

LANCE R. LEFLEUR
DIRECTOR



ROBERT J. BENTLEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov

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Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

JUL 23 2015

Steven D. Smith
CEO
MS Industries II, LLC
2489 County Road 236
Town Creek, AL 35672

RE: Draft Permit
Masterson Site
NPDES Permit No. AL0082759
Lawrence County (079)

Dear Mr. Smith:

Transmitted herein is a draft of the above referenced permit. Please review the enclosed draft permit carefully. 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 issue the above referenced permit, ADEM Admin. Code r. 335-6-6-.21 requires a public notice of the draft permit in a local newspaper followed by a period of at least 30 days for public comment before the permit can be reissued.

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.

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

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



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

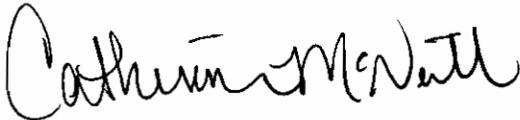
Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

Please be aware that, if you are not already participating in the Department's web-based electronic environmental (E2) reporting system for submittal of discharge monitoring reports (DMRs), your permit will require you to apply for participation in the E2 DMR system within 180 days of the effective date of the permit unless valid justification as to why you cannot participate is submitted in writing. The E2 DMR system allows ADEM to electronically validate, acknowledge receipt, and upload data to the state's central wastewater database. This improves the accuracy of reported compliance data and reduces costs to both the regulated community and ADEM. The Permittee Participation Package may be downloaded online at <https://e2.adem.alabama.gov/npdes> or you may obtain a hard copy by submitting a written request or by emailing e2admin@adem.alabama.gov.

The Alabama Department of Environmental Management encourages you to voluntarily consider pollution prevention practices and alternatives at your facility. Pollution Prevention may assist you in complying with effluent limitations, and possibly reduce or eliminate monitoring requirements.

Should you have any questions concerning this matter, please contact Hao Nguyen by email at hnguyen@adem.state.al.us or by phone at (334) 274-4231.

Sincerely,



Catherine A. McNeill, Chief
Mining and Natural Resource Section
Stormwater Management Branch
Water Division

CAM/hpn File: DPER/46048

Enclosure

cc: Hao Nguyen, 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
Alabama Department of Labor



NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM INDIVIDUAL PERMIT

PERMITTEE: MS Industries II, LLC
2489 County Road 236
Town Creek, AL 35672

FACILITY LOCATION: Masterson Site
2228 County Road 135
Town Creek, AL 35672
Lawrence County
T5S, R9W, S28

PERMIT NUMBER: AL0082759

DSN & RECEIVING STREAM

001-1 Unnamed Tributary to Hogwood Branch
003-1 Unnamed Tributary to Hogwood Branch

DSN & RECEIVING STREAM

002-1 Unnamed Tributary to Hogwood Branch
004-1 Unnamed Tributary to Hogwood Branch

In accordance with and subject to the provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251-1378 (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-16, 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:

EFFECTIVE DATE:

EXPIRATION DATE:

**** DRAFT ****

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	-----	20.0 mg/L	30.0 mg/L	Grab	2/Month
Iron, Total (as Fe) 01045	-----	0.5 mg/L	1.0 mg/L	Grab	2/Month
Aluminum, Total (as Al) 01105	-----	1.0 mg/L	2.0 mg/L	Grab	2/Month
Flow, In Conduit or Thru Treatment Plant ² 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.

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

² Flow must be determined at the time of sample collection by direct measurement, calculation, or other method acceptable to the Department.

C. DISCHARGE MONITORING AND RECORD KEEPING REQUIREMENTS

1. Sampling Schedule and Frequency

- 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. If required by the Director, 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 is utilizing a web-based electronic environmental (E2) reporting system for submittal of DMRs. The E2 DMR system allows ADEM to electronically validate, acknowledge receipt, and upload data to the state's central wastewater database. This improves the accuracy of reported compliance data and reduces costs to both the regulated community and ADEM. If the Permittee is not already participating in the E2 DMR system, **the Permittee must apply for participation in the E2 DMR system within 180 days of the effective date of this permit unless valid justification as to why they cannot participate is submitted in writing. After 180 days, hard copy DMRs may be used only with written approval from the Department.** To participate in the E2 DMR system, the Permittee Participation Package may be downloaded online at <https://e2.adem.alabama.gov/npdes>. If the electronic environmental (E2) 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 E2 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 E2 system resuming operation, the Permittee shall enter the data into the E2 reporting system unless an alternate timeframe is approved by the Department. An attachment should be included with the E2 DMR submittal verifying the original submittal date (date of the fax, copy of dated e-mail, or hand-delivery stamped date). If a permittee is allowed to submit via the US Postal Service, the DMR must be legible and bear an original signature. Photo and electronic copies of the signature are not acceptable and shall not satisfy the reporting requirements of this Permit. 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. 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.
- c. The Permittee shall report "No Discharge During Quarterly Monitoring Period" on the appropriate DMR Form for each point source receiving pumped discharges pursuant to Part I.C.1.b. provided that no discharge has occurred at any time during the entire quarterly (three month) monitoring period.
- d. Each DMR Form submitted by the Permittee to the Department in accordance with Part I.D.1.a. 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.
- e. 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."

- f. All DMRs, reports, and forms required to be submitted by this Permit, the AWPCA and the Department's rules and regulations, 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

- g. 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.
- h. 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.a.

2. Requirements for Outfall Certification Summary Submittal

The Permittee shall submit a summary of outfalls identified on Page 1 of this Permit so that it is received by the Director with the required DMRs 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). This Outfall Certification Summary shall indicate whether each outfall identified on Page 1 of this Permit has been certified and, if so, it shall include the date for each certification as well as the latitude and longitude of the certified outfall. If any outfall identified on Page 1 of this Permit has been released from monitoring requirements as provided in Part I.D.4. of this Permit, then the summary of outfalls shall include the date of the monitoring requirements release. The Outfall Certification Summary shall be submitted in a format approved or provided by the Department. This submittal is only required when DMR submittal is required by Part I.B.4.

3. 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. Form 401 or 421 must be submitted to the Director in accordance with Parts I.D.2.a. and b. The completed form must document the following information:
 - (1) A description of the discharge and cause of noncompliance;
 - (2) The period of noncompliance, including exact dates, times, and duration of the noncompliance. If not corrected by the due date of the written report, then the Permittee is to state the anticipated timeframe that is expected to transpire before the noncompliance is resolved; and
 - (3) A description of the steps taken and/or being taken to reduce or eliminate the noncomplying discharge and to prevent its recurrence.

4. 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.d. 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

The Pollution Abatement and/or Prevention (PAP) Plan shall be prepared and certified by a registered Professional Engineer (PE), licensed to practice in the State of Alabama, and shall include at a minimum, the information indicated in ADEM Admin. Code r. 335-6-9-.03 and ADEM Admin. Code ch. 335-6-9 Appendices A and 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).

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 required by applicable state (ADEM Admin. Code r. 335-6-6-.12(r)) and federal (40 C.F.R. §§112.1-.7)

regulations. The Permittee shall implement appropriate structural and/or non-structural spill prevention, control, and/or management 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. Careful consideration should be applied for tanks or containers located near treatment ponds, water bodies, or high traffic areas. In most situations this would require construction of a containment system if the cumulative storage capacity of petroleum products or other pollutants at the facility is greater than 1320 gallons. 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 applicant shall maintain onsite or have readily available flotation booms to contain, and sufficient material to 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 an approved manner.

- 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. Except as provided in Parts II.B.2.b. and c., a discharge which results from an upset need not meet the applicable discharge limitations specified in Part I.A. of this Permit if:
- (1) No later than 24-hours after becoming aware of the occurrence of the upset, the Permittee orally reports the occurrence and circumstances of the upset to the Director; 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(g) 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(g) 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 I 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 ACTIVITIES 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.
6. The discharge of stormwater or wastewater, generated by any process, facility, or by any other means associated with asphaltic sandstone 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 MANGEMENT (ADEM)
OUTFALL CERTIFICATION SUMMARY**

PERMITTEE NAME: MS Industries II, LLC
 FACILITY NAME: Masterson Site
 NPDES PERMIT NO: AL0082759
 COUNTY: Lawrence County

Outfall Number	Is Outfall Certified?	Date of Certification	Outfall Latitude and Longitude	Post-Mining Limit Approval Date	Date of ADEM Monitoring Release
001-1	<input type="checkbox"/> YES <input type="checkbox"/> NO				
002-1	<input type="checkbox"/> YES <input type="checkbox"/> NO				
003-1	<input type="checkbox"/> YES <input type="checkbox"/> NO				
004-1	<input type="checkbox"/> YES <input type="checkbox"/> NO				

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.

Name and Title (Print)

Signature

Date

Responsible Official

Duly Authorized Representative

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER DIVISION**

NPDES INDIVIDUAL PERMIT RATIONALE

Company Name: MS Industries II, LLC.

Facility Name: Masterson Site

County: Lawrence

Permit Number: AL0082759

Prepared by: Hao Nguyen

Date: July 09, 2015

Receiving Waters: Unnamed Tributaries to Hogwood Branch

Permit Coverage: Sandstone, Dirt and Chert, Shale and Clay, and Bauxitic Clay Mine, Dry Preparation, Transportation and Storage, and Associated Areas

SIC Code(s): 1442 & 1459

The Department has made a tentative determination that the available information is adequate to support issuance of this permit. This permit includes the addition of Outfall 003-1 and Outfall 004-1 that were not proposed in the previous draft permit which was placed on 02/11/2015 Public Notice.

This proposed permit covers a dry preparation sandstone, dirt and chert, shale and clay, and bauxitic clay mine, and associated areas which discharge to surface waters of the state. Asphaltic sandstone mining is not authorized by this Permit

This proposed permit authorizes treated discharges into a stream segment, other State water, or local watershed that currently has a water quality classification of Fish and Wildlife (F&W) (ADEM Admin. Code r. 335-6-10-.09). 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.

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.

The mining discharge limitations for Total Suspended Solids, Total Iron as Fe, and Total Aluminum as Al are based on best professional judgement with consideration given to bauxite ore limitations established in 40 CFR Part 440.20. These parameters are indicative of the

pollutants typically discharged by similar facilities covered by similar permits and have been shown not to adversely affect water quality.

The instream water quality standards for pH of 6.0 – 8.5 s.u. are based on ADEM Admin. Code r. 335-6-10-.09 for streams classified as Fish and Wildlife. The proposed limitations have been shown to be protective of water quality. Regardless, the discharge shall not 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.

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.

If the requirements of the proposed permit are fully implemented, there is reasonable assurance that the pollutants will not be present in the discharge at levels of concern and/or the facility will

not discharge pollutants at levels that will cause or contribute to a violation of applicable State water quality standards in the receiving water.

The applicant is not proposing discharges of pollutant(s) to a water of the State with an approved Total Maximum Daily Load (TMDL).

The applicant is not proposing new or increased discharges into a stream segment or other State water that is included on Alabama's current CWA §303(d) list.

The applicant is not proposing discharges of pollutant(s) to an ADEM identified Tier I water.

The proposed permit action authorizes new or increased discharges of pollutant(s) to receiving waters determined by the Department to be waters where the quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water (Tier II). Pursuant to ADEM Admin. Code r. 335-6-10 (Antidegradation Policy and Implementation of the Antidegradation Policy), the applicant has submitted and the Department has reviewed/considered information regarding (1) demonstration of necessity/importance, (2) alternatives analysis, and (3) if required, calculation(s) of total annualized costs for technically feasible treatment alternatives regarding the proposed new or increased discharges to Tier II waters. The Department has determined, based on the applicant's demonstration, that the proposed new or increased discharges to the Tier II waters are necessary for important economic or social development in the area in which the waters are located.

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER DIVISION**

ANTIDegradation Rationale

Company Name: MS Industries II, LLC
Facility Name: Masterson Site
County: Lawrence
Permit Number: AL0082759
Prepared by: Hao Nguyen
Date: July 09, 2015
Receiving Waters: Unnamed Tributaries to Hogwood Branch
Stream Category: Tier II as defined by ADEM Admin. Code 335-6-10-.12
Discharge Description: Discharge of drainage from a Sandstone, Dirt and Chert, Shale and Clay, and Bauxitic Clay Mine, Dry Preparation, Transportation and Storage, and Associated Areas

The following preliminary determination was prepared in accordance with ADEM Admin. Code 335-6-10-.12(7)(c):

The Department has reviewed the information submitted by applicant in accordance with ADEM Admin. Code 335-6-10-.12(9). The applicant has demonstrated that there are no technically or economically viable treatment options in its alternatives analysis that would completely eliminate a direct discharge.

The permit applicant has indicated that the following economic and social benefits will result from this project:

1. The Permittee expects to employ 15 - 20 employees from the local community if the abovementioned permit is issued.
2. The Permittee submits that the proposed activity will provide much-needed employment for the local community, with many of those jobs being provided to local citizens that would otherwise be unemployed or under-employed. The agricultural-based local economy will ensure an adequate qualified applicant pool for employment well suited to the trades and equipment operators necessary for the project.
3. The Permittee also proposes that the project will generate additional tax revenues from payroll deductions and other expenses as well as pay tonnage fees for transportation and severance taxes to the State of Alabama. These additional tax revenues will help maintain the local infrastructure, school systems and improve the overall quality of life for local residents.

The Department has determined that the discharge proposed by the permit applicant is necessary for important economic and social development in the area of the outfall location in the receiving water.

Reviewed By:
Date:

Catherine McNair



7-22-15

June 25, 2015

Mr. Jeff Kitchens
Stormwater Management Branch Chief
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

Catherine McNeil
Mining and Natural Resource Section Chief
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

RE: **Modification to Draft NPDES Individual Permit AL0082759**
Masterson Site v2
2228 County Road 135
Town Creek, Lawrence County, Alabama

JUN 29 2015

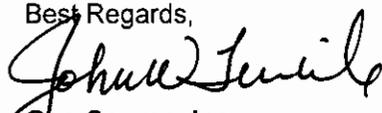
On behalf of MS Industries II, LLC, please find enclosed the referenced draft permit modification as ADEM Form 315 along with attachments and documents as required. This form and associated attachments and documents were prepared by Dean McCrae Engineering, Inc. It is our understanding the permit fee of \$6,190.00 has already been received by ADEM and will be applied to this modification.

As you are aware from previous discussions, this draft permit modification represents the merger of the Masterson Site with the construction area that was previously permitted for land disturbance as ALR10AT61. Accordingly, we have identified this modification as "Masterson Site v2" in order to distinguish between the original submission.

The actual mining area has been enlarged to include the area around the permittee's advance prospecting pit with an additional outfall (003P). Further, the area previously encompassed by the construction permit (ALR10AT61) has been slightly expanded and an outfall (004E) added to encompass this area. With these modifications, the total area within the Masterson Site v2 now represents +/-57 acres. However, less than 45 acres actually constitutes the mining area, which is the total area permitted for surface mining by the ADOL (Permit #014274_File #42-MS-3).

Thank you for your time and attention to this matter. Should you have any questions or need additional information, please do not hesitate to call me at your convenience.

Best Regards,


Geo-Source, Inc
John W. Trimble

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM)
NPDES INDIVIDUAL PERMIT APPLICATION**

SURFACE & UNDERGROUND MINERAL & ORE OR MINERAL PRODUCT MINING, QUARRYING, EXCAVATION, BORROWING, HYDRAULIC MINING, STORAGE, PROCESSING, PREPARATION, RECOVERY, HANDLING, LOADING, STORING, OR DISPOSING ACTIVITIES AND ASSOCIATED AREAS INCLUDING PRE-MINING SITE DEVELOPMENT, CONSTRUCTION, EXCAVATION, CLEARING, DISTURBANCE, RECLAMATION, AND ASSOCIATED AREAS

INSTRUCTIONS: PLEASE READ THE ACCOMPANYING INSTRUCTIONS CAREFULLY BEFORE COMPLETING THIS FORM. COMPLETE ALL QUESTIONS. RESPOND WITH "N/A" AS APPROPRIATE. INCOMPLETE OR INCORRECT ANSWERS OR MISSING SIGNATURES WILL DELAY PROCESSING. ATTACH ADDITIONAL COMMENTS OR INFORMATION AS NEEDED. IF SPACE IS INSUFFICIENT, CONTINUE ON AN ATTACHED SHEET(S) AS NECESSARY. COMMENCEMENT OF ACTIVITIES APPLIED FOR AS DETAILED IN THIS APPLICATION ARE NOT AUTHORIZED UNTIL PERMIT COVERAGE HAS BEEN ISSUED BY THE DEPARTMENT.

PLEASE TYPE OR PRINT IN INK ONLY.

- Initial Permit Application for New Facility
 Initial Permit Application for Existing Facility (e.g. facility previously permitted less than 5 acres)
 Modification of Existing Permit
 Reissuance of Existing Permit
 Reissuance & Modification of Existing Permit
 Reissuance & Transfer of Existing Permit
 Revocation and Reissuance of Existing Permit
 Other Modification to Draft Permit AL0082759

I. GENERAL INFORMATION

NPDES Permit Number (Not applicable if initial permit application): <i>AL 0082759 Draft</i>	County(s) in which Facility is Located: Lawrence County
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Company/Permittee Name: MS Industries II, LLC	Facility Name (e.g., Mine Name, Pit Name, etc.): Masterson Site v.2	
Mailing Address of Company/Permittee: 2489 County Road 236	Physical Address of Facility (as near as possible to entrance): 2228 County Road 135	
City: State: Zip: Town Creek AL 35672-6235	City: State: Zip: Town Creek AL 35672-6235	
Permittee Phone Number: (256)383-6740	Permittee Fax Number: (256)383-6766	Latitude and Longitude of entrance: 34° 35' 4.9" 87° 29' 11.3"

JUN 20 2015

Responsible Official (as described on page 13 of this application): Steven D. Smith	Responsible Official Title: CEO	
Mailing Address of Responsible Official: 2489 County Road 236	Physical Address of Responsible Official: 2489 County Road 236	
City: State: Zip: Town Creek AL 35672-6235	City: State: Zip: Town Creek AL 35672-6235	
Phone Number of Responsible Official: (256)383-6740	Fax Number of Responsible Official: (256)383-6766	Email Address of Responsible Official: ssmsindustries@gmail.com

Facility Contact: Clint Carter	Facility Contact Title: Supervisor	
Physical Address of Facility Contact: 2228 County Road 135	Phone Number of Facility Contact: (256)383-6740	Fax Number of Facility Contact: (256)383-6766
City: State: Zip: Town Creek AL 35672-6235	Email Address of Facility Contact: jccarter1@una.edu	

II. MEMBER INFORMATION

A. Identify the name, title/position, and unless waived in writing by the Department, the residence address of every officer, 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:

Name:	Title/Position:	Physical Address of Residence (P.O. Box is Not Acceptable)
Steven D. Smith	CEO	2489 County Road 236, Town Creek, AL 35672
John F. Christmas	COO	2489 County Road 236, Town Creek, AL 35672

B. Other than the "Company/Permittee" listed in Part I., identify the name of each corporation, partnership, association, and single proprietorship for which any individual identified in Part II.A. 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:

Name of Corporation, Partnership, Association, or Single Proprietorship:	Name of Individual from Part II.A.:	Title/Position in Corporation, Partnership, Association, or Single Proprietorship:
SCS Industries, LLC	Steven D. Smith	CEO
AJSWC, LLC	John F. Christmas	COO

III. LEGAL STRUCTURE OF APPLICANT

A. Indicate the legal structure of the "Company/Permittee" listed in Part I:

Corporation
 Association
 Individual
 Single Proprietorship
 Partnership
 LLP
 LLC

Government Agency: _____
 Other: _____

B. If not an individual or single proprietorship, is the "Company/Permittee" listed in Part I. properly registered and in good standing with the Alabama Secretary of State's Office? (If the answer is "No," attach a letter of explanation.)
 Yes
 No

C. Parent Corporation and Subsidiary Corporations of Applicant, if any: None

D. Land Owner(s): Applicant/Permittee

E. Mining Sub-contractor(s)/Operator(s), if known: N/A

IV. COMPLIANCE HISTORY

A. Has the applicant ever had any of the following:

	Yes	No
(1) An Alabama NPDES, SID, or UIC permit suspended or terminated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(2) An Alabama license to mine suspended or revoked?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(3) An Alabama or federal mining permit suspended or terminated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(4) A reclamation bond, or similar security deposited in lieu of a bond, or portion thereof, forfeited?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(5) A bond or similar security deposited in lieu of a bond, or portion thereof, the purpose of which was to secure compliance with any requirement of the Alabama Water Improvement Commission or Alabama Department of Environmental Management, forfeited?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(If the response to any item of Part IV.A. is "Yes," attach a letter of explanation.)

B. Identify every Warning Letter, Notice of Violation (NOV), Administrative Action, or litigation issued to the applicant, parent corporation, subsidiary, general partner, LLP partner, or LLC member and filed by ADEM or EPA during the three year (36 months) period preceding the date on which this form is signed. Indicate the date of issuance, briefly describe alleged violations, list actions (if any) to abate alleged violations, and indicate date of final resolution:

C. July 03, 2014: Administrative Order 14-075-LD to AJSWC, LLC, an associated company, from failure to register for NPDES construction permit; facility was registered and BMPs installed; Order resolved July 10, 2014

IX. PROPOSED ACTIVITY TO BE CONDUCTED

A. Type(s) of activity presently conducted at applicant's existing facility or proposed to be conducted at facility (check all that apply):

<input checked="" type="checkbox"/> Surface mining	<input type="checkbox"/> Underground mining	<input checked="" type="checkbox"/> Quarrying	<input type="checkbox"/> Auger mining	<input type="checkbox"/> Hydraulic mining
<input type="checkbox"/> Within-bank mining	<input type="checkbox"/> Solution mining	<input checked="" type="checkbox"/> Mineral storing	<input type="checkbox"/> Lime production	<input type="checkbox"/> Cement production
<input type="checkbox"/> Synthetic fuel production	<input type="checkbox"/> Alternative fuels operation	<input checked="" type="checkbox"/> Mineral dry processing (crushing & screening)	<input type="checkbox"/> Mineral wet preparation	
<input type="checkbox"/> Other beneficiation & manufacturing operations		<input checked="" type="checkbox"/> Mineral loading	<input type="checkbox"/> Chemical processing or leaching	
<input type="checkbox"/> Construction related temporary borrow pits/areas		<input checked="" type="checkbox"/> Mineral transportation ___rail___barge <input checked="" type="checkbox"/> truck		
<input type="checkbox"/> Preparation plant waste recovery		<input type="checkbox"/> Hydraulic mining, dredging, instream or between stream-bank mining		
<input checked="" type="checkbox"/> Grading, clearing, grubbing, etc.		<input type="checkbox"/> Pre-construction ponded water removal		<input checked="" type="checkbox"/> Excavation
<input checked="" type="checkbox"/> Pre-mining logging or land clearing		<input type="checkbox"/> Waterbody relocation or other alteration		<input type="checkbox"/> Creek/stream crossings
<input checked="" type="checkbox"/> Onsite construction debris or equipment storage/disposal		<input checked="" type="checkbox"/> Onsite mining debris or equipment storage/disposal		
<input checked="" type="checkbox"/> Reclamation of disturbed areas		<input type="checkbox"/> Chemicals used in process or wastewater treatment (coagulant, biocide, etc.)		
<input type="checkbox"/> Adjacent/associated asphalt/concrete plant(s)		<input type="checkbox"/> Low volume sewage treatment package plant		
<input type="checkbox"/> Other: _____				

B. Primary SIC Code: 1400 Description: Mining and Quarrying of Nonmetallic Minerals, except Fuels
 Secondary SIC Code(s): 1442 Description: Construction Sand and Gravel
 Secondary SIC Code(s): 1459 Description: Clay, Ceramic and Refractory Minerals, NEC

C. Narrative Description of the Activity: Extraction, sizing, crushing and milling of clay, sand, ores and other non-fuel minerals

X. FUEL – CHEMICAL HANDLING, STORAGE & SPILL PREVENTION CONTROL & COUNTERMEASURES (SPCC) PLAN

A. Will fuels, chemicals, compounds, or liquid waste be used or stored onsite? Yes No

B. If "Yes," identify the fuel, chemicals, compounds, or liquid waste and indicate the volume of each:

Volume	Contents	Volume	Contents	Volume	Contents
_____ gallons	_____	_____ gallons	_____	_____ gallons	_____
_____ gallons	_____	_____ gallons	_____	_____ gallons	_____

C. If "Yes," a detailed SPCC Plan with acceptable format and content, including diagrams, must be attached to application in accordance with ADEM Admin. Code R. 335-6-6-.12(r). Unless waived in writing by the Department on a programmatic, categorical, or individual compound/chemical basis, Material Safety Data Sheets (MSDS) for chemicals/compounds used or proposed to be used at the facility must be included in the SPCC Plan submittal.

XI. POLLUTION ABATEMENT & PREVENTION (PAP) PLAN

A. For non-coal mining facilities, a PAP Plan in accordance with ADEM Admin. Code r. 335-6-9-.03 has been completed and is attached as part of this application. Yes No

B. For coal mining facilities, a detailed PAP Plan has been submitted to ASMC according to submittal procedures for ASMC regulated facilities. Yes No

(1) If "Yes" to Part XI.B., provide the date that the PAP Plan was submitted to ASMC: Not Applicable

(2) If "No" to Part XI.B., provide the anticipated date that the PAP Plan will be submitted to ASMC: Not Applicable

XII. TOPOGRAPHIC MAP SUBMITTAL

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 is located. Unless approved in advance by the Department, the topographic or equivalent map(s), at a minimum, must show:

(a) An outline of legal boundary of entire property (property lines and lease boundaries)	(i) All surrounding unimproved/improved roads
(b) An outline of the facility	(j) High-tension power lines and railroad tracks
(c) All existing and proposed disturbed areas	(k) Buildings and structures, including fuel/water tanks
(d) Location of discharge areas	(l) Contour lines, township-range-section lines
(e) Proposed and existing discharge points	(m) Drainage patterns, swales, washes
(f) Perennial, intermittent, and ephemeral streams	(n) All drainage conveyance/treatment structures (ditches, berms, etc.)
(g) Lakes, springs, water wells, wetlands	(o) Any other pertinent or significant feature
(h) All known facility dirt/improved access/haul roads	

XIII. DETAILED FACILITY MAP SUBMITTAL

Attach to this application a 1:500 scale or better, detailed auto-CAD 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 facility. The facility map(s) must include a caption indicating the name of the facility, name of the applicant, facility name, county, and township, range, & section(s) where the facility is located. Unless approved in advance by the Department, the facility or equivalent map(s), at a minimum, must show:

(a) Information listed in Item XII (a) – (o) above (e) Location of mining or pond cleanout waste storage/disposal areas
 (b) If noncoal, detailed, planned mining progression (f) Other information relevant to facility or operation
 (c) If noncoal, location of topsoil storage areas (g) Location of facility sign showing Permittee name, facility name, and NPDES Number
 (d) Location of ASMC bonded increments (if applicable)

XIV. RECEIVING WATERS

List the requested permit action for each outfall (issue, reissue, add, delete, move, etc.), outfall designation including denoting "E" for existing and "P" for proposed outfalls, name of receiving water(s), whether or not the stream is included in a TMDL, latitude and longitude (to seconds) of location(s) of each discharge point, distance of receiving water from outfall in feet, number of disturbed acres, the number of drainage acres which will drain through each treatment system, outfall, or BMP, and if the outfall discharges to an ADEM listed CWA Section 303(d) waterbody segment at the time of application submittal.

Action	Outfall E/P	Receiving Water	Latitude	Longitude	Distance to Rec. Water	Disturbed Acres	Drainage Acres	ADEM WUC	303(d) Segment (Y/N)	TMDL Segment* (Y/N)
Issue	001 P	UT of Hagwood Branch	34°35'8"	87°29'8"	200'	10	10	F&W	N	N
Issue	002 P	UT of Hagwood Branch	34°35'7"	87°29'0"	200'	20	20	F&W	N	N
Issue	003 P	UT of Hagwood Branch	34°35'14"	87°28'56"	100'	12	12	F&W	N	N
Issue	004E	UT of Hagwood Branch	34°35'19"	87°28'56.2"	50'	12	15	F&W	N	N

*If a TMDL Compliance Schedule is requested, the following should be attached as supporting documentation: (1) Justification for the requested Compliance Schedule (e.g. time for design and installation of control equipment, etc.); (2) Monitoring results for the pollutant(s) of concern which have not previously been submitted to the Department (sample collection dates, analytical results (mass and concentration), methods utilized, MDL/ML, etc. should be reported as available); (3) Requested interim limitations, if applicable; (4) Date of final compliance with the TMDL limitations; and (5) Any other additional information available to support the requested compliance schedule.

XVI. DISCHARGE STRUCTURE DESCRIPTION & POLLUTANT SOURCE

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.

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	Other
001 P	Pipe	Overland flow from excavated materials	Yes	No	N/A	Yes	N/A	
002 P	Pipe	Pumped discharge from surface mining	Yes	No	N/A	Yes	N/A	
003 P	Pipe	Overland flow and pumped discharge from mining	Yes	No	N/A	Yes	N/A	
004 E	Stabilized swale	Overland flow from land clearing; non-operational area adjacent to mine site	Yes	No	N/A	Yes	No	Existing permitted outfall from land disturbance

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: _____

XVII. PROPOSED NEW OR INCREASED DISCHARGES

A. Pursuant to ADEM Admin. Code Chapter 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.

- Yes. New/increased discharges of pollutant(s) or discharge locations to Tier 2 waters are proposed.
 No. New/increased discharges of pollutants(s) or discharge locations to Tier 2 waters are not proposed.

B. If "Yes," complete this Part (XVII.B.), Part XVIII, and XIX. **Attach additional sheets/documentation and supporting information as needed.**

(1) What environmental or public health problem will the discharger be correcting?

All discharges will be controlled through best management practices and collected in three retention basins before discharge to an unnamed tributary (UT) to Hagwood Branch (Outfall P001, Outfall P002 and Outfall P003). These retention basins will serve to reduce the volume of stormwater discharges over pre-mining conditions by reducing potential pollutants through monitoring/treatment before discharging to the UT of Hagwood Branch. By reducing the volume of stormwater discharges, the potential for erosion and subsequent sedimentation will also be reduced as will the potential for biological contaminants for Hagwood Branch. This will ultimately improve the aquatic and benthic habitats afforded by the stream(s).

(2) How much will the discharger be increasing employment (at its existing facility or as a result of locating a new facility)?

Employment will be increased by 15 to 20 persons from the local community that will provide much needed high-wage, skilled positions including mechanics and machine operators as well as general labor jobs which will represent a significant improvement to an area predominated by an agricultural employment base. This existing employment base in agriculture has been adversely affected from and exacerbated by a reduction in poultry farms and the shift from small family farms to large centralized commercial operations.

(3) How much reduction in employment will the discharger be avoiding?

The project will entail hiring persons from the local community that will avoid further chronic unemployment consistent with an agricultural-based local economy.

(4) How much additional state or local taxes will the discharger be paying?

The project will generate additional tax revenues from payroll deductions and other expenses as well as pay tonnage fees for transportation and severance taxes to the State of Alabama. These additional tax revenues will help maintain the local infrastructure, school systems and improve the overall quality of life for local residents.

(5) What public service to the community will the discharger be providing?

The project will entail concentrating employment efforts through the local community to an applicant pool with high unemployment. Local community involvement will be paramount to forging a community relationship and ultimately serving as a catalyst for further industrial development.

(6) What economic or social benefit will the discharger be providing to the community?

The proposed activity will provide much-needed employment for the local community, with many of those jobs being provided to local citizens that would otherwise be unemployed or under-employed. The agricultural-based local economy will ensure an adequate qualified applicant pool for employment well suited to the trades and equipment operators necessary for the project.

XVIII. ALTERNATIVES ANALYSIS – ADEM Form 311 3/02

Pursuant to ADEM Admin. Code Chapter 335-6-10, an evaluation of the discharge alternatives identified below has been completed and the following conclusions were reached. All proposed new or expanded discharges of pollutant(s) covered by the Individual NPDES permitting program are subject to the provisions of the antidegradation policy. As part of the permit application review process, the Department is required to determine, based on the applicant's demonstration, that 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. As a part of this demonstration, a registered professional engineer (PE) licensed to practice in the State of Alabama must complete an evaluation of the discharge alternatives, to include calculation of total annualized project costs (Item XIX) for each technically feasible alternative. Technically feasible alternatives with total annualized pollution control project costs that are less than 110% of the preferred alternative total annualized pollution control project costs for the Tier 2 new or increased discharge proposal are considered viable alternatives. Supporting documentation is attached, referenced, or otherwise handled as appropriate.

Alternative	Viable	Non-Viable	Reason/Rationale For Indicating Non-Viable
1) Treatment/Discharge Proposed In This Application	X		
2) Land Application		X	Limited duration; activities outside permitted areas
3) Pretreatment/Discharge to POTW By SID Permit		X	POTW not available
4) Relocation of Discharge		X	Not reasonable as surrounding streams Tier II
5) Reuse/Recycle – Pollution Prevention		X	No process waters involved
6) Other Process/Treatment Alternatives		X	Evaporation rates insufficient to off-set discharges
7) Underground Injection By UIC Permit		X	Not applicable to inject surface waters
8) Other Project Specific Alternative(s) Identified By the Applicant Or The ADEM			
9) Other Project Specific Alternative(s) Identified By the Applicant Or The ADEM			

COMMENTS: See attached evaluation of discharge alternatives

XIX. CALCULATION OF TOTAL ANNUALIZED PROJECT COSTS FOR PRIVATE SECTOR PROJECTS - ADEM Form 313 8/02
(ADEM Form 312 3/02 - Public Sector Project is available upon request)

This item must be completed for each technically feasible alternative evaluated in Item XVIII. Copy, complete, and attach additional blocks/sheets and supporting information as needed.

Capital Costs of pollution control project to be expended or financed by applicant (Supplied by applicant)	\$95,000 (1)	* While actual payback schedules may differ across projects and companies, assume equal annual payments over a 10-year period for consistency in comparing projects.
Interest Rate for Financing (Expressed as a decimal)	.08 (i)	
Time Period of Financing (Assume 10 years *)	10 years (n)	
Annualization Factor ** = $\frac{i}{(1+i)^n - 1} + i$ i = Interest Rate	0.149 (2)	** Or refer to Appendix B (application information) for calculated annualization factors.
Annualized Capital Cost [Calculate: (1) x (2)]	\$14,155 (3)	
Annual Cost of Operation & Maintenance (including but not limited to monitoring, inspection, permitting fees, waste disposal charges, repair, administration & replacement) ***	\$30,000 (4)	*** 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).
Total Annual Cost of Pollution Control Project [(3) + (4)]	\$44,155 (5)	

XX. POLLUTION ABATEMENT PLAN (PAP) SUMMARY

Outfall(s): 001

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

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

IDENTIFY AND PROVIDE DETAILED EXPLANATION FOR ANY "N" OR "N/A" RESPONSE(s):

1. Discharge not into PWS classified stream; emergency spillway sized for peak flow from 50-yr 24-hr event.
2. No stream crossings are associated with proposed mining activities.

I. POLLUTION ABATEMENT PLAN (PAP) SUMMARY

Outfall(s): 002

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

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

IDENTIFY AND PROVIDE DETAILED EXPLANATION FOR ANY "N" OR "N/A" RESPONSE(S):

1. Discharge not into PWS classified stream; emergency spillway sized for peak flow from 50-yr 24-hr event.
2. No stream crossings are associated with proposed mining activities.

I. POLLUTION ABATEMENT PLAN (PAP) SUMMARY

Outfall(s): 004

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

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

IDENTIFY AND PROVIDE DETAILED EXPLANATION FOR ANY "N" OR "N/A" RESPONSE(S):

Outfall 004 was constructed under the NPDES General Permit ALR10AT61 and will be maintained with temporary Best Management Practices (BMPs) for land disturbance activities until permanent stabilization is achieved. If additional disturbance activities or future operations are anticipated through this outfall, the permittee will design and construct applicable structural controls appropriate for the anticipated-use as part of a modification to the Individual NPDES Permit.

II. POLLUTION ABATEMENT PLAN (PAP) REVIEW CHECKLIST

Y	N	N/A
✓		
✓		
✓		

PE Seal with License #
 Name and Address of Operator
 Legal Description of Facility

General Information:

✓		
✓		
✓		
✓		
✓		

Name of Company
 Number of Employees
 Products to be Mined
 Hours of Operation
 Water Supply and Disposition

Topographic Map:

✓		
✓		
✓		
✓		
✓		

Mine Location
 Location of Prep Plant
 Location of Treatment Basins
 Location of Discharge Points
 Location of Adjacent Streams

1"- 500' or Equivalent Facility Map:

✓		
✓		
✓		
✓		

Drainage Patterns
 Mining Details
 All Roads, Structures Detailed All
 Treatment Structures Detailed

Detailed Design Diagrams:

✓		
✓		
✓		

Plan Views
 Cross-section Views
 Method of Diverting Runoff to Treatment Basins

Narrative of Operations:

✓		
✓		
✓		

Raw Materials Defined
 Processes Defined
 Products Defined

Schematic Diagram:

✓		
✓		
✓		

Points of Waste Origin
 Collection System
 Disposal System

Post Treatment Quantity and Quality of Effluent:

✓		
✓		
✓		

Flow
 Suspended Solids
 Iron Concentration
 pH

Description of Waste Treatment Facility:

✓		
✓		
✓		
✓		

Pre-Treatment Measures
 Recovery System
 Expected Life of Treatment Basin
 Schedule of Cleaning and/or abandonment

Other:

✓		
✓		
✓		
✓		
✓		
✓		

Precipitation/Volume Calculations/Diagram Attached
 BMP Plan for Haul Roads
 Measures for Minimizing Impacts to Adjacent Stream i.e., Buffer Strips, Berms, etc.
 Methods for Minimizing Nonpoint Source Discharges
 Facility Closure Plans
 PE Rationale(s) For Alternate Standards, Designs or Plans

IDENTIFY AND PROVIDE DETAILED EXPLANATION FOR ANY "N" OR "N/A" RESPONSE(S):

III. INFORMATION

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.

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 and Individual NPDES Permit prior to commencement of any land disturbance. Such 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 Industrial Relations (ADIR) 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; and
- (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.

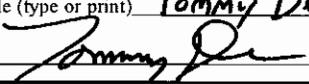
The Department must be in receipt of a completed version of this form, including any supporting documentation, and the appropriate processing fee (including Greenfield Fee and Biomonitoring & Toxicity Limits fee(s), if applicable), prior to development of a draft NPDES permit. Send the completed form,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

Water Division
Alabama Department of Environmental Management
Post Office Box 301463
Montgomery, Alabama 36130-1463
Phone: (334) 271-7823
Fax: (334) 279-3051
h2omail@adem.state.al.us
www.adem.alabama.gov

IV. PROFESSIONAL ENGINEER (PE) CERTIFICATION

A detailed, comprehensive Pollution Abatement/Prevention Plan (PAP) must be prepared, signed, and certified by a professional engineer (PE), registered in the State of Alabama as follows:

"I certify on behalf of the applicant, that I have completed an evaluation of discharge alternatives (Item XVIII) for any proposed new or increased discharges of pollutant(s) to Tier 2 waters and reached the conclusions indicated. I certify under penalty of law that technical information and data contained in this application, and a comprehensive 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 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."

Address PO Box 573 PE Registration # 21361
 Name and Title (type or print) Tommy Derr, President Phone Number 662-423-9104
 Signature  Date Signed 25 June 2015

V. RESPONSIBLE OFFICIAL SIGNATURE

This application must be signed 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-riming associated beneficiation/process pollutants and wastewaters have been fully identified."

Name (type or print) Steven D. Smith Official Title CEO
 Signature  Date Signed 6-24-15

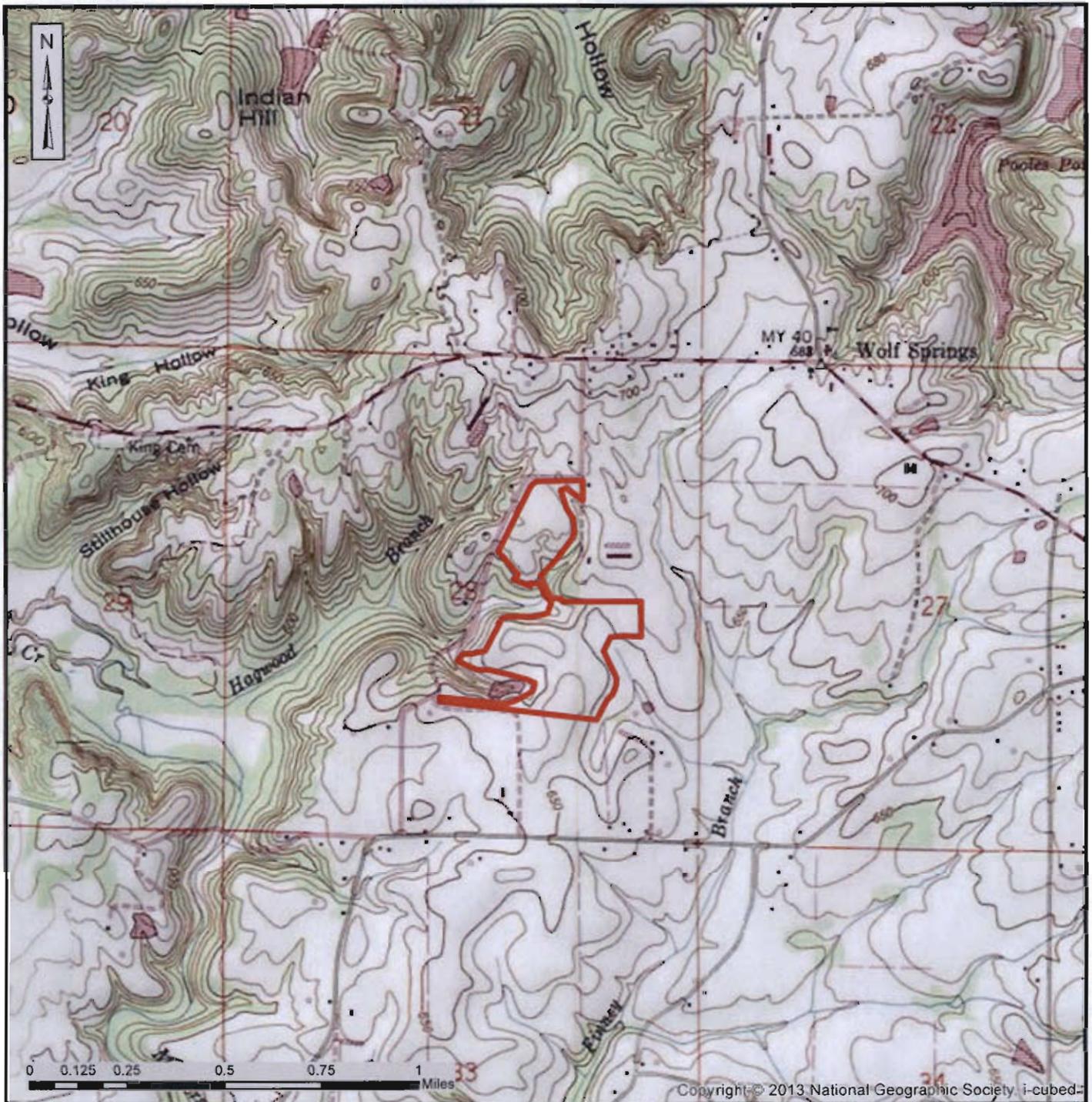
*335-6-6-.09 Signatories to Permit Applications and Reports.

- (1) The application for an NPDES permit shall be signed by a responsible official, as indicated below.
 - (a) In the case of a corporation, by a principal executive officer of at least the level of vice president, or a manager assigned or delegated in accordance with corporate procedures, with such delegation submitted in writing if required by the Department, who is responsible for manufacturing, production, or operating facilities and is authorized to make management decisions which govern the operation of the regulated facility;
 - (b) In the case of a partnership, by a general partner;
 - (c) In the case of a sole proprietorship, by the proprietor; or
 - (d) In the case of a municipal, state, federal, or other public entity by either a principal executive officer, or ranking elected official.

ATTACHMENT:

EVALUATION OF DISCHARGE ALTERNATIVES

- 1. Land Application – Land application of stormwater run-off would be limited and require activities outside the permitted area on adjacent lands necessitating the construction of an additional retention/detention basin to ensure said stormwater is contained during times of large sustained rain events when soils are saturated. Because the land application alternative would be limited in duration and require additional land disturbance activities outside the permitted area, it was not considered technically feasible.**
- 2. Pretreatment/Discharge to POTW – There is no POTW system for consideration of stormwater discharges and therefore, this is not a technically feasible alternative.**
- 3. Relocation of Discharge – Relocation of the discharge would result in stormwater discharges to another Tier II stream over a distance of at least 0.25-mile from the proposed discharge. The relocation over such a distance would be cost prohibitive and result in the same discharges to another Tier II stream.**
- 4. Reuse/Recycle/Pollution Prevention – The proposed activities have no operations for which the opportunity to re-use or recycle the stormwater run-off would be considered technically feasible. There is no system of process waters which could be altered into a closed-loop with the proposed activities.**
- 5. Other Process/Treatment Alternatives – No other process/treatment alternatives were identified as technically feasible for abating stormwater run-off from the site. Evaporation from the retention basins in lieu of discharging stormwater would be insufficient to alter the volumes of effluent.**
- 6. Underground Injection – Underground injection is not typically used to handle stormwater discharges from land disturbances and would entail the introduction of surface waters into an underground aquifer or rock formation. Because of the large volumes of water retained on-site through the basins, underground injection was not considered technically feasible.**



TOPOGRAPHIC MAP
 (Hatton Quadrangle)
 Section 28, T5S, R9W
 Masterson Site v2
 2228 County Road 135
 Town Creek, Lawrence County, AL

Project No:
E14-124
June 2015

GEO-SOURCE, Inc.

Environmental Consultants

462 N. Court Street
 Florence, Alabama 35630
 www.geo-source.com



POLLUTION ABATEMENT PLAN (PAP)

For:

**MASTERSON SITE v2
2228 County Road 135
Town Creek, Lawrence County, AL**

Operator:

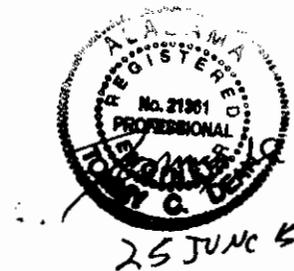
**MS Industries II, LLC
2489 County Road 236
Town Creek, AL 35672**

Contact:

**Mr. Steven D. Smith
Chief Executive Officer
2489 County Road 236
Town Creek, AL 35672
256.383.6740**

Prepared by:

**Mr. Tommy Dean, PE
Dean McCrae Engineering
Post Office Box 573
Iuka, MS 38852**



June 24, 2015

The Pollution Abatement Plan has been developed in accordance with Part III.C of the general permit and ADEM Admin Code 335-6-9-.03.

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ATTACHMENTS to the PAP

- Attachment 1: Comprehensive Reclamation Plan**
- Attachment 2: Design Drawings**
- Attachment 3: Specifications**
- Attachment 4: Design Calculations**
- Attachment 5: Topographic Survey with Permit Boundaries**

Section 1.0 Site Information and Location

1.1 Project Name:

Masterson Site v2

1.2 Project Address and Directions:

2228 County Road 135
Town Creek, Lawrence County, Alabama

From Highway 157, proceed south on County Road 235 approximately 1.5 miles to the intersection of County Road 236, then right for approximately 0.5-mile and turn left onto County Road 135. Continue south on County Road 135 approximately 0.9-mile and gate will be on the left side of road.

1.3 Office/Mailing Address:

2489 County Road 236
Town Creek, Alabama 35672

1.4 Telephone: 256.383.6740

1.5 Coordinates in Latitude/Longitude : (degrees, minutes, seconds)

At entrance from County Road 135:

N34⁰ 35' 04.96"
W87⁰ 29' 11.37"

At mine site:

N34⁰ 35' 04.85"
W87⁰ 28' 53.72"

Note: Coordinates were obtained from USGS 7.5 Minute Series Topographic Quadrangle Map

1.6 Legal Description:

The proposed mine site is located on MS Industries property as shown on the attached topographical map, with the site being more particularly described as:

A Part of **Section 28, Township 5 South, Range 9 West**, Huntsville Meridian, Lawrence County, Alabama, being more particularly described as follows: **Beginning at**

a capped iron pin found at the Northwest Corner of the Northeast Quarter of the Southeast Quarter of said Section 28; Thence run with the State Plane Grid South 86°54'32" East for a distance of 697.85 feet; Thence run South 04°04'27" West for a distance of 414.84 feet; Thence run North 89°47'26" West for a distance of 170.69 feet; Thence run North 88°59'45" West for a distance of 145.09 feet; Thence run South 65°02'36" West for a distance of 106.81 feet; Thence run South 42°10'24" West for a distance of 38.87 feet; Thence run South 26°01'16" West for a distance of 27.52 feet; Thence run South 24°35'31" East for a distance of 141.93 feet; Thence run South 39°40'16" East for a distance of 117.44 feet; Thence run South 00°13'18" East for a distance of 170.28 feet; Thence run South 40°46'53" West for a distance of 201.22 feet; Thence run South 27°18'46" West for a distance of 202.60 feet; Thence run South 84°25'08" West for a distance of 262.23 feet; Thence run North 89°31'39" West for a distance of 1337.18 feet; Thence run North 38°11'13" West for a distance of 262.86 feet; Thence run North 39°51'01" East for a distance of 47.48 feet; Thence run South 38°09'39" East for a distance of 201.83 feet; Thence run South 86°42'04" East for a distance of 108.77 feet; Thence run South 85°50'12" East for a distance of 142.56 feet; Thence run North 50°20'42" East for a distance of 127.26 feet; Thence run North 87°06'22" East for a distance of 94.34 feet; Thence run South 84°56'54" East for a distance of 125.26 feet; Thence run North 63°13'19" East for a distance of 148.26 feet; Thence run North 10°30'41" East for a distance of 50.74 feet; Thence run North 69°33'32" East for a distance of 142.31 feet; Thence run North 52°56'31" East for a distance of 91.85 feet; Thence run North 34°05'10" West for a distance of 40.77 feet; Thence run North 42°33'09" West for a distance of 46.31 feet; Thence run South 89°35'36" West for a distance of 296.50 feet; Thence run North 70°22'16" West for a distance of 179.44 feet; Thence run South 48°54'21" West for a distance of 77.43 feet; Thence run South 54°10'31" West for a distance of 42.64 feet; Thence run North 45°43'18" West for a distance of 246.15 feet; Thence run North 05°21'28" West for a distance of 92.15 feet; Thence run North 68°11'27" East for a distance of 115.42 feet; Thence run South 74°53'58" East for a distance of 149.94 feet; Thence run North 19°30'15" East for a distance of 198.22 feet; Thence run North 49°52'57" East for a distance of 278.59 feet; Thence run South 89°50'29" East for a distance of 322.95 feet; Thence run North 31°12'57" East for a distance of 293.54 feet; Thence run North 49°53'02" East for a distance of 137.56 feet; Thence run North 53°31'26" West for a distance of 111.09 feet; Thence run North 70°23'24" West for a distance of 139.60 feet; Thence run South 58°40'56" West for a distance of 171.48 feet; Thence run North 86°22'12" West for a distance of 46.02 feet; Thence run North 58°16'34" West for a distance of 136.06 feet; Thence run North 41°37'24" West for a distance of 84.17 feet; Thence run North 48°22'36" East for a distance of 89.63 feet; Thence run North 12°41'12" West for a distance of 30.87 feet; Thence run North 14°41'53" East for a distance of 25.74 feet; Thence run North 46°28'02" West for a distance of 251.21 feet; Thence run North 18°21'15" East for a distance of 204.92 feet; Thence run North 27°23'13" East for a distance of 69.71 feet; Thence run North 31°12'19" East for a distance of 64.70 feet; Thence run North 26°17'03" East for a distance of 80.70 feet; Thence run North 25°31'51" East for a distance of 75.57 feet; Thence run North 21°25'22" East for a distance of 314.01 feet; Thence run North 64°36'50" East for a

distance of 99.27 feet; Thence run South 89°36'56" East for a distance of 555.87 feet; Thence run South 02°18'26" West for a distance of 220.20 feet; Thence run North 44°47'25" West for a distance of 157.78 feet; Thence run North 72°18'06" West for a distance of 180.04 feet; Thence run South 56°14'31" West for a distance of 83.33 feet; Thence run South 31°28'40" East for a distance of 425.15 feet; Thence run South 08°10'14" East for a distance of 65.74 feet; Thence run South 21°19'04" East for a distance of 75.98 feet; Thence run South 03°40'07" East for a distance of 90.41 feet; Thence run South 31°33'25" West for a distance of 126.31 feet; Thence run South 51°30'43" West for a distance of 261.06 feet; Thence run South 60°37'09" East for a distance of 122.71 feet; Thence run South 09°20'43" East for a distance of 98.63 feet; Thence run South 72°20'33" East for a distance of 90.19 feet; Thence run South 37°30'18" East for a distance of 242.83 feet to the **Point of Beginning**, containing **56.97 Acres**, more or less.

Section 2.0 Contact Information and Responsible Parties

2.1 Operator:

MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

2.2 Responsible Officials:

Mr. Steven D. Smith
Chief Executive Officer
MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

Mr. John Christmas
Chief Operations Officer
MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

2.3 Project Manager/Site Supervisor

Mr. Clint Carter
MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

2.4 24-Hour Emergency Contact:

Mr. Clint Carter
256.656.8288

3.0 General Information

3.1 Name of Company:

MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

3.2 Expected Number of Employees at Proposed Mine: 10

3.3 Hours of Operation: 7:00 am – 6:00 pm

3.4 Controlled Access: A gate and fencing will be installed at the site entrance on County Road 135 to prevent trespass

3.5 Products to be Mined:

Non-fuel clays, sands, ores and other minerals

3.6 Site Characteristics:

A. Shop and Future Preparation Area: +/-15 Acres

B. Mine Site: +/-43 Acres***

1. Mine Pit (elevation 630): +/-12.7 Acres

2. Stone Stockpile and Crusher: +/-2 Acres

3. Overburden: +/- 7 Acres

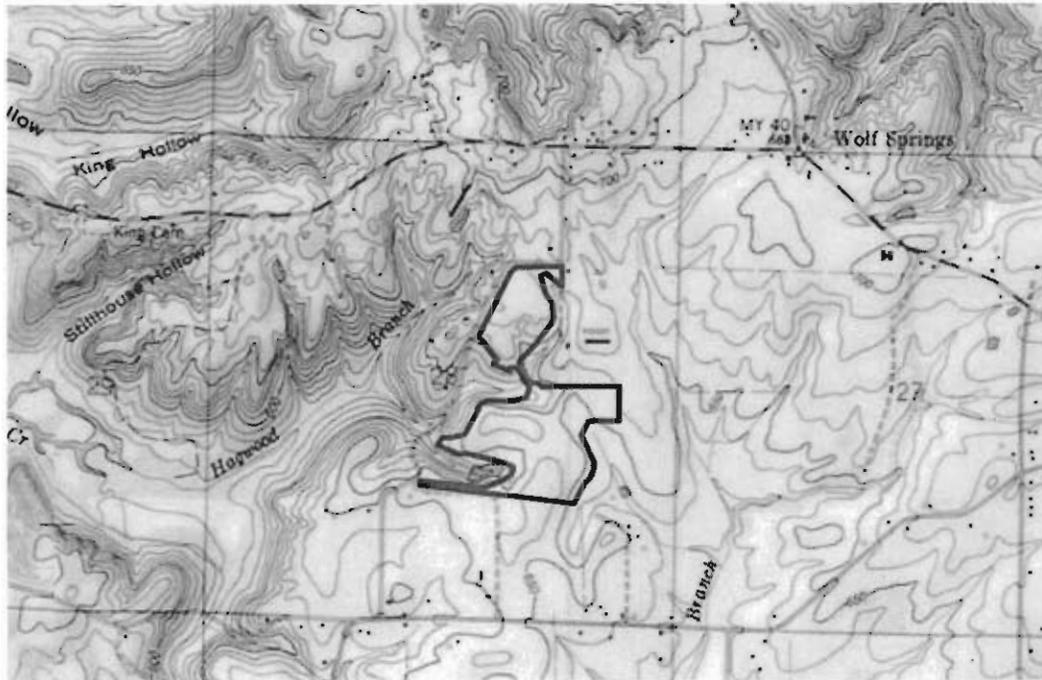
4. Remaining Area: +/-21.3 Acres

Total Area: +/-57 Acres as legally described in Section 1.6 of this Plan

*** (45 Acres permitted and bonded with ADOL under Permit #014274 – File #42-MS-3)

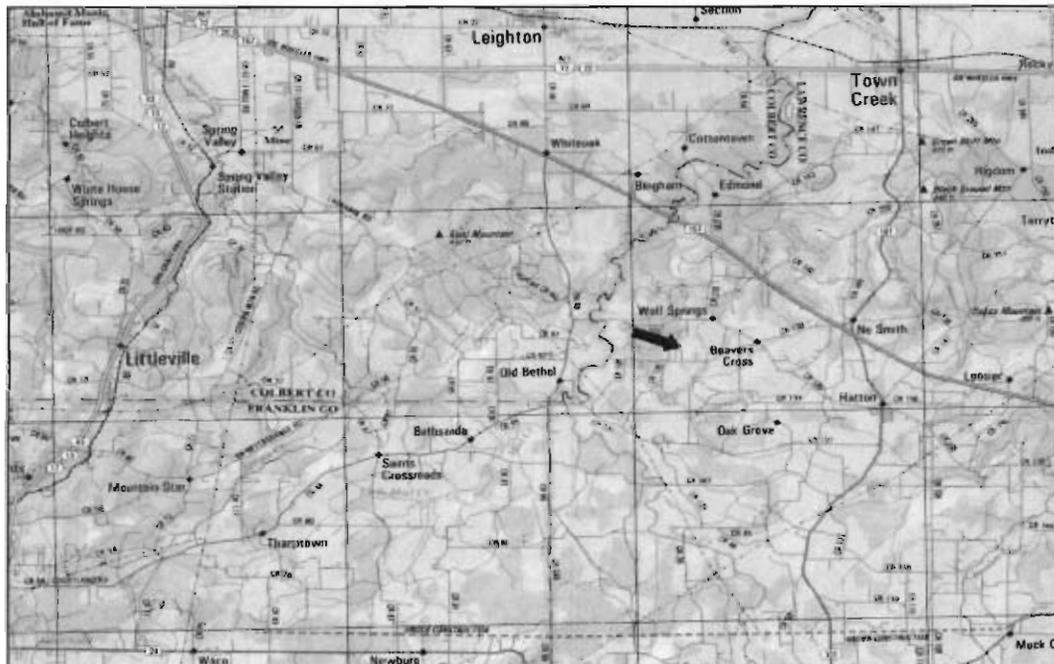
4.0 Maps

4.1 USGS 7.5 Minute Series Topographic Map



Hatton Quadrangle

4.2 Location Map



5.0 Nature of Activities

5.1 General Scope of Work

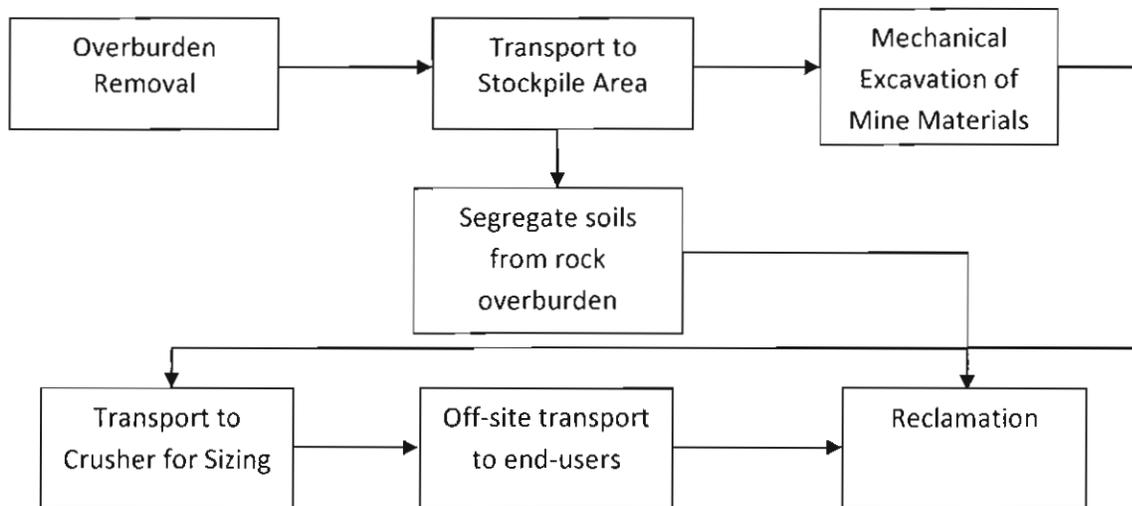
The proposed surface mine site (+/-43 acres) and shop/future preparation area (+/-15 acres) will encompass a total area of +/-57 acres with the mine pit itself occupying approximately 12.7 acres at elevation 630 feet (see Section 3.6 Site Characteristics). The purpose of the mine pit is for the removal of non-fuel sands, clays, ores and other minerals through the open pit method. The extracted materials will be hauled to a crusher at the south end of the mine facility for dry processing. Additional future processing (upon appropriate modification to this PAP and Individual Permit) is anticipated on the north end of the site at the shop and future preparation area.

Descriptive information contained in this discussion of the Pollution Abatement Plan is intended to generally describe the activities to be performed in the operation of the Masterson Site. Specific depictions of the proposed activities are included in the Attachments to this plan, more particularly being the drawings and specifications. All should be taken together in their entirety, as no document is intended to be used on a stand-alone basis.

5.2 Sequence of Mining Activities

Overburden will be removed from the mine area mechanically using excavators and trucks that will transport the materials to the adjacent overburden stockpile area which will have a capacity to receive over 250,000 cubic yards of material. Soils and other suitable materials will be segregated from the overburden rock. Once the overburden is removed, the sands, clays, ores and other minerals will be harvested using excavators, bulldozers and front-end loaders using transitional slopes of no less than 3:1. The harvested materials will be loaded into trucks for transport to the crusher which will be located adjacent to the south end of the mine pit. The harvested strata will be crushed and sized according to market needs and stockpiled for off-site delivery to end-users. No washing or wet processing will occur in association with the mine activities. Reclamation will be contemporaneous using the stockpile overburden as source material.

A flow-chart depicting the sequence of mining activities is on the following page.



5.3 Post-treatment Characteristics of Discharges

All discharges from the mining area would consist of low-volume discharges from the sediment basins to an unnamed tributary of Hagwood Branch. The overland flow directed to the sediment basins through grading, berms and open rock-line ditches will produce sufficient holding time to allow particulates and solids to settle out and accommodate any necessary monitoring of effluent before discharge occurs from the mine site. The flow of discharge will be monitored through a weir or similar apparatus and concentrations of iron will also be monitored through grab samples at the points of discharge. Concentrations of total suspended solids shall not exceed 30 mg/L and pH will be monitored to ensure discharges are between 6 and 8.5 standard units. Iron and Aluminum concentrations will also be monitored and treated within the confines of the Discharge Limitations of the Individual Permit to ensure acceptable discharges.

Permanent and temporary stabilization controls are used on the north 15-acres adjacent to the mine site consistent with previously permitted land disturbance activities. This site was cleared and graded for future anticipated use and, at an appropriate time, additional structural controls may be added in conjunction with a modification to this PAP and Individual Permit. Consistent with the aforementioned sediment basins, this stabilized swale conveys overland flow to an unnamed tributary of Hagwood Branch.

6.0 Site Characteristics

6.1 Soils

According to the USDA Soil Survey of Lawrence County, Alabama, the soils on the site are within the Tilsit Series and more particularly the Tilsit silt loam which formed from fine-grained sandstone, siltstone and shale.

6.2 Slopes

The general area is described as gently rolling to undulating terrain though the proposed mine site is within a relatively flat area with slopes of 2%-5%.

6.3 Vegetation

The area encompassing the proposed mine facility consists of pastoral fields, cut-over timber stands and to a lesser extent lands in row-crop cultivation.

6.4 Roads

Roads will be cut along the mine pit at intervals suitable for mining activities to provide equipment and trucks access to and from the pit and crusher. These roads will be temporary and reclaimed as mining activities progress.

An existing farm road provides ingress/egress from County Road 135 to the mine site. This farm road will be improved to serve as a haul road for end-users of mined materials. Consistent with the existing topography, this farm road is flat with little to no dips or grades and will be maintained as such through said improvements. No stream or creek crossings will be encountered during improvements to this access road. Another existing road connects the mine pit to the shop area and additional preparation area which is located on 15 acres at the north end of the site.

6.5 Drainage Patterns

The proposed mine site is located atop a knoll or ridge oriented north to south and east to west with steeper gradients falling to the north, west and south. Overland flow is conveyed through sheet flow across these gradients. A gentle gradient is to the east. Drainage from the mine facility overburden stockpile will be diverted to the west and into a riprap lined ditch, directing the runoff to a sediment basin constructed under the project. This will reduce the flow over the stockpile slopes, and thereby reduce the possibility of slope degradation. Drainage from the stockpile slopes will be generally

directed to a riprap lined ditch along the bottom of the slopes, and eventually to sediment basins to be constructed near the southwest, southeast and northeast corners of the stockpile. Discharge from the basins shall be via primary discharge pipes and overflow spillways to an unnamed tributary branch of Hagwood Branch.

6.6 Receiving Waters

Unnamed tributary branches drain west to Hagwood Branch and are the receiving waters from a triad of outfalls from the sediment basins (Outfalls 001-002-003) and the stabilized swale at the north end of the site (004). Hagwood Branch is a tributary of Masterson Creek and ultimately Town Creek at the Colbert-Lawrence County line. Hagwood Branch is not listed as impaired on the Alabama Department of Environmental Management's Clean Water Act 303(d) List and has a use classification of Fish and Wildlife. The receiving waters have not been assigned Total Maximum Daily Loads (TMDLs).

6.7 Water Sources

No water wells exist at the proposed mine site. An existing farm pond will serve as an alternate water source for dust suppression and controls within the mine pit, along roads and at the operational area at the crusher. If additional waters are needed for such dust suppression and controls, the permittee may install a water well at the mine site that would likely have a 4"-6" riser and be constructed by a licensed well driller in the State of Alabama. The water well would not be used for potable water or domestic water supply.

No injection of waters or other liquids are associated with the proposed mine facility operations. Hence, no hydraulic fracturing or injection wells will be utilized or present at the facility.

6.8 Storm Sewer Systems and Inlets

A single storm sewer is proposed under the operations area to direct flow onto the site to one of the sediment basins. Inlets and outlets shall be protected with hay bales as necessary to reduce velocities and provide an upstream method of silt containment.

6.9 Public Water Supply

The proposed mine is within the watershed of Wilson Reservoir of the Tennessee River which is designated as an impoundment used as Public Water Supply. This impoundment is located approximately 15-miles to the north with Town Creek being a

direct tributary. The proposed mine does not discharge directly to Town Creek as described above in Section 6.6.

6.10 Potential Sources of Pollution

6.10.1 Sediment

The potential sources of pollution from the proposed mining activities would be associated with erosion and subsequent sedimentation from:

- Run-off from the overburden stockpile
- Run-off from transport or hauling of excavated materials to the crusher
- Run-off from the crushed materials
- Run-off from haul roads

All stormwater run-off from the mine site will be directed to three (3) sediment basins through site grading, berms and open rock-lined ditches. Overland flow from the shop and future preparation area will be conveyed through a stabilized swale using permanent and temporary BMPs to ensure minimization of sediment transport from this area of the facility.

6.10.2 Other Potential Pollutants

Other potential sources of pollution other than sediment to stormwater run-off would include:

- Transportation-related lubricants and fuel storage on trucks and equipment
- Fuel transfer activities between tanker and trucks/equipment
- Drips or leaks from antifreeze, lubricants and fuels in trucks and equipment

There will be no bulk storage of fuels, chemicals or other similar substances at the mining site in fixed storage tanks. Any fuel storage will be transportation-related and delivered on a contract basis as needed. Temporary storage of fuels and lubricants in a tanker truck may occur as needed but the tanker truck will not remain on-site for long durations of time.

7.0 Erosion and Sediment Controls

7.1 General Description

All stormwater runoff from mining activities will be directed to three sediment basins through site grading, berms and open rock-lined ditches. These latter conveyances will utilize rip-rap rock and check dams to abate high-velocity flows and control the volume/velocity of the discharges. Silt fencing will be placed around the periphery of the site where appropriate and in areas of higher sediment transport; metal wiring and hay bales will be used as required in conjunction with the silt fence to help control or mitigate 'knock-downs' or 'blow-outs' often resulting from higher precipitation events in areas of significant velocities. The potential pollutants to stormwater run-off from the proposed mine site are described in Section 6.10 of this Plan.

7.2 Sediment Basins

Three sediment basins will be constructed as structural sediment control management practices at the mine site. Prior to construction of the basins, all rocks, boulders, trees, stumps, organic materials and other similar items will be removed. As necessary, fill areas will be constructed in 12" lifts with compaction to a 95% standard proctor. The embankments of the basins will be maintained at a slope of 3:1 and also be constructed in 12" lifts with a compaction of 95% standard proctor. The sides and periphery of the sediment basins will be seeded with grass and/or further stabilized with rip-rap rock as necessary to prevent erosion and sediment transport. The dam will also be graded and maintained at a slope not to exceed 3:1 and seeded to establish permanent vegetative cover.

The basins will be maintained and cleaned out when 60% of its design capacity is reached. The sediments will be transported to the overburden stockpile, compacted and seeded to establish vegetative cover and reduce potential erosion. No sediments will be transported off-site. The life expectancy of the basins will exceed that of mining activities (5-years).

7.3 Outfalls

The outfalls from the sediment basins (001-002-003) will be stabilized to prevent scour or high volume/high velocity discharges through energy dissipation systems. Rip-rap rock will be placed at the outfalls and grass seeding, hay bales and check dams will also be used as needed to stabilize the underlying soils and prevent sediment transport.

The outfall at the north end of the site (004) which is consistent with previously permitted land-disturbance activities (clearing, grubbing, grading) will be maintained through permanent and temporary Best Management Practices (BMPs) that include rock check dams, silt fencing and staked hay bales. These BMPs will be maintained until full stabilization is achieved.

7.4 Roads

The proposed mine facility will construct and utilize two types of roads, one for transport of mined materials from the pit and another for a haul road to the paved county road.

7.4.1 Mine Roads

Roads into the mine pit will be constructed using no less than 4 inches of crushed rock on slopes not to exceed 10% along contours with transitional slopes of at least 2:1. An existing farm pond will be used as a water source for dust abatement to prevent sediment/dust transport.

7.4.2 Haul Road

The existing farm road from the proposed mine site to County Road 135 will be constructed in 8" lifts, compacted and covered with no less than 24" of base gravel. The existing topography along this road corridor is relatively flat and a similar flat grade will result from improvements. This side slopes of the road will not exceed 3:1 and silt fencing will be used as non-structural controls along this road to prevent erosion and subsequent sedimentation. Hay bales will be added if necessary to provide additional containment in areas of increased runoff.

7.5 Overburden Stockpile

The overburden stockpile will be placed at the location shown, with all material to be compacted, covered in mulch and seeded to provide vegetative cover. The side slopes will be maintained at slopes not to exceed 3:1 and also covered in mulch and seeded. Silt fencing will surround the stockpile and open rock-lined ditches will convey all run-off to the sedimentation basins.

7.6 Operational Storage and Crushed Rock Stockpile

Harvested rock, sand, clays, ores and other minerals will be transported to the crusher for dry processing and sizing. This area will be graded to maintain an aspect to the north-northwest such that any overland flow will be conveyed through sheet flow to the

sediment basin. Base gravel will be spread to cover any exposed areas and water will be sprayed as necessary around the crusher and operational area for dust suppression. Silt fencing, hay bales and check dams will be used as necessary to prevent erosion at the periphery and abate any high-volume, high-velocity flows from discharging at this area.

8.0 House Keeping Best Management Practices

8.1 Equipment and Truck Inspections

All equipment and trucks at the proposed mine site will be inspected on a daily basis to identify points of potential leaks, drips, etc. The inspections shall note any areas on the chassis, under carriage, and engine to ensure no fuels or lubricants are or have been leaking and will identify any connections, fittings, or hoses that could be potential sources of leaks or drips from failure or rupture. All fittings will be checked daily to ensure tight connections and all hoses, especially hydraulic hoses, will be inspected for signs of bulging, wear, rot or chaffing that may lead to a rupture and subsequent release. Maintenance on any areas so noted will be addressed immediately or prior to putting the equipment/truck back into service.

8.2 Fuel Transfers

An over the road tanker truck will supply fuels and lubricants to the proposed mine site for trucks and equipment. Spill buckets and absorbent drip pads will be employed underneath each hose connection prior to fuel transfer activities and will remain until the fuel transfer is complete and the hose disconnected. Any residual fuel in the hose will be drained back into the tanker truck or collected in the spill bucket. The equipment/truck operator will monitor the transfer into the tank to ensure unintended over-fills do not occur. In the event an overfill or spill occurs the necessary equipment and materials are readily available to contain any free product through trenching and berming.

8.3 Solid Waste

All employees will ensure trash is picked up to prevent wind-blown items and disposed of in a designated trash can for proper disposal.

8.4 Sanitary Waste

A porta-potty will be provided on a contract-basis by a third party vendor for use by employees. The vendor will provide regular maintenance and clean-out services. No septic tanks or similar appurtenances will be used on-site.

9.0 Reclamation

A copy of the Reclamation Plan is attached to this PAP as Attachment 1.

9.1 Contemporaneous Reclamation

The reclamation process will consist of the mechanical replacement of stockpiled overburden back into the mine pit to eliminate sheer walls and re-create the previous topography to the extent possible utilizing the overburden stockpile material quantity. The soils will be replaced in lifts of no more than 12 inches with slopes no greater than 3:1 and graded to allow natural drainage. Mulch and grass seeding will be spread to cover the disturbed areas as reclamation continues and establish a permanent vegetative cover.

9.2 Sediment Basins

Abandonment of the sediment basin(s) will consist of mechanically replacing any excavated soils to restore the natural contours and drainage patterns to pre-mine conditions. If applicable, the sediment basins may be converted into woodland ponds to further capture any sediments from run-off should groundwater elevations prevent replacement of excavated soils.

9.3 Haul Road

The haul road from the mine site to the paved county road (Co Rd 135) will remain in-place at cessation of mining activities and be maintained as an existing access road consistent with the present-day farm road.

ATTACHMENT 1

Comprehensive Reclamation Plan

**COMPREHENSIVE RECLAMATION PLAN
FOR**

**MASTERSON SITE
ADOL File Number 42-MS-3
ADOL Permit No 014274**

Legal Description:
57 Acres in Section 28-T5S-R9W
USGS Topographic Map Attached

This plan will be followed to carry out reclamation as mining progresses, as well as the final closeout of the above-referenced site by:

MS Industries II, LLC

(Operator's Name and Address)

2489 County Road 236, Town Creek, AL 35672

I. Reclamation Practices During Mining

1. All disturbed acreage will be revegetated upon cessation of mining or related land disturbance activities in a manner prescribed by the Alabama Department of Labor in accordance with the *Alabama Surface Mining Act of 1969* (Act 99-579). Reclamation shall proceed in a contemporaneous manner, i.e., in accompaniment to normal mining activities and in conjunction with site grading. Appropriate control procedures shall include:
 - a. Backfilling, regarding and stabilizing exposed highwalls in inactive pits to a slope of 3:1 or flatter with appropriate drainage control.
 - b. When appropriate, the conversion of inactive pits to ponds, i.e., where the groundwater level does not lie significantly below a pit's highest rim.
 - c. Revegetating all disturbed areas by applying lime and fertilizer as recommended by a comprehensive soil analysis, in conjunction with mulching and seeding using permanent native grasses or legumes in order to achieve no less than 75% vegetative ground cover.
 - d. In addition, trees shall be planted on affected land with native commercial species on a spacing of 10 feet, approximately 435 trees per acre, and planting methods shall be governed by good planting practices approved by a registered forester.

2. A minimum 50-foot, undisturbed buffer setback from adjacent properties, public roads, streams, lakes, residences, and all other features which may be adversely affected by mining activities shall be maintained during the operational life of the mine. Lateral support for this setback shall be graded to a slope of 3:1 or flatter, and vegetated with permanent native grasses.
3. All reclamation activities will be initiated at the earliest practicable time. Where overburden is used to eliminate sheer walls, the placement of overburden against any section of sheer wall will begin as soon as practical after mining operations have ceased along that section, but no longer than six months after overburden becomes available and mining operations are complete. Contouring of the overburden will be completed no later than six months after the overburden has been placed.
4. Revegetation activities will be initiated as soon as practical and completed no later than one year after the final contours are established in an area and revegetation activities would not interfere with mining operations.
5. If mining operations cease, for whatever reason, for more than two years at the site, then all of the requirements of the Alabama Surface Mining Act of 1969 will be met. This period may be extended for a maximum of two years when the cessation of mining is caused by governmental action during the review of environmental permit applications. However, we will complete those reclamation activities necessary to protect the public health and safety.
6. Reclamation activities will be consistent with all applicable local government ordinances which are at least as stringent as the minimum standards of the Alabama Surface Mining Act of 1969.
7. Reclamation will achieve the stormwater drainage, wetlands, and other surface and groundwater management requirements of the Alabama Department of Environmental Management and other agencies.
8. Safety provisions for persons, wildlife, and adjoining property will be provided during mining and reclamation.

II. Final Reclamation

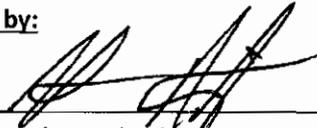
The site manager will ensure completion of the following steps during the mine's final reclamation, within two (2) years of the expiration date of the ADOL surface mining permit period:

1. All mining and processing equipment (mobile or stationary) will be removed from the site.

2. The contents of all fuel/lubricant storage vessels will be pumped for subsequent transportation off-site and the vessels themselves will be removed.
3. All man-made structures will be removed or demolished; any remains of such structures will be disposed of or recycled off-site, except where permission is received from the Alabama Department of Labor, Alabama Department of Environmental Management, or other permitting authorities to refrain from doing so.
4. Any remaining stockpiles of material will be transported elsewhere for sale or utilized in the mine's reclamation via backfilling of pits.
5. The site will be graded to a 3:1 or flatter slope where necessary to minimize future erosion of topsoil, to direct surface runoff flow to retention ponds, and to prevent bodies of standing water other than reclaimed pits or settling ponds from forming.
6. Disturbed acreage will be revegetated by means of seeding and/or planting, using the methods described above.
7. Existing extraction pits will be converted into ponds as appropriate; above-water portions of ponds shall be vegetated as described above.
8. Gullies and washouts will be repaired by backfilling with soil or Type 3 riprap, and stabilized with vegetative cover where appropriate.
9. All lands shall be reclaimed to a neat, clean condition by removing or adequately burying, where allowed by law, all visible debris, litter, junk, worn-out or unusable equipment or materials, as well as all poles, pilings, and cables.
10. In addition to providing soil for revegetation purposes, overburden will be utilized to reduce the occurrence of slopes steeper than three horizontal feet for each vertical foot. Long, continuous slopes will be avoided.
11. Best management practices will be utilized to minimize erosion.
12. Native top soils will be used, especially in areas reclaimed for aquatic or wildlife habitats, and where topsoil is not available, a soil or growing medium including amendments suitable for the type of vegetative communities planned.
13. A suitable berm or backsloping will be employed along the tops of sheer walls above all benches to prevent uncontrolled surface runoff over the sheer wall.

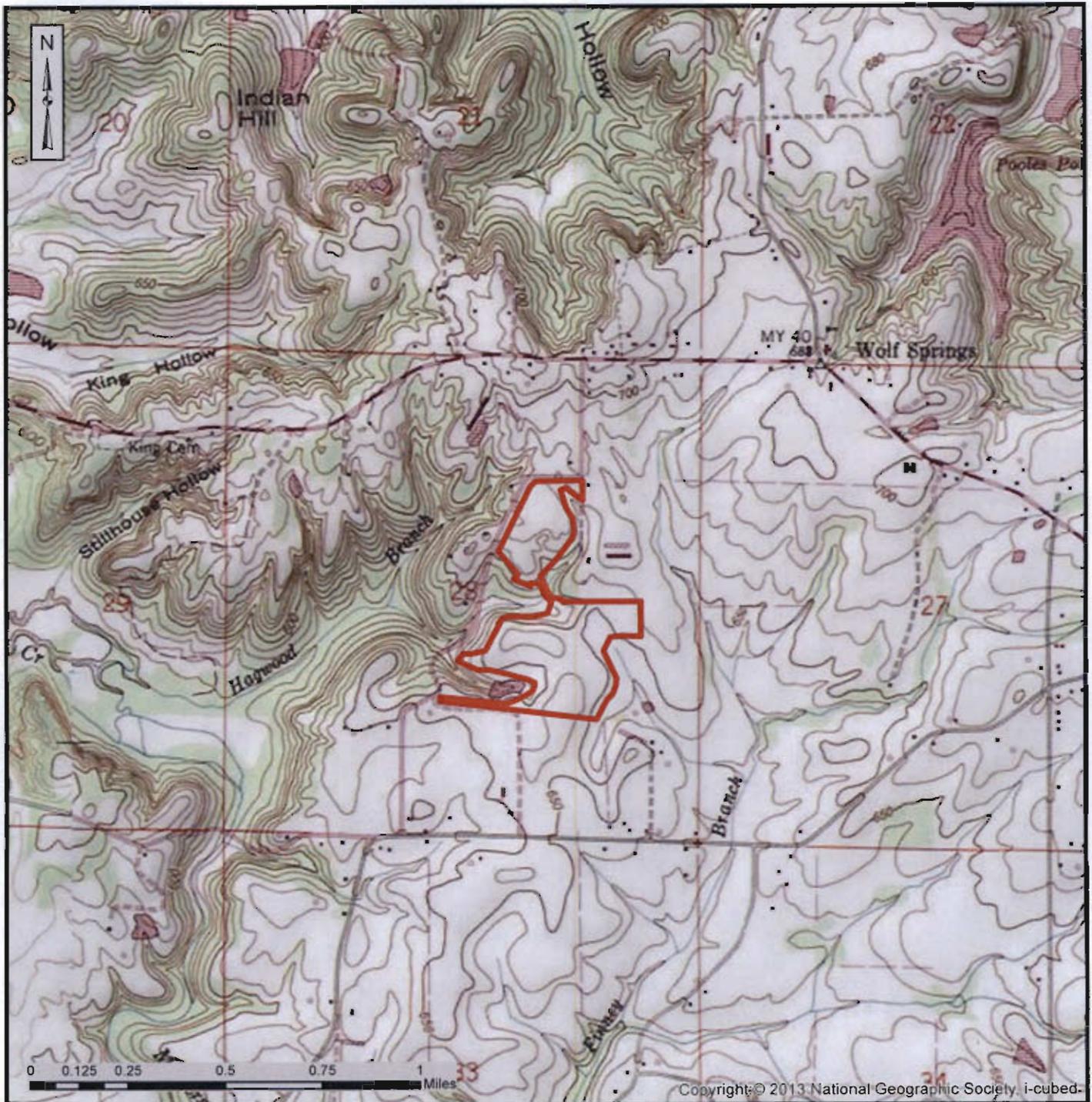
14. A revegetation plan will be developed, including the species of grasses, shrubs, trees, and aquatic and wetland vegetation to be planted, spacing of vegetation, and, where necessary, soil amendments necessary to prepare them for revegetation.

III. Submitted by:



Operator (or authorized representative)

6-24-15
Date



TOPOGRAPHIC MAP
 (Hatton Quadrangle)
 Section 28, T5S, R9W
 Masterson Site v2
 2228 County Road 135
 Town Creek, Lawrence County, AL

Project No:
 E14-124
 June 2015

GEO-SOURCE, Inc.
Environmental Consultants
 462 N. Court Street
 Florence, Alabama 35630
 www.geo-source.com



ATTACHMENT 2

Design Drawings

PROPOSED MINING - MASTERSON SITE v.2

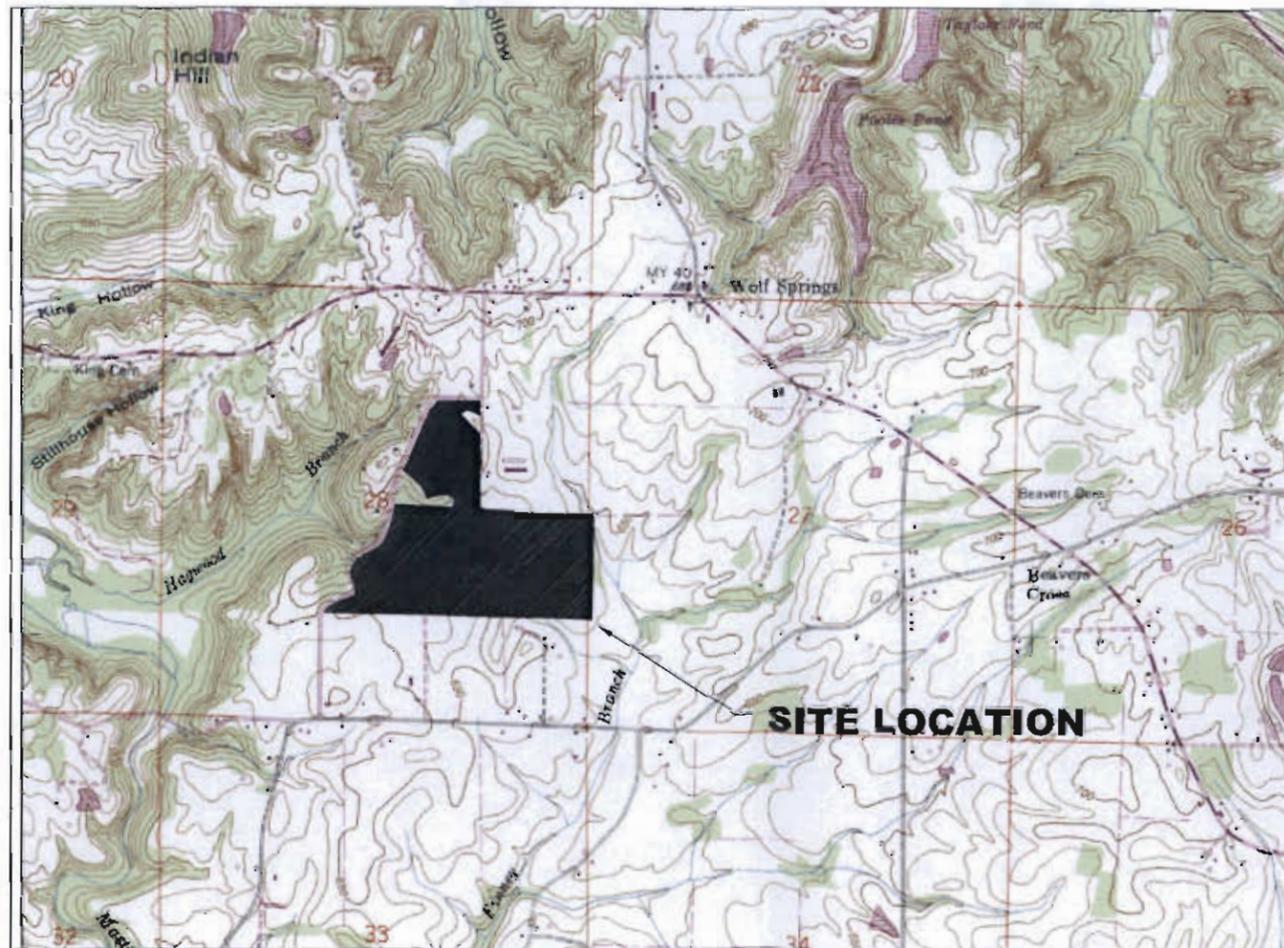
CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)

FOR

MS INDUSTRIES II, LLC

LAWRENCE COUNTY, ALABAMA

MS INDUSTRIES II, LL.
 2489 COUNTY ROAD 236
 TOWN CREEK, AL 35672



PLAN ASSEMBLY

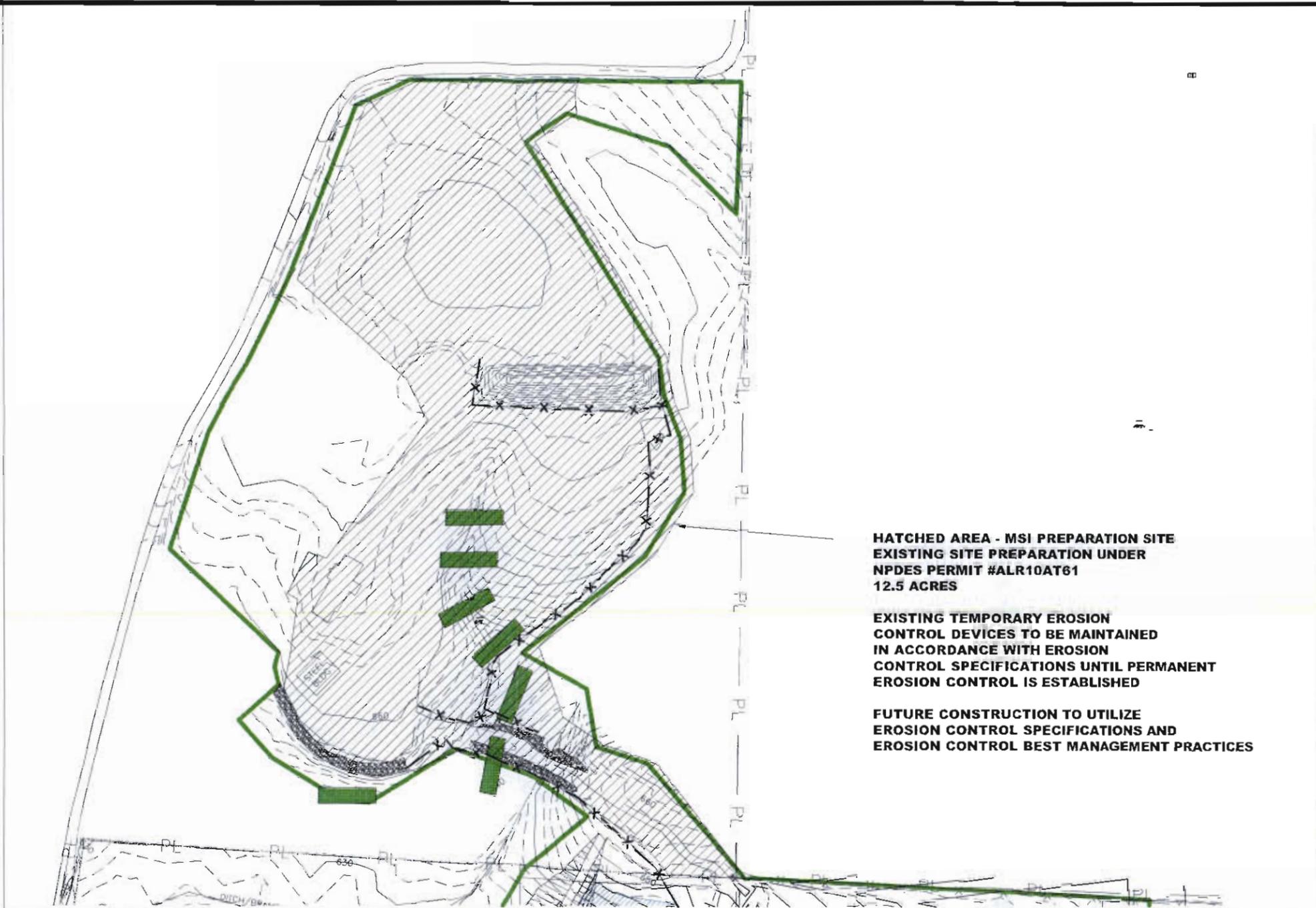
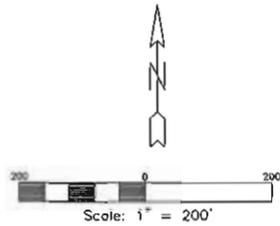
TITLE	1
OVERALL SITE PLAN	2
MINING PIT DETAILS AND SECTIONS	3
OVERBURDEN STOCKPILE DETAILS AND SECTIONS	4
SEDIMENT POND 1 PLAN AND DETAILS	5
SEDIMENT POND 2 PLAN AND DETAILS	6
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ENTRANCE ROAD AND STOCKPILE OPERATIONS AREA	7
EROSION CONTROL PLAN A (MINING AREA)	8
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TEMPORARY EROSION CONTROL DETAILS	9
PERMANENT EROSION CONTROL DETAILS	10

ATTACHMENT

TOPOGRAPHIC SURVEY - EXISTING SITE PLAN


**DEAN
McRAE**
 ENGINEERING, INC.

308 GRISHAM STREET
 P.O. BOX 573
 IUKA, MISSISSIPPI 38852
 PHONE: (662)423-9104



**HATCHED AREA - MSI PREPARATION SITE
EXISTING SITE PREPARATION UNDER
NPDES PERMIT #ALR10AT61
12.5 ACRES**

**EXISTING TEMPORARY EROSION
CONTROL DEVICES TO BE MAINTAINED
IN ACCORDANCE WITH EROSION
CONTROL SPECIFICATIONS UNTIL PERMANENT
EROSION CONTROL IS ESTABLISHED**

**FUTURE CONSTRUCTION TO UTILIZE
EROSION CONTROL SPECIFICATIONS AND
EROSION CONTROL BEST MANAGEMENT PRACTICES**

NOTES:
1.) CONTRACTOR TO PROVIDE AND INSTALL EROSION CONTROL MATERIALS AS SHOWN AND AS DESCRIBED IN THE PERMIT.

2.) ALL DISTURBED AREAS NOT RECEIVING ROCK SURFACING SHALL BE TEMPORARY SEEDED WHEN THE AREAS ARE NOT UNDERGOING ACTIVE DISTURBANCE OR ACTIVE CONSTRUCTION AND OR PROGRESSIVE CONSTRUCTION FOR LONGER THAN 30 DAYS SEEDING SHALL INCLUDE 4" TOPSOIL, FERTILIZER, SEEDING AND MULCHING. SUBMIT TOPSOIL SOURCE, FERTILIZER RATES, AND SEED ANALYSIS FOR APPROVAL.

3.) POSITIVE DRAINAGE AWAY FROM ENTRANCE ROAD SHALL BE MAINTAINED AT ALL TIMES.

4.) ANY DISTURBANCE FROM WITHIN IN MINING PIT AREA SHALL DRAIN TO A POINT IN THE MINE AND THEN BE PUMPED AS REQUIRED TO SEDIMENT POND #2.

-  PROPOSED / EXISTING ROCK CHECK DAM USE 200 POUND RIP RAP
-  PROPOSED / EXISTING PROPOSED ROCK PLATING 18" THICK
-  DITCH
-  INLET PROTECTION (SEE EROSION CONTROL DETAILS)
-  PROPOSED SILT FENCING (SEE EROSION CONTROL DETAILS)
-  PROPOSED STRAW BALE BARRIERS (SEE EROSION CONTROL DETAILS)
-  ORIGINAL CONTOURS 2' INT.
-  ORIGINAL CONTOURS 10' INT.
-  FINAL CONTOURS 2' INT.
-  FINAL CONTOURS 10' INT.
-  PROPOSED PROPERTY LINE

DEAN McRAE
ENGINEERING, INC.
308 GRISHAM STREET
P.O. BOX 573
IUKA, MISSISSIPPI 38852
PHONE: (662) 232-9104
EMAIL: tdcrae@deanmcrac.com

PROJECT:
CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)
MS INDUSTRIES III, LLC.
MASTERTSON SITE - LAWRENCE COUNTY AL
SHEET NAME:
EROSION CONTROL PLAN B (Preparation Site)

JOB NO.:
E14-124

DATE:
JUNE 2015

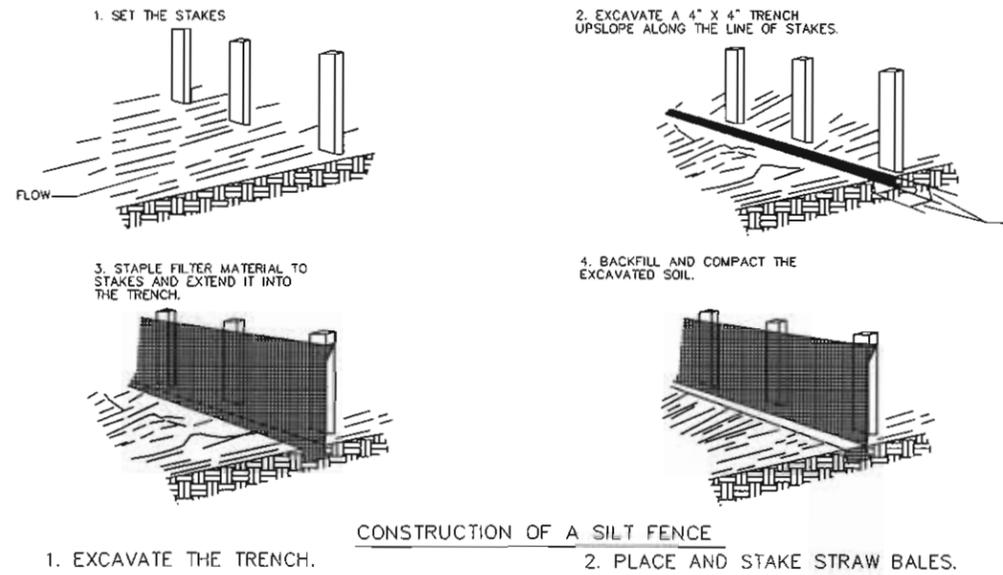
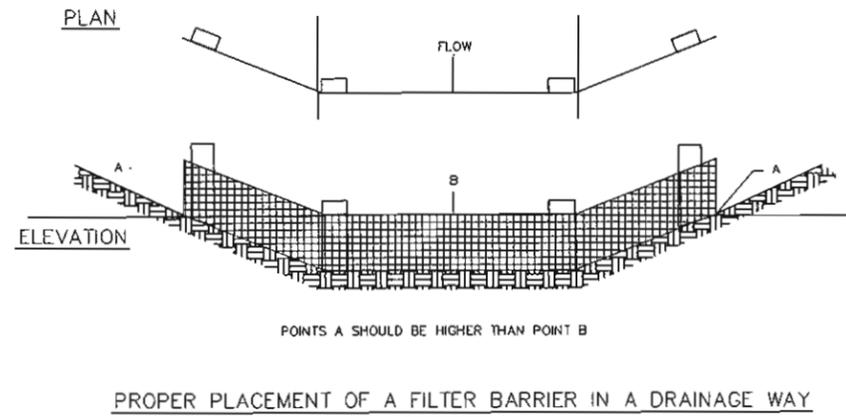
DRAWN BY:
TD

CHECKED BY:
KM

REVISION NO.:
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REVISION NO.	DESCRIPTION

SHEET NO.
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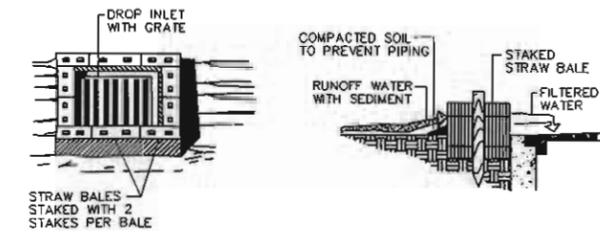
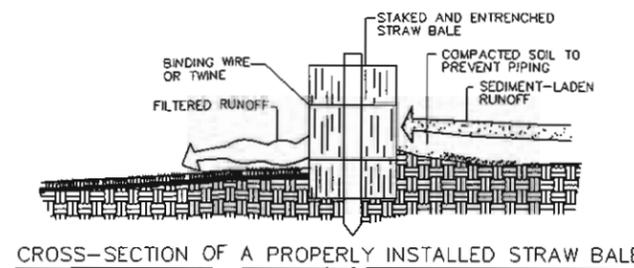
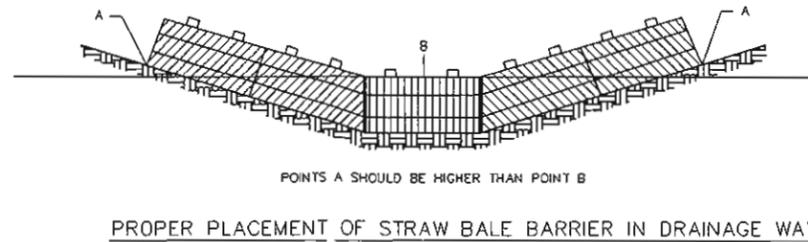
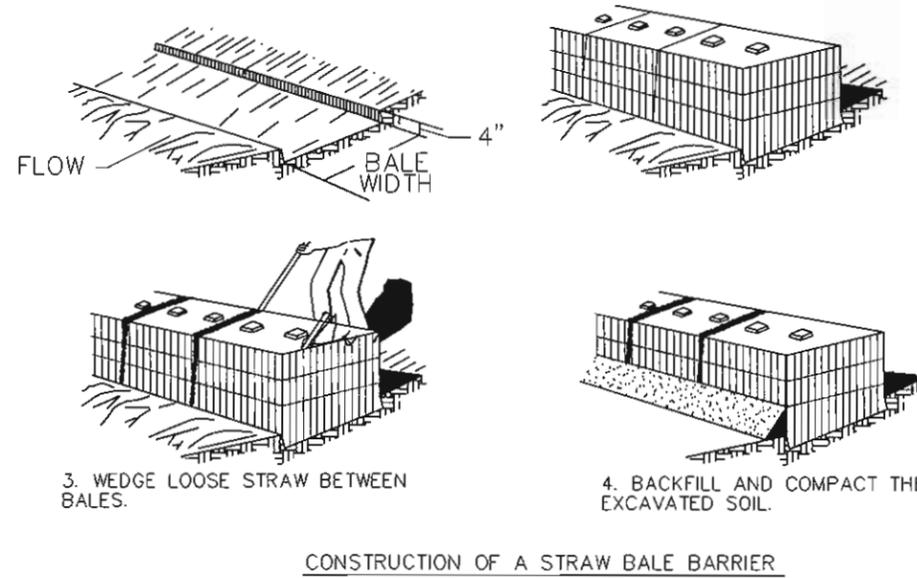
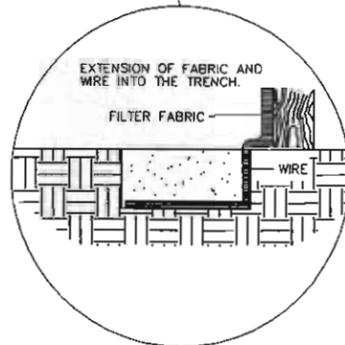
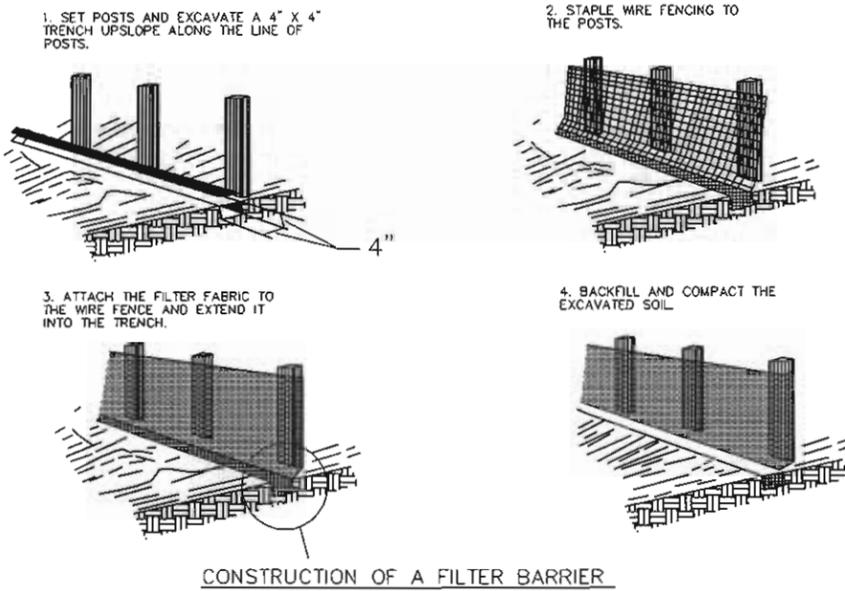


NOTES:

1.) CONTRACTOR TO PROVIDE AND INSTALL EROSION CONTROL MATERIALS AS SHOWN ON THE EROSION CONTROL PLAN.

2.) ALL SLOPES SHALL BE SEEDED, WHICH SHALL INCLUDE 4" TOPSOIL, FERTILIZER, SEEDING AND MULCHING. SUBMIT TOPSOIL SOURCE, FERTILIZER RATES, AND SEED ANALYSIS FOR APPROVAL.

DEAN MCRAE ENGINEERING, INC.
 308 GRISHAM STREET
 P.O. BOX 573
 IUKA, MISSISSIPPI 38852
 PHONE: (662) 933-9104
 E-MAIL: td@deanmcrae.com



STRAW BALE DROP INLET SEDIMENT FILTER

PROJECT: CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)
 MS INDUSTRIES II, LLC.
 MASTERSON SITE - LAWRENCE COUNTY AL

SHEET NAME: TEMPORARY EROSION CONTROL DETAILS

JOB NO.: E14-124

DATE: JUNE 2015

DRAWN BY: TD

CHECKED BY: KM

REVISION NO.: 0000000

DESCRIPTION

SHEET NO.

ATTACHMENT 3

Specifications

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

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**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SCOPE OF WORK

Work under this item shall consist of the removal and satisfactory disposal of all trees and stumps, roots, vegetation, rubbish, or any other material within the construction limits; filling depressions resulting from grubbing operations; the removal of all structures and/or obstructions shown on the plans or encountered during construction which interfere with construction; and the protection of designated trees, shrubs or plants; all in accordance with the plans and specifications.

1.2 PROTECTION OF UTILITIES

Prior to starting work, the location of all utilities shall be determined by the Contractor. Locations of existing utilities shown on the drawings are based on above ground structures and available record drawings. Existing utilities shall not be removed from service without Engineers approval. Any damage occurring to any utility will be replaced at the expense of the Contractor.

1.3 UTILITY RELOCATION

Relocation of the following utilities (where required) will be completed by the owner unless noted otherwise on the drawings:

- Sanitary Sewer Mains and Service Lines
- Water Mains and Valves, Service Lines and Meter Settings (Valve boxes will be reset by the Contractor.)
- Fire Hydrants

The removal and/or resetting of electrical lines, telephone lines, gas mains, services and appurtenances shall be arranged by the Contractor with the appropriate utility. All cost for relocation will be paid by the Owner.

1.4 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

Excavations shall be suitably barricaded and posted with warning signs for the safety of persons. Structures, utilities, sidewalks, pavements, and other facilities immediately adjacent to excavations shall be protected against damage, including settlement, lateral movement, undermining, and washout.

1.5 PROTECTION OF MONUMENTS

The Contractor shall prevent the destruction of baseline monuments, benchmarks, control points, property corners, and all other survey points established by the Engineer. Removal of all monuments shall not be accomplished without prior approval by the Engineer.

PART 2 - EXECUTION

2.1 CLEARING

All the surfaces within the construction limits or right-of-way lines shall be completely cleared of perishable or objectionable vegetable matter and other obstruction, as herein defined, except such trees and shrubs which are designated to remain. All trees, brush and stumps within the limits of the project area to be cut, shall be cut sufficiently close to the ground to facilitate future mowing, except such trees and stumps that are to be grubbed, which may be cut to a convenient height for grubbing by bulldozer.

The contractor shall supply the location and assume all responsibility for the disposition of all cleared non-perishable debris.

2.2 GRUBBING

Within the area of the construction lines where excavation is to be made or embankment is to be placed, all trees, stumps, roots and other objectionable matter shall be grubbed out or otherwise completely removed and disposed of as hereinbefore indicated. When so directed, areas outside the construction lines in marshes or swampy sections shall be cleared of trees and the stumps cut off flush with the ground or at water level. Except in areas to be excavated, stumps, holes, and depressions caused by the grubbing operations shall be back-filled to the level of the original ground, with suitable material, and thoroughly compacted to the satisfaction of the Engineer.

2.3 OBSTRUCTIONS

The Contractor shall preserve and protect all structures, fences, and improvements, above or below the ground, within the construction limits which are to remain.

The Contractor shall raze, remove and satisfactorily dispose of all buildings, structures, old curbs and gutter, sidewalks, fences, or other obstructions any portion of which is within the clearing and grubbing or right-of-way limits, except those items hereinbefore indicated. Unless otherwise specifically directed, the substructure of a bridge and all culverts and minor structures shall be razed to the level of the adjacent ground or low water level. All material which has a salvage value shall be removed, without unnecessary damage, in sections or pieces which may be readily transported, and shall be piled by the Contractor at such places as may be designated. Disposition of unusable material shall be made in accordance with the disposal of debris, under Clearing.

**TECHNICAL SPECIFICATIONS
MASTERTON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

EXCAVATION AND EMBANKMENT

PART 1 – GENERAL

1.1 SCOPE OF WORK

Work under this item shall consist of the excavation of all materials encountered within the limits of the work and the disposal of excavated materials by hauling to embankment or waste. Excavation shall be completed to the lines, grades, and elevations shown on the plans. Excavation and backfill for storm sewers, drainage structures, lines, and utilities are not included in this specification.

1.2 CLASSIFICATION OF EXCAVATION

Excavation specified under this section may be classified by any of the following classes:

- Common Excavation – Common Excavation will consist of the excavation and placement of suitable material at the density shown on the drawings and contained in these specifications.
- Undercut Excavation – Undercut Excavation will consist of excavating unsuitable material within the property boundary which is unsuitable for that required for embankments and which can not be satisfactorily used or disposed of within the right-of-way.
- Select Backfill – Select Backfill will consist of borrow material that conforms to the unified soil classification SM, SP, or GM, natural or processed, to produce a uniform mixture, complying with the requirements of these specifications. The material shall be obtained from approved sources outside the property boundary. Contractor shall provide all testing required to having source material approved. Select Backfill Material containing organic matter or other foreign substances will not be accepted.
- Waste Excavation – Waste Excavation will consist of excavating unsuitable material within the property boundary which is unsuitable for that required for embankments and which cannot be satisfactorily used or disposed of within the right-of-way.
- Shot Rock Excavation and Backfill – Shot Rock Excavation and Backfill will consist of excavating the existing shot rock to allow for installation of the sheet pile wall system and driving of loading pad h-piles. The shot rock shall be excavated, stored on-site and as required reused for concrete wall foundation pads and for backfill around inside and outside of sheet pile wall and concrete wall.

1.3 REQUIREMENTS

The area shall be cleared and grubbed prior to the start of excavation. The Contractor shall inform himself as to the proper movements of haul and disposal of materials.

Suitable materials excavated shall be used in the formation of embankments and backfill as directed. Prior to acceptance, then entire area shall be machined and bladed for proper drainage.

The rough excavation shall be carried to such depth that sufficient material remains to achieve the required compaction. Sufficient material shall be placed above the designated subgrade in embankment construction to allow for both compaction and settlement. Over-excavation shall be backfilled and compacted in accordance with these specifications at the Contractor's expense

1.4 DRAINAGE

Grading in the vicinity of the work shall be performed such that water does not enter into excavated areas. No water shall accumulate in graded areas in advance of construction, with temporary ditches constructed as required to divert surface water.

Placement of embankment shall be performed such that positive drainage away from the construction area is maintained. Acceptable dewatering methods shall be employed as required.

PART 2 - EXCAVATION

2.1 STRIPPING SOIL

Topsoil, where present, shall be stripped in cut and fill areas and stored for later use in seeding and planting.

Heavy growths of grass and other vegetation, roots, debris, stones, objects larger than 2 inches in any dimension, and other unsuitable materials shall be removed from the surface of areas to be stripped by mowing, grubbing, raking, or other suitable methods as required.

Topsoil shall be stripped from the surface of cut areas and areas indicated to receive fills or embankments. Topsoil shall mean the average top 4 to 6 inches, or deeper pockets if found, of natural, friable, dark sandy loam surface soil possessing the characteristics of representative soils on the site and in vicinities that produce heavy growths of crops, grass, or other vegetation. The topsoil shall be reasonably free from subsoil, clay lumps, brush, and objectionable weeds; from stones, stumps, and other objects larger than 2 inches in diameter; from roots and toxic substances; and from any other material or substances that might be harmful to plant growth or be a hindrance to fine grading, planting, and maintenance operations.

Excavated topsoil shall be transported to, and stockpiled in, designated topsoil storage areas on project site. Storage piles of suitable topsoil shall be located away from other soil material storage piles to prevent the intermingling of materials. Storage piles shall be not less than 4 feet high and constructed so that surface water will drain freely.

Where trees are designated to remain, stripping shall be stopped a sufficient distance from such trees to prevent damage to the main root system. In no case shall operations enter within the drip line of trees designated to remain.

2.2 EXCAVATION

All excavation necessary for successful completion of the work shall be performed to the lines, grades and elevations as shown on the plans or as otherwise directed. Surplus suitable excavation shall be stockpiled to the lines and grades as indicated on the plans. Material encountered which is considered unsuitable by the Engineer for use in the work shall be removed and disposed of as surplus excavation. Surplus excavation shall be placed so that it is well drained and presents a neat appearance. Spoils from ditch excavation shall be spread and leveled to blend with the ground contours and so as to present a well-drained, pleasing appearance.

The exposed subgrade in areas that are to receive additional structural fill and dense grade stone layer build-up shall be proof-rolled using a heavily loaded dump truck, prior to any additional materials placement. Any materials judged to deflect excessively under the wheel loads, which continued moisture-conditioning and compaction cannot adequately stabilize, shall be undercut to more stable underlying soils or bridged with a geo-grid stabilization material as directed by the Engineer.

Excavation for structures shall be performed in a manner to allow for proper space for erecting and removing forms from structures. Undercutting will be backfilled with medium crushed stone. All bracing, sheeting, or shoring necessary to perform and protect the excavation and structure shall be completed as required for safety and in accordance with OSHA requirements. All bracing, sheeting, and shoring shall be removed after completion of the structure unless otherwise directed.

2.3 BACKFILL AROUND STRUCTURES

Backfill around structures shall be placed in 12" minimum layers, with a moisture content maintained such that 90% Standard Proctor Density may be obtained. Each layer shall be compacted by hand tampers or other approved methods, with care taken to prevent damage to the constructed structure. Materials for backfill shall consist of the excavated material, borrow material, or other approved materials, and shall be free from roots or other organic materials, trash, frozen materials, and stones greater than 4".

2.4 EMBANKMENTS

Embankments shall be constructed of satisfactory material free of organic or frozen material and rocks with maximum dimensions no greater than 3 inches.

Areas on which embankment is to be placed shall be sufficiently disked to a minimum depth of 4". No embankment is to be placed on frozen ground. Embankments constructed are to be placed in horizontal layers of not more than 12" in compacted lifts to 95% Standard Proctor density within -2 to +3 percent of optimum moisture content for the soil type, unless indicated otherwise on the plans. Fill areas on existing slopes shall be benched, prior to fill placement, to prevent lateral movement. Placement and compaction shall be performed such that the final grade after compaction and shrinkage shall conform to the plan lines, grades, and cross-sections to within +/- 0.10'.

2.5 SUB-GRADE PREPARATION FOR ROADWAYS AND PARKING

The top portion of the sub-grade for all roadways and parking areas shall be crowned correctly, with the top 12" compacted to at least 95% Standard Proctor density within -2 to +3 percent of optimum moisture content unless otherwise directed on the plans. All irregularities or depressions experienced during compaction shall be repaired by scarifying and adding, removing, or replacing material until the surface is smooth and uniform. Soft or yielding material which does not readily compact shall be replaced with suitable material.

Rolling and compaction of the entire area shall be done with equipment which will attain maximum results. Sheepsfoot, rubber-tired, or flat rollers shall be used as conditions require. Any portion of the area which is not accessible to a roller shall be compacted to the required density by other approved means.

During all compacting operations, the water content of the material shall be constantly adjusted, if necessary, by sprinkling or loosening and subsequent evaporation to within the specified range of the optimum moisture content.

At all times the top of the sub-grade shall be kept in such condition that it will drain readily and effectively. The Contractor shall protect the sub-grade from damage, and in no case will vehicles be allowed to travel in a single track. If ruts are formed, the sub-grade shall be reshaped and rolled.

Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at those places and adding, removing, or replacing material until the surface is smooth and uniform. All soft and yielding material which will not compact readily when rolled or tamped shall be removed as directed by the Engineers and replaced with suitable material.

Material encountered that will not permit satisfactory compaction shall be excavated, disposed, and replaced, and will be considered incidental to sub-grade preparation. No additional pay will be allowed for this item.

2.6 HAUL

All materials shall be hauled from the original position to embankment or waste as indicated on the plans and directed by the Engineer.

2.7 FINISH GRADE

All disturbed areas, embankments, and excavations shall be graded smooth to meet the elevations shown on the plans. All roots, lumber, earth, clods, or rocks larger than 3" shall be removed prior to seeding and project completion.

In borrow areas, slopes shall be completed to 3 horizontal 1 vertical slopes, unless otherwise indicated on the plans. Borrow areas shall receive topsoil and seeded and mulched as described herein and in accordance with the technical specifications.

2.8 TOPSOIL

Topsoil shall be placed in the top 4 inches of the areas to be seeded or areas where spot sod and strip sod are to be planted as shown on the drawings. All areas to receive topsoil, including cut and fill areas, shall be shaped to provide a minimum of 4 inches. The topsoil shall be uniformly distributed and evenly

spread to any average thickness of 4 inches. The spreading shall be performed in such a manner that planting can proceed with little additional soil preparation or tillage, and the area shall be left smooth and suitable for lawns. Irregularities in the surface from topsoiling or other operations shall be corrected so as to prevent the formation of depressions where water will stand. Topsoil shall not be hauled and placed when wet or when the sub-grade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to the proposed planting or to proper grading. Topsoil shall be spread uniformly and stabilized using small rolling compaction devices. Where any portion of the surface becomes gullied or otherwise damaged, the affected area shall be repaired to establish the condition and grade prior to topsoiling, and then shall be re-topsoiled as approved.

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

GRANULAR MATERIALS

PART 1 - GENERAL

1.1 SCOPE

Work for this item consists of providing selected borrow material, washed gravel, clay gravel, and crushed stone for incorporation into the work. Material provided under this section may be from onsite sources.

PART 2 - AGGREGATE TYPES

2.1 WASHED GRAVEL

Washed gravel shall be composed of hard, tough, durable particles reasonable free of injurious or deleterious substances, with the percentage of wear not exceeding 50%.

The gradation of the washed gravel shall be as follows:

<u>Sieve Size</u>	<u>Percent Passing (by weight)</u>
2 inch	100
1 1/2 inch	90-100
1 inch	80-100
3/4 inch	50-100
1/2 inch	35-80
3/8 inch	12-65
No. 4	5-30
No. 10	0-8

2.2 CLAY GRAVEL

Clay Gravel shall be composed of natural or artificial mixtures of aggregates and soil binder having satisfactory cementing qualities to meet all the requirements as specified.

The coarse aggregate (material retained on the No. 10 sieve) shall be composed of gravel, stone, slag, or combinations thereof, and shall consist of hard, durable particles reasonably free of vegetable or other deleterious substances. Coarse aggregates shall have a percentage of wear not to exceed 50%.

The fine aggregate (material passing the No. 10 sieve) shall be composed of a natural or artificial mixture of soil binder and granulate material. The soil binder shall be clay or silt or other materials, or combinations thereof, having satisfactory cementing qualities, homogeneous in character, and reasonably free of vegetable matter, clay balls, or other deleterious substances that cannot be classified as

serviceable. The granular portion shall be composed of sand, stone, or slag screenings, and shall be hard and durable and preferably sharp.

2.3 CRUSHED STONE

Crushed Stone shall consist of fragments of sound, durable stone, free from disintegrated stone, salt, alkali, vegetable matter, or adherent coatings and other deleterious substances; and shall be reasonably free from thin or elongated pieces. The percentage of wear shall not exceed 50%.

The gradation of the crushed stone shall be as follows:

TYPE	FINE	MEDIUM	COARSE	CRUSHER RUN
Square Opening Sieves		Percent Passing, (by weight)		
3 inch			100	
2 inch			60-70	
1 1/2 inch		100		100
1 1/4 inch			5-40	
1 inch		80-100	0-10	90-100
3/4 inch	100			
1/2 inch	95-100	25-60		
3/8 inch	45-90			45-85
No. 4	0-15	0-10		30-65
No. 16	0-3			
No. 40				15-30
No. 200				4-15

**TECHNICAL SPECIFICATIONS
MASTERTON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

CRUSHED STONE

PART 1 - GENERAL

1.1 SCOPE OF WORK

Work for this item shall consist of constructing a dense graded crushed stone base on a prepared sub-grade in accordance with the requirements of these specifications and in conformance with the lines, grades and elevations shown on the plans or established by the Engineer.

1.2 MATERIALS

Crushed stone shall conform to Crusher Run Stone as specified in the "Granular Materials" specifications.

1.3 EQUIPMENT

Hauling equipment shall be pneumatic tired vehicles having dump bodies suitable for discharging material into the spreading machines.

The spreader unit shall be mounted on crawler tracks to avoid undesirable deformations. The screed or strike-off assembly shall effectively produce a finished surface to required evenness and texture without tearing or gouging the mixture.

Steel wheel rollers shall be 8-10 ton tandem rollers. Rollers shall be equipped with adjustable scrapers.

Vibratory rollers shall be drum type units not less than 3 feet in width, capable of achieving the desired compaction.

Sprinkling equipment shall consist of tank trucks, pressure distributors or other approved equipment designed to apply a uniform amount of water and controlled quantities to variable widths.

Motor graders rated at not less than 10 tons shall be power driven and equipped as deemed necessary with power controls, wheel base width and blade length to meet the capacity and efficiency requirements of the work.

PART 2 - EXECUTION

2.1 SUB-GRADE PREPARATION

The top portion of the sub-grade, both cut and fill sections, shall be shaped correctly and brought to a firm, unyielding layer. The top 6 inches shall be compacted to at least 95% Standard Proctor Method density at optimum moisture content.

Rolling and compaction of the entire area shall be done with equipment which will attain maximum results. Sheepsfoot, rubber-tired, or flat rollers shall be used as, in the opinion of the Engineers, conditions require. Any portion of the area which is not accessible to a roller shall be compacted to the required density by other approved means.

Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at those places and adding, or replacing material until the surface is smooth and uniform. All soft and yielding material which will not compact readily when rolled or tamped shall be removed as directed by the Engineers and replaced with suitable material.

During all compaction operations, the water content of the material shall be constantly adjusted, if necessary, by sprinkling or loosening and subsequent evaporating to within 2% by weight of the optimum moisture content.

At all times the top of the sub-grade shall be kept in such condition that it will drain readily and effectively. The Contractor shall project the sub-grade from damage, and in no case will vehicles be allowed to travel in a single track. If ruts are formed, the sub-grade shall be reshaped and rolled.

The top of the sub-grade shall be of such smoothness that when tested, it shall not show any deviation in excess of 1/2 inch nor shall it be more than 0.05 foot from the true established grade.

Where material is encountered that will not permit satisfactory compaction for sub-grade, excavation, disposal and replacement for this material will be required and will be considered as incidental to sub-grade preparation. No extra pay will be allowed for this item.

2.2 CONSTRUCTION

Crushed stone base course shall be constructed in layers not to exceed 6 inches in compacted thickness. The first layer shall be constructed upon an approved underlying course. In constructing any required subsequent layer of the stone base the previously laid layer(s) shall have been constructed in accordance with these specifications and shall have been maintained free of all ruts or irregularities and loose material and at the proper moisture content.

The Contractor shall avoid cutting into the underlying compacted course or layer at any time, and by any method. He shall be responsible for maintaining the proper moisture content in the material including the vertical faces of half width spreads of construction. To facilitate the bond between layers of the crushed stone base, subsequent layer(s) shall be placed upon previously placed layers as soon as practicable.

After each layer of the stone is placed and the rolling nears completion, the course and the adjoining one shall be rolled together with special effort being exercised at the point where the joint occurs.

The surface course shall be constructed in approximately equal layers each of which is not to exceed 4 inches in compacted thickness. The Contractor shall be responsible for spreading loose material so as to minimize segregation and degradation, and in such amounts as to yield the required compacted thickness and grades.

Compacting shall begin promptly after satisfactory spreading of the material and while moisture content is at optimum. Unless otherwise directed by the Engineer, compacting operations shall proceed initially with steel wheel rollers(s), followed by Vibratory roller(s), and pneumatic tired roller(s).

Pneumatic tired roller(s) shall be operated in straight paths in both forward and reverse motion, with essential turning made at slow speeds to avoid displacement of the materials.

A motor grader may be used in conjunction with compacting operations to correct the distribution of materials however, special care will be necessary to prevent segregation or degradation of the material.

The density of the completed portions of each layer of the base course shall be 100% Standard Proctor Density.

2.3 LIMITATIONS

No stone shall be placed upon an underlying course, or layer, when such course is or layer is frozen, rutted, or otherwise deformed, nor when it is not to the required grade and cross section and does not have the proper moisture content and required density.

No stone shall be placed when the temperature is below 35 degrees F., or when the latest weather bulletin indicates the probability of freezing temperatures within 12 hours in the area in which the project is located.

No stone shall be placed when over 10 percent of the stone placed in the previous day's operation fails to meet specified requirements for surface finish or density until the Contractor has made such adjustments or changes in equipment, operating procedure, and methods as are necessary to assure the securing or required results.

Water will not be measured for separate payment.

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

EROSION CONTROL

PART 1 - GENERAL

1.1 SCOPE OF WORK

This item provides for the planting and establishment of vegetation for the purpose of controlling erosion and for enhancing the aesthetic value and functional usefulness of the completed project. After acceptance of the finish grading, the entire new soil surfaces, abraded or disturbed areas shall be prepared, fertilized, seeded and mulched with vegetative material or solid sodded excepting areas otherwise noted on plans.

It shall be understood that the term "plant establishment" means that work necessary to supplement and improve natural conditions to the end that fully established healthy vegetation is provided. It shall also include the preserving, protecting and replacing and such other work as may be necessary to keep the turf or sod in a satisfactory condition.

1.2 LIMITATIONS

Normal erosion control establishment items will only be performed between March 1 and November 15. Mixture No. 1 will be used during the spring and summer months, March 1 to August 31, and Mixture No. 2 will be used during the fall and winter months, September 1 to November 15. The Contractor is with this forewarned that these are not arbitrary nor flexible dates and his adherence thereto is expected. At other times, temporary erosion control will be required.

PART 2 - MATERIALS

2.1 FERTILIZERS

Fertilizers shall comply with the applicable fertilizer laws of the State. Combination fertilizer shall be "standard commercial products" and shall contain not less than 13% each Nitrogen, Phosphorous P₂O₅, and Potash K₂O.

Agricultural limestone shall contain not less than 80% soluble of calcium and magnesium carbonate calculated as calcium carbonate on a oven dry basis. Agricultural limestone shall be of such a fineness that at least 80% will pass a U.S. Standard No. 10 sieve and 40% will pass a U.S. Standard No. 40 sieve.

Ammonium Nitrate fertilize shall be a 34-0-0 grade containing a minimum of 34% total nitrogen, of which 17% shall be nitrate nitrogen and 17% shall be ammoniacal nitrogen.

2.2 SEED

All seeds shall comply with the applicable seed laws of the State. The seeds shall be delivered in bags with certified tags or labels attached to each bag showing the name (kind and variety), percent of germination and purity of the seed and the percent of obnoxious weeds and inert matter.

The requirements for germination and purity shall be as set out in the table below:

GERMINATION AND PURITY REQUIREMENTS			
Name (Kind)	Name (Variety)	Percent Germination	Percent Purity
<u>Normal Conditions</u>			
Bermudagrass	Common	90	95
White Clover	Dutch	85	98
Crimson Clover	Dixie, Chief, Tibbee, Autauga	85	98
Bahiagrass	Pensacola, Wilmington	85	85
Fescue	Kentucky 31	95	80
<u>Temporary Control</u>			
Wheat	Mixed	80	98

Approved grass seeds shall be treated with a disinfectant protectant containing active ingredient of not less than 50% Thiram (tetramethylthiuram disulfide). The use of other approved dry (dust) treatment type disinfectant protectant materials for grass seeds may be permitted when the Contractor has furnished satisfactory evidence that Thiram is not available. The treatment shall be performed at the rate specified and according to the directions shown on the container for treatment of grass seeds.

Approved legume seeds shall be treated with leguminous inoculant. The inoculants for treating leguminous seeds shall be standard pure culture of nitrogen fixing bacteria. The seed shall be treated at the rate specified and according to the directions shown on the container of the inoculants and before the expiration date for use of the inoculant as shown on the container.

2.3 WATER

All water used shall be free from injurious quantities of oil, acid, alkali or vegetable matter; reasonably clear; and shall not be brackish. If at any time water from any source shall become of unsatisfactory quality or of insufficient quantity, the Contractor shall provide satisfactory water from some other source.

2.4 MULCH

The vegetative materials for mulch shall be classed as follows:

Type I - Approved baled straw of wheat, oat, rye grain or rice; or broomsage of Bahia grass (without seed heads), which have reached maturity prior to cutting.

Type II - Approved baled hay produced from Bermuda, Bahia, Fescue, Dallis Grass, any of the Lespedezas, or combinations thereof.

All of the above materials shall have been cured properly prior to baling and shall be reasonably free from Johnson Grass and other obnoxious grasses and weeds. Vegetative material shall be reasonably bright in color, dry, and shall not be musty, moldy or of otherwise low quality.

Type I shall be furnished and used unless written permission to use Type II is obtained.

2.5 SOLID SOD

Furnish, transport and plant approved grass sod so as to provide a complete cover of solid sod turf with satisfactory growth on all areas shown on the plans or designated to be sodded solid. This work shall also include the accomplishment of plant establishment as required to assure satisfactory growth of the solid sod.

Unless otherwise specified, solid sod shall be bermudagrass (common), bahia or other approved sod species and shall be live, fresh, growing grass with at least 1 1/2 inches of soil adhering firmly to the roots when placed. The sod shall be reasonably free from obnoxious weeds or other grasses, and shall not contain any matter deleterious to its growth, or which might affect its subsistence or hardiness when transplanted. The sod shall be in blocks at least 8"x 8" free from ragged edges.

The source of solid sod shall be inspected and approved prior to harvest for use on the project. After approval, the area from which the solid sod is to be harvested shall be closely mowed and raked it deemed necessary to remove excessive top growth debris.

2.6 EROSION CONTROL BLANKET

Furnish and install erosion control blankets as indicated on the plans for slope protection prior to establishment of permanent grass. Blankets shall be 100% straw fiber stitched to lightweight netting on both sides. Blankets shall be ContechSFB2, or approved equal.

PART 3 - EXECUTION

3.1 GROUND PREPARATION

The area to be seeded shall be plowed or disk-harrowed and thoroughly pulverized to a depth of 4" the areas immediately before the application of vegetative items. The prepared seedbed must be in reasonably close conformity with the established lines and grades without appreciable humps or depressions. Soil preparation while wet or in an otherwise nontillable condition will not be allowed. When the soil is too dry to allow proper tillage, water will be added to insure a tillable condition.

3.2 FERTILIZING

Equipment necessary to handle, store, uniformly spread and incorporate the specified application of fertilizers, including agricultural limestone, shall be provided. The amounts and types of fertilizers shall be applied and incorporated uniformly in accordance with the requirements for the various items of use. If the fertilizer is not spread in such a manner as to result in the specified amount, the Contractor shall be required to furnish and spread the original amount and type of fertilizer specified on deficient areas, at no additional cost to the Owner.

In the event fertilizer is to be applied to existing vegetated grass areas, incorporation, unless otherwise specified, shall be accomplished immediately after the fertilizer application by reducing the existing vegetation to a height of approximately 4 inches above the ground, in lieu of other methods of incorporation. Under such conditions, all fertilizer, except agricultural limestone, shall be applied without the use of slurry, hydroseeder or other wet methods and such fertilizers shall be of the granular or pellet type.

All fertilizer shall be incorporated as required within 24 hours following the approved spreading, or as directed.

3.3 SEEDING

Prepare and fertilize the soil prior to planting the seeds. Sow treated seed uniformly over the entire area. This may necessitate seeds of different size to be sown separately. No seeding will be permitted during windy weather or when the ground is frozen, extremely wet, or otherwise in a non-tillable condition. Cover all seeds lightly with soil by raking, rolling or other approved methods, and compact the areas as directed.

3.4 MULCHING

Place mulch uniformly on designated areas within 24 hours following the planting of seeds. Begin placement on the windward side of areas and from top of slopes. In its final position, the mulch shall be loose enough to allow air to circulate but compact enough to shade the ground partially and reduce erosion.

Loosen and break the base material thoroughly before it is fed into the mulching machine to avoid placement of unbroken clumps. This machine shall be capable of maintaining a constant air stream which will apply controlled quantities of asphalt coated mulch in a uniform pattern.

The mulch may be anchored by either the use of a mulch stabilizer or by tacking with bituminous material. If asphalt is used, a jet or spray nozzle for applying uniform, controlled amounts of asphalt to the vegetative material as it is ejected shall be located at or near the discharge spout. Any property damage during this operation shall be the responsibility of the Contractor and he will repair or cause to be repaired any such damage at his expense.

3.4 MULCHING (Cont.)

If a mulch stabilizer is used, the mulch shall be punched into the soil for a minimum depth of one inch. Mulch stabilizers shall consist of dull blades or disks without camber. Where steep slopes or soil conditions are such that anchoring cannot be performed satisfactory with a mulch stabilizer the Engineer will require the bituminous material be applied at the time or immediately following the mulch placement. When mulch stabilizers are used, anchoring the mulch shall be performed along the contour of the ground surface.

The Contractor shall be responsible for maintaining and protecting mulched areas until final acceptance of the project. He shall prevent unnecessary foot and vehicular traffic and shall repair and restore immediately, without extra compensation, any displacement of mulch.

At the appropriate times, the Contractor shall mow all areas mulched, or otherwise remove or destroy all undesirable growth, to prevent competition with the desired planted materials and to prevent reseeding of all undesirable growth.

3.5 WATERING

Water shall be applied in the amounts and at the times necessary to establish growth. Watering of plant life shall be done at night, during late afternoon or during the early morning hours.

3.6 SOLID SOD PLACEMENT

Prior to ground preparation for solid sodding upon any area, all excavating, shaping and dressing shall have been completed in such a manner that the foundation for the sod will have the proper cross-section, line and grade and the sod, after placement, will be flush with or slightly below the adjacent final ground line.

Perform ground preparation after the area has been graded as required. Apply the specified amount of fertilizer uniformly and rake or harrow the surface lightly to incorporate it into the prepared soil. After acceptance of the prepared and fertilized area, sodding shall follow immediately.

Place the sod with the edges in close contact, starting at the lowest point and working upward. Fill cracks between blocks of sod with small pieces of fresh sod. Compact and water the entire sodding area.

On areas on which the solid sodding might slide due to the height and slope of the surface or nature of the soil, use wooden pegs to hold the sod in place.

3.7 EROSION CONTROL BLANKETS

Erosion control blankets shall be installed in strict accordance with contract drawings and manufacturer's recommendations. Blankets shall be stapled securely to soil immediately after positioning with 6" x 6" x 1" U-shaped steel staples, minimum 0.091" diameter (11 gauge). Blankets shall be installed only over properly prepared, fertilized and seeded areas as described elsewhere in these specifications.

3.7 EROSION CONTROL BLANKETS (CONT...)

Start installation of the blankets three feet over the crest of the slope, anchored with trenches or check slots. Blankets may be applied either horizontally or vertically with respect to the slope face. Ends and edges shall be butted snugly and stapled in place. Staple spacing shall not exceed six feet apart along the blanket length, with approximately 100 staples per blanket.

Staples shall be driven perpendicularly into the soil. Staple each blanket at every edge, with alternate spacing in the center of each blanket. Use a common row of staples at the seam formed by adjoining blankets. Use six (6) staples at the beginning and end of each blanket.

3.8 TEMPORARY EROSION CONTROL

When normal erosion control measures must be delayed due to planting seasons limitations, temporary erosion control measures shall be applied. These shall consist of ground preparation, seeding with wheat, fertilizing, mulching and watering as herein specified. No limestone will be required for temporary control methods.

When the normal planting season arrives, the temporary control plant growth shall be cut and removed, the remaining roots disc-harrowed and the area treated with normal ground preparation procedures as herein specified. After this work, normal erosion control procedures will be followed.

3.9 PLANT ESTABLISHMENT

The Contractor will be required to provide establishment on all areas where seeds or mixtures containing seeds for permanent vegetation is specified, until final acceptance of the project.

Plant establishment will be required for a minimum period of 90 calendar days after completion of seeding or sod placement. In the event satisfactory growth and coverage as specified below has not been provided in the above specified minimum period of time, plant establishment shall be continued, and final inspection will not be made until such specified growth and coverage is provided.

The Contractor shall water the grassed areas during such periods and as frequently as appropriate to promote maximum practicable growth.

The Contractor shall mow grassed areas as many times in such a manner as may be deemed necessary to control obnoxious vegetation which competes with or shades the desirable grass. Such mowing shall be performed in a manner that will not cause unnecessary damage to desirable vegetation.

Reseeding or resodding may be required at any time on areas or portions of such areas which for any cause are deemed to be unsatisfactory. Except as otherwise specified or permitted, areas deemed to require reseeding shall be prepared, seeded, and all other items of work performed in accordance with the requirements of the contract as if such reseeding was the initial seeding. However, the type of fertilizer and the application rate of fertilizer to be furnished and applied by the Contractor shall be determined by soil tests or as otherwise established.

It shall be the Contractor's responsibility to provide satisfactory growth and coverage of the kinds of grasses or legumes, or a combination of both, produced from seeding as specified.

3.9 PLANT ESTABLISHMENT (CONT...)

Growth and coverage on areas seeded as specified shall be considered to be in reasonably close conformity with the intent of the contract when the type of vegetation specified exclusive of that from seeds not expected to have germinated and shown growth at that time, has reached a point of maturity such that has produced stems or runners which overlap adjacent similar growth in each direction over the entire area.

Prior to final inspection, the Contractor shall mow the entire grassed area with suitable mowing equipment.

3.10 APPLICATION RATES

The application rates shown in the following table are to be considered as minimum rates and the Contractor may use his discretion as to the use of any addition quantities keeping in mind that sufficient growth and establishment must be obtained.

MINIMUM APPLICATION RATES	
Normal Conditions	
Commercial Fertilizer (13:13:13)	1.0 tons per acre
Agricultural Limestone	2.0 tons per acre
Ammonium Nitrate	500 lbs. per acre
Vegetative Mulch	2 tons per acre
Asphalt Emulsion for Mulch (if used)	100 gals. per ton Vegetative Mulch
Mixture No. 1 (March 1-August 31)	
Bermudagrass Seed (Common)	15.0 lbs. per acre
White Clover Seed (Dutch)	20.0 lbs. per acre
Bahiagrass Seed (Pensacola, Wilmington)	30.0 lbs. per acre
Mixture No. 2 (September 1-November 15)	
Bermudagrass Seed (Common)	15 lbs. per acre
Bahiagrass (Pensacola, Wilmington)	30 lbs. per acre
Crimson Clover (Dixie, Chief, Tibbee, Autauga)	15 lbs. per acre
Fescue (Kentucky 31)	40 lbs. per acre
Temporary Control	
Wheat Seed	180 lbs. per acre
Commercial Fertilizer (13:13:13)	0.5 ton per acre
Vegetative Mulch	2 tons per acre
Asphalt Emulsion for Mulch (if used)	100 gal. per ton Vegetative Mulch

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

TEMPORARY EROSION CHECKS

PART 1 - GENERAL

1.1 SCOPE OF WORK

This work consists of furnishing, constructing, and maintaining baled hay or straw erosion checks for the retention of soil along the toe of fill slopes, swale areas, small ditches, and other areas as directed by the Engineer.

Measurement and payment for temporary erosion checks will be made only when ordered and a pay item is included in the bid schedule of the proposal. The quantity is estimated for bidding purposes only. The plan quantity of erosion checks is estimated for bidding purposes only, and will be dependent upon actual conditions that occur during construction of the project.

1.2 MATERIALS

The baled hay straw shall conform to the Erosion Control Specifications, Type I or Type II. The wooden stakes used in securing the baled material in place shall be approximately 2"x2"x34" and must be strong enough to adequately secure the bales.

PART 2 - EXECUTION

2.1 CONSTRUCTION

Erosion Checks shall be constructed at locations, and according to the requirements, shown on the plans or as directed by the Engineer. Erosion checks along fill slopes shall be constructed prior to grading operations at the site.

The soil shall be excavated a minimum of 3 inches in depth to embed the Baled material. Excavated material shall be placed around the erosion checks and compacted to prevent undermining.

The Contractor shall maintain the erosion checks and shall remove and dispose of the silt accumulations as directed by the Engineer during construction. The erosion checks will remain in place.

**TECHNICAL SPECIFICATIONS
MASTERTSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

SILT FENCING

PART 1 - GENERAL

1.1 SCOPE OF WORK

This work consists of furnishing, constructing, maintaining, and removing a filter type fence for the purpose of removing suspended soil particles from the water passing through it.

It shall be understood that payment for temporary silt fence will be made only when ordered, and a pay item is included in the bid proposal. The plan quantities for temporary silt fences are estimated for bidding purposes only, and the quantity used will be dependent upon actual need during construction of the project. No temporary silt fence will be installed unless directed by the Engineer.

1.2 MATERIALS

Fabric

The fabric shall be sediment control type, woven or non-woven, with an apparent opening size (AOS) of 0.15 – 0.84 mm.

Posts

Either wood or steel posts may be used. Wood posts shall have a minimum diameter of three inches and length of five feet and shall be straight enough to provide a fence without noticeable misalignment. Steel tee posts shall be five feet long, approximate 1-3/8 inches deep and 1/8 inch thick with a nominal weight of 11.33 pounds per foot prior to fabrication. The posts shall have projections, notches or holes for fastening the wire backing or fabric to the posts.

Securing Pins

Steel pins used for anchoring the fabric shall be three-sixteenth inch in diameter, minimum length of 15 inches, pointed at one end and fabricated with a head for retaining a steel washer. A minimum one and one-half washer shall be installed on each pin.

Staples

Staples shall be made of nine gauge wire with a minimum length of one inch after bending.

PART 2 - EXECUTION

2.1 CONSTRUCTION

Silt fences shall be constructed as directed by the Engineer.

All posts shall be installed so that no more than three feet of the post shall protrude above the ground. Extra posts for bracing shall be installed as directed by the Engineer. The woven wire shall be securely

fastened to wood posts with staples. When metal posts are used, the wire shall be fastened to the posts with wire or other approved means. The bottom edge of the fabric shall be buried 6" below ground surface to prevent undermining. When splicing of the fabric is necessary, two posts shall be installed approximately 18" apart and each piece of fabric shall be fastened to both posts.

At the time of or during installation, the fabric will be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacturing, transportation, storage or installation.

Except as provided herein, silt fence shall be reinforced with a woven wire backing. The wire backing shall be at least 32 inches high and have no less than six horizontal wires. Vertical wires shall be spaced no more than 12 inches apart. The top and bottom wire shall be 10 gauge or larger. All other wire shall be no smaller than 12-1/2 gauge.

Type II fabric may be installed without the wire backing provided:

- A. Post spacing is reduced to six feet or less.
- B. The fabric has been approved by the Engineer and the manufacturer recommends its use without the wire backing.
- C. The fence posts are inclined toward the runoff source but at an angle of not more than 20° from vertical.
- D. The fabric shall be attached to the posts in such a manner that purpose intended is satisfied and maintained.

The manufacturer's recommendation shall be in writing or issued in a technical data sheet with copy furnished to the Engineer.

The Contractor shall maintain the silt fence and the fabric shall be removed and replaced when deteriorated to such extent that it is no longer effective. Excessive accumulations against the fence shall be removed and disposed of as directed by the Engineer.

Unless otherwise directed, all temporary silt fences shall be removed. Upon removal, the Contractor shall remove and dispose of excess silt accumulations, dress the area to give a pleasing appearance and vegetate all bare areas in accordance with the contract requirements. The temporary fence materials will remain the property of the Contractor and may be used at other locations provided the materials are acceptable to the Engineer.

2.2 SHIPMENT AND STORAGE

During all periods of shipment and storage, the fabric shall be wrapped with a heavy duty protective covering which will protect the cloth from direct sunlight, mud, dirt, dust and debris. The fabric shall not be exposed to temperatures greater than 140°F.

2.3 MANUFACTURER'S CERTIFICATION

The Contractor shall furnish to the Engineer three copies of the manufacturer's certified test reports showing results of all required tests and certification that the material meets the specifications.

**TECHNICAL SPECIFICATIONS
MASTERTON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

RIPRAP PLATING

PART 1 - GENERAL

1.1 SCOPE OF WORK

This work shall consist of furnishing and placing a protective covering of erosion resistant material including plastic filter fabric, riprap and slush grout where shown on the plans for slope or ditch protection. This work shall be in accordance with these specifications and in reasonably close conformity with the lines, grades, and dimensions shown on the plans or established by the Engineer.

PART 2 - SPECIFICATIONS

2.1 FILTER FABRIC

Geotextile fabrics shall generally be in accordance with the following:

Grab Strength (lbs.)	200 #
Elongation	50%
Seam Strength	180 #
Puncture Strength	80 #
Trapezoidal Tear	80 #
AOS	0.21-0.43mm

2.2 SLUSH GROUT

Grout shall be composed of Portland Cement, water and sand mixed in the proportions of one part of portland cement to 3 parts of sand with sufficient water to produce a workable mixture that can be poured into all voids in the rock to form a solid mass.

2.3 RIPRAP

Aggregate for loose riprap shall consist of field stone, broken concrete, or rough, unhewn quarry stone as nearly rectangular in section as is practicable. The stone shall be dense, free of clay or shale seams, resistant to the action of air and water, and suitable in all other respects for the purpose intended.

Stones for riprap, of the size specified, shall meet the requirements for size by weight of the mass specified in the following table (based on % larger than by weight):

Rock Size	Size			
	1/4 Ton	300 Lbs.	200 Lbs.	100 Lbs.
1/2 Ton	0	--	--	--
1/4 Ton	50	--	--	--
300 Lbs	--	0	--	--
200 Lbs	--	--	0	--
100 Lbs	--	--	--	0
75 Lbs	90	--	--	--
60 Lbs	--	80	--	--
40 Lbs	--	--	80	--
20 Lbs	--	90	--	80
10 Lbs	--	--	90	--
5 Lbs	--	--	--	90

PART 3 - EXECUTION

3.1 CONSTRUCTION DETAILS

The slopes or ground surface shall be shaped to the lines and grades indicated on the plans or directed, and shall be thoroughly compacted by the use of mechanical or hand tamps. Unless otherwise stipulated or directed, slopes shall not be steeper than the natural angle of repose of the material upon which riprap is to be constructed.

The outer edges and the top of the riprap where the construction terminates shall be formed so that the surface of the riprap will be embedded and even with the surface of the adjacent slope or ground, and the bottom of the riprap shall be placed at least two feet below the natural ground surface unless otherwise directed.

All riprap shall begin at the bottom of the slope and proceed upward.

3.2 INSTALLATION OF PLASTIC FILTER FABRIC

The filter fabric shall be placed on the manner and at the locations shown on the drawings. The surface to receive the fabric shall be prepared to a relatively smooth condition free of obstructions, depressions and debris. The fabric shall be placed with the long dimension perpendicular to the centerline of the channel and shall be laid loosely but without wrinkles or creases. The strips shall be placed to provide a minimum width of 18 inches of overlap for each joint. Securing pins with washers shall be inserted through both strips of overlapped fabric at not greater than two foot intervals along a line through the midpoint of the overlap. Additional pins shall be installed as necessary to prevent slippage of the filter fabric regardless of location. The fabric shall be placed so that the upstream strip of fabric will overlap the downstream strip and the higher strip will overlap the next lower strip. Each securing pin shall be pushed through the fabric until the washer bears against the fabric and secures it firmly to the foundation. The fabric shall be protected at all times during construction from contamination by surface runoff and any fabric so contaminated shall be removed and replaced with uncontaminated fabric at no expense to the Owner. All damage to the fabric during its installation or during placement of riprap shall be replaced by the Contractor at no cost to the Owner. Riprap and aggregate shall not be dropped on the fabric from a height greater than three feet.

3.3 SLUSH GROUT (if applicable)

Immediately after dumping the batch of grout, it shall be distributed over the surface of the strip by the use of brooms and the grout worked into place between stones with suitable spades, trowels, or vibrating equipment. As a final operation the grout shall be removed from the top surfaces of the upper stones and from pockets and depressions in the surface of the stone protection by use of a stiff broom. After completion of any ten foot strip, no workman or any load shall be permitted on the grouted surface for a period of at least twenty-four hours. The grouted surface shall be protected from rain and flowing water.

3.4 LOOSE RIPRAP

The stones shall be placed on a slope not steeper than the natural angle of repose of the slope material. The stones shall be laid with close joints. The courses shall be laid from the bottom of the bank upward with the larger stones being placed in the lower courses. Interstices shall be filled with smaller stones and spalls.

**TECHNICAL SPECIFICATIONS
MASTERTON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

PIPE CULVERTS AND STORM SEWERS

PART 1 - GENERAL

1.1 SCOPE

This item shall consist of furnishing and installing pipe culverts, arch pipe culverts and flared end sections for cross drains, sidedrains and storm sewers and manholes. These structures, of the types, sizes and dimensions as required on the plans, shall be furnished and installed at such places as designated by the Engineers, all in accordance with these specifications and in conformity with the lines and grades. This item shall include excavation, backfilling, trench required bracing (if required), and all fittings necessary to complete the pipe lines. It shall also include the furnishing and installing of such joints and such connections to existing pipes, catch basins, headwalls, etc., as may be required to complete the work shown on the plans or as directed by the Engineers.

1.2 MATERIALS

Pipe used for Concrete Pipe Culverts shall conform to the requirements of standard specifications for reinforced concrete culvert pipes, ASTM Pipe Designation: C76, Wall B. Pipe classification shall be shown in the proposal.

Pipe used for High Density Polyethylene pipe (HDPE) Culverts shall be smooth interior, corrugated exterior HDPE sewer pipe and associated fittings shall conform to AASHTO M294, AASHTO M 252, ASTM F477, ASTM 1417 and ASTM D3212. All HDPE pipe, and fittings shall be watertight. HDPE pipe shall be N-12 WTIB as manufactured by ADS, or approved equal.

Storm drainage basins for HDPE storm sewer systems shall be PVC road and highway structures designed for H25 loading, as manufactured by Nyloplast, or approved equal. All grates shall be ductile iron.

Polyvinyl chloride pipe where specified for drainage shall be schedule 40 PVC meeting ASTM standards.

Pipe Arches shall conform to the requirements of ASTM Pipe Designation: C506, Class A-III. All concrete pipe arches shall be reinforced concrete.

Flared end sections shall conform to applicable portions of concrete pipe culvert reference specifications.

Joints shall be sealed with either bituminous plastic sealer or preformed rubber-type.

Mortar for connections to other drainage structures shall be composed of one part Portland Cement and two parts fine aggregate.

All approved laboratory test reports covering all the pipe and other materials shall be furnished by the manufacturer.

1.2 MATERIALS (CONT.)

Bituminous Coated Corrugated Metal Culvert Pipe and Pipe Arches shall conform to the requirements of the Standard Specifications for Corrugated Metal Culvert Pipe, AASHTO Designation: M-36 Type I, except the minimum gauge thickness shall be as shown on the plans, or contract documents, however, corrugated metal pipe manufactured from sheets thicker than that specified will be acceptable when approved by the Engineer. The internal diameter of corrugated metal pipe shall be determined by inside measurement between the crests of the corrugations. The corrugations shall be 2 ¾" x ½".

In addition, the Corrugated Metal Pipe and Arches shall be galvanized, fiber bonded and completely coated inside and out with bituminous material in accordance with the requirements of Standard Specifications for Bituminous Coated Corrugated Metal Culvert Pipe and Pipe Arches, AASHTO Designation M-190 Type C, fully coated with paved invert. Connecting bands shall be 24" in length.

The pipe shall be coated uniformly to a minimum thickness of 0.05 inch., measured on the crest of the corrugations and the pavement shall have a minimum thickness of 1/8" above the crest of the corrugations.

PART 2 - EXECUTION

2.1 PIPE LAYING

Excavation shall be true to line and grade within 0.05 feet. Excavation carried below the grade shall be backfilled at the Contractor's expense with selected materials. Unsuitable materials excavated from the trenches shall not be used for backfill and shall be disposed of as directed by the Engineer. Any material encountered in way of pipe trenches, included buried drainage structures and obstructions, shall be excavated.

The trench width shall be not less than 12 inches greater than the outside diameter of the pipe. The Contractor shall do such trench bracing, de-watering, sheathing, or shoring necessary to perform and protect the excavation, and shall remove such material as backfill progresses.

The pipe shall be firmly and accurately set to line and grade so that the invert will be smooth and uniform, and any pipe which is not in true alignment, or which shows any settlement after laying, shall be taken up and relaid without extra compensation. Pipe shall be laid on a prepared bed which will provide a full bearing for the barrel and which is uniformly firm throughout its entire length.

The laying of concrete pipe shall begin at the downstream end, with the spigot or tongue end in the direction of flow and proceed toward the upstream end with the pipe joints abutting and closely joined, and so matched that they will form a culvert with a smooth and uniform invert. The joints of concrete pipe culverts shall be made with bituminous plastic sealer or preformed rubber-type gaskets.

Bituminous Coated Corrugated Metal Pipe shall be laid carefully with outside laps of circumferential joints pointing upstream. The longitudinal laps parallel to the center line of the pipe culvert shall be placed on the sides of the culvert with the outside laps pointing down. The ends of the sections shall be fully and closely joined and true to the lines and grades established. Each section or joint of pipe shall be securely attached to the adjoining sections or joint of pipe with connecting bands, or other approved type of connector. The bands or other type of connector shall be tightly drawn or connected so as to form a rigid joint. Any metal in joints which is not thoroughly protected by galvanizing shall be coated with approved bitumen. Any breaks in the bitumen shall be repaired with the type and kind of bitumen used

2.1 PIPE LAYING (CONT.)

originally in coating the pipe. Corrugated Metal Pipe of 42 inch or larger diameter shall be strutted as shown on the plans or as directed. The struts shall be placed before the embankment is placed and removed when so ordered. The ends of the pipe shall be rigidly supported to prevent any movement pending and during the construction of end supports.

Construction methods of Bituminous Corrugated Metal Pipe Arches shall conform reasonably close to the requirements for Bituminous Coated Corrugated Metal Pipe Culverts. Pipe Arches 58" x 36" and larger shall be braced prior to back-filling operations. The branches shall not be less than 4" x 4" timbers spaced five feet apart between upper and lower sills which shall also be not less than 4" x 4" timbers.

All HDPE piping installations shall be in strict compliance with AASHTO Section 30, ASTM recommended practice D2321, and as recommended by the manufacturer.

2.2 BACKFILLING

The backfill material shall be approved by the Engineers. Great care shall be used to obtain thorough compaction under the haunches and along the sides to the top of the pipe. the backfill shall be placed in loose layers not exceeding 6" in depth and successive layers shall not be placed until thorough compaction is obtained. Trenches under areas to be paved shall be compacted to 95% Standard Proctor density.

2.3 CONNECTIONS

Where the plans call for connections to existing or proposed structures or lines, these connections shall be watertight and made so that a smooth uniform flow line will be obtained. Such connections shall be made by the Contractor at no extra compensation.

The joints of all pipe culverts to other drainage structures shall be caulked and filled with mortar. Joints shall be thoroughly wet before applying mortar, and sufficient mortar shall be used to form a bead around the outside of the joint and to fill the whole joint to inside of the connection. The inside of the joint shall be wiped and finished smooth. After the initial set, the mortar on the outside shall be cured with a cover of thoroughly wetted earth or burlap.

2.4 MANHOLES

Manholes shall be poured-in-place concrete or precast concrete manholes as indicated on the construction drawings. Either type manhole may be selected. Storm draining basins for HDPE storm sewer systems shall be in accordance with Section 1.2.

Precast manhole sections shall conform to ASTM Specification C-478. Where required, the Contractor shall furnish laboratory test reports for precast sections used, showing that they conform to all requirements of these specifications.

Mortar for masonry in sewer structures shall be a 1:3 cement-lime mix, provided that hydrated lime may be substituted for not to exceed 10 per cent, by weight of the cement.

The standard frame and cover, designated as M.H. on the plans, shall be Bouchard #2010 or 2030 Standard Frame and Grate (or approved equal). The cover shall have two non-penetrating pick holes but shall not have vent holes. The casting shall be gray iron castings, free from defects affecting their strength and appearance. The clear opening shall be a minimum of 21 inches in diameter and the cover and ring shall be machined to fit snug and not rattle.

The manhole steps shall be made of injection molded copolymer polypropylene encapsulating a 1/2" diameter grade 60 steel reinforcing rod. The steps shall be of such cross-sectional area and configuration that they will withstand a single concentrated live load of 300 pounds. They shall be in conformance with ASTM Standard C-478. Manhole steps shall be as manufactured by M.A. Industries, Inc., Peachtree City, GA, Press Seal Gasket Corp., or equal.

Rubber gaskets shall be "O"-Ring or flat ring as manufactured by Press Seal Gasket Corp., Fort Wayne, IN; Hamilton-Kent Manufacturing Co., or equal, and shall conform to the requirements of the latest edition of ASTM Designation C-443. Lubricants shall be as recommended by the gasket manufacturer.

Manhole pipe seal gaskets for precast manhole units shall be "Kor-N-Seal" as manufactured by Kor-N-Seal Co., Milford, NH; "PSX" by Press Seal Gasket Corp., or equal.

Preformed joint compound shall be "EZ Stik" as manufactured by Concrete Products Supply Co., Fort Wayne, IN; "Kent Seal No. 2"; or equal. Primer, when required for use with the preformed joint compound, shall be as recommended by the manufacturer of the preformed joint compound. Install joint compound according to the manufacturer's instruction.

Sealer compound shall be "Drycon" as manufactured by IPA Systems, Inc., Philadelphia, PA; Tamm's "Tamoseal"; or equal. Sealer shall be field applied after construction.

Cold joint bonding agent shall be "Octoblen" as manufactured by IPA Systems, Inc., Philadelphia, PA; "Tamm's Tammsbond"; or equal.

Patching material shall be "Octocrete" as manufactured by IPA Systems, Inc., Philadelphia, PA; "Tamm's Speed Crete Blue Line"; or equal.

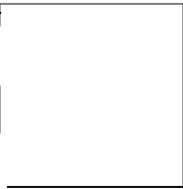
2.5 MANHOLE CONSTRUCTION

The bottom concrete slab shall be poured first, then after sufficient time has elapsed the walls shall be built. The Contractor shall lay brick and concrete blocks in manholes with joints completely filled with mortar. Horizontal joints shall not exceed 1/2 inch; vertical joints 1/4 inch or their interior face. In circular structures, lay all blocks, breaking joints between courses. Strike interior joints smooth with face of the wall.

Precast concrete sections shall be laid so that the axis of the manhole is vertical, and shall be constructed in accordance with the manufacturer's recommendations.

The standard sizes for manhole bottoms, as shown on the plans, are based on a soil bearing pressure of 2000 psf; should a more yielding soil be encountered, the base shall be stabilized with sufficient bedding of coarse crushed stone to obtain the required bearing.

Construct pre-cast manholes as shown on the plans of pre-cast units with a concrete bottom. Excavate hole and set bottom unit, leveling carefully. Make joints between sections using preformed joint compound. Joints shall be water tight. Fit manhole cover frames in place on an adequate grout or grout



bed and brick riser. Joints in brick risers shall not exceed 5/8" in thickness. Plater the brick exterior surface with a coat of plaster not less than 1/2" thick. For pipe 30" in diameter and less make connection to manholes using manhole pipe seal gaskets.

Install the manhole steps at 16" o.c. vertically. The deepest step shall be located not more than 24" above the manhole invert.

Install the cast iron frames and covers to the grade shown on the plans, set in a grout bed. Lap grout up on ring vertical to 1" from the top. In streets, set the manhole covers to one inch (maximum) above the street grade parallel to the plane of the street.

Wherever concrete is applied to an existing concrete or masonry surface, apply a cold joint bonding agent between the surfaces according to the manufacturer's instructions.

Where necessary to fill voids, repair breaks, make patches, etc., clean and moisten the surfaces and use a suitable combination of patching agent and cold joint bonding agent with grout or concrete. The use of brick or chunks of concrete will not be permitted.

All visible leaks in manhole bottoms, barrels, and connections shall be stopped.

The cast iron rings and covers shall be set at the exact finish grade indicated on the drawings. Manholes in open fields shall extend to a minimum of 2 feet above the finished ground surface unless otherwise indicated on the plans. Steps shall be set inside the manholes at 16 inches on center.

The contractor shall construct the manhole flow channels of concrete, of semi-circular section conforming to the inside diameter of the connection sewers. The Contractor shall provide such channels for all connection sewers to each manhole. Drop inlets shall be constructed as an integral part of the manhole as construction progresses.

No backfilling of manhole excavation, above the top of the interior concrete fill, shall be performed until the waterproof coating has been cured for at least twenty-four hours and has been inspected and approved by the Engineer. All defective coverage and leaks shall be corrected and improved as directed prior to backfilling.

As the backfill material is placed around the manhole it shall be carefully tamped to prevent excessive settlement.

ATTACHMENT 4

Design Calculations

Sediment Pond 1

RATIONAL method

1 year storm event

$$Q = CIA$$

$$T_c = .93 \frac{L^{.6} n^{.6}}{I^{.4} S^3}$$

$$C = .8$$

$$A = 5.8$$

$$S = .01 \text{ FT/FT}$$

$$n = .03$$

$$L = 900 \text{ FT}$$

$$A = 5.8 \text{ ACRES}$$

$$T_c = .93 \frac{900^{.6} (.03)^{.6}}{I^{.4} (.01)^3} = \frac{28.76}{I^{.4}}$$

TRIAL #1

$$\text{ASSUME } I = 3.3 \text{ IN/HR}$$

$$T_c = \frac{28.76}{3.3^{.4}} = 17.84 \text{ MIN}$$

CHECK IDF CURVE

$$T_c = 17.84 \quad I = 3.6 \text{ IN/HR}$$

TRIAL #2

$$\text{ASSUME } I = 3.6 \text{ IN/HR}$$

$$T_c = \frac{28.76}{3.6^{.4}} = 17.23 \text{ MIN}$$

CHECK IDF CURVE

$$T_c = 17.23 \quad I = 3.6 \text{ IN/HR}$$

Sediment Pond 1

7/4/2014

RATIONAL Method 2/2

$$Q = 3.6 \text{ CFS}$$

$$Q = CIA$$

$$= .8 \times 3.6 \frac{\text{IN}}{\text{HR}} \times 5.8 \text{ ACRES}$$

$$= 16.7 \text{ CFS}$$

Sediment Pond 1

1/4" 1/2
RATIONAL MET

50 YEAR STORM EVENT

$$Q = CIA$$

$$L = 900 \text{ Feet}$$

$$A = 5.8 \text{ Acres}$$

$$S = .01 \text{ FT/FT}$$

$$n = .03$$

$$I = \text{UNKNOWN}$$

$$T_c = \text{Time of concentration}$$

$$T_c = \frac{.013 \frac{L^{.6}}{S^{.05}}}{.013} = \frac{900^{.6} \cdot .05^{.5}}{.013}$$

$$T_c = \frac{26.75}{1} = 26.75$$

TRIAL #1

$$\text{ASSUME } I = 7.0 \text{ IN/HR}$$

$$T_c = \frac{26.75}{7.0} = 12.30 \text{ min}$$

TRY $T_c = 12.3 \text{ min}$ FROM CURVE

$$I = 7.5 \text{ IN/HR} > 7.0$$

TRIAL #2

$$\text{ASSUME } 7.3 \text{ IN/HR}$$

$$T_c = \frac{26.75}{7.3} = 12.01$$

TRY $T_c = 12.01$ FROM CURVE

$$I = 7.4 \text{ IN/HR}$$

USE 7.4 IN/HR

Sediment Pond 1

50 YEAR EVENT

$$Q = CIA$$

$$C = .8$$

$$I = 7.4 \text{ in/hr}$$

$$A = 5.8 \text{ ACRES}$$

$$Q = .8 \times 7.4 \times 5.8$$

$$Q_{50} = 34.32$$

$$\text{USE } Q_{50} = 35 \text{ CFS}$$

4/21/2017

Pond #1 Spill Pipe Design

✓

$$Q = 16.7 \text{ CFS}$$

$$V = Q/A \quad \text{ASSUME } V = 8 \text{ FT/Sec}$$

$$A = \frac{16.7 \text{ CFS}}{8 \text{ FT/Sec}} \quad A = 2.03 \text{ FT}^2$$

$$A = \pi r^2$$

$$r^2 = \frac{A}{\pi} = \frac{2.03 \text{ FT}^2}{3.14} = .6465'$$

$$r = .804 \text{ FT}$$

$$d = 1.608 \text{ FT} = 19"$$

$$\text{TRY } 21" \quad A = \pi r^2 = 3.14 \times .375^2 = 2.404 \text{ FT}^2$$

CHECK head = h

$$h = \frac{Q^2}{C^2 a^2 2g}$$

C = .53 TABLE 7 Pg 4-40 CIVIL ENGINEER'S HANDBOOK

$$Q = 16.7 \text{ FT}^3/\text{Sec}$$

$$g = 32.2$$

$$h = \frac{16.7^2}{.53^2 \cdot 2.4^2 \cdot 64.4} = 2.17 < 3.0$$

USE 21" CMP

Pond #1

Spill Pipe Design

1/2

$$h_e = K_e \frac{V^2}{2g} = .4 \frac{8^2}{64.4} = .39$$

$$K_e = .4$$

$$S = .075$$

$$K_o =$$

$$h_o = K_o \frac{V^2}{2g} \quad 1 \times .99 = .99$$

$$h_s = \frac{S}{4} \frac{L}{2g} = .075 \frac{1 \cdot 5^3}{.75 \cdot 64.4} = .04$$

$$h = .39 + .99 + .04 = 1.33 < 2.7$$

Pond 1

1/2

Emergency Spillway Width Calculation 50 y ORR Event

$$Q = VA$$

$$Q = 35 \text{ CFS}$$

$$m = .040$$

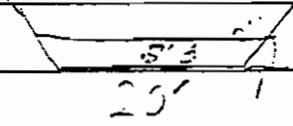
V = Mean Velocity

A = AREA OF PILE

$$S = .005$$

$$V = \frac{4.83}{m} R^{2/3} S^{1/2}$$

TRIAL #1



$$R = \frac{WP}{2}$$

$$A = 21' \times 1.5 = 10.5 \text{ FT}^2$$

$$Z^2 = 1^2 + .5^2$$

$$R = \frac{10.5}{2 \times 1.12}$$

$$Z = 1.12$$

$$WP = 1.12 \times 2 + 20'$$

$$R = 11.12$$

$$WP = 22.24$$

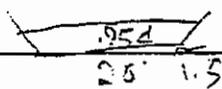
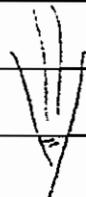
$$V = \frac{1.486}{.04} R^{2/3} .005^{1/2} = 2.62 R^{2/3}$$

$$V = 2.62 R^{2/3} = 2.62 (11.12)^{2/3} =$$

$$V = 1.59$$

$$Q = VA = 1.59 \times 10.5 = 16.6 < 35 \text{ CFS}$$

TRIAL #2



$$Z^2 = X^2 + Y^2$$

$$Z^2 = .5^2 + 1.5^2$$

$$Z = 1.63$$

Pond #1

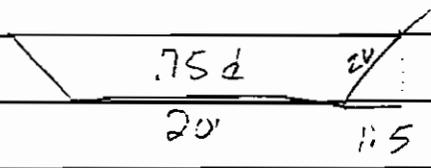
Emergency Spillway width (calculated)

50 year event

Q = 35 cfs

TRIAL #2

TRY .75 = d



$ZW^2 = 1.5^2 + .75^2$

$Z = 1.69$

$WP = 20 + (1.69 * 2)$

$WP = 23.36$

$A = 21.5 * .75$

$= 16.125 FT^2$

$V = 2.62 R^{2/3}$

$= 2.62 (.69)^{2/3}$

$= 2.046 FT/SEC$

$Q = VA$

$Q = 2.046 * 16.125$

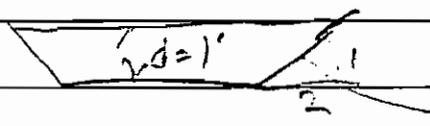
$Q = 33 cfs < 35 cfs$

$R = \frac{A}{WP} = \frac{16.125}{23.36}$

$R = .69$

TRIAL #3

TRY 1' = d



$Z^2 = 2^2 + 1^2$

$Z = 2.2$

$WP = 20 + (2.2 * 2) = 24.4$

$A = 22 * 1 = 22'$

$R = \frac{22}{24.4} = .901$

$V = 2.62 R^{2/3}$

$= 2.62 (.901)^{2/3} = 2.44$

$Q = 2.44 * 22 = 53.68 cfs$

Q = 53.7 cfs > 35 cfs use 1' = d

Sediment Pond 2

RATIONAL Method

1/2

1/YEAR STORM EVENT

$$A = 22.4 \text{ Acres}$$

$$Q = VA$$

$$L = 650 \text{ FT}$$

$$S = .01 \text{ FT/FT}$$

$$n = .03$$

$$C = .40$$

$$T_c = .93 \frac{L^{.6} n^{.8}}{I^{.4} S^{.3}}$$

$$T_c = .93 \frac{650^{.6} \cdot .03^{.8}}{I^{.4} \cdot .01^{.3}}$$

TRIAL #1

$$T_c = \frac{22.00}{I^{.4}}$$

ASSUME 4.2 IN/HR

$$T_c = \frac{22.00}{4.2^{.4}} = 12.39$$

TRY 12.39 IN/HR IN IDF CURVE

$$\therefore I = 4.4 \text{ IN/HR} > 4.2$$

TRIAL #2

ASSUME 4.4 IN/HR

$$T_c = \frac{22.00}{4.4^{.4}} = 12.16$$

TRY 12.16 IN/HR IN IDF CURVE

$$\therefore I = 4.4 \text{ IN/HR} = 4.4 \text{ IN/HR}$$

USE $I = 4.4 \text{ IN/HR}$

Sediment Pond 2

2/2

$$Q = C I A$$

$$Q = .4 \times 4.4 \text{ in/hr} \times 22.4 \text{ ACRES}$$

$$Q = 39.42 \text{ CES}$$

Sediment Pond 2

RATIONAL METHOD

1/2

50 YEAR STORM EVENT

$$A = 22.4 \text{ ACRES}$$

$$L = 650 \text{ FT}$$

$$S = .01 \text{ FT/FT}$$

$$n = .03$$

$$C = .40$$

$$Q = VA$$

$$T_c = .93 \frac{L^{.6} n^{.6}}{I^{.4} S^{.3}}$$

$$T_c = .93 \frac{650^{.6} \cdot .03^{.6}}{I^{.4} \cdot .01^{.3}}$$

$$T_c = \frac{22.004}{I^{.4}}$$

TRIAL #1

ASSUME $I = 7.5 \text{ in/hr}$

$$T_c = \frac{22.004}{7.5^{.4}} = 9.82 \text{ min}$$

TRY 9.82 min IN IDF CURVE

$$\therefore I = 7.8 \text{ in/hr}$$

TRIAL #2

ASSUME $I = 7.7 \text{ in/hr}$

$$T_c = \frac{22.004}{7.7^{.4}} = 9.725 \text{ min}$$

TRY 9.725 min IN IDF CURVE

$$\therefore I = 7.9 \text{ in/hr} > 7.7 \text{ in/hr}$$

TRIAL #3

ASSUME $I = 7.9 \text{ in/hr}$

$$T_c = \frac{22.004}{7.9^{.4}} = 9.626 \text{ min}$$

TRY 9.626 min IN IDF CURVE

$$\therefore I = 7.9 \text{ in/hr} = 7.9 \text{ in/hr}$$

USE $I = 7.9 \text{ in/hr}$

Sediment Pond 2 - CONTINUED

2/2

50 YEAR STORM EVENT

$$Q = CIA$$

$$A = 22.4$$

$$C = .40$$

$$I = 7.9 \text{ in/hr}$$

$$Q = .40 \times 7.9 \times 22.4$$

$$= 70.784$$

USE 75 CFS

Pond 2 Spill Pipe Design

$$Q = 39 \text{ CFS}$$

$$V = \frac{Q}{A} \quad \text{ASSUME } V = 8 \text{ FT/SEC}$$

$$A = \frac{39 \text{ CFS}}{8 \text{ FT/SEC}} \quad A = 4.875 \text{ FT}$$

$$A_{\text{PIPE}} = \pi r^2$$

$$r^2 = \frac{A}{\pi} = \frac{4.875}{3.14} = 1.55$$

$$r = 1.24$$

$$d = 2.49 = 30''$$

CHECK HEAD REQUIRED FOR 30''

$$h = \frac{Q^2}{C^2 \cdot 2.29}$$

$$h = \frac{39^2}{.57^2 \cdot 2.29^2 \cdot 64.4}$$

$$C = .53 \pm .01 / 2 = .57$$

$$Q = 39$$

$$C_2 = \pi r^2 = -1.25^2$$

$$= 4.90$$

$$h = 3.0 < 3.3$$

USE 30'' CMP

Pond 2

EMERGENCY SPILLWAY WIDTH CALCULATION 50 YEAR STORM EVENT

$$Q = VA$$

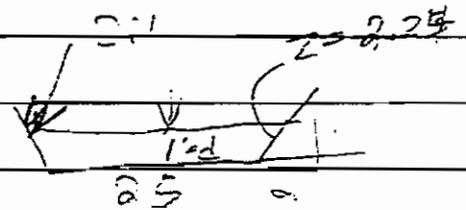
$$Q = 75 \text{ CFS}$$

V = MEAN VELOCITY

A = AREA OF PIPE

$$S = .005$$

$$V = \frac{1.486}{n} R^{2/3} S^{1/2}$$



TRIAL #1 TRY 1' depth @ 25' width

$$R = A/WP$$

$$R = 27/29.68$$

$$R = .91$$

$$A = 27 * 1 = 27 \text{ FT}^2$$

$$WP = 25 + (2.25) * 2$$

$$= 29.68$$

$$V = \frac{1.486}{.04} (.91)^{2/3} (.005)^{1/2}$$

$$= 2.47$$

$$Q = VA = 2.47 * 27 = 66.7$$

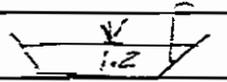
$$Q = 66.7 < 75 \text{ CFS}$$

TRIAL #2 TRY 1.2' depth @ 25' width

$$R = \frac{32.88}{30.35} = 1.08$$

$$V = \frac{1.486}{.04} (1.08)^{2/3} (.005)^{1/2}$$

$$V = 2.76 \text{ FT/S}$$



$$25 + (2.68) * 2 = 30.36$$

$$2 = 2.68$$

$$A = 27.4 * 1.2 =$$

$$= 32.88 \text{ FT}^2$$

$$Q = VA = 2.76 * 32.88$$

$$= 90.7 \text{ CFS} > 75 \text{ CFS}$$

$$WP = 25 + (2.68) * 2$$

$$= 30.36$$

USE 1.20 @ 25' width

DATE 6/10/2015

Sediment Pond 3
1 year STORM EVENT

RATIONAL METHOD $\frac{1}{2}$

A = ~~15~~ 9.8 ACRES

L = 650'

S = .01 FT/FT

n = .03

C = .40

$$Q = VA \quad \frac{2.6 \text{ in}^3}{\text{I} \cdot 4 \text{ S} \cdot 3}$$

$$T_c = .93 \frac{650^{(.6)} \cdot .03^{.6}}{\text{I} \cdot 4 \cdot .01^{.3}}$$

$$T_c = \frac{22.06}{\text{I} \cdot 4}$$

TRIAL #1

ASSUME 4.2 in/hr

$$T_c = \frac{22}{4.3 \cdot 4} = 12.39$$

TRY 12.39 in/hr IN IDF CURVE

$$\therefore I = 4.4 \text{ in/hr} > 4.2$$

TRIAL #2

ASSUME 4.4 in/hr

$$T_c = \frac{22}{4.4 \cdot 4} = 12.16$$

TRY 12.16 in/hr IN IDF CURVE

$$I = 4.4 \text{ in/hr} = 4.4 \text{ in/hr}$$

USE $I = 4.4 \text{ in/hr}$

6/10/2015

Sediment Pond 3

2/2

$$Q = CIA$$

$$Q = .4 \times 4.4 \text{ in/hr} \times 9.8 \text{ Acres}$$

$$Q = 17.248 \text{ CFS}$$

6/11/2015

Sediment Pond 3
- 50 year STORM EVENT

Rational Method $\frac{1}{1}$

$$A = 9.8 \text{ ACRES}$$

$$L = 650 \text{ FT}$$

$$S = .01 \frac{\text{FT}}{\text{FT}}$$

$$n = .03$$

$$C = .4$$

$$Q = VA$$

$$T_c = .93 \frac{L^{.6} n^{.6}}{I^{.4} S^{.3}}$$

$$T_c = .93 \frac{650^{.6} .03^{.6}}{I^{.4} .01^{.3}}$$

$$T_c = \frac{22.00}{I^{.4}}$$

TRIAL #1

ASSUME $I = 7.9 \text{ in/hr}$

$$T_c = \frac{22.00}{7.9^{.4}} = 9.626$$

TRY 9.626 IN IDF CURVE
 $\therefore I = 7.9 \text{ in/hr} = 7.9 \text{ in/hr}$

USE $I = 7.9 \text{ in/hr}$

$$Q = CIA$$

$$A = 9.8$$

$$C = .4$$

$$I = 7.9$$

$$Q = .4 \times 7.9 \times 9.8$$

$$= 31 \text{ CFS}$$

Pond 3 Spill Pipe Design

1/1

$$Q_1 = 17.245 \text{ use } 18 \text{ CFS}$$

$$V = Q/A \quad \text{ASSUME } 8 \text{ FT/sec}$$

$$A = \frac{18 \text{ CFS}}{8 \text{ FT/sec}} \quad A = 2.25 \text{ FT}^2$$

$$A_p = \pi r^2$$

$$r^2 = \frac{A}{\pi} = \frac{2.25}{3.14} = .71656$$

$$r = .846$$

$$d = 1.69 = \text{use } 24''$$

Check Head Required For 24''

$$h = \frac{Q^2}{C^2 a^2 2g}$$
$$= \frac{18^2 \text{ CFS}}{.53^2 (3.14)^2 \times 64.4}$$
$$= 1.81 < 4$$

$$Q = 18 \text{ CFS}$$
$$C = .53 \quad \begin{matrix} \text{TABLE 7} \\ \text{Pg 4-40} \\ \text{Civil Eng.} \\ \text{HAND BOOK} \end{matrix}$$

$$a = \pi r^2 = \pi (1)^2$$
$$a = 3.14$$

USE 24'' CMP

1/1

Pond 3

Emergency Spillway width calculation
50 year STORM EVENT

Use Pond 2 Design

Use 25' width

QUANTITY CALCULATIONS

Quantity calculations for both earthwork volumes and, in the case of sedimentation basins, containment volumes are accomplished through AutoCad and Eagle Point software programs. These programs utilize survey and design information regarding the existing and proposed surfaces to develop triangulated irregular networks (TIN), which are then used to calculate quantities based on the prismatic method for calculating volumes. Therefore, quantity calculations as historically furnished cannot be supplied; however, digital drawings can be provided if necessary for outside confirmation of the quantities shown.

ATTACHMENT 5

Topographic Survey with Permit Boundary

June 25, 2015

Mr. Jeff Kitchens
Stormwater Management Branch Chief
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

Catherine McNeil
Mining and Natural Resource Section Chief
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

RE: **Modification to Draft NPDES Individual Permit AL0082759**
Masterson Site v2
2228 County Road 135
Town Creek, Lawrence County, Alabama

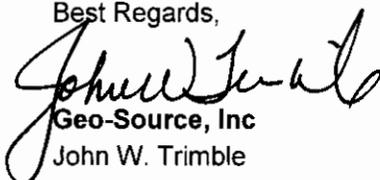
On behalf of MS Industries II, LLC, please find enclosed the referenced draft permit modification as ADEM Form 315 along with attachments and documents as required. This form and associated attachments and documents were prepared by Dean McCrae Engineering, Inc. It is our understanding the permit fee of \$6,190.00 has already been received by ADEM and will be applied to this modification.

As you are aware from previous discussions, this draft permit modification represents the merger of the Masterson Site with the construction area that was previously permitted for land disturbance as ALR10AT61. Accordingly, we have identified this modification as "Masterson Site v2" in order to distinguish between the original submission.

The actual mining area has been enlarged to include the area around the permittee's advance prospecting pit with an additional outfall (003P). Further, the area previously encompassed by the construction permit (ALR10AT61) has been slightly expanded and an outfall (004E) added to encompass this area. With these modifications, the total area within the Masterson Site v2 now represents +/-57 acres. However, less than 45 acres actually constitutes the mining area, which is the total area permitted for surface mining by the ADOL (Permit #014274_File #42-MS-3).

Thank you for your time and attention to this matter. Should you have any questions or need additional information, please do not hesitate to call me at your convenience.

Best Regards,



Geo-Source, Inc
John W. Trimble

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM)
NPDES INDIVIDUAL PERMIT APPLICATION**

SURFACE & UNDERGROUND MINERAL & ORE OR MINERAL PRODUCT MINING, QUARRYING, EXCAVATION, BORROWING, HYDRAULIC MINING, STORAGE, PROCESSING, PREPARATION, RECOVERY, HANDLING, LOADING, STORING, OR DISPOSING ACTIVITIES AND ASSOCIATED AREAS INCLUDING PRE-MINING SITE DEVELOPMENT, CONSTRUCTION, EXCAVATION, CLEARING, DISTURBANCE, RECLAMATION, AND ASSOCIATED AREAS

INSTRUCTIONS: PLEASE READ THE ACCOMPANYING INSTRUCTIONS CAREFULLY BEFORE COMPLETING THIS FORM. COMPLETE ALL QUESTIONS. RESPOND WITH "N/A" AS APPROPRIATE. INCOMPLETE OR INCORRECT ANSWERS OR MISSING SIGNATURES WILL DELAY PROCESSING. ATTACH ADDITIONAL COMMENTS OR INFORMATION AS NEEDED. IF SPACE IS INSUFFICIENT, CONTINUE ON AN ATTACHED SHEET(S) AS NECESSARY. COMMENCEMENT OF ACTIVITIES APPLIED FOR AS DETAILED IN THIS APPLICATION ARE NOT AUTHORIZED UNTIL PERMIT COVERAGE HAS BEEN ISSUED BY THE DEPARTMENT.

PLEASE TYPE OR PRINT IN INK ONLY.

- Initial Permit Application for New Facility
 Initial Permit Application for Existing Facility (e.g. facility previously permitted less than 5 acres)
 Modification of Existing Permit
 Reissuance of Existing Permit
 Reissuance & Modification of Existing Permit
 Reissuance & Transfer of Existing Permit
 Revocation and Reissuance of Existing Permit
 Other Modification to Draft Permit AL0082759

I. GENERAL INFORMATION

NPDES Permit Number (Not applicable if initial permit application): <u>AL 0082759 Draft</u>	County(s) in which Facility is Located: Lawrence County
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Company/Permittee Name: MS Industries II, LLC			Facility Name (e.g., Mine Name, Pit Name, etc.): Masterson Site v.2		
Mailing Address of Company/Permittee: 2489 County Road 236			Physical Address of Facility (as near as possible to entrance): 2228 County Road 135		
City: Town Creek	State: AL	Zip: 35672-6235	City: Town Creek	State: AL	Zip: 35672-6235
Permittee Phone Number: (256)383-6740	Permittee Fax Number: (256)383-6766	Latitude and Longitude of entrance: 34° 35' 4.9" 87° 29' 11.3"			

Responsible Official (as described on page 13 of this application): Steven D. Smith			Responsible Official Title: CEO		
Mailing Address of Responsible Official: 2489 County Road 236			Physical Address of Responsible Official: 2489 County Road 236		
City: Town Creek	State: AL	Zip: 35672-6235	City: Town Creek	State: AL	Zip: 35672-6235
Phone Number of Responsible Official: (256)383-6740	Fax Number of Responsible Official: (256)383-6766	Email Address of Responsible Official: ssmsindustries@gmail.com			

Facility Contact: Clint Carter			Facility Contact Title: Supervisor		
Physical Address of Facility Contact: 2228 County Road 135			Phone Number of Facility Contact: (256)383-6740	Fax Number of Facility Contact: (256)383-6766	
City: Town Creek	State: AL	Zip: 35672-6235	Email Address of Facility Contact: jccarter1@una.edu		

II. MEMBER INFORMATION

A. Identify the name, title/position, and unless waived in writing by the Department, the residence address of every officer, 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:

Name:	Title/Position:	Physical Address of Residence (P.O. Box is Not Acceptable)
Steven D. Smith	CEO	2489 County Road 236, Town Creek, AL 35672
John F. Christmas	COO	2489 County Road 236, Town Creek, AL 35672

B. Other than the "Company/Permittee" listed in Part I, identify the name of each corporation, partnership, association, and single proprietorship for which any individual identified in Part II.A. 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:

Name of Corporation, Partnership, Association, or Single Proprietorship:	Name of Individual from Part II.A.:	Title/Position in Corporation, Partnership, Association, or Single Proprietorship:
SCS Industries, LLC	Steven D. Smith	CEO
AJSWC, LLC	John F. Christmas	COO

III. LEGAL STRUCTURE OF APPLICANT

A. Indicate the legal structure of the "Company/Permittee" listed in Part I:

Corporation
 Association
 Individual
 Single Proprietorship
 Partnership
 LLP
 LLC
 Government Agency: _____
 Other: _____

B. If not an individual or single proprietorship, is the "Company/Permittee" listed in Part I. properly registered and in good standing with the Alabama Secretary of State's Office? (If the answer is "No," attach a letter of explanation.)
 Yes
 No

C. Parent Corporation and Subsidiary Corporations of Applicant, if any: None

D. Land Owner(s): Applicant/Permittee

E. Mining Sub-contractor(s)/Operator(s), if known: N/A

IV. COMPLIANCE HISTORY

A. Has the applicant ever had any of the following:

	Yes	No	
(1) An Alabama NPDES, SID, or UIC permit suspended or terminated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(2) An Alabama license to mine suspended or revoked?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(3) An Alabama or federal mining permit suspended or terminated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(4) A reclamation bond, or similar security deposited in lieu of a bond, or portion thereof, forfeited?			Yes No <input type="checkbox"/> <input checked="" type="checkbox"/>
(5) A bond or similar security deposited in lieu of a bond, or portion thereof, the purpose of which was to secure compliance with any requirement of the Alabama Water Improvement Commission or Alabama Department of Environmental Management, forfeited?			<input type="checkbox"/> <input checked="" type="checkbox"/>

(If the response to any item of Part IV.A. is "Yes," attach a letter of explanation.)

B. Identify every Warning Letter, Notice of Violation (NOV), Administrative Action, or litigation issued to the applicant, parent corporation, subsidiary, general partner, LLP partner, or LLC member and filed by ADEM or EPA during the three year (36 months) period preceding the date on which this form is signed. Indicate the date of issuance, briefly describe alleged violations, list actions (if any) to abate alleged violations, and indicate date of final resolution:

C. July 03, 2014: Administrative Order 14-075-LD to AJSWC, LLC, an associated company, from failure to register for NPDES construction permit; facility was registered and BMPs installed; Order resolved July 10, 2014

IX. PROPOSED ACTIVITY TO BE CONDUCTED

A. Type(s) of activity presently conducted at applicant's existing facility or proposed to be conducted at facility (check all that apply):

<input checked="" type="checkbox"/> Surface mining	<input type="checkbox"/> Underground mining	<input checked="" type="checkbox"/> Quarrying	<input type="checkbox"/> Auger mining	<input type="checkbox"/> Hydraulic mining
<input type="checkbox"/> Within-bank mining	<input type="checkbox"/> Solution mining	<input checked="" type="checkbox"/> Mineral storing	<input type="checkbox"/> Lime production	<input type="checkbox"/> Cement production
<input type="checkbox"/> Synthetic fuel production	<input type="checkbox"/> Alternative fuels operation	<input checked="" type="checkbox"/> Mineral dry processing (crushing & screening)	<input type="checkbox"/> Mineral wet preparation	
<input type="checkbox"/> Other beneficiation & manufacturing operations		<input checked="" type="checkbox"/> Mineral loading	<input type="checkbox"/> Chemical processing or leaching	
<input type="checkbox"/> Construction related temporary borrow pits/areas		<input checked="" type="checkbox"/> Mineral transportation <u> </u> rail <u> </u> barge <input checked="" type="checkbox"/> truck		
<input type="checkbox"/> Preparation plant waste recovery		<input type="checkbox"/> Hydraulic mining, dredging, instream or between stream-bank mining		
<input checked="" type="checkbox"/> Grading, clearing, grubbing, etc.		<input type="checkbox"/> Pre-construction ponded water removal	<input checked="" type="checkbox"/> Excavation	
<input checked="" type="checkbox"/> Pre-mining logging or land clearing		<input type="checkbox"/> Waterbody relocation or other alteration	<input type="checkbox"/> Creek/stream crossings	
<input checked="" type="checkbox"/> Onsite construction debris or equipment storage/disposal		<input checked="" type="checkbox"/> Onsite mining debris or equipment storage/disposal		
<input checked="" type="checkbox"/> Reclamation of disturbed areas		<input type="checkbox"/> Chemicals used in process or wastewater treatment (coagulant, biocide, etc.)		
<input type="checkbox"/> Adjacent/associated asphalt/concrete plant(s)		<input type="checkbox"/> Low volume sewage treatment package plant		
<input type="checkbox"/> Other: _____				

B. Primary SIC Code: 1400 Description: Mining and Quarrying of Nonmetallic Minerals, except Fuels

Secondary SIC Code(s): 1442 Description: Construction Sand and Gravel

Secondary SIC Code(s): 1459 Description: Clay, Ceramic and Refractory Minerals, NEC

C. Narrative Description of the Activity: Extraction, sizing, crushing and milling of clay, sand, ores and other non-fuel minerals

X. FUEL – CHEMICAL HANDLING, STORAGE & SPILL PREVENTION CONTROL & COUNTERMEASURES (SPCC) PLAN

A. Will fuels, chemicals, compounds, or liquid waste be used or stored onsite? Yes No

B. If "Yes," identify the fuel, chemicals, compounds, or liquid waste and indicate the volume of each:

<i>Volume</i>	<i>Contents</i>	<i>Volume</i>	<i>Contents</i>	<i>Volume</i>	<i>Contents</i>
<u> </u> gallons	<u> </u>	<u> </u> gallons	<u> </u>	<u> </u> gallons	<u> </u>
<u> </u> gallons	<u> </u>	<u> </u> gallons	<u> </u>	<u> </u> gallons	<u> </u>

C. If "Yes," a detailed SPCC Plan with acceptable format and content, including diagrams, must be attached to application in accordance with ADEM Admin. Code R. 335-6-6-.12(r). Unless waived in writing by the Department on a programmatic, categorical, or individual compound/chemical basis, Material Safety Data Sheets (MSDS) for chemicals/compounds used or proposed to be used at the facility must be included in the SPCC Plan submittal.

XI. POLLUTION ABATEMENT & PREVENTION (PAP) PLAN

A. For non-coal mining facilities, a PAP Plan in accordance with ADEM Admin. Code r. 335-6-9-.03 has been completed and is attached as part of this application. Yes No

B. For coal mining facilities, a detailed PAP Plan has been submitted to ASMC according to submittal procedures for ASMC regulated facilities. Yes No

(1) If "Yes" to Part XI.B., provide the date that the PAP Plan was submitted to ASMC: Not Applicable

(2) If "No" to Part XI.B., provide the anticipated date that the PAP Plan will be submitted to ASMC: Not Applicable

XII. TOPOGRAPHIC MAP SUBMITTAL

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 is located. Unless approved in advance by the Department, the topographic or equivalent map(s), at a minimum, must show:

(a) An outline of legal boundary of entire property (property lines and lease boundaries)	(i) All surrounding unimproved/improved roads
(b) An outline of the facility	(j) High-tension power lines and railroad tracks
(c) All existing and proposed disturbed areas	(k) Buildings and structures, including fuel/water tanks
(d) Location of discharge areas	(l) Contour lines, township-range-section lines
(e) Proposed and existing discharge points	(m) Drainage patterns, swales, washes
(f) Perennial, intermittent, and ephemeral streams	(n) All drainage conveyance/treatment structures (ditches, berms, etc.)
(g) Lakes, springs, water wells, wetlands	(o) Any other pertinent or significant feature
(h) All known facility dirt/improved access/haul roads	

XIII. DETAILED FACILITY MAP SUBMITTAL

Attach to this application a 1:500 scale or better, detailed auto-CAD 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 facility. The facility map(s) must include a caption indicating the name of the facility, name of the applicant, facility name, county, and township, range, & section(s) where the facility is located. Unless approved in advance by the Department, the facility or equivalent map(s), at a minimum, must show:

(a) Information listed in Item XII (a) – (o) above (e) Location of mining or pond cleanout waste storage/disposal areas
 (b) If noncoal, detailed, planned mining progression (f) Other information relevant to facility or operation
 (c) If noncoal, location of topsoil storage areas (g) Location of facility sign showing Permittee name, facility name, and NPDES Number
 (d) Location of ASMC bonded increments (if applicable)

XIV. RECEIVING WATERS

List the requested permit action for each outfall (issue, reissue, add, delete, move, etc.), outfall designation including denoting "E" for existing and "P" for proposed outfalls, name of receiving water(s), whether or not the stream is included in a TMDL, latitude and longitude (to seconds) of location(s) of each discharge point, distance of receiving water from outfall in feet, number of disturbed acres, the number of drainage acres which will drain through each treatment system, outfall, or BMP, and if the outfall discharges to an ADEM listed CWA Section 303(d) waterbody segment at the time of application submittal.

Action	Outfall E/P	Receiving Water	Latitude	Longitude	Distance to Rec. Water	Disturbed Acres	Drainage Acres	ADEM WUC	303(d) Segment (Y/N)	TMDL Segment* (Y/N)
Issue	001 P	UT of Hagwood Branch	34°35'8"	87°29'8"	200'	10	10	F&W	N	N
Issue	002 P	UT of Hagwood Branch	34°35'7"	87°29'0"	200'	20	20	F&W	N	N
Issue	003 P	UT of Hagwood Branch	34°35'14"	87°28'56"	100'	12	12	F&W	N	N
Issue	004E	UT of Hagwood Branch	34°35'19"	87°28'56.2"	50'	12	15	F&W	N	N

*If a TMDL Compliance Schedule is requested, the following should be attached as supporting documentation: (1) Justification for the requested Compliance Schedule (e.g. time for design and installation of control equipment, etc.); (2) Monitoring results for the pollutant(s) of concern which have not previously been submitted to the Department (sample collection dates, analytical results (mass and concentration), methods utilized, MDL/ML, etc. should be reported as available); (3) Requested interim limitations, if applicable; (4) Date of final compliance with the TMDL limitations; and (5) Any other additional information available to support the requested compliance schedule.

XVI. DISCHARGE STRUCTURE DESCRIPTION & POLLUTANT SOURCE

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.

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	Other
001 P	Pipe	Overland flow from excavated materials	Yes	No	N/A	Yes	N/A	
002 P	Pipe	Pumped discharge from surface mining	Yes	No	N/A	Yes	N/A	
003 P	Pipe	Overland flow and pumped discharge from mining	Yes	No	N/A	Yes	N/A	
004 E	Stabilized swale	Overland flow from land clearing; non-operational area adjacent to mine site	Yes	No	N/A	Yes	No	Existing permitted outfall from land disturbance

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: _____

XVII. PROPOSED NEW OR INCREASED DISCHARGES

A. Pursuant to ADEM Admin. Code Chapter 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.

- Yes. New/increased discharges of pollutant(s) or discharge locations to Tier 2 waters are proposed.
- No. New/increased discharges of pollutants(s) or discharge locations to Tier 2 waters are not proposed.

B. If "Yes," complete this Part (XVII.B.), Part XVIII, and XIX. Attach additional sheets/documentation and supporting information as needed.

(1) What environmental or public health problem will the discharge be correcting?

All discharges will be controlled through best management practices and collected in three retention basins before discharge to an unnamed tributary (UT) to Hagwood Branch (Outfall P001, Outfall P002 and Outfall P003). These retention basins will serve to reduce the volume of stormwater discharges over pre-mining conditions by reducing potential pollutants through monitoring/treatment before discharging to the UT of Hagwood Branch. By reducing the volume of stormwater discharges, the potential for erosion and subsequent sedimentation will also be reduced as will the potential for biological contaminants for Hagwood Branch. This will ultimately improve the aquatic and benthic habitats afforded by the stream(s).

(2) How much will the discharger be increasing employment (at its existing facility or as a result of locating a new facility)?

Employment will be increased by 15 to 20 persons from the local community that will provide much needed high-wage, skilled positions including mechanics and machine operators as well as general labor jobs which will represent a significant improvement to an area predominated by an agricultural employment base. This existing employment base in agriculture has been adversely affected from and exacerbated by a reduction in poultry farms and the shift from small family farms to large centralized commercial operations.

(3) How much reduction in employment will the discharger be avoiding?

The project will entail hiring persons from the local community that will avoid further chronic unemployment consistent with an agricultural-based local economy.

(4) How much additional state or local taxes will the discharger be paying?

The project will generate additional tax revenues from payroll deductions and other expenses as well as pay tonnage fees for transportation and severance taxes to the State of Alabama. These additional tax revenues will help maintain the local infrastructure, school systems and improve the overall quality of life for local residents.

(5) What public service to the community will the discharger be providing?

The project will entail concentrating employment efforts through the local community to an applicant pool with high unemployment. Local community involvement will be paramount to forging a community relationship and ultimately serving as a catalyst for further industrial development.

(6) What economic or social benefit will the discharger be providing to the community?

The proposed activity will provide much-needed employment for the local community, with many of those jobs being provided to local citizens that would otherwise be unemployed or under-employed. The agricultural-based local economy will ensure an adequate qualified applicant pool for employment well suited to the trades and equipment operators necessary for the project.

XVIII. ALTERNATIVES ANALYSIS – ADEM Form 311 3/02

Pursuant to ADEM Admin. Code Chapter 335-6-10, an evaluation of the discharge alternatives identified below has been completed and the following conclusions were reached. All proposed new or expanded discharges of pollutant(s) covered by the Individual NPDES permitting program are subject to the provisions of the antidegradation policy. As part of the permit application review process, the Department is required to determine, based on the applicant's demonstration, that 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. As a part of this demonstration, a registered professional engineer (PE) licensed to practice in the State of Alabama must complete an evaluation of the discharge alternatives, to include calculation of total annualized project costs (Item XIX) for each technically feasible alternative. Technically feasible alternatives with total annualized pollution control project costs that are less than 110% of the preferred alternative total annualized pollution control project costs for the Tier 2 new or increased discharge proposal are considered viable alternatives. Supporting documentation is attached, referenced, or otherwise handled as appropriate.

Alternative	Viable	Non-Viable	Reason/Rationale For Indicating Non-Viable
1) Treatment/Discharge Proposed In This Application	X		
2) Land Application		X	Limited duration; activities outside permitted areas
3) Pretreatment/Discharge to POTW By SID Permit		X	POTW not available
4) Relocation of Discharge		X	Not reasonable as surrounding streams Tier II
5) Reuse/Recycle – Pollution Prevention		X	No process waters involved
6) Other Process/Treatment Alternatives		X	Evaporation rates insufficient to off-set discharges
7) Underground Injection By UIC Permit		X	Not applicable to inject surface waters
8) Other Project Specific Alternative(s) Identified By the Applicant Or The ADEM			
9) Other Project Specific Alternative(s) Identified By the Applicant Or The ADEM			

COMMENTS: See attached evaluation of discharge alternatives

XIX. CALCULATION OF TOTAL ANNUALIZED PROJECT COSTS FOR PRIVATE SECTOR PROJECTS - ADEM Form 313 8/02
(ADEM Form 312 3/02 - Public Sector Project is available upon request)

This item must be completed for each technically feasible alternative evaluated in Item XVIII. Copy, complete, and attach additional blocks/sheets and supporting information as needed.

Capital Costs of pollution control project to be expended or financed by applicant (Supplied by applicant)	\$95,000 (1)	* While actual payback schedules may differ across projects and companies, assume equal annual payments over a 10-year period for consistency in comparing projects.
Interest Rate for Financing (Expressed as a decimal)	.08 (i)	
Time Period of Financing (Assume 10 years *)	10 years (n)	
Annualization Factor ** = $\frac{i}{(1+i)^n - 1} + i$ i = Interest Rate	0.149 (2)	** Or refer to Appendix B (application information) for calculated annualization factors.
Annualized Capital Cost [Calculate: (1) x (2)]	\$14,155 (3)	
Annual Cost of Operation & Maintenance (including but not limited to monitoring, inspection, permitting fees, waste disposal charges, repair, administration & replacement) ***	\$30,000 (4)	*** 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).
Total Annual Cost of Pollution Control Project [(3) + (4)]	\$44,155 (5)	

I. POLLUTION ABATEMENT PLAN (PAP) SUMMARY

Outfall(s): 002

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

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

IDENTIFY AND PROVIDE DETAILED EXPLANATION FOR ANY "N" OR "N/A" RESPONSE(S):

1. Discharge not into PWS classified stream; emergency spillway sized for peak flow from 50-yr 24-hr event.
2. No stream crossings are associated with proposed mining activities.

I. POLLUTION ABATEMENT PLAN (PAP) SUMMARY

Outfall(s): 004

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

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

IDENTIFY AND PROVIDE DETAILED EXPLANATION FOR ANY "N" OR "N/A" RESPONSE(S):

Outfall 004 was constructed under the NPDES General Permit ALR10AT61 and will be maintained with temporary Best Management Practices (BMPs) for land disturbance activities until permanent stabilization is achieved. If additional disturbance activities or future operations are anticipated through this outfall, the permittee will design and construct applicable structural controls appropriate for the anticipated-use as part of a modification to the Individual NPDES Permit.

II. POLLUTION ABATEMENT PLAN (PAP) REVIEW CHECKLIST

Y	N	N/A
✓		
✓		
✓		

PE Seal with License #
 Name and Address of Operator
 Legal Description of Facility

General Information:

✓		
✓		
✓		
✓		
✓		

Name of Company
 Number of Employees
 Products to be Mined
 Hours of Operation
 Water Supply and Disposition

Topographic Map:

✓		
✓		
✓		
✓		
✓		

Mine Location
 Location of Prep Plant
 Location of Treatment Basins
 Location of Discharge Points
 Location of Adjacent Streams

1"- 500' or Equivalent Facility Map:

✓		
✓		
✓		
✓		

Drainage Patterns
 Mining Details
 All Roads, Structures Detailed All
 Treatment Structures Detailed

Detailed Design Diagrams:

✓		
✓		
✓		

Plan Views
 Cross-section Views
 Method of Diverting Runoff to Treatment Basins

Narrative of Operations:

✓		
✓		
✓		

Raw Materials Defined
 Processes Defined
 Products Defined

Schematic Diagram:

✓		
✓		
✓		

Points of Waste Origin
 Collection System
 Disposal System

Post Treatment Quantity and Quality of Effluent:

✓		
✓		
✓		

Flow
 Suspended Solids
 Iron Concentration
 pH

Description of Waste Treatment Facility:

✓		
✓		
✓		
✓		

Pre-Treatment Measures
 Recovery System
 Expected Life of Treatment Basin
 Schedule of Cleaning and/or abandonment

Other:

✓		
✓		
✓		
✓		
✓		
✓		

Precipitation/Volume Calculations/Diagram Attached
 BMP Plan for Haul Roads
 Measures for Minimizing Impacts to Adjacent Stream i.e., Buffer Strips, Berms, etc.
 Methods for Minimizing Nonpoint Source Discharges
 Facility Closure Plans
 PE Rationale(s) For Alternate Standards, Designs or Plans

IDENTIFY AND PROVIDE DETAILED EXPLANATION FOR ANY "N" OR "N/A" RESPONSE(s):

III. INFORMATION

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.

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 NPDES Permit prior to commencement of any land disturbance. Such 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 Industrial Relations (ADIR) 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; and
- (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. Send the completed form, supporting documentation, and the appropriate fees to:

Water Division
Alabama Department of Environmental Management
Post Office Box 301463
Montgomery, Alabama 36130-1463
Phone: (334) 271-7823
Fax: (334) 279-3051
h2omail@adem.state.al.us
www.adem.alabama.gov

IV. PROFESSIONAL ENGINEER (PE) CERTIFICATION

A detailed, comprehensive Pollution Abatement/Prevention Plan (PAP) must be prepared, signed, and certified by a professional engineer (PE), registered in the State of Alabama as follows:

"I certify on behalf of the applicant, that I have completed an evaluation of discharge alternatives (Item XVIII) for any proposed new or increased discharges of pollutant(s) to Tier 2 waters and reached the conclusions indicated. I certify under penalty of law that technical information and data contained in this application, and a comprehensive 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 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."

Address PG Bay 573 PE Registration # 21361
 Name and Title (type or print) Tommy Dean, President Phone Number 662-423-9104
 Signature *Tommy Dean* Date Signed 25 JUNE 2015

V. RESPONSIBLE OFFICIAL SIGNATURE

This application must be signed 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."

Name (type or print) Steven D. Smith Official Title CEO
 Signature *Steven D. Smith* Date Signed 6-24-15

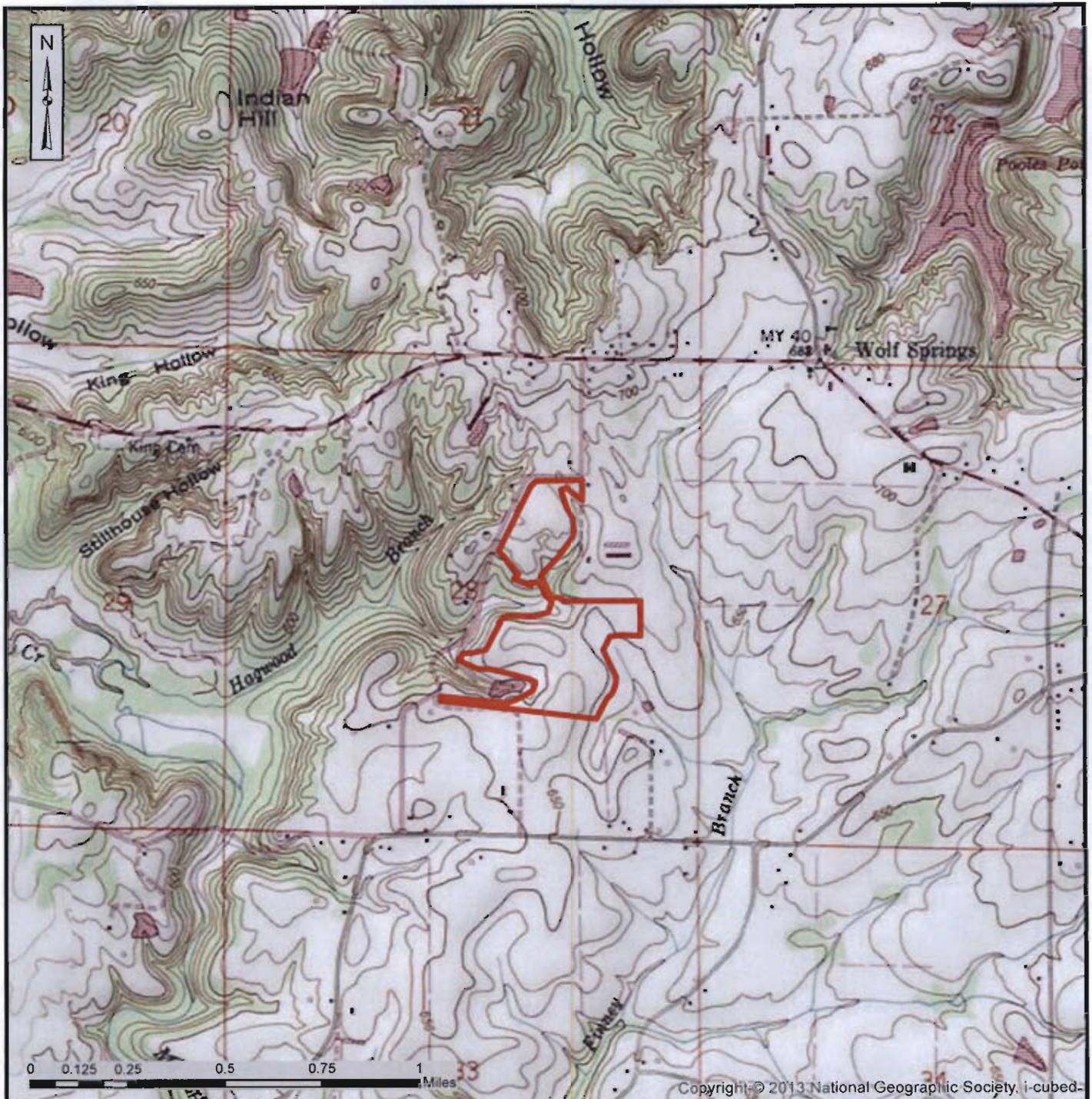
335-6-6-.09 Signatories to Permit Applications and Reports.

- (1) The application for an NPDES permit shall be signed by a responsible official, as indicated below:
 - (a) In the case of a corporation, by a principal executive officer of at least the level of vice president, or a manager assigned or delegated in accordance with corporate procedures, with such delegation submitted in writing if required by the Department, who is responsible for manufacturing, production, or operating facilities and is authorized to make management decisions which govern the operation of the regulated facility;
 - (b) In the case of a partnership, by a general partner;
 - (c) In the case of a sole proprietorship, by the proprietor; or
 - (d) In the case of a municipal, state, federal, or other public entity by either a principal executive officer, or ranking elected official.

ATTACHMENT:

EVALUATION OF DISCHARGE ALTERNATIVES

- 1. Land Application – Land application of stormwater run-off would be limited and require activities outside the permitted area on adjacent lands necessitating the construction of an additional retention/detention basin to ensure said stormwater is contained during times of large sustained rain events when soils are saturated. Because the land application alternative would be limited in duration and require additional land disturbance activities outside the permitted area, it was not considered technically feasible.**
- 2. Pretreatment/Discharge to POTW – There is no POTW system for consideration of stormwater discharges and therefore, this is not a technically feasible alternative.**
- 3. Relocation of Discharge – Relocation of the discharge would result in stormwater discharges to another Tier II stream over a distance of at least 0.25-mile from the proposed discharge. The relocation over such a distance would be cost prohibitive and result in the same discharges to another Tier II stream.**
- 4. Reuse/Recycle/Pollution Prevention – The proposed activities have no operations for which the opportunity to re-use or recycle the stormwater run-off would be considered technically feasible. There is no system of process waters which could be altered into a closed-loop with the proposed activities.**
- 5. Other Process/Treatment Alternatives – No other process/treatment alternatives were identified as technically feasible for abating stormwater run-off from the site. Evaporation from the retention basins in lieu of discharging stormwater would be insufficient to alter the volumes of effluent.**
- 6. Underground Injection – Underground injection is not typically used to handle stormwater discharges from land disturbances and would entail the introduction of surface waters into an underground aquifer or rock formation. Because of the large volumes of water retained on-site through the basins, underground injection was not considered technically feasible.**



TOPOGRAPHIC MAP
 (Hatton Quadrangle)
 Section 28, T5S, R9W
 Masterson Site v2
 2228 County Road 135
 Town Creek, Lawrence County, AL



Project No:
 E14-124
 June 2015

GEO-SOURCE, Inc.
Environmental Consultants
 462 N. Court Street
 Florence, Alabama 35630
 www.geo-source.com

POLLUTION ABATEMENT PLAN (PAP)

For:

**MASTERSON SITE v2
2228 County Road 135
Town Creek, Lawrence County, AL**

Operator:

**MS Industries II, LLC
2489 County Road 236
Town Creek, AL 35672**

Contact:

**Mr. Steven D. Smith
Chief Executive Officer
2489 County Road 236
Town Creek, AL 35672
256.383.6740**

Prepared by:

**Mr. Tommy Dean, PE
Dean McCrae Engineering
Post Office Box 573
Iuka, MS 38852**



June 24, 2015

The Pollution Abatement Plan has been developed in accordance with Part III.C of the general permit and ADEM Admin Code 335-6-9-.03.

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ATTACHMENTS to the PAP

- Attachment 1: Comprehensive Reclamation Plan**
- Attachment 2: Design Drawings**
- Attachment 3: Specifications**
- Attachment 4: Design Calculations**
- Attachment 5: Topographic Survey with Permit Boundaries**

Section 1.0 Site Information and Location

1.1 Project Name:

Masterson Site v2

1.2 Project Address and Directions:

2228 County Road 135
Town Creek, Lawrence County, Alabama

From Highway 157, proceed south on County Road 235 approximately 1.5 miles to the intersection of County Road 236, then right for approximately 0.5-mile and turn left onto County Road 135. Continue south on County Road 135 approximately 0.9-mile and gate will be on the left side of road.

1.3 Office/Mailing Address:

2489 County Road 236
Town Creek, Alabama 35672

1.4 Telephone: 256.383.6740

1.5 Coordinates in Latitude/Longitude : (degrees, minutes, seconds)

At entrance from County Road 135:

N34⁰ 35' 04.96"
W87⁰ 29' 11.37"

At mine site:

N34⁰ 35' 04.85"
W87⁰ 28' 53.72"

Note: Coordinates were obtained from USGS 7.5 Minute Series Topographic Quadrangle Map

1.6 Legal Description:

The proposed mine site is located on MS Industries property as shown on the attached topographical map, with the site being more particularly described as:

A Part of **Section 28, Township 5 South, Range 9 West**, Huntsville Meridian, Lawrence County, Alabama, being more particularly described as follows: **Beginning at**

a capped iron pin found at the Northwest Corner of the Northeast Quarter of the Southeast Quarter of said Section 28; Thence run with the State Plane Grid South $86^{\circ}54'32''$ East for a distance of 697.85 feet; Thence run South $04^{\circ}04'27''$ West for a distance of 414.84 feet; Thence run North $89^{\circ}47'26''$ West for a distance of 170.69 feet; Thence run North $88^{\circ}59'45''$ West for a distance of 145.09 feet; Thence run South $65^{\circ}02'36''$ West for a distance of 106.81 feet; Thence run South $42^{\circ}10'24''$ West for a distance of 38.87 feet; Thence run South $26^{\circ}01'16''$ West for a distance of 27.52 feet; Thence run South $24^{\circ}35'31''$ East for a distance of 141.93 feet; Thence run South $39^{\circ}40'16''$ East for a distance of 117.44 feet; Thence run South $00^{\circ}13'18''$ East for a distance of 170.28 feet; Thence run South $40^{\circ}46'53''$ West for a distance of 201.22 feet; Thence run South $27^{\circ}18'46''$ West for a distance of 202.60 feet; Thence run South $84^{\circ}25'08''$ West for a distance of 262.23 feet; Thence run North $89^{\circ}31'39''$ West for a distance of 1337.18 feet; Thence run North $38^{\circ}11'13''$ West for a distance of 262.86 feet; Thence run North $39^{\circ}51'01''$ East for a distance of 47.48 feet; Thence run South $38^{\circ}09'39''$ East for a distance of 201.83 feet; Thence run South $86^{\circ}42'04''$ East for a distance of 108.77 feet; Thence run South $85^{\circ}50'12''$ East for a distance of 142.56 feet; Thence run North $50^{\circ}20'42''$ East for a distance of 127.26 feet; Thence run North $87^{\circ}06'22''$ East for a distance of 94.34 feet; Thence run South $84^{\circ}56'54''$ East for a distance of 125.26 feet; Thence run North $63^{\circ}13'19''$ East for a distance of 148.26 feet; Thence run North $10^{\circ}30'41''$ East for a distance of 50.74 feet; Thence run North $69^{\circ}33'32''$ East for a distance of 142.31 feet; Thence run North $52^{\circ}56'31''$ East for a distance of 91.85 feet; Thence run North $34^{\circ}05'10''$ West for a distance of 40.77 feet; Thence run North $42^{\circ}33'09''$ West for a distance of 46.31 feet; Thence run South $89^{\circ}35'36''$ West for a distance of 296.50 feet; Thence run North $70^{\circ}22'16''$ West for a distance of 179.44 feet; Thence run South $48^{\circ}54'21''$ West for a distance of 77.43 feet; Thence run South $54^{\circ}10'31''$ West for a distance of 42.64 feet; Thence run North $45^{\circ}43'18''$ West for a distance of 246.15 feet; Thence run North $05^{\circ}21'28''$ West for a distance of 92.15 feet; Thence run North $68^{\circ}11'27''$ East for a distance of 115.42 feet; Thence run South $74^{\circ}53'58''$ East for a distance of 149.94 feet; Thence run North $19^{\circ}30'15''$ East for a distance of 198.22 feet; Thence run North $49^{\circ}52'57''$ East for a distance of 278.59 feet; Thence run South $89^{\circ}50'29''$ East for a distance of 322.95 feet; Thence run North $31^{\circ}12'57''$ East for a distance of 293.54 feet; Thence run North $49^{\circ}53'02''$ East for a distance of 137.56 feet; Thence run North $53^{\circ}31'26''$ West for a distance of 111.09 feet; Thence run North $70^{\circ}23'24''$ West for a distance of 139.60 feet; Thence run South $58^{\circ}40'56''$ West for a distance of 171.48 feet; Thence run North $86^{\circ}22'12''$ West for a distance of 46.02 feet; Thence run North $58^{\circ}16'34''$ West for a distance of 136.06 feet; Thence run North $41^{\circ}37'24''$ West for a distance of 84.17 feet; Thence run North $48^{\circ}22'36''$ East for a distance of 89.63 feet; Thence run North $12^{\circ}41'12''$ West for a distance of 30.87 feet; Thence run North $14^{\circ}41'53''$ East for a distance of 25.74 feet; Thence run North $46^{\circ}28'02''$ West for a distance of 251.21 feet; Thence run North $18^{\circ}21'15''$ East for a distance of 204.92 feet; Thence run North $27^{\circ}23'13''$ East for a distance of 69.71 feet; Thence run North $31^{\circ}12'19''$ East for a distance of 64.70 feet; Thence run North $26^{\circ}17'03''$ East for a distance of 80.70 feet; Thence run North $25^{\circ}31'51''$ East for a distance of 75.57 feet; Thence run North $21^{\circ}25'22''$ East for a distance of 314.01 feet; Thence run North $64^{\circ}36'50''$ East for a

distance of 99.27 feet; Thence run South 89°36'56" East for a distance of 555.87 feet; Thence run South 02°18'26" West for a distance of 220.20 feet; Thence run North 44°47'25" West for a distance of 157.78 feet; Thence run North 72°18'06" West for a distance of 180.04 feet; Thence run South 56°14'31" West for a distance of 83.33 feet; Thence run South 31°28'40" East for a distance of 425.15 feet; Thence run South 08°10'14" East for a distance of 65.74 feet; Thence run South 21°19'04" East for a distance of 75.98 feet; Thence run South 03°40'07" East for a distance of 90.41 feet; Thence run South 31°33'25" West for a distance of 126.31 feet; Thence run South 51°30'43" West for a distance of 261.06 feet; Thence run South 60°37'09" East for a distance of 122.71 feet; Thence run South 09°20'43" East for a distance of 98.63 feet; Thence run South 72°20'33" East for a distance of 90.19 feet; Thence run South 37°30'18" East for a distance of 242.83 feet to the **Point of Beginning**, containing **56.97 Acres**, more or less.

Section 2.0 Contact Information and Responsible Parties

2.1 Operator:

MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

2.2 Responsible Officials:

Mr. Steven D. Smith
Chief Executive Officer
MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

Mr. John Christmas
Chief Operations Officer
MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

2.3 Project Manager/Site Supervisor

Mr. Clint Carter
MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

2.4 24-Hour Emergency Contact:

Mr. Clint Carter
256.656.8288

3.0 General Information

3.1 Name of Company:

MS Industries II, LLC
2489 County Road 236
Town Creek, Alabama 35672
256.383.6740

3.2 Expected Number of Employees at Proposed Mine: 10

3.3 Hours of Operation: 7:00 am – 6:00 pm

3.4 Controlled Access: A gate and fencing will be installed at the site entrance on County Road 135 to prevent trespass

3.5 Products to be Mined:

Non-fuel clays, sands, ores and other minerals

3.6 Site Characteristics:

A. Shop and Future Preparation Area: +/-15 Acres

B. Mine Site: +/-43 Acres***

1. Mine Pit (elevation 630): +/-12.7 Acres

2. Stone Stockpile and Crusher: +/-2 Acres

3. Overburden: +/- 7 Acres

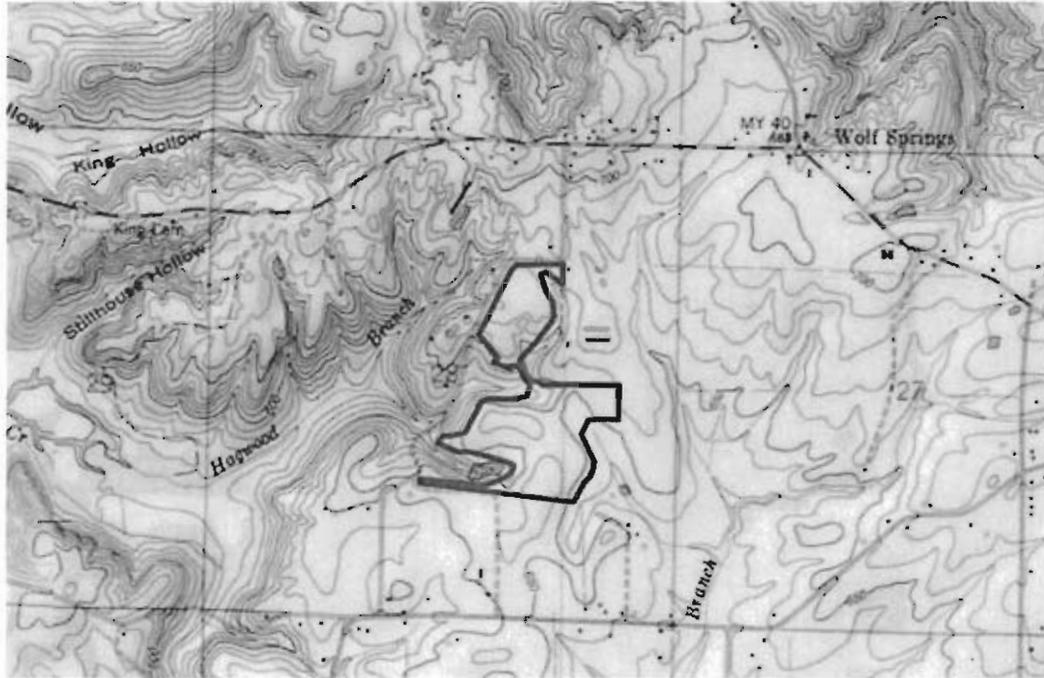
4. Remaining Area: +/-21.3 Acres

Total Area: +/-57 Acres as legally described in Section 1.6 of this Plan

***(45 Acres permitted and bonded with ADOL under Permit #014274 – File #42-MS-3)

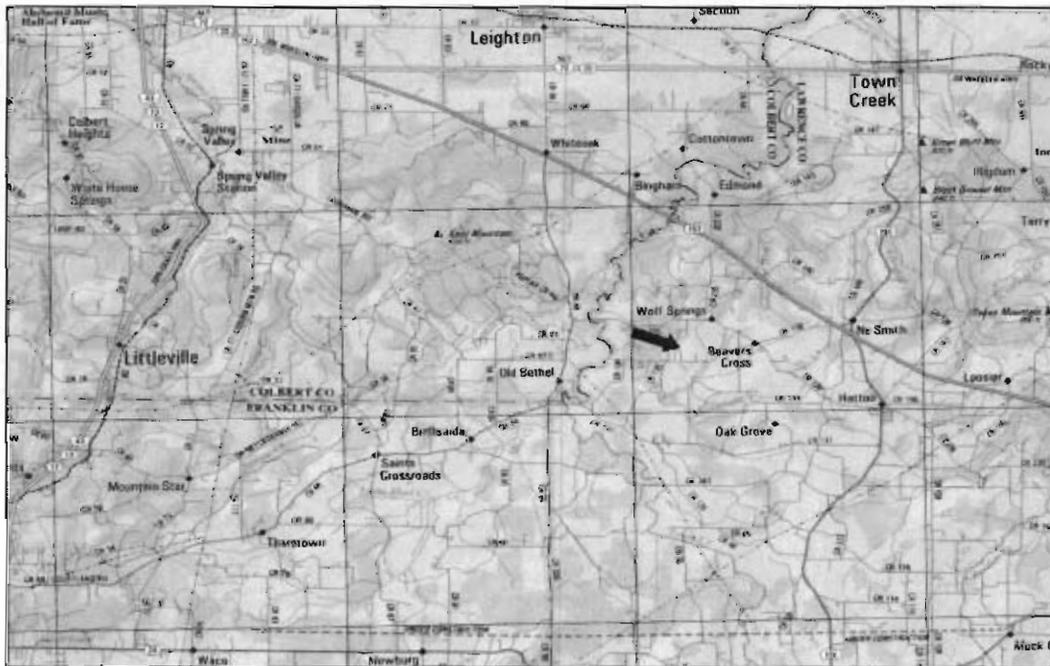
4.0 Maps

4.1 USGS 7.5 Minute Series Topographic Map



Hatton Quadrangle

4.2 Location Map



5.0 Nature of Activities

5.1 General Scope of Work

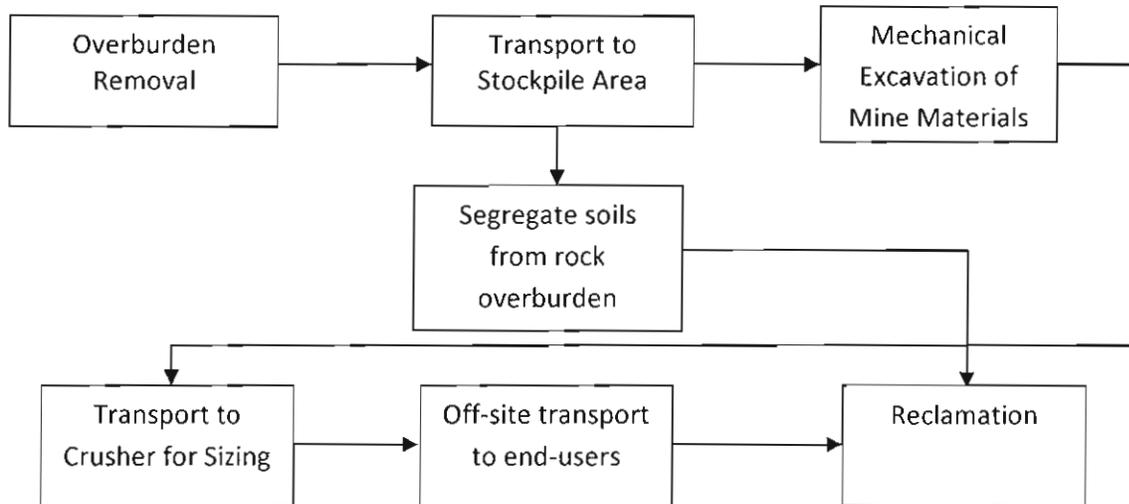
The proposed surface mine site (+/-43 acres) and shop/future preparation area (+/-15 acres) will encompass a total area of +/-57 acres with the mine pit itself occupying approximately 12.7 acres at elevation 630 feet (see Section 3.6 Site Characteristics). The purpose of the mine pit is for the removal of non-fuel sands, clays, ores and other minerals through the open pit method. The extracted materials will be hauled to a crusher at the south end of the mine facility for dry processing. Additional future processing (upon appropriate modification to this PAP and Individual Permit) is anticipated on the north end of the site at the shop and future preparation area.

Descriptive information contained in this discussion of the Pollution Abatement Plan is intended to generally describe the activities to be performed in the operation of the Masterson Site. Specific depictions of the proposed activities are included in the Attachments to this plan, more particularly being the drawings and specifications. All should be taken together in their entirety, as no document is intended to be used on a stand-alone basis.

5.2 Sequence of Mining Activities

Overburden will be removed from the mine area mechanically using excavators and trucks that will transport the materials to the adjacent overburden stockpile area which will have a capacity to receive over 250,000 cubic yards of material. Soils and other suitable materials will be segregated from the overburden rock. Once the overburden is removed, the sands, clays, ores and other minerals will be harvested using excavators, bulldozers and front-end loaders using transitional slopes of no less than 3:1. The harvested materials will be loaded into trucks for transport to the crusher which will be located adjacent to the south end of the mine pit. The harvested strata will be crushed and sized according to market needs and stockpiled for off-site delivery to end-users. No washing or wet processing will occur in association with the mine activities. Reclamation will be contemporaneous using the stockpile overburden as source material.

A flow-chart depicting the sequence of mining activities is on the following page.



5.3 Post-treatment Characteristics of Discharges

All discharges from the mining area would consist of low-volume discharges from the sediment basins to an unnamed tributary of Hagwood Branch. The overland flow directed to the sediment basins through grading, berms and open rock-line ditches will produce sufficient holding time to allow particulates and solids to settle out and accommodate any necessary monitoring of effluent before discharge occurs from the mine site. The flow of discharge will be monitored through a weir or similar apparatus and concentrations of iron will also be monitored through grab samples at the points of discharge. Concentrations of total suspended solids shall not exceed 30 mg/L and pH will be monitored to ensure discharges are between 6 and 8.5 standard units. Iron and Aluminum concentrations will also be monitored and treated within the confines of the Discharge Limitations of the Individual Permit to ensure acceptable discharges.

Permanent and temporary stabilization controls are used on the north 15-acres adjacent to the mine site consistent with previously permitted land disturbance activities. This site was cleared and graded for future anticipated use and, at an appropriate time, additional structural controls may be added in conjunction with a modification to this PAP and Individual Permit. Consistent with the aforementioned sediment basins, this stabilized swale conveys overland flow to an unnamed tributary of Hagwood Branch.

6.0 Site Characteristics

6.1 Soils

According the USDA Soil Survey of Lawrence County, Alabama, the soils on the site are within the Tilsit Series and more particularly the Tilsit silt loam which formed from fine-grained sandstone, siltstone and shale.

6.2 Slopes

The general area is described as gently rolling to undulating terrain though the proposed mine site is within a relatively flat area with slopes of 2%-5%.

6.3 Vegetation

The area encompassing the proposed mine facility consists of pastoral fields, cut-over timber stands and to a lesser extent lands in row-crop cultivation.

6.4 Roads

Roads will be cut along the mine pit at intervals suitable for mining activities to provide equipment and trucks access to and from the pit and crusher. These roads will be temporary and reclaimed as mining activities progress.

An existing farm road provides ingress/egress from County Road 135 to the mine site. This farm road will be improved to serve as a haul road for end-users of mined materials. Consistent with the existing topography, this farm road is flat with little to no dips or grades and will be maintained as such through said improvements. No stream or creek crossings will be encountered during improvements to this access road. Another existing road connects the mine pit to the shop area and additional preparation area which is located on 15 acres at the north end of the site.

6.5 Drainage Patterns

The proposed mine site is located atop a knoll or ridge oriented north to south and east to west with steeper gradients falling to the north, west and south. Overland flow is conveyed through sheet flow across these gradients. A gentle gradient is to the east. Drainage from the mine facility overburden stockpile will be diverted to the west and into a riprap lined ditch, directing the runoff to a sediment basin constructed under the project. This will reduce the flow over the stockpile slopes, and thereby reduce the possibility of slope degradation. Drainage from the stockpile slopes will be generally

directed to a riprap lined ditch along the bottom of the slopes, and eventually to sediment basins to be constructed near the southwest, southeast and northeast corners of the stockpile. Discharge from the basins shall be via primary discharge pipes and overflow spillways to an unnamed tributary branch of Hagwood Branch.

6.6 Receiving Waters

Unnamed tributary branches drain west to Hagwood Branch and are the receiving waters from a triad of outfalls from the sediment basins (Outfalls 001-002-003) and the stabilized swale at the north end of the site (004). Hagwood Branch is a tributary of Masterson Creek and ultimately Town Creek at the Colbert-Lawrence County line. Hagwood Branch is not listed as impaired on the Alabama Department of Environmental Management's Clean Water Act 303(d) List and has a use classification of Fish and Wildlife. The receiving waters have not been assigned Total Maximum Daily Loads (TMDLs).

6.7 Water Sources

No water wells exist at the proposed mine site. An existing farm pond will serve as an alternate water source for dust suppression and controls within the mine pit, along roads and at the operational area at the crusher. If additional waters are needed for such dust suppression and controls, the permittee may install a water well at the mine site that would likely have a 4"-6" riser and be constructed by a licensed well driller in the State of Alabama. The water well would not be used for potable water or domestic water supply.

No injection of waters or other liquids are associated with the proposed mine facility operations. Hence, no hydraulic fracturing or injection wells will be utilized or present at the facility.

6.8 Storm Sewer Systems and Inlets

A single storm sewer is proposed under the operations area to direct flow onto the site to one of the sediment basins. Inlets and outlets shall be protected with hay bales as necessary to reduce velocities and provide an upstream method of silt containment.

6.9 Public Water Supply

The proposed mine is within the watershed of Wilson Reservoir of the Tennessee River which is designated as an impoundment used as Public Water Supply. This impoundment is located approximately 15-miles to the north with Town Creek being a

direct tributary. The proposed mine does not discharge directly to Town Creek as described above in Section 6.6.

6.10 Potential Sources of Pollution

6.10.1 Sediment

The potential sources of pollution from the proposed mining activities would be associated with erosion and subsequent sedimentation from:

- Run-off from the overburden stockpile
- Run-off from transport or hauling of excavated materials to the crusher
- Run-off from the crushed materials
- Run-off from haul roads

All stormwater run-off from the mine site will be directed to three (3) sediment basins through site grading, berms and open rock-lined ditches. Overland flow from the shop and future preparation area will be conveyed through a stabilized swale using permanent and temporary BMPs to ensure minimization of sediment transport from this area of the facility.

6.10.2 Other Potential Pollutants

Other potential sources of pollution other than sediment to stormwater run-off would include:

- Transportation-related lubricants and fuel storage on trucks and equipment
- Fuel transfer activities between tanker and trucks/equipment
- Drips or leaks from antifreeze, lubricants and fuels in trucks and equipment

There will be no bulk storage of fuels, chemicals or other similar substances at the mining site in fixed storage tanks. Any fuel storage will be transportation-related and delivered on a contract basis as needed. Temporary storage of fuels and lubricants in a tanker truck may occur as needed but the tanker truck will not remain on-site for long durations of time.

7.0 Erosion and Sediment Controls

7.1 General Description

All stormwater runoff from mining activities will be directed to three sediment basins through site grading, berms and open rock-lined ditches. These latter conveyances will utilize rip-rap rock and check dams to abate high-velocity flows and control the volume/velocity of the discharges. Silt fencing will be placed around the periphery of the site where appropriate and in areas of higher sediment transport; metal wiring and hay bales will be used as required in conjunction with the silt fence to help control or mitigate 'knock-downs' or 'blow-outs' often resulting from higher precipitation events in areas of significant velocities. The potential pollutants to stormwater run-off from the proposed mine site are described in Section 6.10 of this Plan.

7.2 Sediment Basins

Three sediment basins will be constructed as structural sediment control management practices at the mine site. Prior to construction of the basins, all rocks, boulders, trees, stumps, organic materials and other similar items will be removed. As necessary, fill areas will be constructed in 12" lifts with compaction to a 95% standard proctor. The embankments of the basins will be maintained at a slope of 3:1 and also be constructed in 12" lifts with a compaction of 95% standard proctor. The sides and periphery of the sediment basins will be seeded with grass and/or further stabilized with rip-rap rock as necessary to prevent erosion and sediment transport. The dam will also be graded and maintained at a slope not to exceed 3:1 and seeded to establish permanent vegetative cover.

The basins will be maintained and cleaned out when 60% of its design capacity is reached. The sediments will be transported to the overburden stockpile, compacted and seeded to establish vegetative cover and reduce potential erosion. No sediments will be transported off-site. The life expectancy of the basins will exceed that of mining activities (5-years).

7.3 Outfalls

The outfalls from the sediment basins (001-002-003) will be stabilized to prevent scour or high volume/high velocity discharges through energy dissipation systems. Rip-rap rock will be placed at the outfalls and grass seeding, hay bales and check dams will also be used as needed to stabilize the underlying soils and prevent sediment transport.

The outfall at the north end of the site (004) which is consistent with previously permitted land-disturbance activities (clearing, grubbing, grading) will be maintained through permanent and temporary Best Management Practices (BMPs) that include rock check dams, silt fencing and staked hay bales. These BMPs will be maintained until full stabilization is achieved.

7.4 Roads

The proposed mine facility will construct and utilize two types of roads, one for transport of mined materials from the pit and another for a haul road to the paved county road.

7.4.1 Mine Roads

Roads into the mine pit will be constructed using no less than 4 inches of crushed rock on slopes not to exceed 10% along contours with transitional slopes of at least 2:1. An existing farm pond will be used as a water source for dust abatement to prevent sediment/dust transport.

7.4.2 Haul Road

The existing farm road from the proposed mine site to County Road 135 will be constructed in 8" lifts, compacted and covered with no less than 24" of base gravel. The existing topography along this road corridor is relatively flat and a similar flat grade will result from improvements. This side slopes of the road will not exceed 3:1 and silt fencing will be used as non-structural controls along this road to prevent erosion and subsequent sedimentation. Hay bales will be added if necessary to provide additional containment in areas of increased runoff.

7.5 Overburden Stockpile

The overburden stockpile will be placed at the location shown, with all material to be compacted, covered in mulch and seeded to provide vegetative cover. The side slopes will be maintained at slopes not to exceed 3:1 and also covered in mulch and seeded. Silt fencing will surround the stockpile and open rock-lined ditches will convey all run-off to the sedimentation basins.

7.6 Operational Storage and Crushed Rock Stockpile

Harvested rock, sand, clays, ores and other minerals will be transported to the crusher for dry processing and sizing. This area will be graded to maintain an aspect to the north-northwest such that any overland flow will be conveyed through sheet flow to the

sediment basin. Base gravel will be spread to cover any exposed areas and water will be sprayed as necessary around the crusher and operational area for dust suppression. Silt fencing, hay bales and check dams will be used as necessary to prevent erosion at the periphery and abate any high-volume, high-velocity flows from discharging at this area.

8.0 House Keeping Best Management Practices

8.1 Equipment and Truck Inspections

All equipment and trucks at the proposed mine site will be inspected on a daily basis to identify points of potential leaks, drips, etc. The inspections shall note any areas on the chassis, under carriage, and engine to ensure no fuels or lubricants are or have been leaking and will identify any connections, fittings, or hoses that could be potential sources of leaks or drips from failure or rupture. All fittings will be checked daily to ensure tight connections and all hoses, especially hydraulic hoses, will be inspected for signs of bulging, wear, rot or chaffing that may lead to a rupture and subsequent release. Maintenance on any areas so noted will be addressed immediately or prior to putting the equipment/truck back into service.

8.2 Fuel Transfers

An over the road tanker truck will supply fuels and lubricants to the proposed mine site for trucks and equipment. Spill buckets and absorbent drip pads will be employed underneath each hose connection prior to fuel transfer activities and will remain until the fuel transfer is complete and the hose disconnected. Any residual fuel in the hose will be drained back into the tanker truck or collected in the spill bucket. The equipment/truck operator will monitor the transfer into the tank to ensure unintended over-fills do not occur. In the event an overfill or spill occurs the necessary equipment and materials are readily available to contain any free product through trenching and berming.

8.3 Solid Waste

All employees will ensure trash is picked up to prevent wind-blown items and disposed of in a designated trash can for proper disposal.

8.4 Sanitary Waste

A porta-potty will be provided on a contract-basis by a third party vendor for use by employees. The vendor will provide regular maintenance and clean-out services. No septic tanks or similar appurtenances will be used on-site.

9.0 Reclamation

A copy of the Reclamation Plan is attached to this PAP as Attachment 1.

9.1 Contemporaneous Reclamation

The reclamation process will consist of the mechanical replacement of stockpiled overburden back into the mine pit to eliminate sheer walls and re-create the previous topography to the extent possible utilizing the overburden stockpile material quantity. The soils will be replaced in lifts of no more than 12 inches with slopes no greater than 3:1 and graded to allow natural drainage. Mulch and grass seeding will be spread to cover the disturbed areas as reclamation continues and establish a permanent vegetative cover.

9.2 Sediment Basins

Abandonment of the sediment basin(s) will consist of mechanically replacing any excavated soils to restore the natural contours and drainage patterns to pre-mine conditions. If applicable, the sediment basins may be converted into woodland ponds to further capture any sediments from run-off should groundwater elevations prevent replacement of excavated soils.

9.3 Haul Road

The haul road from the mine site to the paved county road (Co Rd 135) will remain in-place at cessation of mining activities and be maintained as an existing access road consistent with the present-day farm road.

ATTACHMENT 1

Comprehensive Reclamation Plan

**COMPREHENSIVE RECLAMATION PLAN
FOR**

MASTERSON SITE

ADOL File Number 42-MS-3

ADOL Permit No 014274

Legal Description:

57 Acres in Section 28-T5S-R9W

USGS Topographic Map Attached

This plan will be followed to carry out reclamation as mining progresses, as well as the final closeout of the above-referenced site by:

MS Industries II, LLC

(Operator's Name and Address)

2489 County Road 236, Town Creek, AL 35672

I. Reclamation Practices During Mining

1. All disturbed acreage will be revegetated upon cessation of mining or related land disturbance activities in a manner prescribed by the Alabama Department of Labor in accordance with the *Alabama Surface Mining Act of 1969 (Act 99-579)*. Reclamation shall proceed in a contemporaneous manner, i.e., in accompaniment to normal mining activities and in conjunction with site grading. Appropriate control procedures shall include:
 - a. Backfilling, regarding and stabilizing exposed highwalls in inactive pits to a slope of 3:1 or flatter with appropriate drainage control.
 - b. When appropriate, the conversion of inactive pits to ponds, i.e., where the groundwater level does not lie significantly below a pit's highest rim.
 - c. Revegetating all disturbed areas by applying lime and fertilizer as recommended by a comprehensive soil analysis, in conjunction with mulching and seeding using permanent native grasses or legumes in order to achieve no less than 75% vegetative ground cover.
 - d. In addition, trees shall be planted on affected land with native commercial species on a spacing of 10 feet, approximately 435 trees per acre, and planting methods shall be governed by good planting practices approved by a registered forester.

2. A minimum 50-foot, undisturbed buffer setback from adjacent properties, public roads, streams, lakes, residences, and all other features which may be adversely affected by mining activities shall be maintained during the operational life of the mine. Lateral support for this setback shall be graded to a slope of 3:1 or flatter, and vegetated with permanent native grasses.
3. All reclamation activities will be initiated at the earliest practicable time. Where overburden is used to eliminate sheer walls, the placement of overburden against any section of sheer wall will begin as soon as practical after mining operations have ceased along that section, but no longer than six months after overburden becomes available and mining operations are complete. Contouring of the overburden will be completed no later than six months after the overburden has been placed.
4. Revegetation activities will be initiated as soon as practical and completed no later than one year after the final contours are established in an area and revegetation activities would not interfere with mining operations.
5. If mining operations cease, for whatever reason, for more than two years at the site, then all of the requirements of the Alabama Surface Mining Act of 1969 will be met. This period may be extended for a maximum of two years when the cessation of mining is caused by governmental action during the review of environmental permit applications. However, we will complete those reclamation activities necessary to protect the public health and safety.
6. Reclamation activities will be consistent with all applicable local government ordinances which are at least as stringent as the minimum standards of the Alabama Surface Mining Act of 1969.
7. Reclamation will achieve the stormwater drainage, wetlands, and other surface and groundwater management requirements of the Alabama Department of Environmental Management and other agencies.
8. Safety provisions for persons, wildlife, and adjoining property will be provided during mining and reclamation.

II. Final Reclamation

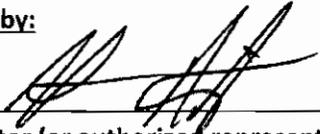
The site manager will ensure completion of the following steps during the mine's final reclamation, within two (2) years of the expiration date of the ADOL surface mining permit period:

1. All mining and processing equipment (mobile or stationary) will be removed from the site.

2. The contents of all fuel/lubricant storage vessels will be pumped for subsequent transportation off-site and the vessels themselves will be removed.
3. All man-made structures will be removed or demolished; any remains of such structures will be disposed of or recycled off-site, except where permission is received from the Alabama Department of Labor, Alabama Department of Environmental Management, or other permitting authorities to refrain from doing so.
4. Any remaining stockpiles of material will be transported elsewhere for sale or utilized in the mine's reclamation via backfilling of pits.
5. The site will be graded to a 3:1 or flatter slope where necessary to minimize future erosion of topsoil, to direct surface runoff flow to retention ponds, and to prevent bodies of standing water other than reclaimed pits or settling ponds from forming.
6. Disturbed acreage will be revegetated by means of seeding and/or planting, using the methods described above.
7. Existing extraction pits will be converted into ponds as appropriate; above-water portions of ponds shall be vegetated as described above.
8. Gullies and washouts will be repaired by backfilling with soil or Type 3 riprap, and stabilized with vegetative cover where appropriate.
9. All lands shall be reclaimed to a neat, clean condition by removing or adequately burying, where allowed by law, all visible debris, litter, junk, worn-out or unusable equipment or materials, as well as all poles, pilings, and cables.
10. In addition to providing soil for revegetation purposes, overburden will be utilized to reduce the occurrence of slopes steeper than three horizontal feet for each vertical foot. Long, continuous slopes will be avoided.
11. Best management practices will be utilized to minimize erosion.
12. Native top soils will be used, especially in areas reclaimed for aquatic or wildlife habitats, and where topsoil is not available, a soil or growing medium including amendments suitable for the type of vegetative communities planned.
13. A suitable berm or backsloping will be employed along the tops of sheer walls above all benches to prevent uncontrolled surface runoff over the sheer wall.

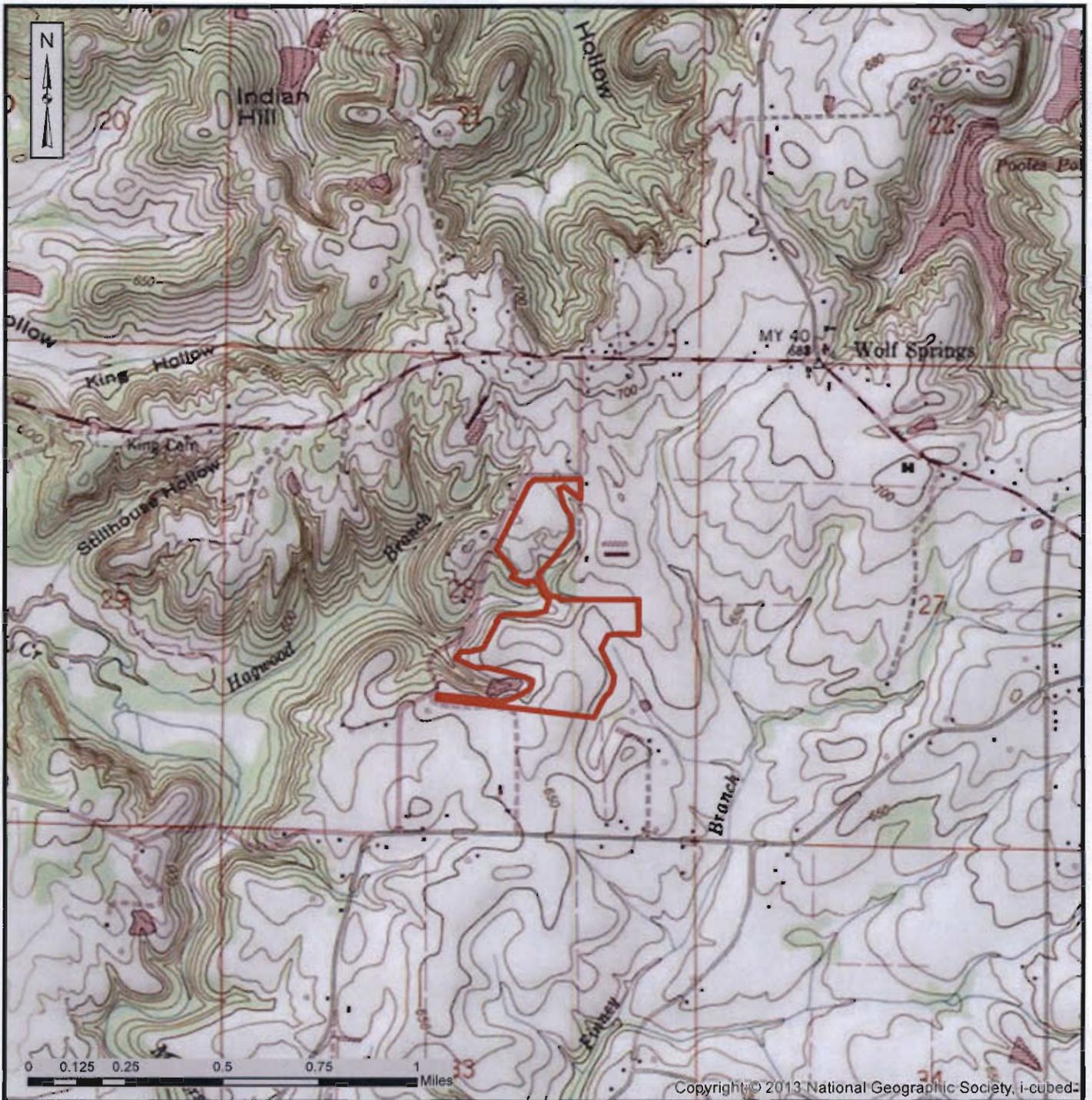
14. A revegetation plan will be developed, including the species of grasses, shrubs, trees, and aquatic and wetland vegetation to be planted, spacing of vegetation, and, where necessary, soil amendments necessary to prepare them for revegetation.

III. Submitted by:



Operator (or authorized representative)

6-24-15
Date



TOPOGRAPHIC MAP
 (Hatton Quadrangle)
 Section 28, T5S, R9W
 Masterson Site v2
 2228 County Road 135
 Town Creek, Lawrence County, AL

Project No:
E14-124
June 2015

GEO-SOURCE, Inc.
Environmental Consultants
 462 N. Court Street
 Florence, Alabama 35630
 www.geo-source.com



ATTACHMENT 2

Design Drawings

PROPOSED MINING - MASTERSON SITE v.2

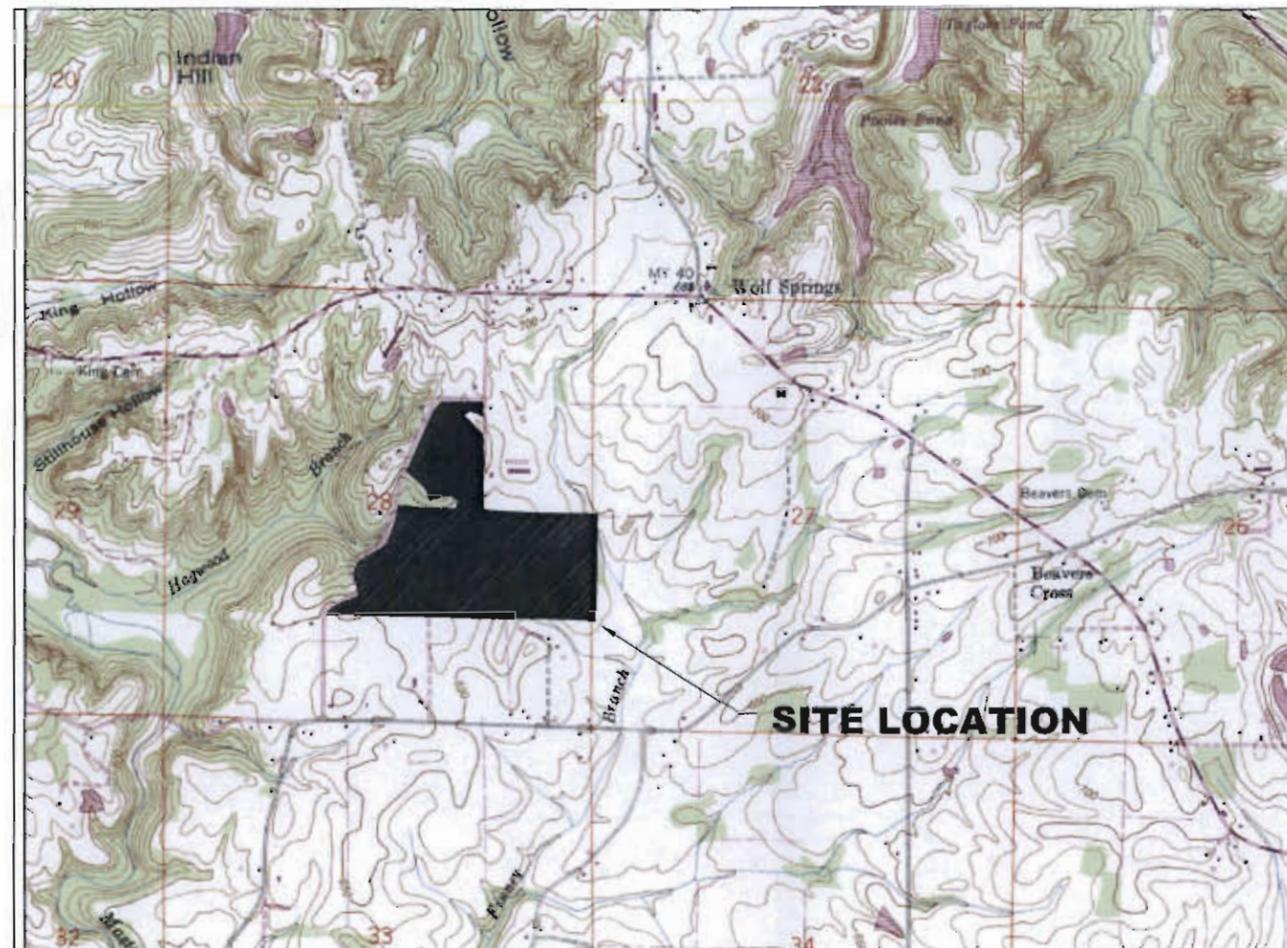
CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)

FOR

MS INDUSTRIES II, LLC

LAWRENCE COUNTY, ALABAMA

MS INDUSTRIES II, LL.
 2489 COUNTY ROAD 236
 TOWN CREEK, AL 35672



PLAN ASSEMBLY

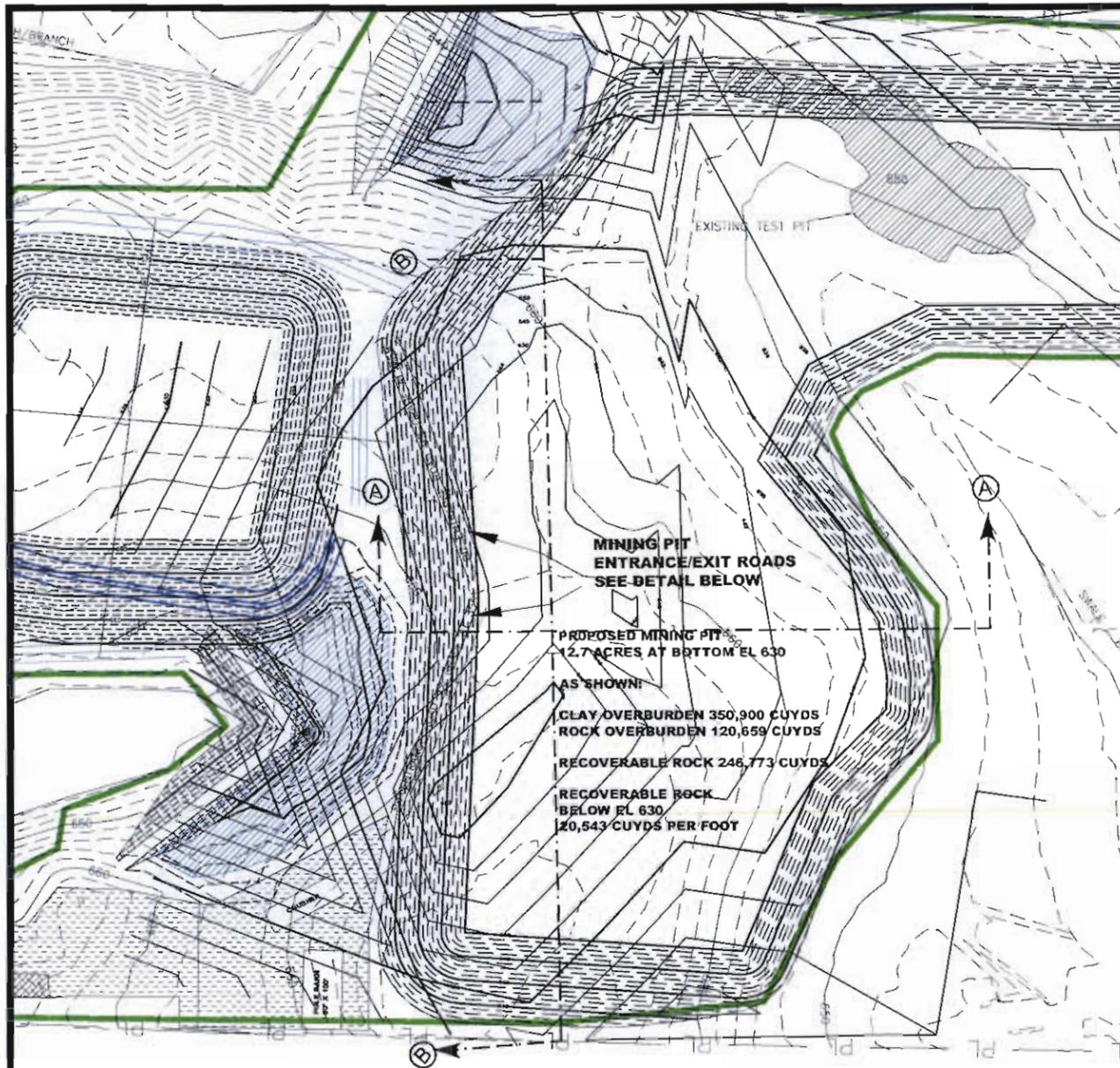
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ATTACHMENT

TOPOGRAPHIC SURVEY - EXISTING SITE PLAN


**DEAN
 McRAE**
 ENGINEERING, INC.

308 GRISHAM STREET
 P.O. BOX 573
 IUKA, MISSISSIPPI 38852
 PHONE: (662)423-9104



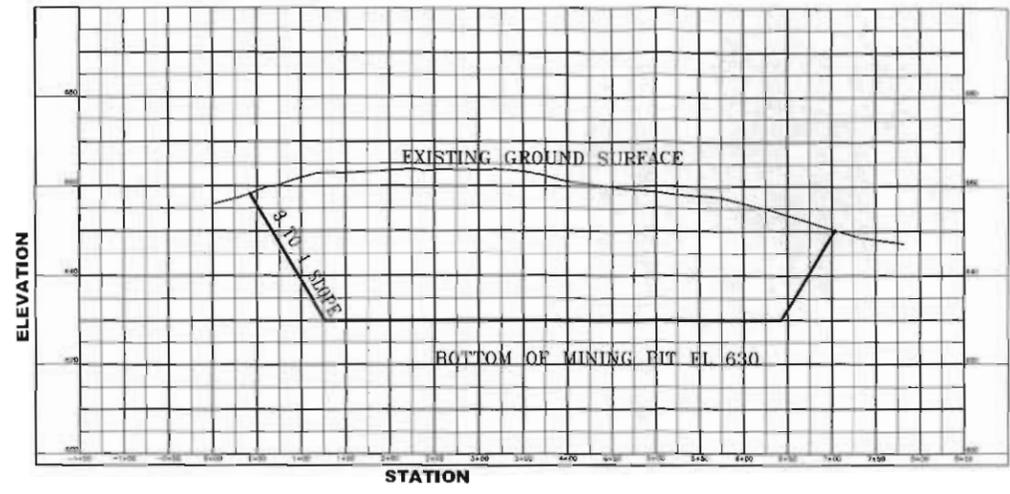
EXISTING TEST PIT

MINING PIT
ENTRANCE/EXIT ROADS
SEE DETAIL BELOW

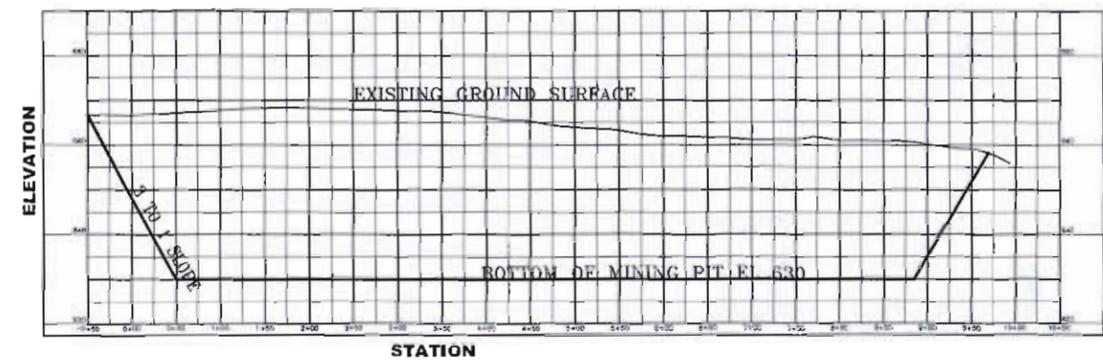
PROPOSED MINING PIT
12.7 ACRES AT BOTTOM EL 630

AS SHOWN:
CLAY OVERBURDEN 350,900 CUYDS
ROCK OVERBURDEN 120,659 CUYDS
RECOVERABLE ROCK 246,773 CUYDS
RECOVERABLE ROCK
BELOW EL 630
20,543 CUYDS PER FOOT

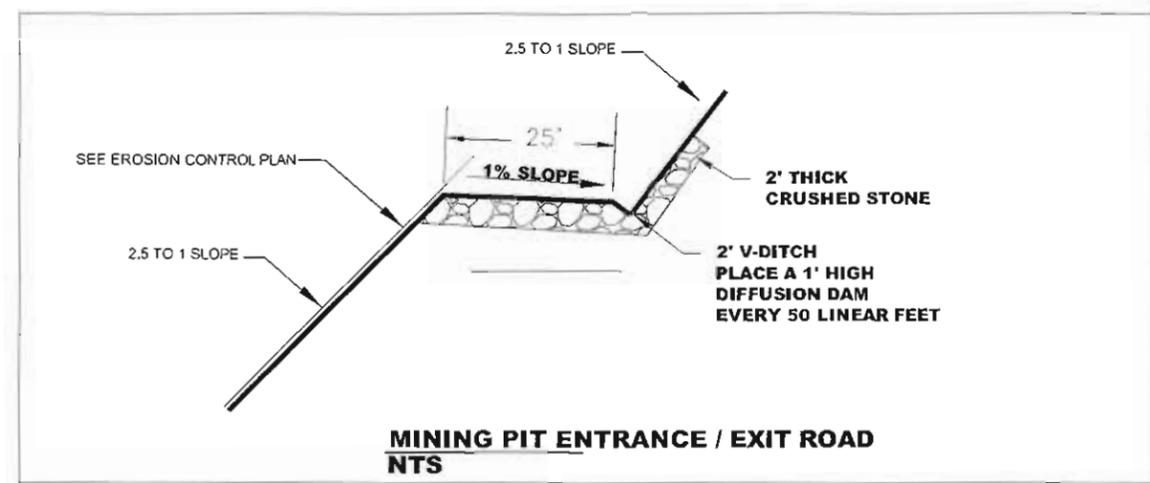
**PROPOSED MINING PIT
PLAN VIEW W/PROFILE BASELINE
SCALE 1" TO 200'**



**MINING PIT
CROSS SECTION "A"**



**MINING PIT
CROSS SECTION "B"**



**MINING PIT ENTRANCE / EXIT ROAD
NTS**

- MINING PIT NOTES:
- 1). ENTRANCE / EXIT ROAD TO 10% OR LESS IN SLOPE.
 - 2). MINING PIT WALLS SHALL BE MAINTAINED IN ACCORDANCE WITH EROSION CONTROL DETAILS AND PLAN.

PROJECT:
CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)
MS INDUSTRIES II, LLC.
MASTERTON SITE - LAWRENCE COUNTY AL

SHEET NAME:
MINING PIT DETAILS AND SECTIONS

JOB NO.:
E14-124

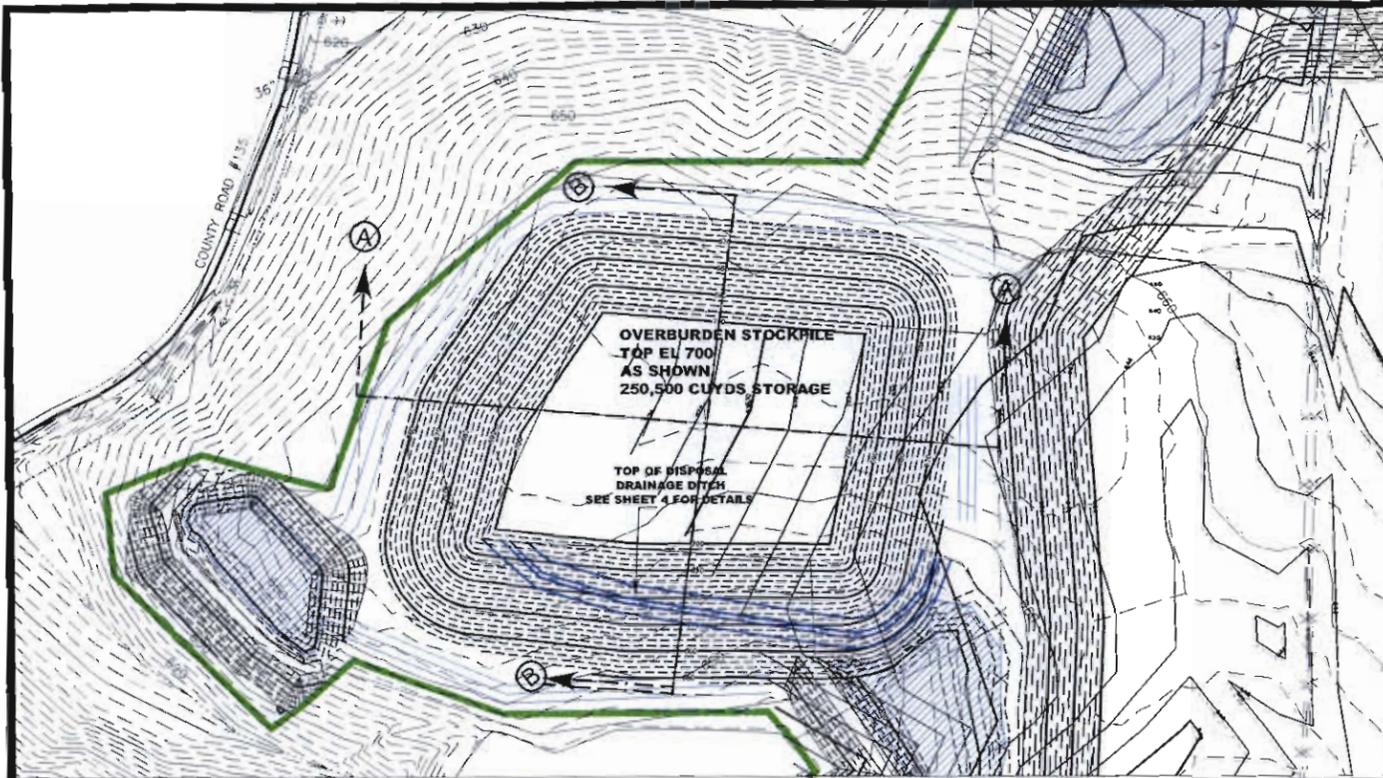
DATE:
JUNE 2015

DRAWN BY:
TD

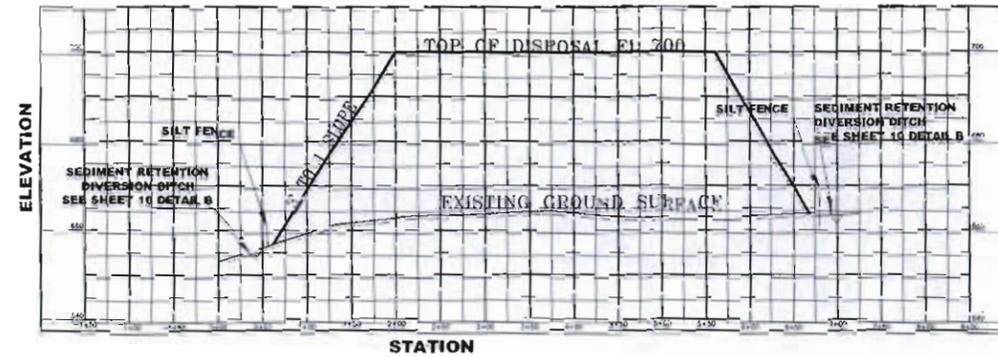
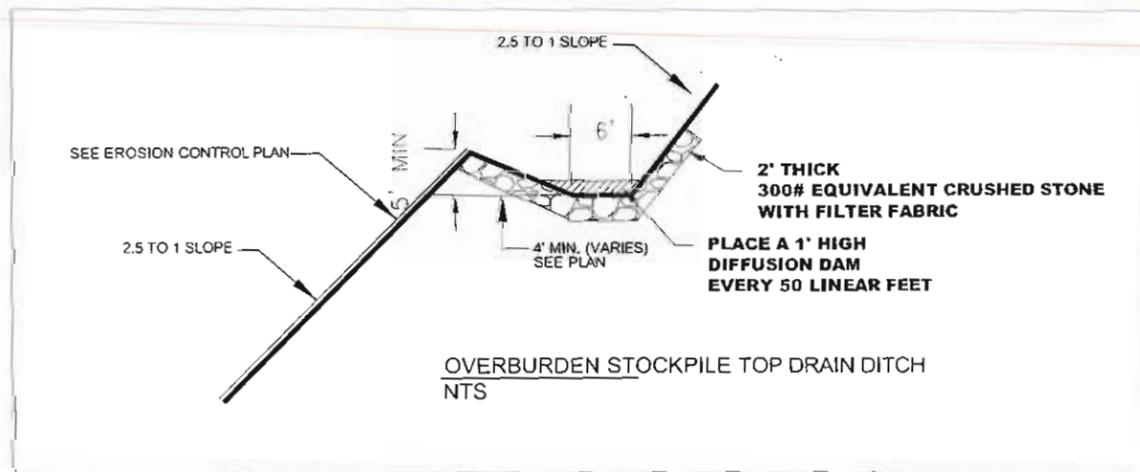
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KM

REVISION NO.:

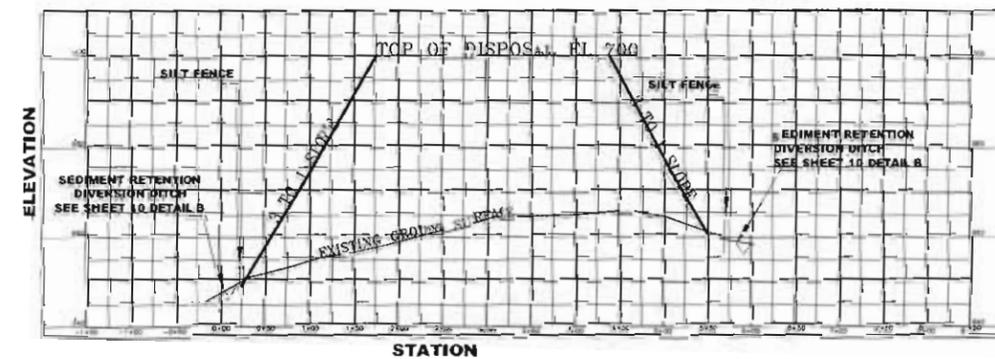
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PROPOSED OVERBURDEN STOCKPILE
PLAN VIEW
SCALE 1 TO 300



OVERBURDEN STOCKPILE
CROSS SECTION "A"



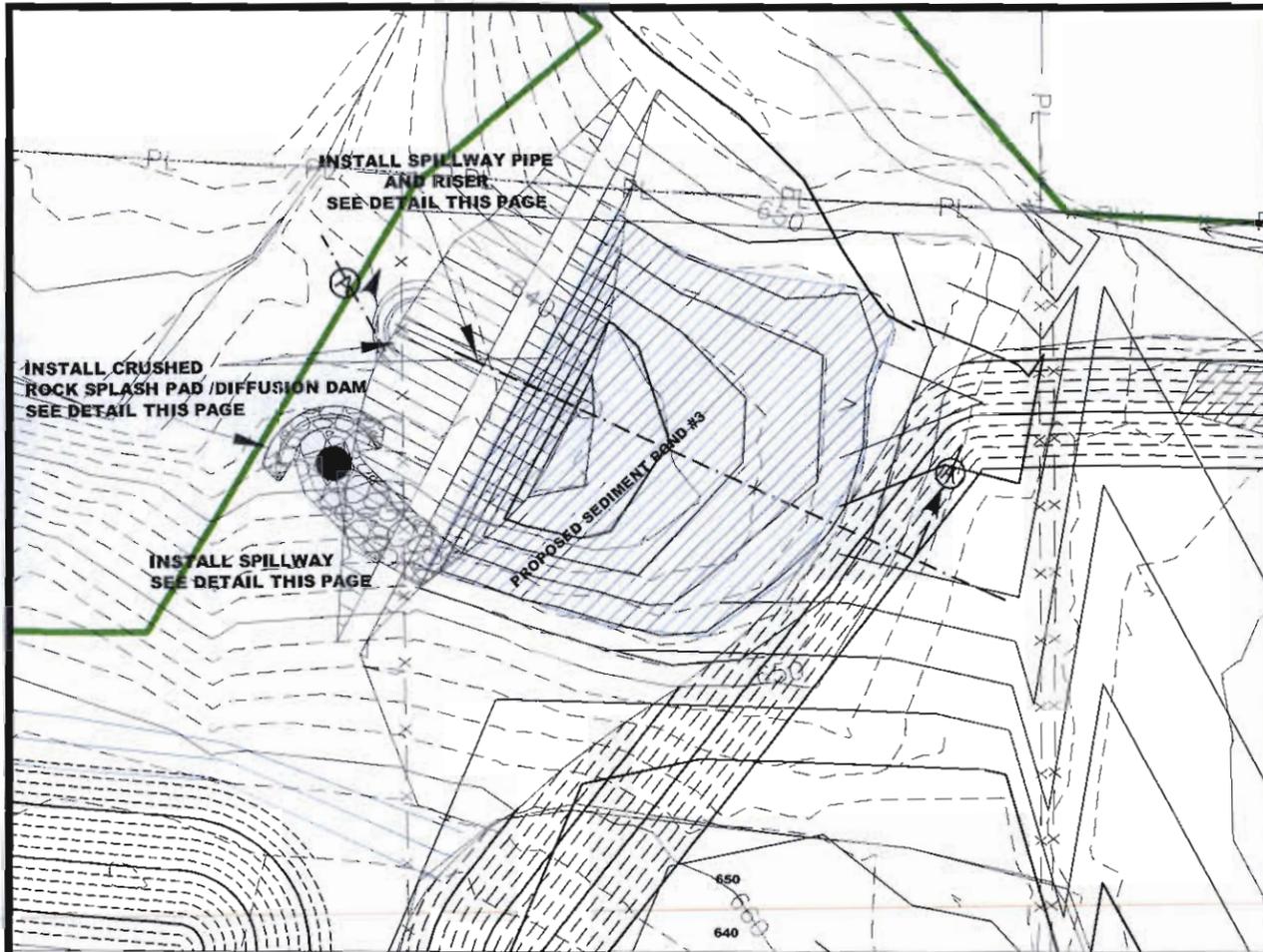
OVERBURDEN STOCKPILE
CROSS SECTION "B"

PROJECT:
CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)
MS INDUSTRIES II, LLC.
MASTERSON SITE - LAWRENCE COUNTY AL
SHEET NAME:
OVERBURDEN STOCKPILE DETAILS AND SECTIONS

JOB NO.:
E 14-124
DATE:
JUNE 2015
DRAWN BY:
TD
CHECKED BY:
KM

REVISION NO.:
0000000
DESCRIPTION

SHEET NO.



NOTE:

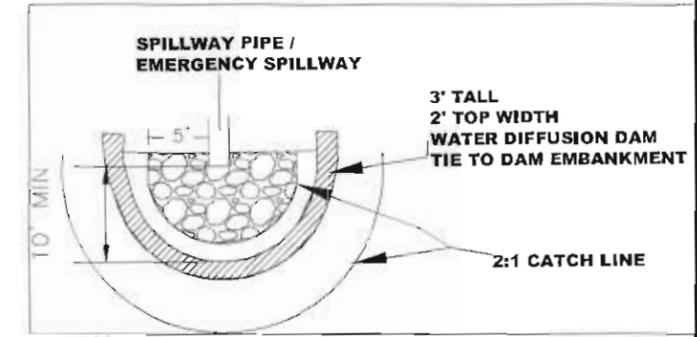
- 1.) ALL SLOPES 3:1 UNLESS OTHERWISE SHOWN IN PLAN.
- 2.) CUTOFF CORE TO EXTEND 2' INTO BEDROCK OR IMPERVIOUS SOIL. MINIMUM WIDTH TO BE 8 FEET. EMBANKMENT AND CUTOFF CORE TO BE 95% COMPACTION STANDARD PROCTOR. PROVIDE COMPACTION TEST EACH LIFT. LIFTS TO BE 12 INCH MAX. SIDE SLOPES FOR CUTOFF CORE 1:1. ANY STANDING WATER TO BE REMOVED FROM CUTOFF TRENCH PRIOR TO BACKFILL.
- 3.) SEE EROSION CONTROL PLAN FOR PERMANENT AND TEMPORARY EROSION CONTROL DEVICES.

PROPOSED SEDIMENT POND #3 NOTE:

DRAINAGE AREA 10.2 ACRES
Q 1 YEAR STORM = 18 CFS
Q 50 YEAR STORM = 31 CFS

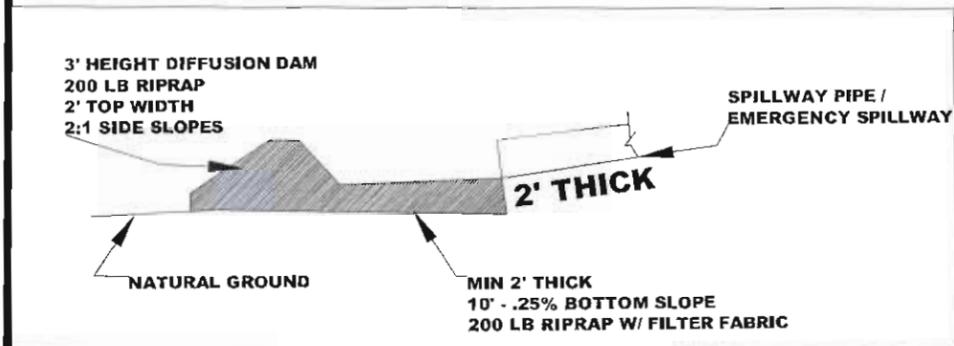
STORAGE PROVIDED @ 648 EL:
7800 CU YDS - 4.8 ACRE FEET

STORAGE REQUIRED:
3952 CU YDS - 2.45 ACRE FEET

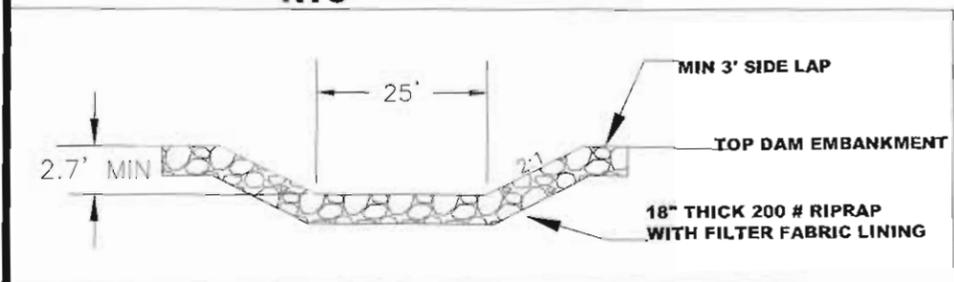


**ROCK SPLASH PAD / DIFFUSION DAM
 PLAN VIEW
 NTS**

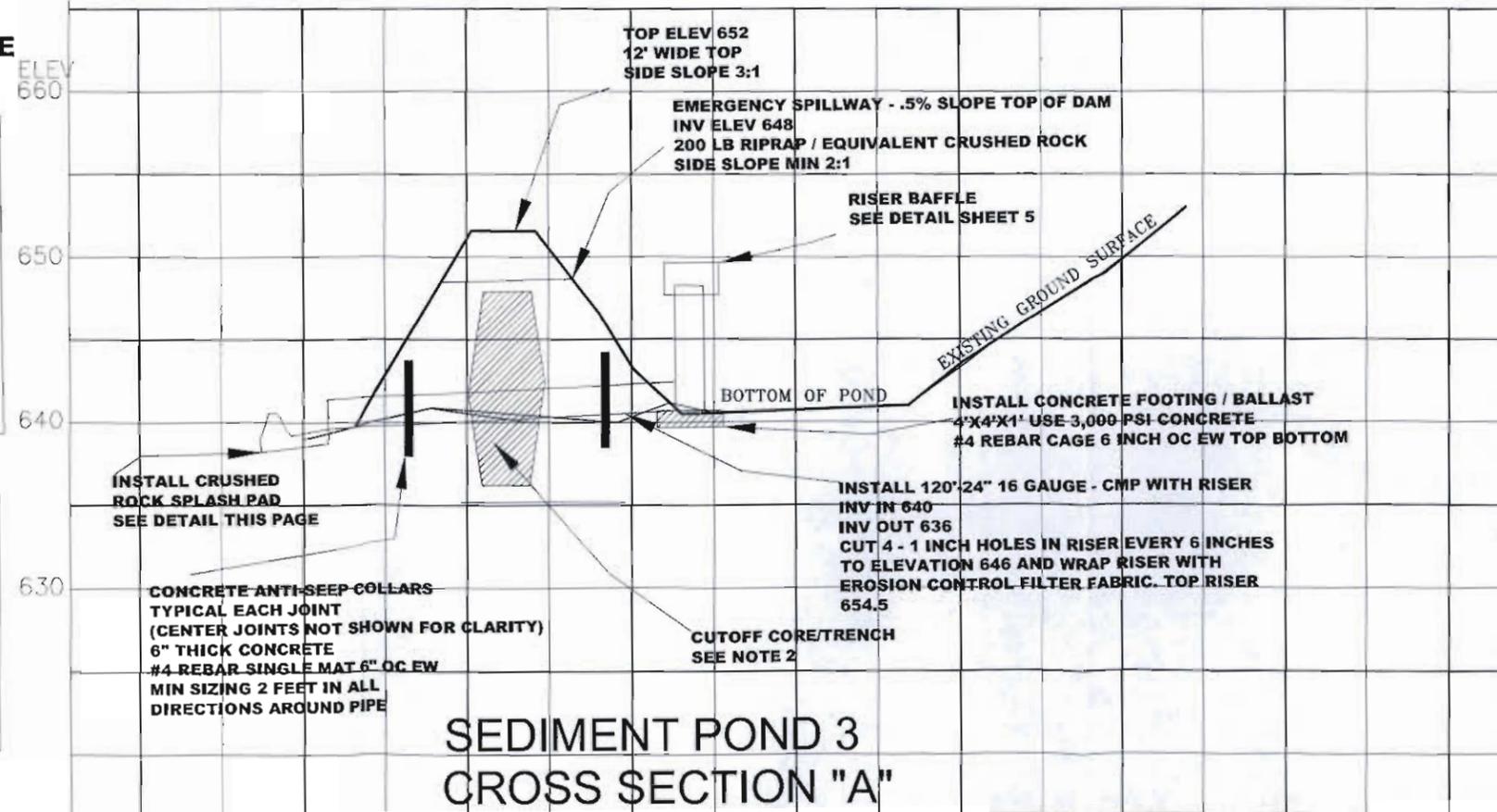
**PROPOSED SEDIMENT POND 3
 PLAN VIEW W/PROFILE BASELINE
 SCALE 1" TO 100'**



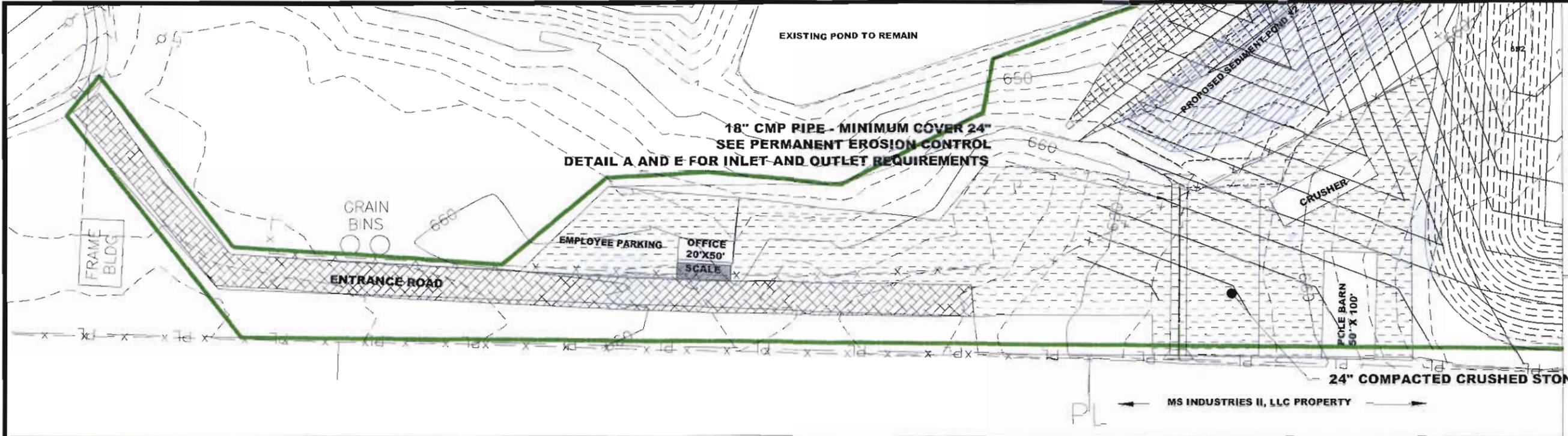
**ROCK SPLASH PAD SECTION
 NTS**



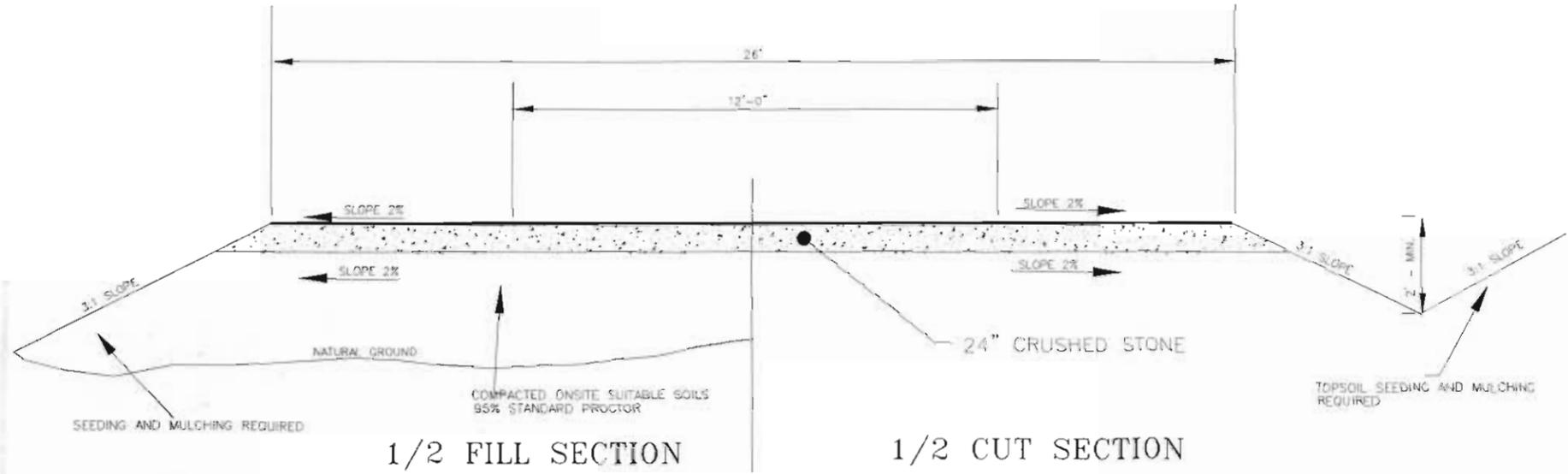
**POND 3 EMERGENCY SPILLWAY SECTION
 NTS**



**SEDIMENT POND 3
 CROSS SECTION "A"**



**CRUSHED STONE STOCKPILE
OPERATIONS AREA AND ENTRANCE ROAD
PLAN VIEW
1" = 100'**



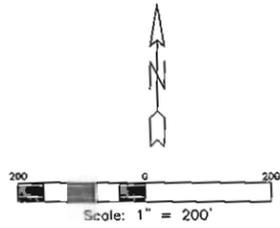
ENTRANCE ROAD TYPICAL SECTION

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LULA, MISSISSIPPI 38852
PHONE: (662) 273-9104
EMAIL: todd@deanmcrac.com

PROJECT:
CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)
MS INDUSTRIES II, LLC.
MASTERTSON SITE - LAWRENCE COUNTY AL
SHEET NAME:
ENTRANCE ROAD AND STOCKPILE OPERATIONS AREA

JOB NO.:
E14-124
DATE:
SEPTEMBER 2014
DRAWN BY:
TO
CHECKED BY:
KM
REVISION NO.:
0000000
DESCRIPTION

SHEET NO.
7



**HATCHED AREA - MSI PREPARATION SITE
EXISTING SITE PREPARATION UNDER
NPDES PERMIT #ALR10AT61
12.5 ACRES**

**EXISTING TEMPORARY EROSION
CONTROL DEVICES TO BE MAINTAINED
IN ACCORDANCE WITH EROSION
CONTROL SPECIFICATIONS UNTIL PERMANENT
EROSION CONTROL IS ESTABLISHED**

**FUTURE CONSTRUCTION TO UTILIZE
EROSION CONTROL SPECIFICATIONS AND
EROSION CONTROL BEST MANAGEMENT PRACTICES**

- NOTES:**
- 1.) CONTRACTOR TO PROVIDE AND INSTALL EROSION CONTROL MATERIALS AS SHOWN AND AS DESCRIBED IN THE PERMIT.
 - 2.) ALL DISTURBED AREAS NOT RECEIVING ROCK SURFACING SHALL BE TEMPORARY SEEDING WHEN THE AREAS ARE NOT UNDERGOING ACTIVE DISTURBANCE OR ACTIVE CONSTRUCTION AND OR PROGRESSIVE CONSTRUCTION FOR LONGER THAN 30 DAYS SEEDING SHALL INCLUDE 4" TOPSOIL, FERTILIZER, SEEDING AND MULCHING. SUBMIT TOPSOIL SOURCE, FERTILIZER RATES, AND SEED ANALYSIS FOR APPROVAL.
 - 3.) POSITIVE DRAINAGE AWAY FROM ENTRANCE ROAD SHALL BE MAINTAINED AT ALL TIMES.
 - 4.) ANY DISTURBANCE FROM WITHIN IN MINING PIT AREA SHALL DRAIN TO A POINT IN THE MINE AND THEN BE PUMPED AS REQUIRED TO SEDIMENT POND #2.

-  PROPOSED / EXISTING ROCK CHECK DAM USE 200 POUND RIP RAP
-  PROPOSED / EXISTING PROPOSED ROCK PLATING 18" THICK
-  DITCH
-  INLET PROTECTION (SEE EROSION CONTROL DETAILS)
-  PROPOSED SILT FENCING (SEE EROSION CONTROL DETAILS)
-  PROPOSED STRAW BALL BARRIERS (SEE EROSION CONTROL DETAILS)
-  ORIGINAL CONTOURS 2' INT.
-  ORIGINAL CONTOURS 10' INT.
-  FINAL CONTOURS 2' INT.
-  FINAL CONTOURS 10' INT.

--- PL --- PROPOSED PROPERTY LINE

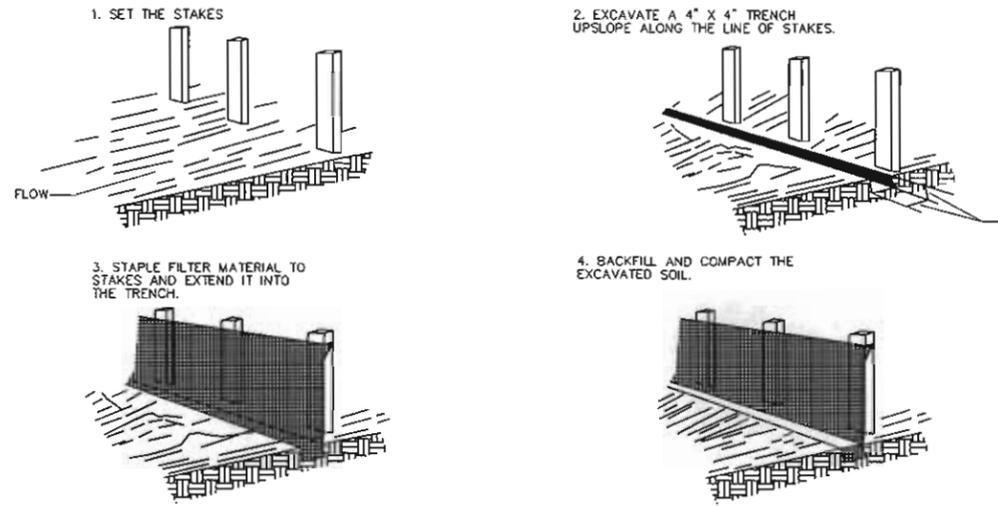
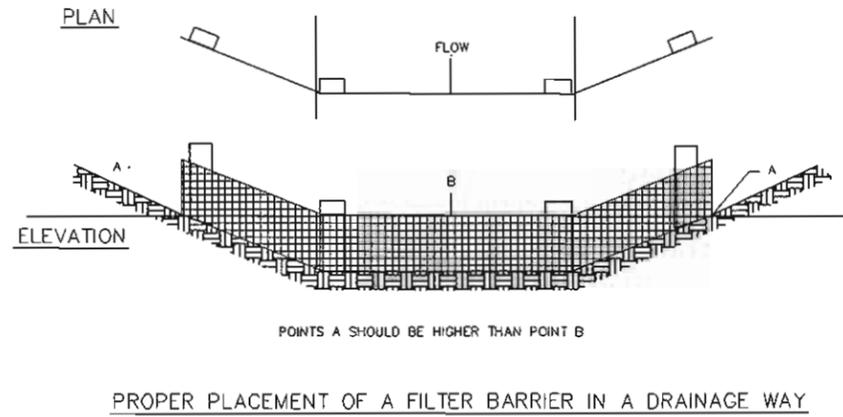
**DEAN
MCRAE**
ENGINEERING, INC.
308 GRISHAM STREET
P.O. BOX 573
LUKA, MISSISSIPPI 39452
PHONE: (662) 229-1044
EMAIL: info@deanmcr.com

PROJECT: CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)
MS INDUSTRIES II, LLC.
MASTERTSON SITE - LAWRENCE COUNTY AL
SHEET NAME: EROSION CONTROL PLAN B (Preparation Site)

JOB NO.: E14-124
DATE: JUNE 2015
DRAWN BY: TD
CHECKED BY: KM

REVISION NO.:	DESCRIPTION
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SHEET NO. 8A



CONSTRUCTION OF A SILT FENCE

1. EXCAVATE THE TRENCH.
2. PLACE AND STAKE STRAW BALES.

NOTES:
1.) CONTRACTOR TO PROVIDE AND INSTALL EROSION CONTROL MATERIALS AS SHOWN ON THE EROSION CONTROL PLAN.

2.) ALL SLOPES SHALL BE SEEDED, WHICH SHALL INCLUDE 4" TOPSOIL, FERTILIZER, SEEDING AND MULCHING. SUBMIT TOPSOIL SOURCE, FERTILIZER RATES, AND SEED ANALYSIS FOR APPROVAL.

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LUKA, MISSISSIPPI 38852
PHONE: (662) 23-9104
EMAIL: tcd@deanmcrae.com

DEAN MCRAE
ENGINEERING, INC.

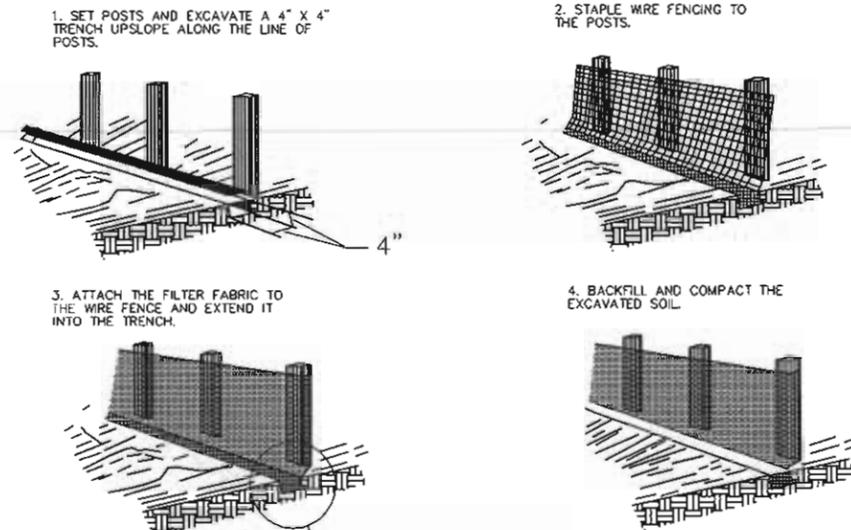
PROJECT: CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)
MS INDUSTRIES II, LLC.
MASTERSON SITE - LAWRENCE COUNTY AL

SHEET NAME: TEMPORARY EROSION CONTROL DETAILS

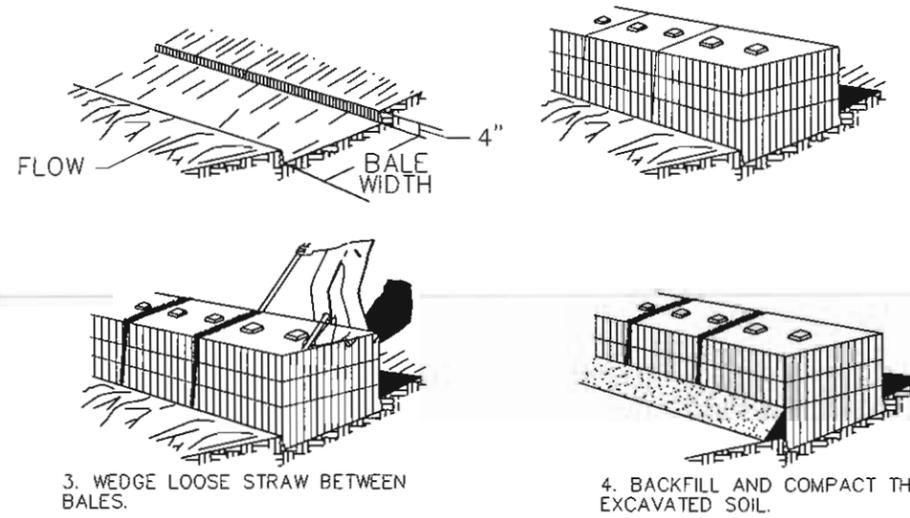
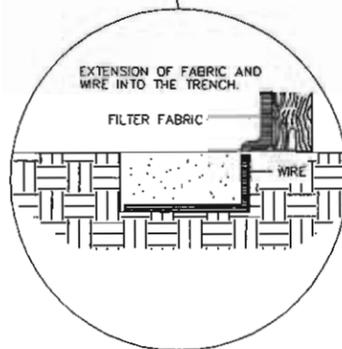
JOB NO.: E14-124
DATE: JUNE 2015
DRAWN BY: TD
CHECKED BY: KM

REVISION NO.: 0000000
DESCRIPTION

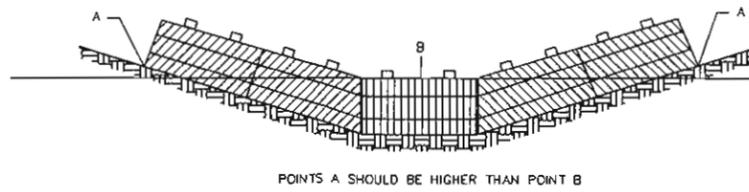
SHEET NO. 9



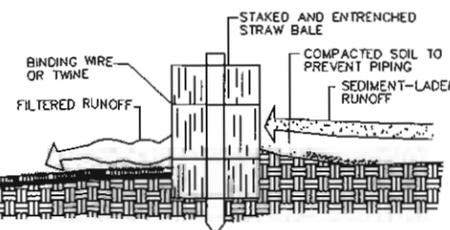
CONSTRUCTION OF A FILTER BARRIER



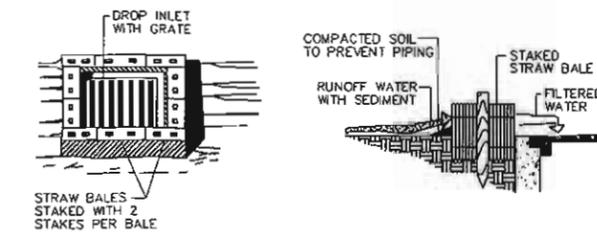
CONSTRUCTION OF A STRAW BALE BARRIER



PROPER PLACEMENT OF STRAW BALE BARRIER IN DRAINAGE WAY



CROSS-SECTION OF A PROPERLY INSTALLED STRAW BALE



STRAW BALE DROP INLET SEDIMENT FILTER

ATTACHMENT 3

Specifications

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

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Temporary Erosion Checks	TS – 20
Silt Fencing	TS – 21
Rip Rap Plating	TS – 23
Pipe Culverts and Storm Sewers	TS - 26

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SCOPE OF WORK

Work under this item shall consist of the removal and satisfactory disposal of all trees and stumps, roots, vegetation, rubbish, or any other material within the construction limits; filling depressions resulting from grubbing operations; the removal of all structures and/or obstructions shown on the plans or encountered during construction which interfere with construction; and the protection of designated trees, shrubs or plants; all in accordance with the plans and specifications.

1.2 PROTECTION OF UTILITIES

Prior to starting work, the location of all utilities shall be determined by the Contractor. Locations of existing utilities shown on the drawings are based on above ground structures and available record drawings. Existing utilities shall not be removed from service without Engineers approval. Any damage occurring to any utility will be replaced at the expense of the Contractor.

1.3 UTILITY RELOCATION

Relocation of the following utilities (where required) will be completed by the owner unless noted otherwise on the drawings:

- Sanitary Sewer Mains and Service Lines
- Water Mains and Valves, Service Lines and Meter Settings (Valve boxes will be reset by the Contractor.)
- Fire Hydrants

The removal and/or resetting of electrical lines, telephone lines, gas mains, services and appurtenances shall be arranged by the Contractor with the appropriate utility. All cost for relocation will be paid by the Owner.

1.4 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

Excavations shall be suitably barricaded and posted with warning signs for the safety of persons. Structures, utilities, sidewalks, pavements, and other facilities immediately adjacent to excavations shall be protected against damage, including settlement, lateral movement, undermining, and washout.

1.5 PROTECTION OF MONUMENTS

The Contractor shall prevent the destruction of baseline monuments, benchmarks, control points, property corners, and all other survey points established by the Engineer. Removal of all monuments shall not be accomplished without prior approval by the Engineer.

PART 2 - EXECUTION

2.1 CLEARING

All the surfaces within the construction limits or right-of-way lines shall be completely cleared of perishable or objectionable vegetable matter and other obstruction, as herein defined, except such trees and shrubs which are designated to remain. All trees, brush and stumps within the limits of the project area to be cut, shall be cut sufficiently close to the ground to facilitate future mowing, except such trees and stumps that are to be grubbed, which may be cut to a convenient height for grubbing by bulldozer.

The contractor shall supply the location and assume all responsibility for the disposition of all cleared non-perishable debris.

2.2 GRUBBING

Within the area of the construction lines where excavation is to be made or embankment is to be placed, all trees, stumps, roots and other objectionable matter shall be grubbed out or otherwise completely removed and disposed of as hereinbefore indicated. When so directed, areas outside the construction lines in marshes or swampy sections shall be cleared of trees and the stumps cut off flush with the ground or at water level. Except in areas to be excavated, stumps, holes, and depressions caused by the grubbing operations shall be back-filled to the level of the original ground, with suitable material, and thoroughly compacted to the satisfaction of the Engineer.

2.3 OBSTRUCTIONS

The Contractor shall preserve and protect all structures, fences, and improvements, above or below the ground, within the construction limits which are to remain.

The Contractor shall raze, remove and satisfactorily dispose of all buildings, structures, old curbs and gutter, sidewalks, fences, or other obstructions any portion of which is within the clearing and grubbing or right-of-way limits, except those items hereinbefore indicated. Unless otherwise specifically directed, the substructure of a bridge and all culverts and minor structures shall be razed to the level of the adjacent ground or low water level. All material which has a salvage value shall be removed, without unnecessary damage, in sections or pieces which may be readily transported, and shall be piled by the Contractor at such places as may be designated. Disposition of unusable material shall be made in accordance with the disposal of debris, under Clearing.

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

EXCAVATION AND EMBANKMENT

PART 1 – GENERAL

1.1 SCOPE OF WORK

Work under this item shall consist of the excavation of all materials encountered within the limits of the work and the disposal of excavated materials by hauling to embankment or waste. Excavation shall be completed to the lines, grades, and elevations shown on the plans. Excavation and backfill for storm sewers, drainage structures, lines, and utilities are not included in this specification.

1.2 CLASSIFICATION OF EXCAVATION

Excavation specified under this section may be classified by any of the following classes:

- Common Excavation – Common Excavation will consist of the excavation and placement of suitable material at the density shown on the drawings and contained in these specifications.
- Undercut Excavation – Undercut Excavation will consist of excavating unsuitable material within the property boundary which is unsuitable for that required for embankments and which can not be satisfactorily used or disposed of within the right-of-way.
- Select Backfill – Select Backfill will consist of borrow material that conforms to the unified soil classification SM, SP, or GM, natural or processed, to produce a uniform mixture, complying with the requirements of these specifications. The material shall be obtained from approved sources outside the property boundary. Contractor shall provide all testing required to having source material approved. Select Backfill Material containing organic matter or other foreign substances will not be accepted.
- Waste Excavation – Waste Excavation will consist of excavating unsuitable material within the property boundary which is unsuitable for that required for embankments and which cannot be satisfactorily used or disposed of within the right-of-way.
- Shot Rock Excavation and Backfill – Shot Rock Excavation and Backfill will consist of excavating the existing shot rock to allow for installation of the sheet pile wall system and driving of loading pad h-piles. The shot rock shall be excavated, stored on-site and as required reused for concrete wall foundation pads and for backfill around inside and outside of sheet pile wall and concrete wall.

1.3 REQUIREMENTS

The area shall be cleared and grubbed prior to the start of excavation. The Contractor shall inform himself as to the proper movements of haul and disposal of materials.

Suitable materials excavated shall be used in the formation of embankments and backfill as directed. Prior to acceptance, then entire area shall be machined and bladed for proper drainage.

The rough excavation shall be carried to such depth that sufficient material remains to achieve the required compaction. Sufficient material shall be placed above the designated subgrade in embankment construction to allow for both compaction and settlement. Over-excavation shall be backfilled and compacted in accordance with these specifications at the Contractor's expense

1.4 DRAINAGE

Grading in the vicinity of the work shall be performed such that water does not enter into excavated areas. No water shall accumulate in graded areas in advance of construction, with temporary ditches constructed as required to divert surface water.

Placement of embankment shall be performed such that positive drainage away from the construction area is maintained. Acceptable dewatering methods shall be employed as required.

PART 2 - EXCAVATION

2.1 STRIPPING SOIL

Topsoil, where present, shall be stripped in cut and fill areas and stored for later use in seeding and planting.

Heavy growths of grass and other vegetation, roots, debris, stones, objects larger than 2 inches in any dimension, and other unsuitable materials shall be removed from the surface of areas to be stripped by mowing, grubbing, raking, or other suitable methods as required.

Topsoil shall be stripped from the surface of cut areas and areas indicated to receive fills or embankments. Topsoil shall mean the average top 4 to 6 inches, or deeper pockets if found, of natural, friable, dark sandy loam surface soil possessing the characteristics of representative soils on the site and in vicinities that produce heavy growths of crops, grass, or other vegetation. The topsoil shall be reasonably free from subsoil, clay lumps, brush, and objectionable weeds; from stones, stumps, and other objects larger than 2 inches in diameter; from roots and toxic substances; and from any other material or substances that might be harmful to plant growth or be a hindrance to fine grading, planting, and maintenance operations.

Excavated topsoil shall be transported to, and stockpiled in, designated topsoil storage areas on project site. Storage piles of suitable topsoil shall be located away from other soil material storage piles to prevent the intermingling of materials. Storage piles shall be not less than 4 feet high and constructed so that surface water will drain freely.

Where trees are designated to remain, stripping shall be stopped a sufficient distance from such trees to prevent damage to the main root system. In no case shall operations enter within the drip line of trees designated to remain.

2.2 EXCAVATION

All excavation necessary for successful completion of the work shall be performed to the lines, grades and elevations as shown on the plans or as otherwise directed. Surplus suitable excavation shall be stockpiled to the lines and grades as indicated on the plans. Material encountered which is considered unsuitable by the Engineer for use in the work shall be removed and disposed of as surplus excavation. Surplus excavation shall be placed so that it is well drained and presents a neat appearance. Spoils from ditch excavation shall be spread and leveled to blend with the ground contours and so as to present a well-drained, pleasing appearance.

The exposed subgrade in areas that are to receive additional structural fill and dense grade stone layer build-up shall be proof-rolled using a heavily loaded dump truck, prior to any additional materials placement. Any materials judged to deflect excessively under the wheel loads, which continued moisture-conditioning and compaction cannot adequately stabilize, shall be undercut to more stable underlying soils or bridged with a geo-grid stabilization material as directed by the Engineer.

Excavation for structures shall be performed in a manner to allow for proper space for erecting and removing forms from structures. Undercutting will be backfilled with medium crushed stone. All bracing, sheeting, or shoring necessary to perform and protect the excavation and structure shall be completed as required for safety and in accordance with OSHA requirements. All bracing, sheeting, and shoring shall be removed after completion of the structure unless otherwise directed.

2.3 BACKFILL AROUND STRUCTURES

Backfill around structures shall be placed in 12" minimum layers, with a moisture content maintained such that 90% Standard Proctor Density may be obtained. Each layer shall be compacted by hand tampers or other approved methods, with care taken to prevent damage to the constructed structure. Materials for backfill shall consist of the excavated material, borrow material, or other approved materials, and shall be free from roots or other organic materials, trash, frozen materials, and stones greater than 4".

2.4 EMBANKMENTS

Embankments shall be constructed of satisfactory material free of organic or frozen material and rocks with maximum dimensions no greater than 3 inches.

Areas on which embankment is to be placed shall be sufficiently disked to a minimum depth of 4". No embankment is to be placed on frozen ground. Embankments constructed are to be placed in horizontal layers of not more than 12" in compacted lifts to 95% Standard Proctor density within -2 to +3 percent of optimum moisture content for the soil type, unless indicated otherwise on the plans. Fill areas on existing slopes shall be benched, prior to fill placement, to prevent lateral movement. Placement and compaction shall be performed such that the final grade after compaction and shrinkage shall conform to the plan lines, grades, and cross-sections to within +/- 0.10'.

2.5 SUB-GRADE PREPARATION FOR ROADWAYS AND PARKING

The top portion of the sub-grade for all roadways and parking areas shall be crowned correctly, with the top 12" compacted to at least 95% Standard Proctor density within -2 to +3 percent of optimum moisture content unless otherwise directed on the plans. All irregularities or depressions experienced during compaction shall be repaired by scarifying and adding, removing, or replacing material until the surface is smooth and uniform. Soft or yielding material which does not readily compact shall be replaced with suitable material.

Rolling and compaction of the entire area shall be done with equipment which will attain maximum results. Sheepsfoot, rubber-tired, or flat rollers shall be used as conditions require. Any portion of the area which is not accessible to a roller shall be compacted to the required density by other approved means.

During all compacting operations, the water content of the material shall be constantly adjusted, if necessary, by sprinkling or loosening and subsequent evaporation to within the specified range of the optimum moisture content.

At all times the top of the sub-grade shall be kept in such condition that it will drain readily and effectively. The Contractor shall protect the sub-grade from damage, and in no case will vehicles be allowed to travel in a single track. If ruts are formed, the sub-grade shall be reshaped and rolled.

Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at those places and adding, removing, or replacing material until the surface is smooth and uniform. All soft and yielding material which will not compact readily when rolled or tamped shall be removed as directed by the Engineers and replaced with suitable material.

Material encountered that will not permit satisfactory compaction shall be excavated, disposed, and replaced, and will be considered incidental to sub-grade preparation. No additional pay will be allowed for this item.

2.6 HAUL

All materials shall be hauled from the original position to embankment or waste as indicated on the plans and directed by the Engineer.

2.7 FINISH GRADE

All disturbed areas, embankments, and excavations shall be graded smooth to meet the elevations shown on the plans. All roots, lumber, earth, clods, or rocks larger than 3" shall be removed prior to seeding and project completion.

In borrow areas, slopes shall be completed to 3 horizontal 1 vertical slopes, unless otherwise indicated on the plans. Borrow areas shall receive topsoil and seeded and mulched as described herein and in accordance with the technical specifications.

2.8 TOPSOIL

Topsoil shall be placed in the top 4 inches of the areas to be seeded or areas where spot sod and strip sod are to be planted as shown on the drawings. All areas to receive topsoil, including cut and fill areas, shall be shaped to provide a minimum of 4 inches. The topsoil shall be uniformly distributed and evenly

spread to any average thickness of 4 inches. The spreading shall be performed in such a manner that planting can proceed with little additional soil preparation or tillage, and the area shall be left smooth and suitable for lawns. Irregularities in the surface from topsoiling or other operations shall be corrected so as to prevent the formation of depressions where water will stand. Topsoil shall not be hauled and placed when wet or when the sub-grade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to the proposed planting or to proper grading. Topsoil shall be spread uniformly and stabilized using small rolling compaction devices. Where any portion of the surface becomes gullied or otherwise damaged, the affected area shall be repaired to establish the condition and grade prior to topsoiling, and then shall be re-topsoiled as approved.

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

GRANULAR MATERIALS

PART 1 - GENERAL

1.1 SCOPE

Work for this item consists of providing selected borrow material, washed gravel, clay gravel, and crushed stone for incorporation into the work. Material provided under this section may be from onsite sources.

PART 2 - AGGREGATE TYPES

2.1 WASHED GRAVEL

Washed gravel shall be composed of hard, tough, durable particles reasonable free of injurious or deleterious substances, with the percentage of wear not exceeding 50%.

The gradation of the washed gravel shall be as follows:

<u>Sieve Size</u>	<u>Percent Passing (by weight)</u>
2 inch	100
1 1/2 inch	90-100
1 inch	80-100
3/4 inch	50-100
1/2 inch	35-80
3/8 inch	12-65
No. 4	5-30
No. 10	0-8

2.2 CLAY GRAVEL

Clay Gravel shall be composed of natural or artificial mixtures of aggregates and soil binder having satisfactory cementing qualities to meet all the requirements as specified.

The coarse aggregate (material retained on the No. 10 sieve) shall be composed of gravel, stone, slag, or combinations thereof, and shall consist of hard, durable particles reasonably free of vegetable or other deleterious substances. Coarse aggregates shall have a percentage of wear not to exceed 50%.

The fine aggregate (material passing the No. 10 sieve) shall be composed of a natural or artificial mixture of soil binder and granulate material. The soil binder shall be clay or silt or other materials, or combinations thereof, having satisfactory cementing qualities, homogeneous in character, and reasonably free of vegetable matter, clay balls, or other deleterious substances that cannot be classified as

serviceable. The granular portion shall be composed of sand, stone, or slag screenings, and shall be hard and durable and preferably sharp.

2.3 CRUSHED STONE

Crushed Stone shall consist of fragments of sound, durable stone, free from disintegrated stone, salt, alkali, vegetable matter, or adherent coatings and other deleterious substances; and shall be reasonably free from thin or elongated pieces. The percentage of wear shall not exceed 50%.

The gradation of the crushed stone shall be as follows:

TYPE	FINE	MEDIUM	COARSE	CRUSHER RUN
Square Opening Sieves	Percent Passing, (by weight)			
3 inch			100	
2 inch			60-70	
1 1/2 inch		100		100
1 1/4 inch			5-40	
1 inch		80-100	0-10	90-100
3/4 inch	100			
1/2 inch	95-100	25-60		
3/8 inch	45-90			45-85
No. 4	0-15	0-10		30-65
No. 16	0-3			
No. 40				15-30
No. 200				4-15

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

CRUSHED STONE

PART 1 - GENERAL

1.1 SCOPE OF WORK

Work for this item shall consist of constructing a dense graded crushed stone base on a prepared sub-grade in accordance with the requirements of these specifications and in conformance with the lines, grades and elevations shown on the plans or established by the Engineer.

1.2 MATERIALS

Crushed stone shall conform to Crusher Run Stone as specified in the "Granular Materials" specifications.

1.3 EQUIPMENT

Hauling equipment shall be pneumatic tired vehicles having dump bodies suitable for discharging material into the spreading machines.

The spreader unit shall be mounted on crawler tracks to avoid undesirable deformations. The screed or strike-off assembly shall effectively produce a finished surface to required evenness and texture without tearing or gouging the mixture.

Steel wheel rollers shall be 8-10 ton tandem rollers. Rollers shall be equipped with adjustable scrapers.

Vibratory rollers shall be drum type units not less than 3 feet in width, capable of achieving the desired compaction.

Sprinkling equipment shall consist of tank trucks, pressure distributors or other approved equipment designed to apply a uniform amount of water and controlled quantities to variable widths.

Motor graders rated at not less than 10 tons shall be power driven and equipped as deemed necessary with power controls, wheel base width and blade length to meet the capacity and efficiency requirements of the work.

PART 2 - EXECUTION

2.1 SUB-GRADE PREPARATION

The top portion of the sub-grade, both cut and fill sections, shall be shaped correctly and brought to a firm, unyielding layer. The top 6 inches shall be compacted to at least 95% Standard Proctor Method density at optimum moisture content.

Rolling and compaction of the entire area shall be done with equipment which will attain maximum results. Sheepsfoot, rubber-tired, or flat rollers shall be used as, in the opinion of the Engineers, conditions require. Any portion of the area which is not accessible to a roller shall be compacted to the required density by other approved means.

Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at those places and adding, or replacing material until the surface is smooth and uniform. All soft and yielding material which will not compact readily when rolled or tamped shall be removed as directed by the Engineers and replaced with suitable material.

During all compaction operations, the water content of the material shall be constantly adjusted, if necessary, by sprinkling or loosening and subsequent evaporating to within 2% by weight of the optimum moisture content.

At all times the top of the sub-grade shall be kept in such condition that it will drain readily and effectively. The Contractor shall protect the sub-grade from damage, and in no case will vehicles be allowed to travel in a single track. If ruts are formed, the sub-grade shall be reshaped and rolled.

The top of the sub-grade shall be of such smoothness that when tested, it shall not show any deviation in excess of 1/2 inch nor shall it be more than 0.05 foot from the true established grade.

Where material is encountered that will not permit satisfactory compaction for sub-grade, excavation, disposal and replacement for this material will be required and will be considered as incidental to sub-grade preparation. No extra pay will be allowed for this item.

2.2 CONSTRUCTION

Crushed stone base course shall be constructed in layers not to exceed 6 inches in compacted thickness. The first layer shall be constructed upon an approved underlying course. In constructing any required subsequent layer of the stone base the previously laid layer(s) shall have been constructed in accordance with these specifications and shall have been maintained free of all ruts or irregularities and loose material and at the proper moisture content.

The Contractor shall avoid cutting into the underlying compacted course or layer at any time, and by any method. He shall be responsible for maintaining the proper moisture content in the material including the vertical faces of half width spreads of construction. To facilitate the bond between layers of the crushed stone base, subsequent layer(s) shall be placed upon previously placed layers as soon as practicable.

After each layer of the stone is placed and the rolling nears completion, the course and the adjoining one shall be rolled together with special effort being exercised at the point where the joint occurs.

The surface course shall be constructed in approximately equal layers each of which is not to exceed 4 inches in compacted thickness. The Contractor shall be responsible for spreading loose material so as to minimize segregation and degradation, and in such amounts as to yield the required compacted thickness and grades.

Compacting shall begin promptly after satisfactory spreading of the material and while moisture content is at optimum. Unless otherwise directed by the Engineer, compacting operations shall proceed initially with steel wheel rollers(s), followed by Vibratory roller(s), and pneumatic tired roller(s).

Pneumatic tired roller(s) shall be operated in straight paths in both forward and reverse motion, with essential turning made at slow speeds to avoid displacement of the materials.

A motor grader may be used in conjunction with compacting operations to correct the distribution of materials however, special care will be necessary to prevent segregation or degradation of the material.

The density of the completed portions of each layer of the base course shall be 100% Standard Proctor Density.

2.3 LIMITATIONS

No stone shall be placed upon an underlying course, or layer, when such course is or layer is frozen, rutted, or otherwise deformed, nor when it is not to the required grade and cross section and does not have the proper moisture content and required density.

No stone shall be placed when the temperature is below 35 degrees F., or when the latest weather bulletin indicates the probability of freezing temperatures within 12 hours in the area in which the project is located.

No stone shall be placed when over 10 percent of the stone placed in the previous day's operation fails to meet specified requirements for surface finish or density until the Contractor has made such adjustments or changes in equipment, operating procedure, and methods as are necessary to assure the securing or required results.

Water will not be measured for separate payment.

**TECHNICAL SPECIFICATIONS
MASTERTON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

EROSION CONTROL

PART 1 - GENERAL

1.1 SCOPE OF WORK

This item provides for the planting and establishment of vegetation for the purpose of controlling erosion and for enhancing the aesthetic value and functional usefulness of the completed project. After acceptance of the finish grading, the entire new soil surfaces, abraded or disturbed areas shall be prepared, fertilized, seeded and mulched with vegetative material or solid sodded excepting areas otherwise noted on plans.

It shall be understood that the term "plant establishment" means that work necessary to supplement and improve natural conditions to the end that fully established healthy vegetation is provided. It shall also include the preserving, protecting and replacing and such other work as may be necessary to keep the turf or sod in a satisfactory condition.

1.2 LIMITATIONS

Normal erosion control establishment items will only be performed between March 1 and November 15. Mixture No. 1 will be used during the spring and summer months, March 1 to August 31, and Mixture No. 2 will be used during the fall and winter months, September 1 to November 15. The Contractor is with this forewarned that these are not arbitrary nor flexible dates and his adherence thereto is expected. At other times, temporary erosion control will be required.

PART 2 - MATERIALS

2.1 FERTILIZERS

Fertilizers shall comply with the applicable fertilizer laws of the State. Combination fertilizer shall be "standard commercial products" and shall contain not less than 13% each Nitrogen, Phosphorous P₂O₅, and Potash K₂O.

Agricultural limestone shall contain not less than 80% soluble of calcium and magnesium carbonate calculated as calcium carbonate on a oven dry basis. Agricultural limestone shall be of such a fineness that at least 80% will pass a U.S. Standard No. 10 sieve and 40% will pass a U.S. Standard No. 40 sieve.

Ammonium Nitrate fertilize shall be a 34-0-0 grade containing a minimum of 34% total nitrogen, of which 17% shall be nitrate nitrogen and 17% shall be ammoniacal nitrogen.

2.2 SEED

All seeds shall comply with the applicable seed laws of the State. The seeds shall be delivered in bags with certified tags or labels attached to each bag showing the name (kind and variety), percent of germination and purity of the seed and the percent of obnoxious weeds and inert matter.

The requirements for germination and purity shall be as set out in the table below:

GERMINATION AND PURITY REQUIREMENTS			
Name (Kind)	Name (Variety)	Percent Germination	Percent Purity
<u>Normal Conditions</u>			
Bermudagrass	Common	90	95
White Clover	Dutch	85	98
Crimson Clover	Dixie, Chief, Tibbee, Autauga	85	98
Bahiagrass	Pensacola, Wilmington	85	85
Fescue	Kentucky 31	95	80
<u>Temporary Control</u>			
Wheat	Mixed	80	98

Approved grass seeds shall be treated with a disinfectant protectant containing active ingredient of not less than 50% Thiram (tetramethylthiuram disulfide). The use of other approved dry (dust) treatment type disinfectant protectant materials for grass seeds may be permitted when the Contractor has furnished satisfactory evidence that Thiram is not available. The treatment shall be performed at the rate specified and according to the directions shown on the container for treatment of grass seeds.

Approved legume seeds shall be treated with leguminous inoculant. The inoculants for treating leguminous seeds shall be standard pure culture of nitrogen fixing bacteria. The seed shall be treated at the rate specified and according to the directions shown on the container of the inoculants and before the expiration date for use of the inoculant as shown on the container.

2.3 WATER

All water used shall be free from injurious quantities of oil, acid, alkali or vegetable matter; reasonably clear; and shall not be brackish. If at any time water from any source shall become of unsatisfactory quality or of insufficient quantity, the Contractor shall provide satisfactory water from some other source.

2.4 MULCH

The vegetative materials for mulch shall be classed as follows:

Type I - Approved baled straw of wheat, oat, rye grain or rice; or broomsage of Bahia grass (without seed heads), which have reached maturity prior to cutting.

Type II - Approved baled hay produced from Bermuda, Bahia, Fescue, Dallis Grass, any of the Lespedezas, or combinations thereof.

All of the above materials shall have been cured properly prior to baling and shall be reasonably free from Johnson Grass and other obnoxious grasses and weeds. Vegetative material shall be reasonably bright in color, dry, and shall not be musty, moldy or of otherwise low quality.

Type I shall be furnished and used unless written permission to use Type II is obtained.

2.5 SOLID SOD

Furnish, transport and plant approved grass sod so as to provide a complete cover of solid sod turf with satisfactory growth on all areas shown on the plans or designated to be sodded solid. This work shall also include the accomplishment of plant establishment as required to assure satisfactory growth of the solid sod.

Unless otherwise specified, solid sod shall be bermudagrass (common), bahia or other approved sod species and shall be live, fresh, growing grass with at least 1 1/2 inches of soil adhering firmly to the roots when placed. The sod shall be reasonably free from obnoxious weeds or other grasses, and shall not contain any matter deleterious to its growth, or which might affect its subsistence or hardiness when transplanted. The sod shall be in blocks at least 8" x 8" free from ragged edges.

The source of solid sod shall be inspected and approved prior to harvest for use on the project. After approval, the area from which the solid sod is to be harvested shall be closely mowed and raked it deemed necessary to remove excessive top growth debris.

2.6 EROSION CONTROL BLANKET

Furnish and install erosion control blankets as indicated on the plans for slope protection prior to establishment of permanent grass. Blankets shall be 100% straw fiber stitched to lightweight netting on both sides. Blankets shall be ContechSFB2, or approved equal.

PART 3 - EXECUTION

3.1 GROUND PREPARATION

The area to be seeded shall be plowed or disk-harrowed and thoroughly pulverized to a depth of 4" the areas immediately before the application of vegetative items. The prepared seedbed must be in reasonably close conformity with the established lines and grades without appreciable humps or depressions. Soil preparation while wet or in an otherwise nontillable condition will not be allowed. When the soil is too dry to allow proper tillage, water will be added to insure a tillable condition.

3.2 FERTILIZING

Equipment necessary to handle, store, uniformly spread and incorporate the specified application of fertilizers, including agricultural limestone, shall be provided. The amounts and types of fertilizers shall be applied and incorporated uniformly in accordance with the requirements for the various items of use. If the fertilizer is not spread in such a manner as to result in the specified amount, the Contractor shall be required to furnish and spread the original amount and type of fertilizer specified on deficient areas, at no additional cost to the Owner.

In the event fertilizer is to be applied to existing vegetated grass areas, incorporation, unless otherwise specified, shall be accomplished immediately after the fertilizer application by reducing the existing vegetation to a height of approximately 4 inches above the ground, in lieu of other methods of incorporation. Under such conditions, all fertilizer, except agricultural limestone, shall be applied without the use of slurry, hydroseeder or other wet methods and such fertilizers shall be of the granular or pellet type.

All fertilizer shall be incorporated as required within 24 hours following the approved spreading, or as directed.

3.3 SEEDING

Prepare and fertilize the soil prior to planting the seeds. Sow treated seed uniformly over the entire area. This may necessitate seeds of different size to be sown separately. No seeding will be permitted during windy weather or when the ground is frozen, extremely wet, or otherwise in a non-tillable condition. Cover all seeds lightly with soil by raking, rolling or other approved methods, and compact the areas as directed.

3.4 MULCHING

Place mulch uniformly on designated areas within 24 hours following the planting of seeds. Begin placement on the windward side of areas and from top of slopes. In its final position, the mulch shall be loose enough to allow air to circulate but compact enough to shade the ground partially and reduce erosion.

Loosen and break the base material thoroughly before it is fed into the mulching machine to avoid placement of unbroken clumps. This machine shall be capable of maintaining a constant air stream which will apply controlled quantities of asphalt coated mulch in a uniform pattern.

The mulch may be anchored by either the use of a mulch stabilizer or by tacking with bituminous material. If asphalt is used, a jet or spray nozzle for applying uniform, controlled amounts of asphalt to the vegetative material as it is ejected shall be located at or near the discharge spout. Any property damage during this operation shall be the responsibility of the Contractor and he will repair or cause to be repaired any such damage at his expense.

3.4 MULCHING (Cont.)

If a mulch stabilizer is used, the mulch shall be punched into the soil for a minimum depth of one inch. Mulch stabilizers shall consist of dull blades or disks without camber. Where steep slopes or soil conditions are such that anchoring cannot be performed satisfactory with a mulch stabilizer the Engineer will require the bituminous material be applied at the time or immediately following the mulch placement. When mulch stabilizers are used, anchoring the mulch shall be performed along the contour of the ground surface.

The Contractor shall be responsible for maintaining and protecting mulched areas until final acceptance of the project. He shall prevent unnecessary foot and vehicular traffic and shall repair and restore immediately, without extra compensation, any displacement of mulch.

At the appropriate times, the Contractor shall mow all areas mulched, or otherwise remove or destroy all undesirable growth, to prevent competition with the desired planted materials and to prevent reseeding of all undesirable growth.

3.5 WATERING

Water shall be applied in the amounts and at the times necessary to establish growth. Watering of plant life shall be done at night, during late afternoon or during the early morning hours.

3.6 SOLID SOD PLACEMENT

Prior to ground preparation for solid sodding upon any area, all excavating, shaping and dressing shall have been completed in such a manner that the foundation for the sod will have the proper cross-section, line and grade and the sod, after placement, will be flush with or slightly below the adjacent final ground line.

Perform ground preparation after the area has been graded as required. Apply the specified amount of fertilizer uniformly and rake or harrow the surface lightly to incorporate it into the prepared soil. After acceptance of the prepared and fertilized area, sodding shall follow immediately.

Place the sod with the edges in close contact, starting at the lowest point and working upward. Fill cracks between blocks of sod with small pieces of fresh sod. Compact and water the entire sodding area.

On areas on which the solid sodding might slide due to the height and slope of the surface or nature of the soil, use wooden pegs to hold the sod in place.

3.7 EROSION CONTROL BLANKETS

Erosion control blankets shall be installed in strict accordance with contract drawings and manufacturer's recommendations. Blankets shall be stapled securely to soil immediately after positioning with 6" x 6" x 1" U-shaped steel staples, minimum 0.091" diameter (11 gauge). Blankets shall be installed only over properly prepared, fertilized and seeded areas as described elsewhere in these specifications.

3.7 EROSION CONTROL BLANKETS (CONT...)

Start installation of the blankets three feet over the crest of the slope, anchored with trenches or check slots. Blankets may be applied either horizontally or vertically with respect to the slope face. Ends and edges shall be butted snugly and stapled in place. Staple spacing shall not exceed six feet apart along the blanket length, with approximately 100 staples per blanket.

Staples shall be driven perpendicularly into the soil. Staple each blanket at every edge, with alternate spacing in the center of each blanket. Use a common row of staples at the seam formed by adjoining blankets. Use six (6) staples at the beginning and end of each blanket.

3.8 TEMPORARY EROSION CONTROL

When normal erosion control measures must be delayed due to planting seasons limitations, temporary erosion control measures shall be applied. These shall consist of ground preparation, seeding with wheat, fertilizing, mulching and watering as herein specified. No limestone will be required for temporary control methods.

When the normal planting season arrives, the temporary control plant growth shall be cut and removed, the remaining roots disc-harrowed and the area treated with normal ground preparation procedures as herein specified. After this work, normal erosion control procedures will be followed.

3.9 PLANT ESTABLISHMENT

The Contractor will be required to provide establishment on all areas where seeds or mixtures containing seeds for permanent vegetation is specified, until final acceptance of the project.

Plant establishment will be required for a minimum period of 90 calendar days after completion of seeding or sod placement. In the event satisfactory growth and coverage as specified below has not been provided in the above specified minimum period of time, plant establishment shall be continued, and final inspection will not be made until such specified growth and coverage is provided.

The Contractor shall water the grassed areas during such periods and as frequently as appropriate to promote maximum practicable growth.

The Contractor shall mow grassed areas as many times in such a manner as may be deemed necessary to control obnoxious vegetation which competes with or shades the desirable grass. Such mowing shall be performed in a manner that will not cause unnecessary damage to desirable vegetation.

Reseeding or resodding may be required at any time on areas or portions of such areas which for any cause are deemed to be unsatisfactory. Except as otherwise specified or permitted, areas deemed to require reseeding shall be prepared, seeded, and all other items of work performed in accordance with the requirements of the contract as if such reseeding was the initial seeding. However, the type of fertilizer and the application rate of fertilizer to be furnished and applied by the Contractor shall be determined by soil tests or as otherwise established.

It shall be the Contractor's responsibility to provide satisfactory growth and coverage of the kinds of grasses or legumes, or a combination of both, produced from seeding as specified.

3.9 PLANT ESTABLISHMENT (CONT...)

Growth and coverage on areas seeded as specified shall be considered to be in reasonably close conformity with the intent of the contract when the type of vegetation specified exclusive of that from seeds not expected to have germinated and shown growth at that time, has reached a point of maturity such that has produced stems or runners which overlap adjacent similar growth in each direction over the entire area.

Prior to final inspection, the Contractor shall mow the entire grassed area with suitable mowing equipment.

3.10 APPLICATION RATES

The application rates shown in the following table are to be considered as minimum rates and the Contractor may use his discretion as to the use of any addition quantities keeping in mind that sufficient growth and establishment must be obtained.

MINIMUM APPLICATION RATES	
Normal Conditions	
Commercial Fertilizer (13:13:13)	1.0 tons per acre
Agricultural Limestone	2.0 tons per acre
Ammonium Nitrate	500 lbs. per acre
Vegetative Mulch	2 tons per acre
Asphalt Emulsion for Mulch (if used)	100 gals. per ton Vegetative Mulch
Mixture No. 1 (March 1-August 31)	
Bermudagrass Seed (Common)	15.0 lbs. per acre
White Clover Seed (Dutch)	20.0 lbs. per acre
Bahiagrass Seed (Pensacola, Wilmington)	30.0 lbs. per acre
Mixture No. 2 (September 1-November 15)	
Bermudagrass Seed (Common)	15 lbs. per acre
Bahiagrass (Pensacola, Wilmington)	30 lbs. per acre
Crimson Clover (Dixie, Chief, Tibbee, Autauga)	15 lbs. per acre
Fescue (Kentucky 31)	40 lbs. per acre
Temporary Control	
Wheat Seed	180 lbs. per acre
Commercial Fertilizer (13:13:13)	0.5 ton per acre
Vegetative Mulch	2 tons per acre
Asphalt Emulsion for Mulch (if used)	100 gal. per ton Vegetative Mulch

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

TEMPORARY EROSION CHECKS

PART 1 - GENERAL

1.1 SCOPE OF WORK

This work consists of furnishing, constructing, and maintaining baled hay or straw erosion checks for the retention of soil along the toe of fill slopes, swale areas, small ditches, and other areas as directed by the Engineer.

Measurement and payment for temporary erosion checks will be made only when ordered and a pay item is included in the bid schedule of the proposal. The quantity is estimated for bidding purposes only. The plan quantity of erosion checks is estimated for bidding purposes only, and will be dependent upon actual conditions that occur during construction of the project.

1.2 MATERIALS

The baled hay straw shall conform to the Erosion Control Specifications, Type I or Type II. The wooden stakes used in securing the baled material in place shall be approximately 2"x2"x34" and must be strong enough to adequately secure the bales.

PART 2 - EXECUTION

2.1 CONSTRUCTION

Erosion Checks shall be constructed at locations, and according to the requirements, shown on the plans or as directed by the Engineer. Erosion checks along fill slopes shall be constructed prior to grading operations at the site.

The soil shall be excavated a minimum of 3 inches in depth to embed the Baled material. Excavated material shall be placed around the erosion checks and compacted to prevent undermining.

The Contractor shall maintain the erosion checks and shall remove and dispose of the silt accumulations as directed by the Engineer during construction. The erosion checks will remain in place.

**TECHNICAL SPECIFICATIONS
MASTERTON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

SILT FENCING

PART 1 - GENERAL

1.1 SCOPE OF WORK

This work consists of furnishing, constructing, maintaining, and removing a filter type fence for the purpose of removing suspended soil particles from the water passing through it.

It shall be understood that payment for temporary silt fence will be made only when ordered, and a pay item is included in the bid proposal. The plan quantities for temporary silt fences are estimated for bidding purposes only, and the quantity used will be dependent upon actual need during construction of the project. No temporary silt fence will be installed unless directed by the Engineer.

1.2 MATERIALS

Fabric

The fabric shall be sediment control type, woven or non-woven, with an apparent opening size (AOS) of 0.15 – 0.84 mm.

Posts

Either wood or steel posts may be used. Wood posts shall have a minimum diameter of three inches and length of five feet and shall be straight enough to provide a fence without noticeable misalignment. Steel tee posts shall be five feet long, approximate 1-3/8 inches deep and 1/8 inch thick with a nominal weight of 11.33 pounds per foot prior to fabrication. The posts shall have projections, notches or holes for fastening the wire backing or fabric to the posts.

Securing Pins

Steel pins used for anchoring the fabric shall be three-sixteenth inch in diameter, minimum length of 15 inches, pointed at one end and fabricated with a head for retaining a steel washer. A minimum one and one-half washer shall be installed on each pin.

Staples

Staples shall be made of nine gauge wire with a minimum length of one inch after bending.

PART 2 - EXECUTION

2.1 CONSTRUCTION

Silt fences shall be constructed as directed by the Engineer.

All posts shall be installed so that no more than three feet of the post shall protrude above the ground. Extra posts for bracing shall be installed as directed by the Engineer. The woven wire shall be securely

fastened to wood posts with staples. When metal posts are used, the wire shall be fastened to the posts with wire or other approved means. The bottom edge of the fabric shall be buried 6" below ground surface to prevent undermining. When splicing of the fabric is necessary, two posts shall be installed approximately 18" apart and each piece of fabric shall be fastened to both posts.

At the time of or during installation, the fabric will be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacturing, transportation, storage or installation.

Except as provided herein, silt fence shall be reinforced with a woven wire backing. The wire backing shall be at least 32 inches high and have no less than six horizontal wires. Vertical wires shall be spaced no more than 12 inches apart. The top and bottom wire shall be 10 gauge or larger. All other wire shall be no smaller than 12-1/2 gauge.

Type II fabric may be installed without the wire backing provided:

- A. Post spacing is reduced to six feet or less.
- B. The fabric has been approved by the Engineer and the manufacturer recommends its use without the wire backing.
- C. The fence posts are inclined toward the runoff source but at an angle of not more than 20° from vertical.
- D. The fabric shall be attached to the posts in such a manner that purpose intended is satisfied and maintained.

The manufacturer's recommendation shall be in writing or issued in a technical data sheet with copy furnished to the Engineer.

The Contractor shall maintain the silt fence and the fabric shall be removed and replaced when deteriorated to such extent that it is no longer effective. Excessive accumulations against the fence shall be removed and disposed of as directed by the Engineer.

Unless otherwise directed, all temporary silt fences shall be removed. Upon removal, the Contractor shall remove and dispose of excess silt accumulations, dress the area to give a pleasing appearance and vegetate all bare areas in accordance with the contract requirements. The temporary fence materials will remain the property of the Contractor and may be used at other locations provided the materials are acceptable to the Engineer.

2.2 SHIPMENT AND STORAGE

During all periods of shipment and storage, the fabric shall be wrapped with a heavy duty protective covering which will protect the cloth from direct sunlight, mud, dirt, dust and debris. The fabric shall not be exposed to temperatures greater than 140°F.

2.3 MANUFACTURER'S CERTIFICATION

The Contractor shall furnish to the Engineer three copies of the manufacturer's certified test reports showing results of all required tests and certification that the material meets the specifications.

**TECHNICAL SPECIFICATIONS
MASTERTON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

RIPRAP PLATING

PART 1 - GENERAL

1.1 SCOPE OF WORK

This work shall consist of furnishing and placing a protective covering of erosion resistant material including plastic filter fabric, riprap and slush grout where shown on the plans for slope or ditch protection. This work shall be in accordance with these specifications and in reasonably close conformity with the lines, grades, and dimensions shown on the plans or established by the Engineer.

PART 2 - SPECIFICATIONS

2.1 FILTER FABRIC

Geotextile fabrics shall generally be in accordance with the following:

Grab Strength (lbs.)	200 #
Elongation	50%
Seam Strength	180 #
Puncture Strength	80 #
Trapezoidal Tear	80 #
AOS	0.21-0.43mm

2.2 SLUSH GROUT

Grout shall be composed of Portland Cement, water and sand mixed in the proportions of one part of portland cement to 3 parts of sand with sufficient water to produce a workable mixture that can be poured into all voids in the rock to form a solid mass.

2.3 RIPRAP

Aggregate for loose riprap shall consist of field stone, broken concrete, or rough, unhewn quarry stone as nearly rectangular in section as is practicable. The stone shall be dense, free of clay or shale seams, resistant to the action of air and water, and suitable in all other respects for the purpose intended.

Stones for riprap, of the size specified, shall meet the requirements for size by weight of the mass specified in the following table (based on % larger than by weight):

Rock Size	Size			
	1/4 Ton	300 Lbs.	200 Lbs.	100 Lbs.
1/2 Ton	0	--	--	--
1/4 Ton	50	--	--	--
300 Lbs	--	0	--	--
200 Lbs	--	--	0	--
100 Lbs	--	--	--	0
75 Lbs	90	--	--	--
60 Lbs	--	80	--	--
40 Lbs	--	--	80	--
20 Lbs	--	90	--	80
10 Lbs	--	--	90	--
5 Lbs	--	--	--	90

PART 3 - EXECUTION

3.1 CONSTRUCTION DETAILS

The slopes or ground surface shall be shaped to the lines and grades indicated on the plans or directed, and shall be thoroughly compacted by the use of mechanical or hand tamps. Unless otherwise stipulated or directed, slopes shall not be steeper than the natural angle of repose of the material upon which riprap is to be constructed.

The outer edges and the top of the riprap where the construction terminates shall be formed so that the surface of the riprap will be embedded and even with the surface of the adjacent slope or ground, and the bottom of the riprap shall be placed at least two feet below the natural ground surface unless otherwise directed.

All riprap shall begin at the bottom of the slope and proceed upward.

3.2 INSTALLATION OF PLASTIC FILTER FABRIC

The filter fabric shall be placed on the manner and at the locations shown on the drawings. The surface to receive the fabric shall be prepared to a relatively smooth condition free of obstructions, depressions and debris. The fabric shall be placed with the long dimension perpendicular to the centerline of the channel and shall be laid loosely but without wrinkles or creases. The strips shall be placed to provide a minimum width of 18 inches of overlap for each joint. Securing pins with washers shall be inserted through both strips of overlapped fabric at not greater than two foot intervals along a line through the midpoint of the overlap. Additional pins shall be installed as necessary to prevent slippage of the filter fabric regardless of location. The fabric shall be placed so that the upstream strip of fabric will overlap the downstream strip and the higher strip will overlap the next lower strip. Each securing pin shall be pushed through the fabric until the washer bears against the fabric and secures it firmly to the foundation. The fabric shall be protected at all times during construction from contamination by surface runoff and any fabric so contaminated shall be removed and replaced with uncontaminated fabric at no expense to the Owner. All damage to the fabric during its installation or during placement of riprap shall be replaced by the Contractor at no cost to the Owner. Riprap and aggregate shall not be dropped on the fabric from a height greater than three feet.

3.3 SLUSH GROUT (if applicable)

Immediately after dumping the batch of grout, it shall be distributed over the surface of the strip by the use of brooms and the grout worked into place between stones with suitable spades, trowels, or vibrating equipment. As a final operation the grout shall be removed from the top surfaces of the upper stones and from pockets and depressions in the surface of the stone protection by use of a stiff broom. After completion of any ten foot strip, no workman or any load shall be permitted on the grouted surface for a period of at least twenty-four hours. The grouted surface shall be protected from rain and flowing water.

3.4 LOOSE RIPRAP

The stones shall be placed on a slope not steeper than the natural angle of repose of the slope material. The stones shall be laid with close joints. The courses shall be laid from the bottom of the bank upward with the larger stones being placed in the lower courses. Interstices shall be filled with smaller stones and spalls.

**TECHNICAL SPECIFICATIONS
MASTERSON SITE
TOWN CREEK, LAWRENCE CO., ALABAMA**

PIPE CULVERTS AND STORM SEWERS

PART 1 - GENERAL

1.1 SCOPE

This item shall consist of furnishing and installing pipe culverts, arch pipe culverts and flared end sections for cross drains, sidedrains and storm sewers and manholes. These structures, of the types, sizes and dimensions as required on the plans, shall be furnished and installed at such places as designated by the Engineers, all in accordance with these specifications and in conformity with the lines and grades. This item shall include excavation, backfilling, trench required bracing (if required), and all fittings necessary to complete the pipe lines. It shall also include the furnishing and installing of such joints and such connections to existing pipes, catch basins, headwalls, etc., as may be required to complete the work shown on the plans or as directed by the Engineers.

1.2 MATERIALS

Pipe used for Concrete Pipe Culverts shall conform to the requirements of standard specifications for reinforced concrete culvert pipes, ASTM Pipe Designation: C76, Wall B. Pipe classification shall be shown in the proposal.

Pipe used for High Density Polyethylene pipe (HDPE) Culverts shall be smooth interior, corrugated exterior HDPE sewer pipe and associated fittings shall conform to AASHTO M294, AASHTO M 252, ASTM F477, ASTM 1417 and ASTM D3212. All HDPE pipe, and fittings shall be watertight. HDPE pipe shall be N-12 WTIB as manufactured by ADS, or approved equal.

Storm drainage basins for HDPE storm sewer systems shall be PVC road and highway structures designed for H25 loading, as manufactured by Nyloplast, or approved equal. All grates shall be ductile iron.

Polyvinyl chloride pipe where specified for drainage shall be schedule 40 PVC meeting ASTM standards.

Pipe Arches shall conform to the requirements of ASTM Pipe Designation: C506, Class A-III. All concrete pipe arches shall be reinforced concrete.

Flared end sections shall conform to applicable portions of concrete pipe culvert reference specifications.

Joints shall be sealed with either bituminous plastic sealer or preformed rubber-type.

Mortar for connections to other drainage structures shall be composed of one part Portland Cement and two parts fine aggregate.

All approved laboratory test reports covering all the pipe and other materials shall be furnished by the manufacturer.

1.2 MATERIALS (CONT.)

Bituminous Coated Corrugated Metal Culvert Pipe and Pipe Arches shall conform to the requirements of the Standard Specifications for Corrugated Metal Culvert Pipe, AASHTO Designation: M-36 Type I, except the minimum gauge thickness shall be as shown on the plans, or contract documents, however, corrugated metal pipe manufactured from sheets thicker than that specified will be acceptable when approved by the Engineer. The internal diameter of corrugated metal pipe shall be determined by inside measurement between the crests of the corrugations. The corrugations shall be 2 3/4" x 1/2".

In addition, the Corrugated Metal Pipe and Arches shall be galvanized, fiber bonded and completely coated inside and out with bituminous material in accordance with the requirements of Standard Specifications for Bituminous Coated Corrugated Metal Culvert Pipe and Pipe Arches, AASHTO Designation M-190 Type C, fully coated with paved invert. Connecting bands shall be 24" in length.

The pipe shall be coated uniformly to a minimum thickness of 0.05 inch., measured on the crest of the corrugations and the pavement shall have a minimum thickness of 1/8" above the crest of the corrugations.

PART 2 - EXECUTION

2.1 PIPE LAYING

Excavation shall be true to line and grade within 0.05 feet. Excavation carried below the grade shall be backfilled at the Contractor's expense with selected materials. Unsuitable materials excavated from the trenches shall not be used for backfill and shall be disposed of as directed by the Engineer. Any material encountered in way of pipe trenches, included buried drainage structures and obstructions, shall be excavated.

The trench width shall be not less than 12 inches greater than the outside diameter of the pipe. The Contractor shall do such trench bracing, de-watering, sheathing, or shoring necessary to perform and protect the excavation, and shall remove such material as backfill progresses.

The pipe shall be firmly and accurately set to line and grade so that the invert will be smooth and uniform, and any pipe which is not in true alignment, or which shows any settlement after laying, shall be taken up and relaid without extra compensation. Pipe shall be laid on a prepared bed which will provide a full bearing for the barrel and which is uniformly firm throughout its entire length.

The laying of concrete pipe shall begin at the downstream end, with the spigot or tongue end in the direction of flow and proceed toward the upstream end with the pipe joints abutting and closely joined, and so matched that they will form a culvert with a smooth and uniform invert. The joints of concrete pipe culverts shall be made with bituminous plastic sealer or preformed rubber-type gaskets.

Bituminous Coated Corrugated Metal Pipe shall be laid carefully with outside laps of circumferential joints pointing upstream. The longitudinal laps parallel to the center line of the pipe culvert shall be placed on the sides of the culvert with the outside laps pointing down. The ends of the sections shall be fully and closely joined and true to the lines and grades established. Each section or joint of pipe shall be securely attached to the adjoining sections or joint of pipe with connecting bands, or other approved type of connector. The bands or other type of connector shall be tightly drawn or connected so as to form a rigid joint. Any metal in joints which is not thoroughly protected by galvanizing shall be coated with approved bitumen. Any breaks in the bitumen shall be repaired with the type and kind of bitumen used

2.1 PIPE LAYING (CONT.)

originally in coating the pipe. Corrugated Metal Pipe of 42 inch or larger diameter shall be strutted as shown on the plans or as directed. The struts shall be placed before the embankment is placed and removed when so ordered. The ends of the pipe shall be rigidly supported to prevent any movement pending and during the construction of end supports.

Construction methods of Bituminous Corrugated Metal Pipe Arches shall conform reasonably close to the requirements for Bituminous Coated Corrugated Metal Pipe Culverts. Pipe Arches 58" x 36" and larger shall be braced prior to back-filling operations. The branches shall not be less than 4" x 4" timbers spaced five feet apart between upper and lower sills which shall also be not less than 4" x 4" timbers.

All HDPE piping installations shall be in strict compliance with AASHTO Section 30, ASTM recommended practice D2321, and as recommended by the manufacturer.

2.2 BACKFILLING

The backfill material shall be approved by the Engineers. Great care shall be used to obtain thorough compaction under the haunches and along the sides to the top of the pipe. The backfill shall be placed in loose layers not exceeding 6" in depth and successive layers shall not be placed until thorough compaction is obtained. Trenches under areas to be paved shall be compacted to 95% Standard Proctor density.

2.3 CONNECTIONS

Where the plans call for connections to existing or proposed structures or lines, these connections shall be watertight and made so that a smooth uniform flow line will be obtained. Such connections shall be made by the Contractor at no extra compensation.

The joints of all pipe culverts to other drainage structures shall be caulked and filled with mortar. Joints shall be thoroughly wet before applying mortar, and sufficient mortar shall be used to form a bead around the outside of the joint and to fill the whole joint to inside of the connection. The inside of the joint shall be wiped and finished smooth. After the initial set, the mortar on the outside shall be cured with a cover of thoroughly wetted earth or burlap.

2.4 MANHOLES

Manholes shall be poured-in-place concrete or precast concrete manholes as indicated on the construction drawings. Either type manhole may be selected. Storm draining basins for HDPE storm sewer systems shall be in accordance with Section 1.2.

Precast manhole sections shall conform to ASTM Specification C-478. Where required, the Contractor shall furnish laboratory test reports for precast sections used, showing that they conform to all requirements of these specifications.

Mortar for masonry in sewer structures shall be a 1:3 cement-lime mix, provided that hydrated lime may be substituted for not to exceed 10 per cent, by weight of the cement.

The standard frame and cover, designated as M.H. on the plans, shall be Bouchard #2010 or 2030 Standard Frame and Grate (or approved equal). The cover shall have two non-penetrating pick holes but shall not have vent holes. The casting shall be gray iron castings, free from defects affecting their strength and appearance. The clear opening shall be a minimum of 21 inches in diameter and the cover and ring shall be machined to fit snug and not rattle.

The manhole steps shall be made of injection molded copolymer polypropylene encapsulating a 1/2" diameter grade 60 steel reinforcing rod. The steps shall be of such cross-sectional area and configuration that they will withstand a single concentrated live load of 300 pounds. They shall be in conformance with ASTM Standard C-478. Manhole steps shall be as manufactured by M.A. Industries, Inc., Peachtree City, GA, Press Seal Gasket Corp., or equal.

Rubber gaskets shall be "O"-Ring or flat ring as manufactured by Press Seal Gasket Corp., Fort Wayne, IN; Hamilton-Kent Manufacturing Co., or equal, and shall conform to the requirements of the latest edition of ASTM Designation C-443. Lubricants shall be as recommended by the gasket manufacturer.

Manhole pipe seal gaskets for precast manhole units shall be "Kor-N-Seal" as manufactured by Kor-N-Seal Co., Milford, NH; "PSX" by Press Seal Gasket Corp., or equal.

Preformed joint compound shall be "EZ Stik" as manufactured by Concrete Products Supply Co., Fort Wayne, IN; "Kent Seal No. 2"; or equal. Primer, when required for use with the preformed joint compound, shall be as recommended by the manufacturer of the preformed joint compound. Install joint compound according to the manufacturer's instruction.

Sealer compound shall be "Drycon" as manufactured by IPA Systems, Inc., Philadelphia, PA; Tamm's "Tamoseal"; or equal. Sealer shall be field applied after construction.

Cold joint bonding agent shall be "Octoblen" as manufactured by IPA Systems, Inc., Philadelphia, PA; "Tamm's Tammsbond"; or equal.

Patching material shall be "Octocrete" as manufactured by IPA Systems, Inc., Philadelphia, PA; "Tamm's Speed Crete Blue Line"; or equal.

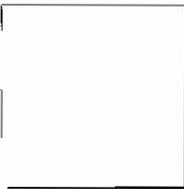
2.5 MANHOLE CONSTRUCTION

The bottom concrete slab shall be poured first, then after sufficient time has elapsed the walls shall be built. The Contractor shall lay brick and concrete blocks in manholes with joints completely filled with mortar. Horizontal joints shall not exceed 1/2 inch; vertical joints 1/4 inch or their interior face. In circular structures, lay all blocks, breaking joints between courses. Strike interior joints smooth with face of the wall.

Precast concrete sections shall be laid so that the axis of the manhole is vertical, and shall be constructed in accordance with the manufacturer's recommendations.

The standard sizes for manhole bottoms, as shown on the plans, are based on a soil bearing pressure of 2000 psf; should a more yielding soil be encountered, the base shall be stabilized with sufficient bedding of coarse crushed stone to obtain the required bearing.

Construct pre-cast manholes as shown on the plans of pre-cast units with a concrete bottom. Excavate hole and set bottom unit, leveling carefully. Make joints between sections using preformed joint compound. Joints shall be water tight. Fit manhole cover frames in place on an adequate grout or grout



bed and brick riser. Joints in brick risers shall not exceed 5/8" in thickness. Plater the brick exterior surface with a coat of plaster not less than 1/2" thick. For pipe 30" in diameter and less make connection to manholes using manhole pipe seal gaskets.

Install the manhole steps at 16" o.c. vertically. The deepest step shall be located not more than 24" above the manhole invert.

Install the cast iron frames and covers to the grade shown on the plans, set in a grout bed. Lap grout up on ring vertical to 1" from the top. In streets, set the manhole covers to one inch (maximum) above the street grade parallel to the plane of the street.

Wherever concrete is applied to an existing concrete or masonry surface, apply a cold joint bonding agent between the surfaces according to the manufacturer's instructions.

Where necessary to fill voids, repair breaks, make patches, etc., clean and moisten the surfaces and use a suitable combination of patching agent and cold joint bonding agent with grout or concrete. The use of brick or chunks or concrete will not be permitted.

All visible leaks in manhole bottoms, barrels, and connections shall be stopped.

The cast iron rings and covers shall be set at the exact finish grade indicated on the drawings. Manholes in open fields shall extend to a minimum of 2 feet above the finished ground surface unless otherwise indicated on the plans. Steps shall be set inside the manholes at 16 inches on center.

The contractor shall construct the manhole flow channels of concrete, of semi-circular section conforming to the inside diameter of the connection sewers. The Contractor shall provide such channels for all connection sewers to each manhole. Drop inlets shall be constructed as an integral part of the manhole as construction progresses.

No backfilling of manhole excavation, above the top of the interior concrete fill, shall be performed until the waterproof coating has been cured for at least twenty-four hours and has been inspected and approved by the Engineer. All defective coverage and leaks shall be corrected and improved as directed prior to backfilling.

As the backfill material is placed around the manhole it shall be carefully tamped to prevent excessive settlement.

ATTACHMENT 4

Design Calculations

Sediment Pond 1

RATIONAL method

1 year storm event

$$Q = CIA$$

$$T_c = .93 \frac{L^{1.6} n^{1.6}}{I^{.4} S^3}$$

$$C = .8$$

$$A = 5.8$$

$$S = .01 \text{ FT/FT}$$

$$n = .03$$

$$L = 900 \text{ FT}$$

$$A = 5.8 \text{ ACRES}$$

$$T_c = .93 \frac{900^{1.6} (.03)^{1.6}}{I^{.4} (.01)^3} = \frac{28.76}{I^{.4}}$$

TRIAL #1

$$\text{ASSUME } I = 3.3 \text{ IN/HR}$$

$$T_c = \frac{28.76}{3.3^{.4}} = 17.84 \text{ MIN}$$

CHECK IDF CURVE

$$T_c = 17.84 \quad I = 3.6 \text{ IN/HR}$$

TRIAL #2

$$\text{ASSUME } I = 3.6 \text{ IN/HR}$$

$$T_c = \frac{28.76}{3.6^{.4}} = 17.23 \text{ MIN}$$

CHECK IDF CURVE

$$T_c = 17.23 \quad I = 3.6 \text{ IN/HR}$$

Sediment Pond 1

7/4/2014

RATIONAL Method 4/2

$$Q = 3.6 \text{ CFS}$$

$$Q = CIA$$

$$= .8 \times 3.6 \frac{\text{IN}}{\text{HR}} \times 5.0 \text{ ACRES}$$

$$= 16.7 \text{ CFS}$$

Sediment Pond 1

1/4" 1/2
RATIONAL MET

50 year STORM EVENT

$$Q = CIA$$

$$L = 900 \text{ Feet}$$

$$A = 5.8 \text{ Acres}$$

$$S = .01 \text{ FT/FT}$$

$$n = .03$$

I = UNKNOWN

T_c = Time of concentration

$$T_c = .12 \frac{700.6 \cdot .05^2}{.01^3}$$

$$T_c = \frac{26.75}{I}$$

TRIAL #1

ASSUM = $I = 7.0 \text{ in/hr}$

$$T_c = \frac{26.75}{7.0} = 12.30 \text{ min}$$

TRY $T_c = 12.3 \text{ min}$ FROM CURVE

$$I = 7.5 \text{ in/hr} > 7.0$$

TRIAL #2

ASSUME 7.3 in/hr

$$T_c = \frac{26.75}{7.3} = 12.01$$

TRY $T_c = 12.0$ FROM CURVE

$$I = 7.4 \text{ in/hr}$$

Use 7.4 in/hr

Sediment Pond 1

50 YEAR EVENT

$$Q = CIA$$

$$C = .8$$

$$I = 7.4 \text{ in/hr}$$

$$A = 5.8 \text{ ACRES}$$

$$Q = .8 \times 7.4 \times 5.8$$

$$Q_{50} = 34.3?$$

$$\text{USE } Q_{50} = 35 \text{ CFS}$$

4/21/2017

✓

Pond #1 Spill Pipe Design

$$Q = 16.7 \text{ CFS}$$

$$V = Q/A \quad \text{ASSUME } V = 8 \text{ FT/Sec}$$

$$A = \frac{16.7 \text{ CFS}}{8 \text{ FT/Sec}} \quad A = 2.03 \text{ FT}^2$$

$$A = \pi r^2$$

$$r^2 = \frac{A}{\pi} = \frac{2.03 \text{ FT}^2}{3.14} = .6465'$$

$$r = .804 \text{ FT}$$

$$d = 1.608 \text{ FT} = 19"$$

$$\text{TRY } 21" \quad A = \pi r^2 = 3.14 \times .375^2 = 2.404 \text{ FT}^2$$

CHECK head = h

$$h = \frac{Q^2}{C^2 a^2 2g}$$

C = .53 TABLE 7 Pg 4-40 CIVIL ENGINEERING HANDBOOK

$$Q = 2.40 \text{ FT}^2$$

$$g = 32.2$$

$$h = \frac{10.7}{.53^2 \cdot 2.4^2 \cdot 64.4} = 2.17 < 3.0$$

USE 21" CMP

Pond #1

Spill Pipe Design

1/2

$$h_e = K_o \frac{V^2}{2g}$$

$$= .4 \frac{8^2}{64.4} = .39$$

$$K_o = .4$$

$$S = .075$$

$$K_o =$$

$$h_o = K_o \frac{V^2}{2g}$$

$$1 \times .99 = .99$$

$$h_f = \frac{S}{d} \frac{L}{2g} = .075 \frac{1}{.175} \frac{9^2}{64.4} = .04$$

$$h = .39 + .99 + .04 = 1.33 < 2.7$$

Pond 1

1/2

Emergency Spillway Width Calculation

50 YR OR EVENT

$$Q = VA$$

$$Q = 35 \text{ CFS}$$

$$n = .040$$

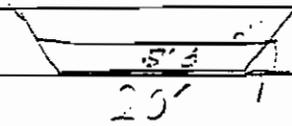
V = Mean Velocity

A = AREA OF PIPE

$$S = .005$$

$$V = \frac{1.49}{n} R^{2/3} S^{1/2}$$

TRIAL #1



$$R = \frac{A}{WP}$$

$$A = 21' \times 1.5 = 10.5 \text{ FT}^2$$

$$Z^2 = 1^2 + .5^2$$

$$R = \frac{10.5}{22.2}$$

$$Z = 1.12$$

$$WP = 1.12 \times 2 + 20'$$

$$WP = 22.24$$

$$R = .4721$$

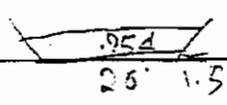
$$V = \frac{1.49}{.04} R^{2/3} .005^{1/2} = 2.62 R^{2/3}$$

$$V = 2.62 R^{2/3} = 2.62 (.4721)^{2/3} =$$

$$V = 1.59$$

$$Q = VA = 1.59 \times 10.5 = 16.6 < 35 \text{ CFS}$$

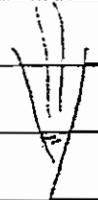
TRIAL #2



$$Z^2 = X^2 + Y^2$$

$$Z^2 = .5^2 + 1.5^2$$

$$Z = 1.68$$



1/21/17 2/2

Pond #1

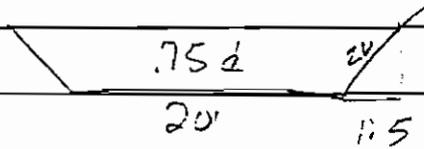
Emergency Spillway width (calculated)

50 year event

$$Q = 35 \text{ cfs}$$

TRIAL #2

TRY .75 = d



$$ZW^2 = 1.5^2 + .75^2$$

$$Z = 1.63$$

$$WP = 20 + (1.63 \times 2)$$

$$WP = 23.36$$

$$A = 21.5 \times .75$$

$$= 16.125 \text{ FT}^2$$

$$V = 2.62 R^{2/3}$$

$$= 2.62 (.69)^{2/3}$$

$$= 2.046 \text{ FT/SEC}$$

$$Q = VA$$

$$Q = 2.046 \times 16.125$$

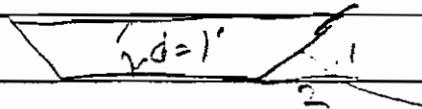
$$Q = 33 \text{ cfs} < 35 \text{ cfs}$$

$$R = \frac{A}{WP} = \frac{16.125}{23.36}$$

$$R = .69$$

TRIAL #3

TRY 1' = d



$$Z^2 = 2^2 + 1^2$$

$$Z = 2.2$$

$$WP = 20 + (2.2 \times 2) = 24.4$$

$$A = 22 \times 1 = 22$$

$$R = \frac{22}{24.4} = .901$$

$$V = 2.62 R^{2/3}$$

$$= 2.62 (.901)^{2/3} = 2.44$$

$$Q = 2.44 \times 22 = 53.68 \text{ cfs}$$

$$Q = 53.7 \text{ cfs} > 35 \text{ cfs} \quad \text{USE } 1' = d$$

Sediment Pond 2

RATIONAL Method

1/2

1/YEAR STORM EVENT

$$A = 22.4 \text{ Acres}$$

$$Q = VA$$

$$L = 650 \text{ FT}$$

$$S = .01 \text{ FT/FT}$$

$$n = .03$$

$$C = .40$$

$$T_c = .93 \frac{L^{.6} n^{.6}}{I^{.4} S^{.3}}$$

$$T_c = .93 \frac{650^{.6} \cdot .03^{.6}}{I^{.4} \cdot .01^{.3}}$$

TRIAL #1

$$T_c = \frac{22.00}{I^{.4}}$$

ASSUME 4.2 ^{IN}/HR

$$T_c = \frac{22.00}{4.2^{.4}} = 12.39$$

TRY 12.39 ^{IN}/HR IN IDF CURVE

$$\therefore I = 4.4 \text{ ^{IN}/HR} > 4.2$$

TRIAL #2

ASSUME 4.4 ^{IN}/HR

$$T_c = \frac{22.00}{4.4^{.4}} = 12.16$$

TRY 12.16 ^{IN}/HR IN IDF CURVE

$$\therefore I = 4.4 \text{ ^{IN}/HR} = 4.4 \text{ ^{IN}/HR}$$

USE I = 4.4 ^{IN}/HR

Sediment Pond 2

$$Q = CIA$$

$$Q = .4 \times 4.4 \text{ in/hr} \times 22.4 \text{ Acres}$$

$$Q = 39.42 \text{ CES}$$

Sediment Pond 2

RATIONAL Method

1/2

50 YEAR STORM EVENT

$$A = 22.4 \text{ ACRES}$$

$$L = 650 \text{ FT}$$

$$S = .01 \text{ FT/FT}$$

$$n = .03$$

$$C = .40$$

$$Q = VA$$

$$T_c = .93 \frac{L^{.6} n^{.6}}{I^{.4} S^{.3}}$$

$$T_c = .93 \frac{650^{.6} \cdot .03^{.6}}{I^{.4} \cdot .01^{.3}}$$

$$T_c = \frac{22.004}{I^{.4}}$$

TRIAL #1

ASSUME $I = 7.5 \text{ in/hr}$

$$T_c = \frac{22.004}{7.5^{.4}} = 9.92 \text{ min}$$

TRY 9.92 in/hr IN IDF CURVE

$$\therefore I = 7.8 \text{ in/hr}$$

TRIAL #2

ASSUME $I = 7.7 \text{ in/hr}$

$$T_c = \frac{22.004}{7.7^{.4}} = 9.725 \text{ min}$$

TRY 9.725 in/hr IN IDF CURVE

$$\therefore I = 7.9 \text{ in/hr} > 7.7 \text{ in/hr}$$

TRIAL #3

ASSUME $I = 7.9 \text{ in/hr}$

$$T_c = \frac{22.004}{7.9^{.4}} = 9.626 \text{ min}$$

TRY 9.626 in/hr IN IDF CURVE

$$\therefore I = 7.9 \text{ in/hr} = 7.9 \text{ in/hr}$$

USE $I = 7.9 \text{ in/hr}$

Sediment Pond 2 - CONTINUED

2/2

50 YEAR STORM EVENT

$$Q = CIA$$

$$A = 22.4$$

$$C = .40$$

$$I = 7.9 \text{ in/hr}$$

$$Q = .40 \times 7.9 \times 22.4$$

$$= 70.784$$

USE 75 CFS

Pond 2 Spill Pipe Design

$$Q = 39 \text{ CFS}$$

$$V = \frac{Q}{A} \quad \text{ASSUME } V = 8 \text{ FT/SEC}$$

$$A = \frac{39 \text{ CFS}}{8 \text{ FT/SEC}} \quad A = 4.875 \text{ FT}$$

$$A_{\text{pipe}} = \pi r^2$$

$$r^2 = \frac{A}{\pi} = \frac{4.875}{3.14} = 1.55$$

$$r = 1.24$$

$$d = 2.49 = 30''$$

Check Head Required For 30''

$$h = \frac{Q^2}{C^2 \cdot 2.29}$$

$$h = \frac{39^2}{.57^2 \cdot 2.29^2 \cdot 16.01}$$

$$C = .53 \pm .01 / 2 = .57$$

$$Q = 39$$

$$a = \pm r^2 = -1.25^2 = 4.90$$

$$h = 3.0 < 3.3$$

USE 30'' CMP

Pond 2

EMERGENCY SPILLWAY WIDTH CALCULATION 50 YEAR STORM EVENT

$$Q = VA$$

$$Q = 75 \text{ CFS}$$

V = MEAN VELOCITY

A = AREA OF PIPE

$$S = .005$$

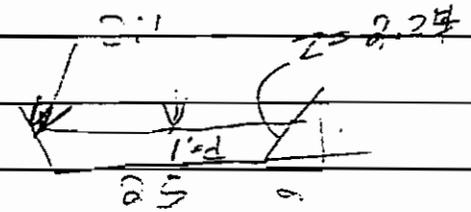
$$V = \frac{1.486}{n} R^{2/3} S^{1/2}$$

TRIAL #1 TRY 1' depth
@ 25' width

$$R = A/WP$$

$$R = 27/29.68$$

$$R = .91$$



$$A = 27 \times 1 = 27 \text{ FT}^2$$

$$WP = 25 + (2.25) \times 2$$

$$= 29.68$$

$$V = \frac{1.486}{.04} (.91)^{2/3} (.005)^{1/2}$$

$$= 2.47$$

$$Q = VA = 2.47 \times 27 = 66.7$$

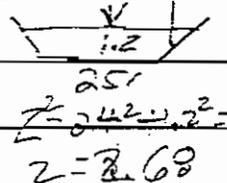
$$Q = 66.7 < 75 \text{ CFS}$$

TRIAL #2 TRY 1.2' depth @ 25' width

$$R = \frac{32.88}{30.76} = 1.08$$

$$V = \frac{1.486}{.04} (1.08)^{2/3} (.005)^{1/2}$$

$$V = 2.76 \text{ FT/SEC}$$



$$A = 27.4 \times 1.2 =$$

$$= 32.88 \text{ FT}^2$$

$$WP = 25 + (2.52) \times 2$$

$$= 30.76$$

$$Q = VA = 2.76 \times 32.88$$

$$= 90.7 \text{ CFS} > 75 \text{ CFS}$$

USE 1.2' @ 25' width

DATE 6/14/2015

Sediment Pond 3
1 year STORM EVENT

Rational Method $\frac{1}{2}$

A = ~~10~~ 9.8 ACRES

L = 650'

S = .01 FT/FT

n = .03

C = .40

$$Q = VA$$
$$t_c = .93 \frac{L^{.6} n^{.6}}{I^{.4} S^{.3}}$$

$$t_c = .93 \frac{650^{(.6)} \cdot .03^{.6}}{I^{.4} \cdot .01^{.3}}$$

$$t_c = \frac{22.06}{I^{.4}}$$

TRIAL #1

ASSUME 4.2 in/hr

$$t_c = \frac{22}{4.2^{.4}} = 12.39$$

TRY 12.39 in/hr 1 in IDF CURVE

$$\therefore I = 4.4 \text{ in/hr} > 4.2$$

TRIAL #2 ASSUME 4.4 in/hr

$$t_c = \frac{22}{4.4^{.4}} = 12.16$$

TRY 12.16 in/hr 1 in IDF CURVE

$$I = 4.4 \text{ in/hr} = 4.4 \text{ in/hr}$$

USE $I = 4.4 \text{ in/hr}$

6/10/2015

Sediment Pond 3

2/2

$$Q = CIA$$

$$Q = .4 \times 4.4 \text{ in/hr} \times 9.8 \text{ Acres}$$

$$Q = 17.248 \text{ CFS}$$

6/11/2015

Sediment Pond 3
- 50 year STORM EVENT

Rational Method $\frac{1}{1}$

$$A = 9.8 \text{ ACRES}$$

$$L = 650 \text{ FT}$$

$$S = .01 \frac{\text{FT}}{\text{FT}}$$

$$n = .03$$

$$C = .4$$

$$Q = VA$$

$$T_c = .93 \frac{L^{.6} n^{.6}}{I^{.4} S^{.3}}$$

$$T_c = .93 \frac{650^{.6} .03^{.6}}{I^{.4} .01^{.3}}$$

$$T_c = \frac{22.00}{I^{.4}}$$

TRIAL #1

ASSUME $I = 7.9 \text{ in/hr}$

$$T_c = \frac{22.00}{7.9^{.4}} = 9.626$$

TRY 9.626 IN IDF CURVE

$$\therefore I = 7.9 \text{ in/hr} = 7.9 \text{ in/hr}$$

USE $I = 7.9 \text{ in/hr}$

$$Q = CIA$$

$$A = 9.8$$

$$C = .4$$

$$I = 7.9$$

$$Q = .40 \times 7.9 \times 9.8$$

$$= 31 \text{ CFS}$$

Pond 3 Spill Pipe Design

1/1

$$Q_1 = 17.245 \text{ use } 18 \text{ CFS}$$

$$V = Q/A \quad \text{ASSUME } 8 \text{ FT/sec}$$

$$A = \frac{18 \text{ CFS}}{8 \text{ FT/sec}} \quad A = 2.25 \text{ FT}^2$$

$$A_p = \pi r^2$$

$$r^2 = \frac{A}{\pi} = \frac{2.25}{3.14} = .71656$$

$$r = .846$$

$$d = 1.69 = \text{use } 24''$$

Check Head Required For 24''

$$h = \frac{Q^2}{C^2 a^2 2g}$$
$$= \frac{18^2 \text{ CFS}}{.53^2 (3.14)^2 \times 64.4}$$
$$= 1.81 < 4$$

$Q = 18 \text{ CFS}$
 $C = .53$ (TABLE 7 Pg 4-40)
Civil Eng.
HAND BOOK

$$a = \pi r^2 = \pi (1)^2$$
$$a = 3.14$$

USE 24'' CMP

1/1

Pond 3

Emergency Spillway width calculation
50 year STORM EVENT

Use Pond 2 Design

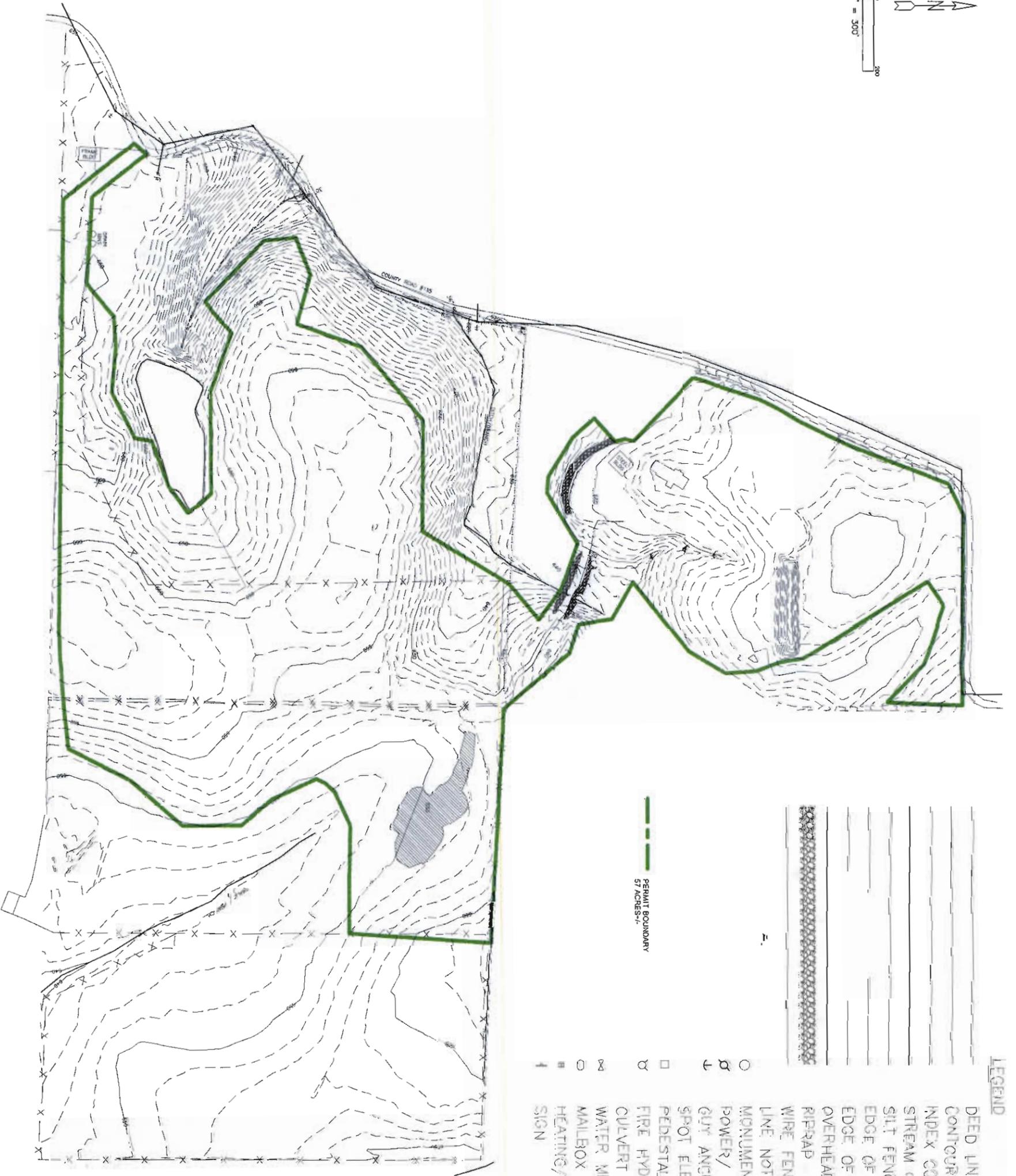
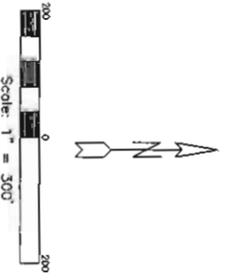
Use 25' width

QUANTITY CALCULATIONS

Quantity calculations for both earthwork volumes and, in the case of sedimentation basins, containment volumes are accomplished through AutoCad and Eagle Point software programs. These programs utilize survey and design information regarding the existing and proposed surfaces to develop triangulated irregular networks (TIN), which are then used to calculate quantities based on the prismatic method for calculating volumes. Therefore, quantity calculations as historically furnished cannot be supplied; however, digital drawings can be provided if necessary for outside confirmation of the quantities shown.

ATTACHMENT 5

Topographic Survey with Permit Boundary



LEGEND

- DEED LINE
- CONTOURS (1' INTERVAL)
- INDEX CONTOURS (5' INTERVAL)
- STREAM OR POND
- SILT FENCE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- OVERHEAD ELECTRIC / TELEPHONE
- RIPRAP
- WIRE FENCE / REMNANTS
- LINE NOT TO SCALE
- MONUMENT FOUND
- POWER / TELEPHONE POLE
- GUY ANCHOR
- SPOT ELEVATION (TYPICAL)
- PEDESTAL
- FIRE HYDRANT
- CULVERT (TYPICAL)
- WATER METER
- MAILBOX
- HEATING/COOLING UNIT
- SIGN

PROJECT:
 CLAY, SAND, ORES AND OTHER MINERALS (ALL NON-FUEL)
 MS INDUSTRIES II, LLC.
 MASTERSON SITE - LAWRENCE COUNTY AL
 SHEET NAME:
 TOPOGRAPHIC SURVEY

DEAN McRAE ENGINEERING, INC.
 308 GRISHAM STREET
 P.O. BOX 573
 IUKA, MISSISSIPPI 38852
 PHONE: (662)423-9104
 EMAIL: dmcr@deanmcrae.com

JOB NO.: E14-124
 DATE: JUNE 2015
 DRAWN BY: TD
 CHECKED BY: KM
 REVISION NO.: 0000000
 DESCRIPTION

SHEET NO.
 A5