Address
[NO STREET ADDRESS SPECIFIED]
[NO CITY SPECIFIED], AL *[NO ZIP CODE SPECIFIED]*

Compliance History

Has the applicant ever had any of the following:

Event	Apply?
An Alabama NPDES, SID, or UIC permit suspended or terminated	No
An Alabama or federal environmental permit suspended/terminated	No
An Alabama State Oil Gas Board permit or other approval suspended or terminated	No
An Alabama or federal performance/environmental bond, or similar security deposited in lieu of a bond, or portion thereof, forfeited	No

Has the applicant, parent corporation, subsidiary, general partner, LLP partner, or LLC Member had any Warning Letters, Notice of Violations (NOVs), Administrative Actions, or litigation filed by ADEM or EPA during the three year (36 month) period preceding the date on which this form is signed?
No

For this facility, list any other NPDES or other environmental permits (including permit numbers), authorizations, or certifications that have been applied for or issued within the State by ADEM, EPA, Alabama Department of Labor (ADOL), US Army Corp of Engineers (USACE), or other agency, to the applicant, parent corporation, subsidiary, or LLC member whether presently effective, expired, suspended, revoked, or terminated:
401-0014-X011
401-0014-X012

For other facilities, list any other NPDES or other ADEM permits (including permit numbers), authorizations, or certifications that have been applied for or issued within the State by ADEM, EPA, ASMC, ADOL, or USACE, to the applicant, parent corporation, subsidiary, or LLC member whether presently effective, expired, suspended, revoked, or terminated:
AL0003336 and 411-0008 (Montevallo Plant)
AL0024473 and 411-0017 (Alabaster Plant)
AL005376 and 411-0039 (O'Neal Quarry and Lime Plant)
AL0079308 (Eagle Quarry)

Anti-Degradation Evaluation

Pursuant to ADEM Admin. Code ch. 335-6-10-.12(9), responses to the following questions must be provided by the applicant requesting NPDES permit coverage for new or expanded discharges of pollutant(s) to Tier 2 waters (except discharges eligible for coverage under general permits). As part of the permit application review process, the Department is required to consider, based on the applicant's demonstration, whether the proposed new or increased discharge to Tier 2 waters is necessary for important economic or social development in the area in which the waters are located. Does this modification/reissuance include new or expanded discharges to Tier II water(s)?
Yes

NOTE

If the discharge is to a Tier II waterbody as defined in ADEM Admin. Code r. 335-6-10-.12(4), complete questions below, ADEM Form 311-Alternatives Analysis, and either ADEM Form 312 or ADEM Form 313- Calculation of Total Annualized Project Costs (Public-Sector or Private-Sector Projects, whichever is applicable). ADEM Form 312 or ADEM Form 313, whichever is applicable, must be provided for each treatment discharge alternative considered technically viable.
ADEM forms can be found on the Department's website here.

What environmental or public health problem will the discharger be correcting?
Outfall 002P discharge will be pass through storm water, no process wastewater. Treatment via gravity sedimentation pond.

How much will the discharger be increasing employment (at its existing facility or as the result of locating a new facility)?
No increase in employment is forecasted for the continuing operations.

How much reduction in employment will the discharger be avoiding?
Failure to modify the NPDES permit would result in the loss of approximately 30 full time employees and 5 contract employees at the Brierfield Quarry. Additionally, raw materials supply to the Montevallo Plant would result in loss employment.

How much additional state or local taxes will the discharger be paying?
The modification request for the additional proposed Outfall 002P is based on continuing the current manufacturing activities at the current permitted production rates. Lhoist North America of Alabama, LLC contributes tax dollars to the State of Alabama, Shelby/Bibb Counties local municipalities.

What public service to the community will the discharger be providing?
The Brierfield Quarry provides raw natural resources for the manufacturing of lime and aggregates for building and/or construction materials.

What economic or social benefit will the discharger be providing to the community?
Employment of approximately 30 full time employees and 5 contract employees at the Brierfield Quarry as the primary benefit. Secondary benefit is raw natural resource materials supplied to the Montevallo Plant for employment. These benefits all through sales tax dollars.

Attach Form 311 (Alternative Analysis)
Form311-Signed.pdf - 04/23/2026 12:51 PM
Comment
NONE PROVIDED

Please attach Form 312 (Public Sector Projects) or Form 313 (Private Sector Projects).
Form313.pdf - 04/22/2026 04:34 PM
Comment
The facility recycles storm water to the maximum extent practicable.

Activity Description & Information

Narrative description of activity(s):
Surface mining of limestone, crushing of limestone, transporting of limestone to other Lhoist facilities for processing.

Total Facility/Operations Area (acres)
2306.00

Total Disturbed Area (acres)
634.00

Anticipated Commencement Date
12/01/1987

Anticipated Completion Date
06/01/2104

Please identify which of the following apply to this operation:

Activity/Condition	Appy?
An existing facility/operation which currently results in discharges to State waters?	Yes
A proposed facility/operation which will result in a discharge to State waters?	No
Be located within any 100-year flood plain?	Yes
Discharge to Municipal Separate Storm Sewer?	No
Discharge to waters of or be located in the Coastal Zone?	No

Activity/Condition	Appy?
Need/have ADEM UIC permit coverage?	No
Be located on Indian/historically significant lands?	No
Need/have ADEM SID permit coverage?	No
Need/have ASMC permit coverage?	No
Need/have State Oil & Gas Board permit coverage?	No
Need/have ADOL permit coverage?	No
Generate, treat, store, or dispose of hazardous or toxic waste?	No
Be located in or discharge to a Public Water Supply (PWS) watershed or be located within mile of any PWS well?	No
Incised pit	Yes

Does your facility/operation use cooling water?
No

Material to be Removed, Processed, or Transloaded

Material To Be Removed, Processed, Or Transloaded (Note: Sum must equal 100.)

Mineral(s)/Mineral product(s)	%
Limestone, crushed limestone and dolomite	80
Dirt and/or Chert	20
	Sum: 100

Proposed Activity To Be Conducted

Type(s) of activity presently conducted at applicant's existing facility or proposed to be conducted at facility (Select Yes or No)):

Activity	Apply?
Adjacent/associated asphalt/concrete plant(s)	No
Alternative fuels operation	No
Auger mining	No
Cement production	No
Chemical processing or leaching	No
Chemicals used in process or wastewater treatment (coagulant, biocide, etc.)	No
Construction related temporary borrow pits/areas	No
Creek/stream crossings	No
Dredging	No
Excavation	Yes
Grading, clearing, grubbing, etc.	Yes
Hydraulic mining	No
Hydraulic mining, dredging, instream or between stream-bank mining	No
Lime production	Yes
Low volume sewage treatment package plant	No
Mineral dry processing (crushing & screening)	Yes
Mineral loading	Yes
Mineral storing	Yes
Mineral transportation	Yes
Mineral wet preparation	Yes
Onsite construction debris or equipment storage/disposal	No
Onsite mining debris or equipment storage/disposal	Yes

Activity	Apply?
Other beneficiation & manufacturing operations	No
Pre-construction ponded water removal	No
Pre-mining logging or land clearing	Yes
Preparation plant waste recovery	No
Quarrying	Yes
Reclamation of disturbed areas	Yes
Solution mining	No
Surface mining	Yes
Synthetic fuel production	No
Underground mining	No
Waterbody relocation or other alteration	No
Within-bank mining	No

If the operation will include activities other than those listed above, please describe them below:
NONE PROVIDED

If the type of activity presently conducted or proposed is Mineral Transportation, please indicate which of the following apply:

Barge	Apply?
Barge	No
Rail	No
Truck	Yes

Fuel - Chemical Handling, Storage, & Spill Prevention Control & Countermeasures (SPCC) Plan

Will fuels, chemicals, compounds, or liquid waste be used or stored onsite?
Yes

Please identify the fuel, chemicals, compounds, or liquid waste and indicate the volume of each:

Volume (gallons)	Contents
14,130.0	Off-Road Diesel
405.0	Gasoline
405.0	Used Oil
500.0	Motor Oil
500.0	Motor Oil
500.0	Hydraulic Oil
500.0	Hydraulic Oil
580.0	Kerosene
10,000.0	Off-Road Diesel (Contractor)
660.0	Drum Storage Area Maintenance Building
880.0	Drum Storage Area Limestone Crushing
690.0	Mobile Oil Truck-Diesel, Used Oil, Motor Oil, Hydraulic Oil
250.0	Mobile Oil Truck-Diesel
77.0	Mobile Oil Truck-Diesel

SPCC Plan
Lhoist Brierfield SPCC Plan Update 2025.pdf - 04/22/2026 04:58 PM
Comment
NONE PROVIDED

ASMC Regulated Entities

Is this a coal mining operation regulated by ASMC?
No

Topographic Map Submittal

Topographic Map

Attach to this application a 7.5 minute series U.S.G.S. topographic map(s) or equivalent map(s) no larger than, or folded to a size of 8.5 by 11 inches (several pages may be necessary), of the area extending to at least one mile beyond property boundaries. The topographic or equivalent map(s) must include a caption indicating the name of the topographic map, name of the applicant, facility name, county, and township, range, & section(s) where the facility are located. Unless approved in advance by the Department, the topographic or equivalent map(s), at a minimum, must show: a) An accurate outline of the area to be covered by the permit (b) An outline of the facility (c) All existing and proposed disturbed areas (d) Location of intake and discharge areas (e) Proposed and existing discharge points (f) Perennial, intermittent, and ephemeral streams (g) Lakes, springs, water wells, wetlands (h) All known facility dirt/improved access/haul roads (i) All surrounding unimproved/improved roads (j) High-tension power lines and railroad tracks (k) Contour lines, township-range-section lines (l) Drainage patterns, swales, washes (m) All drainage conveyance/treatment structures (ditches, berms, etc.) (n) Any other pertinent or significant feature.

Topographic Map
Fig 1 -LHOlST-Brierfield-AL- Site Location Map.pdf - 05/13/2026 10:19 AM
Comment
NONE PROVIDED

CORRECTION REQUEST *(CORRECTED)*
Topographic Map

Please provide a color topographic map labeled with the required information.
Created on 8/20/2026 12:12 PM by **Ange Boatwright**

1 COMMENT
Keith Jackson (kjackson@trccompanies.com) (8/20/2026 12:19 PM)
Figure 1, Site Location Map utilizes the current USGS topographical map (2024) for the appropriate site quadrangle.

Detailed Facility Map Submittal

Detailed Facility Map
Fig 2 -LHOlST-Brierfield-AL- Facility Diagram.pdf - 05/13/2026 10:19 AM
Comment
NONE PROVIDED

Outfalls (1 of 2)

Outfall Identifier: 001

Feature Type
Outfall (External)

Outfall Identifier
001

Outfall Status
Existing

Please be aware that you should only mark an outfall status as existing if (1) the Department has been previously notified that it was constructed as proposed or (2) it began discharge prior to this application. A proposed outfall is one that is being newly added to the permit OR one that has never discharged or has never been authorized by the Department to discharge. Should

you have any questions about which status to select, please contact the Department's permit engineer for this site.

Permit Action
No Change

Receiving Water
Mahan Creek

Check below if the discharge enters the receiving water via an unnamed tributary.
Unnamed Tributary

CORRECTION REQUEST *(CORRECTED)*
Outfall 001 Receiving Stream

Outfall 001 is currently permitted and also appears to discharge to Mahan Creek and not an unnamed tributary to Mahan Creek.
Created on 8/20/2026 11:55 AM by **Ange Boatwright**

1 COMMENT
Keith Jackson (kjackson@trccompanies.com) (8/20/2026 12:21 PM)
Correct, discharge is direct to Mahan Creek. The 'Unnamed Tributary' selection was an error in the system. Unable to remove.

Location of Outfall
33.05083300000000, -86.91972199999999

Are the location coordinates above still correct for this outfall?
Yes

Distance to Receiving Water (ft)
0.0

Disturbed Area (acres)
155.0

Drainage Area (acres)
260.0

303(d) Segment?
Yes

CORRECTION REQUEST *(CORRECTED)*
303(d) Segment

Mahan Creek is on the current 303(d) list. Please enter "yes".
Created on 8/20/2026 11:56 AM by **Ange Boatwright**

1 COMMENT
Keith Jackson (kjackson@trccompanies.com) (8/20/2026 12:46 PM)
Corrected

TMDL Segment?
No

Please do not add a new outfall unless you are requesting a modification that includes a new outfall. All of the currently permitted outfalls are already included in this form. If you add an outfall in error, please choose ﷺDeleteﷺ under ﷺPermit Actionﷺ for the outfall. If you have any questions, please contact your permit engineer BEFORE proceeding.

Outfalls (2 of 2)

Outfall Identifier: 002

Feature Type
Outfall (External)

Outfall Identifier
002

Outfall Status
Proposed

> Please be aware that you should only mark an outfall status as existing if (1) the Department has been previously notified that it was constructed as proposed or (2) it began discharge prior to this application. A proposed outfall is one that is being newly added to the permit OR one that has never discharged or has never been authorized by the Department to discharge. Should you have any questions about which status to select, please contact the Department's permit engineer for this site.

Permit Action
Add

Receiving Water
Mahan Creek

Check below if the discharge enters the receiving water via an unnamed tributary.
NONE PROVIDED

Location of Outfall
33.046602,-86.911126

Are the location coordinates above still correct for this outfall?
Yes

Distance to Receiving Water (ft)
500.0

Disturbed Area (acres)
60.0

Drainage Area (acres)
60.0

303(d) Segment?
Yes

CORRECTION REQUEST *(CORRECTED)*
303(d) Segment

Mahan Creek is on the current 303(d) list. Please change this answer to "yes"
Created on 8/20/2026 11:54 AM by **Ange Boatwright**

1 COMMENT
Keith Jackson (kjackson@trccompanies.com) (8/20/2026 12:46 PM)
Corrected

TMDL Segment?
No

Please do not add a new outfall unless you are requesting a modification that includes a new outfall. All of the currently permitted outfalls are already included in this form. If you add an outfall in error, please choose "Delete" under "Permit Action" for the outfall. If you have any questions, please contact your permit engineer BEFORE proceeding.

Discharge Characterization

EPA Form 2C, EPA Form 2D, and/or ADEM Form 567 Submittal
Yes, pursuant to 40 CFR 122.21, the applicant requests a waiver for completion of EPA Form 2C, EPA Form 2D, and ADEM Form 567 and certifies that the operating facility will discharge treated stormwater only; that chemical/compound additives are not used (unless waived in writing by the Department on a programmatic, categorical, or individual compound/chemical basis); that there are no process, manufacturing, or other industrial operations or wastewaters, including but not limited to lime or cement production and synfuel operations; and that coal and coal products are not mined nor stored onsite.

CORRECTION REQUEST *(CORRECTED)*
Waiver Request

This site qualifies for a waiver. Please mark "yes" for a waiver request.
Created on 8/20/2026 11:51 AM by **Ange Boatwright**

1 COMMENT
Keith Jackson (kjackson@trccompanies.com) (8/20/2026 12:54 PM)
Corrected.

Please download the following Excel file to enter your information. Once complete, please attach to the below control.
Download spreadsheet here.

Required attachment:
Form315TableB-2026 Mod OF002P, R1.xlsx - 08/20/2026 01:40 PM
Comment
NONE PROVIDED

CORRECTION REQUEST *(CORRECTED)*
Discharge Characteristics Tabel B

Please provide estimated discharge characteristics for Outfall 002P.
Created on 8/20/2026 11:53 AM by **Ange Boatwright**

1 COMMENT
Keith Jackson (kjackson@trccompanies.com) (8/20/2026 12:56 PM)
Form 315Table B Revised (R1)

Please download the following Excel file to enter your information. Once complete, please attach to the below control.
Download spreadsheet here.

Required attachment:
Form315TableC-2026 Mod OF002P.xlsx - 04/23/2026 01:25 PM
Comment
NONE PROVIDED

Discharge Structure Description & Pollutant Source

Please download the following Excel file to enter your information. Once complete, please attach to the below control.
Download spreadsheet here.

Required attachment:
Form315DischargeStructure-2026 Mod OF002P.xlsx - 04/23/2026 01:34 PM
Comment
NONE PROVIDED

Variance Request

Do you intend to request or renew one or more of the CWA technology variances authorized at 40 CFR 122.21(m)?
No

Pollution Abatement & Prevention (PAP) Plan Summary (1 of 2)

Outfall(s):
001E

Outfall Questions:	Please select one:
Runoff from all areas of disturbance is controlled	Yes
Drainage from pit area, stockpiles, and spoil areas directed to a sedimentation pond	Yes
Sedimentation basin at least 0.25 acre/feet for every acre of disturbed drainage	Yes
Sedimentation basin cleaned out when sediment accumulation is 60% of design capacity	Yes
Trees, boulders, and other obstructions removed from pond during initial construction	Yes
Width of top of dam greater than 12'	Yes
Side slopes of dam no steeper than 3:1	Yes
Cutoff trench at least 8' wide	Yes
Side slopes of cutoff trench no less than 1:1	Yes
Cutoff trench located along the centerline of the dam	Yes
Cutoff trench extends at least 2' into bedrock or impervious soil	Yes
Cutoff trench filled with impervious material	Yes
Embankments and cutoff trench 95% compaction standard proctor ASTM	Yes
Embankment free of roots, tree debris, stones >6" diameter, etc.	Yes
Embankment constructed in lifts no greater than 12"	Yes
Spillpipe sized to carry peak flow from a one year storm event	N/A
Spillpipe will not chemically react with effluent	N/A
Subsurface withdrawal	Yes
Anti-seep collars extend radially at least 2' from each joint in spillpipe	N/A
Splashpad at the end of the spillpipe	N/A
Emergency Spillway sized for peak flow from 25-yr 24-hr event if discharge not into PWS classified stream	Yes
Emergency spillway sized for peak flow from 50-yr 24-hr event if discharge is into PWS classified stream	N/A
Emergency overflow at least 20' long	Yes
Side slopes of emergency spillway no steeper than 2:1	Yes
Emergency spillway lined with riprap or concrete	Yes
Minimum of 1.5' of freeboard between normal overflow and emergency overflow	Yes
Minimum of 1.5' of freeboard between max. design flow of emergency spillway and top of dam	Yes
All emergency overflows are sized to handle entire drainage area for ponds in series	Yes
Dam stabilized with permanent vegetation	Yes
Sustained grade of haul road <10%	Yes
Maximum grade of haul road <15% for no more than 300'	Yes
Outer slopes of haul road no steeper than 2:1	Yes
Outer slopes of haul road vegetated or otherwise stabilized	Yes
Detail drawings supplied for all stream crossings	N/A
Short-Term Stabilization/Grading And Temporary Vegetative Cover Plans	Yes
Long-Term Stabilization/Grading And Permanent Reclamation or Water Quality Remediation Plans	Yes

Identify and provide detailed explanation for any "N" or "N/A" response(s):
No changes to site conditions or flow dynamics have occurred since the current permit was issued.

Pollution Abatement & Prevention (PAP) Plan Summary (2 of 2)

Outfall(s):
002P

Outfall Questions:	Please select one:
Runoff from all areas of disturbance is controlled	Yes
Drainage from pit area, stockpiles, and spoil areas directed to a sedimentation pond	Yes
Sedimentation basin at least 0.25 acre/feet for every acre of disturbed drainage	Yes
Sedimentation basin cleaned out when sediment accumulation is 60% of design capacity	Yes
Trees, boulders, and other obstructions removed from pond during initial construction	Yes
Width of top of dam greater than 12'	Yes
Side slopes of dam no steeper than 3:1	Yes
Cutoff trench at least 8' wide	Yes
Side slopes of cutoff trench no less than 1:1	Yes
Cutoff trench located along the centerline of the dam	Yes
Cutoff trench extends at least 2' into bedrock or impervious soil	Yes
Cutoff trench filled with impervious material	Yes
Embankments and cutoff trench 95% compaction standard proctor ASTM	Yes
Embankment free of roots, tree debris, stones >6" diameter, etc.	Yes
Embankment constructed in lifts no greater than 12"	Yes
Spillpipe sized to carry peak flow from a one year storm event	Yes
Spillpipe will not chemically react with effluent	Yes
Subsurface withdrawal	No
Anti-seep collars extend radially at least 2' from each joint in spillpipe	Yes
Splashpad at the end of the spillpipe	Yes
Emergency Spillway sized for peak flow from 25-yr 24-hr event if discharge not into PWS classified stream	Yes
Emergency spillway sized for peak flow from 50-yr 24-hr event if discharge is into PWS classified stream	N/A
Emergency overflow at least 20' long	Yes
Side slopes of emergency spillway no steeper than 2:1	Yes
Emergency spillway lined with riprap or concrete	Yes
Minimum of 1.5' of freeboard between normal overflow and emergency overflow	Yes
Minimum of 1.5' of freeboard between max. design flow of emergency spillway and top of dam	Yes
All emergency overflows are sized to handle entire drainage area for ponds in series	Yes
Dam stabilized with permanent vegetation	Yes
Sustained grade of haul road <10%	Yes
Maximum grade of haul road <15% for no more than 300'	Yes
Outer slopes of haul road no steeper than 2:1	Yes
Outer slopes of haul road vegetated or otherwise stabilized	Yes
Detail drawings supplied for all stream crossings	N/A
Short-Term Stabilization/Grading And Temporary Vegetative Cover Plans	Yes
Long-Term Stabilization/Grading And Permanent Reclamation or Water Quality Remediation Plans	Yes

Identify and provide detailed explanation for any "N" or "N/A" response(s):
Receiving stream is not a PWS (Mahan Creek). No stream crossings.

Pollution Abatement & Prevention (PAP) Plan Review Checklist

General Information:	Please select one:
PE Seal with License #	Yes
Name and Address of Operator	Yes
Legal Description of Facility	Yes
Name of Company	Yes

General Information:	Please select one:
Number of Employees	Yes
Products to be Mined	Yes
Hours of Operation	Yes
Water Supply and Disposition	Yes

Maps:	Please select one:
Topographic Map including Information from Part XIII (a) – (o) of this Application	Yes
1" = 500' or Equivalent Facility Map including Information from Part XIV of this Application	Yes

Detailed Design Diagrams:	Please select one:
Plan Views	Yes
Cross-section Views	Yes
Method of Diverting Runoff to Treatment Basins	Yes
Line Drawing of Water Flow through Facility with Water Balance or Pictorial Description of Water Flow	Yes

Narrative of Operations:	Please select one:
Raw Materials Defined	Yes
Processes Defined	Yes
Products Defined	Yes

Schematic Diagram:	Please select one:
Points of Waste Origin	Yes
Collection System	Yes
Disposal System	Yes

Post Treatment Quantity and Quality of Effluent:	Please select one:
Flow	Yes
Suspended Solids	Yes
Iron Concentration	No
pH	Yes

Identify and provide detailed explanation for any "N" or "N/A" response(s):
Iron concentration to be determined

Description of Waste Treatment Facility:	Please select one:
Pre-Treatment Measures	Yes
Recovery System	Yes
Expected Life of Treatment Basin	Yes
Measures for Ensuring Access to All Treatment Structures and Related Appurtenances including Outfall Locations	Yes
Schedule of Cleaning and/or Abandonment	Yes

Other:	Please select one:
Precipitation/Volume Calculations/Diagram Attached	Yes
BMP Plan for Haul Roads	Yes
Measures for Minimizing Impacts to Adjacent Stream (e.g., Buffer Strips, Berms)	Yes
Measures for Ensuring Appropriate Setbacks are Maintained at All Times	Yes
Methods for Minimizing Nonpoint Source Discharges	Yes
If Chemical Treatment Used, Methods for Ensuring Appropriate Dosage	Yes

Other:	Please select one:
Facility Closure Plans	Yes
PE Rationale(s) For Alternate Standards, Designs or Plans	Yes

Pollution Abatement & Prevention (PAP) Plan

Is this a coal mining operation regulated by ASMC?
No

PAP Plan (non-coal mining facilities)
R7310260000-001 PAP Plan Revision 2026.pdf - 05/29/2026 08:07 AM
Comment
NONE PROVIDED

Professional Engineer (PE)

Registration License Number
38320-E

Professional Engineer

Prefix
Mr.

First Name **Last Name**
Nakia Addison

Title
Professional Engineer/Sr. Engineer

Organization Name
TRC Environmental Corporation

Phone Type **Number** **Extension**
Mobile 8642751285

Email
naddison@trccompanies.com

Address
50 International Drive
Suite 150
Greenville, SC 29615

Information for the Applicant

Please read the following information and acknowledge below:

Contact the Department prior to submittal with any questions or to request acceptable alternate content/format.

Be advised that you are not authorized to commence regulated activity until this application can be processed, publicly noticed, and approval to proceed is received in writing from the Department.

EPA Form(s) 1 and 2F need not be submitted unless specifically required by the Department. EPA Form(s) 2C and/or 2D are required to be submitted unless the
applicant is eligible for a waiver and the Department grants a waiver, or unless the relevant information required by EPA Form(s) 2C and/or 2D are submitted to the Department in an alternative format acceptable to the Department.

Planned/proposed mining sites that are greater than 5 acres, that mine/process coal or metallic mineral/ore, or that have wet or chemical processing, must apply for and obtain coverage under an Individual or General NPDES Permit prior to commencement of any land disturbance. Such Individual NPDES Permit coverage may be requested via this ADEM Form 315.

The applicant is advised to contact:
(1) The Alabama Surface Mining Commission (ASMC) if coal, coal fines, coal refuse, or other coal related materials are mined, transloaded, processed, etc.;

(2) The Alabama Department of Labor (ADOL) if conducting non-coal mining operations;
(3) The Alabama Historical Commission for requirements related to any potential historic or culturally significant sites;
(4) The Alabama Department of Conservation and Natural Resources (ADCNR) for requirements related to potential presence of threatened/endangered species;
(5) The US Army Corps of Engineers, Mobile or Nashville Districts, if this project could cause fill to be placed in federal waters or could interfere with navigation.

The Department must be in receipt of a completed version of this form, including any supporting documentation, and the appropriate processing fee [including Greenfield Fee and Biomonitoring & Toxicity Limits fee(s), if applicable], prior to development of a draft NPDES permit.

Acknowledgement
I acknowledge I have read and understand the information above.

Additional Attachments

Additional Attachments
AL0067831 - Lhoist Brierfield NPDES Permit Modification.pdf - 05/29/2026 08:12 AM
Comment
NONE PROVIDED

Application Preparer

Application Preparer

Prefix
Mr.

First Name	Last Name
Keith	Jackson

Title
NONE PROVIDED

Organization Name
TRC Environmental Corporation

Phone Type	Number	Extension
Mobile	2055156349	

Email
kjackson@trccompanies.com

Address
[NO STREET ADDRESS SPECIFIED]
[NO CITY SPECIFIED], [NO STATE SPECIFIED] [NO ZIP CODE SPECIFIED]

Fees Assessed

The following itemized fees have been assessed in accordance with Fee Schedule D and 335-1-6-.04(a) of ADEM Admin. Code Division 1 regulations based on the information provided in this application.

If the correct fees are not displayed, please contact your permit engineer PRIOR to submitting the form. Do NOT answer questions erroneously in order to have the correct fee assessed.

Wet Preparation, Processing, Beneficiation:
6860

Fee

Fee
6860

Revisions

Revision	Revision Date	Revision By
Revision 1	4/22/2026 10:50 AM	Keith Jackson
Revision 2	8/20/2026 12:17 PM	Keith Jackson

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.

Professional Engineer (PE)

A detailed, comprehensive Pollution Abatement & Prevention (PAP) Plan must be prepared, signed, and certified by a professional engineer (PE), registered in the State of Alabama, and the PE must certify as follows: I certify under penalty of law that the technical information and data contained in this application, and a comprehensive Pollution Abatement & Prevention (PAP) Plan, including any attached SPCC plan, maps, engineering designs, etc. acceptable to ADEM, for the prevention and minimization of all sources of pollution in stormwater and authorized related process wastewater runoff has been prepared under my supervision for this facility utilizing effective, good engineering and pollution control practices and in accordance with the provisions of this Permit, and ADEM Admin. Code Division 335-6, including Chapter 335-6-9 and Appendices A & B. If the PAP Plan is properly implemented and maintained by the Permittee, discharges of pollutants can reasonably be expected to be effectively minimized to the maximum extent practicable and according to permit discharge limitations and other permit requirements. The applicant has been advised that appropriate pollution abatement/prevention facilities and structural & nonstructural management practices or Department approved equivalent management practices as detailed in the PAP Plan must be fully implemented and regularly maintained as needed at the facility in accordance with good sediment, erosion, and other pollution control practices, permit requirements, and other ADEM requirements to ensure protection of groundwater and surface water quality.

Signed By Nakia Addison on 08/20/2026 at 2:49 PM

Responsible Official

This application must be signed and initialed by a Responsible Official of the applicant pursuant to ADEM Admin. Code Rule 335-6-6-.09 who has overall responsibility for the operation of the facility. I certify under penalty of law that this document, including technical information and data, the PAP Plan, including any SPCC plan, maps, engineering designs, and all other attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the PE and other person or persons under my supervision 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. A comprehensive PAP Plan to prevent and minimize discharges of pollution to the maximum extent practicable has been prepared at my direction by a PE for this facility utilizing effective, good engineering and pollution control practices and in accordance with the provisions of ADEM Admin. Code Division 335-6, including Chapter 335-6-9 and Appendices A & B, and information contained in this application, including any attachments. I understand that regular inspections must be performed by, or under the direct supervision of, a PE and all appropriate pollution abatement/prevention facilities and structural & nonstructural management practices or Department approved equivalent management practices identified by the PE must be fully implemented prior to and concurrent with commencement of regulated activities and regularly maintained as needed at the facility in accordance with good sediment, erosion, and other pollution control practices and ADEM requirements. I understand that the PAP Plan must be fully implemented and regularly maintained so that discharges of pollutants can reasonably be expected to be effectively minimized to the maximum extent practicable and according to permit discharge limitations and other requirements to ensure protection of groundwater and surface water quality. I understand that failure to fully implement and regularly maintain required management practices for the protection of groundwater and surface water quality may subject the Permittee to appropriate enforcement action. I certify that this form has not been altered, and if copied or reproduced, is consistent in format and identical in content to the ADEM approved form. I further certify that the discharges described in this application have been tested or evaluated for the presence of non-stormwater discharges and any non-mining associated beneficiation/process pollutants and wastewaters have been fully identified. I acknowledge my understanding that I may be required to obtain a permit from the ADOL. I acknowledge my understanding that if the proposed activities will be conducted in or potentially impact waters of the state or waters of the US (including wetlands), that I may be required to obtain a permit from the USACE.

Signed By John Meuth on 08/21/2026 at 12:23 PM

Attachment 1 to Supplementary Form
ADEM Form 311

Alternatives Analysis

Applicant/Project: Lhoist-Brierfield Quarry AL0067831

All new or expanded discharges (except discharges eligible for coverage under general permits) covered by the NPDES permitting program are subject to the provisions of ADEM's antidegradation policy. Applicants for such discharges to Tier 2 waters are required to demonstrate " . . . that the proposed discharge is necessary for important economic or social development." As a part of this demonstration, the applicant must complete an evaluation of the discharge alternatives listed below, including a calculation of the total annualized project costs for each technically feasible alternative (using ADEM Form 312 for public-sector projects and ADEM Form 313 for private-sector projects). Alternatives with total annualized project costs that are less than 110% of the total annualized project costs for the Tier 2 discharge proposal are considered viable alternatives.

Alternative	Viable	Non-Viable	Comment
1 Land Application		x	Insufficient land area due to water volume. Erosion concerns.
2 Pretreatment/Discharge to POTW		x	Insufficient capacity at nearest POTW. Infrastructure not in place; Other - Stormwater only
3 Relocation of Discharge		x	No alternative watersheds available (Mahan Creek).
4 Reuse/Recycle	x		Current, volume exceeds full reuse/recycle needs.
5 Process/Treatment Alternatives		x	No other treatment alternatives identified. Stormwater sedimentation treatment only.
6 On-site/Sub-surface Disposal		x	Not feasible due to geology/Underground Injection Control permit condition.
(other project-specific alternatives considered by the applicant; attach additional sheets if necessary)			
7			
8			
9			

Pursuant to ADEM Administrative Code Rule 335-6-3-.04, I certify on behalf of the applicant that I have completed an evaluation of the discharge alternatives identified above, and reached the conclusions indicated.

Signature: Nakia W. Addison, PE

(Professional Engineer)

Date: 5/1/2026

(Supporting documentation to be attached, referenced, or otherwise handled as appropriate.)

Calculation of Total Annualized Project Costs
for Private-Sector Projects

Capital Costs to be Financed (Supplied by applicant)	$ NA	(1)
Interest rate for Financing (Expressed as a decimal)	NA	(i)
Time Period of Financing (Assume 10 years*)	10 years	(n)
Annualization Factor = $\frac{i}{(1+i)^{10} - 1} + i$	NA	(2)
Annualized Capital Cost [Calculate: (1) x (2)]	$ NA	(3)
Annual Cost of Operation and Maintenance (including but not limited to monitoring, inspection, permitting fees, waste disposal charges, repair, administration and replacement)**	$ NA	(4)
Total Annual Cost of Pollution Control Project [(3) + (4)]	$ NA	(5)

* While actual payback schedules may differ across projects and companies, assume equal annual payments over a 10-year period for consistency in comparing projects.

** For recurring costs that occur less frequently than once a year, pro rate the cost over the relevant number of years (e.g., for pumps replaced once every three years, include one-third of the cost in each year).

The applicant is required to supply outfall number(s) as it appears on the map(s) required by this application [if this application is for a modification to an existing permit do not change the numbering sequence of the permitted outfalls], describe each, (e.g., pipe, spillway, channel, tunnel, conduit, well, discrete fissure, or container), and identify the origin of pollutants. The response must be precise for each outfall. If the discharge of pollutants from any outfall is the result of commingling of waste streams from different origins, each origin must be completely described.

Description of Origin of Pollutants – typical examples: (1) Discharge of drainage from the underground workings of an underground coal mine, (2) Discharge of drainage from a coal surface mine, (3) Discharge of drainage from a coal preparation plant and associated areas, (4) Discharge of process wastewater from a gravel-washing plant, (5) Discharge of wastewater from an existing source coal preparation plant, (6) Discharge of drainage from a sand and gravel pit, (7) Pumped discharge from a limestone quarry, (8) Controlled surface mine drainage (pumped or siphoned), (9) Discharge of drainage from mine reclamation, (10) Other (please describe):

Outfall	Discharge structure Description	Description of Origin of pollutants	Surface Discharge	Groundwater Discharge	Wet Prep -Other Production Plant	Pumped or Controlled Discharge	Low Volume STP
001E	Spillway with Weir	7, 8, 9 Sedimentation Pond	Yes	No	Yes	Pumped Controlled	No
002P	Riser with 24-inch Concrete Discharge Barrel	9, 10 (Discharge of storm water from overburden management area) Sedimentation Pond	Yes	No	No	Controlled	No

The applicant is required to supply the following information separately for every proposed (P) or existing (E) outfall. List expected average daily discharge flow rate in cfs and gpd; frequency of discharge in hours per day and days per month; average summer and winter temperature of discharge(s) in degrees centigrade; average pH in standard units; and average daily discharges in pounds per day of BOD5, Total Suspended Solids, Total Iron, Total Manganese, and Total Aluminum (if bauxite or bauxitic clay or if otherwise believed present):

Outfall E/P	Information Source - # of Samples	Flow (cfs)	Flow (gpd)	Frequency (hours/day)	Frequency (days/month)	Sum/Win Temp, (°C)	pH (s.u.)	BOD5 (lbs/day)	TSS (lbs/day)	Tot Fe (lbs/day)	Tot Mn (lbs/day)	Tot Al (lbs/day)
002P	Hydro Model- 25-yr, 24-hour Event	19.6	12,667,794	24	30	Ambient	8 (Est.)	ND (Est.)	135 (Est.)	ND (Est.)	ND (Est.)	Absent
001E	Historical (DMR)	5	3,231,580	24	27	Ambient	8	ND	135	ND	ND	Absent

The applicant is required to supply the following information separately for every proposed or existing outfall. Identify and list expected average daily discharge of any other pollutant(s) listed in EPA Form 2C Tables A, B, C, D, and E that are not referenced in Part XVI.B. or otherwise submitted elsewhere, that you know is present or have reason to believe could be present in the discharge(s) at levels of concern:

Outfall E/P	Reason Believed Present	Information Source - # of Samples	Mg							
			lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L
001E	Anaytical Sample	Historical (DMR)	515							
002P	Anaytical Sample	Worst Case	515							

Lhoist North America
Lhoist Group

May 29, 2026

Ms. Ange Boatwright
Alabama Department of Environmental Management
Mining and Natural Resource Section – Stormwater Management Branch
1400 Coliseum Boulevard
Montgomery, Alabama 36110

Re: NPDES Permit Modification – Brierfield Quarry
NPDES Permit AL0067831
Lhoist North America of Alabama, LLC
14786 Montevallo Road
Brierfield, Bibb County, Alabama

Ms. Boatwright:

Enclosed please find the proposed modification of the National Pollutant Discharge Elimination System (NPDES) Permit for the Lhoist North America of Alabama, LLC (Lhoist) Brierfield Quarry located at 14786 Montevallo Road in Brierfield, Bibb County, Alabama. This modification includes the following informational modification:

- Update Property Boundary (Figure 1)
- Expansion of Overburden Management Area - East
- Proposed Outfall 002P – Overburden Expansion Area East Pond

If you have any questions, please contact me at (205) 402-1553.

Sincerely,
Lhoist North America of Alabama, LLC

Michael Will
Regional Environmental Manager

Enclosure:
Figure 1 – Site Location Map
Figure 2 – Facility Diagram
ADEM Form 315
Brierfield SPCC – July 2025
Pollution Abatement Plan – May 2026

Lhoist North America of Alabama, LLC
Brierfield Quarry
14786 Montevallo Road
Brierfield, Bibb County, Alabama
NPDES Permit No. AL0067831

Lhoist North America of Alabama, LLC (Lhoist) owns and operates the Brierfield Quarry located in Bibb County at 14786 Montevallo Road, Brierfield, Alabama. The following proposed modification and information is intended to allow for the modification of NPDES Permit No. AL0067831.

Updated Property Boundary

Lhoist acquired real property located to the north, northwest, west, and south of the existing quarry property in Section 22, Section 23, Section 25, Section 26, Section 27, and Section 35 of Township 24N, Range 11E and Section 18, Section 19, and Section 30 of Township 24N, Range 12E.

The acquired properties include the following Shelby County parcel:

- Former Sparks Property – Portion of the contingent parcel to the north located on and south of Montevallo Road and bounded to the south by Mahan Creek.
    - 36-04-18-0-000-011.000 (+/- 21-acres; Section 18, T24N, R12E)

The acquired properties include the following Bibb County parcels:

- Former Sparks Property – Portion of the contingent parcel to the north located on and south of Montevallo Road and bounded to the south by Mahan Creek.
    - 07-08-04-19-0-000-004.000 (+/- 48-acres; Section 19, T24N, R12E)
- Former Barber Property – Contingent parcel to the east located on Emma Drive and State Route 139 and bounded to the east by railroad tracks.
    - 07-08-09-30-0-000-011.003 (+/- 12-acres; Section 30, T24N, R12E)
- Former KKW Land & Timber LLC Property – Contingent parcels to the west, southwest, and south:
    - 07-09-05-22-0-000-005.000 (+/- 14-acres; Section 23, T24N, R11E)
    - 07-09-06-23-0-000-004.000 (+/- 53-acres; Section 22, T24N, R11E)
    - 07-09-07-25-0-000-001.000 (+/- 241-acres; Section 25, T24N, R11E)
    - 07-09-07-26-0-000-001.000 (+/- 425-acres; Section 26, T24N, R11E)
    - 07-09-07-26-0-000-003.000 (+/- 33-acres; Section 26, T24N, R11E)
    - 07-09-07-26-0-000-002.000 (+/- 24-acres, excludes portions west of Frederick Pass; Section 26, T24N, R11E)
    - 07-09-07-35-0-000-001.002 (+/- 190-acres; Section 35, T24N, R11E)
    - 07-09-07-35-0-000-002.000 (+/- 40-acres; Section 35, T24N, R11E)
    - 07-09-08-27-0-000-001.004 (+/- 7-acres; Section 27, T24N, R11E)

Total acquired area: +/- 1,108-acres

The current property boundary is illustrated on the attached Figure 1, Site Location Map. At this time the acquired real property will remain as-is with no intended use for mining operations.

Outfall 002P (Proposed Outfall) – The overburden management area is currently located south of the active quarry area. Lhoist will continue to expand the surface mine with needed expansion of the overburden management area. As part of the overburden management area expansion, a sediment and stormwater detention pond (East Pond) will be constructed on the eastern side of the property near Rolling Mill Road. At this time, the proposed outfall (Outfall 002P) will be gravity discharged via natural drainage features directly east to Mahan Creek. The discharge will consist of storm water only as no process areas are proposed.

The East Pond will accept surface flows from an aerial extent of approximately 60-acres of the post-constructed overburden management area expansion. The East Pond is designed to detain the 25-year, 24-hour storm below the emergency spillway elevation, and to convey the 100-year, 24-hour storm through the emergency spillway. The East Pond is designed as a dry pond to temporarily store storm water runoff and release at a controlled rate gradually through a riser structure to reduce flow and sediment load in the discharge to the proposed Outfall 002P. The discharge point of the East Pond riser is set at a maximum of 19.60 cubic feet per second (cfs) for the 25-year, 24-hour storm event condition. Additionally, the East Pond riser discharge point is located approximately 500-feet upgradient from the proposed Outfall 002P positioned at the storm water culvert passing through/beneath the historic tram way (Historic Ironworks Commission).

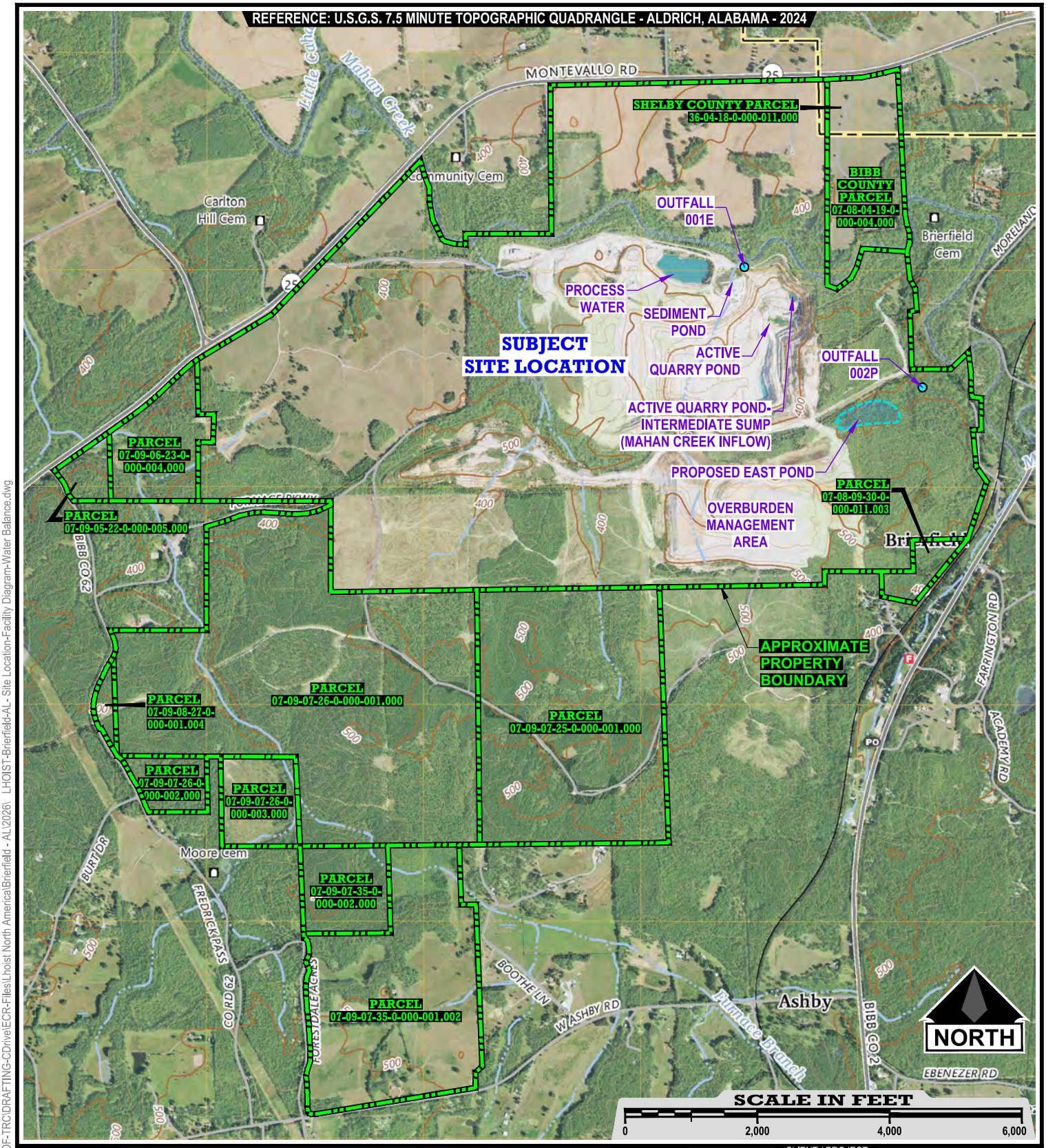
Current discharge limitations and monitoring requirements for Outfall 001E consists of pH, total suspended solids (TSS), and flow on a bi-monthly basis, and Kjeldahl nitrogen, nitrate-nitrite, and phosphorus during the months of April, June, August, and October. Given that the source water discharge for the proposed Outfall 002P will be storm water only, the discharge limitations and monitoring requirement for the proposed Outfall 002P is anticipated to consist of consists of pH, total suspended solids (TSS), and flow on a bi-monthly basis.

FIGURES
(Submitted through AEPACS)

ADEM FORM 315
(Submitted through AEPACS)

BRIERFIELD SPCC
JULY 2025
(Submitted through AEPACS)

BRIERFIELD PAP
May 2026
(Submitted through AEPACS)





CLIENT / PROJECT

LHOIST NORTH AMERICA
Brierfield Quarry
14786 Highway 25, Brierfield, AL 35035

TITLE

SITE LOCATION MAP

DRAWN BY: O. Fonseka	REQUEST BY: K. Jackson	PROJECT NO. 731026
DWG. DATE: May 2026	PROJECT-MGR: K. Jackson	

TRC — BIRMINGHAM, ALABAMA — PHONE: 205-518-9316 — TRCcompanies.com

Lhoist

FIGURE 1

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DRAWING By: Oskar Fonseka - FILE NAME: LHOIST-Brierfield-AL- Site Location-Facility Diagram-Water Balance.dwg

IMAGERY SOURCE: GOOGLE EARTH - 01/13/2023

STATE HIGHWAY 25

MAINTENANCE AREA DISCHARGE

LIMESTONE CRUSHING AND SCREENING AREA

BLASTING AGENT STORAGE AREA

Mahan Creek

OUTFALL 001E

MAINTENANCE OIL STORAGE AREA (SEE ENLARGED DIAGRAM)

DSA-1

OFOE - JAW CRUSHER

T-1

DSA-2

MOBILE DRILLERS TRUCK

INACTIVE QUARRY POND

MOBILE OIL TRUCK

SCALE HOUSE

ORANGE SUMP PUMP

T-2

QUARRY EQUIPMENT STAGING AREA

SEDIMENT POND

UNNAMED TRIBUTARY TO MAHAN CREEK

CONTRACTOR DIESEL TANK

MOBILE AG TRAILER

AGRICULTURAL PRODUCT SCREENING AREA

SPILL KIT

ACTIVE QUARRY PONDS

OFOE - SCREEN

PIONEER PUMP

OFOE - SCREEN DIESEL TANK

RETENTION POND

BIG SUMP PUMP

SMALL SUMP PUMP

OUTFALL 002P

PROPOSED EAST POND

OVERBURDEN MANAGEMENT AREA EXPANSION

OVERBURDEN MANAGEMENT AREA

N

W

E

S

0 350' 700' 1,400'

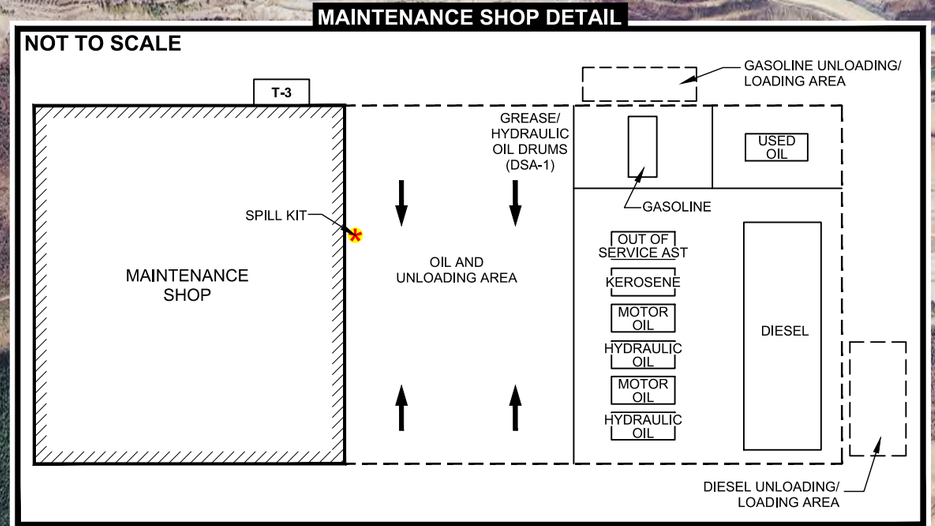
SCALE IN FEET
1" = 700'-0"

TABLE 2-1 - OIL STORAGE

IDENTIFICATION	TANK NAME / CONTENTS	LOCATION	VOLUME AND CONTAINER TYPE
Aboveground Storage Tanks (ASTs)			
Quarry Maintenance Shop Diesel Tank	Diesel Fuel	Maintenance Building Oil Storage Area	14,130-gallon Single Wall AST
Gasoline Tank	Gasoline		405-gallon Single Wall AST
Used Oil	Used Oil		405-gallon Single Wall AST
Motor Oil Tank (30W)	Motor Oil		500-gallon Single Wall AST
Motor Oil Tank (15W-40)	Motor Oil		500-gallon Single Wall AST
Hydraulic Oil 1	Hydraulic Oil		500-gallon Single Wall AST
Hydraulic Oil 2	Hydraulic Oil		500-gallon Single Wall AST
Kerosene	Kerosene		580-gallon Single Wall AST
Out-of-Service	Empty		580-gallon Single Wall AST
Contractor Diesel Tank	Diesel Fuel	West Quarry Road	10,000-gallon Double Wall AST
Transformers			
T-1	Transformer, Dielectric Fluid	Active Quarry-North Face	255-gallon AST (Estimated)
T-2	Transformer, Dielectric Fluid	Limestone Crushing and Screening Area	255-gallon AST (Estimated)
T-3	Transformer, Dielectric Fluid	Maintenance Building Oil Storage Area	255-gallon AST (Estimated)
Drums/Totes/Containers			
DSA-1	Gear/Lube/ Hydraulic Oil	Maintenance Building Oil Storage Area	(12) Drums – 660 gallons
DSA-2	Gear/Lube/ Hydraulic Oil/Used Oil	Limestone Crushing and Screening Area	(16) Drums – 880 gallons
Mobile Equipment			
Mobile Oil Truck	Diesel	Maintenance Building Oil Storage Area	Diesel Fuel – 115-gallons
	Hydraulic Oil		Hydraulic Oil (2) – 115-gallons
	Motor Oil		Motor Oil (2) – 115-gallons
	Used Oil		Used Oil – 115-gallons
Mobile Drillers Truck	Diesel Fuel	Limestone Crushing and Screening Area	250-gallon Single Wall AST
Mobile Ag Product Trailer	Diesel Fuel	Agricultural Product Screening Area	77-gallon Single Wall AST (Truck Mount)
Oil-Filled Operating Equipment			
Jaw Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Limestone Crushing and Screening Area	112-gallon Hydraulic Reservoir
Cone Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Limestone Crushing and Screening Area	38-gallon Hydraulic Reservoir
Pioneer Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	500-gallon Diesel Fuel Tank
Orange Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	125-gallon Diesel Fuel Tank
Big Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	250-gallon Diesel Fuel Tank
Small Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	250-gallon Diesel Fuel Tank
Screen	Oil-Filled Operating Equipment, Diesel Fuel	Agricultural Product Screening Area	77-gallon Diesel Fuel Tank
	Oil-Filled Operating Equipment, Hydraulic Oil		98-gallon Hydraulic Reservoir

MAINTENANCE SHOP DETAIL

NOT TO SCALE



CLIENT / PROJECT

LHOIST NORTH AMERICA
Brierfield Quarry
14786 Highway 25, Brierfield, AL 35035

TITLE

FACILITY DIAGRAM

DRAWN BY: O. Fonseka	REQUEST BY: K. Jackson	PROJECT NO. 731026
DWG. DATE: May 2026	PROJECT-MGR: K. Jackson	FIGURE 2

TRC
BIRMINGHAM, ALABAMA
PHONE: 205-518-9316
TRCcompanies.com
Lhoist

LAST EDIT: 05/12/2026 - FILE LOCATION: HOU C:\OF-TRC\DRAFTING-CD\drive\ECR-Files\Lhoist North America\Brierfield - AL\2026\ LHOIST-Brierfield-AL- Site Location-Facility Diagram-Water Balance.dwg

DRAWING By: Oskar Fonseka - FILE NAME: LHOIST-Brierfield-AL- Site Location-Facility Diagram-Water Balance.dwg

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

LHOIST NORTH AMERICA
BRIERFIELD QUARRY

Prepared for:
Lhoist North America – Brierfield Quarry
14786 Montevallo Road (Highway 25)
Brierfield, Alabama 35035

Prepared by:
TRC Environmental Corporation
Birmingham, Alabama 35243

July 2025

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Appendix C Secondary Containment Calculations
Appendix D Drainage Discharge Report
Appendix E Certified Tank Inspection Reports
Appendix F Facility Inspection Reports and Checklist
Appendix G Annual SPCC Plan Training Documentation
Appendix H Discharge Reporting Form

MANAGEMENT APPROVAL

I, Jason Lauer, having the authority to commit the necessary resources to fully implement this SPCC Plan, give full approval to this SPCC Plan. This SPCC Plan will be fully implemented as herein described. The Designated Person Accountable for Spill Prevention has the authority to implement the response procedures necessary to prevent discharges of oil to the environment.

Signature **Date**

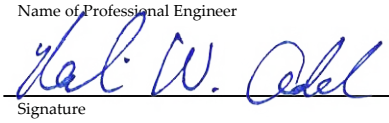
Quarry Manager,
Brierfield Quarry

Title

REGISTERED PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I, or my designated agent, have examined the facility, and being familiar with the provisions of 40 CFR Part 112, attest that this Spill Prevention, Control, and Countermeasure (SPCC) Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and established schedule for inspections and testing that is adequate for this facility. This certification does not include a recommendation for which integrity test to use nor does it include a discussion of the proper implementation of such test, both of which will be the responsibility of the Certified Tank Inspector selected by the facility to meet the testing requirements under 40 CFR Part 112.

Nakia Addison, P.E.
Name of Professional Engineer


Signature

38320
Registration Number

Alabama
State

July 15, 2025
Date

Seal



SPCC PLAN CROSS-REFERENCE

40 CFR 112 Section	Description	SPCC Plan Page or Section(s)
§112.1	Applicability	Section 1
§112.3(a)-(c)	SPCC Plan Preparation and Implementation	All Sections
§112.3(d)	Professional Engineer Certification	iii
§112.3(e)	SPCC Plan Availability	Section 1.2
§112.4	Spill Reporting and SPCC Plan Amendment at Administrator Request	Section 1.4 and Appendix H
§112.5(a)	SPCC Plan Amendment Upon Facility Changes	Section 1.3 and vi
§112.5(b)	SPCC Plan Review and Evaluation Every Five Years	Section 1.3 and vi
§112.5(c)	Professional Engineer Certification Upon Plan Technical Amendments	Section 1.3, 1.4, iii and vi
§112.7	SPCC Plan Management Approval	iii
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§112.7(a)(1)-(2)	SPCC Plan Conformance and Procedures to Address Non-Conformances	Section 1.5
§112.7(a)(3)	Description of Facility and Facility Diagram	Section 2 and Fig. 2-1
§112.7(a)(3)(i)	Oil Storage and Capacity	Section 2.4 and Table 2-1
§112.7(a)(3)(ii)	Discharge Prevention Measures and Procedures for Handling Products	Section 5
§112.7(a)(3)(iii)	Discharge and Drainage Controls	Section 5 and Section 2.5
§112.7(a)(3)(iv)	Countermeasures for Discharge, Discovery, Response, and Cleanup	Section 6
§112.7(a)(3)(v)	Disposal of Recovered Materials	Section 6
§112.7(a)(3)(vi)	Contact List and Phone Numbers	Section 2.1 and Table 6-1
§112.7(a)(4)	Discharge Reporting Procedures (Reporting Form)	Section 6 and Appendix H
§112.7(a)(5)	Emergency Response Procedures	Section 6.3
§112.7(b)	Prediction of Discharge Quantities and Flow due to Equipment Failure	Section 3
§112.7(c)	Containment and/or Diversion Structures	Section 5.2
§112.7(d)	Impracticability of Containment and/or Diversion Structures	NA
§112.7(e)	Inspection and Testing Procedures	Section 5.5
§112.7(f)(1)&(3)	Oil-Handling Personnel Training and Annual Briefings	Section 5.7
§112.7(f)(2)	Designation of Person Responsible for Discharge Prevention	Section 2.1 and Table 6-1
§112.7(g)	Security of Oil Handling, Processing, and Storage Facilities	Section 5.6
§112.7(h)	Tank Car and Tank Truck Loading and Unloading Rack Requirements	Section 5.4
§112.7(i)	Repair, Alteration, Reconstruction or Changes In Service that Effect the Risk of Discharges	Section 1.3, Section 5.5, iii and vi
§112.7(j)	Conformance with §112 Requirements and Discharge Prevention and Containment in other Rules	Section 1.5
§112.7(k)	Qualified Oil-Filled Operational Equipment	NA
§112.8(a)	General Plan Requirements of §112.7	All Sections
§112.8(b)	Facility Drainage Design and Control	Section 2.5 and Section 5.2

40 CFR 112 Section	Description	SPCC Plan Page or Section(s)
§112.8(c)(1)	Bulk Storage Containers Compatibility with Material Stored	Section 5.1 and Table 2-1
§112.8(c)(2)	Bulk Storage Container Secondary Containment Requirements	Section 5.2
§112.8(c)(3)	Drainage of Uncontaminated Rainwater from Containment	Section 2.5
§112.8(c)(4)&(5)	Corrosion Protection/Leak Testing For Buried And Partially Buried Storage Tanks	Section 5.1 and Section 5.5
§112.8(c)(6)	Integrity Testing on Aboveground Storage Tanks (ASTs)	Section 5.5
§112.8(c)(7)	Leakage Control for Internal Heating Coils	NA
§112.8(c)(8)	Discharge Avoidance Engineering	Section 5.3
§112.8(c)(9)	Observation of Effluent Treatment Facilities	NA
§112.8(c)(10)	Correction of Visible Discharges and Removal of Oil Accumulations	Section 5.5 and 6.3.5
§112.8(c)(11)	Containment for Mobile or Portable Oil Storage Containers	Table 3-1
§112.8(d)	Facility Transfer Operations, Pumping and Facility Process	Section 5.4
§112.8(d)(1)	Buried Piping	Section 5.5
§112.8(d)(2)	Piping that is Out-of-Service or In Stand-By Services for Extended Times	Section 5.6
§112.8(d)(3)	Design Pipe Supports to Minimize Abrasion and Corrosion	Section 5.5
§112.8(d)(4)	Piping Inspection Requirements and Integrity and Leak Testing of Buried Piping	Section 5.5
§112.8(d)(5)	Vehicles Warning Systems	Section 5.6
§112.12(a)	General Plan Requirements of §112.7	All Sections
§112.12(a)(1) – (5)	Facility Drainage	Section 2.5
§112.12(c)(1)	Bulk Storage Containers Compatibility with Material Stored	Section 5.1 and Table 2-1
§112.12(c)(2)	Bulk Storage Container Secondary Containment Requirements	Section 5.2
§112.12(c)(3)	Bulk Storage Container Drainage	Section 2.5
§112.12(c)(4) – (5)	Underground Storage Tank Leak Testing and Corrosion Protection	NA; Section 2.4
§112.12(c)(6)	Bulk Storage Container Inspection and Testing Procedures	Section 5.5
§112.12(c)(7)	Leakage Control for Internal Heating Coils	NA
§112.12(c)(8)	Discharge Prevention Engineering	Section 5.3
§112.12(c)(9)	Observation of Effluent Treatment Facilities	NA
§112.12(c)(10)	Correction of Visible Discharges and Removal of Oil Accumulations	Section 5.5 and 6.3.5
§112.12(c)(11)	Containment for Mobile or Portable Oil Storage Containers	NA
§112.12(d)(1)	Buried Piping	Section 5.5
§112.12(d)(2)	Transfer Requirements	Section 5.5
§112.12(d)(3)	Pipe Support Design	Section 5.5
§112.12(d)(4)	Valves, Piping, and Appurtenances Inspection	Section 5.5
§112.12(d)(5)	Vehicle Warning	Section 5.5

SPCC PLAN REVIEW AND AMENDMENT SUMMARY

This Spill Prevention, Control, and Countermeasure (SPCC) Plan must be reviewed, updated, and/or amended under various circumstances, as follows:

- A change(s) at the facility materially affects the potential of oil discharge.
- Five years have elapsed since the plan was last reviewed.
- Technical and nontechnical amendments have been made to the Plan.

Details regarding each of these circumstances, including the time frame for making such changes and the identification of those which require recertification by a Professional Engineer, are discussed below. In accordance with 40 CFR §112.5(a), this Plan is required to be updated and amended whenever a change occurs in the facility design, construction, operation, or maintenance that materially affects its potential for the discharge of oil. The Plan shall be amended within six months of any such change. Examples of changes requiring plan amendment include:

- The commissioning or decommissioning of containers
- The replacement, reconstruction, or movement of containers
- The reconstruction, replacement, or installation of piping systems
- Construction or demolition that might alter secondary containment structures
- Changes in products or services
- A revision in standard operating or maintenance procedures at the facility

Additionally, pursuant to 40 CFR §112.5(b), a review and evaluation of this SPCC Plan is required to be conducted at least once every 5 years. As a result of this review and evaluation, Lhoist North America (LNA) will amend the SPCC Plan within 6 months of the review to include more effective prevention and control technology if (1) such technology will significantly reduce the likelihood of a spill event from the facility, and (2) such technology has been field-proven at the time of review. The amendments shall be implemented as soon as possible, but no later than 6 months following preparation of the amended SPCC Plan.

In accordance with 40 CFR §112.5(c), technical amendments to the SPCC Plan will be certified by a Professional Engineer. Examples of changes that require technical amendment of this Plan include, but are not limited to, the following:

- Increases in oil storage capacity
- Additional oil types
- Changes in the handling/storage areas for oil

- Changes in the handling/storage equipment for oil
- Modifications in the handling/storage procedures for oil
- Changes to the inspection, security, and training program

LNA can make minor changes to the Plan, such as updating emergency telephone contacts, without a Professional Engineer's recertification.

See below for documentation of SPCC Plan review and evaluation.

Review Date	Plan Amended (Y/N)	Description (if amended)	Name & Signature of Reviewer

SECTION 1
INTRODUCTION

This Spill Prevention Control and Countermeasure (SPCC) Plan has been prepared for Lhoist North America of Alabama's (LNA) Brierfield Quarry (the "Facility") located at 14786 Montevallo Road (Highway 25), Brierfield, Alabama, in accordance with the Clean Water Act (CWA), the Oil Pollution Act of 1990 (OPA), and Title 40, Code of Federal Regulations (CFR) Part 112 - Oil Pollution Prevention (**Appendix A**). These regulations are applicable to any owner or operator of a non–transportation-related onshore or offshore facility engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using, or consuming oil and oil products that, due to its location, could reasonably be expected to discharge oil in quantities that may be harmful into or upon the waters of the United States.

A facility is subject to SPCC regulations if the total aboveground storage capacity of oil and oil products exceeds 1,320 gallons; or if the underground storage capacity exceeds 42,000 gallons; and if, because of its location, the facility could reasonably be expected to discharge oil into navigable waters of the United States. Containers with a capacity of less than 55 gallons of oil or oil products are exempted from the requirements under the Oil Pollution Prevention regulations. The Facility is required to prepare and implement this SPCC Plan because it stores or otherwise uses oil in an aggregate aboveground storage capacity of greater than 1,320 gallons.

1.1 Purpose of the SPCC Plan

The purpose of this SPCC Plan is to identify probable factors and events that can lead to the discharge of oil into or upon navigable waters of the United States; establish guidelines for the control and disposal of spills and spill material upon discharge; and outline the oil storage and use at the Facility and engineering designs implemented to prevent and mitigate oil discharges. This Plan may be used independently and without reference to previous plans.

1.2 SPCC Plan Availability

A complete copy of this SPCC Plan will be maintained at the Facility and will be available to the Regional Administrator for on-site review during normal working hours.

1.3 SPCC Plan Amendment

This SPCC Plan shall be amended when there is a change in the Facility design, construction, operation, or maintenance that materially affects its potential for a discharge. Examples of these changes include: commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacement, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes of product or service; or revision of standard operation or maintenance procedures at the Facility. Any required amendment must be incorporated into this SPCC Plan within six months, and implemented as soon as possible, but not later than six months following preparation of the SPCC Plan amendment.

In addition, a complete review and evaluation must be performed of this SPCC Plan at least once every five years. The SPCC Plan then must be amended within six months to include more effective prevention and control technology. These amendments, too, must be implemented as soon as possible, but no later than six months after the SPCC Plan amendment.

The SPCC Plan Review and Amendment Summary are provided on Page viii of this SPCC Plan.

Note that any technical amendment to the SPCC Plan must be certified by a Registered Professional Engineer.

1.4 Amendment by Regional Administrator

In the event the Facility experiences a discharge of 1,000 gallons of oil in a single discharge, or discharges of 42 gallons of oil in each of two discharges during any twelve month period, the information in Section 6.3.4 must be submitted to the EPA Regional Administrator and the Alabama State Emergency Response Center.

USEPA Region 4 Administrator
Sam Nunn Atlanta Federal Center (SNAFC)
61 Forsyth Street SW
Atlanta, GA 30303-8960
(800) 241-1754

State Emergency Response
1400 Coliseum Boulevard
Montgomery, AL 36110
(800) 843-0699

Subsequently, the SPCC Plan may be required to be amended within 30-days of notice from the EPA Regional Administrator or the Alabama Department of Environmental Management. The amended SPCC Plan must be implemented as soon as possible, but not later than within six months of the amendment.

The SPCC Plan Review and Amendment Summary are provided on Page vi of this SPCC Plan.

Note that any technical amendment to the SPCC Plan must be certified by a Registered Professional Engineer.

1.5 Conformance with SPCC Regulations

The SPCC rule, under §112.7(a)(2), allows the SPCC Plan to deviate from certain requirements in the rule, but not the secondary containment requirements for bulk storage containers. The Facility is in conformance with Federal SPCC Regulations contained within 40 CFR 112. The State of Alabama does not have any additional SPCC or oil storage regulations that apply to Facility operations. These requirements have been incorporated throughout the Plan, as shown in the SPCC Plan Cross Reference table on Page v.

SECTION 2
GENERAL FACILITY INFORMATION

2.1 Facility Information and Contacts

Facility Name: Lhoist North America of Alabama, LLC – Brierfield Quarry			
Facility Location: 14786 Montevallo Road (Highway 25), Brierfield, AL			
Latitude:	33º 3' 08"	**Longitude:**	86º 55' 52"
Operator:	Lhoist North America of Alabama, LLC	**Owner:**	Lhoist North America, LLC
Mailing Address:	14786 Montevallo Road (Highway 25) Brierfield, AL 35035	**Mailing Address:**	3700 Hulen Street Fort Worth, TX 76107
Phone:	(205) 665-7509	**Phone:**	(817) 429-3077
Plant Manager:	Jason Lauer	**Env./Safety Manager:**	Jodie Edwards
Work Phone:	(205) 660-9041	**Work Phone:**	(205) 444-4905
Mobile Phone:	(205) 641-0846	**Mobile Phone:**	(205) 335-8532
Emergency Response Coordinators			
Primary		**Alternate**	
Name:	Jason Lauer	**Name:**	Adam Moore
Title:	Quarry Manager	**Title:**	Maintenance Manager
Work Phone:	(205) 660-9041	**Work Phone:**	(205) 660-9045
Mobile Phone:	(205) 641-0846	**Mobile Phone:**	(205) 767-6863
Additional Facility Contact		**Additional Facility Contact**	
Name:	Rebekah Averill	**Name:**	Michael Will
Title:	Mine Engineer	**Title:**	Regional Environmental Manager
Work Phone:		**Work Phone:**	(205) 444-4905
Mobile Phone:	(205) 645-3457	**Mobile Phone:**	(205) 281-4103
Discharge Prevention Coordinator:		Jodie Edwards	
Work Phone:	(205) 444-4905	**Mobile Phone:**	(205) 335-8532

2.2 Facility Location

The Facility is located at 14786 Montevallo Road (Highway 25), Brierfield, Alabama approximately 5 miles southwest of Montevallo, Alabama. The Brierfield Quarry is located in Sections 19, 23, and 24 in Township 24 North, Range 11 East, Bibb County, Alabama. The latitude is 33 degrees, 03 minutes, 08 seconds north and the longitude is 86 degrees, 55 minutes, 52 seconds west. **Figure 1** shows the topographical features in the vicinity of the Facility

2.3 Facility Operations

The LNA Brierfield Quarry consists of surface mining of limestone from the quarry, primary crushing operations (jaw and cone crusher), screening, on-site stock piling, and transportation of limestone to other facilities. Additionally, a third-party contractor utilizes mobile screening equipment for processing lime mud for agricultural uses. The quarry office and maintenance building, and scale house are positioned on the northwest portion of the quarry. The process areas consist of a blasting agent storage area, the limestone crushing and screening area, and quarry equipment staging area. The Brierfield Quarry employs approximately 30 full-time employees, 5 contract employees, and operates 24 hours per day, 5 days per week.

2.4 Facility Oil Storage

Oil and oil products are not stored in containers unless the container material and construction are compatible with the material stored and the conditions of storage. Table 2-1 provides a list of tanks, their volumes, contents, and location. Storage tanks with volumes of less than 55 gallons are not required to be identified in this SPCC, however are included as a best management practice. Diesel is stored at the maintenance shop and at a secondary location to fuel contractor equipment. Other bulk oil stored at the quarry maintenance shop include gasoline, motor oil (30W and 15W-40), kerosene, hydraulic fluid, and used oil. Drum storage areas (DSA) for gear oil, grease and hydraulic oil are located at the Facility in the quarry maintenance shop (DSA-1), and adjacent to the limestone crusher and screening area (DSA-2).

A mobile oil truck is utilized at the Facility to refuel the dewatering pumps, refuel mining equipment, and also contains a motor oil, hydraulic oil, and used oil tanks for equipment maintenance activities. The mobile oil truck is parked near the quarry maintenance shop when it is not in use. A secondary mobile fuel truck is utilized by a third-party contractor for refueling drilling equipment which is staged adjacent to DSA-2 when not in use. A mobile trailer with a 77-gallon diesel tank (truck mount) is used at the Agricultural Screening Area for equipment refueling which is staged near the process equipment when not in use.

Oil-filled operating equipment (OFOE) includes a hydraulic oil reservoir for the jaw crusher (112-gallons) located in the limestone crusher and screening area. A primary water pump (pioneer pump) utilizes a 500-gallon fuel tank, two auxiliary sump pumps (Big Pump and Small Pump) utilizing 250-gallon fuel tanks, and the Orange Pump that utilizes a 125-gallon fuel tank. The third-party mobile screening equipment for processing lime mud for agricultural purposes includes a hydraulic oil reservoir (98-gallons) and diesel tank (77-gallons).

Electrical transformers containing dielectric fluid are located adjacent to the limestone crusher and screening area (T-1); on the north face of the active quarry (T-2); and, north of the quarry maintenance shop (T-3).

Figure 2 provides a Facility Diagram of the site detailing the layout and location of the petroleum storage and oil-filled operating equipment.

2.5 Facility Drainage

The Brierfield Quarry operates under ADEM NPDES Permit No. AL0067831. There is one permitted outfall at the Facility (Outfall 001E). This outfall is the discharge from the sedimentation pond to Mahan Creek. Mahan Creek runs along the northern boundary of the Lhoist Brierfield Quarry property.

Surface water runoff from the quarrying operations at the Facility drains to the inactive quarry pond and active quarry pit. Water collected in the inactive quarry pond is pumped to the limestone screening process. The screening wash water is directed to the sedimentation pond prior to discharging from the property. Water from dewatering operations in the active quarry is either pumped to the sedimentation pond prior to discharging or to the inactive quarry.

The area around the office and maintenance shop is bermed to restrict sheet flow. Runoff from the quarry maintenance shop flows along the berm to a primary discharge point (Maintenance Area Discharge) and eventually to Mahan Creek.

Surface water runoff from the contractor diesel storage tank area discharges to an unnamed tributary of Mahan Creek, which is located on the west portion of the property.

Oil spills from mobile equipment would generally be contained within the facility's sedimentation pond, active quarry pond, or the inactive quarry pond. Spill booms and skimmers would be used to remove any noticeable sheen before the water is discharge from the facility.

REFERENCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE - ALDRICH, AL - 2024



AREA MAP



CLIENT / PROJECT

LHOIST NORTH AMERICA
Brierfield Quarry
14786 Highway 25, Brierfield, AL 35035

TITLE

SITE VICINITY MAP

DRAWN BY: **O. Fonseka**	REQUEST BY: **K. Jackson**	PROJECT NO. **664835**
DWG. DATE: **June 2025**	PROJECT-MGR: **K. Jackson**	

TRC
BIRMINGHAM, ALABAMA
PHONE: 205-518-9316
TRCcompanies.com

FIGURE **1**

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DRAWING By: **Oskar Fonseka** - FILE NAME: LHOIST-Brierfield-AL- Site Vicinity-Facility Diagram.dwg

IMAGERY SOURCE: GOOGLE EARTH - 01/13/2023

STATE HIGHWAY 25

MAINTENANCE AREA DISCHARGE

LIMESTONE CRUSHING AND SCREENING AREA

BLASTING AGENT STORAGE AREA

OUTFALL 001E

Mahan Creek

MAINTENANCE OIL STORAGE AREA (SEE ENLARGED DIAGRAM)

DSA-1

OFOE - JAW CRUSHER

T-1

DSA-2

MOBILE DRILLERS TRUCK

INACTIVE QUARRY POND

MOBILE OIL TRUCK

SCALE HOUSE

QUARRY EQUIPMENT STAGING AREA

ORANGE SUMP PUMP

T-2

UNNAMED TRIBUTARY TO MAHAN CREEK

CONTRACTOR DIESEL TANK

SPILL KIT

MOBILE AG TRAILER

SEDIMENT POND

AGRICULTURAL PRODUCT SCREENING AREA

ACTIVE QUARRY PONDS

OFOE - SCREEN

OFOE - SCREEN DIESEL TANK

PIONEER PUMP

RETENTION POND

BIG SUMP PUMP

SMALL SUMP PUMP

N

W

E

S

0 300' 600' 1,200'

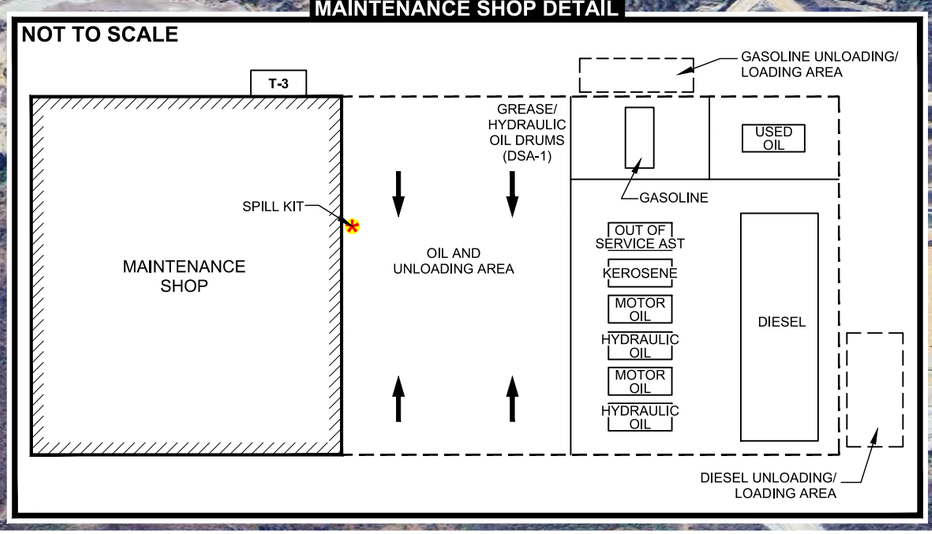
SCALE IN FEET
1" = 600'-0"

TABLE 2-1 - OIL STORAGE

IDENTIFICATION	TANK NAME / CONTENTS	LOCATION	VOLUME AND CONTAINER TYPE
Aboveground Storage Tanks (ASTs)			
Quarry Maintenance Shop Diesel Tank	Diesel Fuel	Maintenance Building Oil Storage Area	14,130-gallon Single Wall AST
Gasoline Tank	Gasoline		405-gallon Single Wall AST
Used Oil	Used Oil		405-gallon Single Wall AST
Motor Oil Tank (30W)	Motor Oil		500-gallon Single Wall AST
Motor Oil Tank (15W-40)	Motor Oil		500-gallon Single Wall AST
Hydraulic Oil 1	Hydraulic Oil		500-gallon Single Wall AST
Hydraulic Oil 2	Hydraulic Oil		500-gallon Single Wall AST
Kerosene	Kerosene		580-gallon Single Wall AST
Out-of-Service	Empty		580-gallon Single Wall AST
Contractor Diesel Tank	Diesel Fuel	West Quarry Road	10,000-gallon Double Wall AST
Transformers			
T-1	Transformer, Dielectric Fluid	Active Quarry -North Face	255-gallon AST (Estimated)
T-2	Transformer, Dielectric Fluid	Limestone Crushing and Screening Area	255-gallon AST (Estimated)
T-3	Transformer, Dielectric Fluid	Maintenance Building Oil Storage Area	255-gallon AST (Estimated)
Drums/Totes/Containers			
DSA-1	Gear/Lube/ Hydraulic Oil	Maintenance Building Oil Storage Area	(12) Drums – 660 gallons
DSA-2	Gear/Lube/ Hydraulic Oil/Used Oil	Limestone Crushing and Screening Area	(16) Drums – 880 gallons
Mobile Equipment			
Mobile Oil Truck	Diesel	Maintenance Building Oil Storage Area	Diesel Fuel – 115-gallons
	Hydraulic Oil		Hydraulic Oil (2) – 115-gallons
	Motor Oil		Motor Oil (2) – 115-gallons
	Used Oil		Used Oil – 115-gallons
Mobile Drillers Truck	Diesel Fuel	Limestone Crushing and Screening Area	250-gallon Single Wall AST
Mobile Ag Product Trailer	Diesel Fuel	Agricultural Product Screening Area	77-gallon Single Wall AST (Truck Mount)
Oil-Filled Operating Equipment			
Jaw Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Limestone Crushing and Screening Area	112-gallon Hydraulic Reservoir
Cone Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Limestone Crushing and Screening Area	38-gallon Hydraulic Reservoir
Pioneer Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	500-gallon Diesel Fuel Tank
Orange Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	125-gallon Diesel Fuel Tank
Big Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	250-gallon Diesel Fuel Tank
Small Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	250-gallon Diesel Fuel Tank
Screen	Oil-Filled Operating Equipment, Diesel Fuel	Agricultural Product Screening Area	77-gallon Diesel Fuel Tank
	Oil-Filled Operating Equipment, Hydraulic Oil		98-gallon Hydraulic Reservoir

MAINTENANCE SHOP DETAIL

NOT TO SCALE



CLIENT / PROJECT

LHOIST NORTH AMERICA
Brierfield Quarry
14786 Highway 25, Brierfield, AL 35035

TITLE

FACILITY DIAGRAM

DRAWN BY: O. Fonseka	REQUEST BY: K. Jackson	PROJECT NO. 664835
DWG. DATE: June 2025	PROJECT-MGR: K. Jackson	

TRC
BIRMINGHAM, ALABAMA
PHONE: 205-518-9316
TRCcompanies.com

FIGURE 2

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DRAWING By: Oskar Fonseka - FILE NAME: LHOIST-Brierfield-AL- Site Vicinity-Facility Diagram.dwg

Table 2-1 Oil Storage

Identification	Tank Name / Contents	Location	Volume and Container Type
Aboveground Storage Tanks (ASTs)			
Quarry Maintenance Shop Diesel Tank	Diesel Fuel	Maintenance Building Oil Storage Area	14,130-gallon Single Wall AST
Gasoline Tank	Gasoline		405-gallon Single Wall AST
Used Oil	Used Oil		405-gallon Single Wall AST
Motor Oil Tank (30W)	Motor Oil		500-gallon Single Wall AST
Motor Oil Tank (15W-40)	Motor Oil		500-gallon Single Wall AST
Hydraulic Oil 1	Hydraulic Oil		500-gallon Single Wall AST
Hydraulic Oil 2	Hydraulic Oil		500-gallon Single Wall AST
Kerosene	Kerosene		580-gallon Single Wall AST
Out-of-Service	Empty		580-gallon Single Wall AST
Contractor Diesel Tank	Diesel Fuel	West Quarry Road	10,000-gallon Double Wall AST
Transformers			
T-1	Transformer, Dielectric Fluid	Active Quarry-North Face	255-gallon AST (Estimated)
T-2	Transformer, Dielectric Fluid	Limestone Crushing and Screening Area	255-gallon AST (Estimated)
T-3	Transformer, Dielectric Fluid	Maintenance Building Oil Storage Area	255-gallon AST (Estimated)
Drums/Totes/Containers			
DSA-1	Gear/Lube/ Hydraulic Oil	Maintenance Building Oil Storage Area	(12) Drums – 660 gallons
DSA-2	Gear/Lube/ Hydraulic Oil/Used Oil	Limestone Crushing and Screening Area	(16) Drums – 880 gallons
Mobile Equipment			
Mobile Oil Truck	Diesel Hydraulic Oil Motor Oil Used Oil	Maintenance Building Oil Storage Area	Diesel Fuel – 115-gallons Hydraulic Oil (2) – 115-gallons Motor Oil (2) – 115-gallons Used Oil – 115-gallons
Mobile Drillers Truck	Diesel Fuel	Limestone Crushing and Screening Area	250-gallon Single Wall AST
Mobile Ag Product Trailer	Diesel Fuel	Agricultural Product Screening Area	77-gallon Single Wall AST (Truck Mount)
Oil-Filled Operating Equipment			
Jaw Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Limestone Crushing and Screening Area	112-gallon Hydraulic Reservoir

Identification	Tank Name / Contents	Location	Volume and Container Type
Cone Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Limestone Crushing and Screening Area	38-gallon Hydraulic Reservoir
Pioneer Pump	Oil-Filled Operating Equipment, Diesel Fuel	Quarry	500-gallon Diesel Fuel Tank
Orange Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	125-gallon Diesel Fuel Tank
Big Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Quarry	250-gallon Diesel Fuel Tank
Small Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Quarry	250-gallon Diesel Fuel Tank
Screen	Oil-Filled Operating Equipment, Diesel Fuel	Agricultural Product Screening Area	77-gallon Diesel Fuel Tank
	Oil-Filled Operating Equipment, Hydraulic Oil		98-gallon Hydraulic Reservoir

SECTION 3
PREDICTION OF POTENTIAL SPILLS AND RELEASES

The oil pollution prevention regulations require facilities to predict the direction, rate of flow, and total quantity of oil, which could potentially be discharged from the facility as a result of a major equipment failure. Table 3-1 gives these predictions.

The bulk storage tanks at the Brierfield Quarry are provided with a secondary containment structure surrounding the perimeter of the tank or otherwise are double-walled tanks. There are 10 bulk storage ASTs at the Facility in two locations: at the contractor diesel tank area and at the maintenance building oil storage area. The contractor diesel tank is a double-walled tank in an earthen berm with geosynthetic liner for tertiary containment that would contain a volume of 11,968 gallons. A spill resulting from catastrophic tank failure would be contained within the secondary containment, or the potential release to an unnamed tributary to Mahan Creek. Also, surface runoff in the mining and processing areas is designed to drain to either the inactive quarry pond, active quarry pit, or to the sediment pond. Spills resulting from loading/unloading operations associated with the contractor diesel tank would be contained within the secondary containment, the inactive quarry pond, or the active quarry pit. Nine (9) single-wall ASTs are located at the maintenance building oil storage area and are provided with concrete secondary containment areas and are covered by a roof. At DSA-1, drums containing grease, hydraulic oil, and other oils are stored on a concrete pad under a common roof with the nine ASTs. Storm water runoff from the quarry maintenance shop flows north through a vegetated area and eventually to Mahan Creek. At DSA-2 drums containing grease, hydraulic oil, and other oils are stored within a steel secondary containment. Storm water runoff would flow to the Inactive Quarry Pond and be contained as the pond does not discharge.

The quarry pit pump diesel tanks are located within the active quarry and manually controlled. A release from either of these tanks would be contained within the active quarry pit.

Three (3) electrical transformers are located at the quarry. One transformer is located immediately north of the maintenance shop and provides power to the maintenance shop, one transformer is located on the north face of the quarry and supplies power to dewatering pump(s) located in the quarry sump, and one is located at the limestone crushing and screening area.

Table 3-1 Potential Oil Releases

Source	Type of Failure	Volume (gallons)	Rate (gal/hr)	Direction of Flow	Secondary Containment (gallons)
Aboveground Storage Tanks (ASTs)					
Quarry Maintenance Shop Diesel Tank	Secondary Containment	14,130	14,130	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (34,470 gallons)
Gasoline Tank	Secondary Containment	405	405	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (2,300 gallons)
Used Oil	Secondary Containment	405	405	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (5,595 gallons)
Motor Oil Tank (30W)	Secondary Containment	500	500	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (34,470 gallons)
Motor Oil Tank (15W-40)	Secondary Containment	500	500	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (34,470 gallons)

Source	Type of Failure	Volume (gallons)	Rate (gal/hr)	Direction of Flow	Secondary Containment (gallons)
Hydraulic Oil 1	Secondary Containment	500	500	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (34,470 gallons)
Hydraulic Oil 2	Secondary Containment	500	500	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (34,470 gallons)
Kerosene	Secondary Containment	580	580	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (34,470 gallons)
Out-of-Service AST	Secondary Containment	580	580	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (34,470 gallons)
Contractor Diesel Tank	Secondary Containment	10,000	10,000	West to unnamed tributary to Mahan Creek	Earthen berm, geosynthetic liner tertiary containment. (11,968 gallons)

Source		Type of Failure	Volume (gallons)	Rate (gal/hr)	Direction of Flow	Secondary Containment (gallons)
Transformers						
T-1	Transformer	Reservoir Failure	255 (estimated)	255	To Sediment Pond	On-Site Spill Response Equipment
T-2	Transformer	Reservoir Failure	255 (estimated)	255	To Active Quarry	On-Site Spill Response Equipment
T-3	Transformer	Reservoir Failure	255 (estimated)	255	North to Maintenance Area Discharge to Mahan Creek	On-Site Spill Response Equipment
Drums/Totes/Containers						
DSA-1	Gear/Lube/Hydraulic Oil	Drum Failure	55	55	North to Maintenance Area Discharge to Mahan Creek	Covered, concrete secondary containment. (100 gallons estimate) On-Site Spill Response Equipment
DSA-2	Gear/Lube/Hydraulic Oil/Used Oil	Drum Failure	55	55	To Inactive Quarry Pond	Steel secondary containment, uncovered. (1,321 gallons)
Oil-Filled Operating Equipment						
Jaw Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Tank Failure	112	112	To Sediment Pond	On-Site Spill Response Equipment

Source		Type of Failure	Volume (gallons)	Rate (gal/hr)	Direction of Flow	Secondary Containment (gallons)
Cone Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Tank Failure	38	38	To Sediment Pond	On-Site Spill Response Equipment
Pioneer Pump	Oil-Filled Operating Equipment, Diesel Fuel	Tank Failure	500	500	Varies	On-Site Spill Response Equipment
Orange Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Tank Failure	125	125	Varies	On-Site Spill Response Equipment
Big Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Tank Failure	250	250	Varies	On-Site Spill Response Equipment
Small Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Tank Failure	250	250	Varies	On-Site Spill Response Equipment
Screen	Oil-Filled Operating Equipment, Hydraulic Oil and Diesel Fuel	Tank Failure	77 (Diesel) 98 (Hyd.)	77 98	To Sediment Pond	On-Site Spill Response Equipment

Source		Type of Failure	Volume (gallons)	Rate (gal/hr)	Direction of Flow	Secondary Containment (gallons)
Mobile Oil Truck	Oil-Filled Operating Equipment, Used Oil, Motor Oil, Hydraulic Oil and Diesel Fuel	Tank Failure	115 (Diesel) 115 (Hyd. Oil-2) 115 (Used Oil) 115 (Motor Oil-2)	115	Varies	On-Site Spill Response Equipment
Mobile Drillers Truck	Oil-Filled Operating Equipment, Diesel Fuel	Tank Failure	250	250	Varies	On-Site Spill Response Equipment
Mobile Ag Trailer	Oil-Filled Operating Equipment, Diesel Fuel	Tank Failure	77	77	Varies	On-Site Spill Response Equipment

SECTION 4
REPORTABLE SPILL HISTORY

No reportable spills have occurred at the Brierfield Quarry. If a spill occurs in the future, the spill is to be recorded in the format as indicated in Appendix H. The up to date list will be an electronic document maintained on the Brierfield Quarry common drive.

SECTION 5
SPILL PREVENTION AND CONTROL MEASURES

Spill prevention and control measures are those features, and procedures implemented to prevent and control oil releases due to minor leaks and spills, equipment failures, and overflows. Spill prevention measures include appropriate container construction, loading and unloading procedures, inspections, testing, maintenance, and site security. Spill control measures include secondary containment, employee response training, and emergency equipment. LNA has determined that these control measures are practical and effective to prevent discharged oil from reaching navigable waters at the Brierfield Quarry.

5.1 Tank Materials and Construction

Aboveground oil storage tanks (ASTs) and containers at the Facility are of a material and construction compatible with the oils stored within them and with their aboveground storage conditions, including temperature and pressure.

No buried or partially buried tanks (i.e., underground storage tank) are utilized at the Brierfield Quarry.

All oil storage tanks at the Brierfield Quarry are constructed of metals suitable for the storage of oil. All tanks are visually inspected daily by area personnel for leaks or damages. Tanks will be examined visually by a competent person familiar with the inspection requirements of this plan and trained in the inspection techniques required to identify potential release situations, to determine their condition and the need for maintenance. See Section 5-5 for more detailed information concerning the visual inspections.

Secondary Containment Design and Capacities

All tank installations at the Brierfield Quarry are constructed of metal or plastic suitable for the storing of oils or chemicals. Tanks are protected against corrosion and equipped with spill prevention features to prevent against spills.

As detailed in Table 3-1, secondary containment areas, double-walled tanks, or spill response equipment are utilized for at the Brierfield Quarry to contain spills that may occur. The gasoline, diesel, and used oil loading/unloading areas at the maintenance oil storage area are bermed to restrict sheet flow. Runoff from the quarry maintenance shop flows along the berm to a primary discharge point (Maintenance Area Discharge) and eventually to Mahan Creek.

Secondary containment calculations for storage areas are provided in Appendix C to verify that these containment areas provide adequate storage capacity.

The gasoline AST and used oil AST located at the maintenance oil storage area have dedicated covered concrete secondary containment areas of 2,300 gallons and 5,595 gallons, respectively, to capture spills that may occur. Similarly, the diesel AST, kerosene AST, two hydraulic oil ASTs, and two motor oil ASTs have a combined covered concrete secondary containment area of 34,470

gallons. DSA-1 is within the covered building and is located in a sloped area that would contain at a minimum of 55-gallons. Should the secondary containment area be breached, the spill would flow along the berm to a primary discharge point (Maintenance Area Discharge) and eventually to Mahan Creek.

The contractor diesel fuel AST located north of the inactive quarry pond is double-walled; however, is located within an earthen berm and geosynthetic liner secondary containment with a volume of 11,968 gallons. Should the secondary containment area be breached, the spill would flow west to an unnamed tributary to Mahan Creek.

Other areas are located such that the discharge drains to the inactive quarry pond, active quarry pond, or to the facility's sediment ponds. DSA-2 is located within a steel secondary containment shell, however, is not covered. Oil-filled operational equipment located onsite have general secondary containment provisions; therefore, alternative requirements are not required. Absorbent material is located throughout the facility to assist with the containment/clean-up of spills or leaks that may occur.

Secondary containment areas at the Brierfield Quarry that are not covered are equipped with manually activated ball valves with the exception of the contractor diesel fuel AST, to prevent the discharge of oil-contaminated storm water, as applicable. The ball valves are closed and locked when not in use. The contractor diesel fuel AST is equipped with a sump pump to drain the contents which remains locked when not in use. In the event storm water collects, the storm water is inspected for the presence of oil prior to being discharged to the storm water drainage system. Appendix D contains the drainage discharge report form for the discharge of collected storm water in secondary containment areas to the storm water drainage system.

5.3 Discharge Prevention Engineering

The diesel AST, gasoline AST, used oil AST, kerosene AST, two hydraulic oil ASTs, and two motor oil ASTs located at the maintenance oil storage area are horizontally mounted cylindrical tanks on steel supports. The tanks are painted to minimize corrosion, and with the exception of the diesel AST are equipped with a direct vision gauge to determine the level of oil present in the containers. These gauges are monitored by plant personnel when the tanks are being filled. The diesel AST is equipped with a high-level alarm.

The contractor diesel fuel AST is located north of the inactive quarry pond is horizontally mounted cylindrical tanks on steel supports and painted to minimize corrosion. The AST is equipped with a direct vision gauge to determine the level of oil present in the containers. The gauge is monitored by plant personnel when the tanks are being filled.

The mobile oil truck tanks mounted on a flatbed truck are rectangular tanks. These tanks are painted to minimize corrosion and are equipped with direct vision gauges to determine the level of oil present in the containers.

Surface water runoff from the quarrying operations at the Facility drains to the inactive quarry pond and active quarry pit. Water collected in the inactive quarry pond is pumped to the limestone screening process. The screening wash water is directed to the sedimentation pond prior to discharging from the property. Water from dewatering operations in the active quarry is either

pumped to the sedimentation pond prior to discharging or to the inactive quarry. The sediment pond and the inactive quarry pond are observed by facility personnel on a daily basis to detect the presence of oil. Therefore, the risk of oil being discharged from the facility's sediment pond to a surface water body is low.

Oil containers found to visually leak or discharge oil are immediately repaired to prevent the discharge of oil. Oil that may accumulate in secondary containment areas is removed by a vacuum truck and is recycled or disposed of.

Mobile storage tanks are provided with a means to prevent discharge. Mobile tanks that are consistently used or stored in the same location are either provided with secondary containment or are located in an area that drains to either the inactive quarry pond or sediment ponds. Spill pans may also be used to control drips and small leaks from portable containers. Should a spill occur within the plant area or other area draining to either the sediment pond or inactive quarry pond, oil can be recovered using booms, skimmers, and/or vacuum trucks.

Buried piping is not used to distribute oil at the Brierfield Quarry. However, should buried piping be installed for the purpose of distributing oil at the Brierfield Quarry, the piping must be installed with a protective wrapping and coating. The piping must also be catholically protected to prevent corrosion.

Piping used to transfer oil at the facility is capped or blank-flanged at the connection when taken out of service for a repair or when a piping change is made.

Piping supports at the Brierfield Quarry are designed to minimize abrasion and corrosion and are designed to allow expansion and contraction.

Aboveground valves, piping, and other associated appurtenances are inspected periodically to assess their condition. If buried piping is installed, integrity and leak testing will be conducted during installation, construction, relocation, or replacement.

Vehicles entering the site are instructed to stay on the defined roads throughout the site. Guard bollards surrounding oil loading/unloading connections prevent vehicles from damaging oil loading/unloading equipment.

Any oil storage tank that is replaced, repaired, or altered in some way that could compromise tank integrity is evaluated for integrity prior to being placed into service.

5.4 Loading and Unloading Procedures

Standard operating procedures are followed during the unloading or loading of petroleum product to the bulk storage tanks. Oil-filled equipment and used oil unloading or loading activities are performed within a secondary containment structure and/or under covered areas.

Bulk fuel ASTs do not have secondary containment structures for loading and unloading operations. Areas other than loading / unloading racks where oil is transferred, such as storage tank fill ports, are excluded from the requirements of 40 CFR 112.7(h) and are subject to the general secondary containment requirements of 40 CFR 112.7(c). Transfers of petroleum from the tanker trucks are

subject to the secondary containment requirements of 40 CFR 112.7(c). At these areas, containment will be provided that is capable of handling the most probable releases, such as spills and leaks, associated with petroleum transfers. A total of three (3) primary unloading areas are located at the facility, generally adjacent to the tanks. The unloading areas drain to either the inactive quarry pond or the sedimentation ponds. All ASTs are filled by a hose extended from the truck to the top of the tank. Any spilled material or runoff contaminated by petroleum is removed by vacuum truck or is recovered using absorbent materials.

The Brierfield Quarry uses warning signs, wheel chocks, and specific loading/unloading procedures to prevent the discharge of oil from loading/unloading vehicles.

Tank trucks performing loading/unloading operations at the site are inspected for discharges from drains and other outlets prior to being allowed to leave the designated loading/unloading areas.

During unloading, the hose from the truck and the pipe leading to the storage tank are checked for leaks. When unloading is complete, the unloading pump is stopped and the isolation valves are closed. The hose is disconnected from the truck and is elevated to promote drainage towards the pump. The pump isolation valves are opened and the pump is operated until the hose is emptied. The pump is then stopped and the isolation valves are closed. A bucket is placed under the hose end to catch drips.

Diesel, gasoline, and petroleum products are transferred to the ASTs using pump, hose, and delivery nozzle on the supplier's truck. Tank levels are measured prior to ordering and only the quantities required to fill the tanks are purchased and delivered.

Other lubricating oils are received in 55-gallon drums or in bulk by a compartment truck. Unloading is accomplished by rolling drums onto a pallet elevated to the level of the truck bed by a forklift. Drums are delivered directly to the operation units or are stored in designated drum storage areas. Drums are stored upright, mounted on their sides in storage racks, or on dollies in spill protected areas. Dispensing is by hand pumps. Drip pans or cans are located under the spigots.

The facility adheres to the following procedures when loading or unloading materials:

1) Load/Unload materials only by authorized, qualified persons (see item 6.b. below) who will implement specific spill prevention and control procedures;
2) Do not smoke if you are involved with or are in the area where bulk oil transfer operations are being conducted;
3) Keep fires and potential ignition sources away from the area where bulk oil transfer operations are being conducted;
4) Before transferring oil to or from the vehicle, set handbrakes, emergency brakes, etc., on the bulk oil transport vehicle (cargo tank), chock wheels; and turn off the engine (unless the engine is to be used for the operation of the pumping system);
5) Persons responsible for oil transfer operations will be aware of overfill prevention systems/techniques, and will ensure that they are being monitored/followed;

6) Ensure that the cargo tank is attended by a qualified person at all times during loading or unloading;
    a. This attendant must have an unobstructed view of the cargo tank, and be within 15 feet of the tank at all times.
    b. "Qualified" means that the person (1) is aware of the hazards involved with bulk loading/unloading, (2) has been instructed on the procedures to be followed in emergencies, and (3) is authorized to move the cargo tank and is capable of doing so.
7) Before moving the cargo tank from the loading/unloading area, check to make sure that the flexible and/or fixed transfer lines have been completely disconnected, and that the valves and other closures in liquid discharge systems are closed and free of leaks;
8) Drain the loading/unloading lines to the storage tank, and close the drain valves before disconnecting the loading/unloading lines. Make sure that a drain pan or other appropriate containment device is located under the connections;
9) Inspect the vehicle before departure to make sure that loading/unloading lines have been disconnected, drain and vent valves have been closed, and no leaks are evident;
10) Immediately report any leak or spill to the SPCC coordinator;
11) Securely lock in a closed position master flow, drain valves, and other valves that could permit the release of a tank's contents when the tank is in a non-operating or non-standby status; and,
12) The loading/unloading connections of tanks and oil pipelines will be securely capped or blank-flanged when not in service or are in standby service for an extended period of time.

These instructions are to be followed by all LNA employees as well as by on-site vendors, contractors, and other staff.

5.5 Inspections, Testing and Maintenance

Inspections are a vital part of spill prevention. Routine and scheduled observations of petroleum storage containers, including both stationary containers (*e.g.*, ASTs and OFOE) and portable containers (*e.g.*, drums and totes), and their related appurtenances enable personnel to detect potential areas of release. LNA personnel conduct routine (monthly) visual inspections of each petroleum storage container at the Facility. The personnel conducting these inspections are trained to be knowledgeable of the Facility operations, the type of storage container and installed components, the characteristics of the oil stored, as well as pumping, piping, and valve operations of the storage tank systems. Prevention of spills will be accomplished most readily by routine inspection and maintenance of equipment.

Inspections at the Brierfield Quarry will be performed by the SPCC coordinator or other qualified LNA employee. The inspection records will be maintained as part of the facility's operations records for 3 years. Copies of the inspection records must be kept with a copy of the SPCC plan or in another location easily accessible by LNA employees.

Detailed Inspections: The facility will inspect for malfunctions, deterioration, operator errors, leaks, damage, discharge or corrosion of SPCC-regulated valves, pumps, tanks, piping, oil handling storage, handling equipment, and spill prevention equipment. These items will be checked to minimize the possibility of spills of oil and hazardous substances. The inspections will be conducted monthly. A list of equipment and areas where detailed inspections may be necessary, along with recommended inspection schedules, is given below. Copies of facility inspection forms are located in Appendix F.

Aboveground Storage Tanks (Including Totes and Drums)

1) ASTs (including totes and drums) containing oil or hazardous substances will be examined visually by a competent person, an individual familiar with the inspection requirements of this plan and trained in the inspection techniques required to identify potential release situations, to determine their condition and the need for maintenance. Such examination will include aboveground foundation and tank structural supports. The outside of the tanks will be checked/inspected for signs of deterioration; leaks from seams, rivets, bolts, and gaskets; and accumulation of oil or hazardous substances inside containment structures. ASTs may need to be subjected to periodic integrity testing if routine visual inspections are not adequate. Routine inspections may be performed monthly.
2) The generator units (generators and transformers) containing oil will be visually examined on a monthly basis by a competent person to determine their condition and the need for maintenance. The outside of the units will be observed for signs of deterioration; leaks from seams, rivets, bolts, and gaskets; and accumulation of oil.

3) Aboveground valves and piping will be examined on a scheduled, periodic basis (at least once per monthly) to determine the general condition of items such as supports, flange joints, valve stems and bodies, and drip pans. Periodic pressure or other nondestructive integrity testing may be warranted for piping where failure might lead to a spill event.

4) Containment areas will be inspected at least once per month for accumulation of oil or hazardous substances and to determine the source. Periodic visual inspections will be performed at least once per month to ensure the integrity of containment walls and earthen berms.

Inspection Schedule

The following presents the inspection schedule:

- Monthly AST Inspections

Monthly inspections can be performed by supervisors or other competent employees. Additional inspections should be conducted by the SPCC coordinator, environmental engineer, or his/her designee.

In the event that visual inspections prove inadequate, due to tank failure occurring in spite of visual inspections, integrity testing (nondestructive testing) must be performed on ASTs managing oil or oil products to ensure that the tank integrity is sufficient to prevent an accidental discharge. The

testing must be performed in accordance with applicable industry standards. The method and schedule for the required non-destructive testing are determined by a certified tank inspector.

Integrity Testing

Title 40 CFR Part 112.8(c)(6) does not specify a required frequency for integrity and leak testing; however, it requires periodic inspections or testing be performed in general accordance with industry standards. The inspections and testing of ASTs and storage containers are conducted in general accordance with the applicable sections of the current version of STI SP001 or the American Petroleum Institute (API) Standard API 653, *Tank Inspection, Repair, Alteration, and Reconstruction*.

Active, shop fabricated ASTs at the Facility have a continuous release detection method and spill control, and are classified as Category One ASTs as defined by STI SP001. Based on review of this standard, LNA has determined that shop fabricated tanks greater than 10,000 gallons will receive a formal external inspection by an STI SP001-certified inspector at least once every 20 years, which includes ultrasonic thickness (UTT) point measurements of horizontal AST shells, vertical AST roofs, and single-wall thickness portions of double-wall ASTs. Also, ultrasonic testing scans (UTS) may be required if significant corrosion is identified.

Field fabricated tanks with maximum shell capacities greater than 30,000 gallons will be inspected and integrity tested in general accordance with API 653 standards. Currently, no field fabricated tanks with a 30,000-gallon capacity are utilized at the facility.

Table 5-1 provides a summary of the inspection and testing requirements for each AST in accordance with the applicable standards. Integrity test reports for each AST are kept for the life of the AST at the Facility. After integrity testing, the records from previous tests will be reviewed and compared to the results of the most recent testing.

Table 5-1 Containers Inspection and Testing Requirements

Container	Capacity (gal)	Industry Standard	STI SP001 Category	Visual Inspection Frequency (Periodic)	Certified Inspection Frequency	Testing Required
Quarry Maint. Shop Diesel Tank	14,130	STI SP001	1	Monthly by Facility Personnel	Every 20 years by STI SP001 Certified Inspector	STI SP001 Formal External Inspection
Contractor Diesel Tank	10,000	STI SP001	1	Monthly by Facility Personnel	Every 20 years by STI SP001 Certified Inspector	STI SP001 Formal External Inspection

Because sufficient secondary containment is provided locally for portable containers and all bulk storage containers with less than 5,000 gallons in storage capacity, tank integrity tests for these smaller bulk tanks is unnecessary. All of these smaller bulk tanks are equipped with double-wall containment and/or secondary containment structures such that tank integrity testing is not practical. The Facility does not utilize heating coils and therefore does not monitor any steam return or exhaust lines for contamination.

If material repairs are made to any aboveground storage container, the container must be subjected to integrity testing by a certified tank inspector prior to bringing the repaired container back into service. Copies of facility certified tank inspection reports are located in Appendix E.

5.6 Security

The facility is secured by a combination of fencing and natural topographic boundaries. Access to the Brierfield Quarry is restricted to LNA personnel and approved vendors. All visitors entering the plant are required to check in at the main office. Access to the site is provided by a single entrance off of Highway 25 which is gated and can be locked if required. Outdoor lighting is provided for oil loading/unloading areas.

Delivery and unloading of oil and other oil products is scheduled for normal daylight working hours to allow quick discovery of any spills that may occur. Drain valves for all storage tanks are normally closed to prevent the container's contents from discharging. Starter controls for oil pumps are located at control stations. These remote control stations are only accessible by authorized personnel and prevent oil pumps from being started by unauthorized personnel.

5.7 Employee Training

In accordance with 40 CFR 112.7(f)(2), the SPCC coordinator has been designated as the person responsible for spill prevention at the Brierfield Quarry. To this end, facility personnel who are reasonably expected to come into contact with or handle oil are required to receive initial spill prevention training as well as annual spill prevention briefings. The initial training will consist of in-house classroom and/or hands-on training, and will cover the following topics:

1) The operation and maintenance of equipment to prevent discharge;
2) Discharge procedure protocols;
3) Applicable pollution control laws, rules, and regulations;
4) General facility operations; and,
5) The contents of the plan.

Annual spill prevention training is conducted for oil-handling personnel. This refresher training is done to make sure that oil-handling personnel have an adequate understanding of this plan and applicable spill prevention regulations and actions to be taken if a spill were to occur. Any known discharges that occurred during the previous year will be discussed during these scheduled briefings. The discussion will include the mode of failure, the malfunctioning components, and the corrective actions taken. In addition, the training will include a discussion of any recently developed precautionary measures.

SECTION 6
SPILL COUNTERMEASURES

Procedures have been implemented to minimize the likelihood of spills and to respond quickly to spills, should they occur. This section presents the facility's emergency contact list, the spill response procedures to be followed during a spill event, and the descriptions of the types and locations of spill response equipment available at the facility for use during a spill event response.

The spill response procedures described herein serve to address spills of oil and oil-containing materials only. It is important to note that such spills may also be subject to additional local, state, and federal release reporting requirements under various regulations, which are beyond the scope of this plan. Such regulations include, but are not necessarily limited to, the Superfund Amendment and Reauthorization Act (SARA), Section 304; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and the Resource Conservation and Recovery Act (RCRA). Consequently, the facility emergency coordinator or his/her designee will be responsible for identifying any other applicable release reporting requirements, as well as any applicable cleanup requirements.

6.1 Personnel

Reporting a spill to the proper facility personnel is of utmost importance so that further action/reporting can be initiated. In case of a fire, spill, or other emergency related to a potential release of oil or oil products, use exiting telephones or two-way radios to contact the SPCC coordinator or the designee.

For internal reporting, contact the SPCC coordinator. If the SPCC coordinator is not available, report the incident to one of the designees. The facility's emergency contact list is provided in the table in this section.

After being notified, the SPCC coordinator (or designee) will report the incident to the outside agencies if warranted. A release of a reportable quantity of oil, and an oil spill will be reported to the emergency response agencies. If a spill is reportable, the National Response Center (NRC) and the state agency will be contacted immediately. The outside agency contact information is presented in Table 6-1.

6.2 Emergency Equipment

Spill response equipment is maintained at the maintenance shop and contractor diesel tank to control and capture spills that may occur at the Brierfield Quarry. Heavy equipment (excavators, dump trucks, etc.) may be utilized as need to control migration of a spill and facilitate cleanup. LNA has the following available spill equipment:

- Spill Kit (Poly Drum) – Located in Maintenance Building;
- Spill Kit (Poly Drum) – Located at Contractor Diesel tank; and,
- Heavy equipment

Absorbents used to control oil spills will be properly disposed of. Equipment used to control spills will be properly decontaminated.

6.3 Response Procedures

As the situation warrants, the response procedures (relating to spill discovery, containment, cleanup, and notification) described in this section will be followed.

6.3.1 Internal Notification

In the event of an accident or chemical spill at the facility, the SPCC coordinator or the designee will be contacted as soon as practicable after the incident has occurred. Notification of one representative of LNA is required; contact preference is in the order listed in Table 6-1. If a spill discharge to surface waters or off the site (including storm or sanitary sewers) is imminent, the appropriate emergency agencies should be notified immediately of the potential threat.

The person discovering a release of oil, or oil product from a container, tank, or operating equipment, should immediately initiate certain actions. If unable, or unqualified (e.g., has not received instruction in the proper use of spill kits, etc.) to perform these actions, the discoverer will seek assistance and notify the SPCC coordinator or designee immediately.

6.3.1 Assessment of Situation

1) Ensure that no danger to human health exists first.

   If there is an immediate threat to human life (e.g., a fire in progress or fumes overcoming workers), initiate alarm signal and report the incident immediately to the foreman and the SPCC coordinator. An immediate alarm will be sounded to evacuate the building, and the fire department will be called. If the spill event warrants, it is advisable to always request the assistance of the fire department or the fire department's hazardous materials response team in the initial response phase, especially when hazardous chemicals are involved. The SPCC coordinator, the plant manager, or the foreman should be involved with the request for outside assistance.

2) Extinguish sources of ignition, if possible.

   Until the material is identified as nonflammable and noncombustible, potential sources of ignition in the area should be removed without endangering the safety of you and others. If the ignition source is stationary (immobile), attempt to move spilled material away from ignition source if this can be accomplished safely.

3) Attempt to stop the release at its source.

   Simple procedures (turning valves, plugging leaks, etc.) may be attempted by the discoverer if there is no health hazard and there is a reasonable certainty of the origin of the leak. 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, a team should be assembled and equipped to halt the discharge at its source or to guide and/or

assist with the fire department's efforts. If a hazardous substance is known to have leaked, make appropriate notifications (see Step 4), and make sure to wear appropriate personal protective equipment (PPE) before approaching the spill area.

4) Initiate spill notification and reporting procedures.

   Report the incident as soon as possible to the foreman and the SPCC coordinator. The SPCC coordinator, the plant manager, or the foreman should contact LNA environmental personnel who will advise plant management whether notification to outside agencies is needed.

6.3.2 Spill Control

Releases of oil and oil-containing materials at the facility should be safely contained within secondary containment structures or otherwise diverted to prevent impacts to the waters of the United States if a release occurs. However, if material is released outside the containment areas, it is critical that the material be accurately identified and appropriate control measures be taken in the safest possible manner.

1) Attempt to stop the release at the source.

   A team should be assembled and equipped to halt the discharge at its source or to guide in the fire department's efforts if the source of the release has not yet been found, if special protective equipment is necessary to approach the release area, or if assistance is required to stop the release.

2) Contain the material released into the environment.

   Follow proper safety procedures (consult applicable safety data sheets [SDSs] for material compatibility, safety, and environmental precautions), use absorbent material, and portable dikes, or shovels and brooms, to contain the spill.

3) Continue the notification procedure.

   Inform the SPCC coordinator of the release (the SPCC coordinator will perform other notifications as appropriate). Obtain assistance from outside contractors to clean up oil residues and/or hazardous substances, if necessary. The SPCC coordinator should be involved with requests for outside assistance.

6.3.3 External Notification

An agency required notification is required in the event a spill occurs at this Facility that results in a one-time discharge of more than 1,000 gallons of oil, or in the event two spills occur within a 12-month period that result in the discharge of more than 42 gallons each.

Any spill to soil will be addressed by the Environmental Manager or his designee to determine whether the spill is reportable. If it is determined that a spill is reportable, the Environmental Manager or his designee must contact the following agencies:

- National Response Center (NRC) must be notified immediately (*i.e.*, within 15 minutes of discovery) of a reportable quantity release.

National Response Center: *(800) 424-8802*

- U.S. Environmental Protection Agency

  Region 4: *(404) 562-9900*

- The ADEM will be notified within 15 minutes of a spill that causes discoloration of a state water (*i.e.*, surface water), including but not limited to sheen, emulsion, or sludge, or has the potential to cause discoloration of a state water. Spills and fish kills should be reported during normal office hours to the nearest ADEM Field Office or 24 hour per day to the Alabama Emergency Management State Warning Point.

  Alabama Emergency Management State Warning Point: *(800) 843-0699*

  Alabama Department of Environmental Management, Montgomery Branch Field Office: *(334) 272-8191*

The spill notification (see spill report form in Appendix D) should include:

- Name, telephone number, and address of facility/spill
- Name of owner/operator
- Date and year of initial facility operation
- Maximum storage or handling capacity of oil of the facility and normal daily throughput
- Facility description with maps, flow diagrams, and topographical information
  - Name, title, telephone number, and address of reporter
  - Date and time of the spill or release
  - Estimated quantity of material released or spilled and the time/duration
  - Extent of injuries/illness, if known
  - Possible hazards to human health and environment
  - Exact spill location, including the name of the waters threatened or other affected media
  - Source of the release or spill
  - Cause of accident/spill
  - Name and telephone number of the person responsible for facility operations at the spill site
  - Steps being taken or proposed to contain/clean up the spill, and precautions taken to minimize impacts
- SPCC plan and failure analysis
- Cause of spill, with failure analysis

- Corrective action taken, with description of equipment repairs and replacements
- Additional preventive measures taken or contemplated to minimize recurrence
- Other information pertinent to the SPCC plan or spill event

In addition to initial notification requirements, follow-up notifications and reports may be required. Spill reports must be kept on file for a period of three (3) years from the date of the spill. In the event that a spill is discovered within the fully-fenced Alabama Power Company transformer site, the Environmental Manager or his designee will notify Alabama Power Company of the spill by dialing 1-800-888-2726.

A follow-up written report and plan amendment will be submitted to USEPA Region 4 within 60 days if the spill exceeds 1,000-gallons, or occurs within 12 consecutive months of a previous reportable oil spill.

Where written reporting is required for regulatory agencies, prepares an incident report which may contain the following information, if applicable:

- Name, address, and telephone number of the owner and operator
- Name, address, and telephone number of the facility
- Name of spilled substance
- Source and characteristics of spilled substance
- Amount spilled and method used to determine that volume
- Description of the spill site
- Size/extent of the spill areas
- Secondary containment
- Ground surface or soils involved
- Diversion/drainage channels involved
- Surface waters affected or plant drainage systems affected
- Date, time, and type of event
- How spill was discovered and by whom
- Time of emergency report
- Time at which spill was under control
- Sampling performed, if any
- Volume and description of contaminated materials generated
- Disposal of materials generated including decontamination wastes
- Site decontamination measures implemented

Once the reportable spill has been communicated to the outside agencies, a discharge reporting form will be completed and submitted within 60 days. An example of the discharge reporting form is included in Appendix H. The completed form and verification of submittal must be maintained in the facility files along with the SPCC plan.

The SPCC coordinator will keep a log of activities during the spill event, including the quantity of oil spilled, recovered, and disposed, as well as other notable events that may occur during the spill and subsequent response activities. The SPCC coordinator will prepare a chronological summary of the incident for the SPCC files.

6.3.4 Internal Reporting

If no report needs to be filed with an external agency, the SPCC coordinator will complete a discharge reporting form and evaluate the procedures included in the SPCC plan to ensure that a similar event does not recur. Completed discharge reporting forms will also be kept in Appendix H. Additionally, the SPCC coordinator will notify LNA environmental personnel about the spill and circumstances surrounding the spill.

6.3.5 Clean-up and Disposal

Appropriate PPE and cleanup procedures can be found on SDSs. Care must be taken when cleaning up spills of oil and oil-containing materials. Spill cleanup activities will be conducted under the general supervision of the SPCC coordinator, or a designee, who will designate facility personnel and equipment and authorize assistance as needed. Spill residues and other contaminated materials will be characterized (i.e., as hazardous or nonhazardous waste) using SDSs, testing, or other available information, and will be disposed of in accordance with applicable regulations. Spill response supplies or equipment depleted, consumed, damaged, or destroyed as a result of the spill or subsequent response activities will be replaced as soon as possible.

1) Recover or clean up the material spilled.

   Wherever possible, and appropriate, spilled material should be recovered and reused. Materials that cannot be reused must be declared a waste. Liquids absorbed by solid materials will be shoveled into open-top drums, or other container suitable for handling this material. Once the containers are filled after a cleanup, the container will be secured and appropriately labeled (or relabeled) identifying the substance(s) within. Always try to avoid commingling wastes. Combining non-compatible materials can cause potentially dangerous chemical and/or physical reactions or may limit disposal options. Compatibility information can be found on SDSs.

2) Clean up the spill area.

   Surfaces contaminated by the release will be cleaned by the use of an appropriate cleaning material or water. Occasionally, porous materials (such as wood) may be contaminated with hazardous materials; such materials may require special handling and disposal.

3) Decontaminate tools and equipment used in the cleanup.

Even if dedicated to cleanup efforts, tools and equipment that have been used must be decontaminated before replacing them in the spill control kit.

Table 6-1 Emergency and Reporting Contact List

Emergency Response Coordinators			
Rank	**Name**	**Work Phone**	**Mobile Phone**
Primary	Jason Lauer	(205) 660-9041	(205) 641-0846
Alternate	Adam Moore	(205) 660-9045	(205) 767-6863

Spill Reporting Contacts	
Agency	**Telephone Number**
Alabama Department of Environmental Management	(334) 271-7700
State Emergency Response Center *Alabama Emergency Management State Warning Point* 1400 Coliseum Blvd. Montgomery, AL 36110	(800) 843-0669
United States EPA Region 4	(800) 241-1754
Bibb County Local Emergency Planning Commission 103 SW Davidson Drive Centreville, AL 35042	(205) 926-3113
National Response Center (NRC) c/o United States Coast Guard (CG-3RPF-2) – Room 2111-B 2100 2nd Street, SW Washington, DC 20593-0001	(800) 424-8802
Emergency Response Contractor Spectrum Environmental Services, Inc. 85 Spectrum Cove Alabaster, AL 35007	(205) 664-2000

Internal Spill Reporting Contacts	
Jodie Edwards Environmental Engineer, Alabama Operations	(205) 335-8532

Emergency Contacts		
Service	**Organization/ Agency**	**Telephone No.**
Site Control and Access	Police Department / Bibb County Sheriff	911 or (205) 926-4683
Fire or Explosion	Brierfield Volunteer Fire & Rescue	911 or (205) 665-3060
Ambulance	Regional Paramedical	911
Hospital	Shelby Baptist Medical Center	(205) 620-8100

SECTION 7
FACILITY RESPONSE PLAN

A Facility Response Plan (FRP) is not required for the Facility as none of the criteria outlined in the "Certification of Substantial Harm Determination Form" have been met or occurred. The completed form is included in Appendix B.

SECTION 8
IMPLEMENTATION SCHEDULE CHECKLIST

The SPCC rule, under §112.7(a)(2), allows the SPCC Plan to deviate from certain requirements in the rule, but not the secondary containment requirements for bulk storage containers. The Facility is in conformance with Federal SPCC Regulations contained within 40 CFR 112. The State of Alabama does not have any additional SPCC or oil storage regulations that apply to the Facility operations.

Federal SPCC requirements have been incorporated throughout the Plan, as shown in the SPCC Plan Cross Reference table on Page iv.

APPENDIX A
40 CFR PART 112

engine on a public vessel) and any discharges of such oil accumulated in the bilges of a vessel discharged in compliance with MARPOL 73/78, Annex I, as provided in 33 CFR part 151, subpart A;

(b) Other discharges of oil permitted under MARPOL 73/78, Annex I, as provided in 33 CFR part 151, subpart A; and

(c) Any discharge of oil explicitly permitted by the Administrator in connection with research, demonstration projects, or studies relating to the prevention, control, or abatement of oil pollution.

[61 FR 7421, Feb. 28, 1996]

§ 110.6 Notice.

Any person in charge of a vessel or of an onshore or offshore facility shall, as soon as he or she has knowledge of any discharge of oil from such vessel or facility in violation of section 311(b)(3) of the Act, immediately notify the National Response Center (NRC) (800–424–8802; in the Washington, DC metropolitan area, 202–426–2675). If direct reporting to the NRC is not practicable, reports may be made to the Coast Guard or EPA predesignated On-Scene Coordinator (OSC) for the geographic area where the discharge occurs. All such reports shall be promptly relayed to the NRC. If it is not possible to notify the NRC or the predesignated OCS immediately, reports may be made immediately to the nearest Coast Guard unit, provided that the person in charge of the vessel or onshore or offshore facility notifies the NRC as soon as possible. The reports shall be made in accordance with such procedures as the Secretary of Transportation may prescribe. The procedures for such notice are set forth in U.S. Coast Guard regulations, 33 CFR part 153, subpart B and in the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR part 300, subpart E.

(Approved by the Office of Management and Budget under control number 2050–0046)

[52 FR 10719, Apr. 2, 1987. Redesignated and amended at 61 FR 7421, Feb. 28, 1996; 61 FR 14032, Mar. 29, 1996]

PART 112—OIL POLLUTION PREVENTION

Sec.

Subpart A—Applicability, Definitions, and General Requirements For All Facilities and All Types of Oils

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112.12 Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities).
112.13 Spill Prevention, Control, and Countermeasure Plan requirements for onshore oil production facilities.
112.14 Spill Prevention, Control, and Countermeasure Plan requirements for onshore oil drilling and workover facilities.

112.15 Spill Prevention, Control, and Countermeasure Plan requirements for offshore oil drilling, production, or workover facilities.

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APPENDIX B TO PART 112—MEMORANDUM OF UNDERSTANDING AMONG THE SECRETARY OF THE INTERIOR, SECRETARY OF TRANSPORTATION, AND ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION AGENCY
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APPENDIX E TO PART 112—DETERMINATION AND EVALUATION OF REQUIRED RESPONSE RESOURCES FOR FACILITY RESPONSE PLANS
APPENDIX F TO PART 112—FACILITY-SPECIFIC RESPONSE PLAN

AUTHORITY: 33 U.S.C. 1251 *et seq.*; 33 U.S.C. 2720; E.O. 12777 (October 18, 1991), 3 CFR, 1991 Comp., p. 351.

SOURCE: 38 FR 34165, Dec. 11, 1973, unless otherwise noted.

EDITORIAL NOTE: Nomenclature changes to part 112 appear at 65 FR 40798, June 30, 2000.

Subpart A—Applicability, Definitions, and General Requirements for All Facilities and All Types of Oils

SOURCE: 67 FR 47140, July 17, 2002, unless otherwise noted.

§ 112.1 General applicability.

(a)(1) This part establishes procedures, methods, equipment, and other requirements to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines, or into or upon the waters of the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974, or that may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States (including resources under the Magnuson Fishery Conservation and Management Act).

(2) As used in this part, words in the singular also include the plural and words in the masculine gender also include the feminine and vice versa, as the case may require.

(b) Except as provided in paragraph (d) of this section, this part applies to any owner or operator of a non-transportation-related onshore or offshore facility engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using, or consuming oil and oil products, which due to its location, could reasonably be expected to discharge oil in quantities that may be harmful, as described in part 110 of this chapter, into or upon the navigable waters of the United States or adjoining shorelines, or into or upon the waters of the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974, or that may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States (including resources under the Magnuson Fishery Conservation and Management Act) that has oil in:

(1) Any aboveground container;

(2) Any completely buried tank as defined in §112.2;

(3) Any container that is used for standby storage, for seasonal storage, or for temporary storage, or not otherwise ''permanently closed'' as defined in §112.2;

(4) Any ''bunkered tank'' or ''partially buried tank'' as defined in §112.2, or any container in a vault, each of which is considered an aboveground storage container for purposes of this part.

(c) As provided in section 313 of the Clean Water Act (CWA), departments, agencies, and instrumentalities of the Federal government are subject to this part to the same extent as any person.

(d) Except as provided in paragraph (f) of this section, this part does not apply to:

(1) The owner or operator of any facility, equipment, or operation that is

not subject to the jurisdiction of the Environmental Protection Agency (EPA) under section 311(j)(1)(C) of the CWA, as follows:

(i) Any onshore or offshore facility, that due to its location, could not reasonably be expected to have a discharge as described in paragraph (b) of this section. This determination must be based solely upon consideration of the geographical and location aspects of the facility (such as proximity to navigable waters or adjoining shorelines, land contour, drainage, etc.) and must exclude consideration of manmade features such as dikes, equipment or other structures, which may serve to restrain, hinder, contain, or otherwise prevent a discharge as described in paragraph (b) of this section.

(ii) Any equipment, or operation of a vessel or transportation-related onshore or offshore facility which is subject to the authority and control of the U.S. Department of Transportation, as defined in the Memorandum of Understanding between the Secretary of Transportation and the Administrator of EPA, dated November 24, 1971 (Appendix A of this part).

(iii) Any equipment, or operation of a vessel or onshore or offshore facility which is subject to the authority and control of the U.S. Department of Transportation or the U.S. Department of the Interior, as defined in the Memorandum of Understanding between the Secretary of Transportation, the Secretary of the Interior, and the Administrator of EPA, dated November 8, 1993 (Appendix B of this part).

(2) Any facility which, although otherwise subject to the jurisdiction of EPA, meets both of the following requirements:

(i) The completely buried storage capacity of the facility is 42,000 gallons or less of oil. For purposes of this exemption, the completely buried storage capacity of a facility excludes the capacity of a completely buried tank, as defined in §112.2, and connected underground piping, underground ancillary equipment, and containment systems, that is currently subject to all of the technical requirements of part 280 of this chapter or all of the technical requirements of a State program approved under part 281 of this chapter. The completely buried storage capacity of a facility also excludes the capacity of a container that is ''permanently closed,'' as defined in §112.2.

(ii) The aggregate aboveground storage capacity of the facility is 1,320 gallons or less of oil. For purposes of this exemption, only containers of oil with a capacity of 55 gallons or greater are counted. The aggregate aboveground storage capacity of a facility excludes the capacity of a container that is ''permanently closed,'' as defined in §112.2.

(3) Any offshore oil drilling, production, or workover facility that is subject to the notices and regulations of the Minerals Management Service, as specified in the Memorandum of Understanding between the Secretary of Transportation, the Secretary of the Interior, and the Administrator of EPA, dated November 8, 1993 (Appendix B of this part).

(4) Any completely buried storage tank, as defined in §112.2, and connected underground piping, underground ancillary equipment, and containment systems, at any facility, that is subject to all of the technical requirements of part 280 of this chapter or a State program approved under part 281 of this chapter, except that such a tank must be marked on the facility diagram as provided in §112.7(a)(3), if the facility is otherwise subject to this part.

(5) Any container with a storage capacity of less than 55 gallons of oil.

(6) Any facility or part thereof used exclusively for wastewater treatment and not used to satisfy any requirement of this part. The production, recovery, or recycling of oil is not wastewater treatment for purposes of this paragraph.

(e) This part establishes requirements for the preparation and implementation of Spill Prevention, Control, and Countermeasure (SPCC) Plans. SPCC Plans are designed to complement existing laws, regulations, rules, standards, policies, and procedures pertaining to safety standards, fire prevention, and pollution prevention rules. The purpose of an SPCC Plan is to form a comprehensive Federal/State spill prevention program

that minimizes the potential for discharges. The SPCC Plan must address all relevant spill prevention, control, and countermeasures necessary at the specific facility. Compliance with this part does not in any way relieve the owner or operator of an onshore or an offshore facility from compliance with other Federal, State, or local laws.

(f) Notwithstanding paragraph (d) of this section, the Regional Administrator may require that the owner or operator of any facility subject to the jurisdiction of EPA under section 311(j) of the CWA prepare and implement an SPCC Plan, or any applicable part, to carry out the purposes of the CWA.

(1) Following a preliminary determination, the Regional Administrator must provide a written notice to the owner or operator stating the reasons why he must prepare an SPCC Plan, or applicable part. The Regional Administrator must send such notice to the owner or operator by certified mail or by personal delivery. If the owner or operator is a corporation, the Regional Administrator must also mail a copy of such notice to the registered agent, if any and if known, of the corporation in the State where the facility is located.

(2) Within 30 days of receipt of such written notice, the owner or operator may provide information and data and may consult with the Agency about the need to prepare an SPCC Plan, or applicable part.

(3) Within 30 days following the time under paragraph (b)(2) of this section within which the owner or operator may provide information and data and consult with the Agency about the need to prepare an SPCC Plan, or applicable part, the Regional Administrator must make a final determination regarding whether the owner or operator is required to prepare and implement an SPCC Plan, or applicable part. The Regional Administrator must send the final determination to the owner or operator by certified mail or by personal delivery. If the owner or operator is a corporation, the Regional Administrator must also mail a copy of the final determination to the registered agent, if any and if known, of the corporation in the State where the facility is located.

(4) If the Regional Administrator makes a final determination that an SPCC Plan, or applicable part, is necessary, the owner or operator must prepare the Plan, or applicable part, within six months of that final determination and implement the Plan, or applicable part, as soon as possible, but not later than one year after the Regional Administrator has made a final determination.

(5) The owner or operator may appeal a final determination made by the Regional Administrator requiring preparation and implementation of an SPCC Plan, or applicable part, under this paragraph. The owner or operator must make the appeal to the Administrator of EPA within 30 days of receipt of the final determination under paragraph (b)(3) of this section from the Regional Administrator requiring preparation and/or implementation of an SPCC Plan, or applicable part. The owner or operator must send a complete copy of the appeal to the Regional Administrator at the time he makes the appeal to the Administrator. The appeal must contain a clear and concise statement of the issues and points of fact in the case. In the appeal, the owner or operator may also provide additional information. The additional information may be from any person. The Administrator may request additional information from the owner or operator. The Administrator must render a decision within 60 days of receiving the appeal or additional information submitted by the owner or operator and must serve the owner or operator with the decision made in the appeal in the manner described in paragraph (f)(1) of this section.

§ 112.2 Definitions.

For the purposes of this part:

Adverse weather means weather conditions that make it difficult for response equipment and personnel to clean up or remove spilled oil, and that must be considered when identifying response systems and equipment in a response plan for the applicable operating environment. Factors to consider include significant wave height as specified in Appendix E to this part (as appropriate), ice conditions, temperatures, weather-related visibility, and

currents within the area in which the systems or equipment is intended to function.

Alteration means any work on a container involving cutting, burning, welding, or heating operations that changes the physical dimensions or configuration of the container.

Animal fat means a non-petroleum oil, fat, or grease of animal, fish, or marine mammal origin.

Breakout tank means a container used to relieve surges in an oil pipeline system or to receive and store oil transported by a pipeline for reinjection and continued transportation by pipeline.

Bulk storage container means any container used to store oil. These containers are used for purposes including, but not limited to, the storage of oil prior to use, while being used, or prior to further distribution in commerce. Oil-filled electrical, operating, or manufacturing equipment is not a bulk storage container.

Bunkered tank means a container constructed or placed in the ground by cutting the earth and re-covering the container in a manner that breaks the surrounding natural grade, or that lies above grade, and is covered with earth, sand, gravel, asphalt, or other material. A bunkered tank is considered an aboveground storage container for purposes of this part.

Completely buried tank means any container completely below grade and covered with earth, sand, gravel, asphalt, or other material. Containers in vaults, bunkered tanks, or partially buried tanks are considered aboveground storage containers for purposes of this part.

Complex means a facility possessing a combination of transportation-related and non-transportation-related components that is subject to the jurisdiction of more than one Federal agency under section 311(j) of the CWA.

Contiguous zone means the zone established by the United States under Article 24 of the Convention of the Territorial Sea and Contiguous Zone, that is contiguous to the territorial sea and that extends nine miles seaward from the outer limit of the territorial area.

Contract or other approved means means:

(1) A written contractual agreement with an oil spill removal organization that identifies and ensures the availability of the necessary personnel and equipment within appropriate response times; and/or

(2) A written certification by the owner or operator that the necessary personnel and equipment resources, owned or operated by the facility owner or operator, are available to respond to a discharge within appropriate response times; and/or

(3) Active membership in a local or regional oil spill removal organization that has identified and ensures adequate access through such membership to necessary personnel and equipment to respond to a discharge within appropriate response times in the specified geographic area; and/or

(4) Any other specific arrangement approved by the Regional Administrator upon request of the owner or operator.

Discharge includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil, but excludes discharges in compliance with a permit under section 402 of the CWA; discharges resulting from circumstances identified, reviewed, and made a part of the public record with respect to a permit issued or modified under section 402 of the CWA, and subject to a condition in such permit; or continuous or anticipated intermittent discharges from a point source, identified in a permit or permit application under section 402 of the CWA, that are caused by events occurring within the scope of relevant operating or treatment systems. For purposes of this part, the term discharge shall not include any discharge of oil that is authorized by a permit issued under section 13 of the River and Harbor Act of 1899 (33 U.S.C. 407).

Facility means any mobile or fixed, onshore or offshore building, structure, installation, equipment, pipe, or pipeline (other than a vessel or a public vessel) used in oil well drilling operations, oil production, oil refining, oil storage, oil gathering, oil processing, oil transfer, oil distribution, and waste treatment, or in which oil is used, as described in Appendix A to this part. The boundaries of a facility depend on

several site-specific factors, including, but not limited to, the ownership or operation of buildings, structures, and equipment on the same site and the types of activity at the site.

Fish and wildlife and sensitive environments means areas that may be identified by their legal designation or by evaluations of Area Committees (for planning) or members of the Federal On-Scene Coordinator's spill response structure (during responses). These areas may include wetlands, National and State parks, critical habitats for endangered or threatened species, wilderness and natural resource areas, marine sanctuaries and estuarine reserves, conservation areas, preserves, wildlife areas, wildlife refuges, wild and scenic rivers, recreational areas, national forests, Federal and State lands that are research national areas, heritage program areas, land trust areas, and historical and archaeological sites and parks. These areas may also include unique habitats such as aquaculture sites and agricultural surface water intakes, bird nesting areas, critical biological resource areas, designated migratory routes, and designated seasonal habitats.

Injury means a measurable adverse change, either long- or short-term, in the chemical or physical quality or the viability of a natural resource resulting either directly or indirectly from exposure to a discharge, or exposure to a product of reactions resulting from a discharge.

Maximum extent practicable means within the limitations used to determine oil spill planning resources and response times for on-water recovery, shoreline protection, and cleanup for worst case discharges from onshore non-transportation-related facilities in adverse weather. It includes the planned capability to respond to a worst case discharge in adverse weather, as contained in a response plan that meets the requirements in §112.20 or in a specific plan approved by the Regional Administrator.

Navigable waters means the waters of the United States, including the territorial seas.

(1) The term includes:

(i) All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide;

(ii) All interstate waters, including interstate wetlands;

(iii) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:

(A) That are or could be used by interstate or foreign travelers for recreational or other purposes; or

(B) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or,

(C) That are or could be used for industrial purposes by industries in interstate commerce;

(iv) All impoundments of waters otherwise defined as waters of the United States under this section;

(v) Tributaries of waters identified in paragraphs (1)(i) through (iv) of this definition;

(vi) The territorial sea; and

(vii) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraph (1) of this definition.

(2) Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds which also meet the criteria of this definition) are not waters of the United States. Navigable waters do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with EPA.

Non-petroleum oil means oil of any kind that is not petroleum-based, including but not limited to: Fats, oils, and greases of animal, fish, or marine mammal origin; and vegetable oils, including oils from seeds, nuts, fruits, and kernels.

Offshore facility means any facility of any kind (other than a vessel or public vessel) located in, on, or under any of the navigable waters of the United

States, and any facility of any kind that is subject to the jurisdiction of the United States and is located in, on, or under any other waters.

Oil means oil of any kind or in any form, including, but not limited to: fats, oils, or greases of animal, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil.

Oil Spill Removal Organization means an entity that provides oil spill response resources, and includes any for-profit or not-for-profit contractor, cooperative, or in-house response resources that have been established in a geographic area to provide required response resources.

Onshore facility means any facility of any kind located in, on, or under any land within the United States, other than submerged lands.

Owner or operator means any person owning or operating an onshore facility or an offshore facility, and in the case of any abandoned offshore facility, the person who owned or operated or maintained the facility immediately prior to such abandonment.

Partially buried tank means a storage container that is partially inserted or constructed in the ground, but not entirely below grade, and not completely covered with earth, sand, gravel, asphalt, or other material. A partially buried tank is considered an aboveground storage container for purposes of this part.

Permanently closed means any container or facility for which:

(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.

Person includes an individual, firm, corporation, association, or partnership.

Petroleum oil means petroleum in any form, including but not limited to crude oil, fuel oil, mineral oil, sludge, oil refuse, and refined products.

Production facility means all structures (including but not limited to wells, platforms, or storage facilities), piping (including but not limited to flowlines or gathering lines), or equipment (including but not limited to workover equipment, separation equipment, or auxiliary non-transportation-related equipment) used in the production, extraction, recovery, lifting, stabilization, separation or treating of oil, or associated storage or measurement, and located in a single geographical oil or gas field operated by a single operator.

Regional Administrator means the Regional Administrator of the Environmental Protection Agency, in and for the Region in which the facility is located.

Repair means any work necessary to maintain or restore a container to a condition suitable for safe operation, other than that necessary for ordinary, day-to-day maintenance to maintain the functional integrity of the container and that does not weaken the container.

Spill Prevention, Control, and Countermeasure Plan; SPCC Plan, or Plan means the document required by §112.3 that details the equipment, workforce, procedures, and steps to prevent, control, and provide adequate countermeasures to a discharge.

Storage capacity of a container means the shell capacity of the container.

Transportation-related and non-transportation-related, as applied to an onshore or offshore facility, are defined in the Memorandum of Understanding between the Secretary of Transportation and the Administrator of the Environmental Protection Agency, dated November 24, 1971, (Appendix A of this part).

United States means the States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, Guam, American Samoa, the U.S. Virgin Islands, and the Pacific Island Governments.

Vegetable oil means a non-petroleum oil or fat of vegetable origin, including

but not limited to oils and fats derived from plant seeds, nuts, fruits, and kernels.

Vessel means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, other than a public vessel.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds.

Worst case discharge for an onshore non-transportation-related facility means the largest foreseeable discharge in adverse weather conditions as determined using the worksheets in Appendix D to this part.

§ 112.3 Requirement to prepare and implement a Spill Prevention, Control, and Countermeasure Plan.

The owner or operator of an onshore or offshore facility subject to this section must prepare a Spill Prevention, Control, and Countermeasure Plan (hereafter ''SPCC Plan'' or ''Plan),'' in writing, and in accordance with §112.7, and any other applicable section of this part.

(a) If your onshore or offshore facility was in operation on or before August 16, 2002, you must maintain your Plan, but must amend it, if necessary to ensure compliance with this part, on or before February 17, 2006, and must implement the amended Plan as soon as possible, but not later than August 18, 2006. If your onshore or offshore facility becomes operational after August 16, 2002, through August 18, 2006, and could reasonably be expected to have a discharge as described in §112.1(b), you must prepare a Plan on or before August 18, 2006, and fully implement it as soon as possible, but not later than August 18, 2006.

(b) If you are the owner or operator of an onshore or offshore facility that becomes operational after August 18, 2006, and could reasonably be expected to have a discharge as described in §112.1(b), you must prepare and implement a Plan before you begin operations.

(c) If you are the owner or operator of an onshore or offshore mobile facility, such as an onshore drilling or workover rig, barge mounted offshore drilling or workover rig, or portable fueling facility, you must prepare, implement, and maintain a facility Plan as required by this section. You must maintain your Plan, but must amend and implement it, if necessary to ensure compliance with this part, on or before August 18, 2006. If your onshore or offshore mobile facility becomes operational after August 18, 2006, and could reasonably be expected to have a discharge as described in §112.1(b), you must prepare and implement a Plan before you begin operations. This provision does not require that you prepare a new Plan each time you move the facility to a new site. The Plan may be a general Plan. When you move the mobile or portable facility, you must locate and install it using the discharge prevention practices outlined in the Plan for the facility. The Plan is applicable only while the facility is in a fixed (non-transportation) operating mode.

(d) A licensed Professional Engineer must review and certify a Plan for it to be effective to satisfy the requirements of this part.

(1) By means of this certification the Professional Engineer attests:

(i) That he is familiar with the requirements of this part ;

(ii) That he or his agent has visited and examined the facility;

(iii) That the Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of this part;

(iv) That procedures for required inspections and testing have been established; and

(v) That the Plan is adequate for the facility.

(2) Such certification shall in no way relieve the owner or operator of a facility of his duty to prepare and fully implement such Plan in accordance with the requirements of this part.

(e) If you are the owner or operator of a facility for which a Plan is required under this section, you must:

(1) Maintain a complete copy of the Plan at the facility if the facility is normally attended at least four hours per day, or at the nearest field office if the facility is not so attended, and

(2) Have the Plan available to the Regional Administrator for on-site review during normal working hours.

(f) *Extension of time.* (1) The Regional Administrator may authorize an extension of time for the preparation and full implementation of a Plan, or any amendment thereto, beyond the time permitted for the preparation, implementation, or amendment of a Plan under this part, when he finds that the owner or operator of a facility subject to this section, cannot fully comply with the requirements as a result of either nonavailability of qualified personnel, or delays in construction or equipment delivery beyond the control and without the fault of such owner or operator or his agents or employees.

(2) If you are an owner or operator seeking an extension of time under paragraph (f)(1) of this section, you may submit a written extension request to the Regional Administrator. Your request must include:

(i) A full explanation of the cause for any such delay and the specific aspects of the Plan affected by the delay;

(ii) A full discussion of actions being taken or contemplated to minimize or mitigate such delay; and

(iii) A proposed time schedule for the implementation of any corrective actions being taken or contemplated, including interim dates for completion of tests or studies, installation and operation of any necessary equipment, or other preventive measures. In addition you may present additional oral or written statements in support of your extension request.

(3) The submission of a written extension request under paragraph (f)(2) of this section does not relieve you of your obligation to comply with the requirements of this part. The Regional Administrator may request a copy of your Plan to evaluate the extension request. When the Regional Administrator authorizes an extension of time for particular equipment or other specific aspects of the Plan, such extension does not affect your obligation to comply with the requirements related to other equipment or other specific aspects of the Plan for which the Regional Administrator has not expressly authorized an extension.

[67 FR 47140, July 17, 2002, as amended at 68 FR 1351, Jan. 9, 2003; 68 FR 18894, Apr. 17, 2003; 69 FR 48798, Aug. 11, 2004]

§ 112.4 Amendment of Spill Prevention, Control, and Countermeasure Plan by Regional Administrator.

If you are the owner or operator of a facility subject to this part, you must:

(a) Notwithstanding compliance with § 112.3, whenever your facility has discharged more than 1,000 U.S. gallons of oil in a single discharge as described in § 112.1(b), or discharged more than 42 U.S. gallons of oil in each of two discharges as described in § 112.1(b), occurring within any twelve month period, submit the following information to the Regional Administrator within 60 days from the time the facility becomes subject to this section:

(1) Name of the facility;

(2) Your name;

(3) Location of the facility;

(4) Maximum storage or handling capacity of the facility and normal daily throughput;

(5) Corrective action and countermeasures you have taken, including a description of equipment repairs and replacements;

(6) An adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary;

(7) The cause of such discharge as described in § 112.1(b), including a failure analysis of the system or subsystem in which the failure occurred;

(8) Additional preventive measures you have taken or contemplated to minimize the possibility of recurrence; and

(9) Such other information as the Regional Administrator may reasonably require pertinent to the Plan or discharge.

(b) Take no action under this section until it applies to your facility. This section does not apply until the expiration of the time permitted for the initial preparation and implementation of

the Plan under §112.3, but not including any amendments to the Plan.

(c) Send to the appropriate agency or agencies in charge of oil pollution control activities in the State in which the facility is located a complete copy of all information you provided to the Regional Administrator under paragraph (a) of this section. Upon receipt of the information such State agency or agencies may conduct a review and make recommendations to the Regional Administrator as to further procedures, methods, equipment, and other requirements necessary to prevent and to contain discharges from your facility.

(d) Amend your Plan, if after review by the Regional Administrator of the information you submit under paragraph (a) of this section, or submission of information to EPA by the State agency under paragraph (c) of this section, or after on-site review of your Plan, the Regional Administrator requires that you do so. The Regional Administrator may require you to amend your Plan if he finds that it does not meet the requirements of this part or that amendment is necessary to prevent and contain discharges from your facility.

(e) Act in accordance with this paragraph when the Regional Administrator proposes by certified mail or by personal delivery that you amend your SPCC Plan. If the owner or operator is a corporation, he must also notify by mail the registered agent of such corporation, if any and if known, in the State in which the facility is located. The Regional Administrator must specify the terms of such proposed amendment. Within 30 days from receipt of such notice, you may submit written information, views, and arguments on the proposed amendment. After considering all relevant material presented, the Regional Administrator must either notify you of any amendment required or rescind the notice. You must amend your Plan as required within 30 days after such notice, unless the Regional Administrator, for good cause, specifies another effective date. You must implement the amended Plan as soon as possible, but not later than six months after you amend your Plan, unless the Regional Administrator specifies another date.

(f) If you appeal a decision made by the Regional Administrator requiring an amendment to an SPCC Plan, send the appeal to the EPA Administrator in writing within 30 days of receipt of the notice from the Regional Administrator requiring the amendment under paragraph (e) of this section. You must send a complete copy of the appeal to the Regional Administrator at the time you make the appeal. The appeal must contain a clear and concise statement of the issues and points of fact in the case. It may also contain additional information from you, or from any other person. The EPA Administrator may request additional information from you, or from any other person. The EPA Administrator must render a decision within 60 days of receiving the appeal and must notify you of his decision.

§112.5 Amendment of Spill Prevention, Control, and Countermeasure Plan by owners or operators.

If you are the owner or operator of a facility subject to this part, you must:

(a) Amend the SPCC Plan for your facility in accordance with the general requirements in §112.7, and with any specific section of this part applicable to your facility, when there is a change in the facility design, construction, operation, or maintenance that materially affects its potential for a discharge as described in §112.1(b). Examples of changes that may require amendment of the Plan include, but are not limited to: commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacement, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes of product or service; or revision of standard operation or maintenance procedures at a facility. An amendment made under this section must be prepared within six months, and implemented as soon as possible, but not later than six months following preparation of the amendment.

(b) Notwithstanding compliance with paragraph (a) of this section, complete a review and evaluation of the SPCC Plan at least once every five years from the date your facility becomes

subject to this part; or, if your facility was in operation on or before August 16, 2002, five years from the date your last review was required under this part. As a result of this review and evaluation, you must amend your SPCC Plan within six months of the review to include more effective prevention and control technology if the technology has been field-proven at the time of the review and will significantly reduce the likelihood of a discharge as described in §112.1(b) from the facility. You must implement any amendment as soon as possible, but not later than six months following preparation of any amendment. You must document your completion of the review and evaluation, and must sign a statement as to whether you will amend the Plan, either at the beginning or end of the Plan or in a log or an appendix to the Plan. The following words will suffice, ''I have completed review and evaluation of the SPCC Plan for (name of facility) on (date), and will (will not) amend the Plan as a result.''

(c) Have a Professional Engineer certify any technical amendment to your Plan in accordance with §112.3(d).

§112.6 [Reserved]

§112.7 General requirements for Spill Prevention, Control, and Countermeasure Plans.

If you are the owner or operator of a facility subject to this part you must prepare a Plan in accordance with good engineering practices. The Plan must have the full approval of management at a level of authority to commit the necessary resources to fully implement the Plan. You must prepare the Plan in writing. If you do not follow the sequence specified in this section for the Plan, you must prepare an equivalent Plan acceptable to the Regional Administrator that meets all of the applicable requirements listed in this part, and you must supplement it with a section cross-referencing the location of requirements listed in this part and the equivalent requirements in the other prevention plan. If the Plan calls for additional facilities or procedures, methods, or equipment not yet fully operational, you must discuss these items in separate paragraphs, and must explain separately the details of installation and operational start-up. As detailed elsewhere in this section, you must also:

(a)(1) Include a discussion of your facility's conformance with the requirements listed in this part.

(2) Comply with all applicable requirements listed in this part. Your Plan may deviate from the requirements in paragraphs (g), (h)(2) and (3), and (i) of this section and the requirements in subparts B and C of this part, except the secondary containment requirements in paragraphs (c) and (h)(1) of this section, and §§112.8(c)(2),112.8(c)(11), 112.9(c)(2), 112.10(c), 112.12(c)(2), 112.12(c)(11),112.13(c)(2), and 112.14(c), where applicable to a specific facility, if you provide equivalent environmental protection by some other means of spill prevention, control, or countermeasure. Where your Plan does not conform to the applicable requirements in paragraphs (g), (h)(2) and (3), and (i) of this section, or the requirements of subparts B and C of this part, except the secondary containment requirements in paragraphs (c) and (h)(1) of this section, and §§112.8(c)(2), 112.8(c)(11), 112.9(c)(2), 112.10(c), 112.12(c)(2), 112.12(c)(11), 112.13(c)(2), and 112.14(c), you must state the reasons for nonconformance in your Plan and describe in detail alternate methods and how you will achieve equivalent environmental protection. If the Regional Administrator determines that the measures described in your Plan do not provide equivalent environmental protection, he may require that you amend your Plan, following the procedures in §112.4(d) and (e).

(3) Describe in your Plan the physical layout of the facility and include a facility diagram, which must mark the location and contents of each container. The facility diagram must include completely buried tanks that are otherwise exempted from the requirements of this part under §112.1(d)(4). The facility diagram must also include all transfer stations and connecting pipes. You must also address in your Plan:

(i) The type of oil in each container and its storage capacity;

(ii) Discharge prevention measures including procedures for routine handling of products (loading, unloading, and facility transfers, *etc.*);

(iii) Discharge or drainage controls such as secondary containment around containers and other structures, equipment, and procedures for the control of a discharge;

(iv) Countermeasures for discharge discovery, response, and cleanup (both the facility's capability and those that might be required of a contractor);

(v) Methods of disposal of recovered materials in accordance with applicable legal requirements; and

(vi) Contact list and phone numbers for the facility response coordinator, National Response Center, cleanup contractors with whom you have an agreement for response, and all appropriate Federal, State, and local agencies who must be contacted in case of a discharge as described in §112.1(b).

(4) Unless you have submitted a response plan under §112.20, provide information and procedures in your Plan to enable a person reporting a discharge as described in §112.1(b) to relate information on the exact address or location and phone number of the facility; the date and time of the discharge, the type of material discharged; estimates of the total quantity discharged; estimates of the quantity discharged as described in §112.1(b); the source of the discharge; a description of all affected media; the cause of the discharge; any damages or injuries caused by the discharge; actions being used to stop, remove, and mitigate the effects of the discharge; whether an evacuation may be needed; and, the names of individuals and/or organizations who have also been contacted.

(5) Unless you have submitted a response plan under §112.20, organize portions of the Plan describing procedures you will use when a discharge occurs in a way that will make them readily usable in an emergency, and include appropriate supporting material as appendices.

(b) Where experience indicates a reasonable potential for equipment failure (such as loading or unloading equipment, tank overflow, rupture, or leakage, or any other equipment known to be a source of a discharge), include in your Plan a prediction of the direction, rate of flow, and total quantity of oil which could be discharged from the facility as a result of each type of major equipment failure.

(c) Provide appropriate containment and/or diversionary structures or equipment to prevent a discharge as described in §112.1(b). The entire containment system, including walls and floor, must be capable of containing oil and must be constructed so that any discharge from a primary containment system, such as a tank or pipe, will not escape the containment system before cleanup occurs. At a minimum, you must use one of the following prevention systems or its equivalent:

(1) For onshore facilities:

(i) Dikes, berms, or retaining walls sufficiently impervious to contain oil;

(ii) Curbing;

(iii) Culverting, gutters, or other drainage systems;

(iv) Weirs, booms, or other barriers;

(v) Spill diversion ponds;

(vi) Retention ponds; or

(vii) Sorbent materials.

(2) For offshore facilities:

(i) Curbing or drip pans; or

(ii) Sumps and collection systems.

(d) If you determine that the installation of any of the structures or pieces of equipment listed in paragraphs (c) and (h)(1) of this section, and §§112.8(c)(2), 112.8(c)(11), 112.9(c)(2), 112.10(c), 112.12(c)(2), 112.12(c)(11), 112.13(c)(2), and 112.14(c) to prevent a discharge as described in §112.1(b) from any onshore or offshore facility is not practicable, you must clearly explain in your Plan why such measures are not practicable; for bulk storage containers, conduct both periodic integrity testing of the containers and periodic integrity and leak testing of the valves and piping; and, unless you have submitted a response plan under §112.20, provide in your Plan the following:

(1) An oil spill contingency plan following the provisions of part 109 of this chapter.

(2) A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful.

(e) *Inspections, tests, and records.* Conduct inspections and tests required by this part in accordance with written procedures that you or the certifying engineer develop for the facility. You must keep these written procedures and a record of the inspections and tests, signed by the appropriate supervisor or inspector, with the SPCC Plan for a period of three years. Records of inspections and tests kept under usual and customary business practices will suffice for purposes of this paragraph.

(f) *Personnel, training, and discharge prevention procedures.* (1) At a minimum, train your oil-handling personnel in the operation and maintenance of equipment to prevent discharges; discharge procedure protocols; applicable pollution control laws, rules, and regulations; general facility operations; and, the contents of the facility SPCC Plan.

(2) Designate a person at each applicable facility who is accountable for discharge prevention and who reports to facility management.

(3) Schedule and conduct discharge prevention briefings for your oil-handling personnel at least once a year to assure adequate understanding of the SPCC Plan for that facility. Such briefings must highlight and describe known discharges as described in §112.1(b) or failures, malfunctioning components, and any recently developed precautionary measures.

(g) *Security (excluding oil production facilities).* (1) Fully fence each facility handling, processing, or storing oil, and lock and/or guard entrance gates when the facility is not in production or is unattended.

(2) Ensure that the master flow and drain valves and any other valves permitting direct outward flow of the container's contents to the surface have adequate security measures so that they remain in the closed position when in non-operating or non-standby status.

(3) Lock the starter control on each oil pump in the ''off'' position and locate it at a site accessible only to authorized personnel when the pump is in a non-operating or non-standby status.

(4) Securely cap or blank-flange the loading/unloading connections of oil pipelines or facility piping when not in service or when in standby service for an extended time. This security practice also applies to piping that is emptied of liquid content either by draining or by inert gas pressure.

(5) Provide facility lighting commensurate with the type and location of the facility that will assist in the:

(i) Discovery of discharges occurring during hours of darkness, both by operating personnel, if present, and by non-operating personnel (the general public, local police, etc.); and

(ii) Prevention of discharges occurring through acts of vandalism.

(h) *Facility tank car and tank truck loading/unloading rack (excluding offshore facilities).* (1) Where loading/unloading area drainage does not flow into a catchment basin or treatment facility designed to handle discharges, use a quick drainage system for tank car or tank truck loading and unloading areas. You must design any containment system to hold at least the maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the facility.

(2) Provide an interlocked warning light or physical barrier system, warning signs, wheel chocks, or vehicle break interlock system in loading/unloading areas to prevent vehicles from departing before complete disconnection of flexible or fixed oil transfer lines.

(3) Prior to filling and departure of any tank car or tank truck, closely inspect for discharges the lowermost drain and all outlets of such vehicles, and if necessary, ensure that they are tightened, adjusted, or replaced to prevent liquid discharge while in transit.

(i) If a field-constructed aboveground container undergoes a repair, alteration, reconstruction, or a change in service that might affect the risk of a discharge or failure due to brittle fracture or other catastrophe, or has discharged oil or failed due to brittle fracture failure or other catastrophe, evaluate the container for risk of discharge or failure due to brittle fracture or other catastrophe, and as necessary, take appropriate action.

(j) In addition to the minimal prevention standards listed under this section, include in your Plan a complete

discussion of conformance with the applicable requirements and other effective discharge prevention and containment procedures listed in this part or any applicable more stringent State rules, regulations, and guidelines.

Subpart B—Requirements for Petroleum Oils and Non-Petroleum Oils, Except Animal Fats and Oils and Greases, and Fish and Marine Mammal Oils; and Vegetable Oils (Including Oils from Seeds, Nuts, Fruits, and Kernels)

SOURCE: 67 FR 47146, July 17, 2002, unless otherwise noted.

§ 112.8 Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities).

If you are the owner or operator of an onshore facility (excluding a production facility), you must:

(a) Meet the general requirements for the Plan listed under §112.7, and the specific discharge prevention and containment procedures listed in this section.

(b) *Facility drainage.* (1) Restrain drainage from diked storage areas by valves to prevent a discharge into the drainage system or facility effluent treatment system, except where facility systems are designed to control such discharge. You may empty diked areas by pumps or ejectors; however, you must manually activate these pumps or ejectors and must inspect the condition of the accumulation before starting, to ensure no oil will be discharged.

(2) Use valves of manual, open-and-closed design, for the drainage of diked areas. You may not use flapper-type drain valves to drain diked areas. If your facility drainage drains directly into a watercourse and not into an on-site wastewater treatment plant, you must inspect and may drain uncontaminated retained stormwater, as provided in paragraphs (c)(3)(ii), (iii), and (iv) of this section.

(3) Design facility drainage systems from undiked areas with a potential for a discharge (such as where piping is located outside containment walls or where tank truck discharges may occur outside the loading area) to flow into ponds, lagoons, or catchment basins designed to retain oil or return it to the facility. You must not locate catchment basins in areas subject to periodic flooding.

(4) If facility drainage is not engineered as in paragraph (b)(3) of this section, equip the final discharge of all ditches inside the facility with a diversion system that would, in the event of an uncontrolled discharge, retain oil in the facility.

(5) Where drainage waters are treated in more than one treatment unit and such treatment is continuous, and pump transfer is needed, provide two ''lift'' pumps and permanently install at least one of the pumps. Whatever techniques you use, you must engineer facility drainage systems to prevent a discharge as described in §112.1(b) in case there is an equipment failure or human error at the facility.

(c) *Bulk storage containers.* (1) Not use a container for the storage of oil unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature.

(2) Construct all bulk storage container installations so that you provide a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. You must ensure that diked areas are sufficiently impervious to contain discharged oil. Dikes, containment curbs, and pits are commonly employed for this purpose. You may also use an alternative system consisting of a drainage trench enclosure that must be arranged so that any discharge will terminate and be safely confined in a facility catchment basin or holding pond.

(3) Not allow drainage of uncontaminated rainwater from the diked area into a storm drain or discharge of an effluent into an open watercourse, lake, or pond, bypassing the facility treatment system unless you:

(i) Normally keep the bypass valve sealed closed.

(ii) Inspect the retained rainwater to ensure that its presence will not cause a discharge as described in §112.1(b).

(iii) Open the bypass valve and reseal it following drainage under responsible supervision; and

(iv) Keep adequate records of such events, for example, any records required under permits issued in accordance with §§ 122.41(j)(2) and 122.41(m)(3) of this chapter.

(4) Protect any completely buried metallic storage tank installed on or after January 10, 1974 from corrosion by coatings or cathodic protection compatible with local soil conditions. You must regularly leak test such completely buried metallic storage tanks.

(5) Not use partially buried or bunkered metallic tanks for the storage of oil, unless you protect the buried section of the tank from corrosion. You must protect partially buried and bunkered tanks from corrosion by coatings or cathodic protection compatible with local soil conditions.

(6) Test each aboveground container for integrity on a regular schedule, and whenever you make material repairs. The frequency of and type of testing must take into account container size and design (such as floating roof, skid-mounted, elevated, or partially buried). You must combine visual inspection with another testing technique such as hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or another system of non-destructive shell testing. You must keep comparison records and you must also inspect the container's supports and foundations. In addition, you must frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. Records of inspections and tests kept under usual and customary business practices will suffice for purposes of this paragraph.

(7) Control leakage through defective internal heating coils by monitoring the steam return and exhaust lines for contamination from internal heating coils that discharge into an open watercourse, or pass the steam return or exhaust lines through a settling tank, skimmer, or other separation or retention system.

(8) Engineer or update each container installation in accordance with good engineering practice to avoid discharges. You must provide at least one of the following devices:

(i) High liquid level alarms with an audible or visual signal at a constantly attended operation or surveillance station. In smaller facilities an audible air vent may suffice.

(ii) High liquid level pump cutoff devices set to stop flow at a predetermined container content level.

(iii) Direct audible or code signal communication between the container gauger and the pumping station.

(iv) A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. If you use this alternative, a person must be present to monitor gauges and the overall filling of bulk storage containers.

(v) You must regularly test liquid level sensing devices to ensure proper operation.

(9) Observe effluent treatment facilities frequently enough to detect possible system upsets that could cause a discharge as described in § 112.1(b).

(10) Promptly correct visible discharges which result in a loss of oil from the container, including but not limited to seams, gaskets, piping, pumps, valves, rivets, and bolts. You must promptly remove any accumulations of oil in diked areas.

(11) Position or locate mobile or portable oil storage containers to prevent a discharge as described in § 112.1(b). You must furnish a secondary means of containment, such as a dike or catchment basin, sufficient to contain the capacity of the largest single compartment or container with sufficient freeboard to contain precipitation.

(d) *Facility transfer operations, pumping, and facility process.* (1) Provide buried piping that is installed or replaced on or after August 16, 2002, with a protective wrapping and coating. You must also cathodically protect such buried piping installations or otherwise satisfy the corrosion protection standards for piping in part 280 of this chapter or a State program approved under part 281 of this chapter. If a section of buried line is exposed for any reason, you must carefully inspect it for deterioration. If you find corrosion damage,

you must undertake additional examination and corrective action as indicated by the magnitude of the damage.

(2) Cap or blank-flange the terminal connection at the transfer point and mark it as to origin when piping is not in service or is in standby service for an extended time.

(3) Properly design pipe supports to minimize abrasion and corrosion and allow for expansion and contraction.

(4) Regularly inspect all aboveground valves, piping, and appurtenances. During the inspection you must assess the general condition of items, such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces. You must also conduct integrity and leak testing of buried piping at the time of installation, modification, construction, relocation, or replacement.

(5) Warn all vehicles entering the facility to be sure that no vehicle will endanger aboveground piping or other oil transfer operations.

§ 112.9 Spill Prevention, Control, and Countermeasure Plan requirements for onshore oil production facilities.

If you are the owner or operator of an onshore production facility, you must:

(a) Meet the general requirements for the Plan listed under §112.7, and the specific discharge prevention and containment procedures listed under this section.

(b) *Oil production facility drainage.* (1) At tank batteries and separation and treating areas where there is a reasonable possibility of a discharge as described in §112.1(b), close and seal at all times drains of dikes or drains of equivalent measures required under §112.7(c)(1), except when draining uncontaminated rainwater. Prior to drainage, you must inspect the diked area and take action as provided in §112.8(c)(3)(ii), (iii), and (iv). You must remove accumulated oil on the rainwater and return it to storage or dispose of it in accordance with legally approved methods.

(2) Inspect at regularly scheduled intervals field drainage systems (such as drainage ditches or road ditches), and oil traps, sumps, or skimmers, for an accumulation of oil that may have resulted from any small discharge. You must promptly remove any accumulations of oil.

(c) *Oil production facility bulk storage containers.* (1) Not use a container for the storage of oil unless its material and construction are compatible with the material stored and the conditions of storage.

(2) Provide all tank battery, separation, and treating facility installations with a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. You must safely confine drainage from undiked areas in a catchment basin or holding pond.

(3) Periodically and upon a regular schedule visually inspect each container of oil for deterioration and maintenance needs, including the foundation and support of each container that is on or above the surface of the ground.

(4) Engineer or update new and old tank battery installations in accordance with good engineering practice to prevent discharges. You must provide at least one of the following:

(i) Container capacity adequate to assure that a container will not overfill if a pumper/gauger is delayed in making regularly scheduled rounds.

(ii) Overflow equalizing lines between containers so that a full container can overflow to an adjacent container.

(iii) Vacuum protection adequate to prevent container collapse during a pipeline run or other transfer of oil from the container.

(iv) High level sensors to generate and transmit an alarm signal to the computer where the facility is subject to a computer production control system.

(d) *Facility transfer operations, oil production facility.* (1) Periodically and upon a regular schedule inspect all aboveground valves and piping associated with transfer operations for the general condition of flange joints, valve glands and bodies, drip pans, pipe supports, pumping well polish rod stuffing boxes, bleeder and gauge valves, and other such items.

(2) Inspect saltwater (oil field brine) disposal facilities often, particularly

following a sudden change in atmospheric temperature, to detect possible system upsets capable of causing a discharge.

(3) Have a program of flowline maintenance to prevent discharges from each flowline.

§ 112.10 Spill Prevention, Control, and Countermeasure Plan requirements for onshore oil drilling and workover facilities.

If you are the owner or operator of an onshore oil drilling and workover facility, you must:

(a) Meet the general requirements listed under § 112.7, and also meet the specific discharge prevention and containment procedures listed under this section.

(b) Position or locate mobile drilling or workover equipment so as to prevent a discharge as described in § 112.1(b).

(c) Provide catchment basins or diversion structures to intercept and contain discharges of fuel, crude oil, or oily drilling fluids.

(d) Install a blowout prevention (BOP) assembly and well control system before drilling below any casing string or during workover operations. The BOP assembly and well control system must be capable of controlling any well-head pressure that may be encountered while that BOP assembly and well control system are on the well.

§ 112.11 Spill Prevention, Control, and Countermeasure Plan requirements for offshore oil drilling, production, or workover facilities.

If you are the owner or operator of an offshore oil drilling, production, or workover facility, you must:

(a) Meet the general requirements listed under § 112.7, and also meet the specific discharge prevention and containment procedures listed under this section.

(b) Use oil drainage collection equipment to prevent and control small oil discharges around pumps, glands, valves, flanges, expansion joints, hoses, drain lines, separators, treaters, tanks, and associated equipment. You must control and direct facility drains toward a central collection sump to prevent the facility from having a discharge as described in § 112.1(b). Where drains and sumps are not practicable, you must remove oil contained in collection equipment as often as necessary to prevent overflow.

(c) For facilities employing a sump system, provide adequately sized sump and drains and make available a spare pump to remove liquid from the sump and assure that oil does not escape. You must employ a regularly scheduled preventive maintenance inspection and testing program to assure reliable operation of the liquid removal system and pump start-up device. Redundant automatic sump pumps and control devices may be required on some installations.

(d) At facilities with areas where separators and treaters are equipped with dump valves which predominantly fail in the closed position and where pollution risk is high, specially equip the facility to prevent the discharge of oil. You must prevent the discharge of oil by:

(1) Extending the flare line to a diked area if the separator is near shore;

(2) Equipping the separator with a high liquid level sensor that will automatically shut in wells producing to the separator; or

(3) Installing parallel redundant dump valves.

(e) Equip atmospheric storage or surge containers with high liquid level sensing devices that activate an alarm or control the flow, or otherwise prevent discharges.

(f) Equip pressure containers with high and low pressure sensing devices that activate an alarm or control the flow.

(g) Equip containers with suitable corrosion protection.

(h) Prepare and maintain at the facility a written procedure within the Plan for inspecting and testing pollution prevention equipment and systems.

(i) Conduct testing and inspection of the pollution prevention equipment and systems at the facility on a scheduled periodic basis, commensurate with the complexity, conditions, and circumstances of the facility and any other appropriate regulations. You

must use simulated discharges for testing and inspecting human and equipment pollution control and countermeasure systems.

(j) Describe in detailed records surface and subsurface well shut-in valves and devices in use at the facility for each well sufficiently to determine their method of activation or control, such as pressure differential, change in fluid or flow conditions, combination of pressure and flow, manual or remote control mechanisms.

(k) Install a BOP assembly and well control system during workover operations and before drilling below any casing string. The BOP assembly and well control system must be capable of controlling any well-head pressure that may be encountered while the BOP assembly and well control system are on the well.

(l) Equip all manifolds (headers) with check valves on individual flowlines.

(m) Equip the flowline with a high pressure sensing device and shut-in valve at the wellhead if the shut-in well pressure is greater than the working pressure of the flowline and manifold valves up to and including the header valves. Alternatively you may provide a pressure relief system for flowlines.

(n) Protect all piping appurtenant to the facility from corrosion, such as with protective coatings or cathodic protection.

(o) Adequately protect sub-marine piping appurtenant to the facility against environmental stresses and other activities such as fishing operations.

(p) Maintain sub-marine piping appurtenant to the facility in good operating condition at all times. You must periodically and according to a schedule inspect or test such piping for failures. You must document and keep a record of such inspections or tests at the facility.

Subpart C—Requirements for Animal Fats and Oils and Greases, and Fish and Marine Mammal Oils; and for Vegetable Oils, including Oils from Seeds, Nuts, Fruits, and Kernels.

SOURCE: 67 FR 57149, July 17, 2002, unless otherwise noted.

§ 112.12 Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities)

If you are the owner or operator of an onshore facility (excluding a production facility), you must:

(a) Meet the general requirements for the Plan listed under §112.7, and the specific discharge prevention and containment procedures listed in this section.

(b) *Facility drainage.* (1) Restrain drainage from diked storage areas by valves to prevent a discharge into the drainage system or facility effluent treatment system, except where facility systems are designed to control such discharge. You may empty diked areas by pumps or ejectors; however, you must manually activate these pumps or ejectors and must inspect the condition of the accumulation before starting, to ensure no oil will be discharged.

(2) Use valves of manual, open-and-closed design, for the drainage of diked areas. You may not use flapper-type drain valves to drain diked areas. If your facility drainage drains directly into a watercourse and not into an on-site wastewater treatment plant, you must inspect and may drain uncontaminated retained stormwater, subject to the requirements of paragraphs (c)(3)(ii), (iii), and (iv) of this section.

(3) Design facility drainage systems from undiked areas with a potential for a discharge (such as where piping is located outside containment walls or where tank truck discharges may occur outside the loading area) to flow into ponds, lagoons, or catchment basins designed to retain oil or return it to the facility. You must not locate

catchment basins in areas subject to periodic flooding.

(4) If facility drainage is not engineered as in paragraph (b)(3) of this section, equip the final discharge of all ditches inside the facility with a diversion system that would, in the event of an uncontrolled discharge, retain oil in the facility.

(5) Where drainage waters are treated in more than one treatment unit and such treatment is continuous, and pump transfer is needed, provide two ''lift'' pumps and permanently install at least one of the pumps. Whatever techniques you use, you must engineer facility drainage systems to prevent a discharge as described in §112.1(b) in case there is an equipment failure or human error at the facility.

(c) *Bulk storage containers.* (1) Not use a container for the storage of oil unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature.

(2) Construct all bulk storage container installations so that you provide a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. You must ensure that diked areas are sufficiently impervious to contain discharged oil. Dikes, containment curbs, and pits are commonly employed for this purpose. You may also use an alternative system consisting of a drainage trench enclosure that must be arranged so that any discharge will terminate and be safely confined in a facility catchment basin or holding pond.

(3) Not allow drainage of uncontaminated rainwater from the diked area into a storm drain or discharge of an effluent into an open watercourse, lake, or pond, bypassing the facility treatment system unless you:

(i) Normally keep the bypass valve sealed closed.

(ii) Inspect the retained rainwater to ensure that its presence will not cause a discharge as described in §112.1(b).

(iii) Open the bypass valve and reseal it following drainage under responsible supervision; and

(iv) Keep adequate records of such events, for example, any records required under permits issued in accordance with §§122.41(j)(2) and 122.41(m)(3) of this chapter.

(4) Protect any completely buried metallic storage tank installed on or after January 10, 1974 from corrosion by coatings or cathodic protection compatible with local soil conditions. You must regularly leak test such completely buried metallic storage tanks.

(5) Not use partially buried or bunkered metallic tanks for the storage of oil, unless you protect the buried section of the tank from corrosion. You must protect partially buried and bunkered tanks from corrosion by coatings or cathodic protection compatible with local soil conditions.

(6) Test each aboveground container for integrity on a regular schedule, and whenever you make material repairs. The frequency of and type of testing must take into account container size and design (such as floating roof, skid-mounted, elevated, or partially buried). You must combine visual inspection with another testing technique such as hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or another system of non-destructive shell testing. You must keep comparison records and you must also inspect the container's supports and foundations. In addition, you must frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. Records of inspections and tests kept under usual and customary business practices will suffice for purposes of this paragraph.

(7) Control leakage through defective internal heating coils by monitoring the steam return and exhaust lines for contamination from internal heating coils that discharge into an open watercourse, or pass the steam return or exhaust lines through a settling tank, skimmer, or other separation or retention system.

(8) Engineer or update each container installation in accordance with good engineering practice to avoid discharges. You must provide at least one of the following devices:

(i) High liquid level alarms with an audible or visual signal at a constantly

attended operation or surveillance station. In smaller facilities an audible air vent may suffice.

(ii) High liquid level pump cutoff devices set to stop flow at a predetermined container content level.

(iii) Direct audible or code signal communication between the container gauger and the pumping station.

(iv) A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. If you use this alternative, a person must be present to monitor gauges and the overall filling of bulk storage containers.

(v) You must regularly test liquid level sensing devices to ensure proper operation.

(9) Observe effluent treatment facilities frequently enough to detect possible system upsets that could cause a discharge as described in §112.1(b).

(10) Promptly correct visible discharges which result in a loss of oil from the container, including but not limited to seams, gaskets, piping, pumps, valves, rivets, and bolts. You must promptly remove any accumulations of oil in diked areas.

(11) Position or locate mobile or portable oil storage containers to prevent a discharge as described in §112.1(b). You must furnish a secondary means of containment, such as a dike or catchment basin, sufficient to contain the capacity of the largest single compartment or container with sufficient freeboard to contain precipitation.

(d) *Facility transfer operations, pumping, and facility process.* (1) Provide buried piping that is installed or replaced on or after August 16, 2002, with a protective wrapping and coating. You must also cathodically protect such buried piping installations or otherwise satisfy the corrosion protection standards for piping in part 280 of this chapter or a State program approved under part 281 of this chapter. If a section of buried line is exposed for any reason, you must carefully inspect it for deterioration. If you find corrosion damage, you must undertake additional examination and corrective action as indicated by the magnitude of the damage.

(2) Cap or blank-flange the terminal connection at the transfer point and mark it as to origin when piping is not in service or is in standby service for an extended time.

(3) Properly design pipe supports to minimize abrasion and corrosion and allow for expansion and contraction.

(4) Regularly inspect all aboveground valves, piping, and appurtenances. During the inspection you must assess the general condition of items, such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces. You must also conduct integrity and leak testing of buried piping at the time of installation, modification, construction, relocation, or replacement.

(5) Warn all vehicles entering the facility to be sure that no vehicle will endanger aboveground piping or other oil transfer operations.

§112.13 Spill Prevention, Control, and Countermeasure Plan requirements for onshore oil production facilities.

If you are the owner or operator of an onshore production facility, you must:

(a) Meet the general requirements for the Plan listed under §112.7, and the specific discharge prevention and containment procedures listed under this section.

(b) *Oil production facility drainage.* (1) At tank batteries and separation and treating areas where there is a reasonable possibility of a discharge as described in §112.1(b), close and seal at all times drains of dikes or drains of equivalent measures required under §112.7(c)(1), except when draining uncontaminated rainwater. Prior to drainage, you must inspect the diked area and take action as provided in §112.12(c)(3)(ii), (iii), and (iv). You must remove accumulated oil on the rainwater and return it to storage or dispose of it in accordance with legally approved methods.

(2) Inspect at regularly scheduled intervals field drainage systems (such as drainage ditches or road ditches), and oil traps, sumps, or skimmers, for an accumulation of oil that may have resulted from any small discharge. You must promptly remove any accumulations of oil.

(c) *Oil production facility bulk storage containers.* (1) Not use a container for

the storage of oil unless its material and construction are compatible with the material stored and the conditions of storage.

(2) Provide all tank battery, separation, and treating facility installations with a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. You must safely confine drainage from undiked areas in a catchment basin or holding pond.

(3) Periodically and upon a regular schedule visually inspect each container of oil for deterioration and maintenance needs, including the foundation and support of each container that is on or above the surface of the ground.

(4) Engineer or update new and old tank battery installations in accordance with good engineering practice to prevent discharges. You must provide at least one of the following:

(i) Container capacity adequate to assure that a container will not overfill if a pumper/gauger is delayed in making regularly scheduled rounds.

(ii) Overflow equalizing lines between containers so that a full container can overflow to an adjacent container.

(iii) Vacuum protection adequate to prevent container collapse during a pipeline run or other transfer of oil from the container.

(iv) High level sensors to generate and transmit an alarm signal to the computer where the facility is subject to a computer production control system.

(d) *Facility transfer operations, oil production facility.* (1) Periodically and upon a regular schedule inspect all aboveground valves and piping associated with transfer operations for the general condition of flange joints, valve glands and bodies, drip pans, pipe supports, pumping well polish rod stuffing boxes, bleeder and gauge valves, and other such items.

(2) Inspect saltwater (oil field brine) disposal facilities often, particularly following a sudden change in atmospheric temperature, to detect possible system upsets capable of causing a discharge.

(3) Have a program of flowline maintenance to prevent discharges from each flowline.

§ 112.14 Spill Prevention, Control, and Countermeasure Plan requirements for onshore oil drilling and workover facilities.

If you are the owner or operator of an onshore oil drilling and workover facility, you must:

(a) Meet the general requirements listed under § 112.7, and also meet the specific discharge prevention and containment procedures listed under this section.

(b) Position or locate mobile drilling or workover equipment so as to prevent a discharge as described in § 112.1(b).

(c) Provide catchment basins or diversion structures to intercept and contain discharges of fuel, crude oil, or oily drilling fluids.

(d) Install a blowout prevention (BOP) assembly and well control system before drilling below any casing string or during workover operations. The BOP assembly and well control system must be capable of controlling any well-head pressure that may be encountered while that BOP assembly and well control system are on the well.

§ 112.15 Spill Prevention, Control, and Countermeasure Plan requirements for offshore oil drilling, production, or workover facilities.

If you are the owner or operator of an offshore oil drilling, production, or workover facility, you must:

(a) Meet the general requirements listed under § 112.7, and also meet the specific discharge prevention and containment procedures listed under this section.

(b) Use oil drainage collection equipment to prevent and control small oil discharges around pumps, glands, valves, flanges, expansion joints, hoses, drain lines, separators, treaters, tanks, and associated equipment. You must control and direct facility drains toward a central collection sump to prevent the facility from having a discharge as described in § 112.1(b). Where drains and sumps are not practicable,

you must remove oil contained in collection equipment as often as necessary to prevent overflow.

(c) For facilities employing a sump system, provide adequately sized sump and drains and make available a spare pump to remove liquid from the sump and assure that oil does not escape. You must employ a regularly scheduled preventive maintenance inspection and testing program to assure reliable operation of the liquid removal system and pump start-up device. Redundant automatic sump pumps and control devices may be required on some installations.

(d) At facilities with areas where separators and treaters are equipped with dump valves which predominantly fail in the closed position and where pollution risk is high, specially equip the facility to prevent the discharge of oil. You must prevent the discharge of oil by:

(1) Extending the flare line to a diked area if the separator is near shore;

(2) Equipping the separator with a high liquid level sensor that will automatically shut in wells producing to the separator; or

(3) Installing parallel redundant dump valves.

(e) Equip atmospheric storage or surge containers with high liquid level sensing devices that activate an alarm or control the flow, or otherwise prevent discharges.

(f) Equip pressure containers with high and low pressure sensing devices that activate an alarm or control the flow.

(g) Equip containers with suitable corrosion protection.

(h) Prepare and maintain at the facility a written procedure within the Plan for inspecting and testing pollution prevention equipment and systems.

(i) Conduct testing and inspection of the pollution prevention equipment and systems at the facility on a scheduled periodic basis, commensurate with the complexity, conditions, and circumstances of the facility and any other appropriate regulations. You must use simulated discharges for testing and inspecting human and equipment pollution control and countermeasure systems.

(j) Describe in detailed records surface and subsurface well shut-in valves and devices in use at the facility for each well sufficiently to determine their method of activation or control, such as pressure differential, change in fluid or flow conditions, combination of pressure and flow, manual or remote control mechanisms.

(k) Install a BOP assembly and well control system during workover operations and before drilling below any casing string. The BOP assembly and well control system must be capable of controlling any well-head pressure that may be encountered while that BOP assembly and well control system are on the well.

(l) Equip all manifolds (headers) with check valves on individual flowlines.

(m) Equip the flowline with a high pressure sensing device and shut-in valve at the wellhead if the shut-in well pressure is greater than the working pressure of the flowline and manifold valves up to and including the header valves. Alternatively you may provide a pressure relief system for flowlines.

(n) Protect all piping appurtenant to the facility from corrosion, such as with protective coatings or cathodic protection.

(o) Adequately protect sub-marine piping appurtenant to the facility against environmental stresses and other activities such as fishing operations.

(p) Maintain sub-marine piping appurtenant to the facility in good operating condition at all times. You must periodically and according to a schedule inspect or test such piping for failures. You must document and keep a record of such inspections or tests at the facility.

Subpart D—Response Requirements

§ 112.20 Facility response plans.

(a) The owner or operator of any non-transportation-related onshore facility that, because of its location, could reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines shall prepare and submit a facility response

plan to the Regional Administrator, according to the following provisions:

(1) For the owner or operator of a facility in operation on or before February 18, 1993 who is required to prepare and submit a response plan under 33 U.S.C. 1321(j)(5), the Oil Pollution Act of 1990 (Pub. L. 101–380, 33 U.S.C. 2701 *et seq.*) requires the submission of a response plan that satisfies the requirements of 33 U.S.C. 1321(j)(5) no later than February 18, 1993.

(i) The owner or operator of an existing facility that was in operation on or before February 18, 1993 who submitted a response plan by February 18, 1993 shall revise the response plan to satisfy the requirements of this section and resubmit the response plan or updated portions of the response plan to the Regional Administrator by February 18, 1995.

(ii) The owner or operator of an existing facility in operation on or before February 18, 1993 who failed to submit a response plan by February 18, 1993 shall prepare and submit a response plan that satisfies the requirements of this section to the Regional Administrator before August 30, 1994.

(2) The owner or operator of a facility in operation on or after August 30, 1994 that satisfies the criteria in paragraph (f)(1) of this section or that is notified by the Regional Administrator pursuant to paragraph (b) of this section shall prepare and submit a facility response plan that satisfies the requirements of this section to the Regional Administrator.

(i) For a facility that commenced operations after February 18, 1993 but prior to August 30, 1994, and is required to prepare and submit a response plan based on the criteria in paragraph (f)(1) of this section, the owner or operator shall submit the response plan or updated portions of the response plan, along with a completed version of the response plan cover sheet contained in Appendix F to this part, to the Regional Administrator prior to August 30, 1994.

(ii) For a newly constructed facility that commences operation after August 30, 1994, and is required to prepare and submit a response plan based on the criteria in paragraph (f)(1) of this section, the owner or operator shall submit the response plan, along with a completed version of the response plan cover sheet contained in Appendix F to this part, to the Regional Administrator prior to the start of operations (adjustments to the response plan to reflect changes that occur at the facility during the start-up phase of operations must be submitted to the Regional Administrator after an operational trial period of 60 days).

(iii) For a facility required to prepare and submit a response plan after August 30, 1994, as a result of a planned change in design, construction, operation, or maintenance that renders the facility subject to the criteria in paragraph (f)(1) of this section, the owner or operator shall submit the response plan, along with a completed version of the response plan cover sheet contained in Appendix F to this part, to the Regional Administrator before the portion of the facility undergoing change commences operations (adjustments to the response plan to reflect changes that occur at the facility during the start-up phase of operations must be submitted to the Regional Administrator after an operational trial period of 60 days).

(iv) For a facility required to prepare and submit a response plan after August 30, 1994, as a result of an unplanned event or change in facility characteristics that renders the facility subject to the criteria in paragraph (f)(1) of this section, the owner or operator shall submit the response plan, along with a completed version of the response plan cover sheet contained in Appendix F to this part, to the Regional Administrator within six months of the unplanned event or change.

(3) In the event the owner or operator of a facility that is required to prepare and submit a response plan uses an alternative formula that is comparable to one contained in Appendix C to this part to evaluate the criterion in paragraph (f)(1)(ii)(B) or (f)(1)(ii)(C) of this section, the owner or operator shall attach documentation to the response plan cover sheet contained in Appendix F to this part that demonstrates the reliability and analytical soundness of the alternative formula.

(4) *Preparation and submission of response plans—Animal fat and vegetable oil facilities.* The owner or operator of any non-transportation-related facility that handles, stores, or transports animal fats and vegetable oils must prepare and submit a facility response plan as follows:

(i) *Facilities with approved plans.* The owner or operator of a facility with a facility response plan that has been approved under paragraph (c) of this section by July 31, 2000 need not prepare or submit a revised plan except as otherwise required by paragraphs (b), (c), or (d) of this section.

(ii) *Facilities with plans that have been submitted to the Regional Administrator.* Except for facilities with approved plans as provided in paragraph (a)(4)(i) of this section, the owner or operator of a facility that has submitted a response plan to the Regional Administrator prior to July 31, 2000 must review the plan to determine if it meets or exceeds the applicable provisions of this part. An owner or operator need not prepare or submit a new plan if the existing plan meets or exceeds the applicable provisions of this part. If the plan does not meet or exceed the applicable provisions of this part, the owner or operator must prepare and submit a new plan by September 28, 2000.

(iii) *Newly regulated facilities.* The owner or operator of a newly constructed facility that commences operation after July 31, 2000 must prepare and submit a plan to the Regional Administrator in accordance with paragraph (a)(2)(ii) of this section. The plan must meet or exceed the applicable provisions of this part. The owner or operator of an existing facility that must prepare and submit a plan after July 31, 2000 as a result of a planned or unplanned change in facility characteristics that causes the facility to become regulated under paragraph (f)(1) of this section, must prepare and submit a plan to the Regional Administrator in accordance with paragraph (a)(2)(iii) or (iv) of this section, as appropriate. The plan must meet or exceed the applicable provisions of this part.

(iv) *Facilities amending existing plans.* The owner or operator of a facility submitting an amended plan in accordance with paragraph (d) of this section after July 31, 2000, including plans that had been previously approved, must also review the plan to determine if it meets or exceeds the applicable provisions of this part. If the plan does not meet or exceed the applicable provisions of this part, the owner or operator must revise and resubmit revised portions of an amended plan to the Regional Administrator in accordance with paragraph (d) of this section, as appropriate. The plan must meet or exceed the applicable provisions of this part.

(b)(1) The Regional Administrator may at any time require the owner or operator of any non-transportation-related onshore facility to prepare and submit a facility response plan under this section after considering the factors in paragraph (f)(2) of this section. If such a determination is made, the Regional Administrator shall notify the facility owner or operator in writing and shall provide a basis for the determination. If the Regional Administrator notifies the owner or operator in writing of the requirement to prepare and submit a response plan under this section, the owner or operator of the facility shall submit the response plan to the Regional Administrator within six months of receipt of such written notification.

(2) The Regional Administrator shall review plans submitted by such facilities to determine whether the facility could, because of its location, reasonably be expected to cause significant and substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines.

(c) The Regional Administrator shall determine whether a facility could, because of its location, reasonably be expected to cause significant and substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines, based on the factors in paragraph (f)(3) of this section. If such a determination is made, the Regional Administrator shall notify the owner or operator of the facility in writing and:

(1) Promptly review the facility response plan;

(2) Require amendments to any response plan that does not meet the requirements of this section;

(3) Approve any response plan that meets the requirements of this section; and

(4) Review each response plan periodically thereafter on a schedule established by the Regional Administrator provided that the period between plan reviews does not exceed five years.

(d)(1) The owner or operator of a facility for which a response plan is required under this part shall revise and resubmit revised portions of the response plan within 60 days of each facility change that materially may affect the response to a worst case discharge, including:

(i) A change in the facility's configuration that materially alters the information included in the response plan;

(ii) A change in the type of oil handled, stored, or transferred that materially alters the required response resources;

(iii) A material change in capabilities of the oil spill removal organization(s) that provide equipment and personnel to respond to discharges of oil described in paragraph (h)(5) of this section;

(iv) A material change in the facility's spill prevention and response equipment or emergency response procedures; and

(v) Any other changes that materially affect the implementation of the response plan.

(2) Except as provided in paragraph (d)(1) of this section, amendments to personnel and telephone number lists included in the response plan and a change in the oil spill removal organization(s) that does not result in a material change in support capabilities do not require approval by the Regional Administrator. Facility owners or operators shall provide a copy of such changes to the Regional Administrator as the revisions occur.

(3) The owner or operator of a facility that submits changes to a response plan as provided in paragraph (d)(1) or (d)(2) of this section shall provide the EPA-issued facility identification number (where one has been assigned) with the changes.

(4) The Regional Administrator shall review for approval changes to a response plan submitted pursuant to paragraph (d)(1) of this section for a facility determined pursuant to paragraph (f)(3) of this section to have the potential to cause significant and substantial harm to the environment.

(e) If the owner or operator of a facility determines pursuant to paragraph (a)(2) of this section that the facility could not, because of its location, reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines, the owner or operator shall complete and maintain at the facility the certification form contained in Appendix C to this part and, in the event an alternative formula that is comparable to one contained in Appendix C to this part is used to evaluate the criterion in paragraph (f)(1)(ii)(B) or (f)(1)(ii)(C) of this section, the owner or operator shall attach documentation to the certification form that demonstrates the reliability and analytical soundness of the comparable formula and shall notify the Regional Administrator in writing that an alternative formula was used.

(f)(1) A facility could, because of its location, reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines pursuant to paragraph (a)(2) of this section, if it meets any of the following criteria applied in accordance with the flowchart contained in Attachment C-I to Appendix C to this part:

(i) The facility transfers oil over water to or from vessels and has a total oil storage capacity greater than or equal to 42,000 gallons; or

(ii) The facility's total oil storage capacity is greater than or equal to 1 million gallons, and one of the following is true:

(A) The facility does not have secondary containment for each aboveground storage area sufficiently large to contain the capacity of the largest aboveground oil storage tank within each storage area plus sufficient freeboard to allow for precipitation;

(B) The facility is located at a distance (as calculated using the appropriate formula in Appendix C to this part or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments. For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III of the ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments'' (see Appendix E to this part, section 13, for availability) and the applicable Area Contingency Plan prepared pursuant to section 311(j)(4) of the Clean Water Act;

(C) The facility is located at a distance (as calculated using the appropriate formula in Appendix C to this part or a comparable formula) such that a discharge from the facility would shut down a public drinking water intake; or

(D) The facility has had a reportable oil discharge in an amount greater than or equal to 10,000 gallons within the last 5 years.

(2)(i) To determine whether a facility could, because of its location, reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines pursuant to paragraph (b) of this section, the Regional Administrator shall consider the following:

(A) Type of transfer operation;

(B) Oil storage capacity;

(C) Lack of secondary containment;

(D) Proximity to fish and wildlife and sensitive environments and other areas determined by the Regional Administrator to possess ecological value;

(E) Proximity to drinking water intakes;

(F) Spill history; and

(G) Other site-specific characteristics and environmental factors that the Regional Administrator determines to be relevant to protecting the environment from harm by discharges of oil into or on navigable waters or adjoining shorelines.

(ii) Any person, including a member of the public or any representative from a Federal, State, or local agency who believes that a facility subject to this section could, because of its location, reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines may petition the Regional Administrator to determine whether the facility meets the criteria in paragraph (f)(2)(i) of this section. Such petition shall include a discussion of how the factors in paragraph (f)(2)(i) of this section apply to the facility in question. The RA shall consider such petitions and respond in an appropriate amount of time.

(3) To determine whether a facility could, because of its location, reasonably be expected to cause significant and substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines, the Regional Administrator may consider the factors in paragraph (f)(2) of this section as well as the following:

(i) Frequency of past discharges;

(ii) Proximity to navigable waters;

(iii) Age of oil storage tanks; and

(iv) Other facility-specific and Region-specific information, including local impacts on public health.

(g)(1) All facility response plans shall be consistent with the requirements of the National Oil and Hazardous Substance Pollution Contingency Plan (40 CFR part 300) and applicable Area Contingency Plans prepared pursuant to section 311(j)(4) of the Clean Water Act. The facility response plan should be coordinated with the local emergency response plan developed by the local emergency planning committee under section 303 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 11001 et seq.). Upon request, the owner or operator should provide a copy of the facility response plan to the local emergency planning committee or State emergency response commission.

(2) The owner or operator shall review relevant portions of the National Oil and Hazardous Substances Pollution Contingency Plan and applicable Area Contingency Plan annually and, if necessary, revise the facility response plan to ensure consistency with these plans.

(3) The owner or operator shall review and update the facility response

plan periodically to reflect changes at the facility.

(h) A response plan shall follow the format of the model facility-specific response plan included in Appendix F to this part, unless you have prepared an equivalent response plan acceptable to the Regional Administrator to meet State or other Federal requirements. A response plan that does not follow the specified format in Appendix F to this part shall have an emergency response action plan as specified in paragraphs (h)(1) of this section and be supplemented with a cross-reference section to identify the location of the elements listed in paragraphs (h)(2) through (h)(10) of this section. To meet the requirements of this part, a response plan shall address the following elements, as further described in Appendix F to this part:

(1) *Emergency response action plan.* The response plan shall include an emergency response action plan in the format specified in paragraphs (h)(1)(i) through (viii) of this section that is maintained in the front of the response plan, or as a separate document accompanying the response plan, and that includes the following information:

(i) The identity and telephone number of a qualified individual having full authority, including contracting authority, to implement removal actions;

(ii) The identity of individuals or organizations to be contacted in the event of a discharge so that immediate communications between the qualified individual identified in paragraph (h)(1) of this section and the appropriate Federal officials and the persons providing response personnel and equipment can be ensured;

(iii) A description of information to pass to response personnel in the event of a reportable discharge;

(iv) A description of the facility's response equipment and its location;

(v) A description of response personnel capabilities, including the duties of persons at the facility during a response action and their response times and qualifications;

(vi) Plans for evacuation of the facility and a reference to community evacuation plans, as appropriate;

(vii) A description of immediate measures to secure the source of the discharge, and to provide adequate containment and drainage of discharged oil; and

(viii) A diagram of the facility.

(2) *Facility information.* The response plan shall identify and discuss the location and type of the facility, the identity and tenure of the present owner and operator, and the identity of the qualified individual identified in paragraph (h)(1) of this section.

(3) *Information about emergency response.* The response plan shall include:

(i) The identity of private personnel and equipment necessary to remove to the maximum extent practicable a worst case discharge and other discharges of oil described in paragraph (h)(5) of this section, and to mitigate or prevent a substantial threat of a worst case discharge (To identify response resources to meet the facility response plan requirements of this section, owners or operators shall follow Appendix E to this part or, where not appropriate, shall clearly demonstrate in the response plan why use of Appendix E of this part is not appropriate at the facility and make comparable arrangements for response resources);

(ii) Evidence of contracts or other approved means for ensuring the availability of such personnel and equipment;

(iii) The identity and the telephone number of individuals or organizations to be contacted in the event of a discharge so that immediate communications between the qualified individual identified in paragraph (h)(1) of this section and the appropriate Federal official and the persons providing response personnel and equipment can be ensured;

(iv) A description of information to pass to response personnel in the event of a reportable discharge;

(v) A description of response personnel capabilities, including the duties of persons at the facility during a response action and their response times and qualifications;

(vi) A description of the facility's response equipment, the location of the equipment, and equipment testing;

(vii) Plans for evacuation of the facility and a reference to community evacuation plans, as appropriate;

(viii) A diagram of evacuation routes; and

(ix) A description of the duties of the qualified individual identified in paragraph (h)(1) of this section, that include:

(A) Activate internal alarms and hazard communication systems to notify all facility personnel;

(B) Notify all response personnel, as needed;

(C) Identify the character, exact source, amount, and extent of the release, as well as the other items needed for notification;

(D) Notify and provide necessary information to the appropriate Federal, State, and local authorities with designated response roles, including the National Response Center, State Emergency Response Commission, and Local Emergency Planning Committee;

(E) Assess the interaction of the discharged substance with water and/or other substances stored at the facility and notify response personnel at the scene of that assessment;

(F) Assess the possible hazards to human health and the environment due to the release. This assessment must consider both the direct and indirect effects of the release (i.e., the effects of any toxic, irritating, or asphyxiating gases that may be generated, or the effects of any hazardous surface water runoffs from water or chemical agents used to control fire and heat-induced explosion);

(G) Assess and implement prompt removal actions to contain and remove the substance released;

(H) Coordinate rescue and response actions as previously arranged with all response personnel;

(I) Use authority to immediately access company funding to initiate cleanup activities; and

(J) Direct cleanup activities until properly relieved of this responsibility.

(4) *Hazard evaluation.* The response plan shall discuss the facility's known or reasonably identifiable history of discharges reportable under 40 CFR part 110 for the entire life of the facility and shall identify areas within the facility where discharges could occur and what the potential effects of the discharges would be on the affected environment. To assess the range of areas potentially affected, owners or operators shall, where appropriate, consider the distance calculated in paragraph (f)(1)(ii) of this section to determine whether a facility could, because of its location, reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines.

(5) *Response planning levels.* The response plan shall include discussion of specific planning scenarios for:

(i) A worst case discharge, as calculated using the appropriate worksheet in Appendix D to this part. In cases where the Regional Administrator determines that the worst case discharge volume calculated by the facility is not appropriate, the Regional Administrator may specify the worst case discharge amount to be used for response planning at the facility. For complexes, the worst case planning quantity shall be the larger of the amounts calculated for each component of the facility;

(ii) A discharge of 2,100 gallons or less, provided that this amount is less than the worst case discharge amount. For complexes, this planning quantity shall be the larger of the amounts calculated for each component of the facility; and

(iii) A discharge greater than 2,100 gallons and less than or equal to 36,000 gallons or 10 percent of the capacity of the largest tank at the facility, whichever is less, provided that this amount is less than the worst case discharge amount. For complexes, this planning quantity shall be the larger of the amounts calculated for each component of the facility.

(6) *Discharge detection systems.* The response plan shall describe the procedures and equipment used to detect discharges.

(7) *Plan implementation.* The response plan shall describe:

(i) Response actions to be carried out by facility personnel or contracted personnel under the response plan to ensure the safety of the facility and to mitigate or prevent discharges described in paragraph (h)(5) of this section or the substantial threat of such discharges;

(ii) A description of the equipment to be used for each scenario;

(iii) Plans to dispose of contaminated cleanup materials; and

(iv) Measures to provide adequate containment and drainage of discharged oil.

(8) *Self-inspection, drills/exercises, and response training.* The response plan shall include:

(i) A checklist and record of inspections for tanks, secondary containment, and response equipment;

(ii) A description of the drill/exercise program to be carried out under the response plan as described in § 112.21;

(iii) A description of the training program to be carried out under the response plan as described in § 112.21; and

(iv) Logs of discharge prevention meetings, training sessions, and drills/exercises. These logs may be maintained as an annex to the response plan.

(9) *Diagrams.* The response plan shall include site plan and drainage plan diagrams.

(10) *Security systems.* The response plan shall include a description of facility security systems.

(11) *Response plan cover sheet.* The response plan shall include a completed response plan cover sheet provided in Section 2.0 of Appendix F to this part.

(i)(1) In the event the owner or operator of a facility does not agree with the Regional Administrator's determination that the facility could, because of its location, reasonably be expected to cause substantial harm or significant and substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines, or that amendments to the facility response plan are necessary prior to approval, such as changes to the worst case discharge planning volume, the owner or operator may submit a request for reconsideration to the Regional Administrator and provide additional information and data in writing to support the request. The request and accompanying information must be submitted to the Regional Administrator within 60 days of receipt of notice of the Regional Administrator's original decision. The Regional Administrator shall consider the request and render a decision as rapidly as practicable.

(2) In the event the owner or operator of a facility believes a change in the facility's classification status is warranted because of an unplanned event or change in the facility's characteristics (i.e., substantial harm or significant and substantial harm), the owner or operator may submit a request for reconsideration to the Regional Administrator and provide additional information and data in writing to support the request. The Regional Administrator shall consider the request and render a decision as rapidly as practicable.

(3) After a request for reconsideration under paragraph (i)(1) or (i)(2) of this section has been denied by the Regional Administrator, an owner or operator may appeal a determination made by the Regional Administrator. The appeal shall be made to the EPA Administrator and shall be made in writing within 60 days of receipt of the decision from the Regional Administrator that the request for reconsideration was denied. A complete copy of the appeal must be sent to the Regional Administrator at the time the appeal is made. The appeal shall contain a clear and concise statement of the issues and points of fact in the case. It also may contain additional information from the owner or operator, or from any other person. The EPA Administrator may request additional information from the owner or operator, or from any other person. The EPA Administrator shall render a decision as rapidly as practicable and shall notify the owner or operator of the decision.

[59 FR 34098, July 1, 1994, as amended at 65 FR 40798, June 30, 2000; 66 FR 34560, June 29, 2001; 67 FR 47151, July 17, 2002]

§ 112.21 Facility response training and drills/exercises.

(a) The owner or operator of any facility required to prepare a facility response plan under § 112.20 shall develop and implement a facility response training program and a drill/exercise program that satisfy the requirements of this section. The owner or operator shall describe the programs in the response plan as provided in § 112.20(h)(8).

(b) The facility owner or operator shall develop a facility response training program to train those personnel involved in oil spill response activities. It is recommended that the training program be based on the USCG's Training Elements for Oil Spill Response, as applicable to facility operations. An alternative program can also be acceptable subject to approval by the Regional Administrator.

(1) The owner or operator shall be responsible for the proper instruction of facility personnel in the procedures to respond to discharges of oil and in applicable oil spill response laws, rules, and regulations.

(2) Training shall be functional in nature according to job tasks for both supervisory and non-supervisory operational personnel.

(3) Trainers shall develop specific lesson plans on subject areas relevant to facility personnel involved in oil spill response and cleanup.

(c) The facility owner or operator shall develop a program of facility response drills/exercises, including evaluation procedures. A program that follows the National Preparedness for Response Exercise Program (PREP) (see Appendix E to this part, section 13, for availability) will be deemed satisfactory for purposes of this section. An alternative program can also be acceptable subject to approval by the Regional Administrator.

[59 FR 34101, July 1, 1994, as amended at 65 FR 40798, June 30, 2000]

APPENDIX A TO PART 112—MEMORANDUM OF UNDERSTANDING BETWEEN THE SECRETARY OF TRANSPORTATION AND THE ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION AGENCY

SECTION II—DEFINITIONS

The Environmental Protection Agency and the Department of Transportation agree that for the purposes of Executive Order 11548, the term:

(1) *Non-transportation-related onshore and offshore facilities* means:

(A) Fixed onshore and offshore oil well drilling facilities including all equipment and appurtenances related thereto used in drilling operations for exploratory or development wells, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(B) Mobile onshore and offshore oil well drilling platforms, barges, trucks, or other mobile facilities including all equipment and appurtenances related thereto when such mobile facilities are fixed in position for the purpose of drilling operations for exploratory or development wells, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(C) Fixed onshore and offshore oil production structures, platforms, derricks, and rigs including all equipment and appurtenances related thereto, as well as completed wells and the wellhead separators, oil separators, and storage facilities used in the production of oil, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(D) Mobile onshore and offshore oil production facilities including all equipment and appurtenances related thereto as well as completed wells and wellhead equipment, piping from wellheads to oil separators, oil separators, and storage facilities used in the production of oil when such mobile facilities are fixed in position for the purpose of oil production operations, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(E) Oil refining facilities including all equipment and appurtenances related thereto as well as in-plant processing units, storage units, piping, drainage systems and waste treatment units used in the refining of oil, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(F) Oil storage facilities including all equipment and appurtenances related thereto as well as fixed bulk plant storage, terminal oil storage facilities, consumer storage, pumps and drainage systems used in the storage of oil, but excluding inline or breakout storage tanks needed for the continuous operation of a pipeline system and any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(G) Industrial, commercial, agricultural or public facilities which use and store oil, but excluding any terminal facility, unit or process integrally associated with the handling or transferring of oil in bulk to or from a vessel.

(H) Waste treatment facilities including in-plant pipelines, effluent discharge lines, and storage tanks, but excluding waste treatment facilities located on vessels and terminal storage tanks and appurtenances for the reception of oily ballast water or tank washings from vessels and associated systems used for off-loading vessels.

(I) Loading racks, transfer hoses, loading arms and other equipment which are appurtenant to a nontransportation-related facility or terminal facility and which are used to transfer oil in bulk to or from highway vehicles or railroad cars.

(J) Highway vehicles and railroad cars which are used for the transport of oil exclusively within the confines of a nontransportation-related facility and which are not intended to transport oil in interstate or intrastate commerce.

(K) Pipeline systems which are used for the transport of oil exclusively within the confines of a nontransportation-related facility or terminal facility and which are not intended to transport oil in interstate or intrastate commerce, but excluding pipeline systems used to transfer oil in bulk to or from a vessel.

(2) *Transportation-related onshore and offshore facilities* means:

(A) Onshore and offshore terminal facilities including transfer hoses, loading arms and other equipment and appurtenances used for the purpose of handling or transferring oil in bulk to or from a vessel as well as storage tanks and appurtenances for the reception of oily ballast water or tank washings from vessels, but excluding terminal waste treatment facilities and terminal oil storage facilities.

(B) Transfer hoses, loading arms and other equipment appurtenant to a non-transportation-related facility which is used to transfer oil in bulk to or from a vessel.

(C) Interstate and intrastate onshore and offshore pipeline systems including pumps and appurtenances related thereto as well as in-line or breakout storage tanks needed for the continuous operation of a pipeline system, and pipelines from onshore and offshore oil production facilities, but excluding onshore and offshore piping from wellheads to oil separators and pipelines which are used for the transport of oil exclusively within the confines of a nontransportation-related facility or terminal facility and which are not intended to transport oil in interstate or intrastate commerce or to transfer oil in bulk to or from a vessel.

(D) Highway vehicles and railroad cars which are used for the transport of oil in interstate or intrastate commerce and the equipment and appurtenances related thereto, and equipment used for the fueling of locomotive units, as well as the rights-of-way on which they operate. Excluded are highway vehicles and railroad cars and motive power used exclusively within the confines of a nontransportation-related facility or terminal facility and which are not intended for use in interstate or intrastate commerce.

APPENDIX B TO PART 112—MEMORANDUM OF UNDERSTANDING AMONG THE SECRETARY OF THE INTERIOR, SECRETARY OF TRANSPORTATION, AND ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION AGENCY

PURPOSE

This Memorandum of Understanding (MOU) establishes the jurisdictional responsibilities for offshore facilities, including pipelines, pursuant to section 311 (j)(1)(c), (j)(5), and (j)(6)(A) of the Clean Water Act (CWA), as amended by the Oil Pollution Act of 1990 (Public Law 101–380). The Secretary of the Department of the Interior (DOI), Secretary of the Department of Transportation (DOT), and Administrator of the Environmental Protection Agency (EPA) agree to the division of responsibilities set forth below for spill prevention and control, response planning, and equipment inspection activities pursuant to those provisions.

BACKGROUND

Executive Order (E.O.) 12777 (56 FR 54757) delegates to DOI, DOT, and EPA various responsibilities identified in section 311(j) of the CWA. Sections 2(b)(3), 2(d)(3), and 2(e)(3) of E.O. 12777 assigned to DOI spill prevention and control, contingency planning, and equipment inspection activities associated with offshore facilities. Section 311(a)(11) defines the term ''offshore facility'' to include facilities of any kind located in, on, or under navigable waters of the United States. By using this definition, the traditional DOI role of regulating facilities on the Outer Continental Shelf is expanded by E.O. 12777 to include inland lakes, rivers, streams, and any other inland waters.

RESPONSIBILITIES

Pursuant to section 2(i) of E.O. 12777, DOI redelegates, and EPA and DOT agree to assume, the functions vested in DOI by sections 2(b)(3), 2(d)(3), and 2(e)(3) of E.O. 12777 as set forth below. For purposes of this MOU, the term ''coast line'' shall be defined as in the Submerged Lands Act (43 U.S.C. 1301(c)) to mean ''the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters.''

1. To EPA, DOI redelegates responsibility for non-transportation-related offshore facilities located landward of the coast line.

2. To DOT, DOI redelegates responsibility for transportation-related facilities, including pipelines, located landward of the coast line. The DOT retains jurisdiction for deepwater ports and their associated seaward pipelines, as delegated by E.O. 12777.

3. The DOI retains jurisdiction over facilities, including pipelines, located seaward of the coast line, except for deepwater ports and associated seaward pipelines delegated by E.O. 12777 to DOT.

EFFECTIVE DATE

This MOU is effective on the date of the final execution by the indicated signatories.

LIMITATIONS

1. The DOI, DOT, and EPA may agree in writing to exceptions to this MOU on a facility-specific basis. Affected parties will receive notification of the exceptions.

2. Nothing in this MOU is intended to replace, supersede, or modify any existing agreements between or among DOI, DOT, or EPA.

MODIFICATION AND TERMINATION

Any party to this agreement may propose modifications by submitting them in writing to the heads of the other agency/department. No modification may be adopted except with the consent of all parties. All parties shall indicate their consent to or disagreement with any proposed modification within 60 days of receipt. Upon the request of any party, representatives of all parties shall meet for the purpose of considering exceptions or modifications to this agreement. This MOU may be terminated only with the mutual consent of all parties.

Dated: November 8, 1993.
Bruce Babbitt,
Secretary of the Interior.
Dated: December 14, 1993.
Federico Peña,
Secretary of Transportation.
Dated: February 3, 1994.
Carol M. Browner,
Administrator, Environmental Protection Agency.

[59 FR 34102, July 1, 1994]

APPENDIX C TO PART 112—SUBSTANTIAL HARM CRITERIA

1.0 INTRODUCTION

The flowchart provided in Attachment C–I to this appendix shows the decision tree with the criteria to identify whether a facility ''could reasonably be expected to cause substantial harm to the environment by discharging into or on the navigable waters or adjoining shorelines.'' In addition, the Regional Administrator has the discretion to identify facilities that must prepare and submit facility-specific response plans to EPA.

1.1 Definitions

1.1.1 *Great Lakes* means Lakes Superior, Michigan, Huron, Erie, and Ontario, their connecting and tributary waters, the Saint Lawrence River as far as Saint Regis, and adjacent port areas.

1.1.2 Higher Volume Port Areas include

(1) Boston, MA;

(2) New York, NY;

(3) Delaware Bay and River to Philadelphia, PA;

(4) St. Croix, VI;

(5) Pascagoula, MS;

(6) Mississippi River from Southwest Pass, LA to Baton Rouge, LA;

(7) Louisiana Offshore Oil Port (LOOP), LA;

(8) Lake Charles, LA;

(9) Sabine-Neches River, TX;

(10) Galveston Bay and Houston Ship Channel, TX;

(11) Corpus Christi, TX;

(12) Los Angeles/Long Beach Harbor, CA;

(13) San Francisco Bay, San Pablo Bay, Carquinez Strait, and Suisun Bay to Antioch, CA;

(14) Straits of Juan de Fuca from Port Angeles, WA to and including Puget Sound, WA;

(15) Prince William Sound, AK; and

(16) Others as specified by the Regional Administrator for any EPA Region.

1.1.3 *Inland Area* means the area shoreward of the boundary lines defined in 46 CFR part 7, except in the Gulf of Mexico. In the Gulf of Mexico, it means the area shoreward of the lines of demarcation (COLREG lines as defined in 33 CFR 80.740—80.850). The inland area does not include the Great Lakes.

1.1.4 *Rivers and Canals* means a body of water confined within the inland area, including the Intracoastal Waterways and other waterways artificially created for navigating that have project depths of 12 feet or less.

2.0 DESCRIPTION OF SCREENING CRITERIA FOR THE SUBSTANTIAL HARM FLOWCHART

A facility that has the potential to cause substantial harm to the environment in the event of a discharge must prepare and submit a facility-specific response plan to EPA in accordance with Appendix F to this part. A description of the screening criteria for the substantial harm flowchart is provided below:

2.1 *Non-Transportation-Related Facilities With a Total Oil Storage Capacity Greater Than or Equal to 42,000 Gallons Where Operations Include Over-Water Transfers of Oil.* A non-transportation-related facility with a total oil storage capacity greater than or equal to 42,000 gallons that transfers oil over water to or from vessels must submit a response plan to EPA. Daily oil transfer operations at these types of facilities occur between barges and vessels and onshore bulk storage tanks over open water. These facilities are located adjacent to navigable water.

2.2 *Lack of Adequate Secondary Containment at Facilities With a Total Oil Storage Capacity Greater Than or Equal to 1 Million Gallons.* Any facility with a total oil storage capacity greater than or equal to 1 million gallons without secondary containment sufficiently large to contain the capacity of the largest aboveground oil storage tank within each area plus sufficient freeboard to allow for precipitation must submit a response plan to EPA. Secondary containment structures that meet the standard of good engineering practice for the purposes of this part include berms, dikes, retaining walls, curbing, culverts, gutters, or other drainage systems.

2.3 *Proximity to Fish and Wildlife and Sensitive Environments at Facilities With a Total Oil Storage Capacity Greater Than or Equal to 1 Million Gallons.* A facility with a total oil storage capacity greater than or equal to 1 million gallons must submit its response plan if it is located at a distance such that a discharge from the facility could cause injury (as defined at 40 CFR 112.2) to fish and wildlife and sensitive environments. For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments'' (see Appendix E to this part, section 13, for availability) and the applicable Area Contingency Plan. Facility owners or operators must determine the distance at which an oil discharge could cause injury to fish and wildlife and sensitive environments using the appropriate formula presented in Attachment C–III to this appendix or a comparable formula.

2.4 *Proximity to Public Drinking Water Intakes at Facilities with a Total Oil Storage Capacity Greater than or Equal to 1 Million Gallons* A facility with a total oil storage capacity greater than or equal to 1 million gallons must submit its response plan if it is located at a distance such that a discharge from the facility would shut down a public drinking water intake, which is analogous to a public water system as described at 40 CFR 143.2(c). The distance at which an oil discharge from an SPCC-regulated facility would shut down a public drinking water intake shall be calculated using the appropriate formula presented in Attachment C–III to this appendix or a comparable formula.

2.5 *Facilities That Have Experienced Reportable Oil Discharges in an Amount Greater Than or Equal to 10,000 Gallons Within the Past 5 Years and That Have a Total Oil Storage Capacity Greater Than or Equal to 1 Million Gallons.* A facility's oil spill history within the past 5 years shall be considered in the evaluation for substantial harm. Any facility with a total oil storage capacity greater than or equal to 1 million gallons that has experienced a reportable oil discharge in an amount greater than or equal to 10,000 gallons within the past 5 years must submit a response plan to EPA.

3.0 Certification for Facilities That Do Not Pose Substantial Harm

If the facility does not meet the substantial harm criteria listed in Attachment C–I to this appendix, the owner or operator shall complete and maintain at the facility the certification form contained in Attachment C–II to this appendix. In the event an alternative formula that is comparable to the one in this appendix is used to evaluate the substantial harm criteria, the owner or operator shall attach documentation to the certification form that demonstrates the reliability and analytical soundness of the comparable formula and shall notify the Regional Administrator in writing that an alternative formula was used.

4.0 References

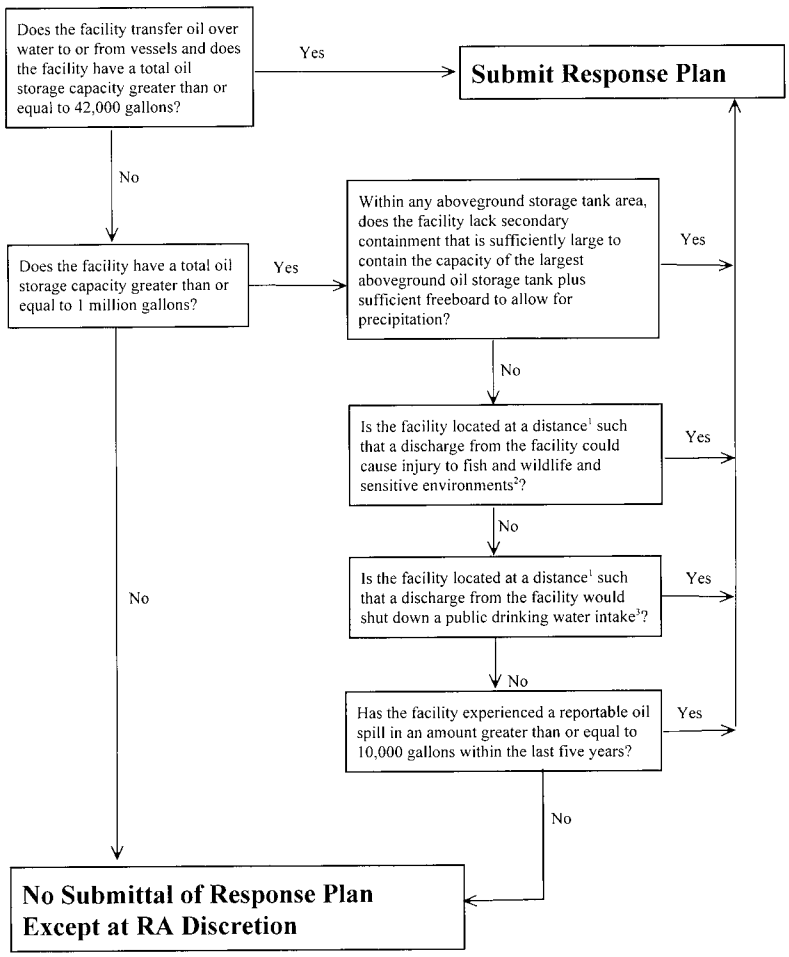
Chow, V.T. 1959. Open Channel Hydraulics. McGraw Hill.

USCG IFR (58 FR 7353, February 5, 1993). This document is available through EPA's rulemaking docket as noted in Appendix E to this part, section 13.

ATTACHMENTS TO APPENDIX C

Attachment C-I

Flowchart of Criteria for Substantial Harm



[1] Calculated using the appropriate formula in Attachment C-III to this appendix or a comparable formula.

[2] For further description of fish and wildlife and sensitive environments, see Appendices I,II, and III to DOC/NOAA's "Guidance for Facility and vessel response Plans: Fish and Wildlife and Sensitive Environments" (59 FR 14713, March 29, 1994) and the applicable Area Contingency Plan.

[3] Public drinking water intakes are analogous to public water systems as described at CFR 143.2(c).

ATTACHMENT C-II—CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

Facility Name: _____
Facility Address: _____

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?
Yes _____ No _____

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?
Yes _____ No _____

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C–III to this appendix or a comparable formula[1]) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments'' (see Appendix E to this part, section 13, for availability) and the applicable Area Contingency Plan.
Yes _____ No _____

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this appendix or a comparable formula[1]) such that a discharge from the facility would shut down a public drinking water intake[2]?
Yes _____ No _____

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil discharge in an amount greater than or equal to 10,000 gallons within the last 5 years?
Yes _____ No _____

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

_____
Signature

_____
Name (please type or print)

_____
Title

_____
Date

ATTACHMENT C-III—CALCULATION OF THE PLANNING DISTANCE

1.0 Introduction

1.1 The facility owner or operator must evaluate whether the facility is located at a distance such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments or disrupt operations at a public drinking water intake. To quantify that distance, EPA considered oil transport mechanisms over land and on still, tidal influence, and moving navigable waters. EPA has determined that the primary concern for calculation of a planning distance is the transport of oil in navigable waters during adverse weather conditions. Therefore, two formulas have been developed to determine distances for planning purposes from the point of discharge at the facility to the potential site of impact on moving and still waters, respectively. The formula for oil transport on moving navigable water is based on the velocity of the water body and the time interval for arrival of response resources. The still water formula accounts for the spread of discharged oil over the surface of the water. The method to determine oil transport on tidal influence areas is based on the type of oil discharged and the distance down current during ebb tide and up current during flood tide to the point of maximum tidal influence.

1.2 EPA's formulas were designed to be simple to use. However, facility owners or operators may calculate planning distances using more sophisticated formulas, which take into account broader scientific or engineering principles, or local conditions. Such comparable formulas may result in different planning distances than EPA's formulas. In the event that an alternative formula that is comparable to one contained in this appendix is used to evaluate the criterion in 40 CFR 112.20(f)(1)(ii)(B) or (f)(1)(ii)(C), the owner or operator shall attach documentation to the response plan cover sheet contained in Appendix F to this part that demonstrates the reliability and analytical soundness of the alternative formula and shall notify the Regional Administrator in

[1] If a comparable formula is used, documentation of the reliability and analytical soundness of the comparable formula must be attached to this form.

[2] For the purposes of 40 CFR part 112, public drinking water intakes are analogous to public water systems as described at 40 CFR 143.2(c).

writing that an alternative formula was used.[1]

1.3 A regulated facility may meet the criteria for the potential to cause substantial harm to the environment without having to perform a planning distance calculation. For facilities that meet the substantial harm criteria because of inadequate secondary containment or oil spill history, as listed in the flowchart in Attachment C–I to this appendix, calculation of the planning distance is unnecessary. For facilities that do not meet the substantial harm criteria for secondary containment or oil spill history as listed in the flowchart, calculation of a planning distance for proximity to fish and wildlife and sensitive environments and public drinking water intakes is required, unless it is clear without performing the calculation (e.g., the facility is located in a wetland) that these areas would be impacted.

1.4 A facility owner or operator who must perform a planning distance calculation on navigable water is only required to do so for the type of navigable water conditions (i.e., moving water, still water, or tidal- influenced water) applicable to the facility. If a facility owner or operator determines that more than one type of navigable water condition applies, then the facility owner or operator is required to perform a planning distance calculation for each navigable water type to determine the greatest single distance that oil may be transported. As a result, the final planning distance for oil transport on water shall be the greatest individual distance rather than a summation of each calculated planning distance.

1.5 The planning distance formula for transport on moving waterways contains three variables: the velocity of the navigable water (v), the response time interval (t), and a conversion factor (c). The velocity, v, is determined by using the Chezy-Manning equation, which, in this case, models the flood flow rate of water in open channels. The Chezy-Manning equation contains three variables which must be determined by facility owners or operators. Manning's Roughness Coefficient (for flood flow rates), n, can be determined from Table 1 of this attachment. The hydraulic radius, r, can be estimated using the average mid-channel depth from charts provided by the sources listed in Table 2 of this attachment. The average slope of the river, s, can be determined using topographic maps that can be ordered from the U.S. Geological Survey, as listed in Table 2 of this attachment.

1.6 Table 3 of this attachment contains specified time intervals for estimating the arrival of response resources at the scene of a discharge. Assuming no prior planning, response resources should be able to arrive at the discharge site within 12 hours of the discovery of any oil discharge in Higher Volume Port Areas and within 24 hours in Great Lakes and all other river, canal, inland, and nearshore areas. The specified time intervals in Table 3 of Appendix C are to be used only to aid in the identification of whether a facility could cause substantial harm to the environment. Once it is determined that a plan must be developed for the facility, the owner or operator shall reference Appendix E to this part to determine appropriate resource levels and response times. The specified time intervals of this appendix include a 3-hour time period for deployment of boom and other response equipment. The Regional Administrator may identify additional areas as appropriate.

2.0 Oil Transport on Moving Navigable Waters

2.1 The facility owner or operator must use the following formula or a comparable formula as described in §112.20(a)(3) to calculate the planning distance for oil transport on moving navigable water:

$d = v \times t \times c$; where

d: the distance downstream from a facility within which fish and wildlife and sensitive environments could be injured or a public drinking water intake would be shut down in the event of an oil discharge (in miles);

v: the velocity of the river/navigable water of concern (in ft/sec) as determined by Chezy-Manning's equation (see below and Tables 1 and 2 of this attachment);

t: the time interval specified in Table 3 based upon the type of water body and location (in hours); and

c: constant conversion factor 0.68 sec/mile/hr/ft (3600 sec/hr ÷ 5280 ft/mile).

2.2 Chezy-Manning's equation is used to determine velocity:

$v = 1.5/n \times r^{2/3} \times s^{1/2}$; where

v=the velocity of the river of concern (in ft/sec);

n=Manning's Roughness Coefficient from Table 1 of this attachment;

r=the hydraulic radius; the hydraulic radius can be approximated for parabolic channels by multiplying the average mid-channel depth of the river (in feet) by 0.667

[1] For persistent oils or non-persistent oils, a worst case trajectory model (i.e., an alternative formula) may be substituted for the distance formulas described in still, moving, and tidal waters, subject to Regional Administrator's review of the model. An example of an alternative formula that is comparable to the one contained in this appendix would be a worst case trajectory calculation based on credible adverse winds, currents, and/or river stages, over a range of seasons, weather conditions, and river stages. Based on historical information or a spill trajectory model, the Agency may require that additional fish and wildlife and sensitive environments or public drinking water intakes also be protected.

(sources for obtaining the mid-channel depth are listed in Table 2 of this attachment); and

s=the average slope of the river (unitless) obtained from U.S. Geological Survey topographic maps at the address listed in Table 2 of this attachment.

TABLE 1—MANNING'S ROUGHNESS COEFFICIENT FOR NATURAL STREAMS

[NOTE: Coefficients are presented for high flow rates at or near flood stage.]

Stream description	Roughness coefficient (n)
Minor Streams (Top Width <100 ft.)	
Clean:	
Straight	0.03
Winding	0.04
Sluggish (Weedy, deep pools):	
No trees or brush	0.06
Trees and/or brush	0.10
Major Streams (Top Width >100 ft.)	
Regular section:	
(No boulders/brush)	0.035
Irregular section:	
(Brush)	0.05

TABLE 2—SOURCES OF R AND S FOR THE CHEZY-MANNING EQUATION

All of the charts and related publications for navigational waters may be ordered from:
Distribution Branch
(N/CG33)
National Ocean Service
Riverdale, Maryland 20737–1199
Phone: (301) 436–6990
There will be a charge for materials ordered and a VISA or Mastercard will be accepted.
The mid-channel depth to be used in the calculation of the hydraulic radius (r) can be obtained directly from the following sources:
Charts of Canadian Coastal and Great Lakes Waters:
Canadian Hydrographic Service
Department of Fisheries and Oceans Institute
P.O. Box 8080
1675 Russell Road
Ottawa, Ontario KIG 3H6
Canada
Phone: (613) 998–4931
Charts and Maps of Lower Mississippi River (Gulf of Mexico to Ohio River and St. Francis, White, Big Sunflower, Atchafalaya, and other rivers):
U.S. Army Corps of Engineers
Vicksburg District
P.O. Box 60
Vicksburg, Mississippi 39180
Phone: (601) 634–5000
Charts of Upper Mississippi River and Illinois Waterway to Lake Michigan:
U.S. Army Corps of Engineers
Rock Island District
P.O. Box 2004
Rock Island, Illinois 61204
Phone: (309) 794–5552
Charts of Missouri River:
U.S. Army Corps of Engineers
Omaha District
6014 U.S. Post Office and Courthouse
Omaha, Nebraska 68102
Phone: (402) 221–3900
Charts of Ohio River:
U.S. Army Corps of Engineers
Ohio River Division
P.O. Box 1159
Cincinnati, Ohio 45201
Phone: (513) 684–3002
Charts of Tennessee Valley Authority Reservoirs, Tennessee River and Tributaries:
Tennessee Valley Authority
Maps and Engineering Section
416 Union Avenue
Knoxville, Tennessee 37902
Phone: (615) 632–2921
Charts of Black Warrior River, Alabama River, Tombigbee River, Apalachicola River and Pearl River:
U.S. Army Corps of Engineers
Mobile District
P.O. Box 2288
Mobile, Alabama 36628–0001
Phone: (205) 690–2511
The average slope of the river (s) may be obtained from topographic maps:
U.S. Geological Survey
Map Distribution
Federal Center
Bldg. 41
Box 25286
Denver, Colorado 80225
Additional information can be obtained from the following sources:

1. The State's Department of Natural Resources (DNR) or the State's Aids to Navigation office;
2. A knowledgeable local marina operator; or
3. A knowledgeable local water authority (e.g., State water commission)

2.3 The average slope of the river (s) can be determined from the topographic maps using the following steps:

(1) Locate the facility on the map.

(2) Find the Normal Pool Elevation at the point of discharge from the facility into the water (A).

(3) Find the Normal Pool Elevation of the public drinking water intake or fish and wildlife and sensitive environment located downstream (B) (Note: The owner or operator should use a minimum of 20 miles downstream as a cutoff to obtain the average slope if the location of a specific public drinking water intake or fish and wildlife and sensitive environment is unknown).

(4) If the Normal Pool Elevation is not available, the elevation contours can be used to find the slope. Determine elevation of the water at the point of discharge from the facility (A). Determine the elevation of the

water at the appropriate distance downstream (B). The formula presented below can be used to calculate the slope.

(5) Determine the distance (in miles) between the facility and the public drinking water intake or fish and wildlife and sensitive environments (C).

(6) Use the following formula to find the slope, which will be a unitless value: Average Slope=[(A−B) (ft)/C (miles)] × [1 mile/5280 feet]

2.4 If it is not feasible to determine the slope and mid-channel depth by the Chezy-Manning equation, then the river velocity can be approximated on- site. A specific length, such as 100 feet, can be marked off along the shoreline. A float can be dropped into the stream above the mark, and the time required for the float to travel the distance can be used to determine the velocity in feet per second. However, this method will not yield an average velocity for the length of the stream, but a velocity only for the specific location of measurement. In addition, the flow rate will vary depending on weather conditions such as wind and rainfall. It is recommended that facility owners or operators repeat the measurement under a variety of conditions to obtain the most accurate estimate of the surface water velocity under adverse weather conditions.

2.5 The planning distance calculations for moving and still navigable waters are based on worst case discharges of persistent oils. Persistent oils are of concern because they can remain in the water for significant periods of time and can potentially exist in large quantities downstream. Owners or operators of facilities that store persistent as well as non-persistent oils may use a comparable formula. The volume of oil discharged is not included as part of the planning distance calculation for moving navigable waters. Facilities that will meet this substantial harm criterion are those with facility capacities greater than or equal to 1 million gallons. It is assumed that these facilities are capable of having an oil discharge of sufficient quantity to cause injury to fish and wildlife and sensitive environments or shut down a public drinking water intake. While owners or operators of transfer facilities that store greater than or equal to 42,000 gallons are not required to use a planning distance formula for purposes of the substantial harm criteria, they should use a planning distance calculation in the development of facility-specific response plans.

TABLE 3—SPECIFIED TIME INTERVALS

Operating areas	Substantial harm planning time (hrs)
Higher volume port area.	12 hour arrival+3 hour deployment=15 hours.
Great Lakes ...	24 hour arrival+3 hour deployment=27 hours.
All other rivers and canals, inland, and nearshore areas.	24 hour arrival+3 hour deployment=27 hours.

2.6 *Example of the Planning Distance Calculation for Oil Transport on Moving Navigable Waters.* The following example provides a sample calculation using the planning distance formula for a facility discharging oil into the Monongahela River:

(1) Solve for v by evaluating n, r, and s for the Chezy-Manning equation:

Find the roughness coefficient, n, on Table 1 of this attachment for a regular section of a major stream with a top width greater than 100 feet. The top width of the river can be found from the topographic map.

n=0.035.

Find slope, s, where A=727 feet, B=710 feet, and C=25 miles.

Solving:

$s=[(727\ ft-1710\ ft)/25\ miles]\times[1\ mile/5280\ feet]=1.3\times10^{-4}$

The average mid-channel depth is found by averaging the mid-channel depth for each mile along the length of the river between the facility and the public drinking water intake or the fish or wildlife or sensitive environment (or 20 miles downstream if applicable). This value is multiplied by 0.667 to obtain the hydraulic radius. The mid-channel depth is found by obtaining values for r and s from the sources shown in Table 2 for the Monongahela River.

Solving:

r=0.667×20 feet=13.33 feet

Solve for v using:

$v=1.5/n\times r^{2/3}\times s^{1/2}$:

$v=[1.5/0.035]\times(13.33)^{2/3}\times(1.3\times10^{-4})^{1/2}$

v=2.73 feet/second

(2) Find t from Table 3 of this attachment. The Monongahela River's resource response time is 27 hours.

(3) Solve for planning distance, d:

d=v×t×c

d=(2.73 ft/sec)×(27 hours)×(0.68 secω mile/hrω ft)

d=50 miles

Therefore, 50 miles downstream is the appropriate planning distance for this facility.

3.0 Oil Transport on Still Water

3.1 For bodies of water including lakes or ponds that do not have a measurable velocity, the spreading of the oil over the surface must be considered. Owners or operators of facilities located next to still water bodies may use a comparable means of calculating

the planning distance. If a comparable formula is used, documentation of the reliability and analytical soundness of the comparable calculation must be attached to the response plan cover sheet.

3.2 *Example of the Planning Distance Calculation for Oil Transport on Still Water.* To assist those facilities which could potentially discharge into a still body of water, the following analysis was performed to provide an example of the type of formula that may be used to calculate the planning distance. For this example, a worst case discharge of 2,000,000 gallons is used.

(1) The surface area in square feet covered by an oil discharge on still water, A1, can be determined by the following formula,[2] where V is the volume of the discharge in gallons and C is a constant conversion factor:

$A_1=10^5\times V^{3/4}\times C$

$C=0.1643$

$A_1=10^5\times(2{,}000{,}000 \text{ gallons})^{3/4}\times(0.1643)$

$A_1=8.74\times10^8 \text{ ft}^2$

(2) The spreading formula is based on the theoretical condition that the oil will spread uniformly in all directions forming a circle. In reality, the outfall of the discharge will direct the oil to the surface of the water where it intersects the shoreline. Although the oil will not spread uniformly in all directions, it is assumed that the discharge will spread from the shoreline into a semi-circle (this assumption does not account for winds or wave action).

(3) The area of a circle=† r^2

(4) To account for the assumption that oil will spread in a semi-circular shape, the area of a circle is divided by 2 and is designated as A_2.

$A_2=(\dagger r^2)/2$

Solving for the radius, r, using the relationship $A_1=A_2$: $8.74\times10^8 \text{ ft}^2=(\dagger^2)/2$

Therefore, r=23,586 ft

r=23,586 ft÷5,280 ft/mile=4.5 miles

Assuming a 20 knot wind under storm conditions:

1 knot=1.15 miles/hour

20 knots×1.15 miles/hour/knot=23 miles/hr

Assuming that the oil slick moves at 3 percent of the wind's speed:[3]

23 miles/hour×0.03=0.69 miles/hour

(5) To estimate the distance that the oil will travel, use the times required for response resources to arrive at different geographic locations as shown in Table 3 of this attachment.

For example:

For Higher Volume Port Areas: 15 hrs×0.69 miles/hr=10.4 miles

For Great Lakes and all other areas: 27 hrs×0.69 miles/hr=18.6 miles

(6) The total distance that the oil will travel from the point of discharge, including the distance due to spreading, is calculated as follows:

Higher Volume Port Areas: d=10.4+4.5 miles or approximately 15 miles

Great Lakes and all other areas: d=18.6+4.5 miles or approximately 23 miles

4.0 Oil Transport on Tidal-Influence Areas

4.1 The planning distance method for tidal influence navigable water is based on worst case discharges of persistent and non-persistent oils. Persistent oils are of primary concern because they can potentially cause harm over a greater distance. For persistent oils discharged into tidal waters, the planning distance is 15 miles from the facility down current during ebb tide and to the point of maximum tidal influence or 15 miles, whichever is less, during flood tide.

4.2 For non-persistent oils discharged into tidal waters, the planning distance is 5 miles from the facility down current during ebb tide and to the point of maximum tidal influence or 5 miles, whichever is less, during flood tide.

4.3 *Example of Determining the Planning Distance for Two Types of Navigable Water Conditions.* Below is an example of how to determine the proper planning distance when a facility could impact two types of navigable water conditions: moving water and tidal water.

(1) Facility X stores persistent oil and is located downstream from locks along a slow moving river which is affected by tides. The river velocity, v, is determined to be 0.5 feet/second from the Chezy-Manning equation used to calculate oil transport on moving navigable waters. The specified time interval, t, obtained from Table 3 of this attachment for river areas is 27 hours. Therefore, solving for the planning distance, d:

$d=v\times t\times c$

$d=(0.5 \text{ ft/sec})\times(27 \text{ hours})\times(0.68 \text{ secmile/hrft})$

$d=9.18$ miles.

(2) However, the planning distance for maximum tidal influence down current during ebb tide is 15 miles, which is greater than the calculated 9.18 miles. Therefore, 15 miles downstream is the appropriate planning distance for this facility.

5.0 Oil Transport Over Land

5.1 Facility owners or operators must evaluate the potential for oil to be transported over land to navigable waters of the United States. The owner or operator must evaluate the likelihood that portions of a worst case discharge would reach navigable

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[2] Huang, J.C. and Monastero, F.C., 1982. *Review of the State-of-the-Art of Oil Pollution Models.* Final report submitted to the American Petroleum Institute by Raytheon Ocean Systems, Co., East Providence, Rhode Island.

[3] *Oil Spill Prevention & Control.* National Spill Control School, Corpus Christi State University, Thirteenth Edition, May 1990.

waters via open channel flow or from sheet flow across the land, or be prevented from reaching navigable waters when trapped in natural or man-made depressions excluding secondary containment structures.

5.2 As discharged oil travels over land, it may enter a storm drain or open concrete channel intended for drainage. It is assumed that once oil reaches such an inlet, it will flow into the receiving navigable water. During a storm event, it is highly probable that the oil will either flow into the drainage structures or follow the natural contours of the land and flow into the navigable water. Expected minimum and maximum velocities are provided as examples of open concrete channel and pipe flow. The ranges listed below reflect minimum and maximum velocities used as design criteria.[4] The calculation below demonstrates that the time required for oil to travel through a storm drain or open concrete channel to navigable water is negligible and can be considered instantaneous. The velocities are:

For open concrete channels:
maximum velocity=25 feet per second
minimum velocity=3 feet per second
For storm drains:
maximum velocity=25 feet per second
minimum velocity=2 feet per second

5.3 Assuming a length of 0.5 mile from the point of discharge through an open concrete channel or concrete storm drain to a navigable water, the travel times (distance/velocity) are:

1.8 minutes at a velocity of 25 feet per second
14.7 minutes at a velocity of 3 feet per second
22.0 minutes for at a velocity of 2 feet per second

5.4 The distances that shall be considered to determine the planning distance are illustrated in Figure C-I of this attachment. The relevant distances can be described as follows:

D1=Distance from the nearest opportunity for discharge, X_1, to a storm drain or an open concrete channel leading to navigable water.
D2=Distance through the storm drain or open concrete channel to navigable water.
D3=Distance downstream from the outfall within which fish and wildlife and sensitive environments could be injured or a public drinking water intake would be shut down as determined by the planning distance formula.
D4=Distance from the nearest opportunity for discharge, X_2, to fish and wildlife and sensitive environments not bordering navigable water.

5.5 A facility owner or operator whose nearest opportunity for discharge is located within 0.5 mile of a navigable water must complete the planning distance calculation (D3) for the type of navigable water near the facility or use a comparable formula.

5.6 A facility that is located at a distance greater than 0.5 mile from a navigable water must also calculate a planning distance (D3) if it is in close proximity (i.e., D1 is less than 0.5 mile and other factors are conducive to oil travel over land) to storm drains that flow to navigable waters. Factors to be considered in assessing oil transport over land to storm drains shall include the topography of the surrounding area, drainage patterns, man-made barriers (excluding secondary containment structures), and soil distribution and porosity. Storm drains or concrete drainage channels that are located in close proximity to the facility can provide a direct pathway to navigable waters, regardless of the length of the drainage pipe. If D1 is less than or equal to 0.5 mile, a discharge from the facility could pose substantial harm because the time to travel the distance from the storm drain to the navigable water (D2) is virtually instantaneous.

5.7 A facility's proximity to fish and wildlife and sensitive environments not bordering a navigable water, as depicted as D4 in Figure C–I of this attachment, must also be considered, regardless of the distance from the facility to navigable waters. Factors to be considered in assessing oil transport over land to fish and wildlife and sensitive environments should include the topography of the surrounding area, drainage patterns, man-made barriers (excluding secondary containment structures), and soil distribution and porosity.

5.8 If a facility is not found to pose substantial harm to fish and wildlife and sensitive environments not bordering navigable waters via oil transport on land, then supporting documentation should be maintained at the facility. However, such documentation should be submitted with the response plan if a facility is found to pose substantial harm.

[4] The design velocities were obtained from Howard County, Maryland Department of Public Works' Storm Drainage Design Manual.

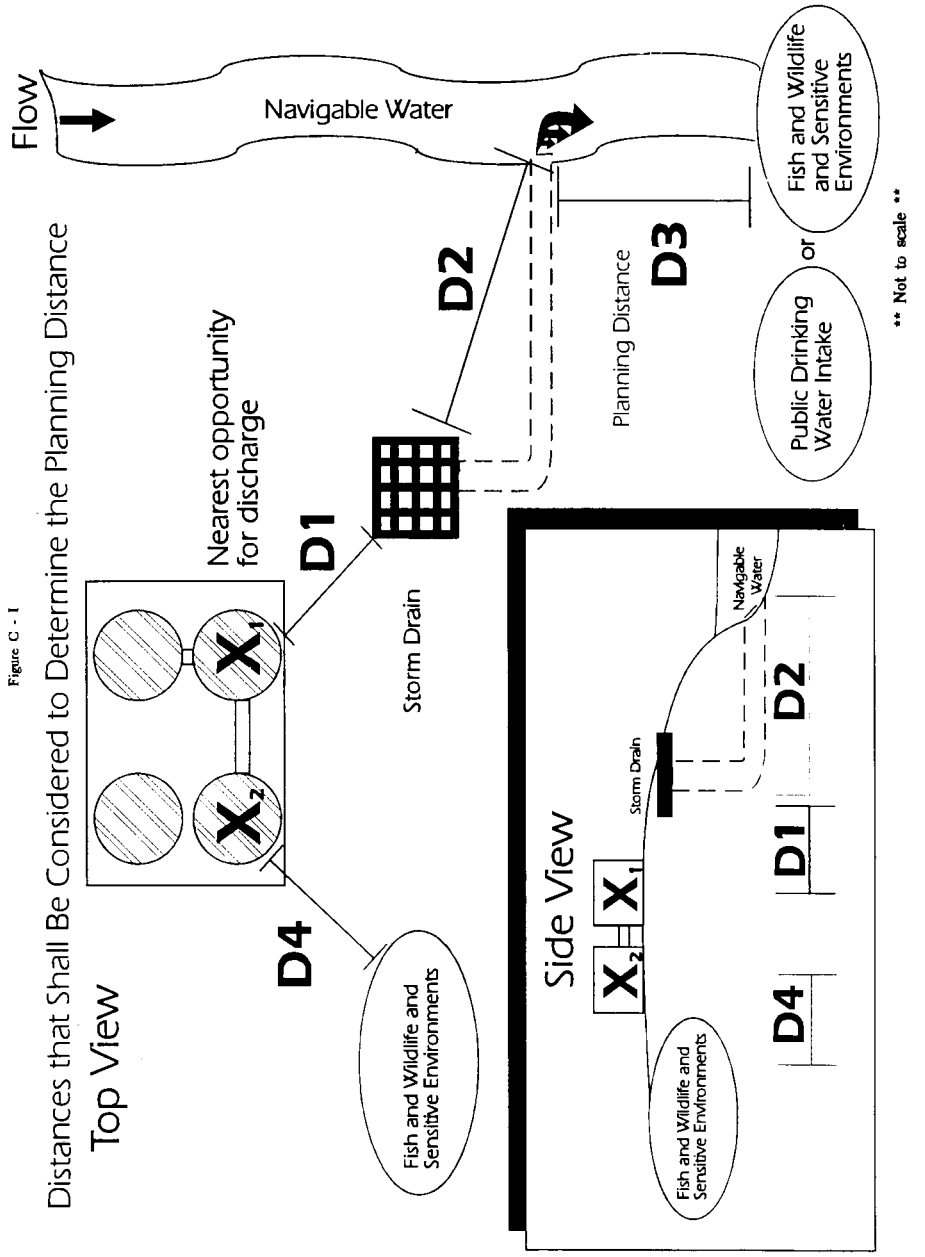


Figure C - 1

[59 FR 34102, July 1, 1994, as amended at 65 FR 40798, June 30, 2000; 67 FR 47152, July 17, 2002]

APPENDIX D TO PART 112—DETERMINATION OF A WORST CASE DISCHARGE PLANNING VOLUME

1.0 Instructions

1.1 An owner or operator is required to complete this worksheet if the facility meets the criteria, as presented in Appendix C to this part, or it is determined by the RA that the facility could cause substantial harm to the environment. The calculation of a worst case discharge planning volume is used for emergency planning purposes, and is required in 40 CFR 112.20 for facility owners or operators who must prepare a response plan. When planning for the amount of resources and equipment necessary to respond to the worst case discharge planning volume, adverse weather conditions must be taken into consideration. An owner or operator is required to determine the facility's worst case discharge planning volume from either part A of this appendix for an onshore storage facility, or part B of this appendix for an onshore production facility. The worksheet considers the provision of adequate secondary containment at a facility.

1.2 For onshore storage facilities and production facilities, permanently manifolded oil storage tanks are defined as tanks that are designed, installed, and/or operated in such a manner that the multiple tanks function as one storage unit (i.e., multiple tank volumes are equalized). In a worst case discharge scenario, a single failure could cause the discharge of the contents of more than one tank. The owner or operator must provide evidence in the response plan that tanks with common piping or piping systems are not operated as one unit. If such evidence is provided and is acceptable to the RA, the worst case discharge planning volume would be based on the capacity of the largest oil storage tank within a common secondary containment area or the largest oil storage tank within a single secondary containment area, whichever is greater. For permanently manifolded tanks that function as one oil storage unit, the worst case discharge planning volume would be based on the combined oil storage capacity of all manifolded tanks or the capacity of the largest single oil storage tank within a secondary containment area, whichever is greater. For purposes of this rule, permanently manifolded tanks that are separated by internal divisions for each tank are considered to be single tanks and individual manifolded tank volumes are not combined.

1.3 For production facilities, the presence of exploratory wells, production wells, and oil storage tanks must be considered in the calculation. Part B of this appendix takes these additional factors into consideration and provides steps for their inclusion in the total worst case discharge planning volume. Onshore oil production facilities may include all wells, flowlines, separation equipment, storage facilities, gathering lines, and auxiliary non-transportation-related equipment and facilities in a single geographical oil or gas field operated by a single operator. Although a potential worst case discharge planning volume is calculated within each section of the worksheet, the final worst case amount depends on the risk parameter that results in the greatest volume.

1.4 Marine transportation-related transfer facilities that contain fixed aboveground onshore structures used for bulk oil storage are jointly regulated by EPA and the U.S. Coast Guard (USCG), and are termed ''complexes.'' Because the USCG also requires response plans from transportation-related facilities to address a worst case discharge of oil, a separate calculation for the worst case discharge planning volume for USCG-related facilities is included in the USCG IFR (see Appendix E to this part, section 13, for availability). All complexes that are jointly regulated by EPA and the USCG must compare both calculations for worst case discharge planning volume derived by using the EPA and USCG methodologies and plan for whichever volume is greater.

PART A: WORST CASE DISCHARGE PLANNING VOLUME CALCULATION FOR ONSHORE STORAGE FACILITIES[1]

Part A of this worksheet is to be completed by the owner or operator of an SPCC-regulated facility (excluding oil production facilities) if the facility meets the criteria as presented in Appendix C to this part, or if it is determined by the RA that the facility could cause substantial harm to the environment. If you are the owner or operator of a production facility, please proceed to part B of this worksheet.

A.1 SINGLE-TANK FACILITIES

For facilities containing only one aboveground oil storage tank, the worst case discharge planning volume equals the capacity of the oil storage tank. If adequate secondary containment (sufficiently large to contain the capacity of the aboveground oil storage tank plus sufficient freeboard to allow for precipitation) exists for the oil storage tank, multiply the capacity of the tank by 0.8.

(1) FINAL WORST CASE VOLUME: _____ GAL

(2) Do not proceed further.

[1] ''Storage facilities'' represent all facilities subject to this part, excluding oil production facilities.

A.2 SECONDARY CONTAINMENT—MULTIPLE-TANK FACILITIES

Are *all* aboveground oil storage tanks or groups of aboveground oil storage tanks at the facility *without* adequate secondary containment?[2]

_____ (Y/N)

A.2.1 If the answer is yes, the final worst case discharge planning volume equals the *total aboveground oil storage capacity at the facility*.

(1) FINAL WORST CASE VOLUME: _____ GAL

(2) Do not proceed further.

A.2.2 If the answer is no, calculate the total aboveground oil storage capacity of tanks without adequate secondary containment. If *all* aboveground oil storage tanks or groups of aboveground oil storage tanks at the facility have adequate secondary containment, ENTER ''0'' (zero).

_____ GAL

A.2.3 Calculate the capacity of the largest single aboveground oil storage tank within an adequate secondary containment area or the combined capacity of a group of aboveground oil storage tanks permanently manifolded together, whichever is greater, PLUS THE VOLUME FROM QUESTION A.2.2.

FINAL WORST CASE VOLUME:[3] _____ GAL

PART B: WORST CASE DISCHARGE PLANNING VOLUME CALCULATION FOR ONSHORE PRODUCTION FACILITIES

Part B of this worksheet is to be completed by the owner or operator of an SPCC-regulated oil production facility if the facility meets the criteria presented in Appendix C to this part, or if it is determined by the RA that the facility could cause substantial harm. A production facility consists of all wells (producing and exploratory) and related equipment in a single geographical oil or gas field operated by a single operator.

B.1 SINGLE-TANK FACILITIES

B.1.1 For facilities containing only one aboveground oil storage tank, the worst case discharge planning volume equals the capacity of the aboveground oil storage tank plus the production volume of the well with the highest output at the facility. If adequate secondary containment (sufficiently large to contain the capacity of the aboveground oil storage tank plus sufficient freeboard to allow for precipitation) exists for the storage tank, multiply the capacity of the tank by 0.8.

B.1.2 For facilities with production wells producing by pumping, if the rate of the well with the highest output is known and the number of days the facility is unattended can be predicted, then the production volume is equal to the pumping rate of the well multiplied by the greatest number of days the facility is unattended.

B.1.3 If the pumping rate of the well with the highest output is estimated or the maximum number of days the facility is unattended is estimated, then the production volume is determined from the pumping rate of the well multiplied by 1.5 times the greatest number of days that the facility has been or is expected to be unattended.

B.1.4 Attachment D–1 to this appendix provides methods for calculating the production volume for exploratory wells and production wells producing under pressure.

(1) FINAL WORST CASE VOLUME: _____ GAL

(2) Do not proceed further.

B.2 SECONDARY CONTAINMENT—MULTIPLE-TANK FACILITIES

Are *all* aboveground oil storage tanks or groups of aboveground oil storage tanks at the facility *without* adequate secondary containment?

_____ (Y/N)

B.2.1 If the answer is yes, the final worst case volume equals the total aboveground oil storage capacity without adequate secondary containment plus the production volume of the well with the highest output at the facility.

(1) For facilities with production wells producing by pumping, if the rate of the well with the highest output is known and the number of days the facility is unattended can be predicted, then the production volume is equal to the pumping rate of the well multiplied by the greatest number of days the facility is unattended.

(2) If the pumping rate of the well with the highest output is estimated or the maximum number of days the facility is unattended is estimated, then the production volume is determined from the pumping rate of the well multiplied by 1.5 times the greatest number of days that the facility has been or is expected to be unattended.

(3) Attachment D–1 to this appendix provides methods for calculating the production volumes for exploratory wells and production wells producing under pressure.

(A) FINAL WORST CASE VOLUME: _____ GAL

(B) Do not proceed further.

[2] Secondary containment is described in 40 CFR part 112, subparts A through C. Acceptable methods and structures for containment are also given in 40 CFR 112.7(c)(1).

[3] All complexes that are jointly regulated by EPA and the USCG must also calculate the worst case discharge planning volume for the transportation-related portions of the facility and plan for whichever volume is greater.

B.2.2 If the answer is no, calculate the total aboveground oil storage capacity of tanks without adequate secondary containment. If *all* aboveground oil storage tanks or groups of aboveground oil storage tanks at the facility have adequate secondary containment, ENTER ''0'' (zero).

_____ GAL

B.2.3 Calculate the capacity of the largest single aboveground oil storage tank within an adequate secondary containment area or the combined capacity of a group of aboveground oil storage tanks permanently manifolded together, whichever is greater, plus the production volume of the well with the highest output, PLUS THE VOLUME FROM QUESTION B.2.2. Attachment D–1 provides methods for calculating the production volumes for exploratory wells and production wells producing under pressure.

(1) FINAL WORST CASE VOLUME:[4]

_____ GAL

(2) Do not proceed further.

ATTACHMENTS TO APPENDIX D

ATTACHMENT D–I—METHODS TO CALCULATE PRODUCTION VOLUMES FOR PRODUCTION FACILITIES WITH EXPLORATORY WELLS OR PRODUCTION WELLS PRODUCING UNDER PRESSURE

1.0 Introduction

The owner or operator of a production facility with exploratory wells or production wells producing under pressure shall compare the well rate of the highest output well (rate of well), in barrels per day, to the ability of response equipment and personnel to recover the volume of oil that could be discharged (rate of recovery), in barrels per day. The result of this comparison will determine the method used to calculate the production volume for the production facility. This production volume is to be used to calculate the worst case discharge planning volume in part B of this appendix.

2.0 Description of Methods

2.1 Method A

If the well rate would overwhelm the response efforts (i.e., rate of well/rate of recovery ≥1), then the production volume would be the 30-day forecasted well rate for a well 10,000 feet deep or less, or the 45-day forecasted well rate for a well deeper than 10,000 feet.

(1) For wells 10,000 feet deep or less:

Production volume=30 days × rate of well.

(2) For wells deeper than 10,000 feet:

Production volume=45 days × rate of well.

2.2 Method B

2.2.1 If the rate of recovery would be greater than the well rate (i.e., rate of well/rate of recovery <1), then the production volume would equal the sum of two terms:

Production volume=discharge volume$_1$ + discharge volume$_2$

2.2.2 The first term represents the volume of the oil discharged from the well between the time of the blowout and the time the response resources are on scene and recovering oil (discharge volume$_1$).

Discharge volume$_1$=(days unattended+days to respond) × (rate of well)

2.2.3 The second term represents the volume of oil discharged from the well after the response resources begin operating until the discharge is stopped, adjusted for the recovery rate of the response resources (discharge volume $_2$).

(1) For wells 10,000 feet deep or less:

Discharge volume$_2$=[30 days−(days unattended + days to respond)] × (rate of well) × (rate of well/rate of recovery)

(2) For wells deeper than 10,000 feet:

Discharge volume$_2$=[45 days−(days unattended + days to respond)] × (rate of well) × (rate of well/rate of recovery)

3.0 Example

3.1 A facility consists of two production wells producing under pressure, which are both less than 10,000 feet deep. The well rate of well A is 5 barrels per day, and the well rate of well B is 10 barrels per day. The facility is unattended for a maximum of 7 days. The facility operator estimates that it will take 2 days to have response equipment and personnel on scene and responding to a blowout, and that the projected rate of recovery will be 20 barrels per day.

(1) First, the facility operator determines that the highest output well is well B. The facility operator calculates the ratio of the rate of well to the rate of recovery:

10 barrels per day/20 barrels per day=0.5 Because the ratio is less than one, the facility operator will use Method B to calculate the production volume.

(2) The first term of the equation is:

Discharge volume$_1$=(7 days + 2 days) × (10 barrels per day)=90 barrels

(3) The second term of the equation is:

Discharge volume $_2$=[30 days—(7 days + 2 days)] × (10 barrels per day) × (0.5)=105 barrels

(4) Therefore, the production volume is:

Production volume=90 barrels + 105 barrels=195 barrels

[4] All complexes that are jointly regulated by EPA and the USCG must also calculate the worst case discharge planning volume for the transportation-related portions of the facility and plan for whichever volume is greater.

3.2 If the recovery rate was 5 barrels per day, the ratio of rate of well to rate of recovery would be 2, so the facility operator would use Method A. The production volume would have been:

30 days × 10 barrels per day=300 barrels

[59 FR 34110, July 1, 1994; 59 FR 49006, Sept. 26, 1994, as amended at 65 FR 40800, June 30, 2000; 67 FR 47152, July 17, 2002]

APPENDIX E TO PART 112—DETERMINATION AND EVALUATION OF REQUIRED RESPONSE RESOURCES FOR FACILITY RESPONSE PLANS

1.0 Purpose and Definitions

1.1 The purpose of this appendix is to describe the procedures to identify response resources to meet the requirements of §112.20. To identify response resources to meet the facility response plan requirements of 40 CFR 112.20(h), owners or operators shall follow this appendix or, where not appropriate, shall clearly demonstrate in the response plan why use of this appendix is not appropriate at the facility and make comparable arrangements for response resources.

1.2 Definitions.

1.2.1 *Animal fat* means a non-petroleum oil, fat, or grease of animal, fish, or marine mammal origin. Animal fats are further classified based on specific gravity as follows:

(1) Group A—specific gravity less than 0.8.

(2) Group B—specific gravity equal to or greater than 0.8 and less than 1.0.

(3) Group C—specific gravity equal to or greater than 1.0.

1.2.2 *Nearshore* is an operating area defined as extending seaward 12 miles from the boundary lines defined in 46 CFR part 7, except in the Gulf of Mexico. In the Gulf of Mexico, it means the area extending 12 miles from the line of demarcation (COLREG lines) defined in 49 CFR 80.740 and 80.850.

1.2.3 *Non-persistent oils* or *Group 1 oils* include:

(1) A petroleum-based oil that, at the time of shipment, consists of hydrocarbon fractions:

(A) At least 50 percent of which by volume, distill at a temperature of 340 degrees C (645 degrees F); and

(B) At least 95 percent of which by volume, distill at a temperature of 370 degrees C (700 degrees F); and

(2) A non-petroleum oil, other than an animal fat or vegetable oil, with a specific gravity less than 0.8.

1.2.4 *Non-petroleum oil* means oil of any kind that is not petroleum-based, including but not limited to: fats, oils, and greases of animal, fish, or marine mammal origin; and vegetable oils, including oils from seeds, nuts, fruits, and kernels.

1.2.5 *Ocean* means the nearshore area.

1.2.6 *Operating area* means Rivers and Canals, Inland, Nearshore, and Great Lakes geographic location(s) in which a facility is handling, storing, or transporting oil.

1.2.7 *Operating environment* means Rivers and Canals, Inland, Great Lakes, or Ocean. These terms are used to define the conditions in which response equipment is designed to function.

1.2.8 *Persistent oils* include:

(1) A petroleum-based oil that does not meet the distillation criteria for a non-persistent oil. Persistent oils are further classified based on specific gravity as follows:

(A) Group 2—specific gravity less than 0.85;

(B) Group 3—specific gravity equal to or greater than 0.85 and less than 0.95;

(C) Group 4—specific gravity equal to or greater than 0.95 and less than 1.0; or

(D) Group 5—specific gravity equal to or greater than 1.0.

(2) A non-petroleum oil, other than an animal fat or vegetable oil, with a specific gravity of 0.8 or greater. These oils are further classified based on specific gravity as follows:

(A) Group 2—specific gravity equal to or greater than 0.8 and less than 0.85;

(B) Group 3—specific gravity equal to or greater than 0.85 and less than 0.95;

(C) Group 4—specific gravity equal to or greater than 0.95 and less than 1.0; or

(D) Group 5—specific gravity equal to or greater than 1.0.

1.2.9 *Vegetable oil* means a non-petroleum oil or fat of vegetable origin, including but not limited to oils and fats derived from plant seeds, nuts, fruits, and kernels. Vegetable oils are further classified based on specific gravity as follows:

(1) Group A—specific gravity less than 0.8.

(2) Group B—specific gravity equal to or greater than 0.8 and less than 1.0.

(3) Group C—specific gravity equal to or greater than 1.0.

1.2.10 Other definitions are included in §112.2, section 1.1 of Appendix C, and section 3.0 of Appendix F.

2.0 Equipment Operability and Readiness

2.1 All equipment identified in a response plan must be designed to operate in the conditions expected in the facility's geographic area (i.e., operating environment). These conditions vary widely based on location and season. Therefore, it is difficult to identify a single stockpile of response equipment that will function effectively in each geographic location (i.e., operating area).

2.2 Facilities handling, storing, or transporting oil in more than one operating environment as indicated in Table 1 of this appendix must identify equipment capable of successfully functioning in each operating environment.

2.3 When identifying equipment for the response plan (based on the use of this appendix), a facility owner or operator must consider the inherent limitations of the operability of equipment components and response systems. The criteria in Table 1 of this appendix shall be used to evaluate the operability in a given environment. These criteria reflect the general conditions in certain operating environments.

2.3.1 The Regional Administrator may require documentation that the boom identified in a facility response plan meets the criteria in Table 1 of this appendix. Absent acceptable documentation, the Regional Administrator may require that the boom be tested to demonstrate that it meets the criteria in Table 1 of this appendix. Testing must be in accordance with ASTM F 715, ASTM F 989, or other tests approved by EPA as deemed appropriate (see Appendix E to this part, section 13, for general availability of documents).

2.4 Table 1 of this appendix lists criteria for oil recovery devices and boom. All other equipment necessary to sustain or support response operations in an operating environment must be designed to function in the same conditions. For example, boats that deploy or support skimmers or boom must be capable of being safely operated in the significant wave heights listed for the applicable operating environment.

2.5 A facility owner or operator shall refer to the applicable Area Contingency Plan (ACP), where available, to determine if ice, debris, and weather-related visibility are significant factors to evaluate the operability of equipment. The ACP may also identify the average temperature ranges expected in the facility's operating area. All equipment identified in a response plan must be designed to operate within those conditions or ranges.

2.6 This appendix provides information on response resource mobilization and response times. The distance of the facility from the storage location of the response resources must be used to determine whether the resources can arrive on-scene within the stated time. A facility owner or operator shall include the time for notification, mobilization, and travel of resources identified to meet the medium and Tier 1 worst case discharge requirements identified in sections 4.3 and 9.3 of this appendix (for medium discharges) and section 5.3 of this appendix (for worst case discharges). The facility owner or operator must plan for notification and mobilization of Tier 2 and 3 response resources as necessary to meet the requirements for arrival on-scene in accordance with section 5.3 of this appendix. An on-water speed of 5 knots and a land speed of 35 miles per hour is assumed, unless the facility owner or operator can demonstrate otherwise.

2.7 In identifying equipment, the facility owner or operator shall list the storage location, quantity, and manufacturer's make and model. For oil recovery devices, the effective daily recovery capacity, as determined using section 6 of this appendix, must be included. For boom, the overall boom height (draft and freeboard) shall be included. A facility owner or operator is responsible for ensuring that the identified boom has compatible connectors.

3.0 Determining Response Resources Required for Small Discharges—Petroleum Oils and Non-Petroleum Oils Other Than Animal Fats and Vegetable Oils

3.1 A facility owner or operator shall identify sufficient response resources available, by contract or other approved means as described in §112.2, to respond to a small discharge. A small discharge is defined as any discharge volume less than or equal to 2,100 gallons, but not to exceed the calculated worst case discharge. The equipment must be designed to function in the operating environment at the point of expected use.

3.2 Complexes that are regulated by EPA and the United States Coast Guard (USCG) must also consider planning quantities for the transportation-related transfer portion of the facility.

3.2.1 *Petroleum oils.* The USCG planning level that corresponds to EPA's ''small discharge'' is termed ''the average most probable discharge.'' A USCG rule found at 33 CFR 154.1020 defines ''the average most probable discharge'' as the lesser of 50 barrels (2,100 gallons) or 1 percent of the volume of the worst case discharge. Owners or operators of complexes that handle, store, or transport petroleum oils must compare oil discharge volumes for a small discharge and an average most probable discharge, and plan for whichever quantity is greater.

3.2.2 *Non-petroleum oils other than animal fats and vegetable oils.* Owners or operators of complexes that handle, store, or transport non-petroleum oils other than animal fats and vegetable oils must plan for oil discharge volumes for a small discharge. There is no USCG planning level that directly corresponds to EPA's ''small discharge.'' However, the USCG (at 33 CFR 154.545) has requirements to identify equipment to contain oil resulting from an operational discharge.

3.3 The response resources shall, as appropriate, include:

3.3.1 One thousand feet of containment boom (or, for complexes with marine transfer components, 1,000 feet of containment boom or two times the length of the largest vessel that regularly conducts oil transfers to or from the facility, whichever is greater), and a means of deploying it within 1 hour of the discovery of a discharge;

3.3.2 Oil recovery devices with an effective daily recovery capacityequal to the amount of oil discharged in a small discharge or greater which is available at the

facility within 2 hours of the detection of an oil discharge; and

3.3.3 Oil storage capacity for recovered oily material indicated in section 12.2 of this appendix.

4.0 Determining Response Resources Required for Medium Discharges—Petroleum Oils and Non-Petroleum Oils Other Than Animal Fats and Vegetable Oils

4.1 A facility owner or operator shall identify sufficient response resources available, by contract or other approved means as described in §112.2, to respond to a medium discharge of oil for that facility. This will require response resources capable of containing and collecting up to 36,000 gallons of oil or 10 percent of the worst case discharge, whichever is less. All equipment identified must be designed to operate in the applicable operating environment specified in Table 1 of this appendix.

4.2 Complexes that are regulated by EPA and the USCG must also consider planning quantities for the transportation-related transfer portion of the facility.

4.2.1 *Petroleum oils.* The USCG planning level that corresponds to EPA's ''medium discharge'' is termed ''the maximum most probable discharge.'' The USCG rule found at 33 CFR part 154 defines ''the maximum most probable discharge'' as a discharge of 1,200 barrels (50,400 gallons) or 10 percent of the worst case discharge, whichever is less. Owners or operators of complexes that handle, store, or transport petroleum oils must compare calculated discharge volumes for a medium discharge and a maximum most probable discharge, and plan for whichever quantity is greater.

4.2.2 *Non-petroleum oils other than animal fats and vegetable oils.* Owners or operators of complexes that handle, store, or transport non-petroleum oils other than animal fats and vegetable oils must plan for oil discharge volumes for a medium discharge. For non-petroleum oils, there is no USCG planning level that directly corresponds to EPA's ''medium discharge.''

4.3 Oil recovery devices identified to meet the applicable medium discharge volume planning criteria must be located such that they are capable of arriving on-scene within 6 hours in higher volume port areas and the Great Lakes and within 12 hours in all other areas. Higher volume port areas and Great Lakes areas are defined in section 1.1 of Appendix C to this part.

4.4 Because rapid control, containment, and removal of oil are critical to reduce discharge impact, the owner or operator must determine response resources using an effective daily recovery capacity for oil recovery devices equal to 50 percent of the planning volume applicable for the facility as determined in section 4.1 of this appendix. The effective daily recovery capacity for oil recovery devices identified in the plan must be determined using the criteria in section 6 of this appendix.

4.5 In addition to oil recovery capacity, the plan shall, as appropriate, identify sufficient quantity of containment boom available, by contract or other approved means as described in §112.2, to arrive within the required response times for oil collection and containment and for protection of fish and wildlife and sensitive environments. For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments'' (see Appendix E to this part, section 13, for availability) and the applicable ACP. Although 40 CFR part 112 does not set required quantities of boom for oil collection and containment, the response plan shall identify and ensure, by contract or other approved means as described in §112.2, the availability of the quantity of boom identified in the plan for this purpose.

4.6 The plan must indicate the availability of temporary storage capacity to meet section 12.2 of this appendix. If available storage capacity is insufficient to meet this level, then the effective daily recovery capacity must be derated (downgraded) to the limits of the available storage capacity.

4.7 The following is an example of a medium discharge volume planning calculation for equipment identification in a higher volume port area: The facility's largest aboveground storage tank volume is 840,000 gallons. Ten percent of this capacity is 84,000 gallons. Because 10 percent of the facility's largest tank, or 84,000 gallons, is greater than 36,000 gallons, 36,000 gallons is used as the planning volume. The effective daily recovery capacity is 50 percent of the planning volume, or 18,000 gallons per day. The ability of oil recovery devices to meet this capacity must be calculated using the procedures in section 6 of this appendix. Temporary storage capacity available on-scene must equal twice the daily recovery capacity as indicated in section 12.2 of this appendix, or 36,000 gallons per day. This is the information the facility owner or operator must use to identify and ensure the availability of the required response resources, by contract or other approved means as described in §112.2. The facility owner shall also identify how much boom is available for use.

5.0 Determining Response Resources Required for the Worst Case Discharge to the Maximum Extent Practicable

5.1 A facility owner or operator shall identify and ensure the availability of, by

contract or other approved means as described in §112.2, sufficient response resources to respond to the worst case discharge of oil to the maximum extent practicable. Sections 7 and 10 of this appendix describe the method to determine the necessary response resources. Worksheets are provided as Attachments E–1 and E–2 at the end of this appendix to simplify the procedures involved in calculating the planning volume for response resources for the worst case discharge.

5.1 A facility owner or operator shall identify and ensure the availability of, by contract or other approved means as described in §112.2, sufficient response resources to respond to the worst case discharge of oil to the maximum extent practicable. Sections 7 and 10 of this appendix describe the method to determine the necessary response resources. Worksheets are provided as Attachments E–1 and E–2 at the end of this appendix to simplify the procedures involved in calculating the planning volume for response resources for the worst case discharge.

5.2 Complexes that are regulated by EPA and the USCG must also consider planning for the worst case discharge at the transportation-related portion of the facility. The USCG requires that transportation-related facility owners or operators use a different calculation for the worst case discharge in the revisions to 33 CFR part 154. Owners or operators of complex facilities that are regulated by EPA and the USCG must compare both calculations of worst case discharge derived by EPA and the USCG and plan for whichever volume is greater.

5.3 Oil discharge response resources identified in the response plan and available, by contract or other approved means as described in §112.2, to meet the applicable worst case discharge planning volume must be located such that they are capable of arriving at the scene of a discharge within the times specified for the applicable response tier listed as follows

	Tier 1 (in hours)	Tier 2 (in hours)	Tier 3 (in hours)
Higher volume port areas	6	30	54
Great Lakes	12	36	60
All other river and canal, inland, and nearshore areas	12	36	60

The three levels of response tiers apply to the amount of time in which facility owners or operators must plan for response resources to arrive at the scene of a discharge to respond to the worst case discharge planning volume. For example, at a worst case discharge in an inland area, the first tier of response resources (*i.e.,* that amount of on-water and shoreline cleanup capacity necessary to respond to the fraction of the worst case discharge as indicated through the series of steps described in sections 7.2 and 7.3 or sections 10.2 and 10.3 of this appendix) would arrive at the scene of the discharge within 12 hours; the second tier of response resources would arrive within 36 hours; and the third tier of response resources would arrive within 60 hours.

5.4 The effective daily recovery capacity for oil recovery devices identified in the response plan must be determined using the criteria in section 6 of this appendix. A facility owner or operator shall identify the storage locations of all response resources used for each tier. The owner or operator of a facility whose required daily recovery capacity exceeds the applicable contracting caps in Table 5 of this appendix shall, as appropriate, identify sources of additional equipment, their location, and the arrangements made to obtain this equipment during a response. The owner or operator of a facility whose calculated planning volume exceeds the applicable contracting caps in Table 5 of this appendix shall, as appropriate, identify sources of additional equipment equal to twice the cap listed in Tier 3 or the amount necessary to reach the calculated planning volume, whichever is lower. The resources identified above the cap shall be capable of arriving on-scene not later than the Tier 3 response times in section 5.3 of this appendix. No contract is required. While general listings of available response equipment may be used to identify additional sources (i.e., ''public'' resources vs. ''private'' resources), the response plan shall identify the specific sources, locations, and quantities of equipment that a facility owner or operator has considered in his or her planning. When listing USCG-classified oil spill removal organization(s) that have sufficient removal capacity to recover the volume above the response capacity cap for the specific facility, as specified in Table 5 of this appendix, it is not necessary to list specific quantities of equipment.

5.5 A facility owner or operator shall identify the availability of temporary storage capacity to meet section 12.2 of this appendix. If available storage capacity is insufficient, then the effective daily recovery capacity must be derated (downgraded) to the limits of the available storage capacity.

5.6 When selecting response resources necessary to meet the response plan requirements, the facility owner or operator shall, as appropriate, ensure that a portion of

those resources is capable of being used in close-to-shore response activities in shallow water. For any EPA-regulated facility that is required to plan for response in shallow water, at least 20 percent of the on-water response equipment identified for the applicable operating area shall, as appropriate, be capable of operating in water of 6 feet or less depth.

5.7 In addition to oil spill recovery devices, a facility owner or operator shall identify sufficient quantities of boom that are available, by contract or other approved means as described in §112.2, to arrive on-scene within the specified response times for oil containment and collection. The specific quantity of boom required for collection and containment will depend on the facility-specific information and response strategies employed. A facility owner or operator shall, as appropriate, also identify sufficient quantities of oil containment boom to protect fish and wildlife and sensitive environments. For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments'' (see Appendix E to this part, section 13, for availability), and the applicable ACP. Refer to this guidance document for the number of days and geographic areas (*i.e.*, operating environments) specified in Table 2 and Table 6 of this appendix.

5.8 A facility owner or operator shall also identify, by contract or other approved means as described in §112.2, the availability of an oil spill removal organization(s) (as described in §112.2) capable of responding to a shoreline cleanup operation involving the calculated volume of oil and emulsified oil that might impact the affected shoreline. The volume of oil that shall, as appropriate, be planned for is calculated through the application of factors contained in Tables 2, 3, 6, and 7 of this appendix. The volume calculated from these tables is intended to assist the facility owner or operator to identify an oil spill removal organization with sufficient resources and expertise.

6.0 Determining Effective Daily Recovery Capacity for Oil Recovery Devices

6.1 Oil recovery devices identified by a facility owner or operator must be identified by the manufacturer, model, and effective daily recovery capacity. These capacities must be used to determine whether there is sufficient capacity to meet the applicable planning criteria for a small discharge, a medium discharge, and a worst case discharge to the maximum extent practicable.

6.2 To determine the effective daily recovery capacity of oil recovery devices, the formula listed in section 6.2.1 of this appendix shall be used. This formula considers potential limitations due to available daylight, weather, sea state, and percentage of emulsified oil in the recovered material. The RA may assign a lower efficiency factor to equipment listed in a response plan if it is determined that such a reduction is warranted.

6.2.1 The following formula shall be used to calculate the effective daily recovery capacity:

$R = T \times 24 \text{ hours} \times E$

where:

R—Effective daily recovery capacity;
T—Throughput rate in barrels per hour (nameplate capacity); and
E—20 percent efficiency factor (or lower factor as determined by the Regional Administrator).

6.2.2 For those devices in which the pump limits the throughput of liquid, throughput rate shall be calculated using the pump capacity.

6.2.3 For belt or moptype devices, the throughput rate shall be calculated using the speed of the belt or mop through the device, assumed thickness of oil adhering to or collected by the device, and surface area of the belt or mop. For purposes of this calculation, the assumed thickness of oil will be ¼ inch.

6.2.4 Facility owners or operators that include oil recovery devices whose throughput is not measurable using a pump capacity or belt/mop speed may provide information to support an alternative method of calculation. This information must be submitted following the procedures in section 6.3.2 of this appendix.

6.3 As an alternative to section 6.2 of this appendix, a facility owner or operator may submit adequate evidence that a different effective daily recovery capacity should be applied for a specific oil recovery device. Adequate evidence is actual verified performance data in discharge conditions or tests using American Society of Testing and Materials (ASTM) Standard F 631–99, F 808–83 (1999), or an equivalent test approved by EPA as deemed appropriate (see Appendix E to this part, section 13, for general availability of documents).

6.3.1 The following formula must be used to calculate the effective daily recovery capacity under this alternative:

$R = D \times U$

where:

R—Effective daily recovery capacity;
D—Average Oil Recovery Rate in barrels per hour (Item 26 in F 808–83; Item 13.2.16 in F 631–99; or actual performance data); and
U—Hours per day that equipment can operate under discharge conditions. Ten hours per day must be used unless a facility owner or operator can demonstrate that the recovery operation can be sustained for longer periods.

6.3.2 A facility owner or operator submitting a response plan shall provide data that supports the effective daily recovery capacities for the oil recovery devices listed. The following is an example of these calculations:

(1) A weir skimmer identified in a response plan has a manufacturer's rated throughput at the pump of 267 gallons per minute (gpm).

267 gpm=381 barrels per hour (bph)
R=381 bph×24 hr/day×0.2=1,829 barrels per day

(2) After testing using ASTM procedures, the skimmer's oil recovery rate is determined to be 220 gpm. The facility owner or operator identifies sufficient resources available to support operations for 12 hours per day.

220 gpm=314 bph
R=314 bph×12 hr/day=3,768 barrels per day

(3) The facility owner or operator will be able to use the higher capacity if sufficient temporary oil storage capacity is available. Determination of alternative efficiency factors under section 6.2 of this appendix or the acceptability of an alternative effective daily recovery capacity under section 6.3 of this appendix will be made by the Regional Administrator as deemed appropriate.

7.0 Calculating Planning Volumes for a Worst Case Discharge—Petroleum Oils and Non-Petroleum Oils Other Than Animal Fats and Vegetable Oils

7.1 A facility owner or operator shall plan for a response to the facility's worst case discharge. The planning for on-water oil recovery must take into account a loss of some oil to the environment due to evaporative and natural dissipation, potential increases in volume due to emulsification, and the potential for deposition of oil on the shoreline. The procedures for non-petroleum oils other than animal fats and vegetable oils are discussed in section 7.7 of this appendix.

7.2 The following procedures must be used by a facility owner or operator in determining the required on-water oil recovery capacity:

7.2.1 The following must be determined: the worst case discharge volume of oil in the facility; the appropriate group(s) for the types of oil handled, stored, or transported at the facility [persistent (Groups 2, 3, 4, 5) or non-persistent (Group 1)]; and the facility's specific operating area. See sections 1.2.3 and 1.2.8 of this appendix for the definitions of non-persistent and persistent oils, respectively. Facilities that handle, store, or transport oil from different oil groups must calculate each group separately, unless the oil group constitutes 10 percent or less by volume of the facility's total oil storage capacity. This information is to be used with Table 2 of this appendix to determine the percentages of the total volume to be used for removal capacity planning. Table 2 of this appendix divides the volume into three categories: oil lost to the environment; oil deposited on the shoreline; and oil available for on-water recovery.

7.2.2 The on-water oil recovery volume shall, as appropriate, be adjusted using the appropriate emulsification factor found in Table 3 of this appendix. Facilities that handle, store, or transport oil from different petroleum groups must compare the on-water recovery volume for each oil group (unless the oil group constitutes 10 percent or less by volume of the facility's total storage capacity) and use the calculation that results in the largest on-water oil recovery volume to plan for the amount of response resources for a worst case discharge.

7.2.3 The adjusted volume is multiplied by the on-water oil recovery resource mobilization factor found in Table 4 of this appendix from the appropriate operating area and response tier to determine the total on-water oil recovery capacity in barrels per day that must be identified or contracted to arrive on-scene within the applicable time for each response tier. Three tiers are specified. For higher volume port areas, the contracted tiers of resources must be located such that they are capable of arriving on-scene within 6 hours for Tier 1, 30 hours for Tier 2, and 54 hours for Tier 3 of the discovery of an oil discharge. For all other rivers and canals, inland, nearshore areas, and the Great Lakes, these tiers are 12, 36, and 60 hours.

7.2.4 The resulting on-water oil recovery capacity in barrels per day for each tier is used to identify response resources necessary to sustain operations in the applicable operating area. The equipment shall be capable of sustaining operations for the time period specified in Table 2 of this appendix. The facility owner or operator shall identify and ensure the availability, by contract or other approved means as described in §112.2, of sufficient oil spill recovery devices to provide the effective daily oil recovery capacity required. If the required capacity exceeds the applicable cap specified in Table 5 of this appendix, then a facility owner or operator shall ensure, by contract or other approved means as described in §112.2, only for the quantity of resources required to meet the cap, but shall identify sources of additional resources as indicated in section 5.4 of this appendix. The owner or operator of a facility whose planning volume exceeded the cap in 1993 must make arrangements to identify and ensure the availability, by contract or other approved means as described in §112.2, for additional capacity to be under contract by 1998 or 2003, as appropriate. For a facility that handles multiple groups of oil, the required effective daily recovery capacity for each oil group is calculated before applying the cap. The oil group calculation resulting in the largest on-water recovery volume

must be used to plan for the amount of response resources for a worst case discharge, unless the oil group comprises 10 percent or less by volume of the facility's total oil storage capacity.

7.3 The procedures discussed in sections 7.3.1–7.3.3 of this appendix must be used to calculate the planning volume for identifying shoreline cleanup capacity (for Group 1 through Group 4 oils).

7.3.1 The following must be determined: the worst case discharge volume of oil for the facility; the appropriate group(s) for the types of oil handled, stored, or transported at the facility [persistent (Groups 2, 3, or 4) or non-persistent (Group 1)]; and the geographic area(s) in which the facility operates (*i.e.*, operating areas). For a facility handling, storing, or transporting oil from different groups, each group must be calculated separately. Using this information, Table 2 of this appendix must be used to determine the percentages of the total volume to be used for shoreline cleanup resource planning.

7.3.2 The shoreline cleanup planning volume must be adjusted to reflect an emulsification factor using the same procedure as described in section 7.2.2 of this appendix.

7.3.3 The resulting volume shall be used to identify an oil spill removal organization with the appropriate shoreline cleanup capability.

7.4 A response plan must identify response resources with fire fighting capability. The owner or operator of a facility that handles, stores, or transports Group 1 through Group 4 oils that does not have adequate fire fighting resources located at the facility or that cannot rely on sufficient local fire fighting resources must identify adequate fire fighting resources. The facility owner or operator shall ensure, by contract or other approved means as described in §112.2, the availability of these resources. The response plan must also identify an individual located at the facility to work with the fire department for Group 1 through Group 4 oil fires. This individual shall also verify that sufficient well-trained fire fighting resources are available within a reasonable response time to a worst case scenario. The individual may be the qualified individual identified in the response plan or another appropriate individual located at the facility.

7.5 The following is an example of the procedure described above in sections 7.2 and 7.3 of this appendix: A facility with a 270,000 barrel (11.3 million gallons) capacity for #6 oil (specific gravity 0.96) is located in a higher volume port area. The facility is on a peninsula and has docks on both the ocean and bay sides. The facility has four aboveground oil storage tanks with a combined total capacity of 80,000 barrels (3.36 million gallons) and no secondary containment. The remaining facility tanks are inside secondary containment structures. The largest aboveground oil storage tank (90,000 barrels or 3.78 million gallons) has its own secondary containment. Two 50,000 barrel (2.1 million gallon) tanks (that are not connected by a manifold) are within a common secondary containment tank area, which is capable of holding 100,000 barrels (4.2 million gallons) plus sufficient freeboard.

7.5.1 The worst case discharge for the facility is calculated by adding the capacity of all aboveground oil storage tanks without secondary containment (80,000 barrels) plus the capacity of the largest aboveground oil storage tank inside secondary containment. The resulting worst case discharge volume is 170,000 barrels or 7.14 million gallons.

7.5.2 Because the requirements for Tiers 1, 2, and 3 for inland and nearshore exceed the caps identified in Table 5 of this appendix, the facility owner will contract for a response to 10,000 barrels per day (bpd) for Tier 1, 20,000 bpd for Tier 2, and 40,000 bpd for Tier 3. Resources for the remaining 7,850 bpd for Tier 1, 9,750 bpd for Tier 2, and 7,600 bpd for Tier 3 shall be identified but need not be contracted for in advance. The facility owner or operator shall, as appropriate, also identify or contract for quantities of boom identified in their response plan for the protection of fish and wildlife and sensitive environments within the area potentially impacted by a worst case discharge from the facility. For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments,'' (see Appendix E to this part, section 13, for availability) and the applicable ACP. Attachment C–III to Appendix C provides a method for calculating a planning distance to fish and wildlife and sensitive environments and public drinking water intakes that may be impacted in the event of a worst case discharge.

7.6 The procedures discussed in sections 7.6.1–7.6.3 of this appendix must be used to determine appropriate response resources for facilities with Group 5 oils.

7.6.1 The owner or operator of a facility that handles, stores, or transports Group 5 oils shall, as appropriate, identify the response resources available by contract or other approved means, as described in §112.2. The equipment identified in a response plan shall, as appropriate, include:

(1) Sonar, sampling equipment, or other methods for locating the oil on the bottom or suspended in the water column;

(2) Containment boom, sorbent boom, silt curtains, or other methods for containing the oil that may remain floating on the surface or to reduce spreading on the bottom;

(3) Dredges, pumps, or other equipment necessary to recover oil from the bottom and shoreline;

(4) Equipment necessary to assess the impact of such discharges; and

(5) Other appropriate equipment necessary to respond to a discharge involving the type of oil handled, stored,, or transported.

7.6.2 Response resources identified in a response plan for a facility that handles, stores, or transports Group 5 oils under section 7.6.1 of this appendix shall be capable of being deployed (on site) within 24 hours of discovery of a discharge to the area where the facility is operating.

7.6.3 A response plan must identify response resources with fire fighting capability. The owner or operator of a facility that handles, stores, or transports Group 5 oils that does not have adequate fire fighting resources located at the facility or that cannot rely on sufficient local fire fighting resources must identify adequate fire fighting resources. The facility owner or operator shall ensure, by contract or other approved means as described in §112.2, the availability of these resources. The response plan shall also identify an individual located at the facility to work with the fire department for Group 5 oil fires. This individual shall also verify that sufficient well-trained fire fighting resources are available within a reasonable response time to respond to a worst case discharge. The individual may be the qualified individual identified in the response plan or another appropriate individual located at the facility.

7.7 *Non-petroleum oils other than animal fats and vegetable oils.* The procedures described in sections 7.7.1 through 7.7.5 of this appendix must be used to determine appropriate response plan development and evaluation criteria for facilities that handle, store, or transport non-petroleum oils other than animal fats and vegetable oils. Refer to section 11 of this appendix for information on the limitations on the use of chemical agents for inland and nearshore areas.

7.7.1 An owner or operator of a facility that handles, stores, or transports non-petroleum oils other than animal fats and vegetable oils must provide information in his or her plan that identifies:

(1) Procedures and strategies for responding to a worst case discharge to the maximum extent practicable; and

(2) Sources of the equipment and supplies necessary to locate, recover, and mitigate such a discharge.

7.7.2 An owner or operator of a facility that handles, stores, or transports non-petroleum oils other than animal fats and vegetable oils must ensure that any equipment identified in a response plan is capable of operating in the conditions expected in the geographic area(s) (*i.e.,* operating environments) in which the facility operates using the criteria in Table 1 of this appendix. When evaluating the operability of equipment, the facility owner or operator must consider limitations that are identified in the appropriate ACPs, including:

(1) Ice conditions;

(2) Debris;

(3) Temperature ranges; and

(4) Weather-related visibility.

7.7.3 The owner or operator of a facility that handles, stores, or transports non-petroleum oils other than animal fats and vegetable oils must identify the response resources that are available by contract or other approved means, as described in §112.2. The equipment described in the response plan shall, as appropriate, include:

(1) Containment boom, sorbent boom, or other methods for containing oil floating on the surface or to protect shorelines from impact;

(2) Oil recovery devices appropriate for the type of non-petroleum oil carried; and

(3) Other appropriate equipment necessary to respond to a discharge involving the type of oil carried.

7.7.4 Response resources identified in a response plan according to section 7.7.3 of this appendix must be capable of commencing an effective on-scene response within the applicable tier response times in section 5.3 of this appendix.

7.7.5 A response plan must identify response resources with fire fighting capability. The owner or operator of a facility that handles, stores, or transports non-petroleum oils other than animal fats and vegetable oils that does not have adequate fire fighting resources located at the facility or that cannot rely on sufficient local fire fighting resources must identify adequate fire fighting resources. The owner or operator shall ensure, by contract or other approved means as described in §112.2, the availability of these resources. The response plan must also identify an individual located at the facility to work with the fire department for fires of these oils. This individual shall also verify that sufficient well-trained fire fighting resources are available within a reasonable response time to a worst case scenario. The individual may be the qualified individual identified in the response plan or another appropriate individual located at the facility.

8.0 Determining Response Resources Required for Small Discharges—Animal Fats and Vegetable Oils

8.1 A facility owner or operator shall identify sufficient response resources available, by contract or other approved means as described in §112.2, to respond to a small discharge of animal fats or vegetable oils. A small discharge is defined as any discharge volume less than or equal to 2,100 gallons, but not to exceed the calculated worst case discharge. The equipment must be designed to function in the operating environment at the point of expected use.

8.2 Complexes that are regulated by EPA and the USCG must also consider planning quantities for the marine transportation-related portion of the facility.

8.2.1 The USCG planning level that corresponds to EPA's ''small discharge'' is termed ''the average most probable discharge.'' A USCG rule found at 33 CFR 154.1020 defines ''the average most probable discharge'' as the lesser of 50 barrels (2,100 gallons) or 1 percent of the volume of the worst case discharge. Owners or operators of complexes that handle, store, or transport animal fats and vegetable oils must compare oil discharge volumes for a small discharge and an average most probable discharge, and plan for whichever quantity is greater.

8.3 The response resources shall, as appropriate, include:

8.3.1 One thousand feet of containment boom (or, for complexes with marine transfer components, 1,000 feet of containment boom or two times the length of the largest vessel that regularly conducts oil transfers to or from the facility, whichever is greater), and a means of deploying it within 1 hour of the discovery of a discharge;

8.3.2 Oil recovery devices with an effective daily recovery capacity equal to the amount of oil discharged in a small discharge or greater which is available at the facility within 2 hours of the detection of a discharge; and

8.3.3 Oil storage capacity for recovered oily material indicated in section 12.2 of this appendix.

9.0 Determining Response Resources Required for Medium Discharges—Animal Fats and Vegetable Oils

9.1 A facility owner or operator shall identify sufficient response resources available, by contract or other approved means as described in §112.2, to respond to a medium discharge of animal fats or vegetable oils for that facility. This will require response resources capable of containing and collecting up to 36,000 gallons of oil or 10 percent of the worst case discharge, whichever is less. All equipment identified must be designed to operate in the applicable operating environment specified in Table 1 of this appendix.

9.2 Complexes that are regulated by EPA and the USCG must also consider planning quantities for the transportation-related transfer portion of the facility. Owners or operators of complexes that handle, store, or transport animal fats or vegetable oils must plan for oil discharge volumes for a medium discharge. For non-petroleum oils, there is no USCG planning level that directly corresponds to EPA's ''medium discharge.'' Although the USCG does not have planning requirements for medium discharges, they do have requirements (at 33 CFR 154.545) to identify equipment to contain oil resulting from an operational discharge.

9.3 Oil recovery devices identified to meet the applicable medium discharge volume planning criteria must be located such that they are capable of arriving on-scene within 6 hours in higher volume port areas and the Great Lakes and within 12 hours in all other areas. Higher volume port areas and Great Lakes areas are defined in section 1.1 of Appendix C to this part.

9.4 Because rapid control, containment, and removal of oil are critical to reduce discharge impact, the owner or operator must determine response resources using an effective daily recovery capacity for oil recovery devices equal to 50 percent of the planning volume applicable for the facility as determined in section 9.1 of this appendix. The effective daily recovery capacity for oil recovery devices identified in the plan must be determined using the criteria in section 6 of this appendix.

9.5 In addition to oil recovery capacity, the plan shall, as appropriate, identify sufficient quantity of containment boom available, by contract or other approved means as described in §112.2, to arrive within the required response times for oil collection and containment and for protection of fish and wildlife and sensitive environments. For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments'' (59 FR 14713–22, March 29, 1994) and the applicable ACP. Although 40 CFR part 112 does not set required quantities of boom for oil collection and containment, the response plan shall identify and ensure, by contract or other approved means as described in §112.2, the availability of the quantity of boom identified in the plan for this purpose.

9.6 The plan must indicate the availability of temporary storage capacity to meet section 12.2 of this appendix. If available storage capacity is insufficient to meet this level, then the effective daily recovery capacity must be derated (downgraded) to the limits of the available storage capacity.

9.7 The following is an example of a medium discharge volume planning calculation for equipment identification in a higher volume port area:

The facility's largest aboveground storage tank volume is 840,000 gallons. Ten percent of this capacity is 84,000 gallons. Because 10 percent of the facility's largest tank, or 84,000 gallons, is greater than 36,000 gallons, 36,000 gallons is used as the planning volume. The effective daily recovery capacity is 50 percent of the planning volume, or 18,000 gallons per day. The ability of oil recovery devices to meet this capacity must be calculated using the procedures in section 6 of this appendix. Temporary storage capacity available on-scene must equal twice the

daily recovery capacity as indicated in section 12.2 of this appendix, or 36,000 gallons per day. This is the information the facility owner or operator must use to identify and ensure the availability of the required response resources, by contract or other approved means as described in §112.2. The facility owner shall also identify how much boom is available for use.

10.0 Calculating Planning Volumes for a Worst Case Discharge—Animal Fats and Vegetable Oils.

10.1 A facility owner or operator shall plan for a response to the facility's worst case discharge. The planning for on-water oil recovery must take into account a loss of some oil to the environment due to physical, chemical, and biological processes, potential increases in volume due to emulsification, and the potential for deposition of oil on the shoreline or on sediments. The response planning procedures for animal fats and vegetable oils are discussed in section 10.7 of this appendix. You may use alternate response planning procedures for animal fats and vegetable oils if those procedures result in environmental protection equivalent to that provided by the procedures in section 10.7 of this appendix.

10.2 The following procedures must be used by a facility owner or operator in determining the required on-water oil recovery capacity:

10.2.1 The following must be determined: the worst case discharge volume of oil in the facility; the appropriate group(s) for the types of oil handled, stored, or transported at the facility (Groups A, B, C); and the facility's specific operating area. See sections 1.2.1 and 1.2.9 of this appendix for the definitions of animal fats and vegetable oils and groups thereof. Facilities that handle, store, or transport oil from different oil groups must calculate each group separately, unless the oil group constitutes 10 percent or less by volume of the facility's total oil storage capacity. This information is to be used with Table 6 of this appendix to determine the percentages of the total volume to be used for removal capacity planning. Table 6 of this appendix divides the volume into three categories: oil lost to the environment; oil deposited on the shoreline; and oil available for on-water recovery.

10.2.2 The on-water oil recovery volume shall, as appropriate, be adjusted using the appropriate emulsification factor found in Table 7 of this appendix. Facilities that handle, store, or transport oil from different groups must compare the on-water recovery volume for each oil group (unless the oil group constitutes 10 percent or less by volume of the facility's total storage capacity) and use the calculation that results in the largest on-water oil recovery volume to plan for the amount of response resources for a worst case discharge.

10.2.3 The adjusted volume is multiplied by the on-water oil recovery resource mobilization factor found in Table 4 of this appendix from the appropriate operating area and response tier to determine the total on-water oil recovery capacity in barrels per day that must be identified or contracted to arrive on-scene within the applicable time for each response tier. Three tiers are specified. For higher volume port areas, the contracted tiers of resources must be located such that they are capable of arriving on-scene within 6 hours for Tier 1, 30 hours for Tier 2, and 54 hours for Tier 3 of the discovery of a discharge. For all other rivers and canals, inland, nearshore areas, and the Great Lakes, these tiers are 12, 36, and 60 hours.

10.2.4 The resulting on-water oil recovery capacity in barrels per day for each tier is used to identify response resources necessary to sustain operations in the applicable operating area. The equipment shall be capable of sustaining operations for the time period specified in Table 6 of this appendix. The facility owner or operator shall identify and ensure, by contract or other approved means as described in §112.2, the availability of sufficient oil spill recovery devices to provide the effective daily oil recovery capacity required. If the required capacity exceeds the applicable cap specified in Table 5 of this appendix, then a facility owner or operator shall ensure, by contract or other approved means as described in §112.2, only for the quantity of resources required to meet the cap, but shall identify sources of additional resources as indicated in section 5.4 of this appendix. The owner or operator of a facility whose planning volume exceeded the cap in 1998 must make arrangements to identify and ensure, by contract or other approved means as described in §112.2, the availability of additional capacity to be under contract by 2003, as appropriate. For a facility that handles multiple groups of oil, the required effective daily recovery capacity for each oil group is calculated before applying the cap. The oil group calculation resulting in the largest on-water recovery volume must be used to plan for the amount of response resources for a worst case discharge, unless the oil group comprises 10 percent or less by volume of the facility's oil storage capacity.

10.3 The procedures discussed in sections 10.3.1 through 10.3.3 of this appendix must be used to calculate the planning volume for identifying shoreline cleanup capacity (for Groups A and B oils).

10.3.1 The following must be determined: the worst case discharge volume of oil for the facility; the appropriate group(s) for the types of oil handled, stored, or transported at the facility (Groups A or B); and the geographic area(s) in which the facility operates

(i.e., operating areas). For a facility handling, storing, or transporting oil from different groups, each group must be calculated separately. Using this information, Table 6 of this appendix must be used to determine the percentages of the total volume to be used for shoreline cleanup resource planning.

10.3.2 The shoreline cleanup planning volume must be adjusted to reflect an emulsification factor using the same procedure as described in section 10.2.2 of this appendix.

10.3.3 The resulting volume shall be used to identify an oil spill removal organization with the appropriate shoreline cleanup capability.

10.4 A response plan must identify response resources with fire fighting capability appropriate for the risk of fire and explosion at the facility from the discharge or threat of discharge of oil. The owner or operator of a facility that handles, stores, or transports Group A or B oils that does not have adequate fire fighting resources located at the facility or that cannot rely on sufficient local fire fighting resources must identify adequate fire fighting resources. The facility owner or operator shall ensure, by contract or other approved means as described in §112.2, the availability of these resources. The response plan must also identify an individual to work with the fire department for Group A or B oil fires. This individual shall also verify that sufficient well-trained fire fighting resources are available within a reasonable response time to a worst case scenario. The individual may be the qualified individual identified in the response plan or another appropriate individual located at the facility.

10.5 The following is an example of the procedure described in sections 10.2 and 10.3 of this appendix. A facility with a 37.04 million gallon (881,904 barrel) capacity of several types of vegetable oils is located in the Inland Operating Area. The vegetable oil with the highest specific gravity stored at the facility is soybean oil (specific gravity 0.922, Group B vegetable oil). The facility has ten aboveground oil storage tanks with a combined total capacity of 18 million gallons (428,571 barrels) and without secondary containment. The remaining facility tanks are inside secondary containment structures. The largest aboveground oil storage tank (3 million gallons or 71,428 barrels) has its own secondary containment. Two 2.1 million gallon (50,000 barrel) tanks (that are not connected by a manifold) are within a common secondary containment tank area, which is capable of holding 4.2 million gallons (100,000 barrels) plus sufficient freeboard.

10.5.1 The worst case discharge for the facility is calculated by adding the capacity of all aboveground vegetable oil storage tanks without secondary containment (18.0 million gallons) plus the capacity of the largest aboveground storage tank inside secondary containment (3.0 million gallons). The resulting worst case discharge is 21 million gallons or 500,000 barrels.

10.5.2 With a specific worst case discharge identified, the planning volume for on-water recovery can be identified as follows:

Worst case discharge: 21 million gallons (500,000 barrels) of Group B vegetable oil

Operating Area: Inland

Planned percent recovered floating vegetable oil (from Table 6, column Nearshore/Inland/Great Lakes): Inland, Group B is 20%

Emulsion factor (from Table 7): 2.0

Planning volumes for on-water recovery: 21,000,000 gallons × 0.2 × 2.0 = 8,400,000 gallons or 200,000 barrels.

Determine required resources for on-water recovery for each of the three tiers using mobilization factors (from Table 4, column Inland/Nearshore/Great Lakes)

Inland Operating Area	Tier 1	Tier 2	Tier 3
Mobilization factor by which you multiply planning volume	.15	.25	.40
Estimated Daily Recovery Capacity (bbls)	30,000	50,000	80,000

10.5.3 Because the requirements for On-Water Recovery Resources for Tiers 1, 2, and 3 for Inland Operating Area exceed the caps identified in Table 5 of this appendix, the facility owner will contract for a response of 12,500 barrels per day (bpd) for Tier 1, 25,000 bpd for Tier 2, and 50,000 bpd for Tier 3. Resources for the remaining 17,500 bpd for Tier 1, 25,000 bpd for Tier 2, and 30,000 bpd for Tier 3 shall be identified but need not be contracted for in advance.

10.5.4 With the specific worst case discharge identified, the planning volume of onshore recovery can be identified as follows:

Worst case discharge: 21 million gallons (500,000 barrels) of Group B vegetable oil

Operating Area: Inland

Planned percent recovered floating vegetable oil from onshore (from Table 6, column Nearshore/Inland/Great Lakes): Inland, Group B is 65%

Emulsion factor (from Table 7): 2.0

Planning volumes for shoreline recovery:

21,000,000 gallons × 0.65 × 2.0 = 27,300,000 gallons or 650,000 barrels

10.5.5 The facility owner or operator shall, as appropriate, also identify or contract for quantities of boom identified in the response plan for the protection of fish and wildlife

and sensitive environments within the area potentially impacted by a worst case discharge from the facility. For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments,'' (see Appendix E to this part, section 13, for availability) and the applicable ACP. Attachment C–III to Appendix C provides a method for calculating a planning distance to fish and wildlife and sensitive environments and public drinking water intakes that may be adversely affected in the event of a worst case discharge.

10.6 The procedures discussed in sections 10.6.1 through 10.6.3 of this appendix must be used to determine appropriate response resources for facilities with Group C oils.

10.6.1 The owner or operator of a facility that handles, stores, or transports Group C oils shall, as appropriate, identify the response resources available by contract or other approved means, as described in §112.2. The equipment identified in a response plan shall, as appropriate, include:

(1) Sonar, sampling equipment, or other methods for locating the oil on the bottom or suspended in the water column;

(2) Containment boom, sorbent boom, silt curtains, or other methods for containing the oil that may remain floating on the surface or to reduce spreading on the bottom;

(3) Dredges, pumps, or other equipment necessary to recover oil from the bottom and shoreline;

(4) Equipment necessary to assess the impact of such discharges; and

(5) Other appropriate equipment necessary to respond to a discharge involving the type of oil handled, stored, or transported.

10.6.2 Response resources identified in a response plan for a facility that handles, stores, or transports Group C oils under section 10.6.1 of this appendix shall be capable of being deployed on scene within 24 hours of discovery of a discharge.

10.6.3 A response plan must identify response resources with fire fighting capability. The owner or operator of a facility that handles, stores, or transports Group C oils that does not have adequate fire fighting resources located at the facility or that cannot rely on sufficient local fire fighting resources must identify adequate fire fighting resources. The owner or operator shall ensure, by contract or other approved means as described in §112.2, the availability of these resources. The response plan shall also identify an individual located at the facility to work with the fire department for Group C oil fires. This individual shall also verify that sufficient well-trained fire fighting resources are available within a reasonable response time to respond to a worst case discharge. The individual may be the qualified individual identified in the response plan or another appropriate individual located at the facility.

10.7 The procedures described in sections 10.7.1 through 10.7.5 of this appendix must be used to determine appropriate response plan development and evaluation criteria for facilities that handle, store, or transport animal fats and vegetable oils. Refer to section 11 of this appendix for information on the limitations on the use of chemical agents for inland and nearshore areas.

10.7.1 An owner or operator of a facility that handles, stores, or transports animal fats and vegetable oils must provide information in the response plan that identifies:

(1) Procedures and strategies for responding to a worst case discharge of animal fats and vegetable oils to the maximum extent practicable; and

(2) Sources of the equipment and supplies necessary to locate, recover, and mitigate such a discharge.

10.7.2 An owner or operator of a facility that handles, stores, or transports animal fats and vegetable oils must ensure that any equipment identified in a response plan is capable of operating in the geographic area(s) (*i.e.,* operating environments) in which the facility operates using the criteria in Table 1 of this appendix. When evaluating the operability of equipment, the facility owner or operator must consider limitations that are identified in the appropriate ACPs, including:

(1) Ice conditions;

(2) Debris;

(3) Temperature ranges; and

(4) Weather-related visibility.

10.7.3. The owner or operator of a facility that handles, stores, or transports animal fats and vegetable oils must identify the response resources that are available by contract or other approved means, as described in §112.2. The equipment described in the response plan shall, as appropriate, include:

(1) Containment boom, sorbent boom, or other methods for containing oil floating on the surface or to protect shorelines from impact;

(2) Oil recovery devices appropriate for the type of animal fat or vegetable oil carried; and

(3) Other appropriate equipment necessary to respond to a discharge involving the type of oil carried.

10.7.4 Response resources identified in a response plan according to section 10.7.3 of this appendix must be capable of commencing an effective on-scene response within the applicable tier response times in section 5.3 of this appendix.

10.7.5 A response plan must identify response resources with fire fighting capability. The owner or operator of a facility that handles, stores, or transports animal fats and vegetable oils that does not have adequate fire fighting resources located at

the facility or that cannot rely on sufficient local fire fighting resources must identify adequate fire fighting resources. The owner or operator shall ensure, by contract or other approved means as described in §112.2, the availability of these resources. The response plan shall also identify an individual located at the facility to work with the fire department for animal fat and vegetable oil fires. This individual shall also verify that sufficient well-trained fire fighting resources are available within a reasonable response time to respond to a worst case discharge. The individual may be the qualified individual identified in the response plan or another appropriate individual located at the facility.

11.0 Determining the Availability of Alternative Response Methods

11.1 For chemical agents to be identified in a response plan, they must be on the NCP Product Schedule that is maintained by EPA. (Some States have a list of approved dispersants for use within State waters. Not all of these State-approved dispersants are listed on the NCP Product Schedule.)

11.2 Identification of chemical agents in the plan does not imply that their use will be authorized. Actual authorization will be governed by the provisions of the NCP and the applicable ACP.

12.0 Additional Equipment Necessary to Sustain Response Operations

12.1 A facility owner or operator shall identify sufficient response resources available, by contract or other approved means as described in §112.2, to respond to a medium discharge of animal fats or vegetables oils for that facility. This will require response resources capable of containing and collecting up to 36,000 gallons of oil or 10 percent of the worst case discharge, whichever is less. All equipment identified must be designed to operate in the applicable operating environment specified in Table 1 of this appendix.

12.2 A facility owner or operator shall evaluate the availability of adequate temporary storage capacity to sustain the effective daily recovery capacities from equipment identified in the plan. Because of the inefficiencies of oil spill recovery devices, response plans must identify daily storage capacity equivalent to twice the effective daily recovery capacity required on-scene. This temporary storage capacity may be reduced if a facility owner or operator can demonstrate by waste stream analysis that the efficiencies of the oil recovery devices, ability to decant waste, or the availability of alternative temporary storage or disposal locations will reduce the overall volume of oily material storage.

12.3 A facility owner or operator shall ensure that response planning includes the capability to arrange for disposal of recovered oil products. Specific disposal procedures will be addressed in the applicable ACP.

13.0 References and Availability

13.1 All materials listed in this section are part of EPA's rulemaking docket and are located in the Superfund Docket, 1235 Jefferson Davis Highway, Crystal Gateway 1, Arlington, Virginia 22202, Suite 105 (Docket Numbers SPCC–2P, SPCC–3P, and SPCC–9P). The docket is available for inspection between 9 a.m. and 4 p.m., Monday through Friday, excluding Federal holidays.

Appointments to review the docket can be made by calling 703–603–9232. Docket hours are subject to change. As provided in 40 CFR part 2, a reasonable fee may be charged for copying services.

13.2 The docket will mail copies of materials to requestors who are outside the Washington, DC metropolitan area. Materials may be available from other sources, as noted in this section. As provided in 40 CFR part 2, a reasonable fee may be charged for copying services. The RCRA/Superfund Hotline at 800–424–9346 may also provide additional information on where to obtain documents. To contact the RCRA/Superfund Hotline in the Washington, DC metropolitan area, dial 703–412–9810. The Telecommunications Device for the Deaf (TDD) Hotline number is 800–553–7672, or, in the Washington, DC metropolitan area, 703–412–3323.

13.3 Documents

(1) National Preparedness for Response Exercise Program (PREP). The PREP draft guidelines are available from United States Coast Guard Headquarters (G-MEP-4), 2100 Second Street, SW., Washington, DC 20593. (See 58 FR 53990–91, October 19, 1993, Notice of Availability of PREP Guidelines).

(2) ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments (published in the Federal Register by DOC/NOAA at 59 FR 14713–22, March 29, 1994.). The guidance is available in the Superfund Docket (see sections 13.1 and 13.2 of this appendix).

(3) ASTM Standards. ASTM F 715, ASTM F 989, ASTM F 631–99, ASTM F 808–83 (1999). The ASTM standards are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959.

(4) Response Plans for Marine Transportation-Related Facilities, Interim Final Rule. Published by USCG, DOT at 58 FR 7330–76, February 5, 1993.

TABLE 1 TO APPENDIX E—RESPONSE RESOURCE OPERATING CRITERIA

Oil Recovery Devices		
Operating environment	Significant wave height[1]	Sea state
Rivers and Canals	≤ 1 foot	1
Inland	≤ 3 feet	2
Great Lakes	≤ 4 feet	2–3
Ocean	≤ 6 feet	3–4

Boom				
Boom property	Use			
	Rivers and canals	Inland	Great Lakes	Ocean
Significant Wave Height[1]	≤ 1	≤ 3	≤ 4	≤ 6
Sea State	1	2	2–3	3–4
Boom height—inches (draft plus freeboard)	6–18	18–42	18–42	≥42
Reserve Buoyancy to Weight Ratio	2:1	2:1	2:1	3:1 to 4:1
Total Tensile Strength—pounds	4,500	15,000–20,000.	15,000–20,000.	≥20,000
Skirt Fabric Tensile Strength—pounds	200	300	300	500
Skirt Fabric Tear Strength—pounds	100	100	100	125

[1] Oil recovery devices and boom *shall* be at least capable of operating in wave heights up to and including the values listed in Table 1 for each operating environment.

TABLE 2 TO APPENDIX E—REMOVAL CAPACITY PLANNING TABLE FOR PETROLEUM OILS

Spill location	Rivers and canals			Nearshore/Inland/Great Lakes		
Sustainability of on-water oil recovery	3 days			4 days		
Oil group[1]	Percent natural dissipation	Percent recovered floating oil	Percent oil onshore	Percent natural dissipation	Percent recovered floating oil	Percent oil onshore
1—Non-persistent oils	80	10	10	80	20	10
2—Light crudes	40	15	45	50	50	30
3—Medium crudes and fuels	20	15	65	30	50	50
4—Heavy crudes and fuels	5	20	75	10	50	70

[1] The response resource considerations for non-petroleum oils other than animal fats and vegetable oils are outlined in section 7.7 of this appendix.

NOTE: Group 5 oils are defined in section 1.2.8 of this appendix; the response resource considerations are outlined in section 7.6 of this appendix.

TABLE 3 TO APPENDIX E—EMULSIFICATION FACTORS FOR PETROLEUM OIL GROUPS[1]

Non-Persistent Oil:	
Group 1	1.0
Persistent Oil:	
Group 2	1.8
Group 3	2.0
Group 4	1.4
Group 5 oils are defined in section 1.2.7 of this appendix; the response resource considerations are outlined in section 7.6 of this appendix.	

[1] See sections 1.2.2 and 1.2.7 of this appendix for group designations for non-persistent and persistent oils, respectively.

TABLE 4 TO APPENDIX E—ON-WATER OIL RECOVERY RESOURCE MOBILIZATION FACTORS

Operating area	Tier 1	Tier 2	Tier 3
Rivers and Canals	0.30	0.40	0.60
Inland/Nearshore Great Lakes	0.15	0.25	0.40

Note: These mobilization factors are for total resources mobilized, not incremental response resources.

TABLE 5 TO APPENDIX E—RESPONSE CAPABILITY CAPS BY OPERATING AREA

	Tier 1	Tier 2	Tier 3
February 18, 1993:			
All except Rivers & Canals, Great Lakes	10K bbls/day	20K bbls/day	40K bbls/day.

TABLE 5 TO APPENDIX E—RESPONSE CAPABILITY CAPS BY OPERATING AREA—Continued

	Tier 1	Tier 2	Tier 3
Great Lakes	5K bbls/day	10K bbls/day	20K bbls/day.
Rivers & Canals	1.5K bbls/day	3.0K bbls/day	6.0K bbls/day.
February 18, 1998:			
All except Rivers & Canals, Great Lakes	12.5K bbls/day	25K bbls/day	50K bbls/day.
Great Lakes	6.35K bbls/day	12.3K bbls/day	25K bbls/day.
Rivers & Canals	1.875K bbls/day	3.75K bbls/day	7.5K bbls/day.
February 18, 2003:			
All except Rivers & Canals, Great Lakes	TBD	TBD	TBD.
Great Lakes	TBD	TBD	TBD.
Rivers & Canals	TBD	TBD	TBD.

Note: The caps show cumulative overall effective daily recovery capacity, not incremental increases.
TBD=To Be Determined.

TABLE 6 TO APPENDIX E—REMOVAL CAPACITY PLANNING TABLE FOR ANIMAL FATS AND VEGETABLE OILS

Spill location	Rivers and canals			Nearshore/Inland/Great Lakes		
Sustainability of on-water oil recovery	3 days			4 days		
Oil group [1]	Percent natural loss	Percent recovered floating oil	Percent recovered oil from onshore	Percent natural loss	Percent recovered floating oil	Percent recovered oil from onshore
Group A	40	15	45	50	20	30
Group B	20	15	65	30	20	50

[1] Substances with a specific gravity greater than 1.0 generally sink below the surface of the water. Response resource considerations are outlined in section 10.6 of this appendix. The owner or operator of the facility is responsible for determining appropriate response resources for Group C oils including locating oil on the bottom or suspended in the water column; containment boom or other appropriate methods for containing oil that may remain floating on the surface; and dredges, pumps, or other equipment to recover animal fats or vegetable oils from the bottom and shoreline.

NOTE: Group C oils are defined in sections 1.2.1 and 1.2.9 of this appendix; the response resource procedures are discussed in section 10.6 of this appendix.

TABLE 7 TO APPENDIX E—EMULSIFICATION FACTORS FOR ANIMAL FATS AND VEGETABLE OILS

Oil Group [1]:	
Group A	1.0
Group B	2.0

[1] Substances with a specific gravity greater than 1.0 generally sink below the surface of the water. Response resource considerations are outlined in section 10.6 of this appendix. The owner or operator of the facility is responsible for determining appropriate response resources for Group C oils including locating oil on the bottom or suspended in the water column; containment boom or other appropriate methods for containing oil that may remain floating on the surface; and dredges, pumps, or other equipment to recover animal fats or vegetable oils from the bottom and shoreline.

NOTE: Group C oils are defined in sections 1.2.1 and 1.2.9 of this appendix; the response resource procedures are discussed in section 10.6 of this appendix.

ATTACHMENTS TO APPENDIX E

Attachment E-1 --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Petroleum Oils

Part I Background Information

Step (A) Calculate Worst Case Discharge in barrels (Appendix D) [ ] (A)

Step (B) Oil Group[1] (Table 3 and section 1.2 of this appendix) . [ ]

Step (C) Operating Area (choose one) . . . . [ ] Near shore/Inland Great Lakes [ ] or Rivers and Canals

Step (D) Percentages of Oil (Table 2 of this appendix)

Percent Lost to Natural Dissipation	Percent Recovered Floating Oil	Percent Oil Onshore
[ ] (D1)	[ ] (D2)	[ ] (D3)

Step (E1) On-Water Oil Recovery $\frac{\text{Step (D2) x Step(A)}}{100}$ [ ] (E1)

Step (E2) Shoreline Recovery $\frac{\text{Step (D3) x Step (A)}}{100}$ . . . . [ ] (E2)

Step (F) Emulsification Factor
(Table 3 of this appendix) . . . . . [ ] (F)

Step (G) On-Water Oil Recovery Resource Mobilization Factor
(Table 4 of this appendix)

Tier 1	Tier 2	Tier 3
[ ] (G1)	[ ] (G2)	[ ] (G3)

[1] A facility that handles, stores, or transports multiple groups of oil must do separate calculations for each oil group on site except for those oil groups that constitute 10 percent or less by volume of the total oil storage capacity at the facility. For purposes of this calculation, the volumes of all products in an oil group must be summed to determine the percentage of the facility's total oil storage capacity.

Attachment E-1 (continued) --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Petroleum Oils

Part II On-Water Oil Recovery Capacity (barrels/day)

Tier 1	Tier 2	Tier 3
Step (E1) x Step (F) x Step (G1)	Step (E1) x Step (F) x Step (G2)	Step (E1) x Step (F) x Step (G3)

Part III Shoreline Cleanup Volume (barrels) . . . . . [ ]

Step (E2) x Step (F)

Part IV On-Water Response Capacity By Operating Area
(Table 5 of this appendix)
(Amount needed to be contracted for in barrels/day)

Tier 1	Tier 2	Tier 3
(J1)	(J2)	(J3)

Part V On-Water Amount Needed to be Identified, but not Contracted for in Advance (barrels/day)

Tier 1	Tier 2	Tier 3
Part II Tier 1 - Step (J1)	Part II Tier 2 - Step (J2)	Part II Tier 3 - Step (J3)

NOTE: To convert from barrels/day to gallons/day, multiply the quantities in Parts II through V by 42 gallons/barrel.

Attachment E-1 Example --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Petroleum Oils

Part I Background Information

Step (A) Calculate Worst Case Discharge in barrels (Appendix D) | 170,000 | (A)

Step (B) Oil Group[1] (Table 3 and section 1.2 of this appendix) . | 4

Step (C) Operating Area (choose one) . . | X | Near shore/Inland Great Lakes | | or Rivers and Canals

Step (D) Percentages of Oil (Table 2 of this appendix)

Percent Lost to Natural Dissipation	Percent Recovered Floating Oil	Percent Oil Onshore
10	50	70
(D1)	(D2)	(D3)

Step (E1) On-Water Oil Recovery $\frac{\text{Step (D2) x Step (A)}}{100}$ | 85,000 | (E1)

Step (E2) Shoreline Recovery $\frac{\text{Step (D3) x Step (A)}}{100}$ | 119,000 | (E2)

Step (F) Emulsification Factor (Table 3 of this appendix) . . . . . | 1.4 | (F)

Step (G) On-Water Oil Recovery Resource Mobilization Factor (Table 4 of this appendix)

Tier 1	Tier 2	Tier 3
0.15	0.25	0.40
(G1)	(G2)	(G3)

[1] A facility that handles, stores, or transports multiple groups of oil must do separate calculations for each oil group on site except for those oil groups that constitute 10 percent or less by volume of the total oil storage capacity at the facility. For purposes of this calculation, the volumes of all products in an oil group must be summed to determine the percentage of the facility's total oil storage capacity.

Attachment E-1 Example (continued) --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Petroleum Oils

Part II On-Water Oil Recovery Capacity (barrels/day)

Tier 1	Tier 2	Tier 3
17,850	29,750	47,600
Step (E1) x Step (F) x Step (G1)	Step (E1) x Step (F) x Step (G2)	Step (E1) x Step (F) x Step (G3)

Part III Shoreline Cleanup Volume (barrels) 166,600

Step (E2) x Step (F)

Part IV On-Water Response Capacity By Operating Area
(Table 5 of this appendix)
(Amount needed to be contracted for in barrels/day)

Tier 1	Tier 2	Tier 3
10,000	20,000	40,000
(J1)	(J2)	(J3)

Part V On-Water Amount Needed to be Identified, but not Contracted for in Advance (barrels/day)

Tier 1	Tier 2	Tier 3
7,850	9,750	7,600
Part II Tier 1 - Step (J1)	Part II Tier 2 - Step (J2)	Part II Tier 3 - Step (J3)

NOTE: To convert from barrels/day to gallons/day, multiply the quantities in Parts II through V by 42 gallons/barrel.

Attachment E-2 --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Animal Fats and Vegetable Oils

Part I Background Information

Step (A) Calculate Worst Case Discharge in barrels (Appendix D) [ ] (A)

Step (B) Oil Group[1] (Table 7 and section 1.2 of this appendix) . [ ]

Step (C) Operating Area (choose one) . . . . [ ] Near shore/Inland Great Lakes [ ] or Rivers and Canals

Step (D) Percentages of Oil (Table 6 of this appendix)

Percent Lost to Natural Dissipation	Percent Recovered Floating Oil	Percent Oil Onshore
[ ] (D1)	[ ] (D2)	[ ] (D3)

Step (E1) On-Water Oil Recovery $\frac{\text{Step (D2) x Step (A)}}{100}$ [ ] (E1)

Step (E2) Shoreline Recovery $\frac{\text{Step (D3) x Step (A)}}{100}$ . . . [ ] (E2)

Step (F) Emulsification Factor
(Table 7 of this appendix) . . . . . [ ] (F)

Step (G) On-Water Oil Recovery Resource Mobilization Factor
(Table 4 of this appendix)

Tier 1	Tier 2	Tier 3
[ ] (G1)	[ ] (G2)	[ ] (G3)

[1] A facility that handles, stores, or transports multiple groups of oil must do separate calculations for each oil group on site except for those oil groups that constitute 10 percent or less by volume of the total oil storage capacity at the facility. For purposes of this calculation, the volumes of all products in an oil group must be summed to determine the percentage of the facility's total oil storage capacity.

Attachment E-2 (continued) --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Animal Fats and Vegetable Oils

Part II On-Water Oil Recovery Capacity (barrels/day)

Tier 1	Tier 2	Tier 3
Step (E1) x Step (F) x Step (G1)	Step (E1) x Step (F) x Step (G2)	Step (E1) x Step (F) x Step (G3)

Part III Shoreline Cleanup Volume (barrels) . . . . [ ]

Step (E2) x Step (F)

Part IV On-Water Response Capacity By Operating Area
(Table 5 of this appendix)
(Amount needed to be contracted for in barrels/day)

Tier 1	Tier 2	Tier 3
(J1)	(J2)	(J3)

Part V On-Water Amount Needed to be Identified, but not Contracted for in Advance (barrels/day)

Tier 1	Tier 2	Tier 3
Part II Tier 1 - Step (J1)	Part II Tier 2 - Step (J2)	Part II Tier 3 - Step (J3)

NOTE: To convert from barrels/day to gallons/day, multiply the quantities in Parts II through V by 42 gallons/barrel.

Attachment E-2 Example --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Animal Fats and Vegetable Oils

Part I Background Information

Step (A) Calculate Worst Case Discharge in barrels (Appendix D)	500,000 (A)
Step (B) Oil Group[1] (Table 7 and section 1.2 of this appendix)	B
Step (C) Operating Area (choose one)	[X] Near shore/Inl and Great Lakes [ ] or Rivers and Canals

Step (D) Percentages of Oil (Table 6 of this appendix)

Percent Lost to Natural Dissipation	Percent Recovered Floating Oil	Percent Oil Onshore
30 (D1)	20 (D2)	50 (D3)

Step (E1) On-Water Oil Recovery $\frac{\text{Step (D2) x Step (A)}}{100}$	100,000 (E1)
Step (E2) Shoreline Recovery $\frac{\text{Step (D3) x Step (A)}}{100}$	250,000 (E2)
Step (F) Emulsification Factor (Table 7 of this appendix)	2.0 (F)

Step (G) On-Water Oil Recovery Resource Mobilization Factor
(Table 4 of this appendix)

Tier 1	Tier 2	Tier 3
0.15 (G1)	0.25 (G2)	0.40 (G3)

[1] A facility that handles, stores, or transports multiple groups of oil must do separate calculations for each oil group on site except for those oil groups that constitute 10 percent or less by volume of the total oil storage capacity at the facility. For purposes of this calculation, the volumes of all products in an oil group must be summed to determine the percentage of the facility's total oil storage capacity.

Attachment E-2 Example (continued) --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Animal Fats and Vegetable Oils (continued)

Part II On-Water Oil Recovery Capacity (barrels/day)

Tier 1	Tier 2	Tier 3
30,000	50,000	80,000
Step (E1) x Step (F) x Step (G1)	Step (E1) x Step (F) x Step (G2)	Step (E1) x Step (F) x Step (G3)

Part III Shoreline Cleanup Volume (barrels) 500,000
Step (E2) x Step (F)

Part IV On-Water Response Capacity By Operating Area
(Table 5 of this appendix)
(Amount needed to be contracted for in barrels/day)

Tier 1	Tier 2	Tier 3
12,500	25,000	50,000
(J1)	(J2)	(J3)

Part V On-Water Amount Needed to be Identified, but not Contracted for in Advance (barrels/day)

Tier 1	Tier 2	Tier 3
17,500	25,000	30,000
Part II Tier 1 - Step (J1)	Part II Tier 2 - Step (J2)	Part II Tier 3 - Step (J3)

NOTE: To convert from barrels/day to gallons/day, multiply the quantities in Parts II through V by 42 gallons/barrel.

[59 FR 34111, July 1, 1994; 59 FR 49006, Sept. 26, 1994, as amended at 65 FR 40806, 40807, June 30, 2000; 65 FR 47325, Aug. 2, 2000; 66 FR 47325, Aug. 2, 2000; 66 FR 35460, 35461, June 29, 2001]

APPENDIX F TO PART 112—FACILITY-SPECIFIC RESPONSE PLAN

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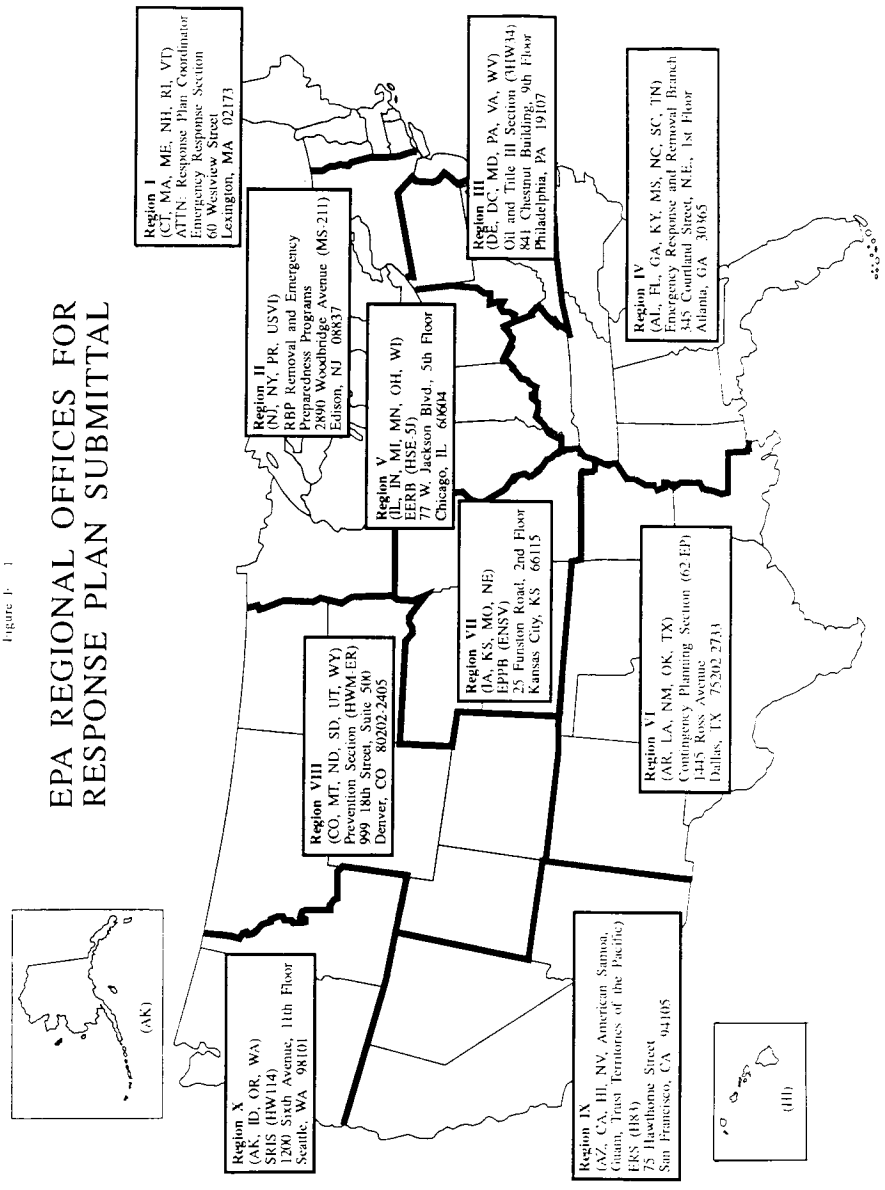
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1.0 Model Facility-Specific Response Plan

(A) Owners or operators of facilities regulated under this part which pose a threat of substantial harm to the environment by discharging oil into or on navigable waters or adjoining shorelines are required to prepare and submit facility-specific response plans to EPA in accordance with the provisions in this appendix. This appendix further describes the required elements in §112.20(h).

(B) Response plans must be sent to the appropriate EPA Regional office. Figure F–1 of this Appendix lists each EPA Regional office and the address where owners or operators must submit their response plans. Those facilities deemed by the Regional Administrator (RA) to pose a threat of significant and substantial harm to the environment will have their plans reviewed and approved by EPA. In certain cases, information required in the model response plan is similar to information currently maintained in the facility's Spill Prevention, Control, and Countermeasures (SPCC) Plan as required by 40 CFR 112.3. In these cases, owners or operators may reproduce the information and include a photocopy in the response plan.

(C) A complex may develop a single response plan with a set of core elements for all regulating agencies and separate sections for the non-transportation-related and transportation-related components, as described in §112.20(h). Owners or operators of large facilities that handle, store, or transport oil at more than one geographically distinct location (e.g., oil storage areas at opposite ends of a single, continuous parcel of property) shall, as appropriate, develop separate sections of the response plan for each storage area.



1.1 Emergency Response Action Plan

Several sections of the response plan shall be co-located for easy access by response personnel during an actual emergency or oil discharge. This collection of sections shall be called the Emergency Response Action Plan. The Agency intends that the Action Plan contain only as much information as is necessary to combat the discharge and be arranged so response actions are not delayed. The Action Plan may be arranged in a number of ways. For example, the sections of the Emergency Response Action Plan may be photocopies or condensed versions of the

forms included in the associated sections of the response plan. Each Emergency Response Action Plan section may be tabbed for quick reference. The Action Plan shall be maintained in the front of the same binder that contains the complete response plan or it shall be contained in a separate binder. In the latter case, both binders shall be kept together so that the entire plan can be accessed by the qualified individual and appropriate spill response personnel. The Emergency Response Action Plan shall be made up of the following sections:

1. Qualified Individual Information (Section 1.2) partial
2. Emergency Notification Phone List (Section 1.3.1) partial
3. Spill Response Notification Form (Section 1.3.1) partial
4. Response Equipment List and Location (Section 1.3.2) complete
5. Response Equipment Testing and Deployment (Section 1.3.3) complete
6. Facility Response Team (Section 1.3.4) partial
7. Evacuation Plan (Section 1.3.5) condensed
8. Immediate Actions (Section 1.7.1) complete
9. Facility Diagram (Section 1.9) complete

1.2 Facility Information

The facility information form is designed to provide an overview of the site and a description of past activities at the facility. Much of the information required by this section may be obtained from the facility's existing SPCC Plan.

1.2.1 *Facility name and location:* Enter facility name and street address. Enter the address of corporate headquarters only if corporate headquarters are physically located at the facility. Include city, county, state, zip code, and phone number.

1.2.2 *Latitude and Longitude:* Enter the latitude and longitude of the facility. Include degrees, minutes, and seconds of the main entrance of the facility.

1.2.3 *Wellhead Protection Area:* Indicate if the facility is located in or drains into a wellhead protection area as defined by the Safe Drinking Water Act of 1986 (SDWA).[1] The response plan requirements in the Wellhead Protection Program are outlined by the State or Territory in which the facility resides.

1.2.4 *Owner/operator:* Write the name of the company or person operating the facility and the name of the person or company that owns the facility, if the two are different. List the address of the owner, if the two are different.

1.2.5 *Qualified Individual:* Write the name of the qualified individual for the entire facility. If more than one person is listed, each individual indicated in this section shall have full authority to implement the facility response plan. For each individual, list: name, position, home and work addresses (street addresses, not P.O. boxes), emergency phone number, and specific response training experience.

1.2.6 *Date of Oil Storage Start-up:* Enter the year which the present facility first started storing oil.

1.2.7 *Current Operation:* Briefly describe the facility's operations and include the North American Industrial Classification System (NAICS) code.

1.2.8 *Dates and Type of Substantial Expansion:* Include information on expansions that have occurred at the facility. Examples of such expansions include, but are not limited to: Throughput expansion, addition of a product line, change of a product line, and installation of additional oil storage capacity. The data provided shall include all facility historical information and detail the expansion of the facility. An example of substantial expansion is any material alteration of the facility which causes the owner or operator of the facility to re-evaluate and increase the response equipment necessary to adequately respond to a worst case discharge from the facility.

Date of Last Update: _____

FACILITY INFORMATION FORM

Facility Name: _____
Location (Street Address): _____
City: _____ State: _____ Zip: _____
County: _____ Phone Number: ( ) _____
Latitude: _____ Degrees _____ Minutes _____ Seconds
Longitude: _____ Degrees _____ Minutes _____ Seconds
Wellhead Protection Area: _____
Owner: _____
Owner Location (Street Address): _____
(if different from Facility Address)
City: _____ State: _____ Zip: _____
County: _____ Phone Number: ( ) _____
Operator (if not Owner): _____
Qualified Individual(s): (attach additional sheets if more than one)
Name: _____
Position: _____
Work Address: _____
Home Address: _____
Emergency Phone Number: ( ) _____

[1] A wellhead protection area is defined as the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield. For further information regarding State and territory protection programs, facility owners or operators may contact the SDWA Hotline at 1–800–426–4791.

Date of Oil Storage Start-up: _____
Current Operations: _____

_____

_____

Date(s) and Type(s) of Substantial Expansion(s): _____

_____

(Attach additional sheets if necessary)

1.3 Emergency Response Information

(A) The information provided in this section shall describe what will be needed in an actual emergency involving the discharge of oil or a combination of hazardous substances and oil discharge. The Emergency Response Information section of the plan must include the following components:

(1) The information provided in the Emergency Notification Phone List in section 1.3.1 identifies and prioritizes the names and phone numbers of the organizations and personnel that need to be notified immediately in the event of an emergency. This section shall include all the appropriate phone numbers for the facility. These numbers must be verified each time the plan is updated. The contact list must be accessible to all facility employees to ensure that, in case of a discharge, any employee on site could immediately notify the appropriate parties.

(2) The Spill Response Notification Form in section 1.3.1 creates a checklist of information that shall be provided to the National Response Center (NRC) and other response personnel. All information on this checklist must be known at the time of notification, or be in the process of being collected. This notification form is based on a similar form used by the NRC. Note: Do not delay spill notification to collect the information on the list.

(3) Section 1.3.2 provides a description of the facility's list of emergency response equipment and location of the response equipment. When appropriate, the amount of oil that emergency response equipment can handle and any limitations (e.g., launching sites) must be described.

(4) Section 1.3.3 provides information regarding response equipment tests and deployment drills. Response equipment deployment exercises shall be conducted to ensure that response equipment is operational and the personnel who would operate the equipment in a spill response are capable of deploying and operating it. Only a representative sample of each type of response equipment needs to be deployed and operated, as long as the remainder is properly maintained. If appropriate, testing of response equipment may be conducted while it is being deployed. Facilities without facility-owned response equipment must ensure that the oil spill removal organization that is identified in the response plan to provide this response equipment certifies that the deployment exercises have been met. Refer to the National Preparedness for Response Exercise Program (PREP) Guidelines (see Appendix E to this part, section 13, for availability), which satisfy Oil Pollution Act (OPA) response exercise requirements.

(5) Section 1.3.4 lists the facility response personnel, including those employed by the facility and those under contract to the facility for response activities, the amount of time needed for personnel to respond, their responsibility in the case of an emergency, and their level of response training. Three different forms are included in this section. The Emergency Response Personnel List shall be composed of all personnel employed by the facility whose duties involve responding to emergencies, including oil discharges, even when they are not physically present at the site. An example of this type of person would be the Building Engineer-in-Charge or Plant Fire Chief. The second form is a list of the Emergency Response Contractors (both primary and secondary) retained by the facility. Any changes in contractor status must be reflected in updates to the response plan. Evidence of contracts with response contractors shall be included in this section so that the availability of resources can be verified. The last form is the Facility Response Team List, which shall be composed of both emergency response personnel (referenced by job title/position) and emergency response contractors, included in one of the two lists described above, that will respond immediately upon discovery of an oil discharge or other emergency (i.e., the first people to respond). These are to be persons normally on the facility premises or primary response contractors. Examples of these personnel would be the Facility Hazardous Materials (HAZMAT) Spill Team 1, Facility Fire Engine Company 1, Production Supervisor, or Transfer Supervisor. Company personnel must be able to respond immediately and adequately if contractor support is not available.

(6) Section 1.3.5 lists factors that must, as appropriate, be considered when preparing an evacuation plan.

(7) Section 1.3.6 references the responsibilities of the qualified individual for the facility in the event of an emergency.

(B) The information provided in the emergency response section will aid in the assessment of the facility's ability to respond to a worst case discharge and will identify additional assistance that may be needed. In addition, the facility owner or operator may want to produce a wallet-size card containing a checklist of the immediate response and notification steps to be taken in the event of an oil discharge.

1.3.1 Notification

Date of Last Update: _____

EMERGENCY NOTIFICATION PHONE LIST WHOM TO NOTIFY

Reporter's Name: _____
Date: _____
Facility Name: _____
Owner Name: _____
Facility Identification Number: _____
Date and Time of Each NRC Notification: __

Organization	Phone No.
1. National Response Center (NRC):	1–800–424–8802
2. Qualified Individual:	
Evening Phone:	
3. Company Response Team:	
Evening Phone:	
4. Federal On-Scene Coordinator (OSC) and/or Regional Response Center (RRC):	
Evening Phone(s):	
Pager Number(s):	
5. Local Response Team (Fire Dept./Co-operatives):	
6. Fire Marshall:	
Evening Phone:	
7. State Emergency Response Commission (SERC):	
Evening Phone:	
8. State Police:	
9. Local Emergency Planning Committee (LEPC):	
10. Local Water Supply System:	
Evening Phone:	
11. Weather Report:	
12. Local Television/Radio Station for Evacuation Notification:	
13. Hospitals:	

SPILL RESPONSE NOTIFICATION FORM

Reporter's Last Name: _____
First: _____
M.I.: _____
Position: _____
Phone Numbers:
Day ( ) –
Evening ( ) –
Company: _____
Organization Type: _____
Address: _____
_____
City: _____
State: _____
Zip: _____
Were Materials Discharged? _____ (Y/N) Confidential? _____ (Y/N)
Meeting Federal Obligations to Report? _____ (Y/N) Date Called: _____
Calling for Responsible Party? _____ (Y/N) Time Called: _____

Incident Description

Source and/or Cause of Incident: _____
_____
_____
_____
_____
Date of Incident: _____
Time of Incident: _____ AM/PM
Incident Address/Location: _____
_____
Nearest City:_____ State: _____
County: _____ Zip: _____
Distance from City: _____ Units of Measure: _____ Direction from City: _____
Section: _____ Township: _____ Range: _____ Borough: _____
Container Type: _____ Tank Oil Storage Capacity: _____ Units of Measure: _____
Facility Oil Storage Capacity: _____ Units of Measure: _____
Facility Latitude: _____ Degrees _____ Minutes _____ Seconds
Facility Longitude: _____ Degrees _____ Minutes _____ Seconds

Material

CHRIS Code	Discharged quantity	Unit of measure	Material Discharged in water	Quantity	Unit of measure

CHRIS Code	Discharged quantity	Unit of measure	Material Discharged in water	Quantity	Unit of measure

Response Action

Actions Taken to Correct, Control or Mitigate Incident:

_____

_____

_____

_____

Impact

Number of Injuries: _____ Number of Deaths: _____

Were there Evacuations? _____ (Y/N) Number Evacuated: _____

Was there any Damage? _____ (Y/N)

Damage in Dollars (approximate): _____

Medium Affected: _____

Description: _____

More Information about Medium: _____

_____

_____

Additional Information

Any information about the incident not recorded elsewhere in the report:

_____

_____

_____

Caller Notifications

EPA? _____ (Y/N) USCG? _____ (Y/N) State? _____ (Y/N)

Other? _____ (Y/N) Describe: _____

1.3.2 Response Equipment List

Date of Last Update:_____

FACILITY RESPONSE EQUIPMENT LIST

1. Skimmers/Pumps—Operational Status: _____

Type, Model, and Year: _____

_____

Type Model Year

Number: _____

Capacity: _____ gal./min.

Daily Effective Recovery Rate: _____

Storage Location(s): _____

Date Fuel Last Changed: _____

2. Boom—Operational Status: _____

Type, Model, and Year: _____

Type Model Year

Number: _____

Size (length): _____ ft.

Containment Area: _____ sq. ft.

Storage Location: _____

3. Chemicals Stored (Dispersants listed on EPA's NCP Product Schedule)

Type	Amount	Date purchased	Treatment capacity	Storage location

Were appropriate procedures used to receive approval for use of dispersants in accordance with the NCP (40 CFR 300.910) and the Area Contingency Plan (ACP), where applicable?_____ (Y/N).

Name and State of On-Scene Coordinator (OSC) authorizing use: _____ .

Date Authorized: _____ .

4. Dispersant Dispensing Equipment—Operational Status: _____ .

Type and year	Capacity	Storage location	Response time (minutes)

5. Sorbents—Operational Status: _____
Type and Year Purchased: _____
Amount: _____
Absorption Capacity (gal.): _____
Storage Location(s): _____
6. Hand Tools—Operational Status: _____

Type and year	Quantity	Storage location

7. Communication Equipment (include operating frequency and channel and/or cellular phone numbers)—Operational Status: _____

Type and year	Quantity	Storage location/ number

8. Fire Fighting and Personnel Protective Equipment—Operational Status: _____

Type and year	Quantity	Storage location

Type and year	Quantity	Storage location

9. Other (e.g., Heavy Equipment, Boats and Motors)—Operational Status: _____

Type and year	Quantity	Storage location

1.3.3 Response Equipment Testing/Deployment

Date of Last Update:_____

Response Equipment Testing and Deployment Drill Log

Last Inspection or Response Equipment Test Date: _____
Inspection Frequency: _____
Last Deployment Drill Date: _____
Deployment Frequency: _____
Oil Spill Removal Organization Certification (if applicable): _____

1.3.4 Personnel

Date of Last Update:_____

EMERGENCY RESPONSE PERSONNEL

Company Personnel

Name	Phone [1]	Response time	Responsibility during response action	Response training type/date
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

[1] Phone number to be used when person is not on-site.

EMERGENCY RESPONSE CONTRACTORS

Date of Last Update: _____

Contractor	Phone	Response time	Contract responsibility [1]
1.			
2.			
3.			
4.			

[1] Include evidence of contracts/agreements with response contractors to ensure the availability of personnel and response equipment.

FACILITY RESPONSE TEAM

Date of Last Update:_____

Team member	Response time (minutes)	Phone or pager number (day/evening)
Qualified Individual:		/
		/
		/
		/
		/
		/
		/
		/
		/
		/
		/
		/
		/
		/
		/
		/
		/
		/
		/

NOTE: If the facility uses contracted help in an emergency response situation, the owner or operator must provide the contractors' names and review the contractors' capacities to provide adequate personnel and response equipment.

1.3.5 Evacuation Plans

1.3.5.1 Based on the analysis of the facility, as discussed elsewhere in the plan, a facility-wide evacuation plan shall be developed. In addition, plans to evacuate parts of the facility that are at a high risk of exposure in the event of a discharge or other release must be developed. Evacuation routes must be shown on a diagram of the facility (see section 1.9 of this appendix). When developing evacuation plans, consideration must be given to the following factors, as appropriate:

(1) Location of stored materials;
(2) Hazard imposed by discharged material;
(3) Discharge flow direction;
(4) Prevailing wind direction and speed;
(5) Water currents, tides, or wave conditions (if applicable);
(6) Arrival route of emergency response personnel and response equipment;
(7) Evacuation routes;
(8) Alternative routes of evacuation;
(9) Transportation of injured personnel to nearest emergency medical facility;
(10) Location of alarm/notification systems;
(11) The need for a centralized check-in area for evacuation validation (roll call);
(12) Selection of a mitigation command center; and
(13) Location of shelter at the facility as an alternative to evacuation.

1.3.5.2 One resource that may be helpful to owners or operators in preparing this section of the response plan is The *Handbook of Chemical Hazard Analysis Procedures* by the Federal Emergency Management Agency (FEMA), Department of Transportation (DOT), and EPA. *The Handbook of Chemical Hazard Analysis Procedures* is available from: FEMA , Publication Office, 500 C. Street, S.W., Washington, DC 20472, (202) 646–3484.

1.3.5.3 As specified in §112.20(h)(1)(vi), the facility owner or operator must reference existing community evacuation plans, as appropriate.

1.3.6 Qualified Individual's Duties

The duties of the designated qualified individual are specified in §112.20(h)(3)(ix). The qualified individual's duties must be described and be consistent with the minimum requirements in §112.20(h)(3)(ix). In addition, the qualified individual must be identified with the Facility Information in section 1.2 of the response plan.

1.4 Hazard Evaluation

This section requires the facility owner or operator to examine the facility's operations closely and to predict where discharges could occur. Hazard evaluation is a widely used industry practice that allows facility owners or operators to develop a complete understanding of potential hazards and the response actions necessary to address these hazards. *The Handbook of Chemical Hazard Analysis Procedures,* prepared by the EPA, DOT, and the FEMA and the *Hazardous Materials Emergency Planning Guide* (NRT–1), prepared by the National Response Team are good references for conducting a hazard analysis. Hazard identification and evaluation will assist facility owners or operators in planning for potential discharges, thereby reducing the severity of discharge impacts that may occur in the future. The evaluation also may help the operator identify and correct potential sources of discharges. In addition, special hazards to workers and emergency response personnel's health and safety shall be evaluated, as well as the facility's oil spill history.

1.4.1 Hazard Identification

The Tank and Surface Impoundment (SI) forms, or their equivalent, that are part of this section must be completed according to the directions below. (''Surface Impoundment'' means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well or a seepage facility.) Similar worksheets, or their equivalent, must be developed for any other type of storage containers.

(1) List each tank at the facility with a separate and distinct identifier. Begin aboveground tank identifiers with an ''A'' and belowground tank identifiers with a ''B'', or submit multiple sheets with the aboveground tanks and belowground tanks on separate sheets.

(2) Use gallons for the maximum capacity of a tank; and use square feet for the area.

(3) Using the appropriate identifiers and the following instructions, fill in the appropriate forms:

(a) Tank or SI number—Using the aforementioned identifiers (A or B) or multiple reporting sheets, identify each tank or SI at the facility that stores oil or hazardous materials.

(b) Substance Stored—For each tank or SI identified, record the material that is stored therein. If the tank or SI is used to store more than one material, list all of the stored materials.

(c) Quantity Stored—For each material stored in each tank or SI, report the average volume of material stored on any given day.

(d) Tank Type or Surface Area/Year—For each tank, report the type of tank (e.g., floating top), and the year the tank was originally installed. If the tank has been refabricated, the year that the latest refabrication was completed must be recorded in parentheses next to the year installed. For

each SI, record the surface area of the impoundment and the year it went into service.

(e) Maximum Capacity—Record the operational maximum capacity for each tank and SI. If the maximum capacity varies with the season, record the upper and lower limits.

(f) Failure/Cause—Record the cause and date of any tank or SI failure which has resulted in a loss of tank or SI contents.

(4) Using the numbers from the tank and SI forms, label a schematic drawing of the facility. This drawing shall be identical to any schematic drawings included in the SPCC Plan.

(5) Using knowledge of the facility and its operations, describe the following in writing:

(a) The loading and unloading of transportation vehicles that risk the discharge of oil or release of hazardous substances during transport processes. These operations may include loading and unloading of trucks, railroad cars, or vessels. Estimate the volume of material involved in transfer operations, if the exact volume cannot be determined.

(b) Day-to-day operations that may present a risk of discharging oil or releasing a hazardous substance. These activities include scheduled venting, piping repair or replacement, valve maintenance, transfer of tank contents from one tank to another, etc. (not including transportation-related activities). Estimate the volume of material involved in these operations, if the exact volume cannot be determined.

(c) The secondary containment volume associated with each tank and/or transfer point at the facility. The numbering scheme developed on the tables, or an equivalent system, must be used to identify each containment area. Capacities must be listed for each individual unit (tanks, slumps, drainage traps, and ponds), as well as the facility total.

(d) Normal daily throughput for the facility and any effect on potential discharge volumes that a negative or positive change in that throughput may cause.

HAZARD IDENTIFICATION TANKS [1]

Date of Last Update: _____

Tank No.	Substance Stored (Oil and Hazardous Substance)	Quantity Stored (gallons)	Tank Type/Year	Maximum Capacity (gallons)	Failure/Cause

[1] Tank = any container that stores oil.
Attach as many sheets as necessary.

HAZARD IDENTIFICATION SURFACE IMPOUNDMENTS (SIS)

Date of Last Update: _____

SI No.	Substance Stored	Quantity Stored (gallons)	Surface Area/Year	Maximum Capacity (gallons)	Failure/Cause

HAZARD IDENTIFICATION SURFACE IMPOUNDMENTS (SIS)—Continued

Date of Last Update: _____

SI No.	Substance Stored	Quantity Stored (gallons)	Surface Area/Year	Maximum Capacity (gallons)	Failure/Cause

Attach as many sheets as necessary.

1.4.2 Vulnerability Analysis

The vulnerability analysis shall address the potential effects (i.e., to human health, property, or the environment) of an oil discharge. Attachment C–III to Appendix C to this part provides a method that owners or operators shall use to determine appropriate distances from the facility to fish and wildlife and sensitive environments. Owners or operators can use a comparable formula that is considered acceptable by the RA. If a comparable formula is used, documentation of the reliability and analytical soundness of the formula must be attached to the response plan cover sheet. This analysis must be prepared for each facility and, as appropriate, must discuss the vulnerability of:

(1) Water intakes (drinking, cooling, or other);
(2) Schools;
(3) Medical facilities;
(4) Residential areas;
(5) Businesses;
(6) Wetlands or other sensitive environments;[2]
(7) Fish and wildlife;
(8) Lakes and streams;
(9) Endangered flora and fauna;
(10) Recreational areas;
(11) Transportation routes (air, land, and water);
(12) Utilities; and
(13) Other areas of economic importance (e.g., beaches, marinas) including terrestrially sensitive environments, aquatic environments, and unique habitats.

1.4.3 Analysis of the Potential for an Oil Discharge

Each owner or operator shall analyze the probability of a discharge occurring at the facility. This analysis shall incorporate factors such as oil discharge history, horizontal range of a potential discharge, and vulnerability to natural disaster, and shall, as appropriate, incorporate other factors such as tank age. This analysis will provide information for developing discharge scenarios for a worst case discharge and small and medium discharges and aid in the development of techniques to reduce the size and frequency of discharges. The owner or operator may need to research the age of the tanks the oil discharge history at the facility.

1.4.4 Facility Reportable Oil Spill History

Briefly describe the facility's reportable oil spill[3] history for the entire life of the facility to the extent that such information is reasonably identifiable, including:

(1) Date of discharge(s);
(2) List of discharge causes;
(3) Material(s) discharged;
(4) Amount discharged in gallons;
(5) Amount of discharge that reached navigable waters, if applicable;
(6) Effectiveness and capacity of secondary containment;
(7) Clean-up actions taken;
(8) Steps taken to reduce possibility of recurrence;
(9) Total oil storage capacity of the tank(s) or impoundment(s) from which the material discharged;
(10) Enforcement actions;
(11) Effectiveness of monitoring equipment; and
(12) Description(s) of how each oil discharge was detected.

[2] Refer to the DOC/NOAA ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments'' (See appendix E to this part, section 13, for availability).

[3] As described in 40 CFR part 110, reportable oil spills are those that: (a) violate applicable water quality standards, or (b) cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

The information solicited in this section may be similar to requirements in 40 CFR 112.4(a). Any duplicate information required by §112.4(a) may be photocopied and inserted.

1.5 Discharge Scenarios

In this section, the owner or operator is required to provide a description of the facility's worst case discharge, as well as a small and medium discharge, as appropriate. A multi-level planning approach has been chosen because the response actions to a discharge (*i.e.*, necessary response equipment, products, and personnel) are dependent on the magnitude of the discharge. Planning for lesser discharges is necessary because the nature of the response may be qualitatively different depending on the quantity of the discharge. The facility owner or operator shall discuss the potential direction of the discharge pathway.

1.5.1 Small and Medium Discharges

1.5.1.1 To address multi-level planning requirements, the owner or operator must consider types of facility-specific discharge scenarios that may contribute to a small or medium discharge. The scenarios shall account for all the operations that take place at the facility, including but not limited to:

(1) Loading and unloading of surface transportation;
(2) Facility maintenance;
(3) Facility piping;
(4) Pumping stations and sumps;
(5) Oil storage tanks;
(6) Vehicle refueling; and
(7) Age and condition of facility and components.

1.5.1.2 The scenarios shall also consider factors that affect the response efforts required by the facility. These include but are not limited to:

(1) Size of the discharge;
(2) Proximity to downgradient wells, waterways, and drinking water intakes;
(3) Proximity to fish and wildlife and sensitive environments;
(4) Likelihood that the discharge will travel offsite (*i.e.*, topography, drainage);
(5) Location of the material discharged (*i.e.*, on a concrete pad or directly on the soil);
(6) Material discharged;
(7) Weather or aquatic conditions (*i.e.*, river flow);
(8) Available remediation equipment;
(9) Probability of a chain reaction of failures; and
(10) Direction of discharge pathway.

1.5.2 Worst Case Discharge

1.5.2.1 In this section, the owner or operator must identify the worst case discharge volume at the facility. Worksheets for production and non-production facility owners or operators to use when calculating worst case discharge are presented in Appendix D to this part. When planning for the worst case discharge response, all of the aforementioned factors listed in the small and medium discharge section of the response plan shall be addressed.

1.5.2.2 For onshore storage facilities and production facilities, permanently manifolded oil storage tanks are defined as tanks that are designed, installed, and/or operated in such a manner that the multiple tanks function as one storage unit (i.e., multiple tank volumes are equalized). In this section of the response plan, owners or operators must provide evidence that oil storage tanks with common piping or piping systems are not operated as one unit. If such evidence is provided and is acceptable to the RA, the worst case discharge volume shall be based on the combined oil storage capacity of all manifold tanks or the oil storage capacity of the largest single oil storage tank within the secondary containment area, whichever is greater. For permanently manifolded oil storage tanks that function as one storage unit, the worst case discharge shall be based on the combined oil storage capacity of all manifolded tanks or the oil storage capacity of the largest single tank within a secondary containment area, whichever is greater. For purposes of the worst case discharge calculation, permanently manifolded oil storage tanks that are separated by internal divisions for each tank are considered to be single tanks and individual manifolded tank volumes are not combined.

1.6 Discharge Detection Systems

In this section, the facility owner or operator shall provide a detailed description of the procedures and equipment used to detect discharges. A section on discharge detection by personnel and a discussion of automated discharge detection, if applicable, shall be included for both regular operations and after hours operations. In addition, the facility owner or operator shall discuss how the reliability of any automated system will be checked and how frequently the system will be inspected.

1.6.1 Discharge Detection by Personnel

In this section, facility owners or operators shall describe the procedures and personnel that will detect any discharge of oil or release of a hazardous substance. A thorough discussion of facility inspections must be included. In addition, a description of initial response actions shall be addressed. This section shall reference section 1.3.1 of the response plan for emergency response information.

1.6.2 Automated Discharge Detection

In this section, facility owners or operators must describe any automated discharge detection equipment that the facility has in place. This section shall include a discussion of overfill alarms, secondary containment sensors, etc. A discussion of the plans to verify an automated alarm and the actions to be taken once verified must also be included.

1.7 Plan Implementation

In this section, facility owners or operators must explain in detail how to implement the facility's emergency response plan by describing response actions to be carried out under the plan to ensure the safety of the facility and to mitigate or prevent discharges described in section 1.5 of the response plan. This section shall include the identification of response resources for small, medium, and worst case discharges; disposal plans; and containment and drainage planning. A list of those personnel who would be involved in the cleanup shall be identified. Procedures that the facility will use, where appropriate or necessary, to update their plan after an oil discharge event and the time frame to update the plan must be described.

1.7.1 Response Resources for Small, Medium, and Worst Case Discharges

1.7.1.1 Once the discharge scenarios have been identified in section 1.5 of the response plan, the facility owner or operator shall identify and describe implementation of the response actions. The facility owner or operator shall demonstrate accessibility to the proper response personnel and equipment to effectively respond to all of the identified discharge scenarios. The determination and demonstration of adequate response capability are presented in Appendix E to this part. In addition, steps to expedite the cleanup of oil discharges must be discussed. At a minimum, the following items must be addressed:

(1) Emergency plans for spill response;

(2) Additional response training;

(3) Additional contracted help;

(4) Access to additional response equipment/experts; and

(5) Ability to implement the plan including response training and practice drills.

1.7.1.2A recommended form detailing immediate actions follows.

OIL SPILL RESPONSE—IMMEDIATE ACTIONS

1. Stop the product flow	Act quickly to secure pumps, close valves, etc.
2. Warn personnel	Enforce safety and security measures.
3. Shut off ignition sources.	Motors, electrical circuits, open flames, etc.
4. Initiate containment	Around the tank and/or in the water with oil boom.
5. Notify NRC	1–800–424–8802
6. Notify OSC	
7. Notify, as appropriate	

Source: FOSS, Oil Spill Response—Emergency Procedures, Revised December 3, 1992.

1.7.2 Disposal Plans

1.7.2.1 Facility owners or operators must describe how and where the facility intends to recover, reuse, decontaminate, or dispose of materials after a discharge has taken place. The appropriate permits required to transport or dispose of recovered materials according to local, State, and Federal requirements must be addressed. Materials that must be accounted for in the disposal plan, as appropriate, include:

(1) Recovered product;

(2) Contaminated soil;

(3) Contaminated equipment and materials, including drums, tank parts, valves, and shovels;

(4) Personnel protective equipment;

(5) Decontamination solutions;

(6) Adsorbents; and

(7) Spent chemicals.

1.7.2.2 These plans must be prepared in accordance with Federal (e.g., the Resource Conservation and Recovery Act [RCRA]), State, and local regulations, where applicable. A copy of the disposal plans from the facility's SPCC Plan may be inserted with this section, including any diagrams in those plans.

Material	Disposal facility	Location	RCRA permit/manifest
1.			
2.			
3.			
4.			

1.7.3 Containment and Drainage Planning

A proper plan to contain and control a discharge through drainage may limit the threat of harm to human health and the environment. This section shall describe how to contain and control a discharge through drainage, including:

(1) The available volume of containment (use the information presented in section 1.4.1 of the response plan);
(2) The route of drainage from oil storage and transfer areas;
(3) The construction materials used in drainage troughs;
(4) The type and number of valves and separators used in the drainage system;
(5) Sump pump capacities;
(6) The containment capacity of weirs and booms that might be used and their location (see section 1.3.2 of this appendix); and
(7) Other cleanup materials.

In addition, a facility owner or operator must meet the inspection and monitoring requirements for drainage contained in 40 CFR part 112, subparts A through C. A copy of the containment and drainage plans that are required in 40 CFR part 112, subparts A through C may be inserted in this section, including any diagrams in those plans.

NOTE: The general permit for stormwater drainage may contain additional requirements.

1.8 Self-Inspection, Drills/Exercises, and Response Training

The owner or operator must develop programs for facility response training and for drills/exercises according to the requirements of 40 CFR 112.21. Logs must be kept for facility drills/exercises, personnel response training, and spill prevention meetings. Much of the recordkeeping information required by this section is also contained in the SPCC Plan required by 40 CFR 112.3. These logs may be included in the facility response plan or kept as an annex to the facility response plan.

1.8.1 Facility Self-Inspection

Under 40 CFR 112.7(e), you must include the written procedures and records of inspections for each facility in the SPCC Plan. You must include the inspection records for each container, secondary containment, and item of response equipment at the facility. You must cross-reference the records of inspections of each container and secondary containment required by 40 CFR 112.7(e) in the facility response plan. The inspection record of response equipment is a new requirement in this plan. Facility self-inspection requires two-steps: (1) a checklist of things to inspect; and (2) a method of recording the actual inspection and its findings. You must note the date of each inspection. You must keep facility response plan records for five years. You must keep SPCC records for three years.

1.8.1.1. Tank Inspection

The tank inspection checklist presented below has been included as guidance during inspections and monitoring. Similar requirements exist in 40 CFR part 112, subparts A through C. Duplicate information from the SPCC Plan may be photocopied and inserted in this section. The inspection checklist consists of the following items:

TANK INSPECTION CHECKLIST

1. Check tanks for leaks, specifically looking for:
   A. drip marks;
   B. discoloration of tanks;
   C. puddles containing spilled or leaked material;
   D. corrosion;
   E. cracks; and
   F. localized dead vegetation.
2. Check foundation for:
   A. cracks;
   B. discoloration;
   C. puddles containing spilled or leaked material;
   D. settling;
   E. gaps between tank and foundation; and
   F. damage caused by vegetation roots.
3. Check piping for:
   A. droplets of stored material;
   B. discoloration;
   C. corrosion;
   D. bowing of pipe between supports;
   E. evidence of stored material seepage from valves or seals; and
   F. localized dead vegetation.

TANK/SURFACE IMPOUNDMENT INSPECTION LOG

Inspector	Tank or SI#	Date	Comments

TANK/SURFACE IMPOUNDMENT INSPECTION LOG—Continued

Inspector	Tank or SI#	Date	Comments

1.8.1.2 Response Equipment Inspection

Using the Emergency Response Equipment List provided in section 1.3.2 of the response plan, describe each type of response equipment, checking for the following:

Response Equipment Checklist

1. Inventory (item and quantity);
2. Storage location;
3. Accessibility (time to access and respond);
4. Operational status/condition;
5. Actual use/testing (last test date and frequency of testing); and
6. Shelf life (present age, expected replacement date).

Please note any discrepancies between this list and the available response equipment.

RESPONSE EQUIPMENT INSPECTION LOG

[Use section 1.3.2 of the response plan as a checklist]

Inspector	Date	Comments

RESPONSE EQUIPMENT INSPECTION LOG—Continued

[Use section 1.3.2 of the response plan as a checklist]

Inspector	Date	Comments

1.8.1.3 Secondary Containment Inspection

Inspect the secondary containment (as described in sections 1.4.1 and 1.7.2 of the response plan), checking the following:

Secondary Containment Checklist

1. Dike or berm system.
   A. Level of precipitation in dike/available capacity;
   B. Operational status of drainage valves;
   C. Dike or berm permeability;
   D. Debris;
   E. Erosion;
   F. Permeability of the earthen floor of diked area; and
   G. Location/status of pipes, inlets, drainage beneath tanks, etc.
2. Secondary containment
   A. Cracks;
   B. Discoloration;
   C. Presence of spilled or leaked material (standing liquid);
   D. Corrosion; and
   E. Valve conditions.
3. Retention and drainage ponds
   A. Erosion;
   B. Available capacity;
   C. Presence of spilled or leaked material;
   D. Debris; and
   E. Stressed vegetation.

The tank inspection checklist presented below has been included as guidance during inspections and monitoring. Similar requirements exist in 40 CFR part 112, subparts A through C. Similar requirements exist in 40 CFR 112.7(e). Duplicate information from the SPCC Plan may be photocopied and inserted in this section.

1.8.2 Facility Drills/Exercises

(A) CWA section 311(j)(5), as amended by OPA, requires the response plan to contain a description of facility drills/exercises. According to 40 CFR 112.21(c), the facility owner or operator shall develop a program of facility response drills/exercises, including evaluation procedures. Following the PREP guidelines (see Appendix E to this part, section 13, for availability) would satisfy a facility's requirements for drills/exercises under this part. Alternately, under §112.21(c), a facility owner or operator may develop a program that is not based on the PREP guidelines. Such a program is subject to approval by the Regional Administrator based on the description of the program provided in the response plan.

(B) The PREP Guidelines specify that the facility conduct internal and external drills/exercises. The internal exercises include: qualified individual notification drills, spill management team tabletop exercises, equipment deployment exercises, and unannounced exercises. External exercises include Area Exercises. Credit for an Area or Facility-specific Exercise will be given to the facility for an actual response to a discharge in the area if the plan was utilized for response to the discharge and the objectives of the Exercise were met and were properly evaluated, documented, and self-certified.

(C) Section 112.20(h)(8)(ii) requires the facility owner or operator to provide a description of the drill/exercise program to be carried out under the response plan. Qualified Individual Notification Drill and Spill Management Team Tabletop Drill logs shall be provided in sections 1.8.2.1 and 1.8.2.2, respectively. These logs may be included in the facility response plan or kept as an annex to the facility response plan. See section 1.3.3 of this appendix for Equipment Deployment Drill Logs.

1.8.2.1 Qualified Individual Notification Drill Logs

Qualified Individual Notification Drill Log

Date: _____
Company: _____
Qualified Individual(s): _____
Emergency Scenario: _____

_____

_____

Evaluation: _____

_____

_____

_____

Changes to be Implemented: _____

_____

_____

Time Table for Implementation: _____

_____

1.8.2.2 Spill Management Team Tabletop Exercise Logs

Spill Management Team Tabletop Exercise Log

Date: _____
Company: _____
Qualified Individual(s): _____
Emergency Scenario: _____

_____

_____

Evaluation: _____

_____

_____

_____

Changes to be Implemented: _____

_____

_____

Time Table for Implementation: _____

1.8.3 Response Training

Section 112.21(a) requires facility owners or operators to develop programs for facility response training. Facility owners or operators are required by §112.20(h)(8)(iii) to provide a description of the response training program to be carried out under the response plan. A facility's training program can be based on the USCG's Training Elements for Oil Spill Response, to the extent applicable to facility operations, or another response training program acceptable to the RA. The training elements are available from the USCG Office of Response (G-MOR) at (202) 267–0518 or fax (202) 267–4085. Personnel response training logs and discharge prevention meeting logs shall be included in sections 1.8.3.1 and 1.8.3.2 of the response plan respectively. These logs may be included in the facility response plan or kept as an annex to the facility response plan.

1.8.3.1 Personnel Response Training Logs

PERSONNEL RESPONSE TRAINING LOG

Name	Response training/date and number of hours	Prevention training/date and number of hours

1.8.3.2 Discharge Prevention Meetings Logs

DISCHARGE PREVENTION MEETING LOG

Date: _____
Attendees: _____

_____

_____

_____

_____

_____

_____

Subject/issue identified	Required action	Implementation date

1.9 Diagrams

The facility-specific response plan shall include the following diagrams. Additional diagrams that would aid in the development of response plan sections may also be included.

(1) The Site Plan Diagram shall, as appropriate, include and identify:
(A) the entire facility to scale;
(B) above and below ground bulk oil storage tanks;
(C) the contents and capacities of bulk oil storage tanks;
(D) the contents and capacity of drum oil storage areas;
(E) the contents and capacities of surface impoundments;
(F) process buildings;
(G) transfer areas;
(H) secondary containment systems (location and capacity);
(I) structures where hazardous materials are stored or handled, including materials stored and capacity of storage;
(J) location of communication and emergency response equipment;
(K) location of electrical equipment which contains oil; and
(L) for complexes only, the interface(s) (i.e., valve or component) between the portion of the facility regulated by EPA and the portion(s) regulated by other Agencies. In most cases, this interface is defined as the last valve inside secondary containment before piping leaves the secondary containment area to connect to the transportation-related portion of the facility (i.e., the structure used or intended to be used to transfer oil to or from a vessel or pipeline). In the absence of secondary containment, this interface is the valve manifold adjacent to the tank nearest the transfer structure as described above. The interface may be defined differently at a specific facility if agreed to by the RA and the appropriate Federal official.

(2) The Site Drainage Plan Diagram shall, as appropriate, include:
(A) major sanitary and storm sewers, manholes, and drains;
(B) weirs and shut-off valves;
(C) surface water receiving streams;
(D) fire fighting water sources;
(E) other utilities;
(F) response personnel ingress and egress;
(G) response equipment transportation routes; and
(H) direction of discharge flow from discharge points.

(3) The Site Evacuation Plan Diagram shall, as appropriate, include:
(A) site plan diagram with evacuation route(s); and
(B) location of evacuation regrouping areas.

1.10 Security

According to 40 CFR 112.7(g) facilities are required to maintain a certain level of security, as appropriate. In this section, a description of the facility security shall be provided and include, as appropriate:

(1) emergency cut-off locations (automatic or manual valves);
(2) enclosures (e.g., fencing, etc.);
(3) guards and their duties, day and night;
(4) lighting;
(5) valve and pump locks; and
(6) pipeline connection caps.

The SPCC Plan contains similar information. Duplicate information may be photocopied and inserted in this section.

2.0 Response Plan Cover Sheet

A three-page form has been developed to be completed and submitted to the RA by owners or operators who are required to prepare and submit a facility-specific response plan. The cover sheet (Attachment F–1) must accompany the response plan to provide the Agency with basic information concerning the facility. This section will describe the Response Plan Cover Sheet and provide instructions for its completion.

2.1 General Information

Owner/Operator of Facility: Enter the name of the owner of the facility (if the owner is the operator). Enter the operator of the facility if otherwise. If the owner/operator of

the facility is a corporation, enter the name of the facility's principal corporate executive. Enter as much of the name as will fit in each section.

(1) *Facility Name:* Enter the proper name of the facility.

(2) *Facility Address:* Enter the street address, city, State, and zip code.

(3) *Facility Phone Number:* Enter the phone number of the facility.

(4) *Latitude and Longitude:* Enter the facility latitude and longitude in degrees, minutes, and seconds.

(5) *Dun and Bradstreet Number:* Enter the facility's Dun and Bradstreet number if available (this information may be obtained from public library resources).

(6) North American Industrial Classification System (NAICS) Code: Enter the facility's NAICS code as determined by the Office of Management and Budget (this information may be obtained from public library resources.)

(7) *Largest Oil Storage Tank Capacity:* Enter the capacity in GALLONS of the largest aboveground oil storage tank at the facility.

(8) *Maximum Oil Storage Capacity:* Enter the total maximum capacity in GALLONS of all aboveground oil storage tanks at the facility.

(9) *Number of Oil Storage Tanks:* Enter the number of all aboveground oil storage tanks at the facility.

(10) *Worst Case Discharge Amount:* Using information from the worksheets in Appendix D, enter the amount of the worst case discharge in GALLONS.

(11) *Facility Distance to Navigable Waters:* Mark the appropriate line for the nearest distance between an opportunity for discharge (i.e., oil storage tank, piping, or flowline) and a navigable water.

2.2 Applicability of Substantial Harm Criteria

Using the flowchart provided in Attachment C–I to Appendix C to this part, mark the appropriate answer to each question. Explanations of referenced terms can be found in Appendix C to this part. If a comparable formula to the ones described in Attachment C–III to Appendix C to this part is used to calculate the planning distance, documentation of the reliability and analytical soundness of the formula must be attached to the response plan cover sheet.

2.3 Certification

Complete this block after all other questions have been answered.

3.0 Acronyms

ACP: Area Contingency Plan
ASTM: American Society of Testing Materials
bbls: Barrels
bpd: Barrels per Day
bph: Barrels per Hour
CHRIS: Chemical Hazards Response Information System
CWA: Clean Water Act
DOI: Department of Interior
DOC: Department of Commerce
DOT: Department of Transportation
EPA: Environmental Protection Agency
FEMA: Federal Emergency Management Agency
FR: Federal Register
gal: Gallons
gpm: Gallons per Minute
HAZMAT: Hazardous Materials
LEPC: Local Emergency Planning Committee
MMS: Minerals Management Service (part of DOI)
NAICS: North American Industrial Classification System
NCP: National Oil and Hazardous Substances Pollution Contingency Plan
NOAA: National Oceanic and Atmospheric Administration (part of DOC)
NRC: National Response Center
NRT: National Response Team
OPA: Oil Pollution Act of 1990
OSC: On-Scene Coordinator
PREP: National Preparedness for Response Exercise Program
RA: Regional Administrator
RCRA: Resource Conservation and Recovery Act
RRC: Regional Response Centers
RRT: Regional Response Team
RSPA: Research and Special Programs Administration
SARA: Superfund Amendments and Reauthorization Act
SERC: State Emergency Response Commission
SDWA: Safe Drinking Water Act of 1986
SI: Surface Impoundment
SPCC: Spill Prevention, Control, and Countermeasures
USCG: United States Coast Guard

4.0 References

CONCAWE. 1982. Methodologies for Hazard Analysis and Risk Assessment in the Petroleum Refining and Storage Industry. Prepared by CONCAWE's Risk Assessment Ad-hoc Group.

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The National Response Team. 1987. Hazardous Materials Emergency Planning Guide. Washington, DC.

The National Response Team. 1990. Oil Spill Contingency Planning, National Status: A Report to the President. Washington, DC. U.S. Government Printing Office.

Offshore Inspection and Enforcement Division. 1988. Minerals Management Service, Offshore Inspection Program: National Potential Incident of Noncompliance (PINC) List. Reston, VA.

ATTACHMENTS TO APPENDIX F

Attachment F–1—Response Plan Cover Sheet

This cover sheet will provide EPA with basic information concerning the facility. It must accompany a submitted facility response plan. Explanations and detailed instructions can be found in Appendix F. Please type or write legibly in blue or black ink. Public reporting burden for the collection of this information is estimated to vary from 1 hour to 270 hours per response in the first year, with an average of 5 hours per response. This estimate includes time for reviewing instructions, searching existing data sources, gathering the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate of this information, including suggestions for reducing this burden to: Chief, Information Policy Branch, Mail Code: PM–2822, U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington D.C. 20503.

GENERAL INFORMATION

Owner/Operator of Facility:

_____

Facility Name: _____

Facility Address (street address or route):

_____

_____

City, State, and U.S. Zip Code:

_____

Facility Phone No.: _____

Latitude (Degrees: North):

_____

degrees, minutes, seconds

Dun & Bradstreet Number: [1]

_____

Largest Aboveground Oil Storage Tank Capacity (Gallons):

_____

Number of Aboveground Oil Storage Tanks:

_____

Longitude (Degrees: West):

_____

degrees, minutes, seconds _____

North American Industrial Classification System (NAICS) Code: [1] _____

_____

Maximum Oil Storage Capacity (Gallons): __

Worst Case Oil Discharge Amount (Gallons):

Facility Distance to Navigable Water. Mark the appropriate line. _____

0– ¼ mile ____ ¼–½ mile ____ ½–1 mile ____ >1 mile ____

APPLICABILITY OF SUBSTANTIAL HARM CRITERIA

Does the facility transfer oil over-water [2] to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

Yes _____

No _____

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and, within any storage area, does the facility lack secondary containment [2] that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation?

Yes _____

No _____

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance [2] (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? [3]

Yes _____

No _____

Does the facility have a total oil storage capacity greater than or equal to 1 million

[1] These numbers may be obtained from public library resources.

[2] Explanations of the above-referenced terms can be found in Appendix C to this part. If a comparable formula to the ones contained in Attachment C–III is used to establish the appropriate distance to fish and wildlife and sensitive environments or public drinking water intakes, documentation of the reliability and analytical soundness of the formula must be attached to this form.

[3] For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's ''Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments'' (see Appendix E to this part, section 13, for availability) and the applicable ACP.

gallons and is the facility located at a distance[2] (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the facility would shut down a public drinking water intake?[2]

Yes _____

No _____

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill [2] in an amount greater than or equal to 10,000 gallons within the last 5 years?

Yes _____

No _____

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Signature: _____

Name (Please type or print): _____

Title: _____

Date: _____

[59 FR 34122, July 1, 1994; 59 FR 49006, Sept. 26, 1994, as amended at 65 FR 40816, June 30, 2000; 65 FR 43840, July 14, 2000; 66 FR 34561, June 29, 2001; 67 FR 47152, July 17, 2002]

PART 113—LIABILITY LIMITS FOR SMALL ONSHORE STORAGE FACILITIES

Subpart A—Oil Storage Facilities

Sec.

113.1 Purpose.
113.2 Applicability.
113.3 Definitions.
113.4 Size classes and associated liability limits for fixed onshore oil storage facilities, 1,000 barrels or less capacity.
113.5 Exclusions.
113.6 Effect on other laws.

AUTHORITY: Sec. 311(f)(2), 86 Stat. 867 (33 U.S.C. 1251 (1972)).

SOURCE: 38 FR 25440, Sept. 13, 1973, unless otherwise noted.

Subpart A—Oil Storage Facilities

§ 113.1 Purpose.

This subpart establishes size classifications and associated liability limits for small onshore oil storage facilities with fixed capacity of 1,000 barrels or less.

§ 113.2 Applicability.

This subpart applies to all onshore oil storage facilities with fixed capacity of 1,000 barrels or less. When a discharge to the waters of the United States occurs from such facilities and when removal of said discharge is performed by the United States Government pursuant to the provisions of subsection 311(c)(1) of the Act, the liability of the owner or operator and the facility will be limited to the amounts specified in § 113.4.

§ 113.3 Definitions.

As used in this subpart, the following terms shall have the meanings indicated below:

(a) *Aboveground* storage facility means a tank or other container, the bottom of which is on a plane not more than 6 inches below the surrounding surface.

(b) *Act* means the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1151, *et seq.*

(c) *Barrel* means 42 United States gallons at 60 degrees Fahrenheit.

(d) *Belowground* storage facility means a tank or other container located other than as defined as ''Aboveground''.

(e) *Discharge* includes, but is not limited to any spilling, leaking, pumping, pouring, emitting, emptying or dumping.

(f) *Onshore Oil Storage Facility* means any facility (excluding motor vehicles and rolling stock) of any kind located in, on, or under, any land within the United States, other than submerged land.

(g) *On-Scene Coordinator* is the single Federal representative designated pursuant to the National Oil and Hazardous Substances Pollution Contingency Plan and identified in approved Regional Oil and Hazardous Substances Pollution Contingency Plans.

(h) *Oil* means oil of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

APPENDIX B
CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA CHECKLIST

Applicability of Substantial Harm Certification

40 CFR 112.20 Requirement

Facility Name: Lhoist North America of Alabama, LLC
Brierfield Quarry
14786 Montevallo Road (Highway 25)
Brierfield, Alabama 35035

1. Does the facility have a maximum storage capacity greater than or equal to 42,000 gallons and do the operations include over water transfers of oil to or from vessels? **YES ___ NO _X_ .**
2. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons and is the facility without secondary containment for any aboveground storage area sufficiently large to contain the capacity of the largest aboveground storage tank within the storage area? **YES ___ NO _X_** .
3. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons and is the facility located at a distance (as calculated using the appropriately formula in Attachment C-III to 40 CFR Part 112 or an alternative formula considered acceptable the Regional Administrator) such that a discharge from the facility could cause injury to an environmentally sensitive area as defined in Appendix D to 40 CFR Part 112? **YES ___ NO _X_** .
4. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to 40 CFR Part 112 or an alternative formula1 considered acceptable by the Regional Administrator) such that a discharge from the facility would shut down a public drinking water intake? **YES ___ NO _X_** .
5. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons and within the past 5 years, has the facility experienced a reportable spill in an amount greater than or equal to 10,000 gallons? **YES ___ NO _X_** .

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

_____
Signature

Jason Lauer
Name (please type or print)

Quarry Manager
Title

_____
Date

APPENDIX C
SECONDARY CONTAINMENT CALCULATIONS

Secondary Containment Calculations for Storage Areas

Tank ID	Tank Volume (gallons)	Secondary Containment Volume* (gallons)	Dimensions (ft)
Quarry Maintenance Shop Diesel Tank	14,130	34,470	48 x 24 x 4
Contractor Diesel Tank	10,000	11,968	40 x 20 x 2
Gasoline Tank	405	2,300	11 x 7 x 4
Used Oil Tank	405	5,595	17 x 11 x 4
DSA-2	16 Drums (880)	1,321	5.8 x 2.1 x 14.5

*Shown for largest tank within secondary containment. Does not include tank displacement

APPENDIX D
DRAINAGE DISCHARGE REPORT

Drainage Discharge Report Form

Tank Containment Area/No.:
Operator's Name:
Date and Time of Water Discharge:
Approximate Volume of Water: _____Gallons
Approximate Volume of Oil: _____ Gallons
Appearance of Water: **Sheen: Yes No** **Odor (describe):** **Foam: Yes No** **Note: Water with sheen or oil must be contained and properly disposed as oily water.**
Signature/Date:

APPENDIX E
CERTIFIED TANK INSPECTION REPORTS

APPENDIX F
FACILITY INSPECTION REPORTS AND CHECKLIST

Monthly Facility Inspection Report and Checklist

Date:	**X - Satisfactory**
Time:	**NA – Not Applicable**
Inspector:	**R – Repair or Adjustment Repair**
Inspector Signature:	**C - See Comments**

Drainage:

___ Noticeable oil sheen on runoff
___ Containment area drainage valves closed and locked
___ Oil/Water separator systems working properly
___ Effluent from oil/water separator inspected
___ No visible oil sheen in the containment area
___ No standing water in containment area

ASTs:

___ Tank surface checked for signs of leakage
___ Tank condition and coating good (no rusting, corrosion, or pitting)
___ Bolts, rivets, or seams not damaged
___ Tank foundation intact
___ Level gauges and alarms working properly
___ Vents, flanges, and gaskets free of leaks
___ Vents not obstructed
___ Containment walls intact (no cracks, holes, or leaks)
___ Presence of water in the primary tank and secondary tank (if equipped)
___ Normal operating vents and emergency vents, and spill containers inspected/cleaned
___ Ground settling or puddling of water near tanks
___ O-ring/Gasket of emergency vents not damaged or deteriorated
___ Tank supports not damaged or deteriorated
___ No signs of settlement, cracking, pitting, or spalling on the tank foundation

Truck Loading/Unloading Areas:

___ No standing water in loading/unloading areas
___ Warning signs posted
___ Hose integrity, no leaks or cracks
___ Catch basin free of contamination
___ Containment curbing or trenches intact
___ Unloading/loading connections capped and blank-flanged

Security:

___ Fence and gates intact (as applicable)
___ Locks on gates
___ AST loading/unloading connections locked when not in use
___ Lighting working properly

Remarks/Recommendations:

APPENDIX G
ANNUAL SPCC PLAN TRAINING DOCUMENTATION

Employee Spill Prevention Control and Countermeasure (SPCC) Plan

Training Log

Date: _____ Instructor Signature: _____

EMPLOYEE ID #	PRINTED NAME	SIGNATURE

Note: Copy Form as Necessary

APPENDIX H
DISCHARGE REPORTING FORM

SPILL RESPONSE NOTIFICATION FORM

IT IS NOT NECESSARY TO WAIT FOR ALL INFORMATION BEFORE CALLING THE NRC.
IF REPORT IS INCOMPLETE, CALL NRC WITHIN 30-60 MINUTES OF SPILL DISCOVERY.

Reporter Information

Reporter's Name (Last, First, M.I.) _____

Reporter's Phone _____

Company _____ Position _____

Address _____

City _____ State _____ Zip _____

Meeting Federal requirements to report (circle one)? Yes No

Are you calling for the responsible party (circle one)? Yes No

Date of Report _____ Time of Report _____

Incident Description

Source/Cause of Spill _____

Date of Spill _____ Time of Spill _____

Location of Spill _____

Nearest City _____

Latitude_____ Longitude_____

Tank Involved_____ Capacity_____

Weather Conditions _____

Wind Direction/Speed _____

Material

Type of Oil _____

Estimated Quantity Spilled _____ Released To: Land Water

Spill Color _____ Spill Length _____ Spill Width _____

Response Action

Actions Taken to Correct, Control or Mitigate Incident:

_____

_____

_____

_____

Impact

Name(s) of Injured_____ Name(s) of Fatalities _____

_____ _____

_____ _____

Were there evacuations? Yes No Number Evacuated _____

Was there property damage? Yes No Estimate Amount (dollars) _____

Caller Notifications

National Response Center (1-800-424-8802)	**YES**	**NO**	**Initials**_____
ADEM Field Office (1-334-260-2700)	**YES**	**NO**	**Initials**_____
Alabama Emergency Management Agency (1-800-843-0699)	**YES**	**NO**	**Initials**_____

Neighbors (list separately)

YES	**NO**	**Initials**_____
YES	**NO**	**Initials**_____
YES	**NO**	**Initials**_____
YES	**NO**	**Initials**_____
YES	**NO**	**Initials**_____
YES	**NO**	**Initials**_____

Pollution Abatement Plan (PAP)

Lhoist North America of Alabama, LLC
Brierfield Quarry

14786 Montevallo Road (Highway 25)
Brierfield, Alabama 35035

May 2026

Keith M. Jackson, P.G.
Project Manager

Nakia Addison, P.E.
Senior Project Engineer

50 INTERNATIONAL DRIVE, SUITE 150, GREENVILLE, SC 29615, ● 864.281.0030 PHONE ● 864.281.0288 FAX ● WWW.TRCCOMPANIES.COM

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Appendix B Specifications for Sedimentation Controls
Appendix C Specifications for Haul Roads

Certification

I hereby certify that I have examined the facility, and being familiar with the provisions of Alabama Department of Environmental Management (ADEM) Administrative Code 335-6-9, attest that this pollution abatement plan (PAP) has been prepared in accordance with good engineering practice.

Nakia Addison, P.E.
Name of Professional Engineer

Signature

38320-E
Registration Number

Alabama
State

May 19, 2026
Date

Seal



Section 1
Introduction

This pollution abatement plan (PAP) has been prepared for Lhoist North America of Alabama's (LNA) Brierfield Quarry (the "Facility") by TRC Environmental Corporation (TRC) in accordance with the requirements of Alabama Department of Environmental Management (ADEM) Administrative Code 335-6-9-.03, Revised September 15, 2021. As part of the certification for this plan, TRC performed a thorough facility site inspection to verify that the existing sedimentation basin system and discharge outfall continue to comply with ADEM requirements and National Pollutant Discharge Elimination System (NPDES) Permit No. AL0067831.

The outline of this plan has been organized similar to the outline for ADEM Administrative Code (AAC) 335-6-9-.03. The information in this plan is provided to satisfy the requirements of AAC 335-6-9-.03 as well as the sedimentation control and haul road guidelines published by ADEM as Appendixes A and B, respectively, to AAC 335-6-9-.03. In accordance with the requirements of AAC 335-6-3(2), a registered professional engineer employed by TRC that is licensed to practice engineering in the State of Alabama has prepared and certified this plan.

The purpose of this PAP plan is to allow for surface mining operations to be conducted in a manner to minimize direct impacts on water quality, and thereby applicable water quality standards.

Section 2
Facility Information

LNA owns and operates the Brierfield Quarry in Brierfield, Alabama (the Facility). Primary crushing and screening operations, as well as an inactive dolomite quarry, are located at this site. This section provides the owner information and describes plant operations and surface water drainage through the facility.

2.1 Owner/Operator Information

The Brierfield Quarry is owned and operated by LNA with business offices located at the following address:

Lhoist North America of Alabama, LLC
Montevallo Plant
7444 Highway 25
Calera, Alabama 35040

The address of the Brierfield Quarry is:

Lhoist North America of Alabama, LLC
Brierfield Quarry
14786 Montevallo Road (Highway 25)
Brierfield, Alabama 35035

LNA has corporate offices located at:

Lhoist North America
5600 Clearfork Main Street
Suite 300
Fort Worth, TX 76109

The Brierfield Quarry is located in Sections 22, 23, 24, 25, 26, 27 and 35 of Township 24 North, Range 11 East and Sections 19 and 30 of Township 24 North, Range 12 East, in Bibb County, Alabama; and, Section 18 of Township 24 North, Range 12 East, in Shelby County, Alabama. The latitude is 33 degrees, 03 minutes, 08 seconds north and the longitude is 86 degrees, 55 minutes, 52 seconds west. The facility and property boundary are shown on Figure 1; a more detailed facility diagram is provided on Figure 2.

The LNA officials responsible for the implementation of the PAP are as follows:

- Montevallo Plant Manager, LNA:
  Grant McCallum
  (205) 444-4903
- Brierfield Quarry Manager, LNA:
  John Meuth
  (205) 660-9041
- Environmental Engineer, LNA:
  Jodie Edwards
  (205) 335-8532

2.2 General Facility Description

The Brierfield Quarry surface mines, crushes, screens, conveys, stacks, and loads raw dolomite. There is also an inactive dolomite quarry at the site. LNA employs approximately 30 personnel at the Brierfield Quarry, along with approximately 10 contracted employees. The quarry typically operates 24 hours per day, 5 days per week. The Brierfield Quarry utilizes a combination of fencing, signage, and controlled access entry points to define the permitted boundaries.

2.3 Method of Diverting Surface Runoff

Surface water runoff from the quarrying operations at the Facility drains to the inactive quarry pond and active quarry pit. Water collected in the inactive quarry pond is pumped to the limestone screening process. The screening wash water is directed to the sedimentation pond prior to discharging from the property. Water from dewatering operations in the active quarry is either pumped to the sedimentation pond prior to discharging or to the inactive quarry. The area around the office and maintenance shop is bermed to restrict sheet flow. Runoff from the quarry maintenance shop flows along the berm to a primary discharge point (Maintenance Area Discharge) and eventually to Mahan Creek. Surface water runoff from the contractor diesel storage tank area discharges to an unnamed tributary of Mahan Creek, which is located on the west portion of the property.

There is currently one permitted outfall at the Facility (Outfall 001E). This outfall is the discharge from the sedimentation pond to Mahan Creek. Mahan Creek runs along the northern, and generally eastern boundary of the Brierfield Quarry property. Lhoist will continue to expand the surface mine to the west of the existing cut, paralleling the overburden management area to the south. At this time, storm water flows will gravity discharge to the current quarry area.

As part of the overburden management area expansion, a sediment and stormwater detention pond (East Pond) will be constructed on the eastern side of the property near Rolling Mill Road. At this time, the proposed outfall (Outfall 002P) will be gravity discharged via natural drainage features directly east to

Mahan Creek. The discharge will consist of storm water only as no process areas are proposed. The approximate position of the East Pond and proposed Outfall 002P are illustrated on Figure 1 and Figure 2.

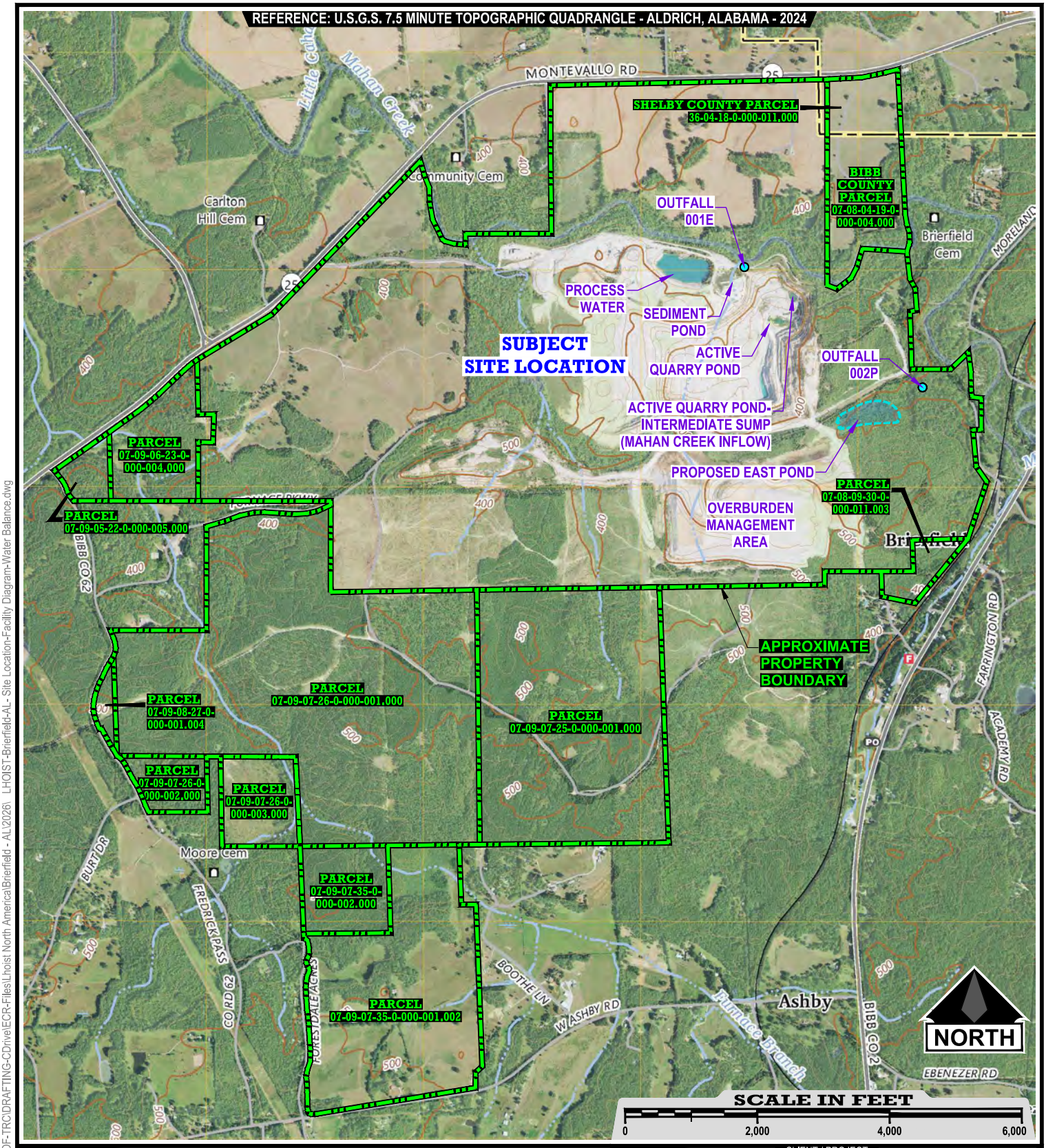
In order to control erosion where it is not practical to use berms or diversion channels, natural vegetation, hay berms, silt fencing, or other equally effective systems may be utilized. The Pollution Abatement Treatment Measures and Sediment Control Structures Certification Report is provided in Appendix A. Sedimentation controls, including sediment ponds, will meet the specifications provided in Appendix B.

2.4 Raw Materials, Processes, and Products

Dolomite is the only raw material mined on the site. Raw dolomite is processed by crushing and screening and then stockpiled until it is transported to other facilities for further processing. Quarrying operations are conducted along the eastern portion of the permit area within the SE ¼ of the NE ¼ of Section 24, Township 24 North, Range 11 East, Bibb County, Alabama. Pits are aligned in a north to south direction. Surface water runoff from quarrying operations drains to the open quarry pit. The water is collected within the open pit and either pumped to the screen in the process area, the inactive quarry pond, or to the sedimentation pond and then to Outfall 001E.

Processing of the dolomite consists of primary crushing and screening operations necessary to meet market demands. The processing equipment is located within the SW ¼ of the NE ¼ of Section 24, Township 24 North, Range 11 East, Bibb County, Alabama. Water collected in the inactive quarry is used as the source of water for the processing operations.

The primary waste products generated at this facility include screened fines reject, overburden/waste rock, sediment pond clean-out, and sediment from the mining and processing operations. Any unsold sediment is transported back to the mining operations waste management area.





CLIENT / PROJECT

LHOIST NORTH AMERICA
Brierfield Quarry
14786 Highway 25, Brierfield, AL 35035

TITLE

SITE LOCATION MAP

DRAWN BY: O. Fonseka	REQUEST BY: K. Jackson	PROJECT NO. 731026
DWG. DATE: May 2026	PROJECT-MGR: K. Jackson	

TRC — BIRMINGHAM, ALABAMA — PHONE: 205-518-9316 — TRCcompanies.com

Lhoist

FIGURE 1

LAST EDIT: 05/12/2026 - FILE LOCATION: HOU C:\OF-TRC\DRAFTING-CDrive\ECR-Files\Lhoist North America\Brierfield - AL\2026\ LHOIST-Brierfield-AL- Site Location-Facility Diagram-Water Balance.dwg

DRAWING By: Oskar Fonseka - FILE NAME: LHOIST-Brierfield-AL- Site Location-Facility Diagram-Water Balance.dwg

IMAGERY SOURCE: GOOGLE EARTH - 01/13/2023

STATE HIGHWAY 25

MAINTENANCE AREA DISCHARGE

LIMESTONE CRUSHING AND SCREENING AREA

BLASTING AGENT STORAGE AREA

Mahan Creek

OUTFALL 001E

MAINTENANCE OIL STORAGE AREA (SEE ENLARGED DIAGRAM)

DSA-1

OFOE - JAW CRUSHER

T-1

DSA-2

MOBILE DRILLERS TRUCK

INACTIVE QUARRY POND

MOBILE OIL TRUCK

SCALE HOUSE

ORANGE SUMP PUMP

T-2

QUARRY EQUIPMENT STAGING AREA

SEDIMENT POND

UNNAMED TRIBUTARY TO MAHAN CREEK

CONTRACTOR DIESEL TANK

MOBILE AG TRAILER

AGRICULTURAL PRODUCT SCREENING AREA

ACTIVE QUARRY PONDS

SPILL KIT

OFOE - SCREEN

OFOE - SCREEN DIESEL TANK

PIONEER PUMP

RETENTION POND

BIG SUMP PUMP

SMALL SUMP PUMP

OUTFALL 002P

PROPOSED EAST POND

OVERBURDEN MANAGEMENT AREA EXPANSION

OVERBURDEN MANAGEMENT AREA

N

W

E

S

0 350' 700' 1,400'

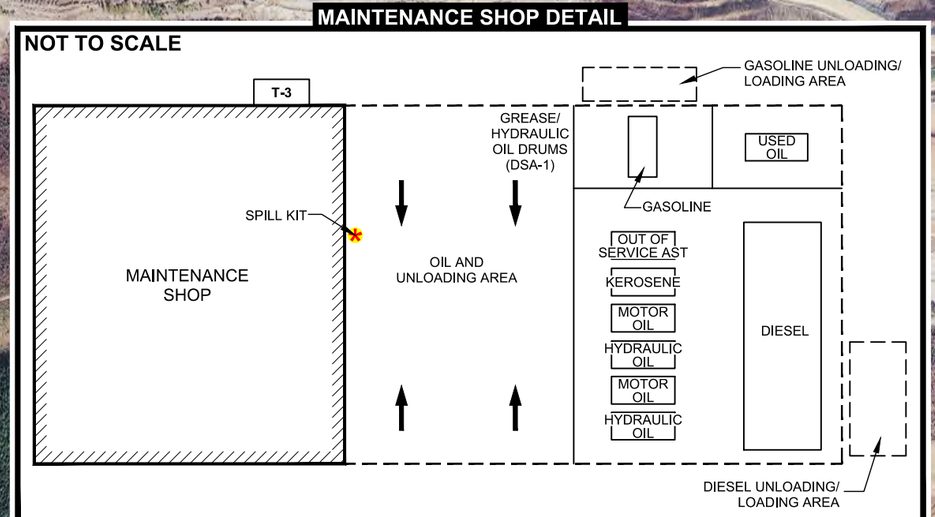
SCALE IN FEET
1" = 700'-0"

TABLE 2-1 - OIL STORAGE

IDENTIFICATION	TANK NAME / CONTENTS	LOCATION	VOLUME AND CONTAINER TYPE
Aboveground Storage Tanks (ASTs)			
Quarry Maintenance Shop Diesel Tank	Diesel Fuel	Maintenance Building Oil Storage Area	14,130-gallon Single Wall AST
Gasoline Tank	Gasoline		405-gallon Single Wall AST
Used Oil	Used Oil		405-gallon Single Wall AST
Motor Oil Tank (30W)	Motor Oil		500-gallon Single Wall AST
Motor Oil Tank (15W-40)	Motor Oil		500-gallon Single Wall AST
Hydraulic Oil 1	Hydraulic Oil		500-gallon Single Wall AST
Hydraulic Oil 2	Hydraulic Oil		500-gallon Single Wall AST
Kerosene	Kerosene		580-gallon Single Wall AST
Out-of-Service	Empty		580-gallon Single Wall AST
Contractor Diesel Tank	Diesel Fuel	West Quarry Road	10,000-gallon Double Wall AST
Transformers			
T-1	Transformer, Dielectric Fluid	Active Quarry-North Face	255-gallon AST (Estimated)
T-2	Transformer, Dielectric Fluid	Limestone Crushing and Screening Area	255-gallon AST (Estimated)
T-3	Transformer, Dielectric Fluid	Maintenance Building Oil Storage Area	255-gallon AST (Estimated)
Drums/Totes/Containers			
DSA-1	Gear/Lube/ Hydraulic Oil	Maintenance Building Oil Storage Area	(12) Drums – 660 gallons
DSA-2	Gear/Lube/ Hydraulic Oil/Used Oil	Limestone Crushing and Screening Area	(16) Drums – 880 gallons
Mobile Equipment			
Mobile Oil Truck	Diesel	Maintenance Building Oil Storage Area	Diesel Fuel – 115-gallons
	Hydraulic Oil		Hydraulic Oil (2) – 115-gallons
	Motor Oil		Motor Oil (2) – 115-gallons
	Used Oil		Used Oil – 115-gallons
Mobile Drillers Truck	Diesel Fuel	Limestone Crushing and Screening Area	250-gallon Single Wall AST
Mobile Ag Product Trailer	Diesel Fuel	Agricultural Product Screening Area	77-gallon Single Wall AST (Truck Mount)
Oil-Filled Operating Equipment			
Jaw Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Limestone Crushing and Screening Area	112-gallon Hydraulic Reservoir
Cone Crusher	Oil-Filled Operating Equipment, Hydraulic Oil	Limestone Crushing and Screening Area	38-gallon Hydraulic Reservoir
Pioneer Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	500-gallon Diesel Fuel Tank
Orange Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	125-gallon Diesel Fuel Tank
Big Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	250-gallon Diesel Fuel Tank
Small Sump Pump	Oil-Filled Operating Equipment, Diesel Fuel	Varies	250-gallon Diesel Fuel Tank
Screen	Oil-Filled Operating Equipment, Diesel Fuel	Agricultural Product Screening Area	77-gallon Diesel Fuel Tank
	Oil-Filled Operating Equipment, Hydraulic Oil		98-gallon Hydraulic Reservoir

MAINTENANCE SHOP DETAIL

NOT TO SCALE



CLIENT / PROJECT

LHOIST NORTH AMERICA
Brierfield Quarry
14786 Highway 25, Brierfield, AL 35035

TITLE

FACILITY DIAGRAM

DRAWN BY: O. Fonseka	REQUEST BY: K. Jackson	PROJECT NO. 731026
DWG. DATE: April 2026	PROJECT-MGR: K. Jackson	FIGURE 2

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PHONE: 205-518-9316
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Lhoist

LAST EDIT: 04/24/2026 - FILE LOCATION: HOU C:\OF-TRC\DRAFTING-CDrive\ECR-Files\Lhoist North America\Brierfield - AL\2026\ LHOIST-Brierfield-AL- Site Location-n-Facility Diagram.dwg

DRAWING By: Oskar Fonseka - FILE NAME: LHOIST-Brierfield-AL- Site Location-n-Facility Diagram.dwg

Section 3
Waste Treatment Information

3.1 Water Supply and Use

A local municipality and along with purchased bottled water, provides the potable water supply for the facility. Storm water is collected in the inactive quarry pond and used as process water in the crushing/screening operations ("process area"). Additionally, a karst feature in the northeast quarry shear wall allows for a groundwater inflow seep direct from Mahan Creek that flows on a continual basis into the quarry. The Facility constructed a sump (Intermediate Sump) within the quarry for dewatering purposes for the groundwater inflow. A second quarry pond (Active Quarry Pond) is located south of the Intermediate Sump within the active quarry area utilized for the dewatering of storm water and groundwater to allow for the surface mining operations. The Active Quarry Pond and Intermediate sump are currently pumped to the process water pond for re-use in the aggregate screening and sorting operations and to the south end of the process sedimentation pond. Approximately 1 million gallons per month (MGM) is discharged as process water, and on average, approximately 180 MGM is discharged as groundwater/storm water from the Active Quarry Pond and Intermediate Sump to the process sedimentation pond. Water used in the process area operations discharges to the sedimentation pond. A water balance for this facility is shown in Figure 3.

3.2 Description of Waste Treatment Facilities

As detailed above, the majority of the water that passes through the sedimentation pond originates from the Active Quarry Pond and Intermediate Sump (180 MGM). Waste treatment facilities at the Brierfield Quarry also include an inactive quarry (the "inactive quarry pond"). Storm water and the groundwater infiltration occurring in the active quarry can be pumped to either the inactive quarry pond or directly to the sedimentation ponds, while storm water runoff in other disturbed areas at the site is drained to the inactive quarry pond. After primary settling of solids in the inactive quarry pond, the collected water is pumped to the process area. From the process area, the water discharges to the sedimentation pond for further treatment prior to discharging through Outfall 001E. The rate of discharge from Outfall 001E varies, and depending on the amount of rainfall, there may be no discharge from this outfall. The extensive hydraulic capacity of the quarry provides sufficient settling of solids to ensure that the pumped discharge contains minimal suspended solids.

Depending on the inflow water conditions/volume to the active quarry, the Facility has the ability to modify the flow dynamics through the process sedimentation pond to reduce the water volume and subsequently the flow rate such that the process water is allowed a greater time for treatment (e.g.,

settlement) prior to discharge through Outfall 001E. This allows the Facility to have the ability to discharge as a comingled source at the permitted Outfall 001E.

The sedimentation pond is earthen and is constructed in accordance with the ADEM rules and regulations. Guidelines for the pond construction, including engineering design details of the sedimentation pond, are presented in Appendix A. The sedimentation pond has a total basin capacity of 23.6 acre-feet and was designed for a 50-year, 24-hour storm event (8 inches of rainfall) based on 256 acres of drainage area with 37 acres of disturbed area. Based on the design data, the sedimentation pond meets the storage requirements established in ADEM Administrative Code R 3345 6 9, Appendix A (3). This pond has previously been certified by a Professional Engineer licensed in the state of Alabama, Mr. Donald Wade Spivey, on December 17, 2003. This certification is provided in Appendix A. Including the available storage capacity of the inactive quarry pond, the storage requirements for the plant are exceeded.

The East Pond will accept surface flows from an aerial extent of approximately 60-acres of the post-constructed overburden management area expansion. The East Pond is designed to detain the 25-year, 24-hour storm below the emergency spillway elevation, and to convey the 100-year, 24-hour storm through the emergency spillway. The East Pond is designed as a dry pond to temporarily store storm water runoff and release at a controlled rate gradually through a riser structure to reduce flow and sediment load in the discharge to the proposed Outfall 002P. The discharge point of the East Pond riser is set at a maximum of 19.60 cubic feet per second (cfs) for the 25-year, 24-hour storm event condition. Simerly to the process wastewater sedimentation pond, the East Pond is based on specific design data, to meet the storage requirements established in ADEM Administrative Code R 3345 6 9, Appendix A (3). Following construction, the East Pond will be certified by a Professional Engineer licensed in the state of Alabama. The hydraulic design specifications and construction drawings are provided in Appendix A.

In accordance with ADEM Administrative Code R, 335 6-9, LNA periodically cleans these basins out to ensure that the sediment accumulation does not exceed 60 percent of the design capacity.

3.3 Quantity and Quality of Effluent after Treatment

The quantity of water discharged through Outfall 001E averages approximately 180 MGM; however, again this volume depends on precipitation events and groundwater inflows. The treatment process for water quality control is sedimentation. Primary sedimentation occurs in the inactive quarry pond. The extensive hydraulic capacity of the inactive quarry provides sufficient settling of solids to ensure that the pumped discharge contains minimal solids. The design data for the sedimentation pond is included in Appendix C. The sedimentation ponds were designed to ensure that the facility adequately removes solids to compliance levels with the NPDES permit for total suspended solids

Outfall 001E is visually inspected at least twice per month and documented inspections are completed twice per month. During the documented inspections, water samples are collected if water is discharging

through the outfall, and the results are submitted quarterly to ADEM in discharge monitoring reports (DMRs). Current discharge limitations and monitoring requirements for Outfall 001E consists of pH, total suspended solids (TSS), and flow on a bi-monthly basis, and Kjeldahl nitrogen, nitrate-nitrite, and phosphorus during the months of April, June, August, and October. Reporting thresholds are limited to pH (6.0 standard units minimum daily and 8.5 standard units maximum daily) and TSS (25 mg/L monthly average with maximum daily limit of 45 mg/L).

According to recent 2025 DMR data, the pH of the discharge ranges from 7.34 to 8.40 and TSS values average 13.4 mg/L.

The quantity of water discharged through proposed Outfall 002P has a maximum discharge rate for the 25-year, 24-hour storm below the emergency spillway elevation, and to convey the 100-year, 24-hour storm through the emergency spillway. Again, the anticipated discharge volume depends directly on precipitation events. Given that the source water discharge for the proposed Outfall 002P will be storm water only, the discharge limitations and monitoring requirement for the proposed Outfall 002P is anticipated to consist of consists of pH, total suspended solids (TSS), and flow on a bi-monthly basis.

IMAGERY SOURCE: GOOGLE EARTH - 01/13/2023

STATE HIGHWAY 25

MAINTENANCE AREA DISCHARGE

LIMESTONE CRUSHING AND SCREENING AREA

BLASTING AGENT STORAGE AREA

Mahan Creek

OUTFALL 001E

MAINTENANCE OIL STORAGE AREA (SEE ENLARGED DIAGRAM)

MOBILE OIL TRUCK

SCALE HOUSE

MOBILE DRILLERS TRUCK

INACTIVE QUARRY POND

QUARRY EQUIPMENT STAGING AREA

ORANGE SUMP PUMP

SEDIMENT POND

UNNAMED TRIBUTARY TO MAHAN CREEK

CONTRACTOR DIESEL TANK

MOBILE AG TRAILER

AGRICULTURAL PRODUCT SCREENING AREA

ACTIVE QUARRY PONDS

PIONEER PUMP

RETENTION POND

BIG SUMP PUMP

SMALL SUMP PUMP

OUTFALL 002P

PROPOSED EAST POND

OVERBURDEN MANAGEMENT AREA EXPANSION

OVERBURDEN MANAGEMENT AREA

N

W

E

S

0 350' 700' 1,400'

SCALE IN FEET
1" = 700'-0"

FLOW

- VARIES - PRODUCTION BASED
- 1 MILLION GALLONS PER MONTH
- 180 MILLION GALLONS PER MONTH (CUMULATIVE)
- 2.12 MILLION GALLONS PER DAY (AVERAGE)
- STORM WATER ONLY (VARIES)

CLIENT / PROJECT

LHOIST NORTH AMERICA
Brierfield Quarry
14786 Highway 25, Brierfield, AL 35035

TITLE

FACILITY WATER BALANCE

DRAWN BY: O. Fonseka	REQUEST BY: K. Jackson	PROJECT NO. 731026
DWG. DATE: May 2026	PROJECT-MGR: K. Jackson	

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FIGURE 3

LAST EDIT: 05/12/2026 - FILE LOCATION: HOU C:\OF-TRC\DRAFTING-CDrive\ECR-Files\Lhoist North America\Brierfield - AL\2026\ LHOIST-Brierfield-AL- Site Location-Facility Diagram-Water Balance.dwg

DRAWING By: Oskar Fonseka - FILE NAME: LHOIST-Brierfield-AL- Site Location-Facility Diagram-Water Balance.dwg

Section 4
Pollution Prevention Plan

The Brierfield Quarry has implemented practices to prevent sediment pollution from haul and access roads to protect the water quality of nearby Mahan Creek and to minimize the effects of non-point source pollution from dolomite stockpiles. Pollution prevention practices administered by the facility are discussed in the following sections.

4.1 Sediment Control for Haul and Access Roads

Haul roads will be constructed in accordance with the specifications in Appendix C per ADEM 335-6-9, Appendix B. These specifications limit the maximum grades of haul roads to minimize erosion and provide specifications for the outer slopes of haul roads. There are no existing stream crossings at the Brierfield Quarry. In accordance with Appendix C, LNA will submit plans to ADEM for approval of any future stream crossings prior to construction.

The primary method used to control vehicle debris tracking onto roadways at entrances will be good housekeeping. The entrance from Montevallo Road (Highway 25) serves as the sole vehicle entrance into the Brierfield Quarry. The access road is a combination of gravel and asphalt base that limits mud tracking onto the public roadway. The access road is approximately 2,700 feet in length that allows adequate travel time at a reduced speed to remove excess debris from moving vehicle(s). A water truck is utilized to control dust from the quarry and process areas into the access road. Excess gravel near the entrance will be removed as needed.

4.2 Protection of Stream Water Quality

The Brierfield Quarry has one outfall, Outfall 001E. As shown in Figure 2, Outfall 001E discharges to Mahan Creek. Mahan Creek flows along the northern boundary of the Brierfield Quarry property.

Storm water runoff from disturbed areas on the property is diverted via earthen berms to the facility's inactive quarry, active quarry, or remains on-site. Any accumulation of storm water runoff in either the active quarry pit or inactive quarry pond is pumped to the sedimentation pond prior to discharging. The volume of the inactive quarry pond and the sedimentation pond is sufficient to prevent discharge without proper treatment.

LNA has established a procedure for cleaning the sedimentation pond that prevents the pond from discharging during sediment removal events. Design of future sediment ponds will conform with the specifications in Appendix B and will be submitted to ADEM for approval prior to construction.

Currently Mahan Creek serves as the only waters of the state that receives storm water, process water, and/or inflow water from karst features. Currently, Total Suspended Solids (TSS) and pH are the pollutants of concern for effluent discharge. As stated previously, the sedimentation pond is utilized to treat the effluent discharge to minimize direct impacts to waters of the state.

Lhoist obtained US Army Corp of Engineers Permit No. SAM-2023-455-AMR in order to permit a wetland area to the west of the current quarry. The wetland area will be excavated to allow for continuing quarrying operations. Collected water from the excavated area(s) will be gravity flow into the quarry pit, collected within the quarry sump, and pumped to the sediment pond for treatment.

These same considerations will be utilized during the development of proposed Outfall 002P. A storm water sedimentation retention pond will be constructed prior to the proposed Outfall 002P to serve as the primary sedimentation control. The sedimentation retention pond will be positioned to allow for gravity influent and effluent hydraulic flow and designed per the guidelines as defined in ADEM 335-6-9, Appendix A in the approximate location illustrated on Figure 1 and Figure 2.

4.3 Non-Point Source Pollution Prevention

Due to the presence of truck traffic and the storage of dolomite, storm water at the plant site and access roads will contain TSS. Site grading is conducted to promote the drainage of storm water to quarries and/or the sedimentation pond to prevent non-point sources of pollution.

Additional best management practices (BMPs) are utilized at the site to control non-point source pollution include berms, silt fences, hay bale dams, and vegetative barriers. Setbacks include vegetation buffer strip(s) between disturbed areas and access roads at a minimum of 50 feet from waters of the state to prevent sediment discharge. Access roads are maintained a minimum of 3 foot high berms and silt fencing utilized as needed to prevent non-point discharges.

LNA has proposed to expand the overburden management area and berm located south-southwest of the quarry. LNA will grade this overburden area to 3:1 and will install silt fencing to minimize sediment entrainment in storm water runoff leaving the new expanded areas of the overburden management area.

4.4 Spill Prevention Control and Countermeasures Plan

A detailed spill prevention control and countermeasure (SPCC) plan has been prepared for the facility under separate cover. The oil storage details and locations of aboveground storage tanks (ASTs), transformers, drums/totes/containers, mobile equipment staging areas, and oil-filled operating equipment is provided on Figure 2.

4.5 Management Practices and Reclamation Procedures

Periodic inspections will be conducted by LNA to determine the effectiveness of the facility's wastewater treatment unit and sedimentation ponds during normal operation, as well as during storm events. These inspections will be reviewed by the quarry manager and modifications to site activities will be made, as needed. Pollution control activities to be used will be in accordance with United States Environmental Protection Agency's (USEPA's) Storm Water Management for Industrial Activities (USEPA 832-R-92-006) or the most current revision thereof.

At the conclusion of the mining of dolomite, this facility will be reclaimed to provide for long-term stabilization that will meet or exceed water quality standards as they apply to this permit in accordance with ADEM Administrative Code R. 335-6-9-.03(g). Disturbed slopes (outside quarry areas) will be graded so that water does not pool or stand on its surface. The existing sediment sumps will be maintained until vegetation is established. The inactive quarry and plant will be vacated of all fuels, fuel tanks, containers, equipment, and debris. LNA will then provide ADEM with an inspection report describing the facility's reclamation activities and request a release from monitoring and termination of the facility's NPDES permit. Reclamation will be considered complete in accordance with the facility's permit upon receipt of ADEM's approval.

Appendix A
Pollution Abatement Treatment Measures and Sediment Control Structures Certification Report

FIELD OPERATIONS DIVISION
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

NPDES INDIVIDUAL PERMIT
POLLUTION ABATEMENT/TREATMENT MEASURES AND SEDIMENT CONTROL STRUCTURES CERTIFICATION REPORT

Please Type or Print In Ink

COMPANY NAME Chemical Lime Company of Alabama

FACILITY NAME Dolomite Quarry

NPDES PERMIT NUMBER AL0067831

TOWNSHIP(s), RANGE(s), SECTION(s) Township 24 north, Range 11 east, Sections 23 & 24

COUNTY(s) Bibb **BASIN NO(s)** 001E

BASIN LATITUDE (d, m, s) 33° 03' 03" **LONGITUDE (d, m, s)** 86° 55' 11"

CONSULTING FIRM NAME & ADDRESS Spivey Engineering Solutions, LLC
2105 Madison Avenue
Montgomery, Alabama 36107-1911

CONSULTING FIRM

Phone: (334) 241-0355 **Fax:** (334) 241-9951 **Email Address:** donspivey@mindspring.com

Based upon the post-construction inspection of the above-referenced facility on November 7, 2003 which I, Donald Wade Spivey conducted, I certify that all pollution abatement/treatment structures/measures, including each basin and its associated structures, have been designed and properly constructed according to good engineering practices, and in accordance with the requirements of the above-referenced NPDES permit and ADEM Administrative Code Chapter 335-6-9, including Appendix A and B, and applicable sections of Chapters 335-6-3, 335-6-6, and are built: (Check one)

_____ In accordance with good engineering practices, and in strict agreement with the above-referenced NPDES permit, ADEM regulations, and the construction plans or revision approved for the above-referenced NPDES permit application.

_X_ In accordance with good engineering practices, and in strict agreement with the above-referenced NPDES permit, ADEM regulations, and substantial agreement with the construction plans or revision accepted for the above-referenced NPDES permit application with minor exceptions. Detail these minor exceptions below or on back of form and submit revised construction plans if necessary. Document all reasons for exceptions. **See noted exceptions in Section XXI of attached ADEM Form 315.**

Affix P.E. Seal and Registration Number

ALABAMA LICENSED No. 20725 PROFESSIONAL ENGINEER DONALD W. SPIVEY

Donald Wade Spivey, P.E.
Name

Signature

December 17, 2003
Date

FIELD OPERATIONS DIVISION - ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

MNPS NPDES POLLUTION ABATEMENT PLAN (PAP) - APPENDIX A& B REVIEW

Y	N	N/A	
			Runoff from all areas of disturbance is controlled
			Drainage from pit area, stockpiles, and spoil areas directed to a sedimentation pond
			Sedimentation basin at least 0.25 acre/feet for every acre of disturbed drainage
X			Sedimentation basin cleaned out when sediment accumulation is 60% of design capacity
X			Trees, boulders, and other obstructions removed from pond during initial construction
X			Width of top of dam greater than 12'
X			Side slopes of dam no steeper than 3:1
X			Cutoff trench at least 8' wide
X			Side slopes of cutoff trench no less than 1:1
X			Cutoff trench located along the centerline of the dam
X			Cutoff trench extends at least 2' into bedrock or impervious soil
X			Cutoff trench filled with impervious material
X			Embankments and cutoff trench 95% compaction standard proctor ASTM
X			Embankment free of roots, tree debris, stones >6" diameter, etc.
X			Embankment constructed in lifts no greater than 12"
X			Spillpipe sized to carry peak flow from a one year storm event
X			Spillpipe will not chemically react with effluent
X			Subsurface withdrawal
	X1		Anti-seep collars extend radially at least 2' from each joint in spillpipe
X			Splashpad at the end of the spillpipe
X			Emergency Spillway sized for peak flow from 25-yr 24-hr event if discharges not into public water supply
X			Emergency spillway sized for peak flow from 50-yr 24-hr event if discharge is into public water supply
X			Emergency overflow at least 20' long
X			Side slopes of emergency spillway no steeper than 2:1
X			Emergency spillway lined with riprap or concrete
X			Minimum of 1.5' of freeboard between normal overflow and emergency overflow
X			Minimum of 1.5' of freeboard between max. design flow of emergency spillway and top of dam
X			All emergency overflows are sized to handle entire drainage area for ponds in series
X			Dam stabilized with permanent vegetation
X			Sustained grade of haul road <10%
X			Maximum grade of haul road <15% for no more than 300'
X			Outer slopes of haul road no steeper than 2:1
X			Outer slopes of haul road vegetated or otherwise stabilized
X			Detail drawings supplied for all stream crossings
X			Short-Term Stabilization/Grading And Temporary Vegetative Cover Plans
X			Long-Term Stabilization/Grading And Permanent Reclamation or Water Quality Remediation Plans

X	The applicant has completed the surface water discharge alternatives analysis and has supporting documentation, including annualized costs for each technically feasible alternative available for review upon request

See Attachment to Appendix A & B for additional information.

PROVIDE DETAILED EXPLANATION FOR ANY "N" OR "N/A" RESPONSE(s):

X1)	**No anti seep collars are proposed along the discharge pipe as a result of the experience in the design and construction of impoundments of this nature by the designer. It has been the designer's experience that the addition of anti seep collars requires the over excavation of the discharge structure trench for their installation. This over excavation and direct areas around the devices produce areas where compaction during the filling of the trench is difficult to achieve. This results in areas of weakness where potential seeps could occur resulting in areas of impoundment instability and possible failure. The designer has designed and overseen construction of numerous impoundments of similar nature without the use of anti seep collars. To date no areas of seepage or instability has occurred as a result of the deletion of the anti seep collars. With the above in mind no anti seep collars are proposed in this design.**

Y	N	N/A	
X			PE Seal with License #
X			Name and Address of Operator
X			Legal Description of Facility

General Information:

X			Name of Company
X			Number of Employees
X			Products to be Mined
X			Hours of Operation
X			Water Supply and Disposition

Topographic Map:

X			Mine Location
X			Location of Prep Plant
X			Location of Treatment Basins
X			Location of Discharge Points
X			Location of Adjacent Streams

1"- 500' or Equivalent Facility Map:

X			Drainage Patterns
X			Mining Details
X			All Roads, Structures Detailed
X			All Treatment Structures Detailed

Detailed Design Diagrams:

X			Plan Views
X			Cross-section Views
X			Method of Diverting Runoff to Treatment Basins

Narrative of Operations:

X			Raw Materials Defined
X			Processes Defined
X			Products Defined

Schematic Diagram:

X			Points of Waste Origin
X			Collection System
X			Disposal System

Post Treatment Quantity and Quality of Effluent:

X			Flow
X			Suspended Solids
X			Iron Concentration
X			pH

Description of Waste Treatment Facility:

X			Pre-Treatment Measures
X			Recovery System
X			Expected Life of Treatment Basin
X			Schedule of Cleaning and/or abandonment

Other:

X			Precipitation/Volume Calculations/Diagram Attached
X			BMP Plan for Haul Roads
X			Measures for Minimizing Impacts to Adjacent Stream i.e., Buffer Strips, Berms, etc.
X			Methods for Minimizing Nonpoint Source Discharges
X			Facility Closure Plans
X			PE Rationale(s) For Alternate Standards, Designs or Plans

IDENTIFY AND PROVIDE DETAILED EXPLANATION FOR ANY "N" OR "N/A" RESPONSE(s):

The number of employees will vary with market conditions; currently, there are 11 full-time employees, including contractors. See attached detailed design diagrams and precipitation/volume calculations.

ENGINEERING DATA SUMMARY

Design of the sedimentation ponds and appurtenances.

1) Drainage Areas:

Pond	Permitted Area	Drainage Area
001E	156 Acres	256 Acres

2) Rainfall Frequency:

From TP-40 Rainfall Atlas of the United States:
50 yr. - 24 hr. precipitation = 8.0 inches

3) Curve Number, CN Factor:

For disturbed areas, a hydrological soil group class of B has been assumed - from Table 2.2, Pg 82 of Applied Hydrology and Sedimentology for Disturbed Areas it was determined to use a CN value of 81 based on the cultivated land without conservation treatment listing and soil group B. This CN factor will be used for all disturbed areas.
For undisturbed areas, a hydrological soil group class of B has been assumed - from Table 2.2, Pg 82 of Applied Hydrology and Sedimentology for Disturbed Areas it was determined to use a CN value of 70 based on the woodland listing and soil group B. This CN factor will be used for all undisturbed areas.

4) Estimated Pre Treatment Quantity of Effluent:

From the SEDCAD design model produced by PERC Engineering Co., Inc., the peak discharge for the areas above the pond for a 50 yr. - 24 hr. storms are as follows:

Pond	50 yr. - 24 hr. Discharge
001E	330.2 cfs

5) Estimated Post Treatment Quantity of Effluent:

The peak discharges from the ponds as determined by the SEDCAD design model produced by PERC Engineering Co., Inc. for a 50 yr. - 24 hr. storms are as follows:

Pond	50 yr. - 24 hr. Discharge
001E	312.9 cfs

6) Sediment Storage Design:

Design of the sediment ponds will be based on the SEDCAD design model report prepared by PERC Engineering Co., Inc., and supplementing the requirements of the ADEM Rules and Regulations.

A) Required sediment storage = 0.25 Ac-Ft per acre of disturbed permitted land. As stated within Section VI of the Pollution Abatement Plan, all surface water runoff from development disturbances will be allowed to drain to the open quarry pit. The water will be collected and stored within the open pit and either pumped to the process area or directly to Outfall 001E. With this in mind, the minimum total storage as shown below is based on the fact that a maximum of 93 acres of disturbed permitted area will be routed directly to Outfall 001E directly without first passing through the open quarry pit.

Pond	Minimum Total Storage	Primary Spillway Elevation
001E	23.6 Ac-ft	366

B) Pond Geometry: See the Planview Drawing.

C) Elevation & Type of Spillway: See the Planview Drawing and Pond Design Sheet.

D) Elevation points where sedimentation accumulation approaches 60% of design capacity are as follows:

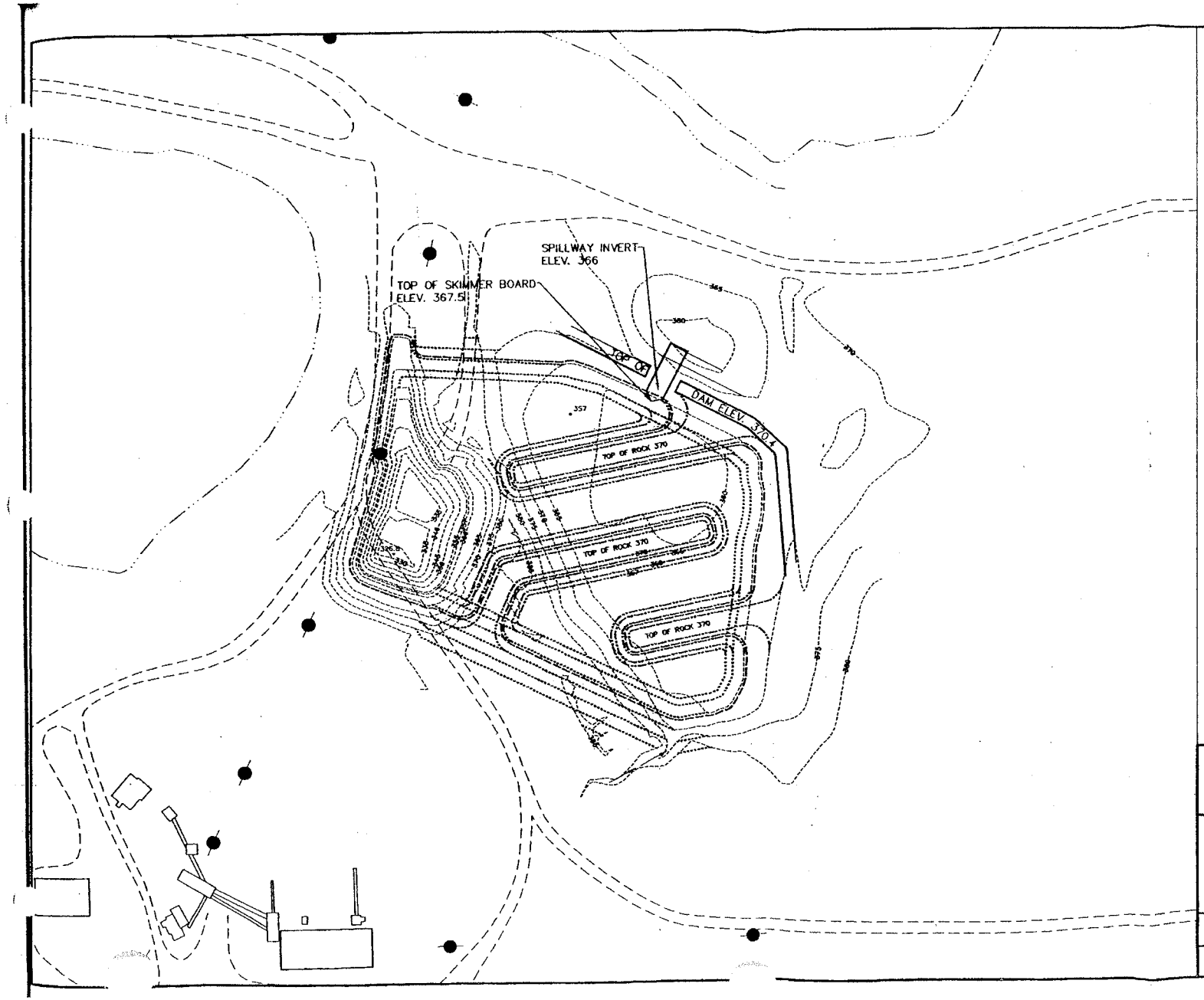
Pond	Sediment Volume	Sediment Removal Level Elevation
001P	14.2 Ac-ft	361.8

E) Design Evaluations: See Pond Design Sheet.

6) Estimated Post Treatment Quality of Effluent:

Estimated Post Treatment Quality of Effluent is based on the average discharge determined using USGS WRI Open File Report 81-59, A Method of Estimating Average Streamflow and Headwater Limits in U. S. Army Corps of Engineers, Mobile District, Alabama and Adjacent States.

Outfall No.	Avg. Daily Flow CFS	Avg. Daily Total Suspended Solids lb/day	Avg. Daily Total IronManganese lb/day	Avg. Daily lb/day	pH s.u.	Avg. Daily
001E	0.6	112.5	9	6		6.0 - 9.0



Scale: 1" = 100'

N

LEGEND

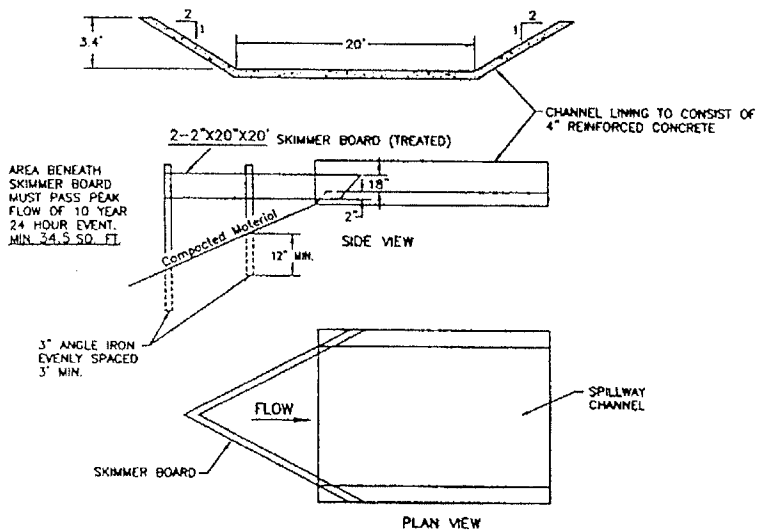
- EXISTING CONTOUR
- FINISH CONTOUR
- EXCAVATED CONTOUR
- ROCK JETTY
- NORMAL POOL LEVEL ELEV. 366
- MAJOR INFLOW

PERC ENGINEERING CO. INC.

CHEMICAL LIME COMPANY
DOLOMITE QUARRY
BASIN 001 PLANVIEW

DRAWN BY: J.J.H. DWG. NAME: CL-B1PV	DATE: 3-26-02
APPROVED BY: S.R.I.	SCALE: 1" = 100'

Skimmer Board Elev. 367.5
Spillway Elev. 366
Q Out 312.9 C.F.S.
V Out 4.2 F.P.S.



SKIMMER BOARD DETAIL

SPILLWAY GRADIENT SHALL BE APPROXIMATELY 40%

Notes:

1. The sediment shall be removed from the basin when the accumulated sediment reaches the sediment storage volume.
2. Outer slopes of embankment shall be grassed.
3. Fill material shall be placed in 12" lifts and compacted to 95% of standard proctor.
4. The surface beneath the embankment shall be stripped of undesirable material.
5. Upon completion of mining, reclamation and maintenance of water quality standards the pond will be de-watered and reclaimed.
6. See the attached pond construction criteria.
7. See the attached drawings and specifications for diversions.
8. Elevations are based on assumed datum.
9. Channel lining within the control section of the spillway channel will extend to the maximum water elevation.

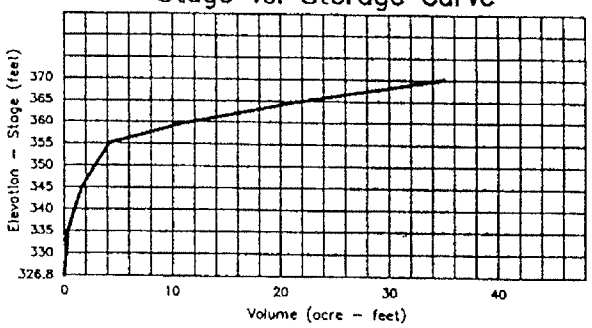
Storage Computation

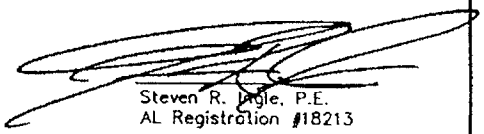
Elevation (feet)	Area (acres)	Avg. Area (acres)	Interval (feet)	Storage (ac.-ft.)	Acc. Storage (ac.-ft.)
326.8	0.000				0.000
		0.006	3.2	0.019	
330	0.011				0.019
		0.052	5	0.260	
335	0.093				0.279
		0.119	5	0.595	
340	0.144				0.874
		0.155	5	0.775	
345	0.190				1.649
		0.220	5	1.100	
350	0.250				2.749
		0.286	5	1.430	
355	0.321				4.179
		0.913	2	1.825	
357	1.504				6.004
		1.656	3	4.968	
360	1.807				10.972
		2.077	5	10.385	
365	2.347				21.357
		2.724	5	13.620	
370	3.100				34.977

Key Basin Parameters

Drainage Area	256 Acres
Disturbed Area	37 Acres
Sediment Storage	14.2 Ac. Ft.
Detention Storage	9.4 Ac. Ft.
Permanent Pool Capacity	23.6 Ac. Ft.
Total Basin Capacity	23.6 Ac. Ft.
Peak Inflow	330.2 C.F.S.
Peak Outflow	312.9 C.F.S.

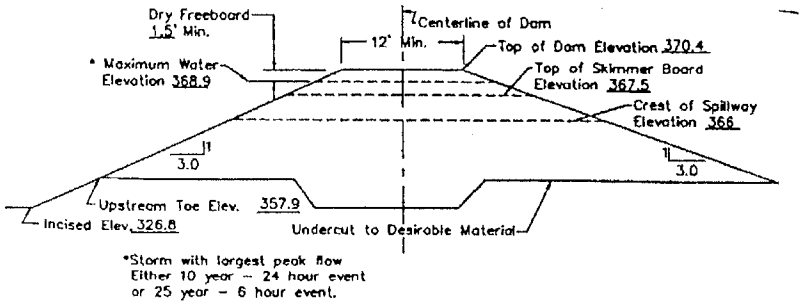
Stage vs. Storage Curve





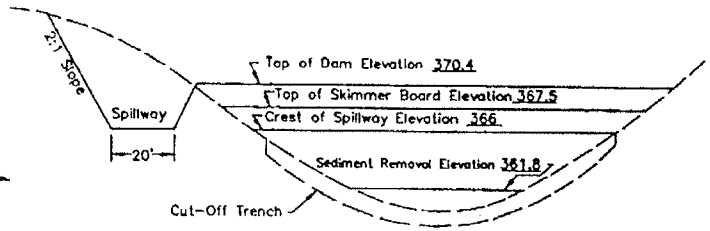
Steven R. Ingle, P.E.
AL Registration #18213

ALABAMA REGISTERED No. 18213 PROFESSIONAL ENGINEER 3-26-02 STEVEN R. INGLE



*Storm with largest peak flow Either 10 year - 24 hour event or 25 year - 6 hour event.

Typical Cross Section Along Spillway

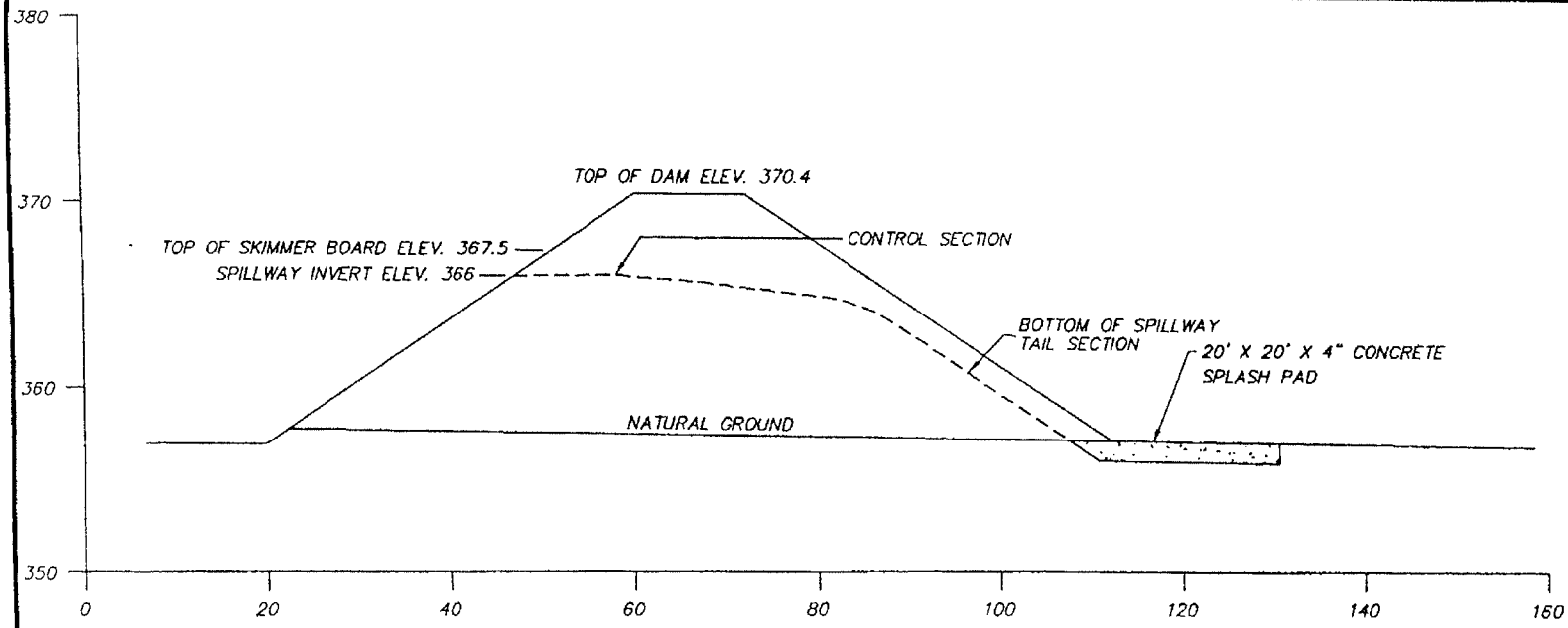


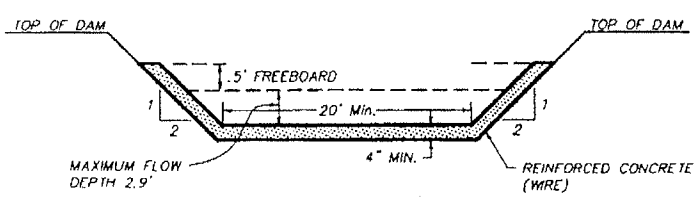
Typical Profile Looking Downstream

PERC ENGINEERING CO., INC.

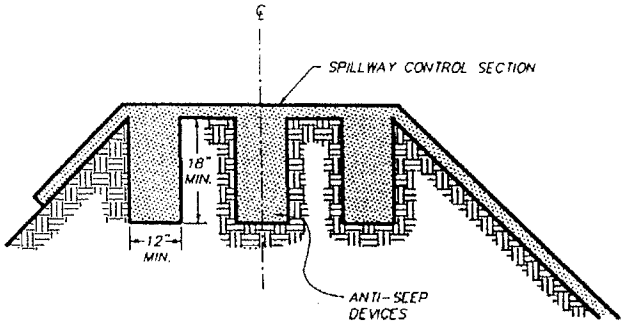
CHEMICAL LIME COMPANY
DOLOMITE QUARRY
BASIN 001

DRAWN BY: J.J.H. DWG. NAME: CL-B1DT	DATE: 3-26-02
APPROVED BY: S.R.I.	SCALE: NONE

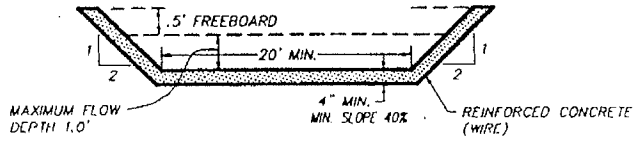




SPILLWAY CONTROL SECTION TYPICAL
N.T.S.



ANTI-SEEP DEVICE TYPICAL
N.T.S.

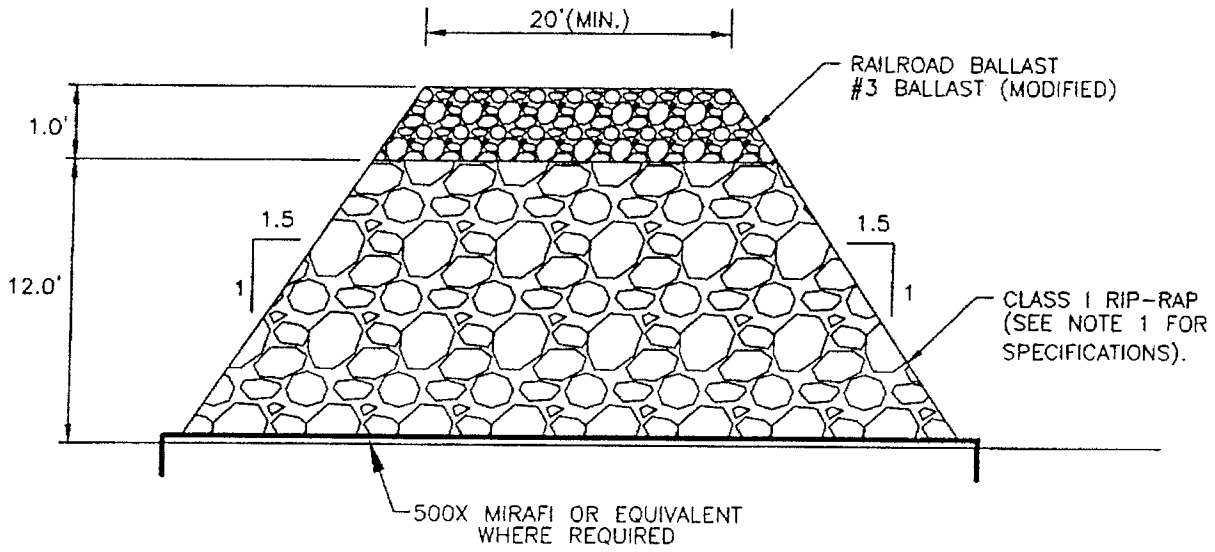


SPILLWAY TAIL SECTION TYPICAL
N.T.S.

PERC ENGINEERING CO., INC.

CHEMICAL LIME COMPANY
DOLOMITE QUARRY
BASIN 001
DAM DETAILS

DRAWN BY: J.J.H. DWG. NAME: CL-B1DD	DATE: 3-26-02
APPROVED BY: S.R.I.	SCALE: AS NOTED



NOTE:

1. NO MORE THAN 10% OF THE STONE WILL HAVE A DIAMETER GREATER THAN TWELVE (12) INCHES; NO MORE THAN 50% OF THE STONE WILL HAVE A DIAMETER LESS THAN TEN (10) INCHES; AND NO MORE THAN 10% OF THE STONE WILL HAVE A DIAMETER OF LESS THAN SIX (6) INCHES.

PERC
ENGINEERING CO., INC.

CHEMICAL LIME COMPANY
DOLOMITE QUARRY
BASIN 001
ROCK JETTY DETAIL

DRAWN BY: J.J.H. DWG. NAME: CL-B1JET	DATE: 3-26-02
APPROVED BY: S.R.I.	SCALE: NONE

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Civil Software Design

CHEMICAL LIME COMPANY
DOLOMITE QUARRY
BASINS 001, 001A, 001B, AND 001C

8.0 INCHES, 50 YEAR - 24 HOUR, DRN 58

WPG

PERC ENGINEERING CO., INC.
P.O. BOX 1712
JASPER, ALABAMA 35502

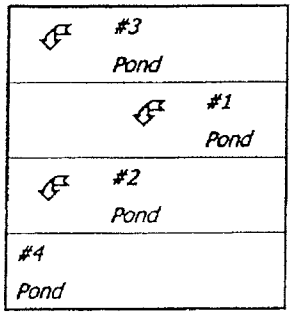
General Information

Storm Information:

Storm Type:	DRN58
Design Storm:	50 yr - 24 hr
Rainfall Depth:	8.000 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#2	0.092	0.333	BASIN 001C
Pond	#2	==>	#4	0.016	0.333	BASIN 001B
Pond	#3	==>	#4	0.005	0.377	BASIN 001A
Pond	#4	==>	End	0.000	0.000	BASIN 001



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3	In	36.000	36.000	57.35	14.01
	Out			53.45	14.01
#1	In	94.000	94.000	112.51	36.44
	Out			110.07	36.44
#2	In	85.000	179.000	207.88	68.36
	Out			207.83	68.36
#4	In	41.000	256.000	330.16	102.13
	Out			312.91	102.12

Structure Detail:

Structure #3 (Pond)

BASIN 001A

Pond Inputs:

Initial Pool Elev:	372.81
Initial Pool:	0.00 ac-ft

Pond Results:

Peak Elevation:	378.10
Dewater Time:	0.49 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
372.80	0.000	0.000	0.000		
372.81	0.000	0.000	0.000		
373.30	0.009	0.002	0.476	0.15	
373.80	0.031	0.011	1.902	0.10	
374.30	0.067	0.035	4.280	0.10	
374.80	0.116	0.080	7.608	6.90	
375.00	0.140	0.106	9.206	0.10	
375.30	0.165	0.151	11.888	2.85	
375.80	0.210	0.245	17.118	0.85	
376.30	0.261	0.362	23.300	0.20	
376.80	0.317	0.507	30.432	0.25	
377.30	0.379	0.680	38.516	0.15	
377.80	0.446	0.886	47.550	0.15	
378.10	0.490	1.028	53.448	0.05	Peak Stage
378.30	0.519	1.127	57.536		
378.80	0.597	1.406	68.472		
379.30	0.681	1.725	80.360		
379.80	0.770	2.087	93.198		
380.00	0.807	2.245	98.600		
380.30	0.841	2.492	106.988		
380.80	0.900	2.928	121.728		

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
381.30	0.961	3.393	137.420	
381.80	1.024	3.890	154.062	
382.30	1.089	4.418	171.656	
382.50	1.116	4.638	178.959	
382.80	1.156	4.979	190.200	
383.30	1.225	5.574	190.200	
383.80	1.296	6.205	190.200	
384.30	1.369	6.871	190.200	
384.80	1.444	7.574	190.200	
385.00	1.474	7.865	190.200	

Detailed Discharge Table

Elevation	User-input discharge (cfs)	Combined Total Discharge (cfs)
372.80	0.000	0.000
372.81	0.000	0.000
373.30	0.476	0.476
373.80	1.902	1.902
374.30	4.280	4.280
374.80	7.608	7.608
375.00	9.206	9.206
375.30	11.888	11.888
375.80	17.118	17.118
376.30	23.300	23.300
376.80	30.432	30.432
377.30	38.516	38.516
377.80	47.550	47.550
378.30	57.536	57.536
378.80	68.472	68.472
379.30	80.360	80.360
379.80	93.198	93.198
380.00	98.600	98.600
380.30	106.988	106.988
380.80	121.728	121.728
381.30	137.420	137.420
381.80	154.062	154.062
382.30	171.656	171.656
382.50	178.959	178.959

Elevation	User-input discharge (cfs)	Combined Total Discharge (cfs)
382.80	190.200	190.200
383.30	190.200	190.200
383.80	190.200	190.200
384.30	190.200	190.200
384.80	190.200	190.200
385.00	190.200	190.200

Structure #1 (Pond)

BASIN 001C

Pond Inputs:

Initial Pool Elev:	380.01
Initial Pool:	0.00 ac-ft

Pond Results:

Peak Elevation:	384.69
Dewater Time:	0.53 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
380.00	0.000	0.000	0.000		
380.01	0.000	0.000	0.000		
380.50	0.004	0.001	1.248	0.65	
381.00	0.013	0.005	4.993	0.35	
381.50	0.029	0.015	11.234	4.75	
382.00	0.050	0.035	19.971	3.50	
382.50	0.077	0.066	31.205	2.30	
383.00	0.110	0.113	44.935	0.45	
383.50	0.149	0.178	61.161	0.30	
384.00	0.194	0.263	79.884	0.15	
384.50	0.245	0.373	101.103	0.10	
384.69	0.268	0.424	110.073	0.20	Peak Stage
385.00	0.301	0.509	124.819		
385.50	0.364	0.675	151.031		

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
386.00	0.432	0.874	179.739	
386.50	0.506	1.108	210.944	
387.00	0.586	1.381	244.645	
387.50	0.672	1.695	280.842	
388.00	0.764	2.053	319.536	
388.50	0.861	2.459	360.726	
389.00	0.965	2.915	404.413	
389.50	1.074	3.425	450.596	
390.00	1.189	3.990	499.275	
390.50	1.310	4.615	550.451	
391.00	1.437	5.301	604.123	
391.50	1.570	6.053	660.291	
392.00	1.709	6.872	718.956	
392.50	1.853	7.762	780.117	
393.00	2.003	8.726	843.775	
393.50	2.160	9.766	909.929	
394.00	2.322	10.886	978.579	
394.50	2.490	12.089	1,049.726	
395.00	2.663	13.377	1,123.369	
395.50	2.843	14.754	1,199.508	
396.00	3.029	16.222	1,278.144	
396.50	3.220	17.784	1,359.276	
397.00	3.418	19.443	1,442.905	
397.50	3.621	21.203	1,529.030	
398.00	3.830	23.065	1,617.651	
398.50	4.045	25.034	1,708.769	
399.00	4.266	27.111	1,802.383	
399.50	4.493	29.301	1,898.493	
400.00	4.725	31.605	1,997.100	

Detailed Discharge Table

Elevation	User-input discharge (cfs)	Combined Total Discharge (cfs)
380.00	0.000	0.000
380.01	0.000	0.000
380.50	1.248	1.248
381.00	4.993	4.993
381.50	11.234	11.234

Elevation	User-input discharge (cfs)	Combined Total Discharge (cfs)
382.00	19.971	19.971
382.50	31.205	31.205
383.00	44.935	44.935
383.50	61.161	61.161
384.00	79.884	79.884
384.50	101.103	101.103
385.00	124.819	124.819
385.50	151.031	151.031
386.00	179.739	179.739
386.50	210.944	210.944
387.00	244.645	244.645
387.50	280.842	280.842
388.00	319.536	319.536
388.50	360.726	360.726
389.00	404.413	404.413
389.50	450.596	450.596
390.00	499.275	499.275
390.50	550.451	550.451
391.00	604.123	604.123
391.50	660.291	660.291
392.00	718.956	718.956
392.50	780.117	780.117
393.00	843.775	843.775
393.50	909.929	909.929
394.00	978.579	978.579
394.50	1,049.726	1,049.726
395.00	1,123.369	1,123.369
395.50	1,199.508	1,199.508
396.00	1,278.144	1,278.144
396.50	1,359.276	1,359.276
397.00	1,442.905	1,442.905
397.50	1,529.030	1,529.030
398.00	1,617.651	1,617.651
398.50	1,708.769	1,708.769
399.00	1,802.383	1,802.383
399.50	1,898.493	1,898.493
400.00	1,997.100	1,997.100

Structure #2 (Pond)

BASIN 001B

Pond Inputs:

Initial Pool Elev:	371.01
Initial Pool:	0.00 ac-ft

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
381.00	20.00	2.00:1	2.00:1	15.00

Pond Results:

Peak Elevation:	381.72
Dewater Time:	0.53 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
371.00	0.000	0.000	0.000		
371.01	0.000	0.000	0.000		
371.50	0.000	0.000	0.476	0.35	
372.00	0.001	0.000	1.902	0.35	
372.50	0.002	0.001	4.280	0.25	
373.00	0.003	0.002	7.608	0.10	
373.50	0.004	0.004	11.888	0.10	
374.00	0.006	0.007	17.118	0.10	
374.50	0.009	0.010	23.300	4.80	
375.00	0.011	0.015	30.432	2.10	
375.50	0.014	0.022	38.516	2.35	
376.00	0.017	0.030	47.550	0.60	
376.50	0.021	0.039	57.536	0.45	
377.00	0.025	0.051	68.472	0.40	
377.50	0.029	0.064	80.360	0.10	
378.00	0.034	0.080	93.198	0.10	
378.50	0.039	0.098	106.988	0.15	
379.00	0.044	0.119	121.728	0.10	
379.50	0.050	0.143	137.420	0.10	
380.00	0.056	0.169	154.062	0.05	
380.50	0.062	0.199	171.656	0.05	
381.00	0.069	0.232	190.200	0.05	Spillway #2

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
381.50	0.072	0.267	192.928	0.05
381.72	0.074	0.283	207.832	0.10 Peak Stage
382.00	0.075	0.304	227.139	
382.50	0.079	0.342	266.943	
383.00	0.082	0.383	320.385	
383.50	0.086	0.424	385.735	
384.00	0.089	0.468	462.983	
384.50	0.093	0.514	552.266	
385.00	0.096	0.561	653.797	
385.50	0.100	0.610	767.833	
386.00	0.104	0.661	894.653	

Detailed Discharge Table

Elevation	User-input discharge (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
371.00	0.000	0.000	0.000
371.01	0.000	0.000	0.000
371.50	0.476	0.000	0.476
372.00	1.902	0.000	1.902
372.50	4.280	0.000	4.280
373.00	7.608	0.000	7.608
373.50	11.888	0.000	11.888
374.00	17.118	0.000	17.118
374.50	23.300	0.000	23.300
375.00	30.432	0.000	30.432
375.50	38.516	0.000	38.516
376.00	47.550	0.000	47.550
376.50	57.536	0.000	57.536
377.00	68.472	0.000	68.472
377.50	80.360	0.000	80.360
378.00	93.198	0.000	93.198
378.50	106.988	0.000	106.988
379.00	121.728	0.000	121.728
379.50	137.420	0.000	137.420
380.00	154.062	0.000	154.062
380.50	171.656	0.000	171.656
381.00	190.200	0.000	190.200
381.50	190.200	2.728	192.928

Elevation	User-Input discharge (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
382.00	190.200	36.939	227.139
382.50	190.200	76.743	266.943
383.00	190.200	130.185	320.385
383.50	190.200	195.535	385.735
384.00	190.200	272.783	462.983
384.50	190.200	362.066	552.266
385.00	190.200	463.597	653.797
385.50	190.200	577.633	767.833
386.00	190.200	704.453	894.653

Structure #4 (Pond)

BASIN 001

Pond Inputs:

Initial Pool Elev:	366.00
Initial Pool:	23.59 ac-ft

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
366.00	20.00	2.00:1	2.00:1	20.00

Pond Results:

Peak Elevation:	368.84
Dewater Time:	0.79 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
326.80	0.000	0.000	0.000	
327.30	0.000	0.000	0.000	
327.80	0.001	0.000	0.000	
328.30	0.002	0.001	0.000	
328.80	0.004	0.003	0.000	
329.30	0.007	0.006	0.000	
329.80	0.010	0.010	0.000	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
330.00	0.011	0.012	0.000	
330.30	0.014	0.015	0.000	
330.80	0.019	0.024	0.000	
331.30	0.025	0.034	0.000	
331.80	0.031	0.048	0.000	
332.30	0.039	0.066	0.000	
332.80	0.047	0.087	0.000	
333.30	0.056	0.113	0.000	
333.80	0.066	0.144	0.000	
334.30	0.077	0.179	0.000	
334.80	0.088	0.220	0.000	
335.00	0.093	0.239	0.000	
335.30	0.096	0.267	0.000	
335.80	0.100	0.316	0.000	
336.30	0.105	0.367	0.000	
336.80	0.110	0.421	0.000	
337.30	0.115	0.477	0.000	
337.80	0.120	0.536	0.000	
338.30	0.125	0.598	0.000	
338.80	0.131	0.662	0.000	
339.30	0.136	0.728	0.000	
339.80	0.142	0.798	0.000	
340.00	0.144	0.826	0.000	
340.30	0.147	0.870	0.000	
340.80	0.151	0.944	0.000	
341.30	0.155	1.021	0.000	
341.80	0.160	1.100	0.000	
342.30	0.164	1.181	0.000	
342.80	0.169	1.264	0.000	
343.30	0.174	1.350	0.000	
343.80	0.178	1.438	0.000	
344.30	0.183	1.528	0.000	
344.80	0.188	1.621	0.000	
345.00	0.190	1.659	0.000	
345.30	0.193	1.716	0.000	
345.80	0.199	1.814	0.000	
346.30	0.205	1.915	0.000	
346.80	0.211	2.019	0.000	
347.30	0.217	2.126	0.000	
347.80	0.223	2.236	0.000	
348.30	0.229	2.349	0.000	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
348.80	0.235	2.464	0.000		
349.30	0.241	2.583	0.000		
349.80	0.247	2.706	0.000		
350.00	0.250	2.755	0.000		
350.30	0.254	2.831	0.000		
350.80	0.261	2.960	0.000		
351.30	0.268	3.092	0.000		
351.80	0.275	3.227	0.000		
352.30	0.282	3.366	0.000		
352.80	0.289	3.509	0.000		
353.30	0.296	3.655	0.000		
353.80	0.303	3.805	0.000		
354.30	0.311	3.958	0.000		
354.80	0.318	4.115	0.000		
355.00	0.321	4.179	0.000		
355.30	0.443	4.293	0.000		
355.80	0.690	4.574	0.000		
356.30	0.991	4.993	0.000		
356.80	1.347	5.575	0.000		
357.00	1.504	5.860	0.000		
357.30	1.533	6.315	0.000		
357.80	1.582	7.094	0.000		
358.30	1.632	7.898	0.000		
358.80	1.682	8.726	0.000		
359.30	1.734	9.580	0.000		
359.80	1.786	10.460	0.000		
360.00	1.807	10.819	0.000		
360.30	1.837	11.366	0.000		
360.80	1.889	12.297	0.000		
361.30	1.941	13.255	0.000		
361.80	1.993	14.238	0.000		
362.30	2.047	15.248	0.000		
362.80	2.101	16.285	0.000		
363.30	2.156	17.349	0.000		
363.80	2.211	18.441	0.000		
364.30	2.267	19.560	0.000		
364.80	2.324	20.708	0.000		
365.00	2.347	21.175	0.000		
365.30	2.389	21.885	0.000		
365.80	2.461	23.098	0.000		
366.00	2.489	23.593	0.000		Spillway #1

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
366.30	2.533	24.346	2.175	4.19*	
366.50	2.562	24.856	3.625	2.15	
366.80	2.606	25.631	32.197	4.85	
367.00	2.636	26.155	48.400	2.95	
367.30	2.681	26.953	77.431	2.85	
367.80	2.756	28.312	138.570	1.00	
368.30	2.832	29.709	214.834	0.40	
368.80	2.910	31.144	304.932	0.35	
368.84	2.916	31.258	312.908	0.10	Peak Stage
369.30	2.988	32.619	408.741		
369.80	3.068	34.133	526.289		
370.00	3.100	34.750	577.178		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
326.80	0.000	0.000
327.30	0.000	0.000
327.80	0.000	0.000
328.30	0.000	0.000
328.80	0.000	0.000
329.30	0.000	0.000
329.80	0.000	0.000
330.00	0.000	0.000
330.30	0.000	0.000
330.80	0.000	0.000
331.30	0.000	0.000
331.80	0.000	0.000
332.30	0.000	0.000
332.80	0.000	0.000
333.30	0.000	0.000
333.80	0.000	0.000
334.30	0.000	0.000
334.80	0.000	0.000
335.00	0.000	0.000
335.30	0.000	0.000

Elevation	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
335.80	0.000	0.000
336.30	0.000	0.000
336.80	0.000	0.000
337.30	0.000	0.000
337.80	0.000	0.000
338.30	0.000	0.000
338.80	0.000	0.000
339.30	0.000	0.000
339.80	0.000	0.000
340.00	0.000	0.000
340.30	0.000	0.000
340.80	0.000	0.000
341.30	0.000	0.000
341.80	0.000	0.000
342.30	0.000	0.000
342.80	0.000	0.000
343.30	0.000	0.000
343.80	0.000	0.000
344.30	0.000	0.000
344.80	0.000	0.000
345.00	0.000	0.000
345.30	0.000	0.000
345.80	0.000	0.000
346.30	0.000	0.000
346.80	0.000	0.000
347.30	0.000	0.000
347.80	0.000	0.000
348.30	0.000	0.000
348.80	0.000	0.000
349.30	0.000	0.000
349.80	0.000	0.000
350.00	0.000	0.000
350.30	0.000	0.000
350.80	0.000	0.000
351.30	0.000	0.000
351.80	0.000	0.000
352.30	0.000	0.000
352.80	0.000	0.000
353.30	0.000	0.000

Elevation	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
353.80	0.000	0.000
354.30	0.000	0.000
354.80	0.000	0.000
355.00	0.000	0.000
355.30	0.000	0.000
355.80	0.000	0.000
356.30	0.000	0.000
356.80	0.000	0.000
357.00	0.000	0.000
357.30	0.000	0.000
357.80	0.000	0.000
358.30	0.000	0.000
358.80	0.000	0.000
359.30	0.000	0.000
359.80	0.000	0.000
360.00	0.000	0.000
360.30	0.000	0.000
360.80	0.000	0.000
361.30	0.000	0.000
361.80	0.000	0.000
362.30	0.000	0.000
362.80	0.000	0.000
363.30	0.000	0.000
363.80	0.000	0.000
364.30	0.000	0.000
364.80	0.000	0.000
365.00	0.000	0.000
365.30	0.000	0.000
365.80	0.000	0.000
366.00	0.000	0.000
366.30	2.175	2.175
366.50	3.625	3.625
366.80	32.197	32.197
367.00	48.400	48.400
367.30	77.431	77.431
367.80	138.570	138.570
368.30	214.834	214.834
368.80	304.932	304.932
369.30	408.741	408.741

Elevation	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
369.80	526.289	526.289
370.00	577.178	577.178

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	3.000	0.015	0.000	0.000	81.000	F	5.56	1.436
	2	32.000	0.110	0.000	0.000	70.000	M	49.69	11.905
	3	1.000	0.000	0.000	0.000	100.000	F	2.10	0.667
	Σ	**36.000**						**57.35**	**14.007**
#1	1	89.000	0.268	0.000	0.000	70.000	M	103.58	33.110
	2	5.000	0.000	0.000	0.000	100.000	F	10.49	3.333
	Σ	**94.000**						**112.51**	**36.443**
#2	1	84.000	0.258	0.000	0.000	70.000	M	98.11	31.250
	2	1.000	0.000	0.000	0.000	100.000	F	2.10	0.667
	Σ	**179.000**						**207.88**	**68.360**
#4	1	34.000	0.137	0.000	0.000	81.000	F	59.96	16.270
	2	2.000	0.012	0.127	0.365	70.000	M	3.11	0.744
	3	2.000	0.019	0.061	0.363	70.000	M	3.11	0.744
	4	3.000	0.000	0.000	0.000	100.000	F	6.29	2.000
	Σ	**256.000**						**330.16**	**102.125**

TO BE COMPLETED FOLLOWING CONSTRUCTION

WATER DIVISION
MINING AND NATURAL RESOURCES SECTION
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

POLLUTION ABATEMENT/TREATMENT MEASURES AND SEDIMENT CONTROL STRUCTURES CERTIFICATION REPORT

Please type or print in ink. Use one form per outfall. Please complete all questions. Use "N/A" where appropriate. Incorrect/Incomplete Forms will be returned and may delay approval.

Name of Permittee: Lhoist North America of Alabama LLC

Postal Address of Permittee: 14786 Montevallo Road (Highway 25)

Facility Name: Brierfield Quarry

NPDES Permit Number: AL0067831

Point Source (Outfall) Number: 002

Location of Outfall:

County: Bibb Township: T24N Range: R12E Section: 19

Latitude: 33 2' 50.00" N Longitude: 86 54' 35.30" W (In degrees, minutes, & seconds)

Consulting Firm Name & Address: TRC Environmental Corporation

50 International Drive, Suite 150, Greenville, SC 29615

Consulting Firm Phone: (864) 281-0030 Fax: (864) 281-0288 Email Address: naddison@trccompanies.com

Based upon the post-construction inspection of the above-referenced facility on (date) TBD

which I or personnel under my supervision (Print name: Nakia Addison) conducted, I certify that all pollution abatement/treatment structures/measures, including each basin and its associated structures, have been designed and properly constructed according to good engineering practices, and in accordance with the requirements of the above-referenced NPDES permit and: (check one)

ASMC PERMITTED OR BONDED FACILITIES

☐ In accordance with ASMC Administrative Code 880-X-8F and 880-X-10C and/or the detailed design plans approved by ASMC.

NON-ASMC PERMITTED OR BONDED FACILITIES

ADEM Administrative Code r. 335-6-9, including Appendix A and B, and applicable sections of Chapters 335-6-3, 335-6-6, and are built:

☒ In accordance with good engineering practices, and in strict agreement with the above-referenced NPDES permit, ADEM regulations, and the construction plans or revision accepted for the above-referenced NPDES permit application.

☐ In accordance with good engineering practices, and in strict agreement with the above-referenced NPDES permit, ADEM regulations, and substantial agreement with the construction plans or revision accepted for the above-referenced NPDES permit application with minor exceptions. **Detail these minor exceptions below or on back of form and submit revised construction plans if necessary. Document all reasons for exceptions**.

Nakia Addison
PE Name (Please Type or Print)

Signature

Date

38320-E
PE Registration # and Affix Seal

Technical Memorandum

To:	John Meuth Rebekah Averill Lhoist North America
From:	Nakia Addison, P.E. South Operations Manager
Subject:	Lhoist Brierfield, AL - East Pond Design Engineering Design Calculations
Date:	April 10, 2026
CC:	Michael Will, Lhoist Grant McCallum, Lhoist Jason Lauer, Lhoist Keith Jackson, TRC Ian Spurlock, TRC
Project No.:	684454.0000.0000

This memorandum provides a summary of the engineering calculations for the design of the East Pond (the pond) at the Lhoist Brierfield facility to manage stormwater runoff from the proposed overburden expansion area.

The pond was designed based on the Stormwater Detention Basin Design Guidance in the Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas, Volume 1. Below are the design criteria used:

- Type 3
- Sediment Storage: 1/2" from disturbed area
- Storage: 2-year 24-hr
- Minimum Principal Spillway Design: 10-year 24-hr
- Minimum Emergency (Auxiliary) Spillway Design: 25-year 24-hr

The pond design will also meet the requirements of Part II.B.2 (Upset Clause) of the facility's NPDES permit (AL0067831) with an effective date of April 1, 2024. According to Part II.B.2.b (1), the facility is exempt from a discharge which is an overflow from a treatment facility or system, or an excess discharge from a point source associated with a treatment facility or system if the treatment facility or system is designed, constructed, and maintained to contain the maximum volume of wastewater which would be generated by the facility during a 24-hour period without an increase in volume from precipitation and the maximum volume of wastewater resulting from a 10-year, 24-hour precipitation event or to treat the maximum flow associated with these volumes.

It is TRC's interpretation of Part II.B.2.b (1) that to qualify for the exemption in an upset, the pond must be designed to contain or control the discharge rate from the pond during the 10-year storm event based on "pre" analysis conditions. This interpretation is in line with the Alabama Department of Environmental Management (ADEM) recommendations in the Stormwater Detention Basin design guidelines. The pond is conservatively designed detain the 25-year, 24-hours storm below the emergency spillway elevation and to convey the 100-year, 24-hour storm through the emergency spillway, assuming a maximum accumulation of 2.5 feet of sediment.

HydroCAD stormwater modeling software version 10.20-6a by HydroCAD Software Solutions LLC was utilized for pond sizing and routing. Table 1 summarizes the pre- and post-development discharge rates for the drainage areas analyzed. The drainage areas modeled are 53.75 acres in the pre-development condition with a weighted CN of 71 and 60.46 acres in the post-development condition with a weighted CN of 74, assuming a fallow surface for the majority of the overburden management area.

Table 1: Pre- Versus Post-development Discharge Comparison

Design Storm Frequency	Pre-development (cfs)	Post-development (cfs)
2-year, 24-hour	52.19	6.81
10-year, 24-hour	103.16	14.58
25-year, 24-hour	127.58	19.60
100-year, 24-hour	169.42	43.85

For the other parts of the designed drainage system, calculations methods applied are as noted in the attachment descriptions below. The calculations attached include the following:

- Attachment 1: Type 3 Pond Sizing Calculations
- Attachment 2: Pre-development HydroCAD Modeling Report
- Attachment 3: Post-development HydroCAD Modeling Report
- Attachment 4: Manning's Channel Design Calculations
- Attachment 5: HEC-15 East Diversion Swale Rock Lining Design Calculations
- Attachment 6: HEC-15 High-Flow Areas Design Calculations
- Attachment 7: USDA-SCS Anti-Seep Collar Calculations
- Attachment 8: Riser Anti-Flotation Calculation
- Attachment 9: HEC-14 Dissipator Pool Calculations
- Attachment 10: Riprap Outlet Protection Calculations

Attachment 1: Pond Sizing Calculation

Project ID: Lhoist East Stormwater Pond
Location: Brierfield, AL
Designer/Checker: C. / J.Radanyi
Date: 3/5/26

POND DESIGN SIZING CALCULATIONS

Designed per Stormwater Detention Basin guidelines in ADEM handbook Chapter 4 Design Criteria for Stormwater Detention Basin
https://alabamasoilandwater.gov/wp-content/uploads/2021/03/2018-Handbook-Vol-1.pdf
SB39-eng.pdf Dam Bill

Drainage Area: 60.46 60.46 acres HydroCAD

The minimum capacity of a stormwater detention basin below the crest of the principal spillway pipe should be ½ inch per acre of the potential disturbed portion of the drainage area plus the runoff volume from a 2-year frequency, 24-hour duration storm for the developed conditions.

Design Condition assumed to be Fallow, Bare Soil HSG D CN 94, Pond is impervious CN 98
Developed conditions assumed to be a vegetated cover in fair condition (50-75% cover) with HSG D soils

Design Criteria

Classification

Table SDB-1 shows the recommended design and classification criteria for three types of Stormwater Detention Basins.

Table SDB-1 Stormwater Detention Basin Classification

Type [1]	Max. W/S Size (acre)	Max. Dam Ht.[2] (feet)	Minimum Principal Spillway Design Storm Frequency[3]	Minimum Emergency (Auxiliary) Spillway Design Storm Frequency[3]	Freeboard [4] (feet)
1	20	7	5-yr 24-hr	10-yr 24-hr	1.0
2	20	10	5-yr 24-hr	10-yr 24-hr	1.0
3	50	15	10-yr 24-hr	25-yr 24-hr	1.0

[1] Type 1 basins may be used where site conditions prevent the construction of an auxiliary spillway on residual earth.
[2] Height is measured from the top of the dam to the low point on the original centerline survey of the dam.
[3] Runoff should be determined by NRCS methods or other methods accepted by local ordinances. Soil and cover conditions used should be based on those expected during the construction period.
[4] Vertical distance between basin water surface at maximum flow through the auxiliary spillway and top of dam.

Chapter 4

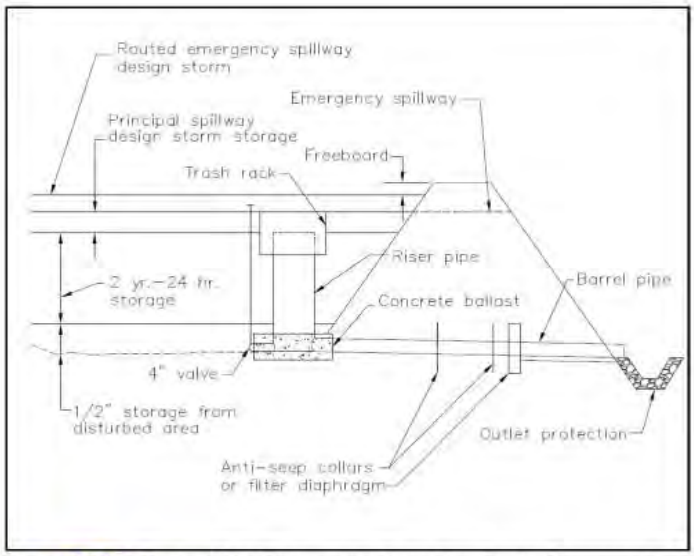


Figure SDB-3 Typical Wet Stormwater Detention Basin Components.

Project ID: Lhoist East Stormwater Pond
Location: Brierfield, AL
Designer/Checker: C. / J.Radanyi
Date: 3/5/26

Storage:

1/2" per acre	2.519	ac-ft	=	109735	ft^3	=	4064	CY
2-year, 24-hr	12.283	ac-ft	=	535047	ft^3	=	19817	CY	HydroCAD
10-year 24-hr	20.595	ac-ft	=	897118	ft^3	=	33227	CY	HydroCAD
25-year 24-hr	24.439	ac-ft	=	1064563	ft^3	=	39428	CY	HydroCAD

Storage Volumes for design storm plust 1/2" per acre:

Total w/ 2-yr storage=	14.802	ac-ft	=	644782	ft^3	=	23881	CY
Total w/ 10-yr storage=	23.114	ac-ft	=	1006853	ft^3	=	37291	CY
Total w/ 25-yr storage=	26.958	ac-ft	=	1174298	ft^3	=	43493	CY

Depth:

Storage Depth	12.09	ft	Top of Sediment Storage Elevation to Emergency Spillway

Footprint: 25% added to account for slope and embankment

w/ 2-yr storage=	2.66	acres	Elevation 400

Working volume estimate to top of berm: use 2-year plus freeboard 36755 CY

1.50	FT	Freeboard from top of principal spillway to emergency spillway
1.50	FT	Depth of Emergency spillway elevation to top of berm

Storage Required = 36755 CY

Use	40806.04889	CY	
Use	41806.0489	CY	Adds 67 CY/acre of drainage are for sediment storage
	25.29	ac-ft	
	1,101,763	CF	

Project ID: Lhoist East Stormwater Pond
Location: Brierfield, AL
Designer/Checker: C. / J.Radanyi
Date: 3/5/26

Forebay

USEPA NPDES Stormwater Best Management Practice Dry Detention Ponds states "about 10 percent of the volume of water that the pond will treat for pollutant removal"
Use 15% design calculations

Treatment Volume	20.595	ac-ft		23881	CY			
Forebay Volume	3.089	ac-ft		4984	CY	Use	5000	CY
Forebay								
Drainage Area	31.308	acres						
% of Total Drainage Area	52%							
Check Volume	2589	CY						
Storage:								
1/2" per acre	1.305	ac-ft	=	56824	ft^3	=	2105	CY
Side Slope	2	:1						
Top Elevation	400	FT						
Emergency Spillway Elevation	399	FT						
Wet Pool Elevation	395.8	FT						
Bottom Elevation	391	FT						
Total Depth	9	FT						
Total Length	695	FT						
Wet Pool Length	680	FT						
Wet Pool Depth	4.8	FT						
Wet Bottom Width	8	FT						
Wet Pool Top Width	27.2	FT						
Wet Volume	57446.4	CF						
Wet Volume	2128	CY	=	101%	of 1/2" per acre storage			
Dry Depth	3	FT						
Dry Bottom Width	27	FT						
Dry Top Width	40	FT						
Dry Volume	74726	CF						
Dry Volume	2768	CY						

Attachment 2: Pre-development HydroCAD Modeling Report

Project Notes

Rainfall events imported from "Atlas-14-Rain.txt" for 4 AL Bibb
Rainfall events imported from "Atlas-14-Rain.txt" for 4 AL Bibb

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	4.40	2
2	10-Year	Type III 24-hr		Default	24.00	1	6.40	2
3	25-Year	Type III 24-hr		Default	24.00	1	7.30	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.80	2
5	100-Year 6-Hr	Type III 6-hr		Default	6.00	1	6.34	2

Summary for Subcatchment DA-PRE2: Subcat DA-PRE2

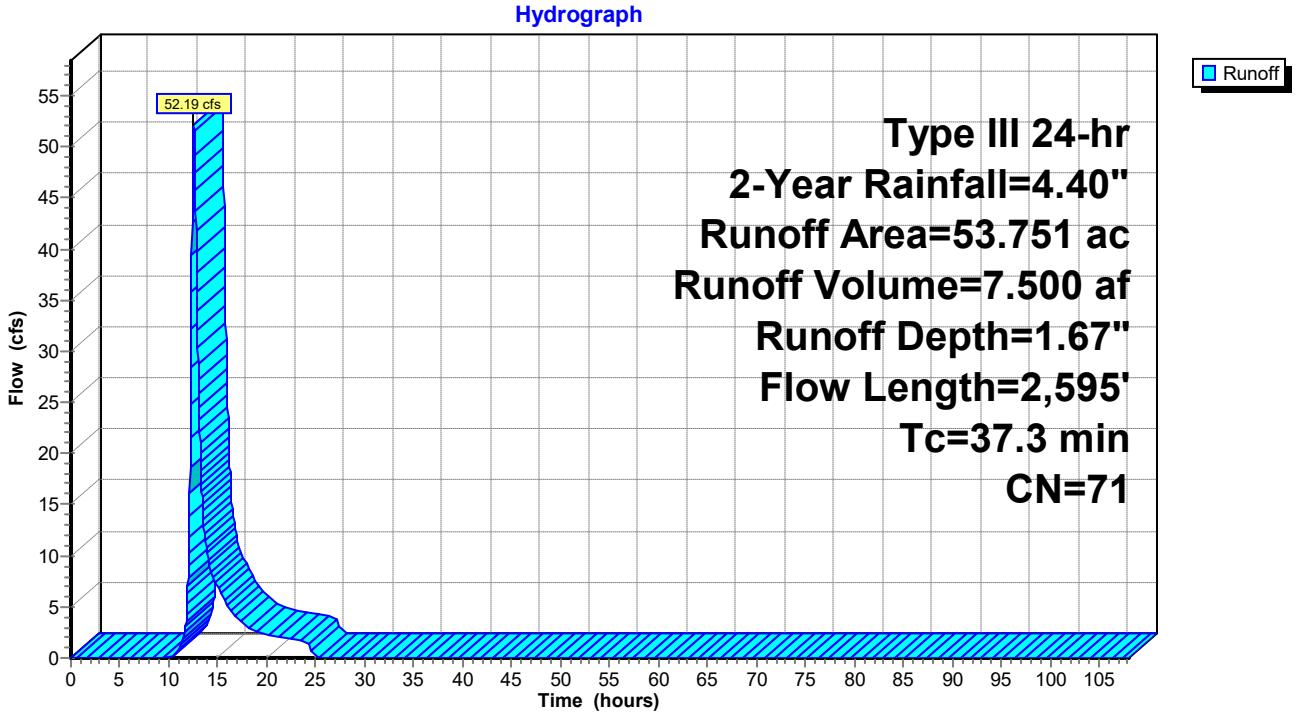
Runoff = 52.19 cfs @ 12.55 hrs, Volume= 7.500 af, Depth= 1.67"
Routed to Reach 1R : 60" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-108.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=4.40"

Area (ac)	CN	Description
1.649	91	Fallow, bare soil, HSG C
52.102	70	Woods, Good, HSG C
53.751	71	Weighted Average
53.751		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	35	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.15" Using McCuen-Spiess flow length
3.9	165	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.9	895	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.2	750	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.2	750	0.0100	3.00	127.61	**Trap/Vee/Rect Channel Flow,** Bot.W=80.00' D=0.50' Z= 10.0 '/' Top.W=90.00' n= 0.030 Earth, grassed & winding
37.3	2,595	Total			

Subcatchment DA-PRE2: Subcat DA-PRE2



Hydrograph for Subcatchment DA-PRE2: Subcat DA-PRE2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.50	0.07	0.00	0.00
3.00	0.14	0.00	0.00
4.50	0.22	0.00	0.00
6.00	0.32	0.00	0.00
7.50	0.45	0.00	0.00
9.00	0.64	0.00	0.00
10.50	0.95	0.00	0.14
12.00	2.20	0.35	**9.04**
13.50	3.45	1.03	**13.72**
15.00	3.76	1.23	6.88
16.50	3.95	1.36	4.38
18.00	4.08	1.45	3.09
19.50	4.18	1.52	2.43
21.00	4.27	1.58	2.10
22.50	4.34	1.63	1.83
24.00	**4.40**	**1.67**	1.56
25.50	4.40	1.67	0.01
27.00	4.40	1.67	0.00
28.50	4.40	1.67	0.00
30.00	4.40	1.67	0.00
31.50	4.40	1.67	0.00
33.00	4.40	1.67	0.00
34.50	4.40	1.67	0.00
36.00	4.40	1.67	0.00
37.50	4.40	1.67	0.00
39.00	4.40	1.67	0.00
40.50	4.40	1.67	0.00
42.00	4.40	1.67	0.00
43.50	4.40	1.67	0.00
45.00	4.40	1.67	0.00
46.50	4.40	1.67	0.00
48.00	4.40	1.67	0.00
49.50	4.40	1.67	0.00
51.00	4.40	1.67	0.00
52.50	4.40	1.67	0.00
54.00	4.40	1.67	0.00
55.50	4.40	1.67	0.00
57.00	4.40	1.67	0.00
58.50	4.40	1.67	0.00
60.00	4.40	1.67	0.00
61.50	4.40	1.67	0.00
63.00	4.40	1.67	0.00
64.50	4.40	1.67	0.00
66.00	4.40	1.67	0.00
67.50	4.40	1.67	0.00
69.00	4.40	1.67	0.00
70.50	4.40	1.67	0.00
72.00	4.40	1.67	0.00
73.50	4.40	1.67	0.00
75.00	4.40	1.67	0.00
76.50	4.40	1.67	0.00
78.00	4.40	1.67	0.00
79.50	4.40	1.67	0.00
81.00	4.40	1.67	0.00
82.50	4.40	1.67	0.00
84.00	4.40	1.67	0.00
85.50	4.40	1.67	0.00
87.00	4.40	1.67	0.00
88.50	4.40	1.67	0.00
90.00	4.40	1.67	0.00
91.50	4.40	1.67	0.00
93.00	4.40	1.67	0.00
94.50	4.40	1.67	0.00
96.00	4.40	1.67	0.00
97.50	4.40	1.67	0.00
99.00	4.40	1.67	0.00
100.50	4.40	1.67	0.00
102.00	4.40	1.67	0.00
103.50	4.40	1.67	0.00
105.00	4.40	1.67	0.00
106.50	4.40	1.67	0.00
108.00	4.40	1.67	0.00

Summary for Subcatchment DA-PRE2: Subcat DA-PRE2

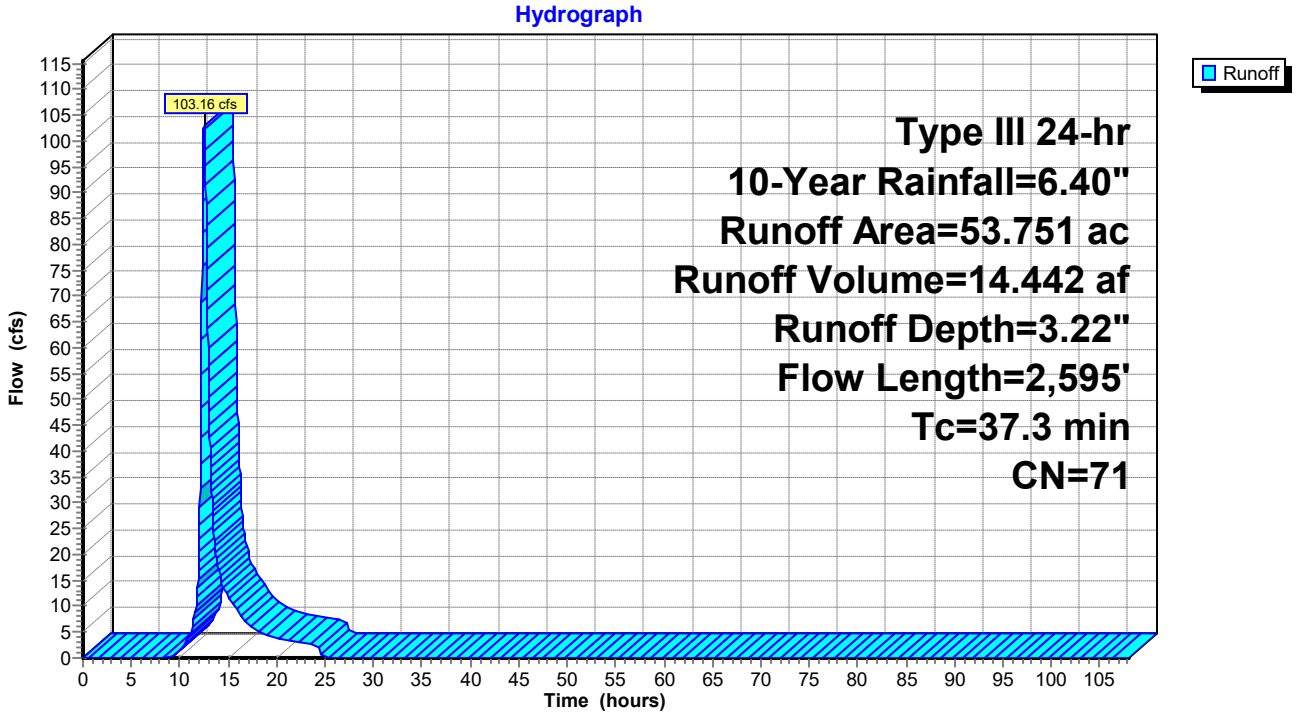
Runoff = 103.16 cfs @ 12.53 hrs, Volume= 14.442 af, Depth= 3.22"
Routed to Reach 1R : 60" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-108.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=6.40"

Area (ac)	CN	Description
1.649	91	Fallow, bare soil, HSG C
52.102	70	Woods, Good, HSG C
53.751	71	Weighted Average
53.751		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	35	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.15" Using McCuen-Spiess flow length
3.9	165	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.9	895	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.2	750	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.2	750	0.0100	3.00	127.61	**Trap/Vee/Rect Channel Flow,** Bot.W=80.00' D=0.50' Z= 10.0 '/' Top.W=90.00' n= 0.030 Earth, grassed & winding
37.3	2,595	Total			

Subcatchment DA-PRE2: Subcat DA-PRE2



Hydrograph for Subcatchment DA-PRE2: Subcat DA-PRE2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.50	0.10	0.00	0.00
3.00	0.20	0.00	0.00
4.50	0.32	0.00	0.00
6.00	0.46	0.00	0.00
7.50	0.65	0.00	0.00
9.00	0.93	0.00	0.09
10.50	1.39	0.07	2.75
12.00	3.20	0.88	**22.97**
13.50	5.01	2.13	**24.60**
15.00	5.47	2.48	11.89
16.50	5.75	2.70	7.48
18.00	5.94	2.85	5.24
19.50	6.08	2.96	4.09
21.00	6.20	3.06	3.53
22.50	6.31	3.15	3.07
24.00	**6.40**	**3.22**	2.60
25.50	6.40	3.22	0.02
27.00	6.40	3.22	0.00
28.50	6.40	3.22	0.00
30.00	6.40	3.22	0.00
31.50	6.40	3.22	0.00
33.00	6.40	3.22	0.00
34.50	6.40	3.22	0.00
36.00	6.40	3.22	0.00
37.50	6.40	3.22	0.00
39.00	6.40	3.22	0.00
40.50	6.40	3.22	0.00
42.00	6.40	3.22	0.00
43.50	6.40	3.22	0.00
45.00	6.40	3.22	0.00
46.50	6.40	3.22	0.00
48.00	6.40	3.22	0.00
49.50	6.40	3.22	0.00
51.00	6.40	3.22	0.00
52.50	6.40	3.22	0.00
54.00	6.40	3.22	0.00
55.50	6.40	3.22	0.00
57.00	6.40	3.22	0.00
58.50	6.40	3.22	0.00
60.00	6.40	3.22	0.00
61.50	6.40	3.22	0.00
63.00	6.40	3.22	0.00
64.50	6.40	3.22	0.00
66.00	6.40	3.22	0.00
67.50	6.40	3.22	0.00
69.00	6.40	3.22	0.00
70.50	6.40	3.22	0.00
72.00	6.40	3.22	0.00
73.50	6.40	3.22	0.00
75.00	6.40	3.22	0.00
76.50	6.40	3.22	0.00
78.00	6.40	3.22	0.00
79.50	6.40	3.22	0.00
81.00	6.40	3.22	0.00
82.50	6.40	3.22	0.00
84.00	6.40	3.22	0.00
85.50	6.40	3.22	0.00
87.00	6.40	3.22	0.00
88.50	6.40	3.22	0.00
90.00	6.40	3.22	0.00
91.50	6.40	3.22	0.00
93.00	6.40	3.22	0.00
94.50	6.40	3.22	0.00
96.00	6.40	3.22	0.00
97.50	6.40	3.22	0.00
99.00	6.40	3.22	0.00
100.50	6.40	3.22	0.00
102.00	6.40	3.22	0.00
103.50	6.40	3.22	0.00
105.00	6.40	3.22	0.00
106.50	6.40	3.22	0.00
108.00	6.40	3.22	0.00

Summary for Subcatchment DA-PRE2: Subcat DA-PRE2

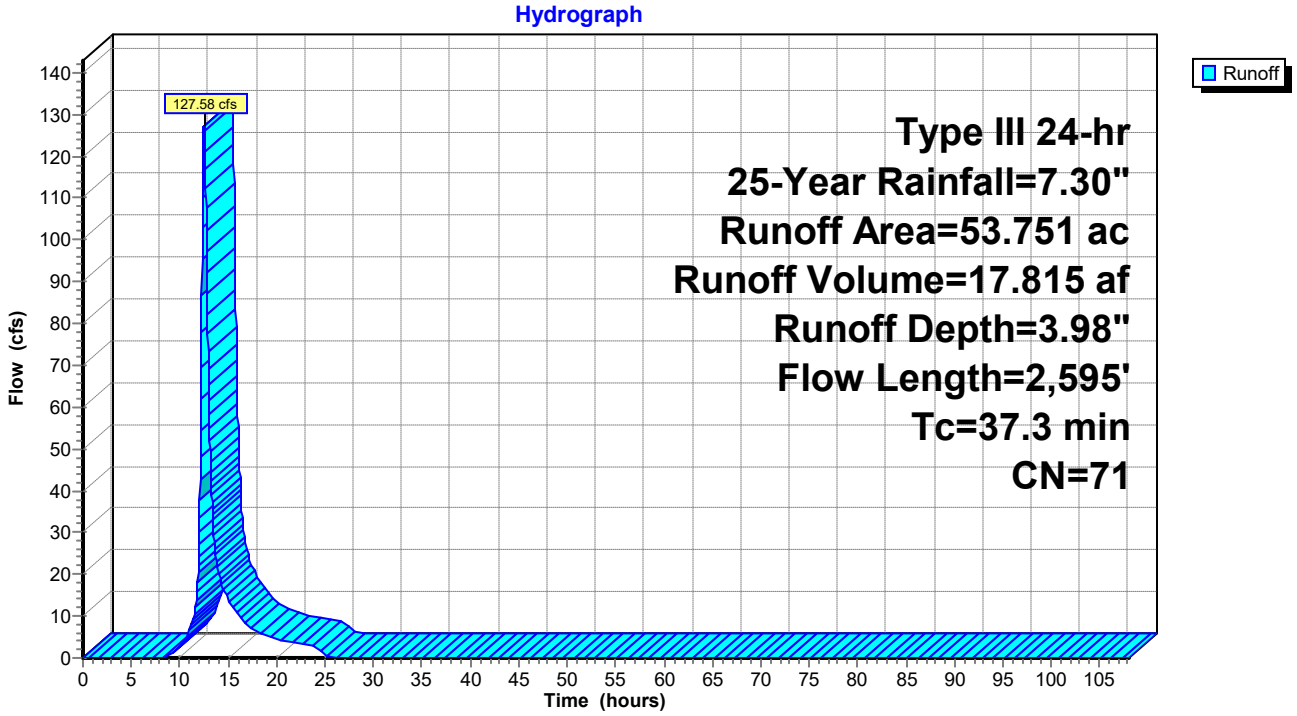
Runoff = 127.58 cfs @ 12.52 hrs, Volume= 17.815 af, Depth= 3.98"
Routed to Reach 1R : 60" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-108.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=7.30"

Area (ac)	CN	Description
1.649	91	Fallow, bare soil, HSG C
52.102	70	Woods, Good, HSG C
53.751	71	Weighted Average
53.751		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	35	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.15" Using McCuen-Spiess flow length
3.9	165	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.9	895	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.2	750	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.2	750	0.0100	3.00	127.61	**Trap/Vee/Rect Channel Flow,** Bot.W=80.00' D=0.50' Z= 10.0 '/' Top.W=90.00' n= 0.030 Earth, grassed & winding
37.3	2,595	Total			

Subcatchment DA-PRE2: Subcat DA-PRE2



Hydrograph for Subcatchment DA-PRE2: Subcat DA-PRE2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.50	0.11	0.00	0.00
3.00	0.22	0.00	0.00
4.50	0.36	0.00	0.00
6.00	0.53	0.00	0.00
7.50	0.74	0.00	0.00
9.00	1.06	0.01	0.65
10.50	1.58	0.12	4.29
12.00	3.65	1.16	**30.04**
13.50	5.72	2.67	**29.63**
15.00	6.24	3.09	14.17
16.50	6.56	3.35	8.89
18.00	6.77	3.53	6.21
19.50	6.94	3.67	4.85
21.00	7.08	3.79	4.18
22.50	7.20	3.89	3.63
24.00	**7.30**	**3.98**	3.08
25.50	7.30	3.98	0.03
27.00	7.30	3.98	0.00
28.50	7.30	3.98	0.00
30.00	7.30	3.98	0.00
31.50	7.30	3.98	0.00
33.00	7.30	3.98	0.00
34.50	7.30	3.98	0.00
36.00	7.30	3.98	0.00
37.50	7.30	3.98	0.00
39.00	7.30	3.98	0.00
40.50	7.30	3.98	0.00
42.00	7.30	3.98	0.00
43.50	7.30	3.98	0.00
45.00	7.30	3.98	0.00
46.50	7.30	3.98	0.00
48.00	7.30	3.98	0.00
49.50	7.30	3.98	0.00
51.00	7.30	3.98	0.00
52.50	7.30	3.98	0.00
54.00	7.30	3.98	0.00
55.50	7.30	3.98	0.00
57.00	7.30	3.98	0.00
58.50	7.30	3.98	0.00
60.00	7.30	3.98	0.00
61.50	7.30	3.98	0.00
63.00	7.30	3.98	0.00
64.50	7.30	3.98	0.00
66.00	7.30	3.98	0.00
67.50	7.30	3.98	0.00
69.00	7.30	3.98	0.00
70.50	7.30	3.98	0.00
72.00	7.30	3.98	0.00
73.50	7.30	3.98	0.00
75.00	7.30	3.98	0.00
76.50	7.30	3.98	0.00
78.00	7.30	3.98	0.00
79.50	7.30	3.98	0.00
81.00	7.30	3.98	0.00
82.50	7.30	3.98	0.00
84.00	7.30	3.98	0.00
85.50	7.30	3.98	0.00
87.00	7.30	3.98	0.00
88.50	7.30	3.98	0.00
90.00	7.30	3.98	0.00
91.50	7.30	3.98	0.00
93.00	7.30	3.98	0.00
94.50	7.30	3.98	0.00
96.00	7.30	3.98	0.00
97.50	7.30	3.98	0.00
99.00	7.30	3.98	0.00
100.50	7.30	3.98	0.00
102.00	7.30	3.98	0.00
103.50	7.30	3.98	0.00
105.00	7.30	3.98	0.00
106.50	7.30	3.98	0.00
108.00	7.30	3.98	0.00

Summary for Subcatchment DA-PRE2: Subcat DA-PRE2

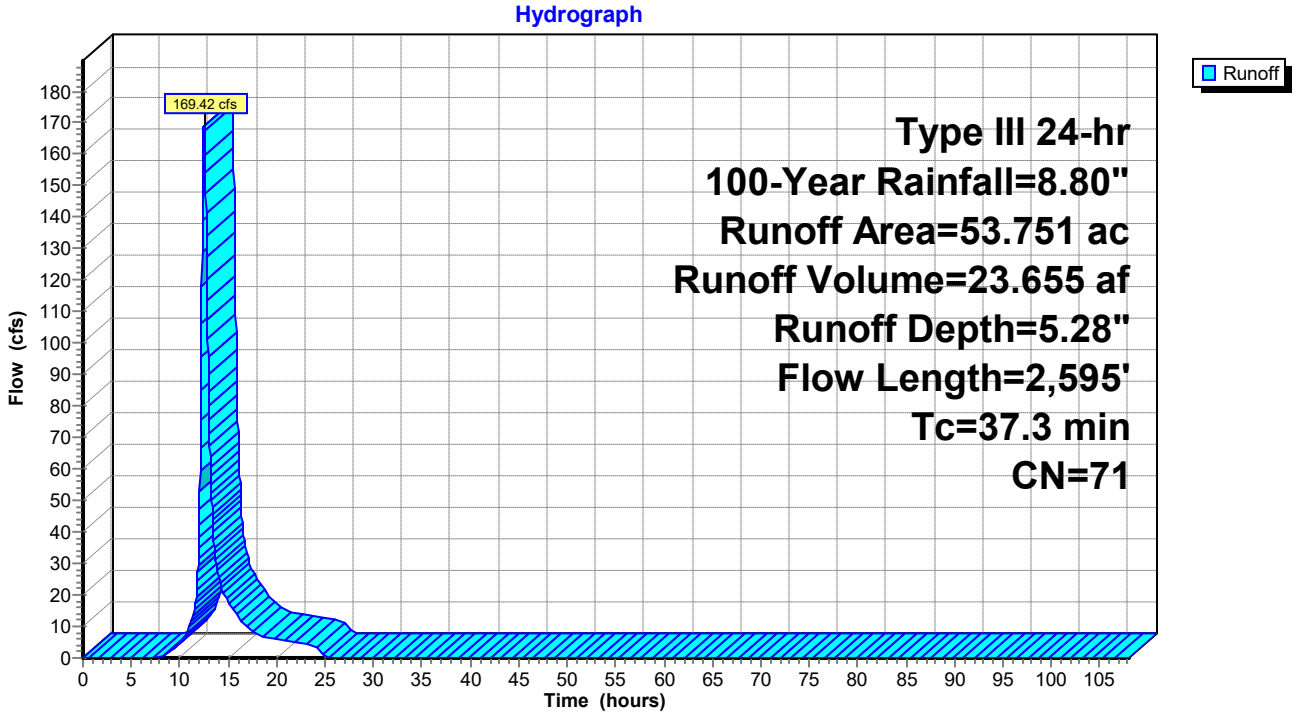
Runoff = 169.42 cfs @ 12.51 hrs, Volume= 23.655 af, Depth= 5.28"
Routed to Reach 1R : 60" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-108.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.80"

Area (ac)	CN	Description
1.649	91	Fallow, bare soil, HSG C
52.102	70	Woods, Good, HSG C
53.751	71	Weighted Average
53.751		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	35	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.15" Using McCuen-Spiess flow length
3.9	165	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.9	895	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.2	750	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.2	750	0.0100	3.00	127.61	**Trap/Vee/Rect Channel Flow,** Bot.W=80.00' D=0.50' Z= 10.0 '/' Top.W=90.00' n= 0.030 Earth, grassed & winding
37.3	2,595	Total			

Subcatchment DA-PRE2: Subcat DA-PRE2



Hydrograph for Subcatchment DA-PRE2: Subcat DA-PRE2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.50	0.13	0.00	0.00
3.00	0.27	0.00	0.00
4.50	0.44	0.00	0.00
6.00	0.63	0.00	0.00
7.50	0.89	0.00	0.03
9.00	1.28	0.05	1.96
10.50	1.91	0.23	7.18
12.00	4.40	1.67	**42.54**
13.50	6.89	3.64	**38.07**
15.00	7.52	4.16	17.98
16.50	7.91	4.50	11.23
18.00	8.17	4.72	7.84
19.50	8.36	4.90	6.10
21.00	8.53	5.04	5.25
22.50	8.68	5.17	4.56
24.00	**8.80**	**5.28**	3.86
25.50	8.80	5.28	0.04
27.00	8.80	5.28	0.00
28.50	8.80	5.28	0.00
30.00	8.80	5.28	0.00
31.50	8.80	5.28	0.00
33.00	8.80	5.28	0.00
34.50	8.80	5.28	0.00
36.00	8.80	5.28	0.00
37.50	8.80	5.28	0.00
39.00	8.80	5.28	0.00
40.50	8.80	5.28	0.00
42.00	8.80	5.28	0.00
43.50	8.80	5.28	0.00
45.00	8.80	5.28	0.00
46.50	8.80	5.28	0.00
48.00	8.80	5.28	0.00
49.50	8.80	5.28	0.00
51.00	8.80	5.28	0.00
52.50	8.80	5.28	0.00
54.00	8.80	5.28	0.00
55.50	8.80	5.28	0.00
57.00	8.80	5.28	0.00
58.50	8.80	5.28	0.00
60.00	8.80	5.28	0.00
61.50	8.80	5.28	0.00
63.00	8.80	5.28	0.00
64.50	8.80	5.28	0.00
66.00	8.80	5.28	0.00
67.50	8.80	5.28	0.00
69.00	8.80	5.28	0.00
70.50	8.80	5.28	0.00
72.00	8.80	5.28	0.00
73.50	8.80	5.28	0.00
75.00	8.80	5.28	0.00
76.50	8.80	5.28	0.00
78.00	8.80	5.28	0.00
79.50	8.80	5.28	0.00
81.00	8.80	5.28	0.00
82.50	8.80	5.28	0.00
84.00	8.80	5.28	0.00
85.50	8.80	5.28	0.00
87.00	8.80	5.28	0.00
88.50	8.80	5.28	0.00
90.00	8.80	5.28	0.00
91.50	8.80	5.28	0.00
93.00	8.80	5.28	0.00
94.50	8.80	5.28	0.00
96.00	8.80	5.28	0.00
97.50	8.80	5.28	0.00
99.00	8.80	5.28	0.00
100.50	8.80	5.28	0.00
102.00	8.80	5.28	0.00
103.50	8.80	5.28	0.00
105.00	8.80	5.28	0.00
106.50	8.80	5.28	0.00
108.00	8.80	5.28	0.00

Summary for Subcatchment DA-PRE2: Subcat DA-PRE2

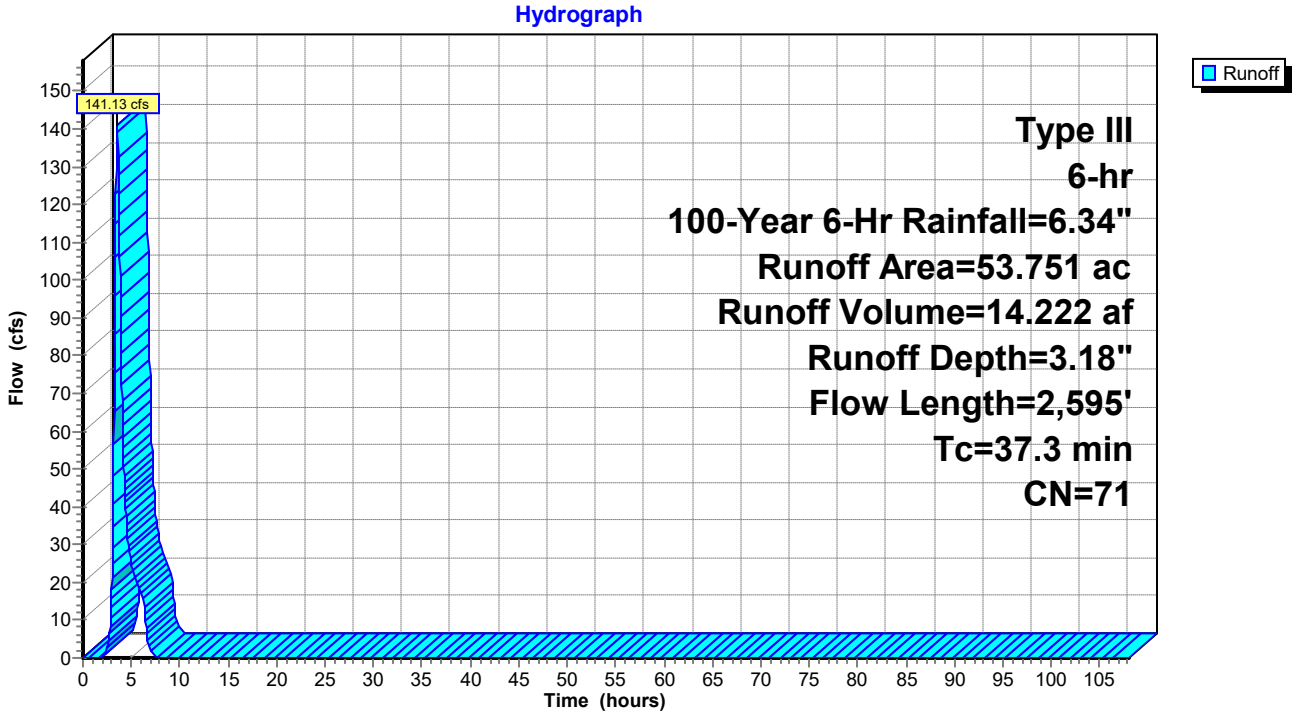
Runoff = 141.13 cfs @ 3.54 hrs, Volume= 14.222 af, Depth= 3.18"
Routed to Reach 1R : 60" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-108.00 hrs, dt= 0.03 hrs
Type III 6-hr 100-Year 6-Hr Rainfall=6.34"

Area (ac)	CN	Description
1.649	91	Fallow, bare soil, HSG C
52.102	70	Woods, Good, HSG C
53.751	71	Weighted Average
53.751		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	35	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 4.15" Using McCuen-Spiess flow length
3.9	165	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.9	895	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.2	750	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.2	750	0.0100	3.00	127.61	**Trap/Vee/Rect Channel Flow,** Bot.W=80.00' D=0.50' Z= 10.0 '/' Top.W=90.00' n= 0.030 Earth, grassed & winding
37.3	2,595	Total			

Subcatchment DA-PRE2: Subcat DA-PRE2



Hydrograph for Subcatchment DA-PRE2: Subcat DA-PRE2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.50	0.63	0.00	0.00
3.00	3.17	0.86	**21.31**
4.50	5.71	2.66	**35.76**
6.00	**6.34**	**3.18**	17.44
7.50	6.34	3.18	0.16
9.00	6.34	3.18	0.00
10.50	6.34	3.18	0.00
12.00	6.34	3.18	0.00
13.50	6.34	3.18	0.00
15.00	6.34	3.18	0.00
16.50	6.34	3.18	0.00
18.00	6.34	3.18	0.00
19.50	6.34	3.18	0.00
21.00	6.34	3.18	0.00
22.50	6.34	3.18	0.00
24.00	6.34	3.18	0.00
25.50	6.34	3.18	0.00
27.00	6.34	3.18	0.00
28.50	6.34	3.18	0.00
30.00	6.34	3.18	0.00
31.50	6.34	3.18	0.00
33.00	6.34	3.18	0.00
34.50	6.34	3.18	0.00
36.00	6.34	3.18	0.00
37.50	6.34	3.18	0.00
39.00	6.34	3.18	0.00
40.50	6.34	3.18	0.00
42.00	6.34	3.18	0.00
43.50	6.34	3.18	0.00
45.00	6.34	3.18	0.00
46.50	6.34	3.18	0.00
48.00	6.34	3.18	0.00
49.50	6.34	3.18	0.00
51.00	6.34	3.18	0.00
52.50	6.34	3.18	0.00
54.00	6.34	3.18	0.00
55.50	6.34	3.18	0.00
57.00	6.34	3.18	0.00
58.50	6.34	3.18	0.00
60.00	6.34	3.18	0.00
61.50	6.34	3.18	0.00
63.00	6.34	3.18	0.00
64.50	6.34	3.18	0.00
66.00	6.34	3.18	0.00
67.50	6.34	3.18	0.00
69.00	6.34	3.18	0.00
70.50	6.34	3.18	0.00
72.00	6.34	3.18	0.00
73.50	6.34	3.18	0.00
75.00	6.34	3.18	0.00
76.50	6.34	3.18	0.00
78.00	6.34	3.18	0.00
79.50	6.34	3.18	0.00
81.00	6.34	3.18	0.00
82.50	6.34	3.18	0.00
84.00	6.34	3.18	0.00
85.50	6.34	3.18	0.00
87.00	6.34	3.18	0.00
88.50	6.34	3.18	0.00
90.00	6.34	3.18	0.00
91.50	6.34	3.18	0.00
93.00	6.34	3.18	0.00
94.50	6.34	3.18	0.00
96.00	6.34	3.18	0.00
97.50	6.34	3.18	0.00
99.00	6.34	3.18	0.00
100.50	6.34	3.18	0.00
102.00	6.34	3.18	0.00
103.50	6.34	3.18	0.00
105.00	6.34	3.18	0.00
106.50	6.34	3.18	0.00
108.00	6.34	3.18	0.00

Events for Subcatchment DA-PRE2: Subcat DA-PRE2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	4.40	52.19	7.500	1.67
10-Year	6.40	103.16	14.442	3.22
25-Year	7.30	127.58	17.815	3.98
100-Year	**8.80**	**169.42**	**23.655**	**5.28**
100-Year 6-Hr	6.34	141.13	14.222	3.18

Attachment 3: Post-development HydroCAD Modeling Report

Project Notes

Rainfall events imported from "Atlas-14-Rain.txt" for 4 AL Bibb
Rainfall events imported from "Atlas-14-Rain.txt" for 4 AL Bibb

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	4.40	2
2	10-Year	Type III 24-hr		Default	24.00	1	6.40	2
3	25-Year	Type III 24-hr		Default	24.00	1	7.30	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.80	2
5	100-Year 6-Hr	Type III 6-hr		Default	6.00	1	6.34	2

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	EP'	385.00	383.00	92.0	0.0217	0.012	0.0	24.0	0.0	

Summary for Pond EP': EAST POND - 2.5 FT SED

Inflow Area = 60.464 ac, 0.00% Impervious, Inflow Depth = 3.32" for 2-Year event
Inflow = 162.45 cfs @ 12.18 hrs, Volume= 16.748 af
Outflow = 6.81 cfs @ 16.41 hrs, Volume= 18.808 af, Atten= 96%, Lag= 253.4 min
Primary = 6.81 cfs @ 16.41 hrs, Volume= 18.808 af
Routed to Reach EP-P : EP- Primary
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach EP-ES : EP Spillway Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.03 hrs / 2
Starting Elev= 389.00' Surf.Area= 62,590 sf Storage= 89,502 cf
Peak Elev= 394.41' @ 16.41 hrs Surf.Area= 85,940 sf Storage= 489,679 cf (400,177 cf above start)

Plug-Flow detention time= 942.5 min calculated for 16.743 af (100% of inflow)
Center-of-Mass det. time= 777.5 min (1,597.8 - 820.3)

Volume	Invert	Avail.Storage	Storage Description
#1	385.00'	1,048,324 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

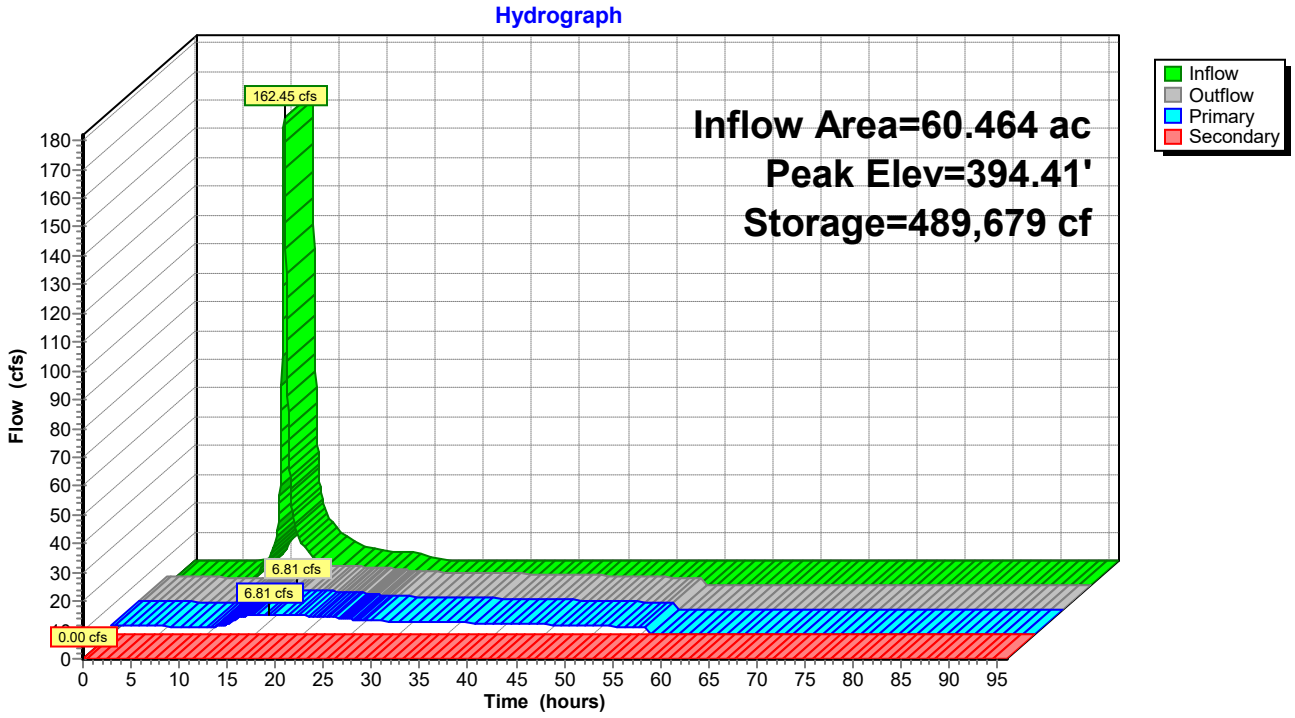
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
385.00	10,000	300.0	0.0	0	0	10,000
386.00	45,049	1,000.0	0.0	0	0	82,418
387.50	56,793	1,222.0	0.0	0	0	121,708
390.00	66,612	1,305.0	100.0	154,093	154,093	138,695
395.00	88,704	1,468.0	100.0	386,974	541,067	175,326
400.00	114,757	1,639.0	100.0	507,257	1,048,324	218,313

Device	Routing	Invert	Outlet Devices
#1	Primary	385.00'	**24.0" Round CMP_Round 24"** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 385.00' / 383.00' S= 0.0217 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf
#2	Device 1	385.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	393.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#6	Secondary	398.50'	**10.0' long + 10.0 '/' SideZ x 30.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.81 cfs @ 16.41 hrs HW=394.41' TW=383.51' (Dynamic Tailwater)
└─**1=CMP_Round 24"** (Passes 6.81 cfs of 43.87 cfs potential flow)
  ├─**2=8" Dewatering Orifice** (Orifice Controls 5.06 cfs @ 14.51 fps)
  ├─**3=8" Dewatering Orifice** (Orifice Controls 1.75 cfs @ 5.00 fps)
  ├─**4=Rect. Orifice** (Controls 0.00 cfs)
  └─**5=Rect. Orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=389.00' TW=398.50' (Dynamic Tailwater)
└─**6=Emergency Spillway** (Controls 0.00 cfs)

Pond EP': EAST POND - 2.5 FT SED



Hydrograph for Pond EP': EAST POND - 2.5 FT SED

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	89,502	389.00	3.22	3.22	**0.00**
3.00	0.00	56,075	388.46	2.97	2.97	0.00
6.00	0.15	25,769	387.95	2.72	2.72	0.00
9.00	1.95	5,763	387.60	2.53	2.53	0.00
12.00	**92.32**	122,750	389.52	3.44	3.44	0.00
15.00	**10.59**	**480,364**	**394.30**	**6.69**	**6.69**	0.00
18.00	4.67	**483,413**	**394.34**	**6.73**	**6.73**	0.00
21.00	3.21	453,639	393.99	6.30	6.30	0.00
24.00	2.29	418,875	393.57	5.64	5.64	0.00
27.00	0.13	371,064	392.98	4.65	4.65	0.00
30.00	0.03	322,604	392.35	4.45	4.45	0.00
33.00	0.01	275,774	391.73	4.25	4.25	0.00
36.00	0.01	231,068	391.12	4.04	4.04	0.00
39.00	0.00	188,636	390.51	3.82	3.82	0.00
42.00	0.00	148,583	389.92	3.60	3.60	0.00
45.00	0.00	111,004	389.34	3.36	3.36	0.00
48.00	0.00	75,993	388.78	3.12	3.12	0.00
51.00	0.00	43,645	388.25	2.87	2.87	0.00
54.00	0.00	14,055	387.75	2.61	2.61	0.00
57.00	0.00	0	385.00	0.00	0.00	0.00
60.00	0.00	0	385.00	0.00	0.00	0.00
63.00	0.00	0	385.00	0.00	0.00	0.00
66.00	0.00	0	385.00	0.00	0.00	0.00
69.00	0.00	0	385.00	0.00	0.00	0.00
72.00	0.00	0	385.00	0.00	0.00	0.00
75.00	0.00	0	385.00	0.00	0.00	0.00
78.00	0.00	0	385.00	0.00	0.00	0.00
81.00	0.00	0	385.00	0.00	0.00	0.00
84.00	0.00	0	385.00	0.00	0.00	0.00
87.00	0.00	0	385.00	0.00	0.00	0.00
90.00	0.00	0	385.00	0.00	0.00	0.00
93.00	0.00	0	385.00	0.00	0.00	0.00
96.00	0.00	0	385.00	0.00	0.00	0.00

Summary for Pond EP': EAST POND - 2.5 FT SED

Inflow Area = 60.464 ac, 0.00% Impervious, Inflow Depth = 5.27" for 10-Year event
Inflow = 253.16 cfs @ 12.18 hrs, Volume= 26.548 af
Outflow = 14.58 cfs @ 15.15 hrs, Volume= 28.609 af, Atten= 94%, Lag= 178.6 min
Primary = 14.58 cfs @ 15.15 hrs, Volume= 28.609 af
Routed to Reach EP-P : EP- Primary
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach EP-ES : EP Spillway Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.03 hrs / 2
Starting Elev= 389.00' Surf.Area= 62,590 sf Storage= 89,502 cf
Peak Elev= 397.31' @ 15.15 hrs Surf.Area= 100,350 sf Storage= 759,749 cf (670,246 cf above start)

Plug-Flow detention time= 1,037.3 min calculated for 26.546 af (100% of inflow)
Center-of-Mass det. time= 922.7 min (1,736.1 - 813.4)

Volume	Invert	Avail.Storage	Storage Description
#1	385.00'	1,048,324 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

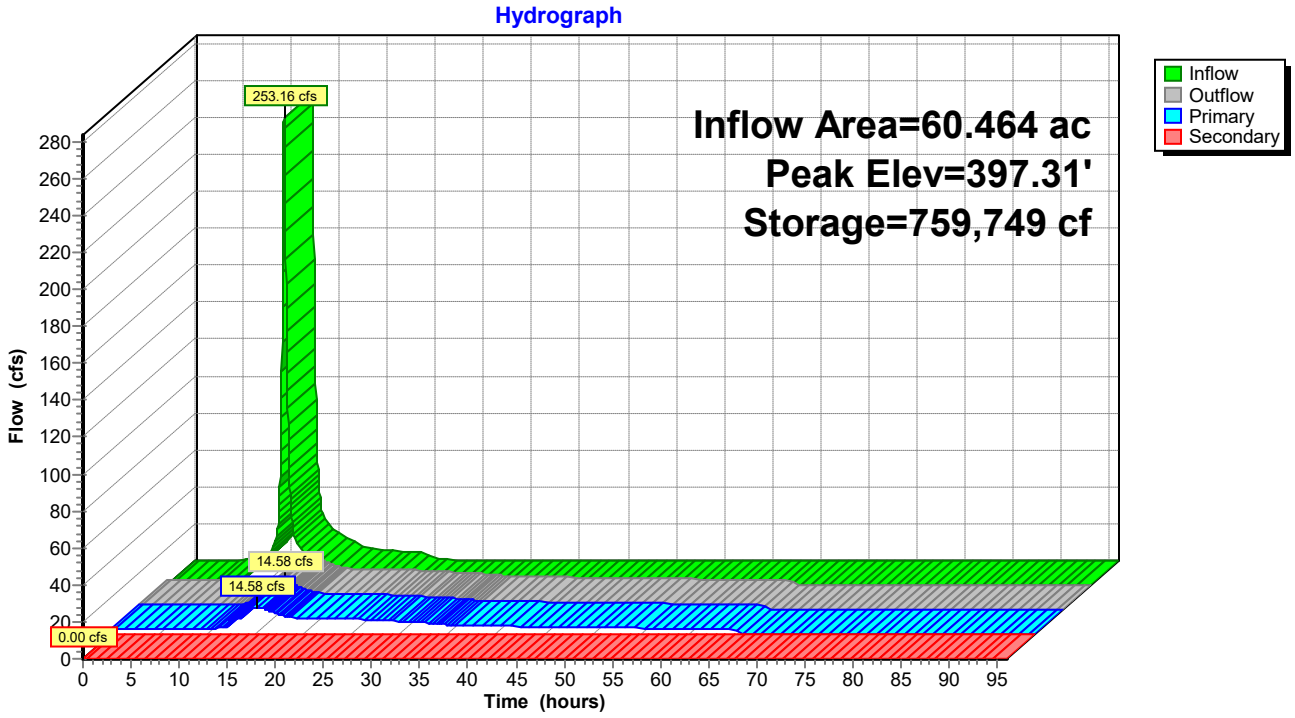
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
385.00	10,000	300.0	0.0	0	0	10,000
386.00	45,049	1,000.0	0.0	0	0	82,418
387.50	56,793	1,222.0	0.0	0	0	121,708
390.00	66,612	1,305.0	100.0	154,093	154,093	138,695
395.00	88,704	1,468.0	100.0	386,974	541,067	175,326
400.00	114,757	1,639.0	100.0	507,257	1,048,324	218,313

Device	Routing	Invert	Outlet Devices
#1	Primary	385.00'	**24.0" Round CMP_Round 24"** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 385.00' / 383.00' S= 0.0217 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf
#2	Device 1	385.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	393.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#6	Secondary	398.50'	**10.0' long + 10.0 '/' SideZ x 30.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=14.58 cfs @ 15.15 hrs HW=397.31' TW=383.78' (Dynamic Tailwater)
└─**1=CMP_Round 24"** (Passes 14.58 cfs of 50.88 cfs potential flow)
  ├─**2=8" Dewatering Orifice** (Orifice Controls 5.82 cfs @ 16.67 fps)
  ├─**3=8" Dewatering Orifice** (Orifice Controls 3.35 cfs @ 9.61 fps)
  ├─**4=Rect. Orifice** (Orifice Controls 2.70 cfs @ 2.70 fps)
  └─**5=Rect. Orifice** (Orifice Controls 2.70 cfs @ 2.70 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=389.00' TW=398.50' (Dynamic Tailwater)
└─**6=Emergency Spillway** (Controls 0.00 cfs)

Pond EP': EAST POND - 2.5 FT SED



Hydrograph for Pond EP': EAST POND - 2.5 FT SED

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	89,502	389.00	3.22	3.22	**0.00**
3.00	0.01	56,082	388.46	2.97	2.97	0.00
6.00	0.75	27,897	387.98	2.74	2.74	0.00
9.00	8.09	32,546	388.06	2.78	2.78	0.00
12.00	**150.86**	259,560	391.51	4.18	4.18	0.00
15.00	**15.11**	**759,598**	**397.31**	**14.56**	**14.56**	0.00
18.00	7.19	**737,085**	**397.09**	**9.87**	**9.87**	0.00
21.00	5.38	705,406	396.77	8.80	8.80	0.00
24.00	4.04	663,574	396.33	8.48	8.48	0.00
27.00	0.38	588,983	395.53	7.86	7.86	0.00
30.00	0.06	510,055	394.65	7.06	7.06	0.00
33.00	0.02	439,309	393.82	6.06	6.06	0.00
36.00	0.01	381,556	393.11	4.73	4.73	0.00
39.00	0.01	332,034	392.48	4.49	4.49	0.00
42.00	0.00	284,644	391.85	4.29	4.29	0.00
45.00	0.00	239,451	391.23	4.08	4.08	0.00
48.00	0.00	196,543	390.63	3.87	3.87	0.00
51.00	0.00	156,010	390.03	3.64	3.64	0.00
54.00	0.00	117,940	389.45	3.41	3.41	0.00
57.00	0.00	82,426	388.89	3.17	3.17	0.00
60.00	0.00	49,560	388.35	2.92	2.92	0.00
63.00	0.00	19,436	387.84	2.66	2.66	0.00
66.00	0.00	0	385.02	0.00	0.00	0.00
69.00	0.00	0	385.02	0.00	0.00	0.00
72.00	0.00	0	385.02	0.00	0.00	0.00
75.00	0.00	0	385.01	0.00	0.00	0.00
78.00	0.00	0	385.01	0.00	0.00	0.00
81.00	0.00	0	385.01	0.00	0.00	0.00
84.00	0.00	0	385.01	0.00	0.00	0.00
87.00	0.00	0	385.01	0.00	0.00	0.00
90.00	0.00	0	385.01	0.00	0.00	0.00
93.00	0.00	0	385.01	0.00	0.00	0.00
96.00	0.00	0	385.01	0.00	0.00	0.00

Summary for Pond EP': EAST POND - 2.5 FT SED

Inflow Area = 60.464 ac, 0.00% Impervious, Inflow Depth = 6.15" for 25-Year event
Inflow = 289.24 cfs @ 12.18 hrs, Volume= 31.002 af
Outflow = 19.60 cfs @ 14.57 hrs, Volume= 33.062 af, Atten= 93%, Lag= 143.4 min
Primary = 19.60 cfs @ 14.57 hrs, Volume= 33.062 af
Routed to Reach EP-P : EP- Primary
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach EP-ES : EP Spillway Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.03 hrs / 2
Starting Elev= 389.00' Surf.Area= 62,590 sf Storage= 89,502 cf
Peak Elev= 398.07' @ 14.57 hrs Surf.Area= 104,283 sf Storage= 836,611 cf (747,108 cf above start)

Plug-Flow detention time= 951.0 min calculated for 30.998 af (100% of inflow)
Center-of-Mass det. time= 857.1 min (1,669.4 - 812.3)

Volume	Invert	Avail.Storage	Storage Description
#1	385.00'	1,048,324 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

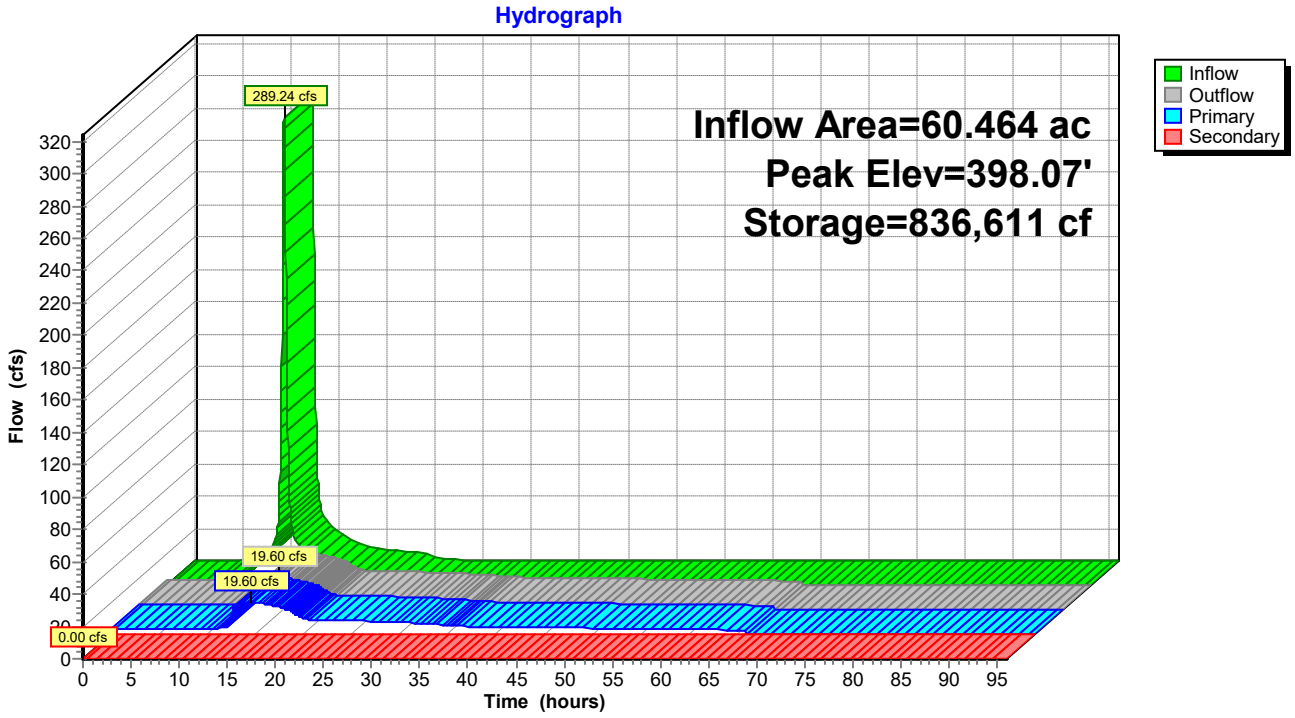
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
385.00	10,000	300.0	0.0	0	0	10,000
386.00	45,049	1,000.0	0.0	0	0	82,418
387.50	56,793	1,222.0	0.0	0	0	121,708
390.00	66,612	1,305.0	100.0	154,093	154,093	138,695
395.00	88,704	1,468.0	100.0	386,974	541,067	175,326
400.00	114,757	1,639.0	100.0	507,257	1,048,324	218,313

Device	Routing	Invert	Outlet Devices
#1	Primary	385.00'	**24.0" Round CMP_Round 24"** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 385.00' / 383.00' S= 0.0217 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf
#2	Device 1	385.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	393.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#6	Secondary	398.50'	**10.0' long + 10.0 '/' SideZ x 30.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=19.60 cfs @ 14.57 hrs HW=398.07' TW=383.91' (Dynamic Tailwater)
└─**1=CMP_Round 24"** (Passes 19.60 cfs of 52.54 cfs potential flow)
  ├─**2=8" Dewatering Orifice** (Orifice Controls 6.00 cfs @ 17.18 fps)
  ├─**3=8" Dewatering Orifice** (Orifice Controls 3.66 cfs @ 10.47 fps)
  ├─**4=Rect. Orifice** (Orifice Controls 4.97 cfs @ 4.97 fps)
  └─**5=Rect. Orifice** (Orifice Controls 4.97 cfs @ 4.97 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=389.00' TW=398.50' (Dynamic Tailwater)
└─**6=Emergency Spillway** (Controls 0.00 cfs)

Pond EP': EAST POND - 2.5 FT SED



Hydrograph for Pond EP': EAST POND - 2.5 FT SED

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	89,502	389.00	3.22	3.22	**0.00**
3.00	0.03	56,109	388.46	2.97	2.97	0.00
6.00	1.11	29,678	388.01	2.75	2.75	0.00
9.00	10.06	48,943	388.34	2.91	2.91	0.00
12.00	**177.06**	**324,495**	**392.38**	**4.46**	**4.46**	0.00
15.00	**17.82**	**835,252**	**398.05**	**19.53**	**19.53**	0.00
18.00	9.11	777,040	397.49	16.00	16.00	0.00
21.00	5.98	727,126	396.99	8.95	8.95	0.00
24.00	4.58	689,453	396.60	8.68	8.68	0.00
27.00	0.70	616,291	395.83	8.10	8.10	0.00
30.00	0.09	535,944	394.94	7.34	7.34	0.00
33.00	0.02	461,914	394.09	6.43	6.43	0.00
36.00	0.01	399,244	393.33	5.08	5.08	0.00
39.00	0.01	348,434	392.69	4.56	4.56	0.00
42.00	0.00	300,325	392.06	4.36	4.36	0.00
45.00	0.00	254,384	391.44	4.15	4.15	0.00
48.00	0.00	210,699	390.83	3.94	3.94	0.00
51.00	0.00	169,358	390.23	3.72	3.72	0.00
54.00	0.00	130,450	389.64	3.49	3.49	0.00
57.00	0.00	94,067	389.07	3.25	3.25	0.00
60.00	0.00	60,301	388.53	3.00	3.00	0.00
63.00	0.00	29,245	388.01	2.75	2.75	0.00
66.00	0.00	993	387.52	2.48	2.48	0.00
69.00	0.00	0	385.02	0.00	0.00	0.00
72.00	0.00	0	385.02	0.00	0.00	0.00
75.00	0.00	0	385.01	0.00	0.00	0.00
78.00	0.00	0	385.01	0.00	0.00	0.00
81.00	0.00	0	385.01	0.00	0.00	0.00
84.00	0.00	0	385.01	0.00	0.00	0.00
87.00	0.00	0	385.01	0.00	0.00	0.00
90.00	0.00	0	385.01	0.00	0.00	0.00
93.00	0.00	0	385.01	0.00	0.00	0.00
96.00	0.00	0	385.01	0.00	0.00	0.00

Summary for Pond EP': EAST POND - 2.5 FT SED

Inflow Area = 60.464 ac, 0.00% Impervious, Inflow Depth = 7.63" for 100-Year event
Inflow = 359.58 cfs @ 12.18 hrs, Volume= 38.460 af
Outflow = 43.85 cfs @ 13.09 hrs, Volume= 40.520 af, Atten= 88%, Lag= 54.9 min
Primary = 24.34 cfs @ 13.09 hrs, Volume= 37.693 af
Routed to Reach EP-P : EP- Primary
Secondary = 19.51 cfs @ 13.09 hrs, Volume= 2.827 af
Routed to Reach EP-ES : EP Spillway Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.03 hrs / 2
Starting Elev= 389.00' Surf.Area= 62,590 sf Storage= 89,502 cf
Peak Elev= 399.13' @ 13.09 hrs Surf.Area= 109,972 sf Storage= 950,343 cf (860,840 cf above start)

Plug-Flow detention time= 828.9 min calculated for 38.453 af (100% of inflow)
Center-of-Mass det. time= 758.7 min (1,567.6 - 808.9)

Volume	Invert	Avail.Storage	Storage Description
#1	385.00'	1,048,324 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

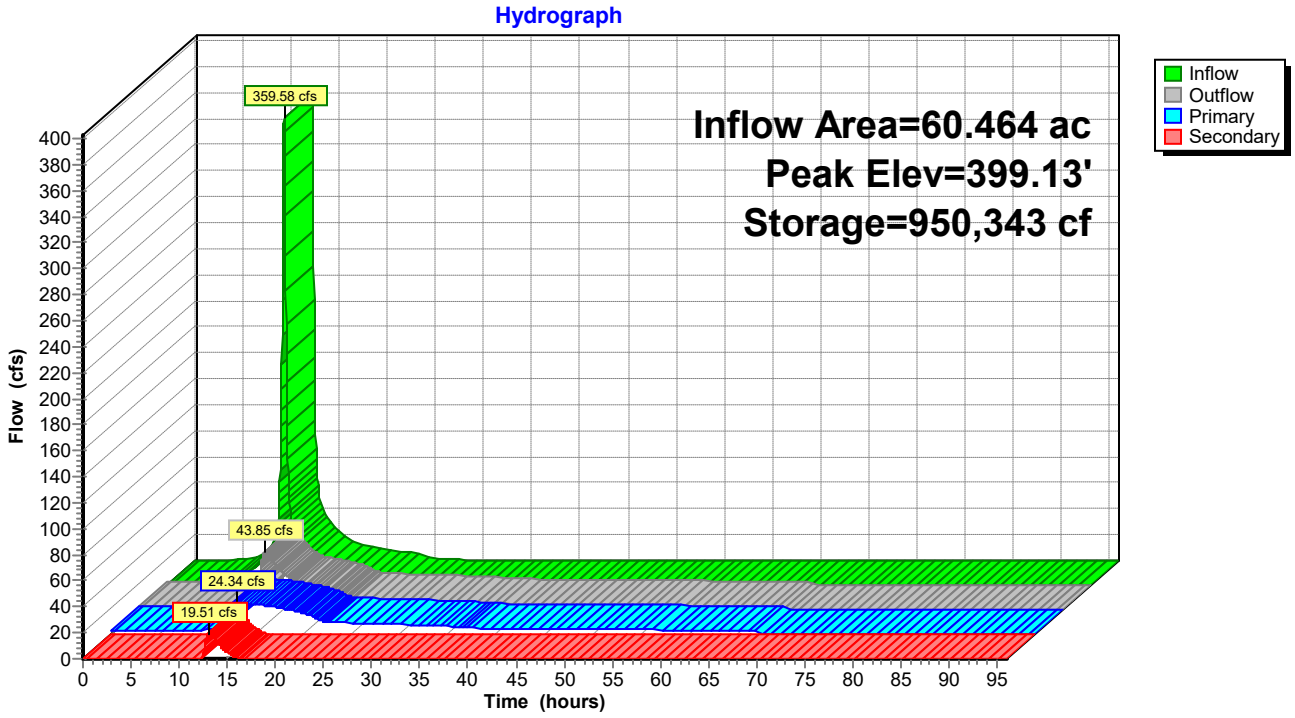
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
385.00	10,000	300.0	0.0	0	0	10,000
386.00	45,049	1,000.0	0.0	0	0	82,418
387.50	56,793	1,222.0	0.0	0	0	121,708
390.00	66,612	1,305.0	100.0	154,093	154,093	138,695
395.00	88,704	1,468.0	100.0	386,974	541,067	175,326
400.00	114,757	1,639.0	100.0	507,257	1,048,324	218,313

Device	Routing	Invert	Outlet Devices
#1	Primary	385.00'	**24.0" Round CMP_Round 24"** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 385.00' / 383.00' S= 0.0217 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf
#2	Device 1	385.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	393.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#6	Secondary	398.50'	**10.0' long + 10.0 '/' SideZ x 30.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=24.34 cfs @ 13.09 hrs HW=399.13' TW=384.02' (Dynamic Tailwater)
└─**1=CMP_Round 24"** (Passes 24.34 cfs of 54.81 cfs potential flow)
  ├─**2=8" Dewatering Orifice** (Orifice Controls 6.24 cfs @ 17.88 fps)
  ├─**3=8" Dewatering Orifice** (Orifice Controls 4.05 cfs @ 11.59 fps)
  ├─**4=Rect. Orifice** (Orifice Controls 7.02 cfs @ 7.02 fps)
  └─**5=Rect. Orifice** (Orifice Controls 7.02 cfs @ 7.02 fps)

Secondary OutFlow Max=19.51 cfs @ 13.09 hrs HW=399.13' TW=398.64' (Dynamic Tailwater)
└─**6=Emergency Spillway** (Weir Controls 19.51 cfs @ 1.91 fps)

Pond EP': EAST POND - 2.5 FT SED



Hydrograph for Pond EP': EAST POND - 2.5 FT SED

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	89,502	389.00	3.22	3.22	0.00
3.00	0.08	56,204	388.46	2.97	2.97	0.00
6.00	1.79	33,550	388.08	2.79	2.79	0.00
9.00	13.39	78,739	388.83	3.14	3.14	0.00
12.00	**220.19**	**435,413**	**393.77**	**5.99**	**5.99**	**0.00**
15.00	**22.46**	**913,576**	**398.79**	**28.01**	**22.98**	**5.03**
18.00	11.14	838,730	398.09	19.70	19.70	0.00
21.00	7.79	755,174	397.27	13.71	13.71	0.00
24.00	5.30	715,999	396.87	8.87	8.87	0.00
27.00	1.19	643,689	396.12	8.33	8.33	0.00
30.00	0.17	563,449	395.25	7.62	7.62	0.00
33.00	0.03	486,470	394.37	6.77	6.77	0.00
36.00	0.01	419,216	393.57	5.65	5.65	0.00
39.00	0.01	365,563	392.91	4.63	4.63	0.00
42.00	0.00	316,726	392.28	4.43	4.43	0.00
45.00	0.00	270,025	391.65	4.23	4.23	0.00
48.00	0.00	225,550	391.04	4.01	4.01	0.00
51.00	0.00	183,388	390.43	3.80	3.80	0.00
54.00	0.00	143,628	389.84	3.57	3.57	0.00
57.00	0.00	106,361	389.27	3.33	3.33	0.00
60.00	0.00	71,679	388.71	3.09	3.09	0.00
63.00	0.00	39,676	388.18	2.84	2.84	0.00
66.00	0.00	10,443	387.68	2.58	2.58	0.00
69.00	0.00	0	385.02	0.00	0.00	0.00
72.00	0.00	0	385.02	0.00	0.00	0.00
75.00	0.00	0	385.02	0.00	0.00	0.00
78.00	0.00	0	385.01	0.00	0.00	0.00
81.00	0.00	0	385.01	0.00	0.00	0.00
84.00	0.00	0	385.01	0.00	0.00	0.00
87.00	0.00	0	385.01	0.00	0.00	0.00
90.00	0.00	0	385.01	0.00	0.00	0.00
93.00	0.00	0	385.01	0.00	0.00	0.00
96.00	0.00	0	385.01	0.00	0.00	0.00

Summary for Pond EP': EAST POND - 2.5 FT SED

Inflow Area = 60.464 ac, 0.00% Impervious, Inflow Depth = 5.21" for 100-Year 6-Hr event
Inflow = 352.90 cfs @ 3.18 hrs, Volume= 26.252 af
Outflow = 24.52 cfs @ 5.48 hrs, Volume= 28.312 af, Atten= 93%, Lag= 138.0 min
Primary = 22.46 cfs @ 5.48 hrs, Volume= 28.089 af
Routed to Reach EP-P : EP- Primary
Secondary = 2.06 cfs @ 5.48 hrs, Volume= 0.223 af
Routed to Reach EP-ES : EP Spillway Channel

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.03 hrs / 2
Starting Elev= 389.00' Surf.Area= 62,590 sf Storage= 89,502 cf
Peak Elev= 398.67' @ 5.48 hrs Surf.Area= 107,499 sf Storage= 900,534 cf (811,032 cf above start)

Plug-Flow detention time= 961.7 min calculated for 26.249 af (100% of inflow)
Center-of-Mass det. time= 887.8 min (1,120.2 - 232.4)

Volume	Invert	Avail.Storage	Storage Description
#1	385.00'	1,048,324 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

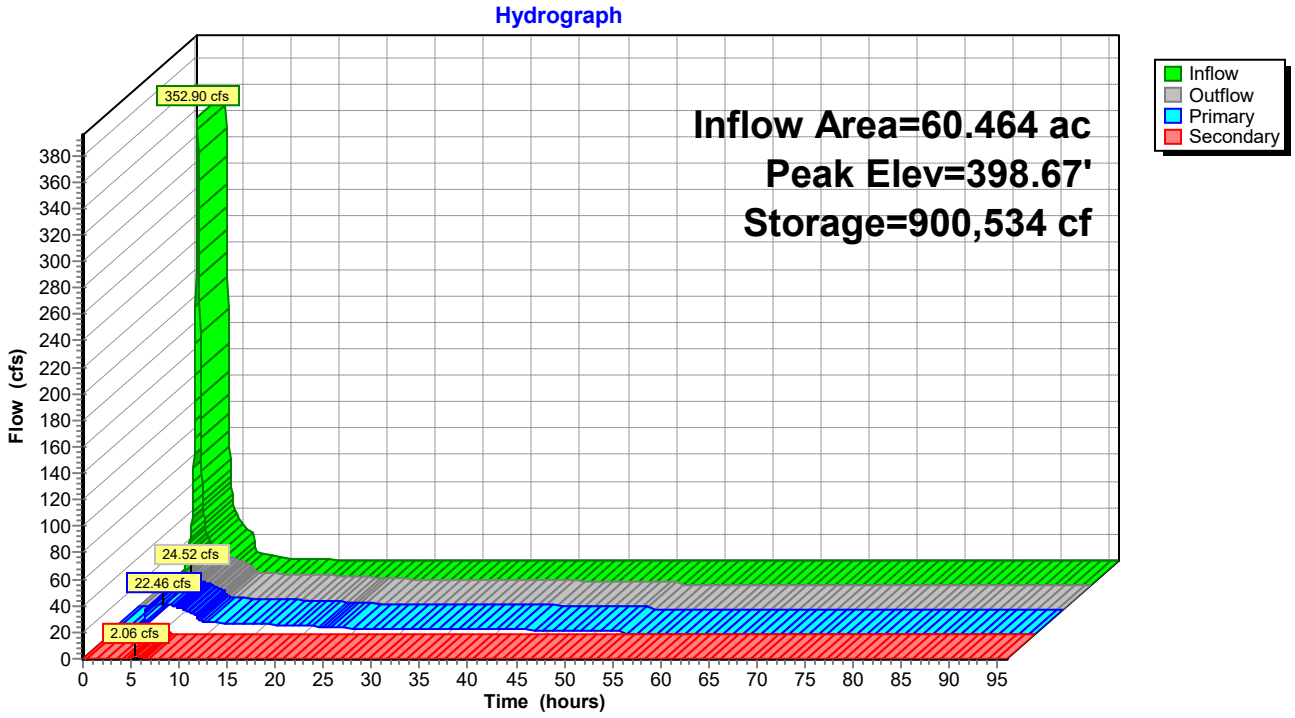
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
385.00	10,000	300.0	0.0	0	0	10,000
386.00	45,049	1,000.0	0.0	0	0	82,418
387.50	56,793	1,222.0	0.0	0	0	121,708
390.00	66,612	1,305.0	100.0	154,093	154,093	138,695
395.00	88,704	1,468.0	100.0	386,974	541,067	175,326
400.00	114,757	1,639.0	100.0	507,257	1,048,324	218,313

Device	Routing	Invert	Outlet Devices
#1	Primary	385.00'	**24.0" Round CMP_Round 24"** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 385.00' / 383.00' S= 0.0217 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf
#2	Device 1	385.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	393.00'	**8.0" Vert. 8" Dewatering Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	397.00'	**24.0" x 6.0" Horiz. Rect. Orifice** C= 0.600 Limited to weir flow at low heads
#6	Secondary	398.50'	**10.0' long + 10.0 '/' SideZ x 30.0' breadth Emergency Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=22.46 cfs @ 5.48 hrs HW=398.67' TW=383.98' (Dynamic Tailwater)
└─**1=CMP_Round 24"** (Passes 22.46 cfs of 53.84 cfs potential flow)
  ├─**2=8" Dewatering Orifice** (Orifice Controls 6.14 cfs @ 17.58 fps)
  ├─**3=8" Dewatering Orifice** (Orifice Controls 3.88 cfs @ 11.12 fps)
  ├─**4=Rect. Orifice** (Orifice Controls 6.22 cfs @ 6.22 fps)
  └─**5=Rect. Orifice** (Orifice Controls 6.22 cfs @ 6.22 fps)

Secondary OutFlow Max=2.06 cfs @ 5.48 hrs HW=398.67' TW=398.54' (Dynamic Tailwater)
└─**6=Emergency Spillway** (Weir Controls 2.06 cfs @ 1.04 fps)

Pond EP': EAST POND - 2.5 FT SED



Hydrograph for Pond EP': EAST POND - 2.5 FT SED

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	89,502	389.00	3.22	3.22	0.00
3.00	**209.57**	**286,488**	**391.88**	**4.30**	**4.30**	**0.00**
6.00	**21.37**	**898,319**	**398.65**	**24.04**	**22.38**	**1.67**
9.00	2.42	750,992	397.23	12.66	12.66	0.00
12.00	1.42	670,109	396.40	8.53	8.53	0.00
15.00	0.33	590,990	395.55	7.88	7.88	0.00
18.00	0.05	511,661	394.67	7.07	7.07	0.00
21.00	0.02	440,673	393.83	6.09	6.09	0.00
24.00	0.01	382,618	393.12	4.74	4.74	0.00
27.00	0.01	333,044	392.49	4.50	4.50	0.00
30.00	0.00	285,609	391.87	4.30	4.30	0.00
33.00	0.00	240,369	391.25	4.09	4.09	0.00
36.00	0.00	197,413	390.64	3.87	3.87	0.00
39.00	0.00	156,829	390.04	3.65	3.65	0.00
42.00	0.00	118,707	389.46	3.41	3.41	0.00
45.00	0.00	83,139	388.90	3.17	3.17	0.00
48.00	0.00	50,217	388.36	2.92	2.92	0.00
51.00	0.00	20,035	387.85	2.67	2.67	0.00
54.00	0.00	0	385.02	0.00	0.00	0.00
57.00	0.00	0	385.02	0.00	0.00	0.00
60.00	0.00	0	385.02	0.00	0.00	0.00
63.00	0.00	0	385.01	0.00	0.00	0.00
66.00	0.00	0	385.01	0.00	0.00	0.00
69.00	0.00	0	385.01	0.00	0.00	0.00
72.00	0.00	0	385.01	0.00	0.00	0.00
75.00	0.00	0	385.01	0.00	0.00	0.00
78.00	0.00	0	385.01	0.00	0.00	0.00
81.00	0.00	0	385.01	0.00	0.00	0.00
84.00	0.00	0	385.01	0.00	0.00	0.00
87.00	0.00	0	385.01	0.00	0.00	0.00
90.00	0.00	0	385.01	0.00	0.00	0.00
93.00	0.00	0	385.01	0.00	0.00	0.00
96.00	0.00	0	385.01	0.00	0.00	0.00

Events for Pond EP': EAST POND - 2.5 FT SED

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	162.45	6.81	6.81	0.00	394.41	489,679
10-Year	253.16	14.58	14.58	0.00	397.31	759,749
25-Year	289.24	19.60	19.60	0.00	398.07	836,611
100-Year	**359.58**	**43.85**	**24.34**	**19.51**	**399.13**	**950,343**
100-Year 6-Hr	352.90	24.52	22.46	2.06	398.67	900,534

Attachment 4: Manning's Channel Design Calculations

PROJECT: Lhoist Brierfield - East Pond
PROJECT #: 684454
DATE: 3/6/2025
BY: C. Valdez
CHECKED: J. Radanyi

Access Road Ditch - Upper

Runoff

Drainage Area 1

10-year Runoff: **4.59** ft^3/sec

Ditch Design

Lining: 12" riprap

Check stability

	Bare Earth	Rock Lining
Bottom Width (b):	**0.0** ft	0.0 ft
Side Slope Ratio Uphill (z_u):	**3.0** ft h/ft v	3.0 ft h/ft v
Side Slope Ratio Downhill (z_d):	**3.0** ft h/ft v	3.0 ft h/ft v
Water Depth (d):	0.452 ft	0.653 ft
Top Width at Water Depth (T):	2.709	3.917
Side Slope Width Uphill =	1.35	1.96
Side Slope Width Downhill =	1.35	1.96
Area (A):	0.61 ft^2	1.28 ft^2
Wetted Perimeter (P) :	2.86 ft	4.13 ft
Hydraulic Radius (R):	0.214 ft	0.310 ft
VR:	1.61	0.76
Roughness Coefficient (n):	0.020 (bare)	0.078 12" riprap
Ditch Length	225 ft	225 ft
Upper Elevation	435.0 ft	435.0 ft
Lower Elevation	417.0 ft	417.0 ft
Slope (S):	0.080 ft/ft	0.080 ft/ft
Velocity (V):	**7.50** ft/sec	**2.46** ft/sec
Flow (Q):	4.59 ft^3/sec	3.15 ft^3/sec
Permissible Velocity:	2.50 ft/sec	
Shear Stress (Td = δ * d * S):		3.26 lb/ft^2
Unit Weight of Water (δ):		62.40 lb/ft^3
Permissible Shear Stress:		4.00 lb/ft^2
Conclusion:	**Temporary lining required**	**STABLE**

Use North American Green SC150 (or equal)

[1]Flow was iterally solved by changing depth until swale flow equaled 10-year runoff flow

$$T = b + (z_u * d) + (z_d * d) \qquad A = \frac{d(b+T)}{2} \qquad P = b + 2\left(\left(\frac{T-b}{2}\right)^2 + d^2\right)^{1/2}$$

$$R = \frac{A}{P} \qquad V = \frac{1.49}{n} R^{2/3} S^{1/2} \qquad Q = VA$$

PROJECT: Lhoist Brierfield - East Pond
PROJECT #: 684454
DATE: 3/6/2025
BY: C. Valdez
CHECKED: J. Radanyi

Access Road Ditch - Lower

Runoff

Drainage Area 1

10-year Runoff: **11.21** ft^3/sec

Ditch Design

Lining: 12" riprap

Check stability

	Bare Earth	Rock Lining
Bottom Width (b):	**1.0** ft	1.0 ft
Side Slope Ratio Uphill (z_u):	**3.0** ft h/ft v	3.0 ft h/ft v
Side Slope Ratio Downhill (z_d):	**3.0** ft h/ft v	3.0 ft h/ft v
Water Depth (d):	0.495 ft	0.799 ft
Top Width at Water Depth (T):	3.973	5.793
Side Slope Width Uphill =	1.49	2.40
Side Slope Width Downhill =	1.49	2.40
Area (A):	1.23 ft^2	2.71 ft^2
Wetted Perimeter (P) :	4.13 ft	6.05 ft
Hydraulic Radius (R):	0.298 ft	0.448 ft
VR:	2.71	1.38
Roughness Coefficient (n):	0.020 (bare)	0.078 12" riprap
Ditch Length	225 ft	225 ft
Upper Elevation	417.0 ft	417.0 ft
Lower Elevation	400.0 ft	400.0 ft
Slope (S):	0.076 ft/ft	0.076 ft/ft
Velocity (V):	**9.10** ft/sec	**3.07** ft/sec
Flow (Q):	11.21 ft^3/sec	8.32 ft^3/sec
Permissible Velocity:	2.50 ft/sec	
Shear Stress (Td = δ * d * S):		3.77 lb/ft^2
Unit Weight of Water (δ):		62.40 lb/ft^3
Permissible Shear Stress:		4.00 lb/ft^2
Conclusion:	**Temporary lining required**	**STABLE**

Use North American Green SC150 (or equal)

[1]Flow was iterally solved by changing depth until swale flow equaled 10-year runoff flow

$$T = b + (z_u * d) + (z_d * d) \qquad A = \frac{d(b+T)}{2} \qquad P = b + 2\left(\left(\frac{T-b}{2}\right)^2 + d^2\right)^{1/2}$$

$$R = \frac{A}{P} \qquad V = \frac{1.49}{n} R^{2/3} S^{1/2} \qquad Q = VA$$

PROJECT: Lhoist Brierfield - East Pond
PROJECT #: 684454
DATE: 3/6/2025
BY: C. Valdez
CHECKED: J. Radanyi

Northwest Diversion Swale

Runoff

Drainage Area 1

10-year Runoff: **17.64** ft^3/sec

Ditch Design

Lining: 6" riprap

Check stability

	Bare Earth	Vegetative Lining
Bottom Width (b):	**2.0** ft	2.0 ft
Side Slope Ratio Uphill (z_u):	**2.0** ft h/ft v	2.0 ft h/ft v
Side Slope Ratio Downhill (z_d):	**2.0** ft h/ft v	2.0 ft h/ft v
Water Depth (d):	0.797 ft	1.313 ft
Top Width at Water Depth (T):	5.186	7.252
Side Slope Width Uphill =	1.59	2.63
Side Slope Width Downhill =	1.59	2.63
Area (A):	2.86 ft^2	6.07 ft^2
Wetted Perimeter (P) :	5.56 ft	7.87 ft
Hydraulic Radius (R):	0.515 ft	0.772 ft
VR:	3.17	1.81
Roughness Coefficient (n):	0.020 (bare)	0.069 6" riprap
Ditch Length	600 ft	600 ft
Upper Elevation	397.0 ft	397.0 ft
Lower Elevation	387.0 ft	387.0 ft
Slope (S):	0.017 ft/ft	0.017 ft/ft
Velocity (V):	**6.16** ft/sec	**2.34** ft/sec
Flow (Q):	17.64 ft^3/sec	14.23 ft^3/sec
Permissible Velocity:	2.50 ft/sec	
Shear Stress (Td = δ * d * S):		1.37 lb/ft^2
Unit Weight of Water (δ):		62.40 lb/ft^3
Permissible Shear Stress:		2.00 lb/ft^2
Conclusion:	**Temporary lining required**	**STABLE**

Use North American Green SC150 (or equal)

[1]Flow was iterally solved by changing depth until swale flow equaled 10-year runoff flow

$$T = b + (z_u * d) + (z_d * d) \qquad A = \frac{d(b+T)}{2} \qquad P = b + 2\left(\left(\frac{T-b}{2}\right)^2 + d^2\right)^{1/2}$$

$$R = \frac{A}{P} \qquad V = \frac{1.49}{n} R^{2/3} S^{1/2} \qquad Q = VA$$

PROJECT: Lhoist Brierfield - East Pond
PROJECT #: 684454
DATE: 3/6/2025
BY: C. Valdez
CHECKED: J. Radanyi

East Diversion Swale Inlet (Down Pond Slope)

Runoff

Drainage Area 1

25-year Runoff: **118.40** ft^3/sec Use Flow without effect of dissipator

Ditch Design

Lining: 24" riprap

Check stability

	Bare Earth	Rock Lining	
Bottom Width (b):	**28.0** ft	28.0 ft	
Side Slope Ratio Uphill (z_u):	**3.0** ft h/ft v	3.0 ft h/ft v	
Side Slope Ratio Downhill (z_d):	**3.0** ft h/ft v	3.0 ft h/ft v	
Water Depth (d):	0.248 ft	0.547 ft	
Top Width at Water Depth (T):	29.489	31.281	
Side Slope Width Uphill =	0.74	1.64	
Side Slope Width Downhill =	0.74	1.64	
Area (A):	7.14 ft^2	16.21 ft^2	
Wetted Perimeter (P) :	29.57 ft	31.46 ft	
Hydraulic Radius (R):	0.241 ft	0.515 ft	
VR:	4.00	3.64	
Roughness Coefficient (n):	0.020 (bare)	0.078 24" riprap	
Ditch Length	39 ft	39 ft	
Upper Elevation	398.0 ft	398.0 ft	
Lower Elevation	385.0 ft	385.0 ft	
Slope (S):	0.333 ft/ft	0.333 ft/ft	
Velocity (V):	**16.59** ft/sec	**7.07** ft/sec	
Flow (Q):	118.40 ft^3/sec	114.62 ft^3/sec	
Permissible Velocity:	2.50 ft/sec		
Shear Stress (Td = δ * d * S):		11.37 lb/ft^2	Use larger riprap size to meet shear
Unit Weight of Water (δ):		62.40 lb/ft^3	
Permissible Shear Stress:		8.00 lb/ft^2	See HEC-15 Calc
Conclusion:	**Temporary lining required**	**ERROR**	

Use North American Green SC150 (or equal)

[1]Flow was iterally solved by changing depth until swale flow equaled 10-year runoff flow

$$T = b + (z_u * d) + (z_d * d) \qquad A = \frac{d(b+T)}{2} \qquad P = b + 2\left(\left(\frac{T-b}{2}\right)^2 + d^2\right)^{1/2}$$

$$R = \frac{A}{P} \qquad V = \frac{1.49}{n} R^{2/3} S^{1/2} \qquad Q = VA$$

PROJECT: Lhoist Brierfield - East Pond
PROJECT #: 684454
DATE: 3/6/2025
BY: C. Valdez
CHECKED: J. Radanyi

Pond Outfall Channel

Runoff

Drainage Area 1

100-year Runoff: **24.47** ft^3/sec

Ditch Design

Lining: 6" riprap

Check stability

	Bare Earth	Rock Lining
Bottom Width (b):	**5.0** ft	5.0 ft
Side Slope Ratio Uphill (z_u):	**3.0** ft h/ft v	3.0 ft h/ft v
Side Slope Ratio Downhill (z_d):	**3.0** ft h/ft v	3.0 ft h/ft v
Water Depth (d):	0.706 ft	1.215 ft
Top Width at Water Depth (T):	9.233	12.290
Side Slope Width Uphill =	2.12	3.65
Side Slope Width Downhill =	2.12	3.65
Area (A):	5.02 ft^2	10.50 ft^2
Wetted Perimeter (P) :	9.46 ft	12.68 ft
Hydraulic Radius (R):	0.531 ft	0.828 ft
VR:	2.59	1.58
Roughness Coefficient (n):	0.020 (bare)	0.069 6" riprap
Ditch Length	100 ft	100 ft
Upper Elevation	383.0 ft	383.0 ft
Lower Elevation	382.0 ft	382.0 ft
Slope (S):	0.010 ft/ft	0.010 ft/ft
Velocity (V):	**4.87** ft/sec	**1.90** ft/sec
Flow (Q):	24.47 ft^3/sec	19.99 ft^3/sec
Permissible Velocity:	2.50 ft/sec	
Shear Stress (Td = δ * d * S):		0.76 lb/ft^2
Unit Weight of Water (δ):		62.40 lb/ft^3
Permissible Shear Stress:		2.00 lb/ft^2
Conclusion:	**Temporary lining required**	**STABLE**

Use North American Green S75 (or equal)

[1]Flow was iterally solved by changing depth until swale flow equaled 100-year runoff flow

$$T = b + (z_u * d) + (z_d * d) \qquad A = \frac{d(b+T)}{2} \qquad P = b + 2\left(\left(\frac{T-b}{2}\right)^2 + d^2\right)^{1/2}$$

$$R = \frac{A}{P} \qquad V = \frac{1.49}{n} R^{2/3} S^{1/2} \qquad Q = VA$$

PROJECT: Lhoist Brierfield - East Pond
PROJECT #: 684454
DATE: 3/6/2025
BY: C. Valdez
CHECKED: J. Radanyi

Pond Emergency Spillway Channel

Runoff

Drainage Area 1

100-year Runoff: **21.74** ft^3/sec

Ditch Design

Lining: 24" riprap

Check stability

	Bare Earth	Rock Lining
Bottom Width (b):	**10.0** ft	10.0 ft
Side Slope Ratio Uphill (z_u):	**3.0** ft h/ft v	3.0 ft h/ft v
Side Slope Ratio Downhill (z_d):	**3.0** ft h/ft v	3.0 ft h/ft v
Water Depth (d):	0.183 ft	0.393 ft
Top Width at Water Depth (T):	11.095	12.357
Side Slope Width Uphill =	0.55	1.18
Side Slope Width Downhill =	0.55	1.18
Area (A):	1.93 ft^2	4.39 ft^2
Wetted Perimeter (P) :	11.15 ft	12.48 ft
Hydraulic Radius (R):	0.173 ft	0.352 ft
VR:	2.27	1.89
Roughness Coefficient (n):	0.020 (bare)	0.078 24" riprap
Ditch Length	26 ft	27 ft
Upper Elevation	398.5 ft	398.5 ft
Lower Elevation	390.0 ft	390.0 ft
Slope (S):	0.327 ft/ft	0.321 ft/ft
Velocity (V):	**13.13** ft/sec	**5.37** ft/sec
Flow (Q):	25.29 ft^3/sec	23.59 ft^3/sec
Permissible Velocity:	2.50 ft/sec	
Shear Stress (Td = δ * d * S):		7.86 lb/ft^2
Unit Weight of Water (δ):		62.40 lb/ft^3
Permissible Shear Stress:		8.00 lb/ft^2
Conclusion:	**Temporary lining required**	**STABLE**

note: larger rock for larger factor of safety

Use North American Green SC150 (or equal)

[1]Flow was iterally solved by changing depth until swale flow equaled 100-year runoff flow

$$T = b + (z_u * d) + (z_d * d) \qquad A = \frac{d(b+T)}{2} \qquad P = b + 2\left(\left(\frac{T-b}{2}\right)^2 + d^2\right)^{1/2}$$

$$R = \frac{A}{P} \qquad V = \frac{1.49}{n} R^{2/3} S^{1/2} \qquad Q = VA$$

Permissible Shear Stresses for Riprap and Temporary Liners.

Lining Category	Lining Type	Permissible Unit Shear Stress, T_d (lb/ft^2)
Temporary	Woven Paper Net	0.15
	Jute Net	0.45
	Fiberglass Roving:	
	Single	0.60
	Double	0.85
	Straw with Net	1.45
	Curled Wood mat	1.55
	Synthetic Mat	2.00
	d_{50} **Stone Size** (inches)	
Gravel Riprap	1	0.33
	2	0.67
Rock Riprap	6	2.00
	9	3.00
	12	4.00
	15	5.00
	18	6.00
	21	7.80
	24	8.00

Adapted From: FHWA, HEC-15, April 1983, pgs. 17 & 37.

Lining Category	Lining Type	*n* - value		
		n value for Depth Ranges		
		0-0.5 ft (0-15 cm)	0.5-2.0 ft (15-60 cm)	2.0 ft (>60 cm)
Rigid	Concrete	0.015	0.013	0.013
	Grouted Riprap	0.040	0.030	0.028
	Stone Masonry	0.042	0.032	0.030
	Soil Cement	0.025	0.022	0.020
	Asphalt	0.018	0.016	0.016
Unlined	Bare Soil	0.023	0.020	0.020
	Rock Cut	0.045	0.035	0.025
Gravel Riprap	1-inch (2.5-cm) D_{50}	0.044	0.033	0.030
	2-inch (5-cm) D_{50}	0.066	0.041	0.034
Rock Riprap	6-inch (15-cm) D_{50}	0.104	0.069	0.035
	12-inch (30-cm) D_{50}	--	0.078	0.040

Note: Values listed are representative values for the respective depth ranges. Manning's roughness coefficients, *n*, vary with the flow depth.

Vegetation Class	Cover	Condition
A	**Weeping lovegrass**	Excellent stand, tall (average 30")
	Yellow bluestem ischaemum	Excellent stand, tall (average 36")
B	Kudzu	Very dense growth, uncut
	Bermuda grass	Good stand, tall (average 12")
	Native grass mixture (**little bluestem**, bluestem, **blue grama,** other long and short Midwest grasses)	Good stand, unmowed
	Weeping lovegrass	Good stand, tall (average 24")
	Lespedeza serices	Good stand, not woody, tall (average 19")
	Alfalfa	Good stand, uncut (average 11")
	Weeping lovegrass	Good stand, unmowed (average 13")
	Kudzu	Dense growth, uncut
	Brome, smooth	Good stand, mowed (average 12" to 15")
	Tall fescue	Good stand, uncut (average 18")
	Tall fescue with birdsfoot trefoil	Good stand, uncut (average 18")
	Grass - Legume mixture - Timothy, Smooth bromegrass, or Orchardgrass	Good stand, uncut (average 20")
	Blue grama	Good stand, uncut (average 13")
C	Crabgrass	Fair stand, uncut (10" to 48")
	Bermuda grass	Good stand, mowed (average 6")
	Red top	Good stand, headed (15" to 20")
	Common lespedeza	Good stand, uncut (average 11")
	Grass-legume mixture - Summer (**orchard grass, redtop,** Italian ryegrass, and common lespedeza)	Good stand, uncut (6" to 8")
	Centipedegrass	Very dense cover (average 6")
	Kentucky bluegrass	Good stand, headed (6" to 12")
D	Bermuda grass	Good stand, cut to 2.5" height
	Common lespedeza	Excellent stand, uncut (average 4.5")
	Buffalo grass	Good stand, uncut (3" to 6")
	Grass-legume mixture fall, spring (**orchard grass, redtop,** Italian ryegrass, and common lespedeza)	Good stand, uncut (4" to 5")
	Kentucky bluegrass or Lespedeza sericea	Good stand, cut to 2" height. Very good stand before cutting.
	Red fescue	Good stand (headed (12" to 18")
E	Bermuda grass	Good stand, cut to 1.5" height
	Bermuda grass	Burned stubble

Note: covers classified have been tested in experimental channels. Covers were green and generally uniform
Items shown in **Bold** are seed varieties included in the SUDAS Specifications.

Source: Chen & Cotton, 1988 (HEC-15) and USDA NRCS, 1986

Vegetation Class	Permissible Shear Stress (lb/ft^2)	Average Height, h (feet)	Stiffness, MEI (lb/ft^2)
A	3.7	3.0	725
B	2.1	2.0	50
C	1.0	0.66	1.2
D	0.6	0.33	0.12
E	0.35	0.13	0.012

Source: Chen & Cotton, 1988 (HEC-15)

Attachment 5: HEC-15 East Diversion Swale Rock Lining Design Calculations

Lining Type: Riprap

Project ID: Lhoist East Stormwater Pond	
Location: Brierfield, AL	
Designer/Checker: C. / J.Radanyi	
Date: 1/21/26	
Area:	**East Swale**

Channel Geometry		
Channel Slope, S_o (ft/ft)	0.1	Current concept would result is ~9-10% slope
Channel Bottom Width, B (ft)	20	15 was attempted, however it creates a greater flow depth and
Channel Side Slope, z_1	3	makes the lining unstable with Safety Factor of 1.5
Channel Side Slope, z_2	3	
Curvature Radius, R_c (ft)	0	
Depth of Flow, d (ft) Solve iteratively	0.83	Calculated in HydroCAD
Riprap Parameters		
Median Riprap Size, D_{50} (ft)	1.04	
Riprap Specific Weight, γ_s (lb/ft^3)	165	
Riprap Angle of Repose, ϕ , (degrees)	41.8	Figure 6.1 HEC 15 "very angular"
Safety Factor, SF	1.50	
Safety Factor, SF (used in calculation)	1.50	
Results Summary		
Design Flow, Q (ft^3/s)	118.4	from HydroCAD (25-yr 24-hr)
Calculated Flow, Qi (cfs)	116.0	
Difference Between Design & Calc. Flow (%)	-2.0%	Need to check that Calculated Flow (Qi) is within 5% of Design Flow (Q)
Bottom Lining Stable (Yes or No)	Yes	
Side Lining Stable (Yes or No)		
Bottom in Bend Stable (Yes or No)	N/A	
Side in Bend Stable (Yes or No)	N/A	
Downstream Length of Protection (ft)	N/A	
Additional Freeboard Required, (ft)	N/A	
Channel Parameters		
Cross Sectional Area, A (ft^2)	18.67	
Top Width, T (ft)	25.0	
Average Depth, d_a (ft)	0.747	
Wetted Perimeter, P (ft)	25.25	
Hydraulic Radius, R (ft)	0.739	
Depth to D_{50} Ratio, d_a/D_{50}	0.7	
Mannings n	0.062	
Average Velocity, V (ft/s)	6.21	slightly below HydroCAD calculated velocity of 6.77 ft/s
Calculated Flow, Q (ft^3/s)	116.0	
Difference Between Design & Calc. Flow (%)	-2.0%	
Suggested Trial Depth, d_{i+1} (ft)	0.837	
Manning's n		
Manning's n (Blodgett)	0.000	
Manning's n (Bathurst)	0.062	
Effective Roughness Concentration, b	0.206	
Froude Number, Fr (design Q)	1.293	
Froude Number function, f(Fr)	1.372	
Roughness Element Geometry, f(REG)	6.1	
Channel Geometry Function, f(CG)	0.485	

52	***Bottom Shear***	
53	Shear Velocity, V_* (ft/s)	1.63
54	Reynolds Number, R_e	1.4E+05
55	Shield's Parameter, F*	0.111
56	Safety Factor, SF	1.31
57	Maximum Shear Stress, τ_d (lb/ft^2)	5.18
58	Permissible Shear Stress, S_o<=10%, τ_p (lb/ft^2)	11.8
59	Stability Number, η	0.38
60	Steepest Channel Side Slope, z	3
61	Channel Side Slope Angle, θ (radians)	0.32
62	Channel Bottom Slope Angle, α (radians)	0.10
63	Riprap Angle of Repose, ϕ , (radians)	0.730
64	Weight Vector Angle, B (radians)	0.47
65	Channel Geometry and Riprap Size Func, Δ	1.41
66	Permissible Shear Stress, S_o>=5%, τ_p (lb/ft^2)	8.4
67	Permissible Shear based on Slope, τ_p (lb/ft^2)	8.4
68	Adjusted Permissible Shear, τ_p/SF (lb/ft^2)	5.6
69	Bottom Lining Stable (Yes or No)	Yes
70	Stable D_{50} (ft)	0.96
71	***Side Shear***	
72	Channel Side to Bottom Shear Stress Ratio, K_1	0.87
73	Channel Side Shear Stress, τ_s (lb/ft^2)	4.51
74	Side Slope Angle, θ (radians)	0.322
75	Side Slope Angle, θ (degrees)	18.4
76	Tractive Force Ratio, K_2	0.88
77	Permissible Side Tractive Force, τ_{ps} (lb/ft^2)	
78	Side Lining Stable (Yes or No)	
79	Stable D_{50} (ft)	
80	***Bend Shear***	
81	Curvature Radius, R_c (ft)	0
82	Ratio of Radius of Curvature to Top Width, R_c/T	N/A
83	f(Channel Bend and Bottom Shear Stress), K_b	N/A
84	Shear Stress on the Channel Bottom, τ_b (lb/ft^2)	N/A
85	Bottom in Bend Stable (Yes or No)	N/A
86	Shear Stress on the Channel Side, τ_{bs} (lb/ft^2)	N/A
87	Side in Bend Stable (Yes or No)	N/A
88	Downstream Length of Protection, L_p (ft)	N/A
89	Addition Freeboard Required, Δd (ft)	N/A

Attachment 6: HEC-15 High-Flow Areas Design Calculations

Lining Type: Riprap

Project ID: Lhoist East Stormwater Pond	
Location: Brierfield, AL	
Designer/Checker: C. / J.Radanyi	
Date: 3/5/26	
Area:	**East Swale Outlet**

Channel Geometry		
Channel Slope, S_o (ft/ft)	0.33	
Channel Bottom Width, B (ft)	9	Smaller width required to satisfy line 25. Specify larger
Channel Side Slope, z_1	2	(28 ft) to match dissipator pool discharge width
Channel Side Slope, z_2	2	
Curvature Radius, R_c (ft)	0	
Depth of Flow, d (ft) Solve iteratively	0.55	Calculated in Channel Design Excel Calc
Riprap Parameters		
Median Riprap Size, D_{50} (ft)	6	
Riprap Specific Weight, γ_s (lb/ft^3)	165	
Riprap Angle of Repose, ϕ , (degrees)	42.1	"very angular"
Safety Factor, SF	1.50	
Safety Factor, SF (used in calculation)	1.50	
Results Summary		
Design Flow, Q (ft^3/s)	118.4	from HydroCAD (25-yr 24-hr)
Calculated Flow, Qi (cfs)	121.1	
Difference Between Design & Calc. Flow (%)	2.3%	Need to check that Calculated Flow (Qi) is within 5% of Design Flow (Q)
Bottom Lining Stable (Yes or No)	Yes	
Side Lining Stable (Yes or No)		
Bottom in Bend Stable (Yes or No)	N/A	
Side in Bend Stable (Yes or No)	N/A	
Downstream Length of Protection (ft)	N/A	
Additional Freeboard Required, (ft)	N/A	
Channel Parameters		
Cross Sectional Area, A (ft^2)	5.52	
Top Width, T (ft)	11.2	
Average Depth, d_a (ft)	0.494	
Wetted Perimeter, P (ft)	11.45	
Hydraulic Radius, R (ft)	0.482	
Depth to D_{50} Ratio, d_a/D_{50}	0.1	
Mannings n	0.024	
Average Velocity, V (ft/s)	21.94	
Calculated Flow, Q (ft^3/s)	121.1	
Difference Between Design & Calc. Flow (%)	2.3%	
Suggested Trial Depth, d_{i+1} (ft)	0.542	
Manning's n		
Manning's n (Blodgett)	0.000	
Manning's n (Bathurst)	0.024	
Effective Roughness Concentration, b	0.113	
Froude Number, Fr (design Q)	5.379	
Froude Number function, f(Fr)	8.538	
Roughness Element Geometry, f(REG)	1.6	
Channel Geometry Function, f(CG)	0.704	

52	***Bottom Shear***	
53	Shear Velocity, V_* (ft/s)	2.41
54	Reynolds Number, R_e	1.2E+06
55	Shield's Parameter, F*	0.150
56	Safety Factor, SF	1.50
57	Maximum Shear Stress, τ_d (lb/ft^2)	11.26
58	Permissible Shear Stress, S_o<=10%, τ_p (lb/ft^2)	92.3
59	Stability Number, η	0.10
60	Steepest Channel Side Slope, z	2
61	Channel Side Slope Angle, θ (radians)	0.46
62	Channel Bottom Slope Angle, α (radians)	0.32
63	Riprap Angle of Repose, ϕ , (radians)	0.735
64	Weight Vector Angle, B (radians)	0.09
65	Channel Geometry and Riprap Size Func, Δ	3.61
66	Permissible Shear Stress, S_o>=5%, τ_p (lb/ft^2)	25.6
67	Permissible Shear based on Slope, τ_p (lb/ft^2)	25.6
68	Adjusted Permissible Shear, τ_p/SF (lb/ft^2)	17.1
69	Bottom Lining Stable (Yes or No)	Yes
70	Stable D_{50} (ft)	3.96
71	***Side Shear***	
72	Channel Side to Bottom Shear Stress Ratio, K_1	0.8
73	Channel Side Shear Stress, τ_s (lb/ft^2)	9.01
74	Side Slope Angle, θ (radians)	0.464
75	Side Slope Angle, θ (degrees)	26.6
76	Tractive Force Ratio, K_2	0.75
77	Permissible Side Tractive Force, τ_{ps} (lb/ft^2)	
78	Side Lining Stable (Yes or No)	
79	Stable D_{50} (ft)	
80	***Bend Shear***	
81	Curvature Radius, R_c (ft)	0
82	Ratio of Radius of Curvature to Top Width, R_c/T	N/A
83	f(Channel Bend and Bottom Shear Stress), K_b	N/A
84	Shear Stress on the Channel Bottom, τ_b (lb/ft^2)	N/A
85	Bottom in Bend Stable (Yes or No)	N/A
86	Shear Stress on the Channel Side, τ_{bs} (lb/ft^2)	N/A
87	Side in Bend Stable (Yes or No)	N/A
88	Downstream Length of Protection, L_p (ft)	N/A
89	Addition Freeboard Required, Δd (ft)	N/A

Lining Type: Riprap

Project ID: Lhoist East Stormwater Pond	
Location: Brierfield, AL	
Designer/Checker: C. / J.Radanyi	
Date: 3/5/26	
Area:	**Pond Emergency Spillway**

Channel Geometry		
Channel Slope, S_o (ft/ft)	0.33	
Channel Bottom Width, B (ft)	4	Smaller width required to satisfy line 25.
Channel Side Slope, z_1	3	Specify large (10 ft) to match spillway width
Channel Side Slope, z_2	3	
Curvature Radius, R_c (ft)	0	
Depth of Flow, d (ft) Solve iteratively	0.39	Calculated in Channel Design Excel Calc
Riprap Parameters		
Median Riprap Size, D_{50} (ft)	2.2	
Riprap Specific Weight, γ_s (lb/ft^3)	165	
Riprap Angle of Repose, ϕ , (degrees)	42.1	"very angular"
Safety Factor, SF	1.50	
Safety Factor, SF (used in calculation)	1.50	
Results Summary		
Design Flow, Q (ft^3/s)	21.74	from HydroCAD (25-yr 24-hr)
Calculated Flow, Qi (cfs)	21.4	
Difference Between Design & Calc. Flow (%)	-1.3%	Need to check that Calculated Flow (Qi) is within 5% of Design Flow (Q)
Bottom Lining Stable (Yes or No)	Yes	
Side Lining Stable (Yes or No)		
Bottom in Bend Stable (Yes or No)	N/A	
Side in Bend Stable (Yes or No)	N/A	
Downstream Length of Protection (ft)	N/A	
Additional Freeboard Required, (ft)	N/A	
Channel Parameters		
Cross Sectional Area, A (ft^2)	2.02	
Top Width, T (ft)	6.3	
Average Depth, d_a (ft)	0.318	
Wetted Perimeter, P (ft)	6.47	
Hydraulic Radius, R (ft)	0.312	
Depth to D_{50} Ratio, d_a/D_{50}	0.1	
Mannings n	0.037	
Average Velocity, V (ft/s)	10.64	
Calculated Flow, Q (ft^3/s)	21.4	
Difference Between Design & Calc. Flow (%)	-1.3%	
Suggested Trial Depth, d_{i+1} (ft)	0.392	
Manning's n		
Manning's n (Blodgett)	0.000	
Manning's n (Bathurst)	0.037	
Effective Roughness Concentration, b	0.146	
Froude Number, Fr (design Q)	3.369	
Froude Number function, f(Fr)	3.779	
Roughness Element Geometry, f(REG)	2.4	
Channel Geometry Function, f(CG)	0.646	

52	***Bottom Shear***	
53	Shear Velocity, V_* (ft/s)	2.04
54	Reynolds Number, R_e	3.7E+05
55	Shield's Parameter, F*	0.150
56	Safety Factor, SF	1.50
57	Maximum Shear Stress, τ_d (lb/ft^2)	8.03
58	Permissible Shear Stress, S_o<=10%, τ_p (lb/ft^2)	33.9
59	Stability Number, η	0.21
60	Steepest Channel Side Slope, z	3
61	Channel Side Slope Angle, θ (radians)	0.32
62	Channel Bottom Slope Angle, α (radians)	0.32
63	Riprap Angle of Repose, ϕ , (radians)	0.735
64	Weight Vector Angle, B (radians)	0.25
65	Channel Geometry and Riprap Size Func, Δ	1.52
66	Permissible Shear Stress, S_o>=5%, τ_p (lb/ft^2)	22.3
67	Permissible Shear based on Slope, τ_p (lb/ft^2)	22.3
68	Adjusted Permissible Shear, τ_p/SF (lb/ft^2)	14.8
69	Bottom Lining Stable (Yes or No)	Yes
70	Stable D_{50} (ft)	1.19
71	***Side Shear***	
72	Channel Side to Bottom Shear Stress Ratio, K_1	0.87
73	Channel Side Shear Stress, τ_s (lb/ft^2)	6.99
74	Side Slope Angle, θ (radians)	0.322
75	Side Slope Angle, θ (degrees)	18.4
76	Tractive Force Ratio, K_2	0.88
77	Permissible Side Tractive Force, τ_{ps} (lb/ft^2)	
78	Side Lining Stable (Yes or No)	
79	Stable D_{50} (ft)	
80	***Bend Shear***	
81	Curvature Radius, R_c (ft)	0
82	Ratio of Radius of Curvature to Top Width, R_c/T	N/A
83	f(Channel Bend and Bottom Shear Stress), K_b	N/A
84	Shear Stress on the Channel Bottom, τ_b (lb/ft^2)	N/A
85	Bottom in Bend Stable (Yes or No)	N/A
86	Shear Stress on the Channel Side, τ_{bs} (lb/ft^2)	N/A
87	Side in Bend Stable (Yes or No)	N/A
88	Downstream Length of Protection, L_p (ft)	N/A
89	Addition Freeboard Required, Δd (ft)	N/A

Lining Type: Riprap

Project ID: Lhoist East Stormwater Pond	
Location: Brierfield, AL	
Designer/Checker: C. / J.Radanyi	
Date: 3/5/26	
Area:	**Forebay Pipes Outlet**

Channel Geometry		
Channel Slope, S_o (ft/ft)	0.33	
Channel Bottom Width, B (ft)	8	Smaller width required to satisfy line 25. Specify
Channel Side Slope, z_1	3	larger (12 ft) to match spillway width
Channel Side Slope, z_2	3	
Curvature Radius, R_c (ft)	0	
Depth of Flow, d (ft) Solve iteratively	0.60	
Riprap Parameters		
Median Riprap Size, D_{50} (ft)	2.2	
Riprap Specific Weight, γ_s (lb/ft^3)	165	
Riprap Angle of Repose, ϕ , (degrees)	42.1	"very angular"
Safety Factor, SF	1.50	
Safety Factor, SF (used in calculation)	1.50	
Results Summary		
Design Flow, Q (ft^3/s)	75.7	from HydroCAD (25-yr 24-hr) for two pipes
Calculated Flow, Qi (cfs)	79.1	
Difference Between Design & Calc. Flow (%)	4.5%	Need to check that Calculated Flow (Qi) is within 5% of Design Flow (Q)
Bottom Lining Stable (Yes or No)	Yes	
Side Lining Stable (Yes or No)		
Bottom in Bend Stable (Yes or No)	N/A	
Side in Bend Stable (Yes or No)	N/A	
Downstream Length of Protection (ft)	N/A	
Additional Freeboard Required, (ft)	N/A	
Channel Parameters		
Cross Sectional Area, A (ft^2)	5.88	
Top Width, T (ft)	11.6	
Average Depth, d_a (ft)	0.507	
Wetted Perimeter, P (ft)	11.79	
Hydraulic Radius, R (ft)	0.499	
Depth to D_{50} Ratio, d_a/D_{50}	0.2	
Mannings n	0.040	
Average Velocity, V (ft/s)	13.45	
Calculated Flow, Q (ft^3/s)	79.1	
Difference Between Design & Calc. Flow (%)	4.5%	
Suggested Trial Depth, d_{i+1} (ft)	0.590	
Manning's n		
Manning's n (Blodgett)	0.000	
Manning's n (Bathurst)	0.040	
Effective Roughness Concentration, b	0.163	
Froude Number, Fr (design Q)	3.187	
Froude Number function, f(Fr)	3.114	
Roughness Element Geometry, f(REG)	3.2	
Channel Geometry Function, f(CG)	0.601	

52	***Bottom Shear***	
53	Shear Velocity, V_* (ft/s)	2.52
54	Reynolds Number, R_e	4.6E+05
55	Shield's Parameter, F*	0.150
56	Safety Factor, SF	1.50
57	Maximum Shear Stress, τ_d (lb/ft^2)	12.36
58	Permissible Shear Stress, S_o<=10%, τ_p (lb/ft^2)	33.9
59	Stability Number, η	0.32
60	Steepest Channel Side Slope, z	3
61	Channel Side Slope Angle, θ (radians)	0.32
62	Channel Bottom Slope Angle, α (radians)	0.32
63	Riprap Angle of Repose, ϕ , (radians)	0.735
64	Weight Vector Angle, B (radians)	0.36
65	Channel Geometry and Riprap Size Func, Δ	1.55
66	Permissible Shear Stress, S_o>=5%, τ_p (lb/ft^2)	21.9
67	Permissible Shear based on Slope, τ_p (lb/ft^2)	21.9
68	Adjusted Permissible Shear, τ_p/SF (lb/ft^2)	14.6
69	Bottom Lining Stable (Yes or No)	Yes
70	Stable D_{50} (ft)	1.86
71	***Side Shear***	
72	Channel Side to Bottom Shear Stress Ratio, K_1	0.87
73	Channel Side Shear Stress, τ_s (lb/ft^2)	10.75
74	Side Slope Angle, θ (radians)	0.322
75	Side Slope Angle, θ (degrees)	18.4
76	Tractive Force Ratio, K_2	0.88
77	Permissible Side Tractive Force, τ_{ps} (lb/ft^2)	
78	Side Lining Stable (Yes or No)	
79	Stable D_{50} (ft)	
80	***Bend Shear***	
81	Curvature Radius, R_c (ft)	0
82	Ratio of Radius of Curvature to Top Width, R_c/T	N/A
83	f(Channel Bend and Bottom Shear Stress), K_b	N/A
84	Shear Stress on the Channel Bottom, τ_b (lb/ft^2)	N/A
85	Bottom in Bend Stable (Yes or No)	N/A
86	Shear Stress on the Channel Side, τ_{bs} (lb/ft^2)	N/A
87	Side in Bend Stable (Yes or No)	N/A
88	Downstream Length of Protection, L_p (ft)	N/A
89	Addition Freeboard Required, Δd (ft)	N/A

6.3.1 Basic Design

The riprap and gravel lining design procedure for the bottom of a straight channel is described in the following steps. It is iterative by necessity because flow depth, roughness, and shear stress are interdependent. The procedure requires the designer to specify a channel shape and slope as a starting point and is outlined in the eight-step process identified below. In this approach, the designer begins with a design discharge and calculates an acceptable D_{50} to line the channel bottom. An alternative analytical framework is to use the maximum discharge approach described in Section 3.6. For the maximum discharge approach, the designer selects the D_{50}, and determines the maximum depth and flow permitted in the channel while maintaining a stable lining. The following steps are recommended for the standard design.

Step 1. Determine channel slope, channel shape, and design discharge.

Step 2. Select a trial (initial) D_{50}, perhaps based on available sizes for the project. (Also, determine specific weight of proposed stone.)

Step 3. Estimate the depth. For the first iteration, select a channel depth, d_i. For subsequent iterations, a new depth can be estimated from the following equation or any other appropriate method.

$$d_{i+1} = d_i \left(\frac{Q}{Q_i} \right)^{0.4}$$

Determine the average flow depth, d_a in the channel. $d_a = A/T$

Step 4. Estimate Manning's n and the implied discharge. First, calculate the relative depth ratio, d_a/D_{50}. If d_a/D_{50} is greater than or equal to 1.5, use Equation 6.1 to calculate Manning's n. If d_a/D_{50} is less than 1.5 use Equation 6.2 to calculate Manning's n. Calculate the discharge using Manning's equation.

Step 5. If the calculated discharge is within 5 percent of the design discharge, then proceed to step 6. If not, go back to step 3 and estimate a new flow depth.

Step 6. Calculate the particle Reynolds number using Equation 6.6 and determine the appropriate Shields parameter and Safety Factor values from Table 6.1. If channel slope is less than 5 percent, calculate required D_{50} from Equation 6.8. If channel slope is greater than 10 percent, use Equation 6.11. If channel slope is between 5 and 10 percent, use both Equations 6.8 and 6.11 and take the largest value.

Step 7. If the D_{50} calculated is greater than the trial size in step 2, then the trial size is too small and unacceptable for design. Repeat procedure beginning at step 2 with new trial value of D_{50}. If the D_{50} calculated in step 6 is less than or equal to the previous trial size, then the previous trial size is acceptable. However, if the D_{50} calculated in step 6 is sufficiently smaller than the previous trial size, the designer may elect to repeat the design procedure at step 2 with a smaller, more cost-effective, D_{50}.

Table OP-2 Size of Riprap Stones

Weight	Mean Spherical Diameter (feet)	Rectangular Shape	
		Length	Width, Height (feet)
50	0.8	1.4	0.5
100	1.1	1.75	0.6
150	1.3	2.0	0.67
300	1.6	2.6	0.9
500	1.9	3.0	1.0
1000	2.2	3.7	1.25
1500	2.6	4.7	1.5
2000	2.75	5.4	1.8
4000	3.6	6.0	2.0
6000	4.0	6.9	2.3
8000	4.5	7.6	2.5
20000	6.1	10.0	3.3

Table OP-3 Graded Riprap

Class	Weight (lbs.)					
	d_{10}	d_{15}	d_{25}	d_{50}	d_{75}	d_{90}
1	10	-	-	50	-	100
2	10	-	-	80	-	200
3	-	25	-	200	-	500
4	-	-	50	500	1000	-
5	-	-	200	1000	-	2000

				c_1		c_2		c_3		c_4		c_5		c_6			
Soil Type List	Condition	Soil Class	Porosity	10<=PI <=20	PI>20	10<=PI <=20	PI>20	10<=PI <=20	PI>20	10<=PI <=20	PI>20	10<=PI <=20	PI>20	10<=PI <=20	PI>20		
cohesive	good	CH	0.55						0.097		1.38		-0.373	1		1	CH - Inorganic clays of high plasticity
noncohesive	fair	CL	0.38	1.07		14.3		47.7	0.076	1.48	1.48	-0.57	-0.57	0.0001		1	CL - Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	poor	GC	0.23	0.0477		2.86		42.9	0.119	1.42	1.42	-0.61	-0.61	0.001		1	GC -Clayey gravels, gravel-sand-clay mixtures
		GM	0.2	1.07		14.3		47.7	0.076	1.42	1.42	-0.61	-0.61	0.0001		1	GM - Silty Gravels, gravel-sand mixtures
		MH	0.48	0.0477		1.43		10.7	0.058	1.38	1.38	-0.373	-0.373	0.001		1	MH - Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
		ML	0.33	1.07		7.15		11.9	0.058	1.48	1.48	-0.57	-0.57	0.0001		1	ML - Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
		SC	0.35	1.07		14.3		47.7	0.076	1.42	1.42	-0.61	-0.61	0.0001		1	SC - Clayey sands, sand-clay mixtures
		SM	0.29	1.07		7.15		11.9	0.058	1.42	1.42	-0.61	-0.61	0.0001		1	SM - Silty sands, sand-silt mixtures

Riprap Size, ft (D_{50}) and Type

0.18	Select Crushed Material
0.83	Light Riprap
1.04	Medium Riprap
1.33	Heavy Riprap
1.67	Extra Heavy Riprap

Attachment 7: USDA-SCS Anti-Seep Collar Calculations

ANTI-SEEP COLLAR CALCULATIONS

Project ID: Lhoist East Stormwater Pond
Location: Brierfield, AL
Designer/Checker: C. Valdez/J. Radanyi

Pipe Length		92.00	ft
Station at End	00+92	92.00	
Station at pipe entrance		0.00	
Pipe Slope		0.0171	ft/ft
Pipe Diameter		2	ft
Anti-seep Height		13.5	ft

From VESCH

Ls= Y (Z+4) x (1 + S/0.25-S)

where

Y= Depth of water at principal spillway crest
Z= Slope of upstream face of embankment
S= Slope of principal spillway barrel
Ls= Length of barrel in saturated zone

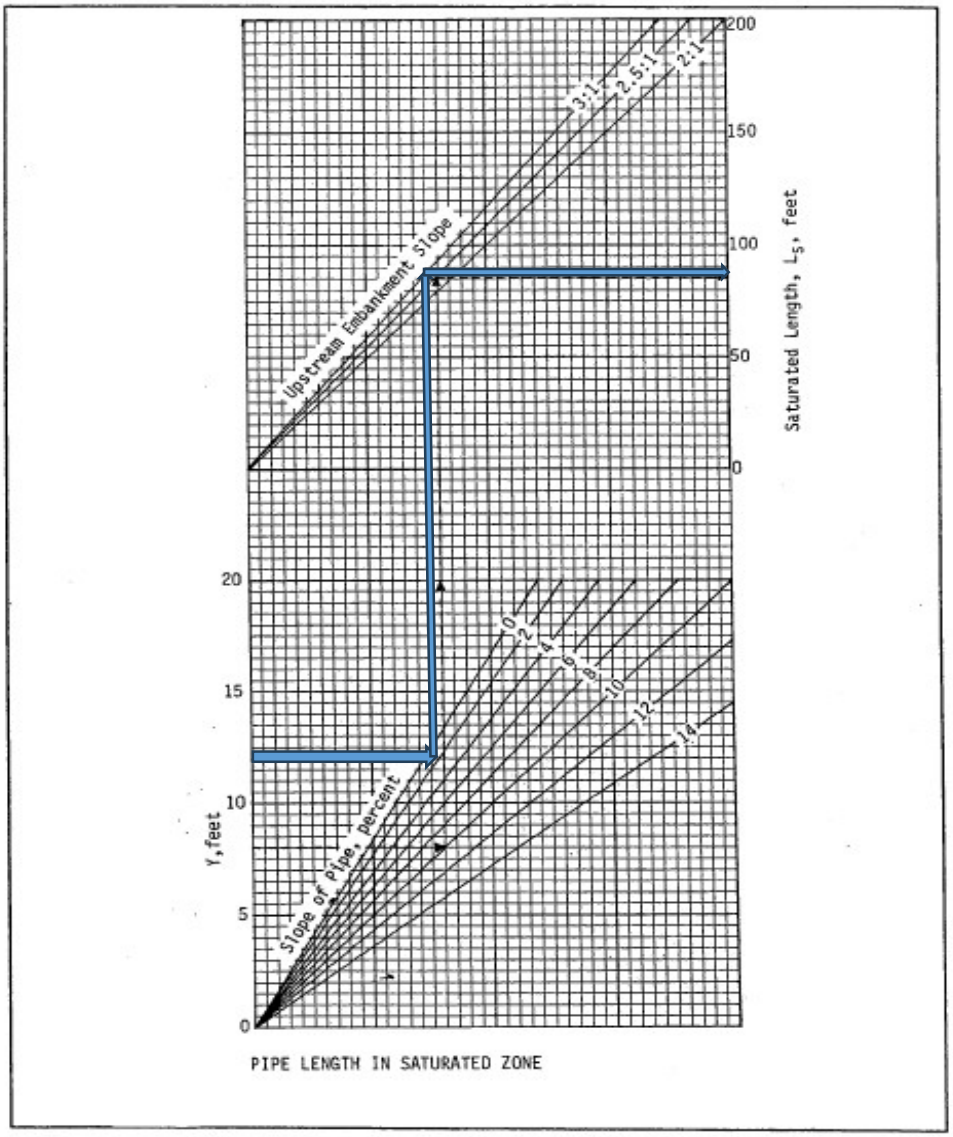
Y=	12.0	ft	
Z=	3	:1	
S=	0.0171	ft/ft	
Ls=	90.17	ft	
# of Collars	3		
Collar Side Dimensions	5.00	ft	Plate 3.14-12
P=	2	ft	
2P=	4	ft	
7xP=	14	ft	
14xP=	28	ft	

Anti-Seep Collar Stations

Sta	Sta	Sta
4.00	18.00	32.00

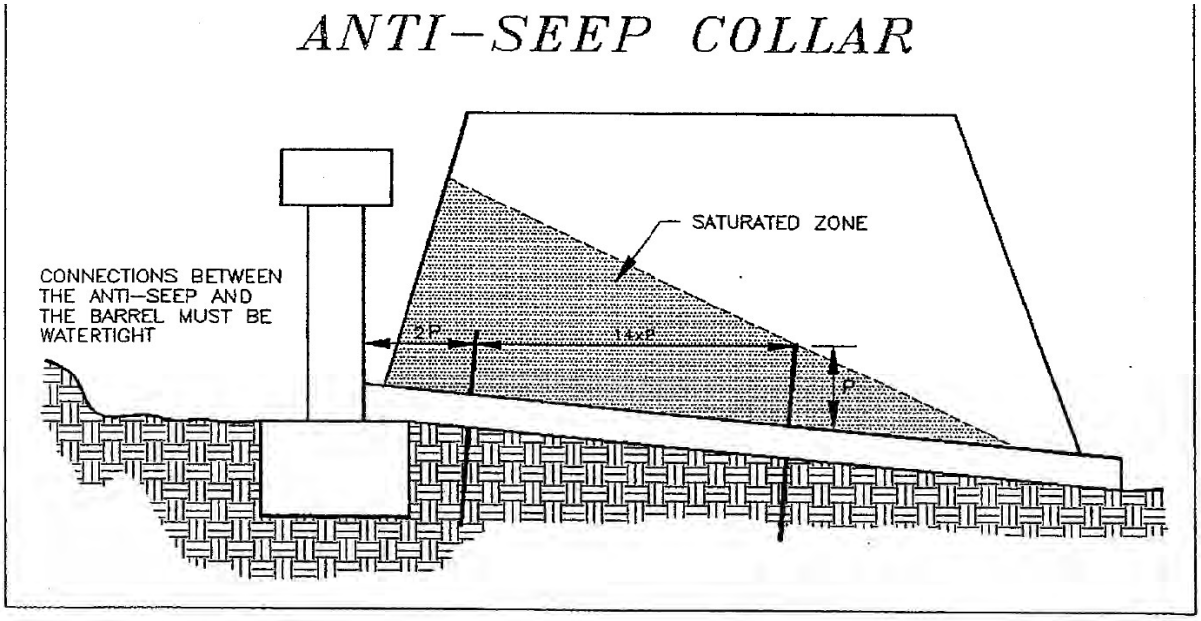
Anti-Seep Collar Locations		
Pipe Sta	Pipe Sta	Pipe Sta
00+4	00+18	00+32

ANTI-SEEP COLLAR CALCULATIONS



Source: USDA-SCS Plate 3.14-11

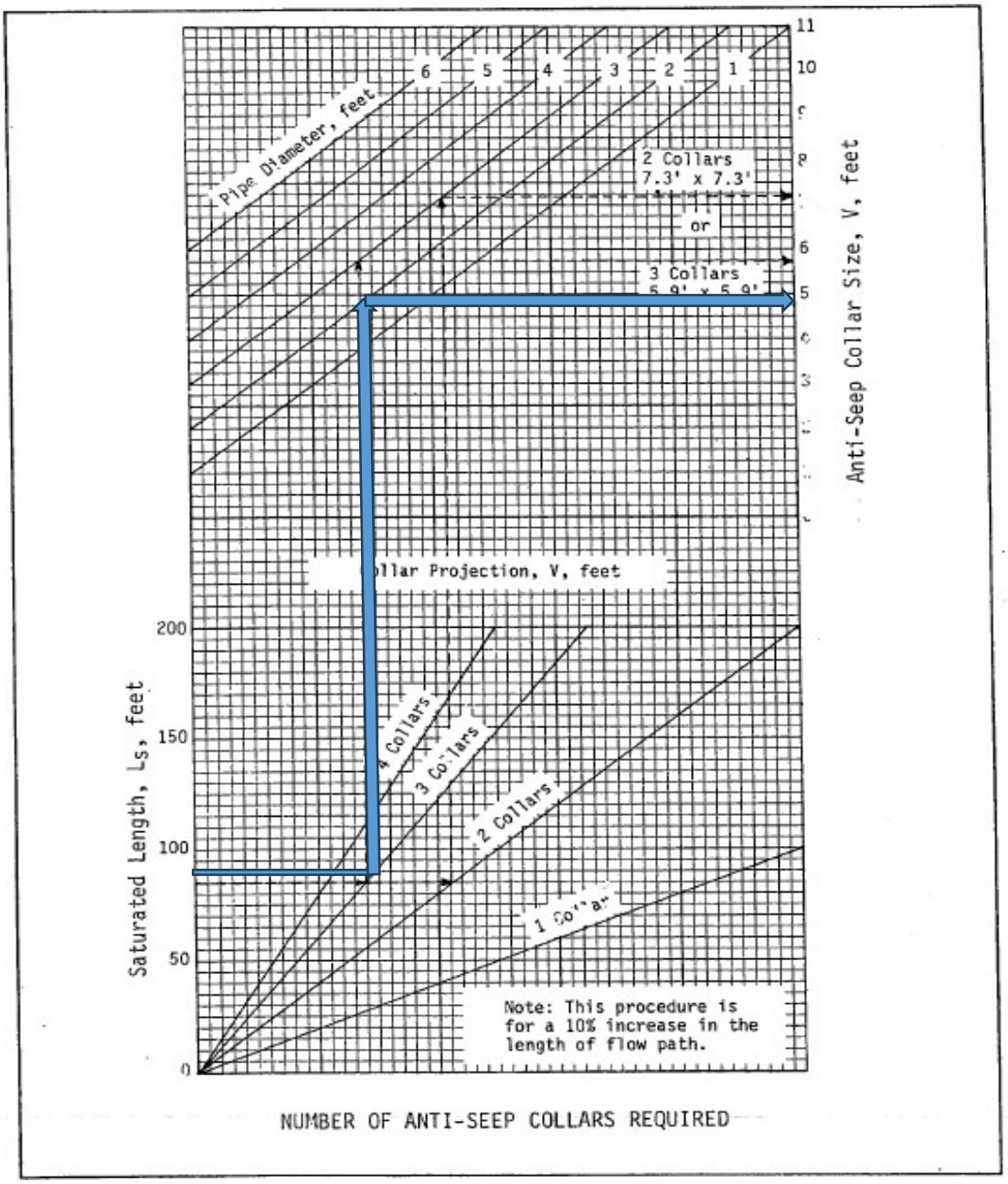
ANTI-SEEP COLLAR CALCULATIONS



Source: Va. DSWC

Plate 3.14-4

ANTI-SEEP COLLAR CALCULATIONS



Source: USDA-SCS Plate 3.14-12

Attachment 8: Riser Anti-Flotation Calculation

RISER BUOANCY

Project ID: Lhoist East Stormwater Pond	
Location: Brierfield, AL	
Designer/Checker: C. / J.Radanyi	
Date: 3/5/26	

Pond Riser	
398.50	Principle spillway crest EL
385.00	Outlet IN EL
383.58	Bottom of Riser EL

RESULTS	
5.00	Wall Thickness (in)
3.00	Concrete Anchor Height (ft)
383.58	Top of Footing EL
380.58	Bottom of Footing EL

1. Upward Force of Riser

Height (ft)	13.50	
Diameter (in)	58.00	
Diameter (ft)	4.83	
Radius (ft)	2.42	
Unit Weight of Water (lb/ft3)	62.4	

Upward Force (Fu) = (Ww x pi r2 x H)

Upward Force (Fu1) **15456.2**

2. Weight of Concrete Riser

ID (ft)	4.00	
Wall Thickness (ft)	0.42	
OD (ft)	4.83	
Volume CF/LF	5.78	
Height (ft)	13.50	
Weight of Concrete (lb/ft3)	150.0	
Buoyant Weight of Concrete (lb/ft3)	87.6	
Unit Weight (lb)/LF	506.5	

Weight of Riser (Wr) **6837.1** (Precast or CIP Riser)

3. Weight of Riser Ballast and Base

OD (ft)	4.00	
Height (ft)	1.00	
Buoyant Weight of Concrete (lb/ft3)	87.6	
Weight of Riser Ballast (lb)	1100.8	(2000 psi Concrete Ballast)
Weight of Riser Base (lb)	669.7	(base of precast riser)

Weight of Riser Ballast and Base (Wb) **1770.5**

4. Weight of Anchor

Concrete OD (ft)	8.83	
Area (sf)	61.2829	
H (ft)	3	
Buoyant Weight of Concrete (lb/ft3)	87.6	

Weight of Concrete Anchor (Wc) **16105.1**

5. Upward Force of Anchor

Diameter (ft)	8.83
Radius (ft)	4.42
Unit Weight of Water (lb/ft3)	62.4

Upward Force (Fu) = (Wc x pi r2 x H)

Upward Force (Fu2) **11472.2**

5. Weight of Soil

submerged unit weight is equal in magnitude to the saturated unit weight ysat of soil minus the unit weight of water Y w.

Unit Weight of Sat. Soil (lb/ft3)	120
Unit Weight of Water (lb/ft3)	62.4
Buoyant Weight of Soil (lb/ft3)	57.6
Minimum Depth of Soil over Anchor (ft)	6.5
Volume of Soil over Anchor (ft3)	279

Weight of Soil (Wd) **16074.9**

Typical Soil Characteristics (from Lindeburg, *Civil Engineering Reference Manual for the PE Exam, 8th ed.*)

Soil Type	γ (lb/ft^3)	γ_{sat} (lb/ft^3)
Sand, loose and uniform	90	118
Sand, dense and uniform	109	130
sand, loose and well graded	99	124
Sand, dense and well graded	116	135
glacial clay, soft	76	110
glacial clay, stiff	106	125

Downward Force (Fd = Wr + Wb + Wc + Wd) **40787.6**

FS	Fd/Fu	1.51

Attachment 9: HEC-14 Dissipator Pool Calculations

RIPRAP DISSIPATOR POOL STILLING BASIN

HEC-14 Riprap Basin
Sub Critical Flow conditions

Diversion Swale

Change depth to equal flow rate.
Flow rate provided by HydroCAD.

	n	0.078
	S_o	0.1
	Width (ft)	20
	Depth (ft)	0.95
	Side Slope	3
	Area (ft^2)	21.71
	Wetted Perimeter (ft)	26.01
	Hydraulic Radius (ft)	0.835
$Q = (1.49/n)*A*R^{2/3}*S_o^{1/2}$	Flow Rate (cfs)	116.24
	Velocity (ft/s)	5.354964
	gravity (ft/s^2)	32.2
	Froude Number (Fr)	0.97

118 HydroCAD
25-yr

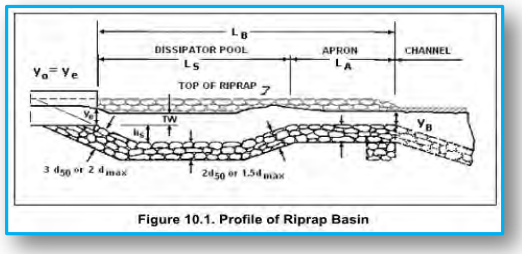


Figure 10.1. Profile of Riprap Basin

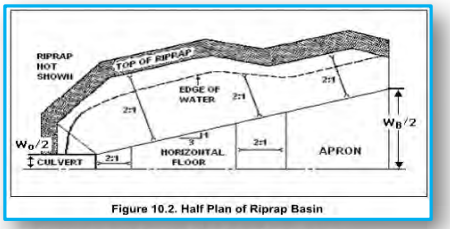


Figure 10.2. Half Plan of Riprap Basin

If Fr is greater than 1.0, flow is supercritical; if it is under 1.0, flow is subcritical.
Fr is 1.0 for critical flow conditions.

	Tailwater depth (T_w)	0.1	
	T_w/Channel Depth	0.11	
	C_o	1.40	
	D_{50} (in)	1.89	
	D_{50} (ft)	0.16	use 1.0
	h_s/y_e	0.83	
	h_s	0.79	use 1.5
Must be greater than 2	h_s/D_{50}	5.02	
Must be greater than 0.1	D_{50}/y_e	0.15	

	L_s (ft)	7.92	use 16
	L_b (ft)	11.89	
	L_A (ft)	3.96	use 5
basin width	W_b (ft)	27.92	

The Froude number used to determine jump efficiency and to evaluate the suitability of alternative stilling basins as described in Table 8.1 is defined in Equation 8.1.

$$Fr_1 = \frac{V_1}{\sqrt{gy_1}} \qquad (8.1)$$

where,
Fr_1 = Froude number at the entrance to the basin
V_1 = velocity entering the basin, m/s (ft/s)
y_1 = depth entering the basin, m (ft)
g = acceleration due to gravity, m/s^2 (ft/s^2)

$$\frac{h_s}{y_e} = 0.86\left(\frac{D_{50}}{y_e}\right)^{-0.55}\left(\frac{V_o}{\sqrt{gy_e}}\right) - C_o \qquad (10.1)$$

where,
h_s = dissipator pool depth, m (ft) DEPTH OF DISCHARGE INTO THE PLUNGE POOL
y_e = equivalent brink (outlet) depth, m (ft)
D_{50} = median rock size by weight, m (ft)
C_o = tailwater parameter
The tailwater parameter, C_o, is defined as:

$C_o = 1.4$ $TW/y_e < 0.75$
$C_o = 4.0(TW/y_e) - 1.6$ $0.75 < TW/y_e < 1.0$
$C_o = 2.4$ $1.0 < TW/y_e$ (10.2)

Select D_{50} appropriate for locally available riprap. Determine C_o from Equation 10.2 or 10.3 and obtain h_s/y_e from Equation 10.1. Check to see that $h_s/D_{50} \geq 2$ and $D_{50}/y_e \geq 0.1$. If h_s/D_{50} or D_{50}/y_e is out of this range, try a different riprap size. (Basins sized where h_s/D_{50} is greater than, but close to, 2 are often the most economical choice.)

RIPRAP DISSIPATOR POOL STILLING BASIN

HEC-14 Riprap Basin
Super Critical Flow conditions

Pond Emergency Spillway

Change depth to equal flow rate.
Flow rate provided by HydroCAD.

	n	0.015
	S_o	0.22
	Width (ft)	10
	Depth (ft)	0.26
	Side Slope	3
	Area (ft^2)	2.80
	Wetted Perimeter (ft)	11.64
	Hydraulic Radius (ft)	0.241
$Q = (1.49/n)*A*R^{2/3}*S_o^{1/2}$	Flow Rate (cfs)	50.529947
	Velocity (ft/s)	18.028381
	gravity (ft/s^2)	32.2
	Froude Number (Fr)	6.23
	Tailwater depth (T_w)	0.1
	T_w/Channel Depth	0.38
	C_o	1.40
	D_{50} (in)	4.62
	D_{50} (ft)	0.38 use 0.5
	h_s/y_e	2.92
	h_s	0.76 use 1
Must be greater than 2	h_s/D_{50}	1.97
Must be greater than 0.1	D_{50}/y_e	0.1
	L_s (ft)	7.59 use 12
	L_b (ft)	11.39
	L_A (ft)	3.80 use 5
basin width	W_b (ft)	17.59

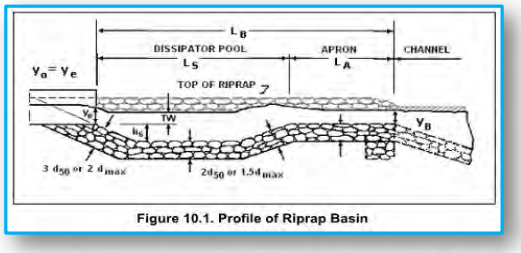


Figure 10.1. Profile of Riprap Basin

depth of .12 for 12 cfs was yielding negative results. Assumed flow 4x the model (48 cfs) to obtain positive values in range

12 HydroCAD
100-yr

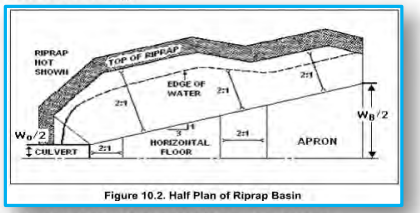


Figure 10.2. Half Plan of Riprap Basin

If Fr is greater than 1.0, flow is supercritical; if it is under 1.0, flow is subcritical.
Fr is 1.0 for critical flow conditions.

The Froude number used to determine jump efficiency and to evaluate the suitability of alternative stilling basins as described in Table 8.1 is defined in Equation 8.1.

$$Fr_1 = \frac{V_1}{\sqrt{gy_1}} \qquad (8.1)$$

where,
Fr_1 = Froude number at the entrance td the basin
V_1 = velocity entering the basin, m/s (ft/s)
y_1 = depth entering the basin, m (ft)
g = acceleration due to gravity, m/s^2 (ft/s^2)

$$\frac{h_s}{y_e} = 0.86\left(\frac{D_{50}}{y_e}\right)^{-0.55}\left(\frac{V_o}{\sqrt{gy_e}}\right) - C_o \qquad (10.1)$$

where,
h_s = dissipator pool depth, m (ft) DEPTH OF DISCHARGE INTO THE PLUNGE POOL
y_e = equivalent brink (outlet) depth, m (ft)
D_{50} = median rock size by weight, m (ft)
C_o = tailwater parameter
The tailwater parameter, C_o, is defined as:

$C_o = 1.4$ $TW/y_e < 0.75$
$C_o = 4.0(TW/y_e) - 1.6$ $0.75 < TW/y_e < 1.0$
$C_o = 2.4$ $1.0 < TW/y_e$ (10.2)

Select D_{50} appropriate for locally available riprap. Determine C_o from Equation 10.2 or 10.3 and obtain h_s/y_e from Equation 10.1. Check to see that $h_s/D_{50} \geq 2$ and $D_{50}/y_e \geq 0.1$. If h_s/D_{50} or D_{50}/y_e is out of this range, try a different riprap size. (Basins sized where h_s/D_{50} is greater than, but close to, 2 are often the most economical choice.)

Attachment 10: Riprap Outlet Protection Calculation

PROJECT: Lhoist Brierfield - East Pond
PROJECT #: 684454
DATE: 3/6/2025
BY: C. Valdez
CHECKED: J. Radanyi

Forebay Pipes

Runoff

Drainage Area 1

25-year Runoff: **37.85** ft^3/sec Individual Pipe

The structurally lined apron should have the capacity to carry the peak stormflow from the 25-year 24-hour frequency storm

Outlet Protection Design

Receiving Area: Flat, Pond Bottom
Defined Channel (Y/N): N where does the

Outlet pipe diameter, Do (in.)	36	in	
Area (ft2)	7.07	ft2	
Pipe Quantity	2		
Effective outlet diameter, Do (in.)	51	in	
Tailwater depth (in.)	<0.5 Do	in	
Minimum/Maximum tailwater?	Minimum		
Discharge, Q (cfs)	75.70	ft^3/sec	
Velocity (ft./s)	10.71	ft/sec	25% full

	Minimum TW		Maximum TW
Riprap d50, (ft.)	0.80	ft	ft
Minimum apron length, La (ft.)	26.00	ft	ft
Apron width at pipe outlet (ft.)	18.00	ft	ft
Apron shape			
Apron width at outlet end (ft.)	29.00	ft	ft
Max Stone Diameter, dmax (ft.)	1.20	ft	ft
$d_{max} = 1.5 \times d_{50}$			
Apron Thickness(ft.)	1.80	ft	ft

Apron thickness = $1.5 \times d_{max}$

Selected d50, (ft.):	0.8	minimum	Per Table OP-2
Selected Class:	Class 1	minimum	Per Table OP-3
Selected Apron Thickness(ft.)	1.80	minimum	

PROJECT: Lhoist Brierfield - East Pond
PROJECT #: 684454
DATE: 3/6/2025
BY: C. Valdez
CHECKED: J. Radanyi

Diversion Swale to Pond

Runoff

Drainage Area 1

25-year Runoff: **118.40** ft^3/sec from HydroCAD

The structurally lined apron should have the capacity to carry the peak stormflow from the 25-year 24-hour frequency storm

Outlet Protection Design

Discharge, Q (cfs)	118.40	ft^3/sec	
Velocity (ft./s)	19.94	ft/sec	Channel Design "East Diversion Swale Inlet" Tab

Effective outlet diameter, Do (in.)	33	in	$D_o = \sqrt{\frac{4Q}{\pi V}}$
Tailwater depth (in.)	<0.5 Do	in	
Minimum/Maximum tailwater?	Minimum		

	Minimum TW		Maximum TW
Riprap d50, (ft.)	1.70	ft	ft
Minimum apron length, La (ft.)	37.00	ft	ft
Apron width at outlet (ft.)	29.00	ft	ft
Apron shape			
Apron width at outlet end (ft.)	39.75	ft	ft
Max Stone Diameter, dmax (ft.)	2.55	ft	ft
$d_{max} = 1.5 \times d_{50}$			
Apron Thickness(ft.)	3.83	ft	ft

Apron thickness = $1.5 \times d_{max}$

Selected d50:	1.7	minimum	Per Table OP-2
Selected Class:	Class 4	minimum	Per Table OP-3
Selected Apron Thickness(ft.)	3.83	minimum	

PROJECT: Lhoist Brierfield - East Pond
PROJECT #: 684454
DATE: 3/6/2025
BY: C. Valdez
CHECKED: J. Radanyi

Northwest Diversion Swale

Runoff

Drainage Area 1

25-year Runoff: **21.27** ft^3/sec from HydroCAD

The structurally lined apron should have the capacity to carry the peak stormflow from the 25-year 24-hour frequency storm

Outlet Protection Design

Discharge, Q (cfs)	21.27	ft^3/sec
Velocity (ft./s)	5.81	ft/sec

Channel Design "Northwest Diversion Swale" Tab

Effective outlet diameter, Do (in.)	26	in
Tailwater depth (in.)	<0.5 Do	in
Minimum/Maximum tailwater?	Minimum	

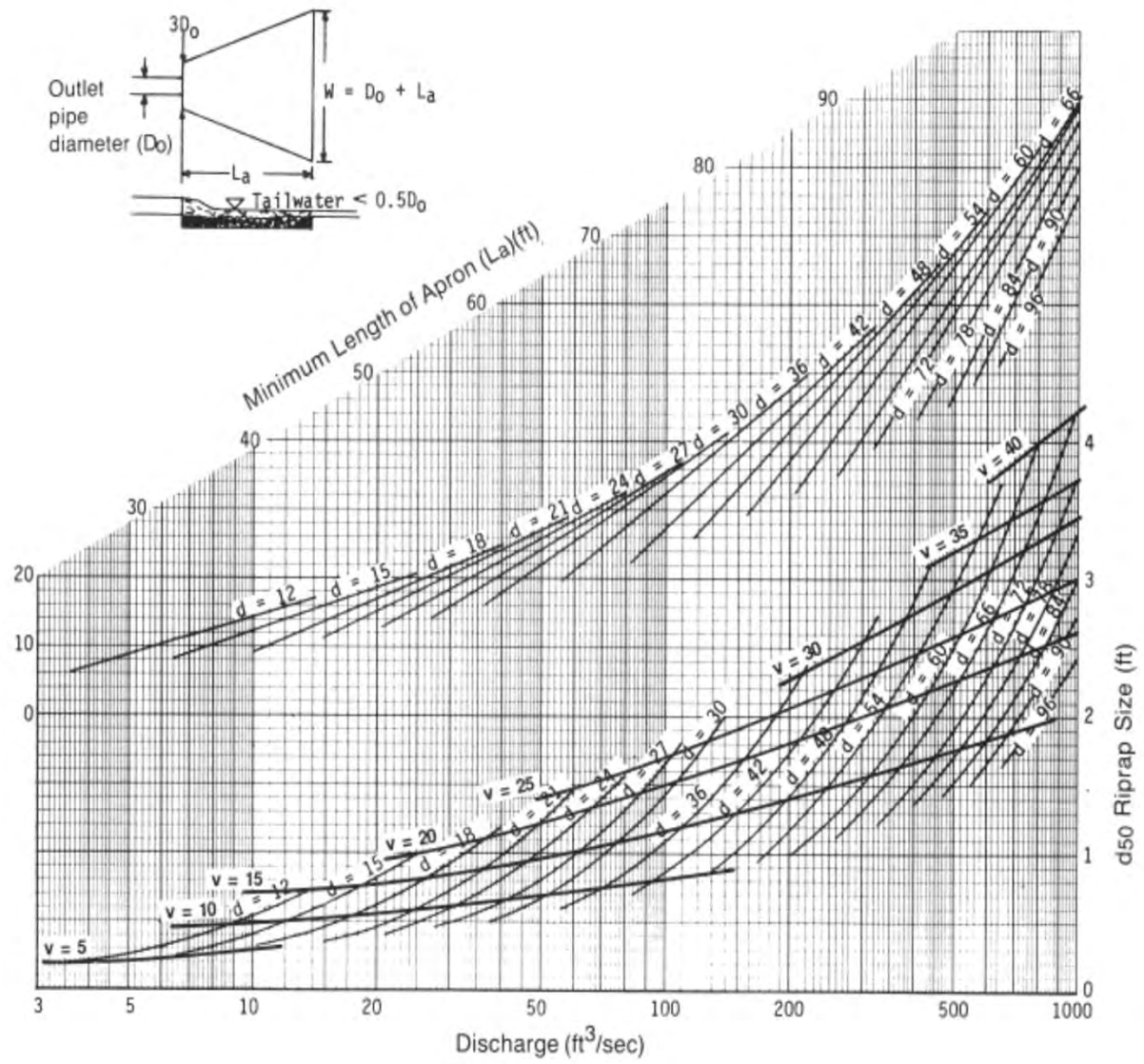
$$D_o = \sqrt{\frac{4Q}{\pi V}}$$

	Minimum TW		Maximum TW
Riprap d50, (ft.)	0.50	ft	ft
Minimum apron length, La (ft.)	15.00	ft	ft
Apron width at outlet (ft.)	8.00	ft	ft
Apron shape			
Apron width at outlet end (ft.)	17.16	ft	ft
Max Stone Diameter, dmax (ft.)	0.75	ft	ft
$d_{max} = 1.5 \times d_{50}$			
Apron Thickness(ft.)	1.13	ft	ft

Apron thickness = $1.5 \times d_{max}$

Selected d50:	0.5	minimum	Per Table OP-2
Selected Class:	Class 1	minimum	Per Table OP-3
Selected Apron Thickness(ft.)	1.25	minimum	

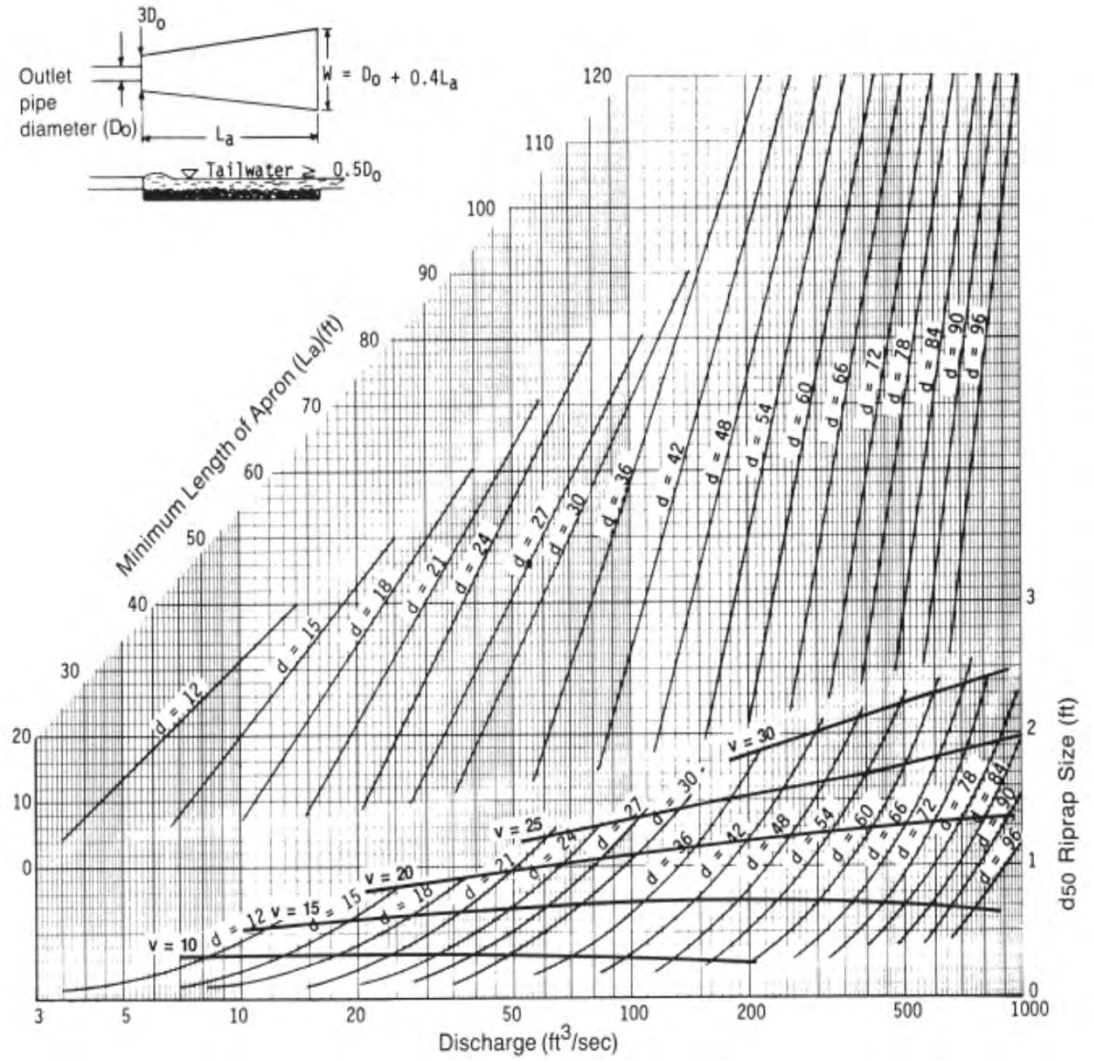
Figure 8.06a: Design of outlet protection from a round pipe flowing full, minimum tailwater condition (Tw<0.5 diameter)



Curves may not be extrapolated.

Figure 8.06a Design of outlet protection protection from a round pipe flowing full, minimum tailwater condition (T_w < 0.5 diameter).

Figure 8.06b: Design of outlet protection from a round pipe flowing full, maximum tailwater condition (Tw>=0.5 diameter)



Curves may not be extrapolated.

Figure 8.06b Design of outlet protection from a round pipe flowing full, maximum tailwater condition ($T_w \geq 0.5$ diameter).

The apron may be lined with loose rock riprap, grouted riprap, or concrete. The median sized stone for riprap should be determined from the curves on Figure OP-2 and OP-3 according to the tailwater condition.

After the median stone size is determined, the gradation of rock to be used should be specified using Tables OP-2 and OP-3. Table OP-2 is used to determine the weight of the median stone size (d_{50}). Using this median weight, a gradation can be selected from Table OP-3, which shows the commercially available riprap gradations as classified by the Alabama Department of Transportation.

Table OP-2 Size of Riprap Stones

Weight	Mean Spherical Diameter (feet)	Rectangular Shape	
		Length	Width, Height (feet)
50	0.8	1.4	0.5
100	1.1	1.75	0.6
150	1.3	2.0	0.67
300	1.6	2.6	0.9
500	1.9	3.0	1.0
1000	2.2	3.7	1.25
1500	2.6	4.7	1.5
2000	2.75	5.4	1.8
4000	3.6	6.0	2.0
6000	4.0	6.9	2.3
8000	4.5	7.6	2.5
20000	6.1	10.0	3.3

Table OP-3 Graded Riprap

Class	Weight (lbs.)					
	d_{10}	d_{15}	d_{25}	d_{50}	d_{75}	d_{90}
1	10	-	-	50	-	100
2	10	-	-	80	-	200
3	-	25	-	200	-	500
4	-	-	50	500	1000	-
5	-	-	200	1000	-	2000

OVERBURDEN MANAGEMENT AREA EAST POND CONSTRUCTION DRAWINGS

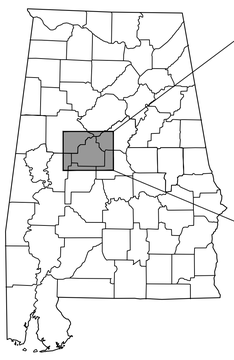
BRIERFIELD, ALABAMA

PREPARED FOR: LHOIST NORTH AMERICA

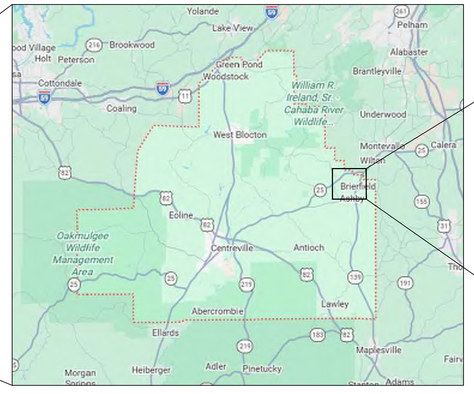
PREPARED BY: TRC ENVIRONMENTAL CORPORATION
GREENVILLE, SOUTH CAROLINA

DATE: APRIL 2026

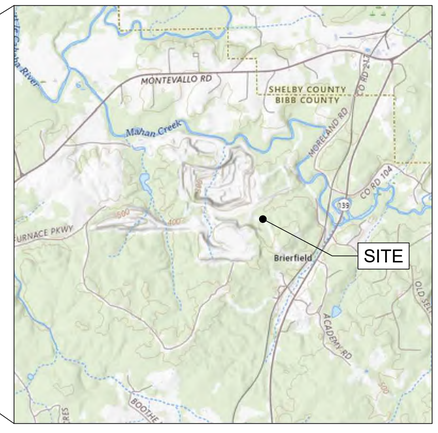
DRAWING INDEX	
SHEET NUMBER	**SHEET TITLE**
G01	COVER SHEET
G02	GENERAL NOTES
V01	EXISTING CONDITIONS
C01	SITE PLAN
D01	GENERAL DETAILS (1 OF 5)
D02	GENERAL DETAILS (2 OF 5)
D03	GENERAL DETAILS (3 OF 5)
D04	GENERAL DETAILS (4 OF 5)
D05	GENERAL DETAILS (5 OF 5)
D06	ESC DETAILS (1 OF 2)
D07	ESC DETAILS (2 OF 2)



ALABAMA



BIBB COUNTY



SITE LOCATOR

NO.	REVISION	DATE

DESIGN BY:	CCV
DRAWN BY:	JGC
CHECKED BY:	NWA
SCALE:	
JOB NUMBER	684454

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA FIRM ENGINEERING #ECAA370

ALABAMA LICENSED NO. 38320-E PROFESSIONAL ENGINEER NATHAN W. ADDISON 4/10/2026

COVER SHEET

LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA

LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

APRIL 2026

SHEET G01

C:\USERS\CVALDEZ\DC\ACCDOCS\TRC\LHOIST-BRIARFIELD EAST POND DESIGN\PROJECT FILES\637719-CVR-NOTE-DTL.DWG - 4/10/26

GENERAL NOTES

1. REFERENCE DRAWINGS:
   - PROPERTY BOUNDARIES - "PROPERTY LINES AND TRAMWAY.DWG" PROVIDED TO TRC BY LHOIST.
   - CONTOURS - "BRIERFIELD_BREAKLINES_2025_06_07_NAD83.DWG" PROVIDED TO TRC BY LHOIST.
   - BRIERFIELD ORTHO PHOTOGRAPHY - "BRIERFIELD_ORTHOPHOTO_2025_07_06_ECW_NAD83.DWG" PROVIDED TO TRC BY LHOIST
2. THE SITE IS LOCATED IN BIBB COUNTY, ALABAMA ON LHOIST PROPERTY LOCATED AT 14786 AL-25, BRIERFIELD, AL 35035. ALL CONSTRUCTION OCCURS ON PROPERTY OWNED BY LHOIST.
4. LOCATIONS OF PROPERTY LINES SHOWN ARE APPROXIMATE.
5. PROPOSED WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE FACILITY EXISTING POLLUTION ABATEMENT AND/OR PREVENTION PLAN AS REQUIRED BY ISSUED NPDES INDIVIDUAL PERMIT AL0067831.
6. EXISTING CONDITION TOPOGRAPHY WAS PROVIDED BY LHOIST IN JULY 2025 BASED ON AERIAL LIDAR.
7. GEOLOGICAL HAZARDS (I.E., KARST SINKHOLES) WERE IDENTIFIED BY LHOIST WITHIN THE PROPOSED POND FOOTPRINT AND ONE WAS IDENTIFIED ADJACENT TO THE PROJECT SITE. THE SOUTHERNMOST SINKHOLE SURVEYED BY LHOIST WAS EVALUATED BY TRC VIA AN ELECTRICAL RESISTIVITY STUDY IN AUGUST 2025, SUGGESTING THESE GEOLOGIC HAZARDS MAY PROVIDE VERTICAL PATHWAYS FOR DIRECT SURFACE WATER INFILTRATION.
8. TRC DID NOT PROVIDE GEOTECHNICAL DESIGN AND SLOPE STABILITY ANALYSIS OF THE POND BERMS, AND ACCESS ROADS AS PART OF THIS DESIGN AND IS RECOMMENDED PRIOR TO CONSTRUCTION. OWNER HAS EXTENSIVE GEOTECHNICAL INFORMATION OF THE MATERIALS UTILIZED IN THIS PROJECT, AND THEIR SUITABILITY AS INDIVIDUAL COMPONENTS.

GENERAL STORMWATER NOTES

1. STORMWATER DETENTION FACILITIES WERE SIZED TO STORE THE VOLUME OF STORM WATER RUNOFF PRODUCED DURING A 2-YEAR 24-HOUR STORM EVENT AND CONVEY RUNOFF PRODUCED UP TO A 100-YEAR 24-HOUR STORM EVENT. THE POND AND FOREBAY ARE REQUIRED TO BE DEWATERED AND CLEANED OUT AS NEEDED TO MAINTAIN CAPACITY AND PREVENT CLOGGING OF THE OUTLET CONTROL STRUCTURE.
2. CHANNELS AND SWALES WERE SIZED TO CONVEY AT A MINIMUM THE STORM WATER RUNOFF PRODUCED DURING A 10-YEAR 24-HOUR STORM EVENT. OUTLET PROTECTION STRUCTURES WERE SIZED FOR A 25-YEAR 24-HOUR STORM EVENT.
3. PIPE LENGTHS, GRADES, ELEVATIONS AND LOCATIONS SHOWN ARE APPROXIMATE. THEY MAY BE ADJUSTED TO ACCOMMODATE UNFORESEEN CONDITIONS.
4. ALL STORM PIPES INSTALLED SHALL BE CLASS III OR IV REINFORCED CONCRETE PIPE (RCP) PER ASTM C76 OR HIGH DENSITY POLYETHYLENE (HDPE) SMOOTH DOUBLE-WALL CORRUGATED PLASTIC PIPE (CPP) PER ASTM D3350, UNLESS SPECIFICALLY NOTED OTHERWISE. EXISTING STORMWATER PIPE MATERIALS, MODIFIED, DAMAGED OR DEFORMED, ETC. SHALL NOT BE REUSED UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER.
5. THE POND WILL BE CONSTRUCTED IN AN AREA WITH KNOWN KARST GEOLOGIC HAZARDS. THEREBY KNOWN AND/OR UNKNOWN SUBSURFACE FEATURES MAY CAUSE POTENTIAL SUBSIDENCE ISSUES RELATED TO THE POND BASE AND BERMS.
6. THE POND IS DESIGNED TO DEWATER THROUGH THE PRINCIPAL AND EMERGENCY SPILLWAYS.
7. ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENT AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
8. ALL PIPES SHALL BE BEDDED PER MANUFACTURER'S RECOMMENDATIONS.
9. DURING CONSTRUCTION AND AFTER FINAL GRADING, NO SURFACE WATER RUNOFF MAY BE DIRECTED TO ADJACENT PROPERTIES, AND ALL SURFACE WATER RUNOFF MUST BE ROUTED TO DRAINAGE FACILITIES OR BE RETAINED ON SITE. ALL RUNOFF FROM THE SITE, BOTH DURING AND AFTER CONSTRUCTION, MUST BE FREE OF POLLUTANTS, INCLUDING SEDIMENT, PRIOR TO DISCHARGE.

GENERAL EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN THROUGHOUT THE PROJECT CONSTRUCTION EROSION CONTROL MEASURES PER ADEM EROSION AND SEDIMENT CONTROL REGULATIONS.
2. TEMPORARY AND PERMANENT STABILIZATION PRACTICES AND BMP'S SHALL BE INSTALLED AT THE EARLIEST POSSIBLE TIME DURING THE CONSTRUCTION SEQUENCE.
3. CONTRACTOR SHALL PROVIDE SURFACE ROUGHENING AND SHALL PLACE EROSION CONTROL BLANKET ON ALL SITE AREAS WITH SLOPES EQUAL TO OR GREATER THAN 3:1 (HORIZONTAL TO VERTICAL), AND IN THE BOTTOM AND SIDE SLOPES OF ALL SWALES.
4. CONSTRUCTION ENTRANCE SHALL BE LOCATED SO AS TO PROVIDE THE LEAST AMOUNT OF DISTURBANCE TO THE FLOW OF TRAFFIC IN AND OUT OF THE SITE.
5. NO CONSTRUCTION SHALL BE LOCATED OUTSIDE THE PROJECT AREA.
6. NO CONSTRUCTION LAYDOWN OR STAGING SHALL BE LOCATED OUTSIDE THE PROJECT AREA.
7. ALL DRAINAGE SWALES MUST BE GRADED AND RIP-RAP MUST BE REPLACED AS REQUIRED TO CONTROL EROSION. RIP-RAP WILL CONSIST OF GRADED ROCK SIZE SPECIFIED AND PLACED AT ALL PIPE INLETS, PIPE AND CHANNEL OUTLETS, AND WHERE NOTED ON CONSTRUCTION DRAWINGS. SEE DETAIL SHEET FOR OUTFALL SIZE CHART.
8. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED FOR ADDITIONAL CONTRACTOR LAYDOWN AREA. CONTRACTOR TO COORDINATE WITH OWNER DURING CONSTRUCTION. THE PROJECT AREA SHOULD CONTAIN ANY ADDITIONAL LAYDOWN AREAS.
9. PUMPING SEDIMENT LADEN WATER INTO ANY STORMWATER FACILITY THAT IS NOT DESIGNATED TO BE A SEDIMENT TRAP, DRAINAGEWAY, OR OFFSITE AREA EITHER DIRECTLY OR INDIRECTLY WITHOUT FILTRATION IS PROHIBITED. DURING DEWATERING OPERATIONS, WATER SHALL BE PUMPED INTO AN APPROVED FILTERING DEVICE PRIOR TO DISCHARGE TO RECEIVING OUTLET. WATER REMOVED FROM TRAPS, BASINS, AND OTHER WATER HOLDING DEPRESSIONS OR EXCAVATIONS MUST FIRST PASS THROUGH A SEDIMENT CONTROL AND/OR FILTRATION DEVICE. WHEN DEWATERING DEVICES ARE USED, DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION.
10. ALL TEMPORARY STORMWATER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION IS ACHIEVED.TRAPPED SEDIMENT AND OTHER DISTURBED SOILS RESULTING FROM TEMPORARY MEASURES SHALL BE PROPERLY DISPOSED OF PRIOR TO PERMANENT STABILIZATION.
11. SOIL STOCKPILES SHALL NOT BE LOCATED IN A DRAINAGEWAY, FLOOD PLAIN AREA OR A DESIGNATED BUFFER. ALL STOCKPILES SHALL BE IMMEDIATELY STABILIZED.
12. ALL OTHER DISTURBED AREAS SHALL BE PROVIDED TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER AS SOON AS PRACTICABLE BUT IN ANY EVENT WITHIN 14 CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY.

GENERAL GRADING NOTES

1. ALL NECESSARY PERMITS ARE THE RESPONSIBILITY OF THE CONTRACTOR/OWNER AND MUST BE OBTAINED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, AS APPLICABLE.
2. WHERE FILL MATERIAL IS TO BE PLACED FOR THE CONSTRUCTION OF POND BERMS, ALL UNDERLYING MATERIALS (VEGETATION AND TOPSOIL) SHALL BE REMOVED TO PROVIDE A STABLE BASE. KNOWN SURFACE KARST FEATURES WILL BE EXCAVATED AND FILLED AT THE DISCRETION OF THE OWNER PRIOR TO THE POND CONSTRUCTION.
3. WHERE STRUCTURAL FILL IS TO BE PLACED ON AN EXISTING SLOPE STEEPER THAN 10:1 (HORIZONTAL TO VERTICAL) THE EXISTING GROUND SURFACE SHALL BE BENCHED TO A HORIZONTAL SURFACE TO FACILITATE SOIL COMPACTION.
4. THE OWNER SHALL EVALUATE, ANALYZE, AND SELECT SUITABLE FILL MATERIALS FROM AVAILABLE SOURCES.
5. FILL SOILS SHALL BE COMPACTED AND TESTED IN ACCORDANCE WITH STANDARD INDUSTRY REQUIREMENTS FOR LIKE PROJECTS.
6. PRIOR TO CONSTRUCTION THE CONTRACTOR MUST CLEARLY DELINEATE AND MARK OFF AREAS IDENTIFIED AS PROTECTED (SUCH AS STREAMS/WETLANDS, NATURAL BUFFERS, TREE, HABITATS OF ENDANGERED/THREATENED SPECIES, HISTORIC PROPERTIES, ETC.).
7. THE CONTRACTOR SHALL VERIFY ALL GRADES AND CONTOURS SHOWN ON THESE DRAWINGS. THE EXISTING CONTOURS SHOWN WERE PROVIDED BY THE OWNER AND MAY NOT BE THE SAME IN THE FIELD.
8. BEFORE ANY EARTHWORK IS DONE, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF PAVEMENT AND OTHER ITEMS ESTABLISHED IN THE PLANS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.
9. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
10. ALL PROPOSED CONTOURS AND SPOT ELEVATIONS REFLECT FINISHED GRADES. ELEVATIONS ARE IN REFERENCE TO THE ELEVATION DATA PROVIDED. THIS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO GROUND BREAKING.
11. CONTRACTOR SHALL REVIEW, UNDERSTAND AND IMPLEMENT ALL REQUIRED EROSION AND SEDIMENTATION CONTROL MEASURES PRIOR TO ANY DISTURBANCE.
12. SEED OR OTHER MEANS OF STABILIZATION MUST BE INSTALLED AND MAINTAINED ON EXPOSED SLOPES WITHIN 48 HOURS OF COMPLETING FINAL GRADING, AND AT ANY OTHER TIME AS NECESSARY, TO PREVENT EROSION, SEDIMENTATION OR TURBID DISCHARGES.
13. THE CONTRACTOR SHALL GRADE THE SITE TO THE ELEVATIONS INDICATED AND SHALL REGRADE WASHOUTS WHERE THEY OCCUR AFTER EVERY RAINFALL UNTIL A GRASS STAND IS WELL ESTABLISHED OR ADEQUATE STABILIZATION OCCURS.
14. IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE CONTRACTOR SHALL NOTIFY THE OWNER.
15. IF SINKHOLES OR VERTICAL DRAINAGE PATHWAYS ARE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE OWNER.
16. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF ALL SHEETING, SHORING, BRACING AND SPECIAL EXCAVATION MEASURES REQUIRED TO MEET OSHA, FEDERAL, STATE AND LOCAL REGULATIONS PURSUANT TO THE INSTALLATION OF THE WORK INDICATED ON THESE DRAWINGS. THE DESIGN ENGINEER ACCEPTS NO RESPONSIBILITY FOR THE DESIGN(S) TO INSTALL SAID ITEMS.
17. ALL OPEN, DISTURBED AREAS WITHIN THE PROJECT SITE SHALL BE SEEDED AND MULCHED FOR FINAL STABILIZATION.
18. STRIP TOPSOIL AND ORGANIC MATTER FROM ALL AREAS OF THE SITE AS REQUIRED. TOPSOIL MAY BE STOCKPILED ON SITE FOR PLACEMENT AS DIRECTED BY THE OWNER.
19. ALL CUT OR FILL SLOPES SHALL BE 3 (HORIZONTAL) :1 (VERTICAL) OR FLATTER UNLESS OTHERWISE SHOWN. CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY TO TRANSITION BACK TO EXISTING GRADE.
20. APPROVAL OF THIS PLAN IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF-SITE GRADING. ENSURE ADDITIONAL EROSION CONTROL MEASURES ARE INSTALLED PRIOR TO OFF-SITE GRADING.

GRADATION OF COMMERCIAL AVAILABLE RIP RAP GRADATIONS AS CLASSIFIED BY THE ALABAMA DEPARTMENT OF TRANSPORTATION

Class	Weight (lbs.)					
	D_{10}	D_{15}	D_{25}	D_{50}	D_{75}	D_{90}
1	10	-	-	50	-	100
2	10	-	-	80	-	200
3	-	25	-	200	-	500
4	-	-	50	500	1000	-
5	-	-	200	1000	-	2000

GEOTEXTILE NOTES

1. GEOTEXTILE FILTERS SHALL MEET THE APPROPRIATE CHEMICAL AND PHYSICAL REQUIREMENTS OF AASHTO M 288 FOR SEPARATION APPLICATIONS.
2. MINIMUM WEIGHT FOR ALL GEOTEXTILES SHALL BE 6 OZ/SQ YD UNLESS OTHERWISE NOTED AND BE SELECTED FROM THE ALABAMA DEPARTMENT OF TRANSPORTATION LIST II-3 APPROVED GEOTEXTILES.
3. GEOTEXTILES SELECTED SHALL BE DESIGNED FOR USE AS A PERMEABLE SEPARATOR TO PREVENT MIXING OF DISSIMILAR MATERIALS SUCH AS RIPRAP, SUBGRADES AND SURFACED AND UNSURFACED PAVEMENT STRUCTURES, ZONES IN EMBANKMENTS, FOUNDATIONS, AND SELECT FILL MATERIALS. THE GEOTEXTILES SHALL BE DESIGNED TO ALLOW PASSAGE OF WATER WHILE RETAINING IN SITU SOIL WITHOUT CLOGGING.
4. THE INSTALLATION SITE SHALL BE PREPARED BY CLEARING AND GRADING THE AREA AS REQUIRED. ALL SHARP OBJECTS AND LARGE STONES SHALL BE REMOVED AND TREES AND SHRUBS SHALL BE CUT FLUSH WITH THE SUBGRADE.
5. WHEN APPROPRIATE, SOFT SPOTS AND UNSUITABLE AREAS SHALL BE IDENTIFIED DURING SITE PREPARATION OR SUBSEQUENT PROOF ROLLING. THESE AREAS SHALL BE EXCAVATED AND BACKFILLED WITH SELECT MATERIAL WHICH IS COMPACTED TO A DEPTH SUCH THAT THE AREA PROVIDES EQUAL STABILITY AS THE ADJACENT AREA. STABILIZATION OF THESE AREAS MAY BE ENHANCED BY USE OF A GEOTEXTILE AT THE BOTTOM OF THE EXCAVATION BEFORE BACKFILL.
6. THE FIRST LAYER OF MATERIAL SHALL BE PLACED MANUALLY WITH EQUIPMENT OVER PREVIOUSLY PLACED SUBBASE AGGREGATE, AS SPECIFIED, AND SHOULD NOT BE END DUMPED ONTO THE GEOTEXTILE DIRECTLY.
7. DAMAGED GEOTEXTILES SHALL BE REPAIRED IMMEDIATELY. THE DAMAGED AREA, PLUS AN ADDITIONAL 3 FEET {1 M} AROUND THE AREA, SHALL BE CLEARED OF ALL FILL MATERIAL. THIS AREA SHALL BE COVERED WITH A GEOTEXTILE PATCH EXTENDING 3 FEET {1 M} BEYOND THE PERIMETER OF THE DAMAGE.

EMBANKMENT NOTES:

1. CLEARING AND GRUBBING SHALL BE COMPLETED, AS NEEDED WITHIN THE WORK LIMITS
2. ALL VEGETATION, TOPSOIL, AND OTHER DELETERIOUS MATERIALS SHALL BE REMOVED FROM AREAS WHERE FILL OR STRUCTURES WILL BE PLACED. THE MATERIAL SHALL BE STOCKPILED WITHIN THE LIMITS OF THE PROJECT.
3. CONSTRUCT EMBANKMENT WITH SUITABLE EXCAVATED MATERIAL AND MATERIAL FROM OTHER APPROVED SOURCES, AS NECESSARY, TO COMPLETE THE PLANNED STRUCTURE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COOPERATING WITH THE ENGINEER DURING ALL TESTING ACTIVITIES. THE CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR TO ASSIST THE ENGINEER IN SAMPLING, IF REQUESTED, AND PROVIDE ACCESS TO ALL AREAS REQUIRING TESTING.
5. WATER USED TO ADJUST THE MOISTURE CONTENT OF THE COMPACTED SOIL FILL, IF REQUIRED, SHALL MEET THE STANDARDS FOR UNCONTAMINATED SURFACE WATER AT THE TIME OF APPLICATION.
6. THE ENGINEER SHALL EXAMINE EXCAVATION BOTTOMS, TO CONFIRM THERE IS NO STANDING WATER AND NO SOFT AREAS PRESENT, PRIOR TO PLACEMENT OF BACKFILL.
7. THE SOILS FOR THE EMBANKMENT FILL SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS: (1) BE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) AS CL,CL-ML,SC,GC OR AS OTHERWISE APPROVED BY THE ENGINEER; AND (2) BE FREE OF ALL DELETERIOUS MATERIALS (E.G LARGE OR SHARP ROCKS GREATER THAN 3 INCHES IN DIAMETER, LIMBS, ROOTS, TRASH, ETC.),UNLESS OTHERWISE APPROVED BY THE ENGINEER.
8. IF THE EMBANKMENT IS CONSTRUCTED USING GRANULAR MATERIALS, THE CONTRACTOR SHALL USE A CLAY CORE USING THE FILL MATERIAL THAT MEETS THE SPECIFICATIONS OUTLINED ABOVE. THE CLAY CORE SHOULD BE A MINIMUM OF 10 FT WIDE AT THE TOP, MAXIMUM 1H:1V SIDE SLOPES, AND SHALL BE BUILT WITH A CREST ELEVATION EQUAL TO THE MAXIMUM POOL ELEVATION OF THE POND (TOP OF RISER ELEVATION).
9. THE EMBANKMENT FILL AND CLAY CORE MATERIAL, AS APPLICABLE, SHALL BE PLACED IN HORIZONTAL LIFTS NOT EXCEEDING 8 INCHES LOOSE THICKNESS. EACH LIFTS SHALL BE COMPACTED USING SHEEPSFOOT, PADFOOT ROLLER, FOR COHESIVE MATERIAL AND A SMOOTH DRUM, VIBRATORY ROLLER FOR GRANULAR MATERIAL, OR OTHER EQUIPMENT APPROVED BY THE ENGINEER, TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AND WITHIN +/- 2% OF THE OPTIMUM MOISTURE CONTENT AS ESTABLISHED BY STANDARD PROCTOR METHODS (ASTM D698). FIELD DENSITY AND MOISTURE TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM D6938 OR ASTM D1556 AT LOCATIONS DETERMINED BY THE ENGINEER.
10. AREAS THAT ARE INACCESSIBLE TO DRIVEN COMPACTION EQUIPMENT SHALL BE COMPACTED USING HAND-OPERATED EQUIPMENT (E.G., WALK BEHIND ROLLER) THAT IS CAPABLE OF ACHIEVING THE REQUIRED DEGREE OF COMPACTION. TRENCH SIDEWALLS WITHIN THE EMBANKMENT DURING THE INSTALLATION OF THE WATER LEVEL CONTROL STRUCTURE OUTLET PIPE SHALL BE LAID BACK AT A MINIMUM OF 1H:1V. IF USING HAND-OPERATED COMPACTION EQUIPMENT, A 4-INCH LOOSE LIFT THICKNESS IS REQUIRED.

ROCK & RIPRAP PLACEMENT NOTES:

1. SUBGRADE FOR FILTER MATERIAL, GEOTEXTILE FABRIC OR RIPRAP SHOULD BE CLEARED AND GRUBBED TO REMOVE ALL ROOTS, VEGETATION, AND DEBRIS AND PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. EXCAVATE DEEP ENOUGH FOR BOTH FILTER AND RIPRAP. COMPACT ANY FILL MATERIAL TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY.
3. EXCAVATE A KEYWAY IN STABLE MATERIAL AT BASE OF SLOPE TO REINFORCE THE TOE. KEYWAY DEPTH SHOULD BE 1.5 TIMES THE DESIGN THICKNESS OF RIPRAP AND SHOULD EXTEND A HORIZONTAL DISTANCE EQUAL TO THE DESIGN THICKNESS.
4. ROCK AND/OR GRAVEL USED FOR FILTER AND RIPRAP SHALL CONFORM TO THE SPECIFIED GRADATION.
5. WELL-GRADED ROCK, 50% BEING LARGER AND 50 % BEING SMALLER BY WEIGHT THAN THE SPECIFIED "D50". THE LARGEST ROCK SHOULD NOT EXCEED 1.5 TIMES THE "D50" SPECIFIED. ROCK SHOULD BE SHAPED SO THAT THE LEAST DIMENSION OF THE STONE FRAGMENT IS NOT LESS THAN ONE-THIRD OF THE GREATEST DIMENSION OF THE FRAGMENT. FLAT ROCKS SHOULD NOT BE USED FOR RIPRAP.
6. PLACE RIPRAP IMMEDIATELY AFTER INSTALLING STONE BEDDING LAYER.
7. THE FIRST LAYER OF RIPRAP, GREATER THAN 12-INCHES, MUST BE PLACED ONE AT A TIME BY HAND OR WITH EQUIPMENT.
8. ONCE THE FIRST LAYER HAS BEEN PLACED, THE NEXT LAYER MAY BE GENTLY POURED OVER THE TOP OF THE FIRST FROM A SMALL LOADER OR EXCAVATOR.
9. PLACE SMALLER STONES IN VOIDS TO FORM A DENSE, UNIFORM, WELL-GRADED MASS. SELECTIVE LOADING AT THE QUARRY AND SOME HAND PLACEMENT MAY BE NECESSARY TO OBTAIN AN EVEN DISTRIBUTION OF STONE SIZES.
10. INSTALL RIPRAP TO FULL THICKNESS IN ONE OPERATION. DO NOT DUMP THROUGH CHUTES OR USE ANY METHOD THAT CAUSES SEGREGATION OF STONE SIZES. AVOID DISLODGING OR DAMAGING UNDERLYING BEDDING MATERIAL WHEN PLACING RIPRAP.
11. IN NO CASE SHALL THE PLACED RIPRAP BE PUSHED WITH EQUIPMENT TO DISPLACE OR REPOSITION THE RIPRAP IN A WAY THAT WILL DAMAGE THE COMPACTED BASE AND GEOTEXTILE.
12. IF THE GEOTEXTILE IS TORN BY THE RIPRAP PLACEMENT, THE RIPRAP SHALL BE REMOVED AND THE GEOTEXTILE SHALL BE REPLACED AND REPAIRED WITH A MINIMUM OF A 3-FOOT OVERLAP.
13. BLEND THE STONE SURFACE SMOOTHLY WITH THE SURROUNDING AREA, ALLOWING NO PROTRUSIONS OR OVERFALL.
14. BECAUSE RIPRAP IS USED WHERE EROSION POTENTIAL IS HIGH, CONSTRUCTION MUST BE SEQUENCED SO THAT THE RIPRAP IS PUT IN PLACE WITH THE MINIMUM POSSIBLE DELAY. DISTURBANCE OF AREAS WHERE RIPRAP IS TO BE PLACED SHOULD BE UNDERTAKEN ONLY WHEN FINAL PREPARATION AND PLACEMENT OF THE RIPRAP CAN FOLLOW IMMEDIATELY BEHIND THE INITIAL DISTURBANCE, AS MUCH AS IS FEASIBLE.
15. WHERE RIPRAP IS USED FOR OUTLET PROTECTION, THE RIPRAP SHOULD BE PLACED BEFORE OR IN CONJUNCTION WITH THE CONSTRUCTION OF THE PIPE OR CHANNEL SO THAT IT IS IN PLACE WHEN THE PIPE OR CHANNEL BEGINS TO OPERATE.
16. RIPRAP SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM FOR DISPLACED STONES, SLUMPING, AND EROSION AT EDGES, ESPECIALLY DOWNSTREAM OR DOWNSLOPE. IF THE RIPRAP HAS BEEN DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY BEFORE FURTHER DAMAGE CAN TAKE PLACE.
17. WOODY VEGETATION SHOULD BE REMOVED FROM THE ROCK RIPRAP ANNUALLY TO PREVENT TREE ROOTS FROM EVENTUALLY DISLODGING THE RIPRAP.

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NO.	REVISION	DATE

DESIGN BY:	CCV
DRAWN BY:	JGC
CHECKED BY:	NWA
SCALE:	
JOB NUMBER	684454

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA ENGINEERING #ECA4370

ALABAMA LICENSED NO. 38320-E PROFESSIONAL ENGINEER NOEMIA W. ADDISON 4/10/2026

GENERAL NOTES

LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA

LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

APRIL 2026

SHEET
G02

NOTES:

1. THREE SINKHOLES WERE IDENTIFIED BY LHOIST. LOCATION DATA WERE PROVIDED TO TRC. TWO SINKHOLES WERE APPROXIMATED AS POINT COORDINATES WITH A 50-FOOT OFFSET BASED ON USGS TOPOGRAPHY OF THE AREA. THE THIRD SINKHOLE LIMITS WERE SURVEYED BY LHOIST, ALSO SHOWN WITH A 50-FOOT OFFSET. ONLY THE SINKHOLE IDENTIFIED AND SURVEYED BY LHOIST WAS INCLUDED IN THE SCOPE OF THE ELECTRICAL RESISTIVITY STUDY SCOPE COMPLETED BY TRC IN AUGUST 2025.

2. A SEEP THROUGH AN EXISTING FACILITY ROAD WAS IDENTIFIED BY LHOIST. IT WAS NOTED TO FLOW FOLLOWING EXISTING DRAINAGE PATTERNS TOWARD THE PROPOSED POND SITE. THE FLOW RATE IS UNKNOWN.

3. THE CAHABA TRACT INCLUDES A HISTORICAL TRAMWAY EASEMENT, A FEATURE TO BE PROTECTED DURING CONSTRUCTION. A 50-FOOT MINIMUM SETBACK FROM THE CAHABA TRACT BOUNDARY IS REQUIRED. NO COMPONENTS OF THE POND SYSTEM ARE PERMITTED IN THE SETBACK, WITH THE EXCEPTION OF TIE-IN GRADING.

4. LHOIST PERFORMED EXPLORATORY DRILLING IN THE VICINITY OF PROPOSED POND FOOTPRINT IN AUGUST 2025 TO EVALUATE POSSIBLE DEPTH TO ROCK. THESE POINTS ARE SHOWN WITH ESTIMATED ROCK ELEVATION NOTED

LEGEND
- 105 — EXISTING MAJOR CONTOUR-5' INTERVAL
- EXISTING MINOR CONTOUR-1' INTERVAL
- CAHABA TRACT TRAMWAY EASEMENT
- 50' SETBACK FROM EASEMENT
- SINKHOLE W/ 50' OFFSET

MAGNETIC

GRAPHICAL SCALE
0 35.5' 75' 150'
1" = 75'

EX. FACILITY ROAD

CAHABA TRACT
(HISTORICAL TRAMWAY EASEMENT)

50' SETBACK

50' SINKHOLE OFFSET (TYP)

SINKHOLE IDENTIFIED AND SURVEYED BY LHOIST (TYP)

SEEP APPROXIMATE LOCATION

EX. FACILITY ROAD

TO MAHAN CREEK

EX. 60" DIAMETER STEEL PIPE (APPROXIMATE LOCATION)

PIPE INVERT EL. ±375.87 PROVIDED BY LHOIST

ROCK AT +/- 366

ROCK AT +/- 411

ROCK AT +/- 411

ROCK AT +/- 404

ROCK AT +/- 389

ROCK AT +/- 415

ROCK AT +/- 404

ROCK AT +/- 375.6

EX, DIVERSION SWALE BY LHOIST

NO.	REVISION	DATE

DESIGN BY:	CCV
DRAWN BY:	JGC
CHECKED BY:	NWA
SCALE:	
JOB NUMBER	684454

TRC
TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA ENGINEERING #ECAA370

ALABAMA LICENSED NO. 38320-E PROFESSIONAL ENGINEER NATHAN W. ADDISON 4/10/2026

EXISTING CONDITIONS

LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA

LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

APRIL 2026

SHEET
V01

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NOTES:

1.INSTALL SKIMMER AT DRAWDOWN INLET PIPE AFTER CONSTRUCTION TO MINIMIZE SEDIMENT IN DISCHARGE UNTIL SLOPES AND DRAINAGE FEATURES ARE STABILIZED.

2. CLEAR AND GRUB ALL AREAS WHERE FILL MATERIAL IS TO BE PLACED FOR THE CONSTRUCTION OF POND BERMS. ALL UNDERLYING MATERIALS (VEGETATION AND TOPSOIL) SHALL BE REMOVED.

3. FILL SOILS SHALL BE COMPACTED AND TESTED IN ACCORDANCE WITH STANDARD INDUSTRY REQUIREMENTS FOR LIKE PROJECTS.

4. TOP OF THE ROCK FILTER BERM AT THE RISER IS EQUIVALENT TO THE 1/2" PER ACRE SEDIMENT STORAGE ELEVATION. CONTRACTOR TO ALSO PROVIDE PAINTED STAKING AT THE BOTTOM OF THE MAINTENANCE ROAD AND BOTTOM OF EAST DIVERSION SWALE INLET FOR SEDIMENT ACCUMULATION MONITORING.

5. THE DRY POND SYSTEM IS REQUIRED TO BE DEWATERED AND CLEANED OUT AS NEEDED TO MAINTAIN CAPACITY.

6. THE DESIGN DRAINAGE AREA IS 60.46 ACRES FROM THE FUTURE OVERBURDEN MANAGEMENT AREA, INCLUDING THE POND FOOTPRINT.

7. CONSTRUCTED EMBANKMENT HEIGHT SHALL NOT EXCEED 15 FEET AS MEASURED FROM THE TOP OF THE EMBANKMENT TO THE LOW POINT ON THE ORIGINAL CENTERLINE SURVEY OF THE EMBANKMENT.

8. ALL SAFETY BERMS SHALL BE CONSTRUCTED CONSISTENT WITH LHOIST DESIGN SPECIFICATIONS. PROVIDE QUANTITY OF DRAINAGE OPENINGS TO FOREBAY AS IS COMPLIANT WITH FACILITY SPECIFICATIONS.

LEGEND

- EXISTING MAJOR CONTOUR-5' INTERVAL
- EXISTING MINOR CONTOUR-1' INTERVAL
- PROPOSED MAJOR CONTOUR-5' INTERVAL
- PROPOSED MINOR CONTOUR-1' INTERVAL
- PROPOSED ROAD
- CAHABA TRACT TRAMWAY EASEMENT
- 50' SETBACK FROM EASEMENT
- SINKHOLE W/ 50' OFFSET
- RIPRAP
- SAFETY BERM

MAGNETIC

GRAPHICAL SCALE
0 35.5' 75' 150'
1" = 75'

TO MAHAN CREEK

EX. 60" DIAMETER STEEL PIPE (APPROXIMATE LOCATION)
PIPE INVERT EL. ±375.87 PROVIDED BY LHOIST

EX. FACILITY ROAD

CAHABA TRACT (HISTORICAL TRAMWAY EASEMENT)

50' SETBACK

ACCESS ROAD BASE BY LHOIST. TIE IN GRADES ARE APPROXIMATE. ROAD TO DRAIN AWAY FROM SAFETY BERM AND TOWARDS DITCH.

10' WIDE SAFETY BERM

60.0'

60-FOOT ACCESS ROAD WITH SAFETY BERM BUILT TO LHOIST SPECIFICATIONS (1 D05)

ACCESS ROAD DITCH LINING: RIPRAP (2 D03)

ACCESS ROAD DITCH TO EXTEND TO FOREBAY BOTTOM

25-FOOT PERIMETER ACCESS ROAD WITH SAFETY BERM BUILT TO LHOIST SPECIFICATIONS

20' WIDE POND MAINTENANCE ROAD

20-FOOT PERIMETER ACCESS ROAD EL. 400

NORTHWEST DIVERSION SWALE LINING: GRASS (3 D03)

RIPRAP OUTLET PROTECTION, TYP. (1 D06)

POND RISER (1 D02)

POND DISCHARGE BARREL

RIP RAP OUTLET PROTECTION, TYP. (1 D06)

POND PRIMARY DISCHARGE CHANNEL LINING: RIPRAP (4 D03)

ROCK FILTER

STORMWATER DETENTION POND
BOTTOM EL. 385

FOREBAY
BOTTOM EL. 391

FOREBAY PIPES
2- 36" HDPE
INV IN: 395.80
INV OUT: 394.36

FOREBAY PIPES
2- 36" HDPE
INV IN: 395.80
INV OUT: 394.36

DIVERSION SWALE RIPRAP DISSIPATER POOL (3 D04, 5 D03)

FOREBAY EMERGENCY SPILLWAY LINING: RIPRAP (2 D04)

POND EMERGENCY SPILLWAY RIPRAP DISSIPATER POOL (5 D03)

POND EMERGENCY SPILLWAY LINING: RIPRAP (1 D01)

GRADE BREAK 406.00'

3:1 SLOPE SEED AND STABILIZE WITH EROSION CONTROL MATTING

2:1 SLOPE SEED AND STABILIZE WITH EROSION CONTROL MATTING

EAST DIVERSION SWALE LINING: RIPRAP (3 D04)

EAST DIVERSION SWALE TIE-IN TO EXISTING DIVERSION SWALE BY LHOIST

+/- 477

EX. DIVERSION SWALE BY LHOIST

ROCK AT +/- 411
ROCK AT +/- 404
ROCK AT +/- 366
ROCK AT +/- 389
ROCK AT +/- 415

386.23'
385.56'
385.75'
95.6'
45.0'
25.0'
20.0'
45.0'

FUTURE OVERBURDEN MANAGEMENT AREA

NO.	REVISION	DATE

DESIGN BY: CCV
DRAWN BY: JGC
CHECKED BY: NWA
SCALE:
JOB NUMBER: 684454

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA ENGINEERING REG #ECA4370

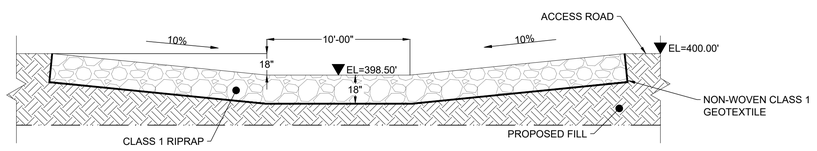
ALABAMA LICENSED PROFESSIONAL ENGINEER NO. 38320-E NORTH CAROLINA NW. ADDITION 4/10/2026

SITE PLAN
LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA
LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

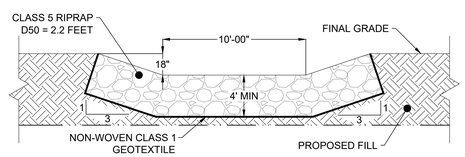
APRIL 2026

SHEET C01

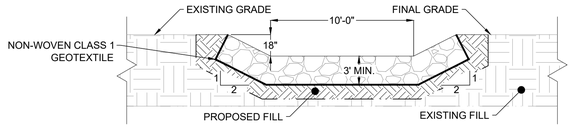
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SECTION VIEW - A



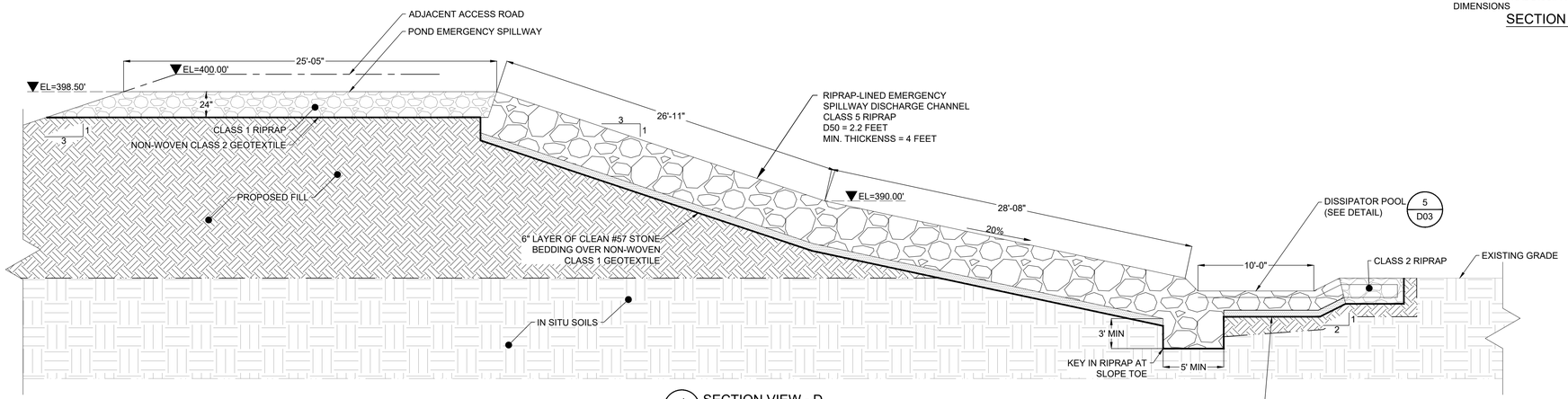
SECTION VIEW - B



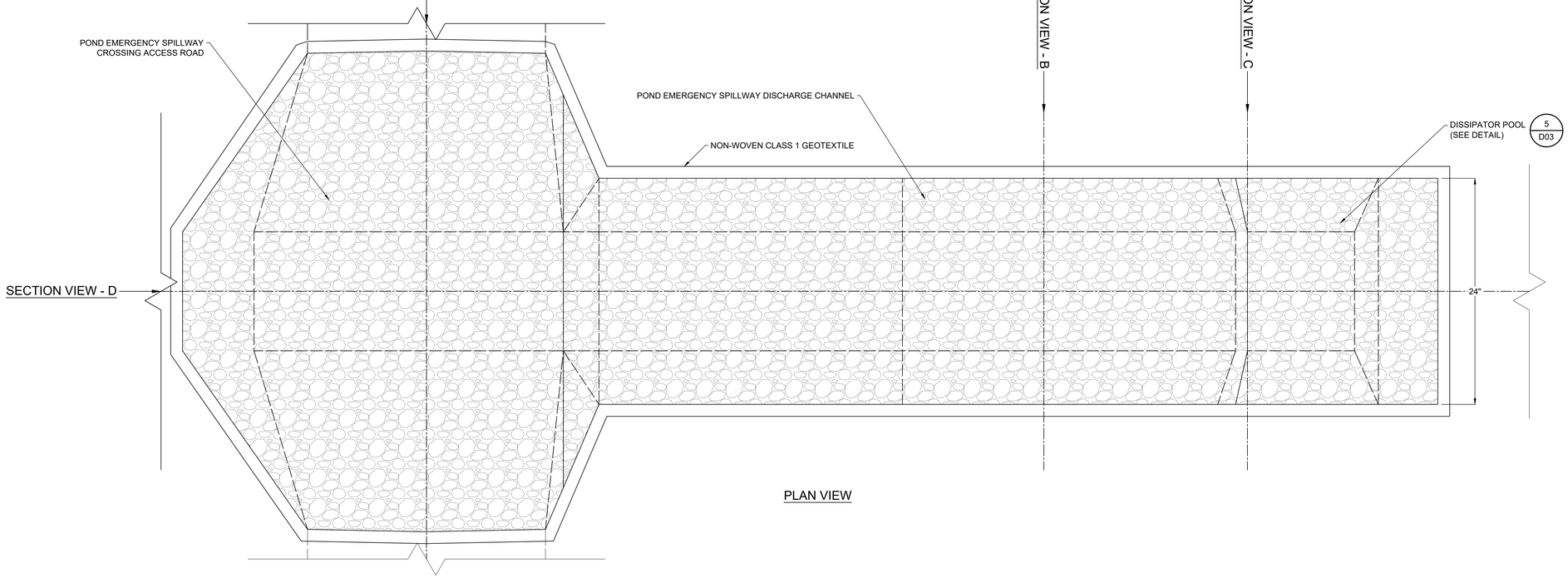
NOTE:
SEE DISSIPATER POOL - TYPICAL DETAIL FOR ADDITIONAL DISSIPATOR POOL DIMENSIONS

5 / D03

SECTION VIEW - C



1 / D01 SECTION VIEW - D



PLAN VIEW

2 / D01 EMERGENCY SPILLWAY - POND
NOT TO SCALE

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NO.	REVISION	DATE

DESIGN BY:	CCV
DRAWN BY:	JGC
CHECKED BY:	NWA
SCALE:	
JOB NUMBER	684454

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA ENGINEERING #ECAA370

ALABAMA LICENSED NO. 38320-E PROFESSIONAL ENGINEER NWA W. ADDISON JR. 4/10/2026

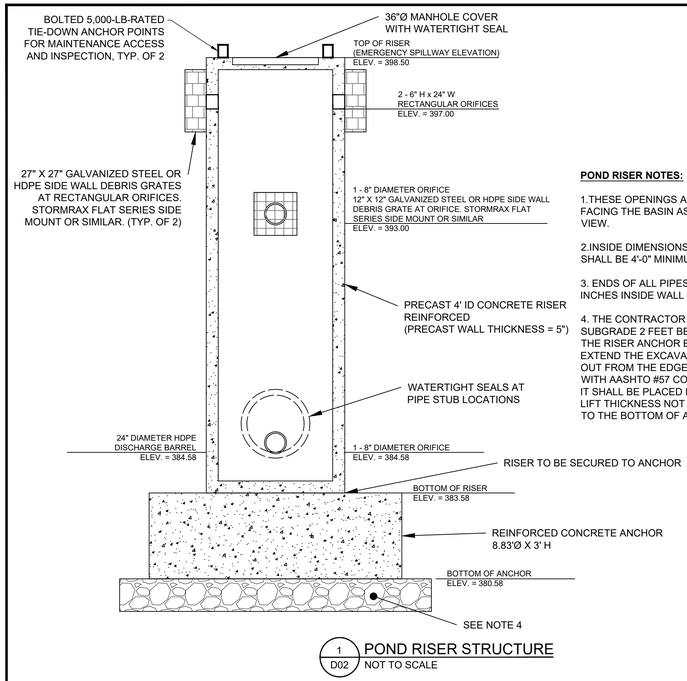
GENERAL DETAILS (1 OF 5)

LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA

LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

APRIL 2026

SHEET
D01



POND RISER NOTES:

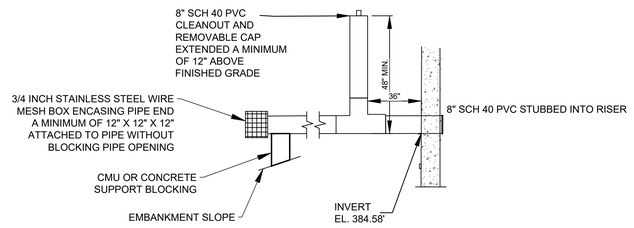
1.THESE OPENINGS ARE TO BE CONSTRUCTED FACING THE BASIN AS SHOWN IN THE PLAN VIEW.

2.INSIDE DIMENSIONS OF OUTLET STRUCTURE SHALL BE 4'-0" MINIMUM

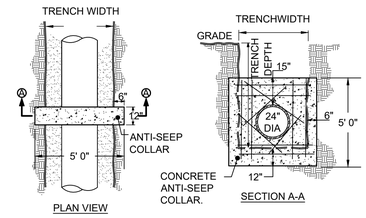
3. ENDS OF ALL PIPES SHALL EXTEND 4 INCHES INSIDE WALL OF OUTLET STRUCTURE.

4. THE CONTRACTOR SHALL EXCAVATE THE SUBGRADE 2 FEET BELOW THE BOTTOM OF THE RISER ANCHOR ELEVATION AND SHALL EXTEND THE EXCAVATION EQUAL DISTANCE OUT FROM THE EDGE OF THE RISER. BACKFILL WITH AASHTO #57 COARSE AGGREGATE AND IT SHALL BE PLACED IN HORIZONTAL LOOSE LIFT THICKNESS NOT EXCEEDING 8-INCHES UP TO THE BOTTOM OF ANCHOR ELEVATION.

1 D02 POND RISER STRUCTURE
NOT TO SCALE

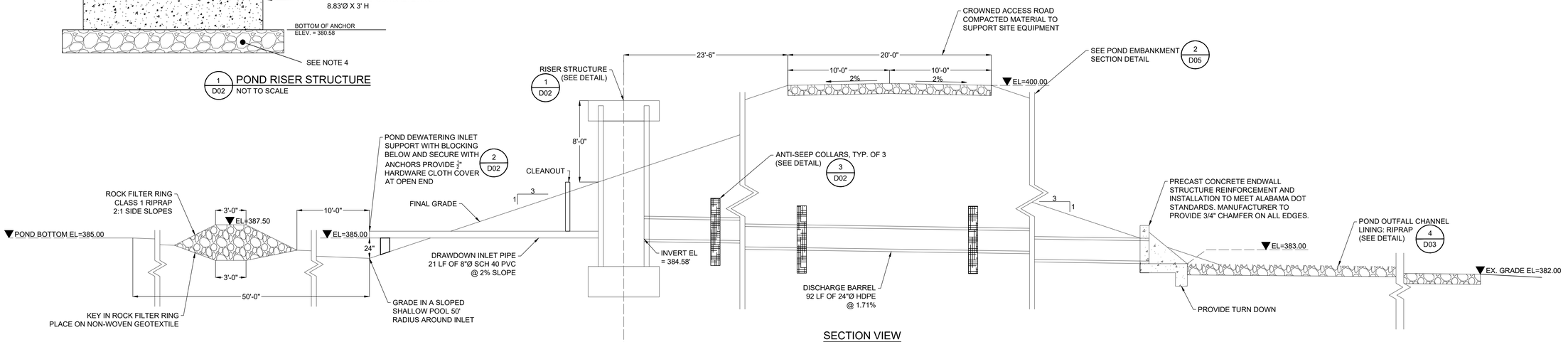


2 D02 POND DEWATERING OUTLET
NOT TO SCALE

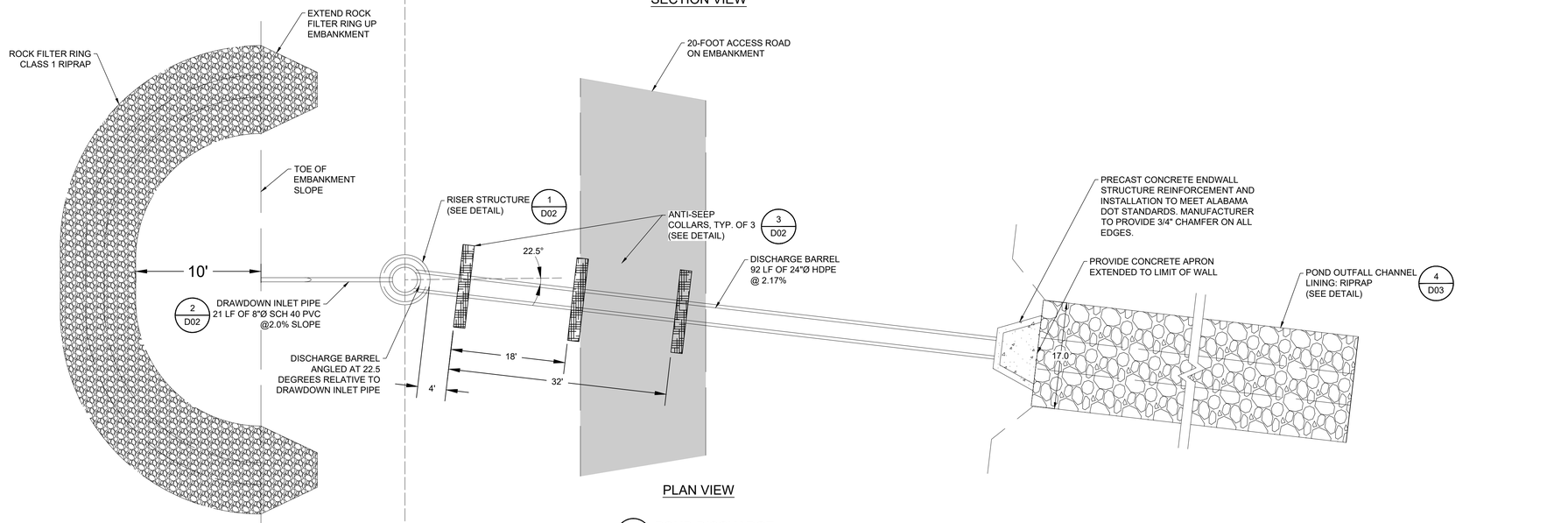


NOTES:
1. MIN. CLEARANCE BETWEEN REBAR AND OUTSIDE FACE OF COLLAR SHALL BE 3".
2. #4 BARS AT 12" O.C. EACH WAY
3. COMPACT OVER-EXCAVATION TO 95% DENSITY PER ASTM D-698.
4. COLLARS SHOULD BE PLACED A MIN. OF 2' FROM PIPE JOINTS.
5. BACKFILL SHALL BE PLACED EVENLY ON BOTH SIDES OF THE ANTI-SEEP COLLAR.
6. REINFORCED CONCRETE: fc = 4,000 PSI @ 28 DAYS.
7. EPOXY ADHESIVE TO BE APPLIED BETWEEN ALL CONCRETE SURFACES.
8. ALL ANTI-SEEP COLLARS AND THEIR CONNECTION SHOULD BE WATERTIGHT.

3 D02 ANTI-SEEP COLLAR
NOT TO SCALE



SECTION VIEW



PLAN VIEW

4 D02 POND DISCHARGE
NOT TO SCALE

NO.	REVISION	DATE

DESIGN BY:	CCV
DRAWN BY:	JGC
CHECKED BY:	NWA
SCALE:	
JOB NUMBER	484454

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA FIRM ENGINEERING #ECAA370

ALABAMA LICENSED NO. 38320-E PROFESSIONAL ENGINEER NOVITA W. ADDINGTON 4/10/2026

GENERAL DETAILS (2 OF 5)

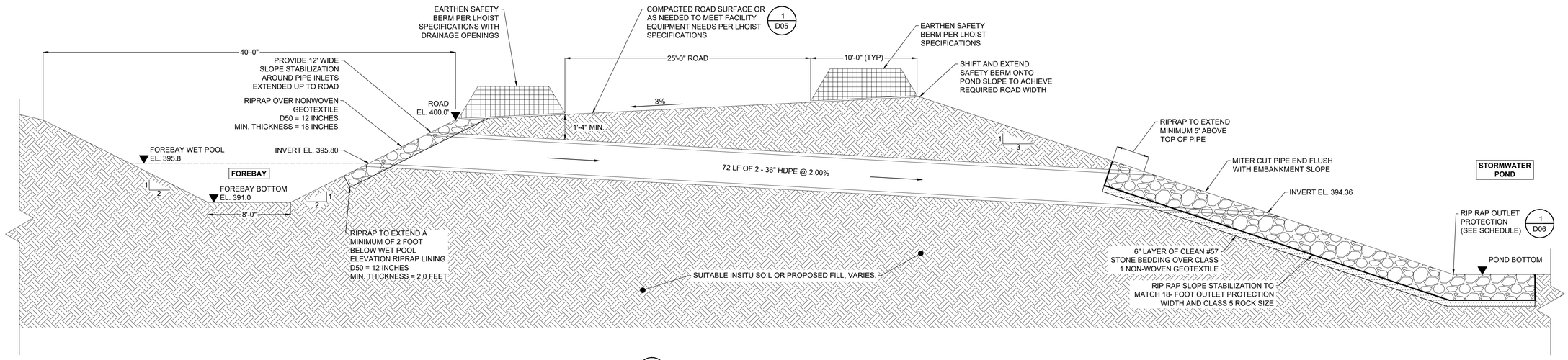
LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA

LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

APRIL 2026

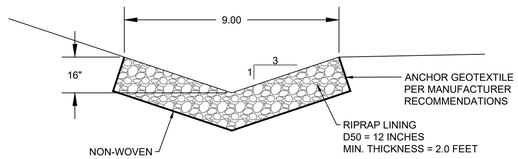
SHEET
D02

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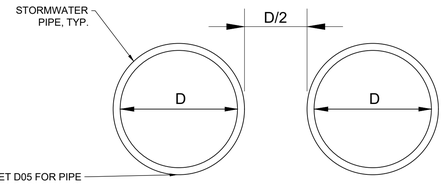


1 D03 FOREBAY AND FOREBAY PIPE DETAIL
NOT TO SCALE

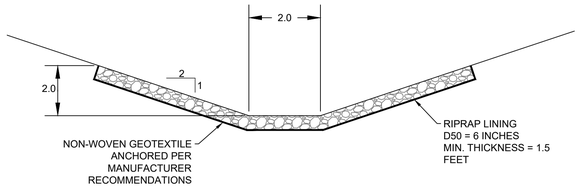
NOTES:
1. SEE EMBANKMENT NOTES ON GENERAL NOTES SHEET G02 FOR MATERIAL REQUIREMENTS.
2. SEE SHEET D05 FOR PIPE BEDDING DETAILS.
3. PIPE COVER SHALL BE A MINIMUM OF 1' 4" AT ALL POINTS ACROSS ROAD SURFACE.



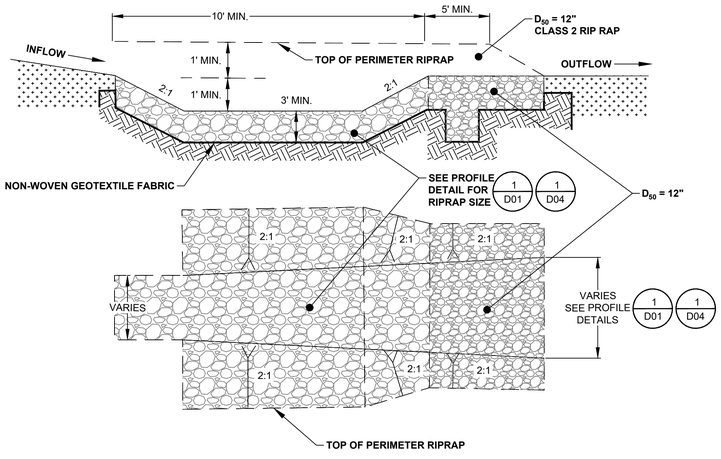
2 D03 ACCESS ROAD DITCH - SECTION
NOT TO SCALE



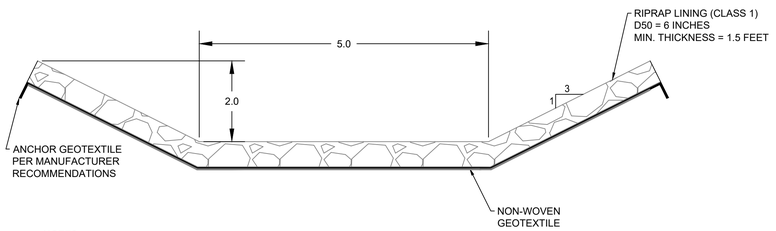
6 D03 PIPE SPACING - TYPICAL
NOT TO SCALE



3 D03 NORTHWEST DIVERSION SWALE - SECTION
NOT TO SCALE



5 D03 DISSIPATER POOL - TYPICAL
NOT TO SCALE



NOTES:
1. LINING THICKNESS: THE MINIMUM LINING THICKNESS SHOULD BE EQUAL TO THE MAXIMUM STONE SIZE OF THE SPECIFIED RIPRAP GRADATION PLUS THE THICKNESS OF ANY REQUIRED FILTER OR BEDDING.
2. LINING DURABILITY: STONE FOR RIPRAP SHOULD CONSIST OF FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE STONE SHOULD BE HARD AND ANGULAR AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING AND IT SHOULD BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE SPECIFIC GRAVITY OF THE INDIVIDUAL STONES SHOULD BE AT LEAST 2.5.
3. GEOTEXTILE: NON- WOVEN GEOTEXTILES SHOULD BE USED WHERE APPROPRIATE AS A SEPARATOR BETWEEN ROCK AND SOIL TO PREVENT MIGRATION OF SOIL PARTICLES FROM THE SUBGRADE, THROUGH THE LINING MATERIAL. THE NON-WOVEN GEOTEXTILE SHOULD MEET AT A MINIMUM THE REQUIREMENTS FOUND IN AASHTO M288FOR A CLASS 2 SEPARATION GEOTEXTILE.

4 D03 POND OUTFALL CHANNEL - SECTION
NOT TO SCALE

NO.	REVISION	DATE

DESIGN BY: CCV	DRAWN BY: JGC	CHECKED BY: NWA	SCALE:	JOB NUMBER 484454	

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA FIRM ENGINEERING #ECAA370

ALABAMA LICENSED NO. 38320-E PROFESSIONAL ENGINEER NWA NWA W. ADDISON, JR. 4/10/2026

GENERAL DETAILS (3 OF 5)

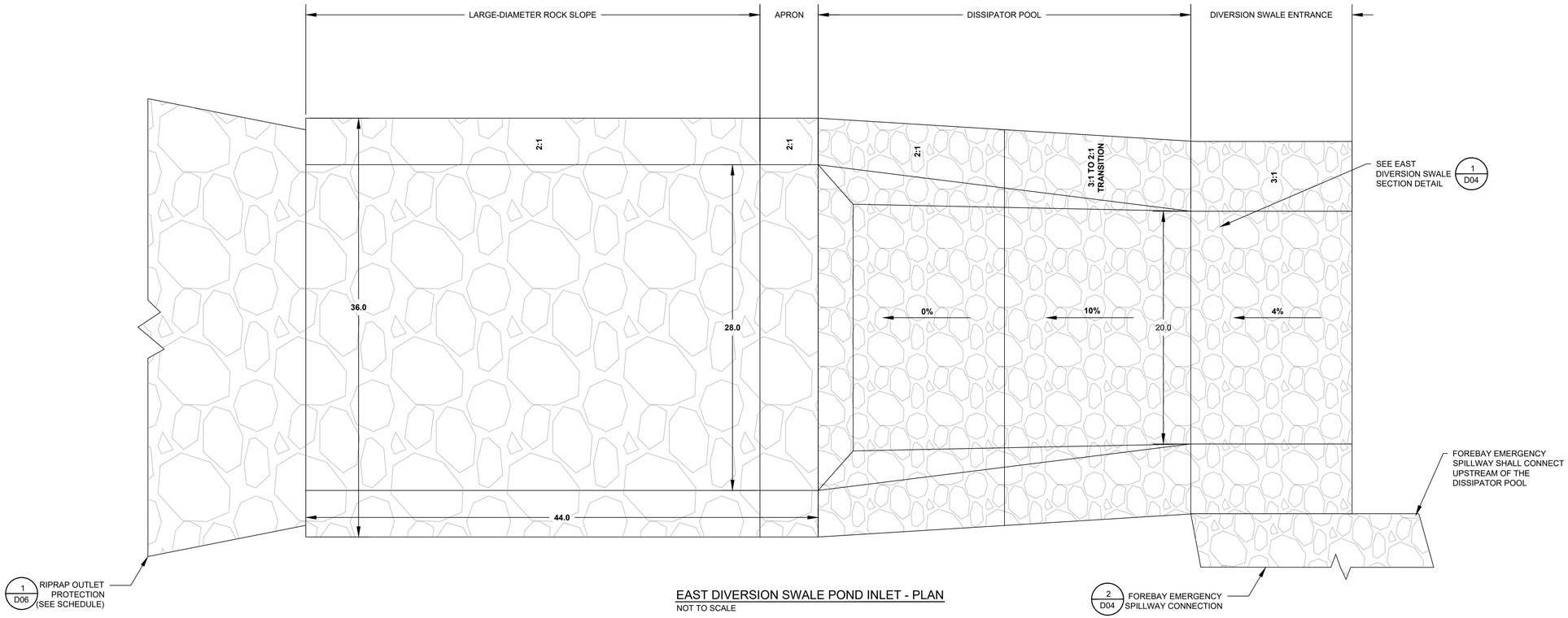
LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA

LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

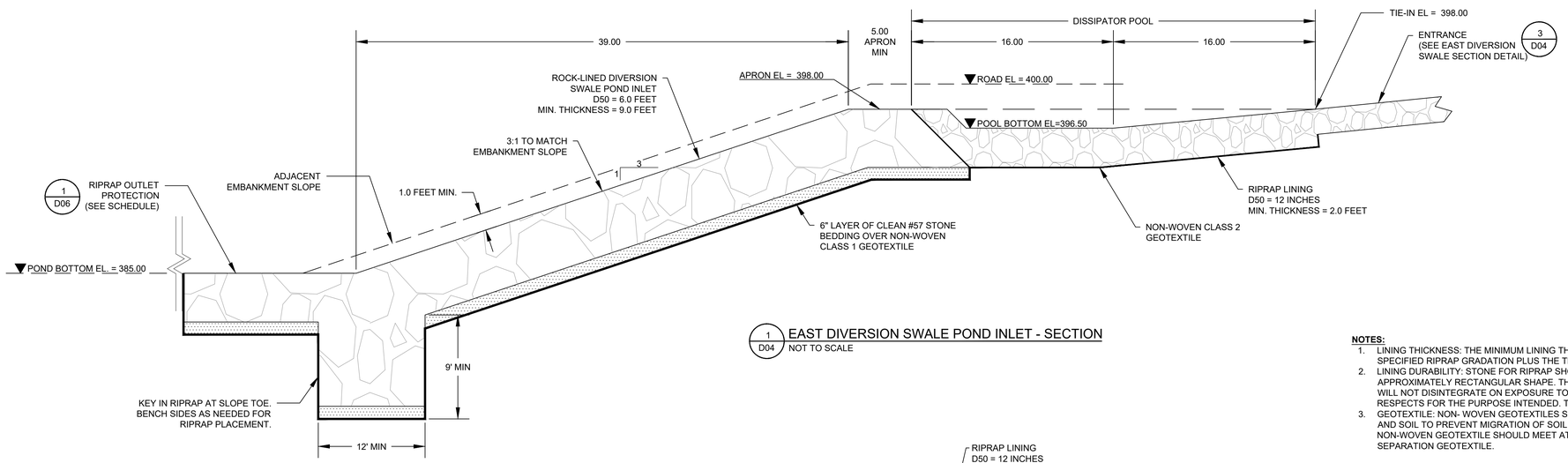
APRIL 2026

SHEET D03

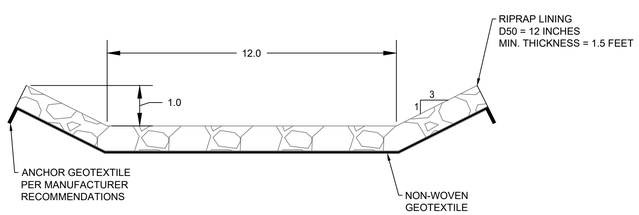
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EAST DIVERSION SWALE POND INLET - PLAN
NOT TO SCALE



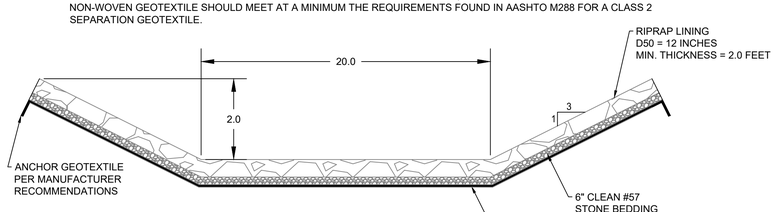
1/D04 EAST DIVERSION SWALE POND INLET - SECTION
NOT TO SCALE



2/D04 FOREBAY EMERGENCY SPILLWAY - SECTION
NOT TO SCALE

NOTES:

1. LINING THICKNESS: THE MINIMUM LINING THICKNESS SHOULD BE EQUAL TO THE MAXIMUM STONE SIZE OF THE SPECIFIED RIPRAP GRADATION PLUS THE THICKNESS OF ANY REQUIRED FILTER OR BEDDING.
2. LINING DURABILITY: STONE FOR RIPRAP SHOULD CONSIST OF FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE STONE SHOULD BE HARD AND ANGULAR AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING AND IT SHOULD BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE SPECIFIC GRAVITY OF THE INDIVIDUAL STONES SHOULD BE AT LEAST 2.5.
3. GEOTEXTILE: NON- WOVEN GEOTEXTILES SHOULD BE USED WHERE APPROPRIATE AS A SEPARATOR BETWEEN ROCK AND SOIL TO PREVENT MIGRATION OF SOIL PARTICLES FROM THE SUBGRADE, THROUGH THE LINING MATERIAL. THE NON-WOVEN GEOTEXTILE SHOULD MEET AT A MINIMUM THE REQUIREMENTS FOUND IN AASHTO M288 FOR A CLASS 2 SEPARATION GEOTEXTILE.



3/D04 EAST DIVERSION SWALE - SECTION
NOT TO SCALE

NO.	REVISION	DATE

DESIGN BY: CCV
DRAWN BY: JGC
CHECKED BY: NWA
SCALE:
JOB NUMBER: 684454

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA ENGINEERING #ECAA370

ALABAMA LICENSED NO. 38320-E PROFESSIONAL ENGINEER NWA W. ADDISON 4/10/2026

GENERAL DETAILS (4 OF 5)

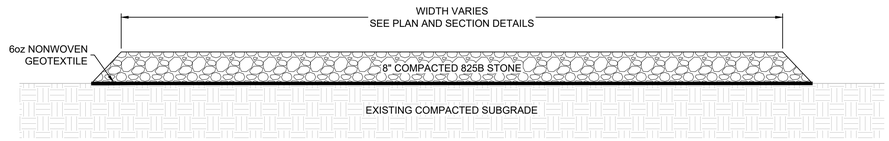
LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA

LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

APRIL 2026

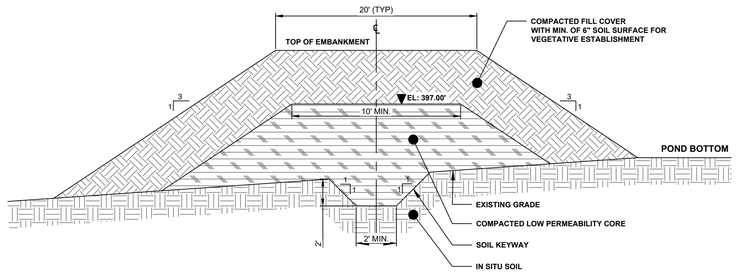
SHEET
D04

C:\USERS\CVALDEZ\DC\ACCDOCS\TRC\LHOIST-BRIARFIELD EAST POND DESIGN\PROJECT FILES\637719-CVR-NOTE-DTL.DWG - 4/10/26



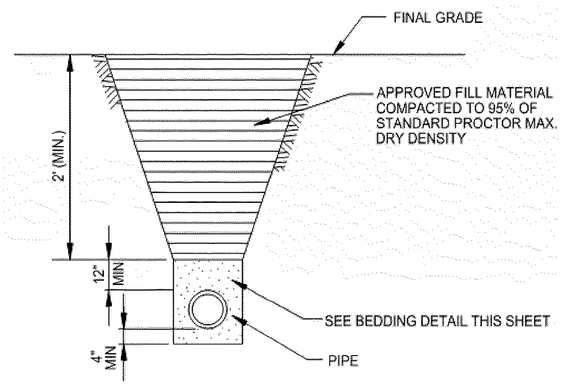
NOTE:
SUBGRADE SHALL BE COMPACTED AND SMOOTH PRIOR TO PLACEMENT OF THE GEOTEXTILE AND STONE.

1 / D05 ACCESS ROAD TYPICAL DETAIL
NOT TO SCALE

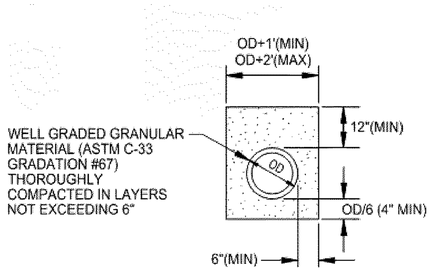


2 / D05 POND EMBANKMENT SECTION - TYPICAL
NOT TO SCALE

NOTES:
1. THE SOILS FOR THE EMBANKMENT FILL SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS: (1) BE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) AS CL,CL-ML,SC,GC OR AS OTHERWISE APPROVED BY THE ENGINEER; AND (2) BE FREE OF ALL DELETERIOUS MATERIALS (E.G LARGE OR SHARP ROCKS GREATER THAN 3 INCHES IN DIAMETER, LIMBS, ROOTS, TRASH, ETC.),UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. IF THE EMBANKMENT IS CONSTRUCTED USING GRANULAR MATERIALS, THE CONTRACTOR SHALL USE A CLAY CORE USING THE FILL MATERIAL THAT MEETS THE SPECIFICATIONS OUTLINED ABOVE. THE CLAY CORE SHOULD BE A MINIMUM OF 10 FT WIDE AT THE TOP. MAXIMUM 1H:1V SIDE SLOPES, AND SHALL BE BUILT WITH A CREST ELEVATION EQUAL TO THE MAXIMUM POOL ELEVATION OF THE POND (TOP OF RISER ELEVATION).



3 / D05 TYPICAL TRENCHING DETAIL
NOT TO SCALE



4 / D05 PIPE BEDDING DETAIL
NOT TO SCALE

NO.	REVISION	DATE

DESIGN BY:	CCV
DRAWN BY:	JGC
CHECKED BY:	NWA
SCALE:	
JOB NUMBER	684454

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA CIVIL ENGINEERING #ECA4370

ALABAMA LICENSED NO. 38320-E PROFESSIONAL ENGINEER NATHAN W. ADDISON 4/10/2026

GENERAL DETAILS (5 OF 5)

LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA

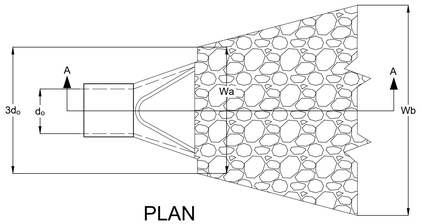
LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

APRIL 2026

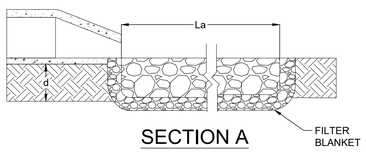
SHEET
D05

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PIPE OUTLET TO FLAT AREA NO WELL-DEFINED CHANNEL



PLAN

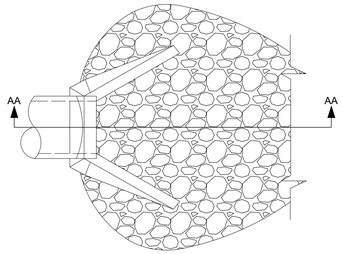


SECTION A

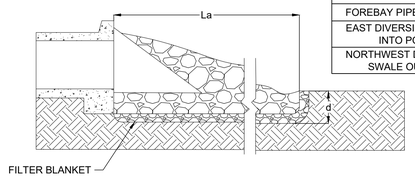
La = Length of Riprap Apron
d = Thickness of Riprap Apron

NOTES:
1. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL. LOW AREAS IN THE SUBGRADE ON UNDISTURBED SOIL MAY ALSO BE FILLED BY INCREASING THE RIPRAP THICKNESS.
2. THE RIPRAP AND GRAVEL FILTER MUST CONFORM TO THE SPECIFIED GRADING LIMITS SHOWN ON THE PLANS.
3. FILTER CLOTH, WHEN USED, MUST MEET DESIGN REQUIREMENTS, AND BE PROPERLY PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION. REPAIR ANY DAMAGE BY REMOVING THE RIPRAP AND PLACING ANOTHER PIECE OVER THE DAMAGED AREA. IF THE DAMAGE IS EXTENSIVE, REPLACE THE ENTIRE FILTER CLOTH.
4. ALL CONNECTING JOINTS SHOULD OVERLAP SO THE TOP LAYER IS ABOVE THE DOWNSTREAM LAYER A MINIMUM OF 1 FOOT.
5. THE MINIMUM THICKNESS OF THE RIPRAP SHOULD BE 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".
6. RIPRAP MAY BE FIELD STONE OR ROUGH QUARRY STONE. IT SHOULD BE HARD, ANGULAR HIGHLY WEATHER-RESISTANT AND WELL GRADED.
7. CONSTRUCT THE APRON ON ZERO GRADE WITH NO OVERFILL AT THE END. MAKE THE TOP OF THE RIPRAP AT THE DOWNSTREAM END LEVEL WITH THE RECEIVING AREA OR SLIGHTLY BELOW IT.
8. ENSURE THAT THE APRON IS PROPERLY ALIGNED WITH THE RECEIVING STREAM AND PREFERABLY STRAIGHT THROUGHOUT ITS LENGTH. IF A CURVE IS NEEDED, PLACE IN THE UPPER SECTION OF THE APRON.

PIPE OUTLET TO WELL-DEFINED CHANNEL



PLAN



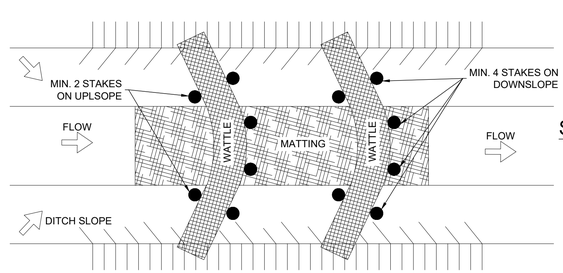
SECTION AA

La = Length of Riprap Apron
d = Thickness of Riprap Apron

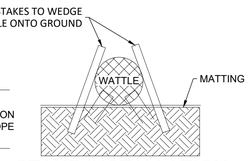
LOCATION	DIMENSIONS					
	DOT CLASS	d50 (FT)	La (FT)	d (INCH)	Wa (FT)	Wb (FT)
FOREBAY PIPE OUTLETS	5	-	26	24	18	29
EAST DIVERSION SWALE INTO POND	-	6	37	48	29	40
NORTHWEST DIVERSION SWALE OUTLET	1	-	15	15	8	18

MAINTENANCE:
1. INSPECT OUTLET STRUCTURES AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 1.0 INCH OR GREATER.
2. CHECK OUTLETS FOR EROSION AROUND OR BELOW RIPRAP AND FOR IF STONES HAVE BEEN DISLODGED. MAKE REPAIRS IMMEDIATELY TO PREVENT FURTHER DAMAGE.

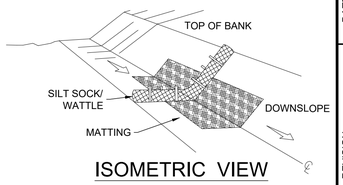
1 D06 OUTLET PROTECTION
NOT TO SCALE



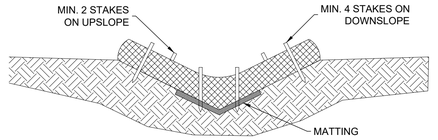
PLAN VIEW



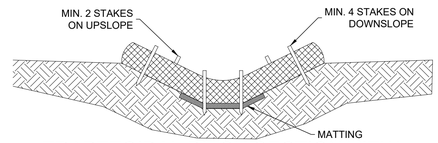
STAKE INSTALLATION CROSS-SECTION



ISOMETRIC VIEW



V- DITCH SECTION VIEW



TRAPEZOIDAL DITCH SECTION VIEW

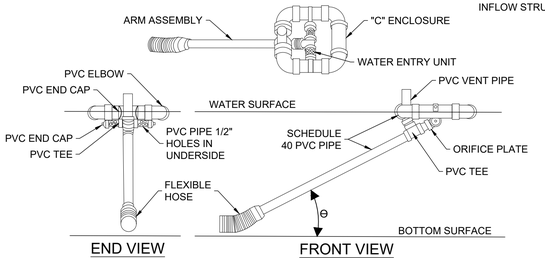
Spacing Between Socks / Wattles (Feet)		
Channel Slope (%)	8-inch Diameter Sock	12-inch Diameter Sock
1	67	100
2	33	50
3	22	33
4	17	25
5	13	20

NOTES:
1. OTHER MATERIALS PROVIDING EQUIVALENT PROTECTION AGAINST EROSIVE VELOCITIES MAY BE SUBSTITUTED FOR COMPOST USE IN SILT SOCKS OR WATTLES.
2. FILL SILT SOCK/WATTLE NETTING UNIFORMLY TO THE DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. USE 24 INCH LONG WOODEN STAKES WITH A 2 INCH X 2 INCH NOMINAL CROSS SECTION.
4. INSTALL SILT SOCK/WATTLE(S) TO A HEIGHT ON SLOPE SO FLOW WILL NOT WASH AROUND SILT SOCK/WATTLE AND SCOUR SLOPES, OR AS DIRECTED.
5. INSTALL A MINIMUM OF TWO UP-SLOPE STAKES AND FOUR DOWN-SLOPE STAKES AT AN ANGLE TO WEDGE SILT SOCK/WATTLE TO GROUND AT BOTTOM DITCH. USE STAPLES TO SECURE SILT SOCK/WATTLE TO THE GROUND TO PREVENT UNDERMINING.
6. THE USE OF FLOCCULANTS SUCH AS POLYACRYLAMIDE (PAM) IS RECOMMENDED. APPLY FLOCCULANTS ON TOP OF SOCK/WATTLE AND TO MATTING ON EITHER SIDE OF SOCK/WATTLE ACCORDING TO MANUFACTURER RECOMMENDED RATES. REAPPLY AFTER EACH 1.0 INCH RAINFALL.

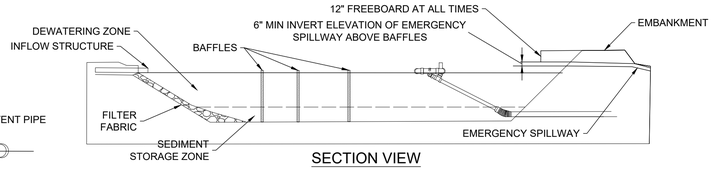
MAINTENANCE:
1. INSPECT ALL MEASURES WEEKLY AND AFTER EACH RAINFALL OF 1.0 INCH OR GREATER. REMOVE ACCUMULATED SEDIMENT AND ANY DEBRIS.
2. SILT SOCK/WATTLE(S) MUST BE REPLACED IF CLOGGED OR TORN.
3. IF PONDING BECOMES EXCESSIVE, THE SILT SOCK/WATTLE MAY NEED TO BE REPLACED WITH A LARGER DIAMETER OR A DIFFERENT MEASURE.
4. REINSTALL IF DAMAGED OR DISLODGED.
5. SILT SOCKS/WATTLES SHALL BE INSPECTED UNTIL LAND DISTURBANCE IS COMPETE AND THE AREA ABOVE THE MEASURE IS PERMANENTLY STABILIZED.

SILT SOCK/WATTLE FOR CHECK DAM
NOT TO SCALE

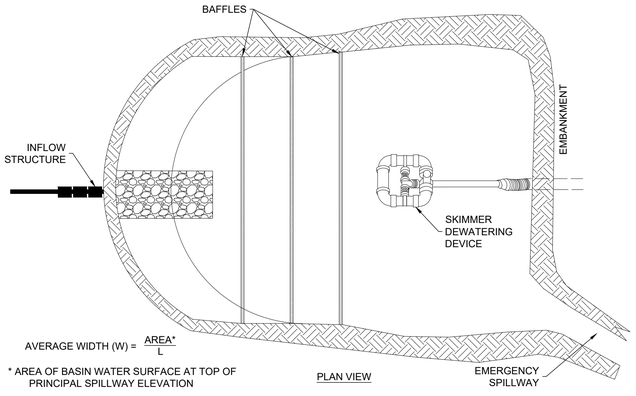
PERSPECTIVE VIEW



END VIEW FRONT VIEW



SECTION VIEW



PLAN VIEW

NOTES:
1. CLEAR, GRUB AND STRIP THE AREA UNDER THE EMBANKMENT OF ALL VEGETATION AND ROOT MAT. REMOVE ALL SURFACE SOIL CONTAINING HIGH AMOUNTS OF ORGANIC MATTER AND STOCKPILE OR DISPOSE OF IT PROPERLY. HAUL ALL OBJECTIONABLE MATERIAL TO THE DESIGNATED DISPOSAL AREA. PLACE TEMPORARY SEDIMENT CONTROL MEASURES BELOW BASIN AS NEEDED.
2. PLACE THE FILL IN LIFTS NOT TO EXCEED 9 INCHES, AND MACHINE COMPACT IT. OVER FILL THE EMBANKMENT 6 INCHES TO ALLOW FOR SETTLEMENT.
3. PLACE THE BARREL ON A FIRM, SMOOTH FOUNDATION OF IMPERVIOUS SOIL. DO NOT USE PERVIOUS MATERIAL SUCH AS SAND, GRAVEL, OR CRUSHED STONE AS BACKFILL AROUND THE PIPE. PLACE THE FILL AROUND THE PIPE SPILLWAY IN 4-INCH LAYERS AND COMPACT IT UNDER AND AROUND THE PIPE TO AT LEAST THE SAME DENSITY AS THE ADJACENT EMBANKMENT.
4. PLACE A MINIMUM DEPTH OF 2 FEET COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING WITH CONSTRUCTION EQUIPMENT.
5. ENSURE THAT THE FLOW LENGTH TO BASIN WIDTH RATIO IS AT LEAST 2:1 TO IMPROVE TRAPPING EFFICIENCY. LENGTH IS MEASURED AT THE ELEVATION OF THE PRINCIPAL SPILLWAY.
6. ASSEMBLE THE SKIMMER FOLLOWING MANUFACTURERS INSTRUCTIONS OR AS DESIGNED AND LAY ON THE BOTTOM OF THE BASIN WITH THE FLEXIBLE JOINT AT THE INLET OF THE BARREL PIPE. ATTACH THE FLEXIBLE JOINT TO THE BARREL PIPE AND POSITION THE SKIMMER OVER THE EXCAVATED PIT OR SUPPORT. BE SURE TO ATTACH A ROPE AND ANCHOR IT TO THE SIDE OF THE BASIN.THIS WILL BE USED TO PULL THE SKIMMER TO THE SIDE FOR MAINTENANCE.
7. INSTALL THE SPILLWAY IN UNDISTURBED SOIL TO THE GREATEST EXTENT POSSIBLE. THE SPILLWAY SHOULD BE LINED WITH LAMINATED PLASTIC OR IMPERMEABLE GEOTEXTILE FABRIC. THE FABRIC MUST BE WIDE AND LONG ENOUGH TO COVER THE BOTTOM AND SIDES AND EXTEND ONTO THE TOP OF THE DAM FOR ANCHORING IN A TRENCH. THE EDGES MAY BE SECURED WITH 8-INCH STAPLES OR PINS.
8. FILTER FABRIC MUST BE LONG ENOUGH TO EXTEND DOWN THE SLOPE AND EXIT ONTO STABLE GROUND. THE WIDTH OF THE FABRIC MUST BE ONE PIECE, NOT JOINED OR SPLICED; OTHERWISE WATER CAN GET UNDER THE FABRIC.
9. THE UPPER SECTION(S) SHOULD OVERLAP THE LOWER SECTION(S) SO THAT WATER CANNOT FLOW UNDER THE FABRIC. SECURE THE UPPER EDGE AND SIDES OF THE FABRIC IN A TRENCH WITH STAPLES OR PINS.
10. DISCHARGE WATER INTO THE BASIN IN A MANNER TO PREVENT EROSION. USE TEMPORARY SLOPE DRAINS OR DIVERSIONS WITH OUTLET PROTECTION TO DIVERT SEDIMENT-LADEN WATER TO THE UPPER END OF THE POOL AREA TO IMPROVE BASIN TRAP EFFICIENCY.
11. STABILIZE THE EMERGENCY SPILLWAY EMBANKMENT AND ALL OTHER DISTURBED AREAS ABOVE THE CREST OF THE PRINCIPAL SPILLWAY IMMEDIATELY AFTER CONSTRUCTION.

MAINTENANCE:
1. INSPECT ALL MEASURES AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 1.0 INCH OR GREATER. MAKE NECESSARY REPAIRS IMMEDIATELY.
2. REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT ACCUMULATES TO ONE-HALF THE HEIGHT OF THE FIRST BAFFLE. PULL THE SKIMMER TO ONE SIDE SO THAT THE SEDIMENT UNDERNEATH CAN BE EXCAVATED. EXCAVATE THE SEDIMENT FROM THE ENTIRE BASIN, NOT JUST AROUND THE SKIMMER OR WITHIN THE FIRST CELL.
3. MAKE SURE ANY VEGETATION GROWING IN THE BOTTOM OF THE BASIN DOES NOT HOLD DOWN THE SKIMMER.
4. REPAIR BAFFLES IF THEY ARE DAMAGED. RE-ANCHOR THE BAFFLES IF WATER IS FLOWING UNDERNEATH OR AROUND THEM.
5. ENSURE THE SKIMMER IS NOT CLOGGED WITH TRASH OR DEBRIS.
6. IF THE SKIMMER ARM OR BARREL PIPE IS CLOGGED, REMOVE ORIFICE AND CLEAR DEBRIS WITH A PLUMBER'S SNAKE OR BY FLUSHING WITH CLEAN WATER. BE SURE TO REPLACE THE ORIFICE BEFORE REPOSITIONING THE SKIMMER.
7. CHECK FABRIC LINED SPILLWAY FOR DAMAGE AND MAKE ANY REQUIRED REPAIRS WITH FABRIC THAT SPANS THE FULL WIDTH OF THE SPILLWAY. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT.

SKIMMER SEDIMENT BASIN
NOT TO SCALE

NO.	REVISION	DATE

DESIGN BY: CCV
DRAWN BY: JGC
CHECKED BY: NWA
SCALE:
JOB NUMBER: 684454

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA FIRM ENGINEERING #EOA370

ALABAMA LICENSED PROFESSIONAL ENGINEER NO. 38320-E NOVEMBER 7, 2025 NOVIA W. ADDISON 4/10/2026

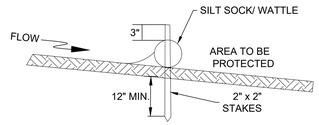
ESC DETAILS (1 OF 2)

LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA
LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

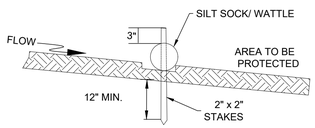
APRIL 2026

SHEET
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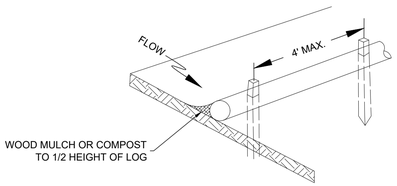
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SECTION

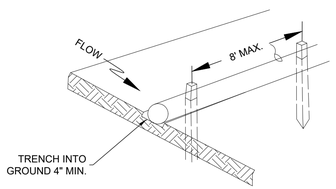


SECTION



UNTRENCHED INSTALLATION

ISOMETRIC VIEW

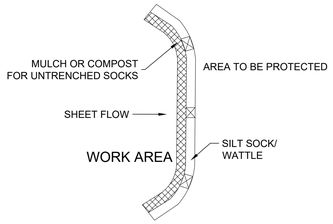


ENTRENCHED INSTALLATION*

*THIS APPLICATION MAY NOT BE USED WITH COMPOST SOCKS SMALLER THAN 12".

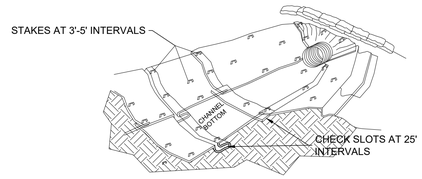
NOTE:
1. OTHER MATERIALS PROVIDING EQUIVALENT PROTECTION AGAINST EROSIVE VELOCITIES MAY BE SUBSTITUTED FOR COMPOST USE IN SILT SOCKS OR WATTLES.
2. FILL SILT SOCK/WATTLE NETTING UNIFORMLY WITH COMPOST TO THE DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. SILT SOCK/WATTLE(S) SHOULD BE INSTALLED PARALLEL TO AND A MINIMUM OF 10 FEET BEYOND THE TOE OF A GRADED SLOPE. SILT SOCK/WATTLE(S) LOCATED BELOW FLAT AREAS SHOULD BE LOCATED AT THE EDGE OF THE LAND DISTURBANCE. THE ENDS OF THE SILT SOCK/WATTLE(S) SHOULD BE TURNED SLIGHTLY UPSLOPE TO PREVENT RUNOFF FROM GOING AROUND THE END OF THE SILT SOCK/WATTLE(S).
4. OAK OR OTHER DURABLE HARDWOOD STAKES WITH A 2 INCH X 2 INCH CROSS SECTION SHOULD BE DRIVEN VERTICALLY PLUMB, THROUGH THE CENTER OF THE SILT SOCK/WATTLE. STAKES SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 4 FEET OR A MAXIMUM INTERVAL OF 8 FEET IF THE SILT SOCK/WATTLE IS PLACED IN A 4 INCH TRENCH.
5. IN THE EVENT STAKING IS NOT POSSIBLE (IE. WHEN SOCKS/WATTLES ARE USED ON PAVEMENT) HEAVY CONCRETE BLOCKS SHALL BE USED BEHIND THE SILT SOCK/WATTLE TO HOLD IT IN PLACE DURING RUNOFF EVENTS.

MAINTENANCE:
1. INSPECT ALL MEASURES AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 1.0 INCH OR GREATER.
2. REMOVE ACCUMULATED SEDIMENT AND ANY DEBRIS AS NEEDED TO ALLOW FOR ADEQUATE FLOW.
3. SILT SOCK/WATTLE MUST BE REPLACED IF CLOGGED OR TORN.
4. IF PONDING BECOMES EXCESSIVE, THE SILT SOCK/WATTLE MAY NEED TO BE REPLACED WITH A LARGER DIAMETER OR A DIFFERENT MEASURE.
5. REINSTALL IF DAMAGED OR DISLODGED.
6. SILT SOCKS/WATTLES SHALL BE INSPECTED UNTIL LAND DISTURBANCE IS COMPETE AND THE AREA ABOVE THE MEASURE HAS BEEN PERMANENTLY STABILIZED.



COMPOST SOCK INITIAL FLOW RATES						
Compost Sock Design Diameter	8 Inch (200 nm)	12 Inch (300 nm)	18 Inch (450 nm)	24 Inch (600 nm)	32 Inch (750 nm)
Maximum Slope Length (<2%)	600 Feet (183 m)	750 Feet (229 m)	1,000 Feet (305 m)	1,300 Feet (396 m)	1,650 Feet (500 m)
Hydraulic Flow Through Rate	7.5 gpm/ft (94 l/m/m)	11.3 gpm/ft (141 l/m/m)	15.0 gpm/ft (188 l/m/m)	22.5 gpm/ft (281 l/m/m)	30.0 gpm/ft (374 l/m/m)

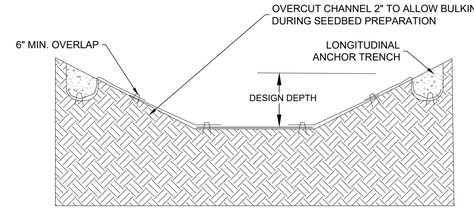
SILT SOCK/WATTLE FOR PERIMETER AND INLET PROTECTION
NOT TO SCALE

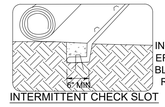




INITIAL CHANNEL ANCHOR TRENCH

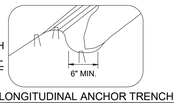
TERMINAL SLOPE AND CHANNEL ANCHOR TRENCH



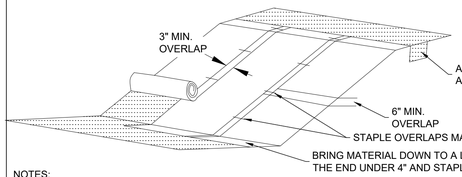


INTERMITTENT CHECK SLOT

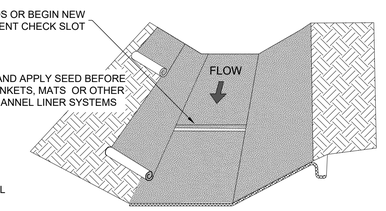
TYPICAL INSTALLATION WITH EROSION CONTROL BLANKETS OR TURF REINFORCEMENT MATS



LONGITUDINAL ANCHOR TRENCH



NOTES:
1. LIME, FERTILIZE AND SEED BEFORE INSTALLATION. PLANTING OF SHRUBS, TREES, ETC. SHOULD OCCUR AFTER INSTALLATION.
2. SLOPE SURFACE SHALL BE SMOOTH BEFORE PLACEMENT FOR PROPER SOIL CONTACT.
3. DESIGN VELOCITIES EXCEEDING 2 FEET/SECOND REQUIRE TEMPORARY BLANKETS, MATS OR SIMILAR LINERS TO PROTECT SEED AND SOIL UNTIL VEGETATION BECOMES ESTABLISHED.
4. TERMINAL ANCHOR TRENCHES ARE REQUIRED AT RECP ENDS AND INTERMITTENT CHECK SLOTS MUST BE CONSTRUCTED ACROSS CHANNELS AT 25 FOOT INTERVALS.
5. TERMINAL ANCHOR TRENCHES SHOULD BE A MINIMUM OF 12 INCHES IN DEPTH AND 6 INCHES IN WIDTH. INTERMITTENT CHECK SLOTS SHOULD BE 6 INCHES DEEP AND 6 INCHES WIDE.
6. FOR INSTALLATION ON A SLOPE, PLACE RECP 2-3 FEET OVER THE TOP OF THE SLOPE AND INTO AN EXCAVATED END TRENCH MEASURING APPROXIMATELY 12 INCHES DEEP BY 6 INCHES WIDE. PIN THE RECP AT 1 FOOT INTERVALS ALONG THE BOTTOM OF THE TRENCH, BACKFILL AND COMPACT. UNROLL THE RECP DOWN THE SLOPE MAINTAINING DIRECT CONTACT BETWEEN THE SOIL AND RECP. SECURE USING STAPLES OR PINS IN A 3 FOOT CENTER-TO-CENTER PATTERN.
7. 11 GAUGE, AT LEAST 6 INCH BY 1 INCH STAPLES OR 12 INCH MINIMUM LENGTH WOODEN STAKES ARE RECOMMENDED FOR ANCHORING.
8. GRASS-LINED CHANNELS WITH DESIGN VELOCITIES EXCEEDING 6 FEET/SECOND SHOULD INCLUDE TURF REINFORCEMENT MATS
9. CHECK SLOTS TO BE CONSTRUCTED PER MANUFACTURERS SPECIFICATIONS.
10. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATION.
11. IF THERE IS A BERM AT THE TOP OF SLOPE, ANCHOR UP-SLOPE OF THE BERM.
12. DO NOT STRETCH BLANKETS/MATTING TIGHT, ALLOW THE ROLLS TO CONFORM TO ANY IRREGULARITIES.
13. FOR SLOPES LESS THAN 3H:1V, ROLLS MAY BE PLACED IN HORIZONTAL STRIPS.

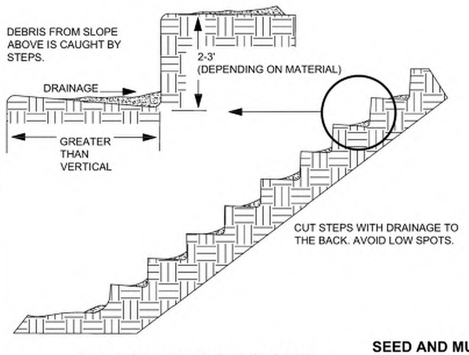


MAINTENANCE:
1. INSPECT ROLLED EROSION CONTROL PRODUCTS AT LEAST WEEKLY AND AFTER EACH RAINFALL OF 1.0 INCH OR GREATER; REPAIR IMMEDIATELY.
2. GOOD CONTACT WITH THE GROUND MUST BE MAINTAINED, AND EROSION MUST NOT OCCUR BENEATH THE RECP.
3. ANY AREAS OF THE RECP THAT ARE DAMAGED OR NOT IN CLOSE CONTACT WITH THE GROUND SHALL BE REPAIRED AND STAPLED.
4. IF EROSION OCCURS DUE TO POORLY CONTROLLED DRAINAGE, THE PROBLEM SHALL BE FIXED AND THE ERODED AREA PROTECTED.
5. MONITOR AND REPAIR THE RECP AS NECESSARY UNTIL GROUND COVER IS ESTABLISHED.

ROLLED EROSION CONTROL PRODUCTS

EFFECTIVE DATE: 9/1/2023
IN ACCORDANCE WITH THE 2013 DESIGN MANUAL UPDATES

GROOVING SLOPES



STAIR STEPPING CUT SLOPES

CUT SLOPE ROUGHENING FOR AREAS NOT TO BE MOWED:
1. Stair-step grade or groove cut slopes with a gradient steeper than 3:1.
2. Use stair-step grading on any erodible material soft enough to be ripped with a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair-stepping.
3. Make the vertical cut distance less than the horizontal distance, and slightly slope the horizontal position of the "step" in toward the vertical wall.
4. Do not make individual vertical cuts more than 2 feet in soft materials or more than 3 feet in rocky materials.
5. Grooving uses machinery to create a series of ridges and depressions that run across the slope (on the contour).
6. Groove using any appropriate implement that can be safely operated on the slope. Such as disks, tillers, spring harrows, or the teeth on a front-end loader bucket. Do not make such grooves less than 3 inches deep nor more than 15 inches apart.

FILL SLOPE ROUGHENING FOR AREAS NOT TO BE MOWED:
1. Place fill slopes with a gradient steeper than 3:1 in lifts not to exceed 9 inches, and make sure each lift is properly compacted. Ensure that the face of the slope consists of loose, uncompacted fill 4 to 6 inches deep. Use grooving, as described above, to roughen the face of the slopes, if necessary.
2. Do not blade or scrape the final slope face.

CUTS, FILLS, AND GRADED AREAS THAT WILL BE MOWED:
1. Make mowed slopes **no steeper than 3:1**
2. Roughen these areas to shallow grooves by normal tilling, disking, harrowing, or use of a cultipacker-seeder. Make the final pass of any such tillage implement on the contour.
3. Make grooves, formed by such implements, close together (less than 10 inches) and not less than 1 inch deep.
4. Excessive roughness is undesirable where mowing is planned.

ROUGHENING WITH TRACKED MACHINERY:
1. Limit roughening with tracked machinery to sandy soils to avoid undue compaction of the soil surface. Tracking is generally not as effective as the other roughening methods described.
2. Operate tracked machinery up and down the slope to leave horizontal depressions in the soil. Do not back-blade during the final grading operation.

SEED AND MULCH ROUGHENED AREAS IMMEDIATELY TO OBTAIN OPTIMUM SEED GERMINATION AND GROWTH.

SURFACE ROUGHENING
NOT TO SCALE

NO.	REVISION	DATE

DESIGN BY:	DRAWN BY:	CHECKED BY:	SCALE:	JOB NUMBER
CCV	JGC	NWA		684454

TRC ENVIRONMENTAL CORPORATION
50 INTERNATIONAL DRIVE, PATEWOOD PLAZA THREE, SUITE 150
GREENVILLE SC, 29615
ALABAMA FIRM ENGINEERING #ECAA370

ALABAMA LICENSED NO. 38320-E PROFESSIONAL ENGINEER NOVEMBER W. ADDISON 4/10/2026

ESC DETAILS (2 OF 2)

LHOIST-BRIERFIELD OVERBURDEN MANAGEMENT AREA

LHOIST NORTH AMERICA
BIBB COUNTY, ALABAMA

APRIL 2026

SHEET
D07

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Appendix B
Specifications for Sedimentation Controls

Guidelines for Sedimentation Controls

1. Pollution abatement facilities should be designed and constructed so as to control both spoil runoff and pit drainage.
2. Pit drainage and spoil runoff should be diverted through the sedimentation basin by means of diversion ditches or normal drainage patterns. In cases where it is not practical to use this system, natural vegetation, vegetative windows, hay berms, earthen berms, or other equally effective systems may be utilized.
3. The sediment basin should have a minimum capacity to store 0.25 acre feet/acre of disturbed area in the drainage area. The basin shall be cleaned out when the sediment accumulation approaches 60 percent of the design capacity. All trees, boulders, and other obstructions must be removed from the basin during the initial construction phase to facilitate clean-out.
4. The dam for the sediment basin should be designed and built using the following as minimum criteria:
    - The top of the dam should be no less than 12 feet wide.
    - The slope on either side of the dam should be no steeper than 3:1.
    - The dam should be constructed with a cutoff trench at least 8 feet wide. The side slopes should be no less than 1:1. The cutoff trench shall be located on the dam centerline and be of sufficient depth (not less than 2 feet) to extend into a relatively impervious layer of soil or to bedrock and shall be filled with a relatively impervious material from which the core of the dam shall be constructed.
    - The entire embankment and cutoff trench shall be compacted to 95 percent density, based on standard Proctor as outlined in American Society for Testing and Materials (ASTM).
    - The material placed in the embankment should be free of sod, roots, stones over 6 inches in diameter and other objectionable materials. The fill material should be placed and spread over the entire fill area, starting at the lowest point of the foundation, in layers not to exceed 12 inches in thickness. Construction of the fill should be undertaken only at such times that the moisture content of the fill material will permit satisfactory compaction in accordance with the specifications provided above.
    - The spill pipe should be sized to adequately carry the expected peak flow from a one-year frequency storm.
    - The spill pipes should be made of a material capable of withstanding chemical reactions caused by the quality of the water being discharged.
    - The spill pipe should be equipped with a device, or constructed, such as to ensure that subsurface withdrawal is accomplished in order to ensure that no floating solids are discharged.

- The spill pipes should be equipped with anti-seep collars at each joint which radiate at least 2 feet from the pipe in all directions. The collars and their connections to the pipe should be watertight.
- A splash pad or riprap should be placed under the discharge of the spill pipe, or the location of the discharge set, so as to ensure that the discharge does not erode the dam.
- The emergency spillway should be designed to safely carry the expected peak flow from a 25-year, 24-hour storm or shorter duration. When designing spillways that are in the drainage course of a public water supply, 50 years, 24 hour or shorter duration data should be used. The slope of the entrance and exit of the emergency overflow should not exceed 3 percent. The emergency overflow should be constructed with a control section at least 20 feet long. The side slopes of the emergency overflow should not be steeper than 2:1. The emergency overflow should be riprapped or concreted in order to prevent erosion.
- There should be a minimum of 1.5 feet of freeboard between the normal overflow and the emergency overflow. There should be at least 1.5 feet of freeboard between the maximum design flow elevation in the emergency overflow and the top of the dam.
- If basins are built in series, then the emergency overflow for each should be designed to accommodate the entire drainage area.
- The dam should be sowed with both perennial and annual grasses in order to ensure erosion is minimized. Hay bales or riprap should be placed at the toe of the dam immediately upon completion of construction.

5. Areas in which surface mined minerals are stockpiled, and areas in which refuse resulting from any type of mining operation is or has been deposited, should be provided with diversion ditches or other appropriate methods of interception surface water in such a way as to minimize the possibility of sediment laden, acidic or toxic waters from such areas, being deposited in streams.

Appendix C
Specifications for Haul Roads

Specifications for the Construction, Maintenance, and Reclamation of Haul Roads

1. In order to minimize sediment from haul roads:
    - No sustained grade should exceed 10 percent.
    - The maximum grade should not exceed 15 percent for 300 feet.
    - There should be no more than 300 feet of 15 percent maximum grade for each 1,000 feet of road constructed.
    - The haul road, whenever possible, should be located so that runoff from the road enters a sediment basin constructed for the mining operation.
    - Outer slopes for haul roads out of the permitted area should not be steeper than 2:1 and should be seeded with annual and perennial grasses with at least 80 percent cover to avoid erosion. Where this is not possible, basins, hay filters or diversion ditches should be cut, built or placed to intercept runoff.

Stream crossings should be avoided; however, any crossings which are necessary and which meet technical staff approval should be detailed with drawings and any other pertinent data and submitted to ADEM for approval prior to construction.