R D Green Station

Green Ash Pond Closure Project

RFQ# G-22-105

Case No. 2019-00435
Filed October 18, 2022

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1. Overview

1.1. Big Rivers Electric Corporation (Big Rivers) will be accepting bids to provide qualified labor, experienced supervision, tools, equipment, materials, consumables, and services as required to provide removal of all Coal Combustion Residual (CCR) and CCR-impacted soil as described in the specification and attachments.

1.2. If any conditions, circumstances or occurrences not covered in the Specification are encountered, or if there are any doubts as to the meaning, contact the designated representative.

1.3. The Contractor shall not assign, or sublet any part of the Work or this Specification without first obtaining Big Rivers' written approval. Such approval, if given, will not relieve the Contractor from full responsibility for the fulfillment of all obligations under this Specification.

1.4. Big Rivers Electric Corporation reserves the right to reject any or all Bids, to waive informalities therein and to consider exceptions and clarifications therein in order to determine the lowest and best bid; to reject any or all non-conforming, non-responsive, unbalanced or conditional Bids; to reject the Bid of any Contractor that it would not be in the best interest of the Project to make an award to that Contractor, whether because the Bid is not responsive or the Contractor is unqualified or of doubtful financial ability, or fails to meet any other pertinent standard or criteria established. The Company also reserves the right to negotiate contract terms with the successful Contractor. By submitting a Bid, the Contractor agrees that such procedures will be without liability for any damage or claim brought by the Contractor because of such rejections or procedures, nor will the Contractor seek any recourse of any kind against the Company because of such rejections or procedures. The filing of any Bid in response to this Invitation will constitute an agreement of the Contractor to these conditions.

2. Definitions

2.1. Throughout this Specification, "Owner, Big Rivers, BREC", will mean the Big Rivers Electric Corporation.

2.2. Throughout this Specification, "RDG", will mean the Big Rivers Electric Corporation, R D Green Station.

2.3. Throughout this Specification, "Engineer", will mean the Burns and McDonnell.

2.4. Throughout this Specification, "Proponent" shall constitute Big Rivers Designee.

2.5. Throughout this Specification, "Contractor" shall constitute work by others.

3. Submittal

3.1. **A mandatory pre-bid meeting will be held at the RD Green Station, 3rd Floor Conference Room on Wednesday, May 11, 2022 at 9:00 a.m. CST.**

3.2. All bids will be valid for ninety (90) days from the opening of the bid.

3.3. The Bidder **MUST** submit a list of any sub-contractors that would be used for this project for pre-approval. The submittal must include experience lists and reference contacts for all proposed sub-contractors.

3.4. Any addenda to this Bid Package will be signed by the Bidder and will be returned with the proposal.

3.5. Any deviations from or exceptions to the attached Specification, terms and conditions, or the submittals may impact the evaluation of the Bidder's proposal. If there are no exceptions or clarifications, please so indicate on the Clarifications & Exceptions Form (Appendix B).

3.5.1. The terms and conditions set forth in the attached Specification and any required submittals are an important consideration to Big Rivers.

3.5.2. Any exception taken to the Specification must be justified in writing, i.e., safety, reliability, efficiency, and increase or decrease in cost.

3.6. The Bidder will submit sufficient information and detail with the bid to permit full understanding and evaluation of the equipment and services being offered.

3.7. The Bidder will itemize the proposal to reflect labor, equipment and materials separately as shown on the Submittal Form (Appendix A).

3.7.1. The Bidder may submit alternate bids, however, alternates will be considered only if a complete original bid is submitted.

3.7.2. The Bidder will submit time and material rates for any work on this project that may be classified as extra work by the Big Rivers. If the Bidder charges a separate rate for overtime and or holiday pay, the Bidder will include a clear explanation of the overtime and holiday policies, and will include a list of all observed holidays. The Bidder will also provide a cost plus percentage markup for any materials that may be needed for additional/emerging work for this project. This percentage is to be factored on the base cost of the material before taxes are applied.

3.8. All materials will be inclusive of all costs including but not limited to documentation, shipping, handling, profit, and freight, FOB destination.

3.8.1. Taxes shall be excluded on materials, Big Rivers chooses to direct pay Kentucky Sales Taxes and will furnish documentation upon request.

3.9. The proposal **must** be submitted by **provided link** (the email link for the bid and proposals will be sent to all bidders in a separate email). Bids **must** be received no later than **May 26, 2022 by 2:00 p.m.** (Central Time). Bid proposals received after this date and time will not be considered. Bid proposals shall be submitted to the Big Rivers Supply Chain department.

3.10. All questions concerning the Bid are to be sent to Big Rivers Electric Corporation via email to the address shown below. Questions will be evaluated and the responses will be sent to all bidders.

3.10.1. Questions addressed to persons other than those show below will not be responded to.

Email: mary.holmes@bigrivers.com

3.11. This inquiry implies no obligation on the part of Big Rivers. The Bidder offers the prices, terms, and delivery freely and without bias.

3.12. All expenses incurred by the Bidder in the development of this bid are the sole responsibility of the Bidder.

3.13. The evaluation methodology that will be used to identify the winning bid includes, but is not limited to the following four elements: the Non-Responsiveness Test, the Price Evaluation, Qualification/Certification Evaluation, and the Technical Evaluation. The purpose of each element and the process employed in each are described in the following sections.

3.13.1. Non-Responsiveness Evaluation: The Non-Responsiveness Evaluation is designed to identify and eliminate any proposal that has not provided the requested information in a proper format to allow an equitable evaluation to occur or that does not meet the requirements set forth in this RFQ. A bid deemed non-responsive by Big Rivers may be rejected. Bidders are subject to disqualification for such things as failure to submit the proposal on or before the designated time and date. Big Rivers Electric Corporation may, in its discretion, disqualify a bid and drop it from further consideration for failure to submit a complete proposal in the form required or failure to provide additional supporting documentation or any clarification that may be requested by Big Rivers subsequent to the submission of the proposal.

3.13.2. Price Evaluation: The Price Evaluation is designed to identify and eliminate bids which are clearly more expensive than other compliant proposals received. This will be accomplished by ranking the bids, as well as the designated options, against each other according to price. Preliminary estimates of production cost effects, operation and maintenance costs, and other pertinent costs will be made and added to each proposal for evaluation purposes. The evaluation will also include an estimate of the negative impact of deviations or exceptions, if any, to the terms and conditions in the proposed Contract or in other agreements contemplated to be entered into. Big Rivers expects the bid to contain an early payment discount structure which terms will also be part of the evaluation.

3.13.3. Qualification/Certification Evaluation: The Qualification/Certification Evaluation is designed to identify and eliminate bids that clearly demonstrate a lack of understanding or an inability to meet the intended Specification for this project. Big Rivers Electric Corporation requires all on-site contractors to complete the Contractor Certification process before any on-site work is awarded. Therefore, a winning Bidder will, among other things, submit or

confirm on file the completed and fully executed General Services Agreement, and safety rules, and will agree that all site workers will be in compliance with the CSCAP Program and any site specific safety requirements which will apply to all work.

3.13.4. Technical Evaluation: The Technical Evaluation will consist of a comprehensive review that considers a number of price and non-price factors. The goal of the Technical Evaluation is to determine the options that best meet the needs of Big Rivers for this project and technical options which improve the facility's overall cost, reliability and availability.

4. General Requirements

4.1. Upon award, all work will be governed by the terms and conditions set forth in the Specification and Bid Instructions, including, without limitation, the General Services Agreement (Appendix C).

4.2. The Contractor will, upon bid award, submit a Certificate of Insurance naming Big Rivers Electric Corporation as the holder of the certificate. The certificate will also show Big Rivers Electric Corporation as additional insured. Insurance coverage must meet as a minimum, the insurance requirements as specified in General Services Agreement.

4.3. Big Rivers is committed to procuring safe results for all Purchase Orders. The Contractor and every on-site employee must be certified through and current with Big Rivers' Contractor Safety Credentials Assessment Program (C-SCAP Program; Appendix G). Contractor will comply with all applicable OSHA, KOSHA, EPA, Big Rivers' rules or other safety practices, rules and regulations that govern work while on the Big Rivers' sites.

4.3.1. Big Rivers may stop work and/or remove the Contractor from the worksite which may lead to termination of this agreement by Big Rivers without further obligation to the Contractor, if the Contractor fails to observe safety requirements.

4.3.2. Non-compliance of BREC's Safety Programs/Rules shall be considered just cause to terminate this Agreement.

4.4. The Contractor will abide by the items in this Specification unless Big Rivers agrees in writing to any changes. Changes must be made in the form of a written request.

4.5. The criteria listed in this Specification should be used as a base line. Actual work required to perform this Specification may not be listed. It is expected that work required to access or reassemble specified work will be included as part of this Specification. The Specification entries may not be in chronological order or inclusive of all the job elements. It is the responsibility of the Contractor to realize and correct this.

5. Subcontracts and Subcontractors

5.1. Award of Subcontracts And Other Contracts For Portions Of The Work

5.1.1. The Contractor, at the time of the Bid Submittal, shall furnish in writing to the Owner, the names of Subcontractors and Sub-subcontractors (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work, including but not limited to: (1) Grade Work, (2) Electrical, (3) Piping and (4) General. The Owner will promptly reply to the Contractor in writing stating whether or not the Owner or the Contractor, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Contractor to reply promptly shall constitute notice of no reasonable objection.

5.1.2. The Contractor shall NOT substitute any person or company listed in the Contractor's original Bid Proposal, except (1) of the listed subcontractor's bid is later determined by the Contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the work, or (2) with the written approval of the Owner for good cause shown by the Contractor.

5.2. Subcontractual Relations

5.2.1. The Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms and conditions of the Contract Documents and Contract for Construction, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these documents, assumes toward the Owner and Engineer. Each subcontract agreement shall preserve and protect the rights of the Owner and Engineer under the Contract Documents with respect to the Work to be performed by the Subcontractor. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.2.2. Contractor must furnish to Owner, prior to contract award, Certificates of Insurance (COI) from each named subcontractor insuring the Contractor to the limits required by the contractor, which shall be no less than the minimum requirements shown in the Big Rivers General Services agreement. Said insurance certificate will also show Big Rivers as Additional Insured. All Sub-subcontractors are required to furnish the same documentation.

5.2.3. All Subcontractors and Sub-subcontractors are required to complete the required C-SCAP documentation and be issued C-SCAP cards for entry into

the plant site. Under no circumstances shall the Contractor or Subcontractor issue C-SCAP cards for Subcontractors and Sub-subcontractors.

6. Owner's Right to Perform Construction and to Award Separate Contracts

6.1. The Owner reserves the right to perform construction or operations related to the project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site outside the scope of this Specification.

7. Commencement and Completion Schedule

7.1. The Contractor may start as early as Contract Award date but all work must be completed no later than **September 29, 2023**.

7.2. The time of completion of the Work is a basic consideration of the Specification. The proposal will be based upon completion of the Work during an allotted time window. Contractor's schedule and support requirements must be defined and submitted to Big Rivers for approval. The approved schedule must be met.

7.2.1. The Contractor shall submit a final schedule showing the duration, milestones and major tasks as per Appendix K.

7.3. The Contractor will provide a weekly (daily as needed) project status update to the designated Big Rivers proponent unless directed by Big Rivers proponent.

7.4. The Contractor will adhere to the schedule. Any schedule provided within this Specification may be updated prior to the project; however, task durations will remain constant. The Contractor will take any and all actions necessary to ensure scheduled completion.

7.5. The Contractor shall maintain, throughout the duration of the job, a schedule with the work progression of individual job elements. The schedule will be up-dated regularly and will be available to Big Rivers for review at any time. The schedule will be broken down to show individual job elements.

7.6. If at any time during the progress of the work it is determined that the scheduled completion date cannot be met, Big Rivers reserves the right to take any action it deems necessary to ensure timely completion.

8. Liquidated Damages

8.1. The Contractor shall acknowledge that the Company will suffer substantial loss if the project is not completed by the date shown in Commencement and Completion Dates; therefore, the Contractor shall guarantee that the project shall meet all deliverables as shown on the Engineers Submittal Schedule shown in Appendix J, Section 013301-A and shall be completed as shown in Commencement and Completion Dates.

8.2. The Parties agree that it would be extremely difficult and impracticable under the presently known and anticipated facts and circumstances to ascertain and fix the

actual damages that the Company would incur should Contractor fail to complete the project on or before the “Commencement and *Completion Dates”.

8.3. Accordingly, the parties hereby agree that if Contractor fails to complete the project on or before the dates shown in the “Commencement and Completion Dates” section, then Contractor shall pay to Company, as liquidated damages and not as a penalty, an amount equal to ten percent (10%) of the total contract price for each twenty-four (24) hour period that such project exceeds the Completion Date shown.

9. Application for Payment

9.1. The Contractor warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work.

9.2. Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Designer (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract for Construction to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5) if required by the Owner, other or additional data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances rising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

10. Bonds

10.1. The Contractor will, within 10 business days after Notice to Proceed, submit performance and payment bonds (Bonds), each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Bidder’s obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Laws or Regulations or by the Contract Documents.

10.2. All Bonds shall be executed by such sureties as are named in the current list of “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Circular 570

(amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury.

10.3. The Bonds shall be automatically increased in amount and extended in time without formal separate amendments to cover full and faithful performance of the Contract in the event of Change Orders, regardless of the amount of time or money involved. It is Contractor's responsibility to notify its surety of any changes affecting the general scope of the Work or change in the Contract Price or Contract Time. All Bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

10.4. If at any time during the continuance of the Contract, the surety on any Bond becomes unacceptable to Owner for financial reasons, Owner has the right to require additional and sufficient sureties, which Contractor shall furnish to the satisfaction of Owner within ten (10) Days after notice to do so.

10.5. If the surety on any Bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of the Contract, Contractor shall within five (5) Days thereafter substitute another Bond and surety, both of which must be acceptable to Owner.

11. Retainage

11.1. Owner shall have the right to withhold from the total contract price a sum ("retainage") equal to fifteen (15%) percent of the Contract amount. Upon successful completion of Final Reports (1 electronic copy and 1 hard copy) and the Performance Guarantee all monies will be released for payment to the Contractor.

12. Warranty

12.1. The Contractor will warrant to Big Rivers that all work will be in accordance with this Specification and will be free from defects. Prompt notice of all defects will be given to the Contractor.

12.2. All defective work, whether or not in place, may be rejected, corrected or accepted by Big Rivers. If Contractor does not promptly comply, or in an emergency where delay would cause serious risk of loss or damage, Big Rivers may, upon written notice to the Contractor, have the defective work corrected or the rejected work removed and replaced, and all direct costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) will be paid by Contractor.

13. BREC Responsibilities

13.1. **BREC reserves the right to furnish the Contractor with the following items in connection with performance of the work.**

13.2. **Electrical connections as existing, 480 volt three phase, or 110 volt single phase 20 amp service; wiring and connections will not be provided.**

13.2.1. **Contractor must furnish transformers for voltage reductions from 480 volts to 220V/110 volts. A transformer is to be mounted on each trailer complete with its own disconnects and it is the Contractor's responsibility to properly maintain. Any electrical plugs supplied and/or installed by BREC for the Contractor's use on its equipment must be returned prior to leaving the job site or Contractor will be back charged. It is the Contractor's responsibility to immediately returned all borrowed items and provide a written return form listing all items returned. All items returned must be verified by the Contractor's plant contact. Failure to complete returns in this manner will result in replacement cost being withheld from the Contractor.**

13.2.2. **Electrical connection requiring greater than 30 amp service will be provided by the plant; however, sufficient wiring will be provided by the Contractor. Electrical hook-ups and disconnects will be scheduled 24-hours in advance whenever possible.**

13.3. **Separate scrap metal and trash dumpsters will be provided on-site for disposal of waste material.**

13.4. **Potable water is available at the plant site with the Contractor being responsible for providing his own water station (coolers) and cups as required. Contractor is responsible to provide all bottled water if required. Water for construction wash-down of clean-up is available in limited quantities. Contractor will provide his own connections, piping and hoses.**

13.5. **BREC will provide an area for the Contractor's office/tool/break trailer at the plant site. Normal, prudent practices will be exercised by Contractor to deter theft of tools and materials (i.e., lighting, routine observation, access, etc.). Contractor will inventory equipment in and out of the site. All related costs shall be included in Bidders submitted hourly rates.**

13.6. **BREC's Hazard Communication program requires that BREC inform Contractors of any hazardous chemicals in the area where they will be working. Material Safety Data Sheets (MSDS) are available for any chemical on site. MSDS sheets can be reviewed in the Safety Coordinator's office.**

13.7. **BREC will insure that all equipment is secured and properly tagged and systems rendered safe prior to disassembly and repair work beginning.**

14. Job Site Requirements

14.1. The Contractor will provide all necessary supervision, labor, job management, materials, tools, equipment and consumables deemed necessary to ensure safe, proper and timely completion of the specified work.

14.2. The Contractor will furnish a field service manager to act as coordinator, and field service supervisors/technicians to supervise, direct, and assist with the varied scope of the project. These people are required to be permanent employees of the Contractor who are thoroughly experienced in their respective area of work. The

proposal must include a job history resume for each of the permanent employees who may be staffing this job. Field service supervisors must be present during requested activities. The Contractor's field service manager must be onsite to insure timely coordination of the activities involved to meet the schedule required by the Owner and Engineer. The Bidder is required to have satisfactorily completed at least five similar jobs and provide references for each.

14.3. Contractors will designate full-time safety representation for all Contractors, Subcontractors and Subs of Subcontractors inclusive as follows:

Manpower #	Safety Professional(s) Required
20 – 49	1
50 – 99	2
100 – 199	3
For every additional 100	Add 1 safety professional

14.4. The Contractor's on-site employees will be in compliance with all C-SCAP requirements.

14.5. Except as otherwise expressly set forth in this Agreement, the Contractor will be responsible for all temporary facilities and utilities necessary for performance of the work at no additional cost to BREC, including but not limited to:

14.6. All temporary buildings inclusive of office and break room facilities.

14.7. One phone line per General Contractor will be provided, subsequent phone lines will be per availability and subject to BREC approval. Internet connection will NOT be available.

14.8. All sanitary facilities, Porta John, hand wash facilities, including janitorial services, adequate for the Contractors work force. Use of BREC facilities will not be permitted.

14.9. First-aid facilities.

14.10. Fuels and lubricants (Vehicles included).

14.11. Communication facilities.

14.12. Maintenance of Contractor's lay-down, storage and work areas and roads within such areas.

14.13. The Contractor shall maintain all trailer, office, lay down, storage and work areas in an orderly manner. There is zero tolerance for an unsafe and unhealthy environment in or around the Contractor's staging and office areas.

14.14. All tools/consumables.

14.15. Unless otherwise previously agreed in writing BREC, or its agents or employees will not be responsible for or reimburse the Contractor for the loss or damage to any tools, machinery or appliances used by the Contractor in the performance of the work.

14.16. Contractor employee safety supplies and personal protective equipment.

14.17. The Contractor will have a confined space procedure that complies with OSHA CFR 1910.146. This procedure must be equal to or better than BREC's confined space procedure. The Contractor will provide personnel qualified for confined space work, including but not limited to, Entrant Supervisor, Entrant, and Attendant. The confined space personnel will be qualified from the existing work force and will perform the confined space tasks as a function of the normally assigned service work at no additional cost. The Contractor will absorb all costs for the training of its employees for confined space work. The Contractor will furnish, at no additional cost, all monitoring equipment, communication equipment, personal protective equipment, safety related items, and other items required to perform confined space work.

14.18. The Contractor will provide a qualified on-site Emergency Rescue Team (ERT) if and as required by law. If additional cost is required for the ERT, then the Contractor will identify the cost and will provide pricing for the ERT(s) in its proposal.

14.19. The Contractor will inform BREC of any hazardous chemicals that will be transported or used on the plant site. Material Safety Data Sheets (MSDS) must be provided to the Safety Training Coordinator prior to use on the plant site and must be available at all times while on the plant site.

14.20. Contractor will be responsible to repair/reimburse BREC for property damaged by Contractor while performing work or traveling on the plant site.

14.21. The Contractor will utilize all of the information presented in this document to be fully prepared to begin work at the specified commencement date and time. The Contractor will ensure that a copy of this document has been reviewed by and is in the possession of the on-site superintendent.

14.22. The Contractor will ensure that all instructions and emergency warnings can be effectively and immediately communicated to all employees. Unless otherwise instructed Big Rivers requires that one (1) interpreter be provided for every eight (8) non-English speaking employees.

14.23. The Contractor will provide all necessary personnel protective equipment for each of its employees along with documentation of proper training in the use of said equipment.

14.23.1. High visibility safety apparel shall be worn at a minimum any time an employee or contract employee is exposed to increased risks of moving traffic or equipment. This includes public or private roadways or property. If a supervisor believes that high visibility apparel should be worn in additional situations, he/she may direct his/her employees to do so. This apparel shall include, at a minimum, a vest or shirt.

14.23.2. High visibility apparel must meet or exceed ANSI standard 107-2004 (or any subsequent revisions) and be worn as the outermost garment. Further, high visibility apparel must meet the following specifications:

14.23.3. High visibility apparel must be ANSI standard 107-2004 Class II (2) compliant using reflective striping material (including vests, shirts, or jackets).

14.23.4. Clothing provided by BREC may not be altered without management approval.

14.23.5. High visibility apparel must fit and be worn properly and should be inspected regularly for wear, damage, fading, or other deterioration which effects visibility and reflectivity (vests shall be worn closed in front at all times). Defective garments shall not be worn.

14.23.6. Specific examples of tasks that will require high visibility safety apparel to be worn include:

14.23.7. Working on foot near moving vehicles or equipment.

14.23.8. Any task being performed on a roadway or highway right-of-way.

14.23.9. Any task that may create exposure to the general traveling public.

14.23.10. Any task that is performed in a work zone (an area where construction, maintenance, traffic control, or other utility work activities take place on or near a private or public roadway).

14.23.11. Inspection, supervision, or oversight of work being performed in a work zone.

14.23.12. Operating mobile equipment such as backhoes, loaders, mowers and forklifts (includes mobilizing equipment to and from a work site) if the operator exits from such equipment within or near a private or public roadway.

14.23.12.1. When operation of such equipment takes place at an isolated work site with no other equipment or vehicles simultaneously in operation and no exposure to roadways or potential vehicular traffic, such as a farm field, it is not necessary for the operator to wear high visibility safety apparel.

14.23.12.2. An employee is not required to wear high visibility safety apparel while working within the confines of a bucket on an aerial device.

14.23.13. Flagging

14.23.14. This document does not require high visibility safety apparel to be worn when an individual is simply walking to or from their parked vehicle after exiting or entering a building or other facility.

14.24. The Contractor will protect its own employees and its Sub-contractors' employees and be responsible for their work until the Big Rivers' acceptance of the entire

project, and to protect Big Rivers' facilities, property, employees and third parties from damage or injury.

14.25. The Contractor will provide for the safety and protection of existing property. Any damage to existing facilities resulting from construction operations will be reported immediately to Big Rivers thereof and promptly repaired or replaced by the Contractor.

14.26. No person will perform any of the Work while under the influence of drugs or alcohol. No alcohol may be consumed within four (4) hours of the start of any person's performance of the Work or anytime during the workday. A person will be deemed under the influence of alcohol if a level of .02 percent blood alcohol or greater is found. In addition to the requirements of the drug testing program, as set forth in Company's rules and regulations, all persons who will perform any of the Work will be subject to drug and alcohol testing under either of the following circumstances: (i) where the person's performance either contributed to an accident or cannot be completely discounted as a contributing factor to an accident which involves off-site medical treatment of any person; and (ii) where Company determines in its sole discretion that there is reasonable cause to believe such person is using drugs or alcohol or may otherwise be unfit for duty. Such persons will not be permitted to perform any Work until the test results are established. Contractor shall be solely responsible for administering and conducting drug and alcohol testing, as set forth herein, at Contractor's sole expense. As applicable and in addition to any other requirements under this Agreement, Contractor shall develop and strictly comply with any and all drug testing requirements as required by applicable Laws or Regulations.

14.27. Contractor's employees working on-site shall be required to complete a negative drug and alcohol pre-test within seven (7) days before reporting to work on-site at Big Rivers. The Contractor shall conduct random drug and alcohol testing on ten percent (10%) of their on-site workforce assigned to Big Rivers within thirty (30) days of the start of Work. The Contractor shall subsequently test ten percent (10%) of their on-site workforce assigned to Big Rivers on an on-going monthly basis for the duration of this outage. Big Rivers Corporate Health and Safety will be auditing Contractor compliance with these requirements. Testing costs are the responsibility of the Contractor. Testing should be conducted using a licensed health care facility or FDA-approved testing device [consisting of, at a minimum, a 10 panel drug test (including Amphetamines, Barbiturates, Benzodiazepines, Cannabinoids, Cocaine, Methaqualone, Opiate, Phencyclidine, Methadone, and Propoxyphene)] suitable for on-site testing and under the supervision of a certified Medical Review Officer. The Contractor is responsible for all testing and administrative costs associated with the random drug and alcohol testing requirement however, it is anticipated that any employee's time away from the job for random testing will occur during regularly scheduled work hours paid by Big Rivers. The confidentiality of individual test results for your employees should be maintained according to all applicable regulations. Big Rivers Corporate Health and Safety will randomly audit contractor testing programs to ensure requirements are met.

14.28. The Contractor will comply with the latest or amended version of the followings standards and codes, and with any and all other standards and codes that may be applicable:

14.28.1. National Fire Protection Association (NFPA)
14.28.2. National Electrical Code (NEC)
14.28.3. National Electrical Manufacturers Association (NEMA)
14.28.4. Electrical Apparatus Service Association (EASA)
14.28.5. International Electrical Testing Association (NETA)
14.28.6. Factory Mutual (FM)
14.28.7. Institute of Electric and Electronics Engineers (IEEE)
14.28.8. American Society of Mechanical Engineers (ASME)
14.28.9. American Society of Testing and Materials (ASTM)

14.29. The Contractor will notify the designated Big Rivers proponent upon completion of each phase of the work.

14.30. The Contractor will ensure that all discarded material and trash removed from the site or placed in an approved dumpster.

14.31. The Contractor will not discharge petroleum products anywhere on the plant site. Fuel, lubrication products and any other liquid consumables stored on-site will be in an appropriate tank or container with proper labeling. Use of the proper container and the Big Rivers' approval of such containers in no way releases the Contractor from its responsibility to clean up any spills, discharges, or other releases.

14.32. During the project, unanticipated repair needs may be encountered. If such needs are discovered during the project, they will be communicated to the designated Big Rivers representative by the Contractor's on-site supervisor as soon as possible.

14.32.1. The Contractor will obtain sufficient information to present a firm dollar quote for any emerging work for this project.

14.32.2. No additional work will be performed until the Contractor has been given written authorization to proceed by the Big Rivers.

14.33. The Contractor will exercise care in the protection of materials and equipment furnished under this Contract.

14.34. The Contractor will provide for the safety and protection of existing property. Any damage to existing facilities resulting from construction operations will be reported immediately to Big Rivers thereof and promptly repaired or replaced by the Contractor.

14.35. The Contractor will warrant to Big Rivers that all work will be in accordance with this Specification and will be free from defects in material and workmanship. Prompt notice of all defects will be given to the Contractor. All defective work, whether or not in place, may be rejected, corrected or accepted by Big Rivers. If Contractor does not promptly comply, or in an emergency where delay would cause serious risk of loss or damage, Big Rivers may, upon written notice to the Contractor, have the defective work corrected or the rejected work removed and replaced, and all direct costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) will be paid by Contractor.

15. Site Supervision

15.1. The Contractor will designate an on-site contact person with the authority to make decisions, correct problems and generally oversee the Contractor's operations. In the event the contact person is absent from the job site, an alternate contact person with full will be available onsite during all activities relating to this project.

15.1.1. There will be a designated Big Rivers representative on site, during day shift, to coordinate work schedules, safety issues, etc.

15.2. The Contractor will provide in writing the name and phone number (office, home, pager and mobile as applicable) of the contact person and the alternate contact person(s) prior to the start of work hereunder and within one working day of any changes in the previously designated contact person.

15.3. To the extent possible, the on-site contact person will be the same from week to week to ensure job continuity.

15.4. The Contractor will provide after hours, emergency 24-hour per day contact list. The list will be prioritized as to the order that should be followed in notifying the Contractor.

16. Engineers Specification

16.1. Please refer to Appendix J: Burns and McDonnell Project Number 132721 for specification details.

17. Notices

17.1. Any notice, request, or approval or other document required or permitted to be given under this contract will be in writing unless otherwise provided herein and will be deemed to have been sufficiently given if delivered in person, transmitted by fax followed by a hard copy, dispatched in the U.S. mails, postage prepaid for mailing by certified or registered mail, return receipt requested, or dispatched for delivery by other courier service providing a return receipt, addressed as follows:

17.2. If to Big Rivers, addressed to:

Big Rivers Electric Corporation
RD Green Station
Robards, KY 42452
Attention: Procurement
Phone: 270-844-5963
Cell [redacted]

17.3. If to Contractor, addressed to:

_____

_____

APPENDIX A

Big Rivers Electric Corporation
Submittal Form
RFQ #G-22-105

PROPOSAL

The Bidder agrees to perform the all work described in this specification and other attached documents for the following firm lump sum price:

	Labor	Equipment	Materials	
Base Bid (as per Spec)	$	$	$	
Total Lump Sum Price				**$**

☐ **TIME AND MATERIALS RATE SHEET ATTACHED**

☐ **ADDENDA ACCEPTANCE** (ATTACHED)

☐ **EXCEPTIONS & CLARIFICATIONS (**ATTACHED)

☐

☐ TAXES NOT APPLIED

Included	Previously Submitted	
☐	☐	**General Services Agreement**
☐	☐	**Contractor Safety Credentials Assessment Program Forms**
☐	☐	**Equal Opportunity, Debarment, & Lobbying Forms**
☐	☐	**Vendor Information & W-9 Forms**

Company Name _____ Printed Name _____ Signature _____ Date _____

Bidder:

BREC - Green Ash Pond Closure
Construction Price Breakdown

ITEM DESCRIPTION	QUANTITIES Qty	UM	Total Direct Labor Manhours	Total Labor $	Subcontract $	Equipment $	Contractor Total Matl $	Total Cost $	REMARKS
1.00 Site Preparation									
Strip Topsoil & Stockpile on Site		AC							
Clearing & Grubbing of Vegetation		AC							
Demolition		LS							
1.01 Dewatering/Unwatering									
Process Water Management		LS							
Stormwater Management		LS							
Unwatering		MO							
Well Installation		EA							
Water Treatment Mobilization		LS							
Water Treatment		MO							
1.02 Ash Removal									
CCR Excavation and Haul to Landfill		CY							
CCR Placement in Landfill		CY							
12" Native Material Excavation and Haul to Landfill		CY							
12" Native Material Placement in Landfill		CY							
Uncontaminated Material Excavation and Haul to Stockpile		CY							
1.03 Surfacing									
Erosion & Sediment Control Installation		LS							
Erosion & Sediment Control Management		MO							
Rip Rap		TN							
Crushed Rock Road		TN							
Hydroseeding		AC							
Schedule of Adjustment Unit Prices									
Indirect Costs									
Mobilization/Demobilization		LS							
Initial Construction Survey		LS							
Construction Management		LS							
Safety & Security		LS							
P&P Bond Premiums		LS							
Permits		LS							
TOTAL PROPOSAL PRICE									

Abbreviations:
AC: Acre
CY: Cubic Yard
EA: Each
LB: Pounds
LF: Linear Feet
LS: Lump Sum
MH: Man Hour
SF: Square Foot
SY: Square Yards
TN: Ton

Case No. 2019-00435
Filed October 18, 2022

Appendix B

BID CLARIFICATIONS AND/OR EXCEPTIONS

Bidder offers the following clarifications and/or exceptions taken to any requirement or provision of this Request For Quotation and any proposed modifications or replacement language for each clarification or exception (If none, so state).

Bidder understands that unless itemized above, no other clarifications or exceptions to this Request for Quotation are taken by the Bidder.

_____

Bidder

_____

Signature of Executing Party

Appendix C

Big Rivers Electric Corporation
General Services Agreement

This General Services Agreement (this "General Services Agreement") is made this _____day of _____, 20_____ by and between Big Rivers Electric Corporation ("Company") and _____ ("Contractor"), a_____(list state o f entity's organization and entity type, such as "Kentucky corporation" or "Kentucky limited liability company", etc.).

WHEREAS, Contractor desires the opportunity to provide goods and/or services to Big Rivers Electric Corporation from time to time, and Big Rivers Electric Corporation desire the opportunity to engage Contractor to provide such goods and/or services; and

WHEREAS, the parties intend that this General Services Agreement sets forth the exclusive set of terms and conditions which shall govern the performance of the "Work" (as defined below) by Contractor for the Company should the Company engage Contractor to provide Work.

NOW THEREFORE, in consideration of the premises, the mutual covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties do agree as follows:

ARTICLE 1 DEFINITIONS

1.1 **Agreement:** "Agreement" shall mean this General Services Agreement, along with any "Specifications, (as defined below) and/or Purchase Order (as defined below) issued by Company and/or ", etc. any other documentation as may be executed by the parties in accordance with Article 2, and/or other agreed collateral document pursuant to which the Work is to be performed.

1.2 **Applicable Laws:** "Applicable Laws" shall mean any and all applicable federal, state, or local laws, regulations, codes, ordinances, administrative rules, court orders, permits or executive orders.

1.3 **Contract Price:** "Contract Price" shall mean the aggregate of the particular consideration set forth in one or more Purchase Orders or other Statements of Work or as otherwise agreed upon. Unless otherwise agreed in writing, the Contract Price includes all applicable taxes, duties, fees, and assessments of any nature, including without limitation all sales and use taxes, due to any governmental authority with respect to the Work.

1.4 **Contractor:** "Contractor" shall mean the entity designated as the "Contractor" in the opening paragraph of this Agreement.

1.5 **Company:** "Company" shall mean Big Rivers Electric Corporation

1.6 **Purchase Order:** "Purchase Order" shall mean the numerically controlled, principle contract document that incorporates, by reference, the agreed-to scope of Work and/or Specification; all exhibits of the scope of Work and/or Specification; any mutually agreed-to amendments to the Purchase Order, Work, or Specification; and any mutually agreed-to change orders to the Purchase Order, Work, or Specification. Company may, at its discretion, issue its "Purchase Order Standard Terms and Conditions" (collectively referred to as a "Purchase Order") that may supplement, but in no way or manner ever supersede, this Agreement with respect to any conflicting terms and conditions.

1.7 **Specifications:** "Specifications" shall mean any specifications, instructions, drawings, schedules, a Purchase Order, contracts, scopes of work, and/or statements of work.

1.8 **Work: "**Work" shall include those services and/or goods set forth in this Agreement.

1.9 **Tools and Equipment:** "Tools and Equipment" shall mean any tools, equipment, rigging and other general supplies on the Company's premises where the Work is being performed that is either owned and/or leased by Company or by any of its Affiliates.

ARTICLE 2 SCOPE; BINDING EFFECT

Unless otherwise agreed in a writing executed by each of the parties which evidences a clear intention to supersede this Agreement, the parties intend that this Agreement apply to all transactions which may occur between the Company on one hand and Contractor on the other hand during the term of this Agreement and which are related to the provision of goods and/or services by Contractor for the benefit of the Company. Neither the Company makes any commitment to Contractor as to the exclusiveness of this relationship or as to the volume, if any, of business the Company will do with Contractor. The parties do, however, anticipate that the parties will agree from time to time for the performance of Work by Contractor. Such agreement for the provision of Work shall be reflected by (a) each of the parties executing a mutually acceptable Statement of Work under this Agreement or (b) Company providing a Purchase Order or other Statement of Work to Contractor and Contractor accepting such Purchase Order or other Statement of Work (including by commencing performance pursuant to such Purchase Order or other Statement of Work). In the event Company provides a Purchase Order or other Statement of Work to Contractor and Contractor commences performance, unless such Purchase Order or other Statement of Work expressly provides otherwise, Contractor hereby agrees to the formation of a binding agreement as described in the Purchase Order or other Statement of Work upon Contractor's commencement of performance, waives any argument that it might otherwise have under Applicable Laws that the Purchase Order should have been

executed by each of the parties to be enforceable and further agrees to not contest the enforceability of such Purchase Order or other Statement of Work on those grounds, and agrees to not contest the admissibility of Company's records related to such Purchase Order or other Statement of Work that are kept in the ordinary course by Company. In addition, in no event shall the terms and conditions of any proposal, Purchase Order or other Statement of Work, acknowledgement, invoice, or other document unilaterally issued by Contractor be binding upon Company without Company's explicit written acceptance thereof. Any Work performed by Contractor without Company's binding commitment for such Work either via a duly executed or accepted Purchase Order or other Statement of Work under this Agreement shall be at Contractor's sole risk and expense, and Company shall have no obligation to pay for any such Work.

ARTICLE 3 CONDITIONS AND RISKS OF WORK; LABOR HARMONY

Unless the applicable Statement of Work expressly provides otherwise, Contractor agrees that before beginning any Work Contractor shall carefully examine all conditions relevant to such Work and its surroundings, and, unless Contractor notifies Company in writing that it will not perform the Work under such conditions, Contractor shall assume the risk of such conditions and shall, regardless of such conditions, the expense, or difficulty of performing the Work, fully complete the Work for the stated Contract Price applicable to such Work without further recourse to Company. Without limiting the foregoing, Contractor specifically recognizes that Company and other parties may be working concurrently at the site. Information on the site of the Work and local conditions at such site furnished by Company in specifications, drawings, or otherwise is made without representation or warranty of any nature by Company, is not guaranteed by Company, and is furnished solely for the convenience of Contractor. All drawings and other documents, if any, required to be submitted to Company for review shall be submitted in accordance with the mutually agreed to schedule, and, if no schedule applies, such drawings or other documents shall be submitted by Contractor without unreasonable delay. No Work affected by such drawings and other documents shall be started until Contractor is authorized to do so by Company. In case of a conflict between or within instructions, specifications, drawings, schedules, Purchase Order(s) and/or other Statements of Work, Company shall resolve such conflict; and Company's resolution shall be binding on Contractor. Contractor agrees that all labor employed by Contractor, its agents, or subcontractors for Work on the premises of Company shall be in harmony with all other labor being used by Company or other contractors working on Company's premises. Contractor agrees to give Company immediate notice of any threatened or actual labor dispute and will provide assistance as determined necessary by Company to resolve any such dispute. Contractor, its agents, or subcontractors shall remove from Company's premises any person objected to by Company in association with the Work.

ARTICLE 4 COMPANY CHANGES IN WORK

The scope of and conditions applicable to the Work shall be subject to changes by Company from time to time. Such changes shall only be enforceable if documented in a writing executed by Company. Except as otherwise specifically set forth in this Agreement, changes in the scope of or conditions applicable to the Work may result in adjustments in the Contract Price and/or the Work schedule in accordance with this Article 4. If Contractor believes that adjustment of the Contract Price or the Work schedule is justified, whether as a result of a change made pursuant to this Article or as a result of any other circumstance, then Contractor shall (a) give Company written notice of its claim within five (5) business days after receipt of notice of such change or the occurrence of such circumstances and (b) shall supply a written statement supporting Contractor's claim within ten (10) business days after receipt of notice of such change or occurrence of such circumstances, which statement shall include Contractor's detailed estimate of the effect on the Contract Price and/or the Work schedule. Contractor agrees to continue performance of the Work during the time any claim hereunder is pending. Company shall not be bound to any adjustments in the Contract Price or the Work schedule unless expressly agreed to by Company in writing. Company will not be liable for, and Contractor waives, any claims of Contractor that Contractor knew or should have known and that were not reported by Contractor in accordance with the provisions of this Article.

ARTICLE 5 FORCE MAJEURE

Neither party shall be liable to the other for any damages for any failure to perform or for any delays or interruptions beyond that party's reasonable control in performing any of its obligations under this Agreement due to acts of God, fires, floods, earthquakes, riots, war, acts of terrorism, civil insurrection, acts of the public enemy, or acts or failures to act of civil or military authority, unless the time to perform is expressly guaranteed. Contractor shall advise Company immediately of any anticipated and actual failure, delay, or interruption and the cause and estimated duration of such event. Any such failure, delay, or interruption, even though existing on the date of this Agreement or on the date of the start of the Work, shall require Contractor to within five (5) days submit a recovery plan detailing the manner in which the failure, delay, or interruption shall be remedied and the revised schedule. Contractor shall diligently proceed with the Work notwithstanding the occurrence thereof. This Article shall apply only to the part of the Work directly affected by the particular failure, delay, or interruption, and shall not apply to the Work as a whole or any other unaffected part thereof.

ARTICLE 6 CONTRACTOR DELAYS

Time is an important and material consideration in the performance of this Agreement by Contractor. Contractor agrees to cooperate with Company in scheduling the Work so that the project and other activities at Company's site will progress with a minimum of delays. Company shall not be responsible for compensating Contractor for any costs of overtime or other premium time work unless Company has provided separate prior written authorization for additional compensation to Contractor, and, if Company provides such written authorization, such additional compensation shall be limited to Contractor's actual cost of the

premium portion of wages, craft fringe benefits, and payroll burdens. Contractor shall be liable for all failures, delays, and interruptions in performing any of its obligations under this Agreement which are not (a) caused by Company and reported in accordance with Article 4, (b) excused by Article 5, or (c) directed by Company pursuant to Article 7. Contractor shall, without adjustment to completion date or Contract Price, be obligated to make up time lost by such failures, delays, or interruptions. Company may suspend payments under this Agreement during the period of any such failure, delay, or interruption.

ARTICLE 7 COMPANY EXTENSIONS

Company shall have the right to extend schedules or suspend the Work, in whole or in part, at any time upon written notice to Contractor (except that in an emergency or in the event that Company identifies any safety concerns, Company may require an immediate suspension upon oral or written notice to Contractor). Contractor shall, upon receipt of such notice, immediately suspend or delay the Work. Contractor shall resume any suspended Work when directed by Company. If Contractor follows the requirements of Article 4, a mutually agreed equitable adjustment to the Contract Price or to the schedules for payments and performance of the remaining Work may be made to reflect Company's extension of schedules or suspension of the Work. Contractor shall provide Company all information Company shall request in connection with determining the amount of such equitable adjustment.

ARTICLE 8 INSPECTING, TESTING, AUDITING, AND USE OF TOOLS AND EQUIPMENT;

8.1 Right of Inspecting and Testing: Company reserves the right, but shall not be obligated, to appoint representatives to follow the progress of the Work with authority to suspend any Work not in compliance with this Agreement. The appointment or absence of an appointment, of such representatives by Company shall not have any effect on warranties. Acceptance or approval by Company's representative shall not be deemed to constitute final acceptance by Company, nor shall Company's inspection relieve Contractor of responsibility for proper performance of the Work. Inspection by Company's representative shall not be deemed to be supervision or direction by Company of Contractor, its agents, servants, or employees, but shall be only for the purpose of attempting to ensure that the Work complies with this Agreement. In the event Contractor fails to provide Company with reasonable facilities and access for inspection when advised, and if in the opinion of Company, it becomes necessary to dismantle the Work for such inspection, then Contractor shall bear the expenses of such dismantling and reassembly.

8.2 Right of Auditing: Contractor shall maintain complete records relating to any cost-based (i.e., Work not covered by firm prices) components of the Work billed under this Agreement or relating to the quantity of units billed under any unit price provisions of this Agreement (all the foregoing hereinafter referred to as "Records") for a minimum of five years following the latest of performance of, delivery to Company of, or payment by Company for, such Work or units. All such Records shall be open to inspection and subject to audit and reproduction during normal working hours, by Company or its authorized representatives to the extent necessary to adequately permit evaluation and verification of any invoices, payments, time sheets, or claims based on Contractor's actual costs incurred in the performance or delivery of Work under this Agreement. For the purpose of evaluating or verifying such actual or claimed costs, Company or its authorized representative shall have access to said Records at any time, including any time after final payment by Company to Contractor pursuant to this Agreement. All non-public information obtained in the course of such audits shall be held in confidence except pursuant to judicial and administrative order. Company or its authorized representative shall have access, during normal working hours, to all necessary Contractor facilities and shall be provided adequate and appropriate workspace to conduct audits in compliance with the provisions of this Article. Company shall give Contractor reasonable notice of intended audits. The rights of Company set forth in this paragraph shall survive the termination or expiration of this Agreement.

8.3 Use of Tools and Equipment: Company, in its sole discretion, may allow Contractor to use Company's Tools and Equipment for the Work and related activities at designated Company locations. Contractor shall indemnify and hold harmless Company and its Affiliates, including their respective officers, directors, shareholders, agents, members and employees (each an "Indemnified Party"), from and against any and all claims, damages, losses or liabilities arising out of, relating to, or in connection with, the use of Company's Tools and Equipment by Contractor, its agents, servants, employees or subcontractors, and will reimburse each Indemnified Party for all expenses (including attorney's fees and expenses) as they are incurred in connection with investigating, preparing or pursuing or defending any action, claim, suit or investigation or proceeding related to, arising out of, or in connection with, the use of Company's Tools and Equipment by Contractor, its agents, servants, employees or subcontractors, whether or not threatened or pending and whether or not any Indemnified Party is a party. Contractor, on behalf of itself or its agents, affiliates, officers and directors, and all of their predecessors, successors, assigns, heirs, executors and administrators, hereby irrevocably release, discharge, waive, relinquish and covenant not to sue, directly, derivatively or otherwise, Company and/or its Affiliates and each of their respective directors, officers, shareholders, members, partners (general or limited), employees and agents (including, without limitation, its financial advisors, counsel, proxy solicitors, information agents, depositories, consultants and public relations representatives) and all of their predecessors, successors, assigns, heirs, executors or administrators, and all persons acting in concert with any such person, with respect to any and all matters, actions causes of action (whether actually asserted or not), suits, damages, claims, or liabilities whatsoever, at law, equity or otherwise, arising out of, relating to, or in connection with the use of Company's Tools and Equipment by Contractor, its agents, servants, employees or subcontractors. Company shall in no event be liable for any claim whatsoever by or through Contractor, its employees, agents and/or subcontractors or by any third party, for any inoperability or failure of the Tools and Equipment to perform as designed or intended, whether such claim is based in warranty, contract, tort (including negligence), strict liability or otherwise and whether for direct, incidental, consequential, special, exemplary or other damages. Contractor shall ensure that its employees, agents, subcontractors or servants shall inspect, exercise the appropriate level of care in

the use, maintenance and repair of the Tools and Equipment, so as to minimize the incidence of casualties and injuries occurring in connection therewith.

ARTICLE 9 COMPLIANCE WITH APPLICABLE LAWS; SAFETY; DRUG AND ALCOHOL TESTING

9.1 Applicable Laws and Safety: Contractor agrees to protect its own and its subcontractors' employees and be responsible for their Work until Company's acceptance of the entire project and to protect Company's facilities, property, employees, and third parties from damage or injury. Contractor shall at all times be solely responsible for complying with all Applicable Laws and facility rules, including without limitation those relating to health and safety, in connection with the Work and for obtaining (but only as approved by Company) all permits and approvals necessary to perform the Work. Without limiting the foregoing, Contractor agrees to strictly abide by and observe all standards of the Occupational Safety & Health Administration (OSHA) which are applicable to the Work being performed now or in the future, as well as Company's Contractor Code of Business Conduct and Company's Contractor/Subcontractor Safety Policy which are both hereby incorporated by reference (Contractor hereby acknowledges receipt of a copy of such Company's Contractor Code of Business Conduct and Company's Contractor/Subcontractor Safety Policy) and any other rules and regulations of the Company, all of which are incorporated herein by reference. Contractor also agrees to be bound to any amendments and/or modifications that may be issued in the future by Company from time to time, with respect to Company's Contractor Code of Business Conduct and/or any of its related policies which are the subject of this Article 9. Contractor shall maintain the Work site in a safe and orderly condition at all times. Company shall have the right but not the obligation to review Contractor's compliance with safety and cleanup measures. In the event Contractor fails to keep the work area clean, Company shall have the right to perform such cleanup on behalf of, at the risk of and at the expense of Contractor. In the event Contractor subcontracts any of the Work, Contractor shall notify Company in writing of the identity of the subcontractor before utilizing the subcontractor. Contractor shall require all of its subcontractors to complete the safety and health questionnaire and checklists provided by Company and shall provide a copy of such documents to Company upon request. Contractor shall conduct, and require its subcontractors to conduct, safety audits and job briefings during performance of the Work. In the event a subcontractor has no procedure for conducting safety audits and job briefings, Contractor shall include the subcontractor in its safety audits and job briefings. All safety audits shall be documented in writing by the Contractor and its subcontractors. Contractor shall provide documentation of any and all audits identifying safety deficiencies and concerns and corrective action taken as a result of such audits to Company semi-monthly.

9.2 Hazards and Training: Contractor shall furnish adequate numbers of trained, qualified, and experienced personnel and appropriate safety and other equipment in first-class condition, suitable for performance of the Work. Such personnel shall be skilled and properly trained to perform the Work and recognize all hazards associated with the Work. Without limiting the foregoing, Contractor shall participate in any safety orientation or other of Company's familiarization initiatives related to safety and shall strictly comply with any monitoring initiatives as determined by Company. Contractor shall accept all equipment, structures, and property of Company as found and acknowledges it has inspected the property, has determined the hazards incident to working thereon or thereabouts, and has adopted suitable precautions and methods for the protection and safety of its employees and the property.

9.3 Drug and Alcohol: No person will perform any of the Work while under the influence of drugs or alcohol. No alcohol may be consumed within four (4) hours of the start of any person's performance of the Work or anytime during the workday. A person will be deemed under the influence of alcohol if a level of 0.02 percent blood alcohol or greater is found. In addition to the requirements of the drug testing program, as set forth in Company's rules and regulations, all persons who will perform any of the Work will be subject to drug and alcohol testing under either of the following circumstances: (i) where the person's performance either contributed to an accident or cannot be completely discounted as a contributing factor to an accident which involves off-site medical treatment of any person; and (ii) where Company determines in its sole discretion that there is reasonable cause to believe such person is using drugs or alcohol or may otherwise be unfit for duty. Such persons will not be permitted to perform any Work until the test results are established. Contractor shall be solely responsible for administering and conducting drug and alcohol testing, as set forth herein, at Contractor's sole expense. As applicable and in addition to any other requirements under this Agreement, Contractor shall develop and strictly comply with any and all drug testing requirements as required by Applicable Laws.

9.4 Drug and Alcohol Testing: Contractor's employees working on-site shall be required to complete a negative drug and alcohol pre-test within seven (7) days before reporting to work on-site at Big Rivers. The Contractor shall conduct random drug and alcohol testing on ten percent (10%) of their on-site workforce assigned to Big Rivers within thirty (30) days of the start of Work. The Contractor shall subsequently test ten percent (10%) of their on-site workforce assigned to Big Rivers on an on-going monthly basis for the duration of the contract or outage. Big Rivers reserves the right to audit the Contractor's compliance with these requirements. Testing costs are the responsibility of the Contractor. Testing should be conducted using a licensed health care facility or FDA-approved testing device consisting of, at a minimum, a 10 panel drug test (including Amphetamines, Barbiturates, Benzodiazepines, Cannabinoids, Cocaine, Methaqualone, Opiate, Phencyclidine, Methadone, and Propoxyphene) suitable for on-site testing and under the supervision of a certified Medical Review Officer. The Contractor is responsible for all testing and administrative costs associated with the random drug and alcohol testing requirement however, it is anticipated that any employee's time away from the job for random testing will occur during regularly scheduled work hours paid by Big Rivers. The confidentiality of individual test results for your employees should be maintained according to all applicable regulations. Big Rivers will randomly audit contractor testing programs to ensure requirements are met.

9.5 Office of Compliance: The Company has an Office of Compliance. Should Contractor have actual knowledge of violations

of any of the herein stated policies of conduct in this Article 9, or have a reasonable basis to believe that such violations will occur in the future, whether by its own employees, agents, representatives or subcontractors, or by another vendor and/or supplier of the Company and its employees, agents, representatives or subcontractors, or by any employee, agent and/or representative of Company, Contractor has an affirmative obligation to immediately report any such known, perceived and/or anticipated violations to the Company's Office.

ARTICLE 10 STATUS OF CONTRACTOR

Company does not reserve any right to control the methods or manner of performance of the Work by Contractor. Contractor, in performing the Work, shall not act as an agent or employee of Company, but shall be and act as an independent contractor and shall be free to perform the Work by such methods and in such manner as Contractor may choose, doing everything necessary to perform such Work properly and safely and having supervision over and responsibility for the safety and actions of its employees and the suitability of its equipment. Contractor's employees and subcontractors shall not be deemed to be employees of Company. Contractor agrees that if any portion of Contractor's Work is subcontracted, all such subcontractors shall be bound by and observe the conditions of this Agreement to the same extent as required of Contractor. In such event, Company strongly encourages the use of Minority Business Enterprises, Women Business Enterprises, and Disadvantaged Business Enterprises, as defined under federal law and as certified by a certifying agency that Company recognizes as proper.

ARTICLE 11 EQUAL EMPLOYMENT OPPORTUNITY

To the extent applicable, Contractor shall comply with all of the following provisions, which are incorporated herein by reference: (i) Equal Opportunity regulations set forth in 41 CFR § 60-1.4(a) and (c), prohibiting employment discrimination against any employee or applicant because of race, color, religion, sex, or national origin; (ii) Vietnam Era Veterans Readjustment Assistance Act regulations set forth in 41 CFR § 60-250.4 relating to the employment and advancement of disabled veterans and Vietnam era veterans; (iii) Rehabilitation Act regulations set forth in 41 CFR § 60-741.4 relating to the employment and advancement of qualified disabled employees and applicants for employment; (iv) the clause known as "Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals" set forth in 15 USC § 637(d)(3); and (v) the subcontracting plan requirement set forth in 15 USC § 637(d).

ARTICLE 12 INDEMNITY BY CONTRACTOR

12.1 Indemnity: Contractor shall be responsible for and shall defend, indemnify, and save harmless Big Rivers Electric Corporation from any and all damage, loss, claim, demand, suit, liability, fine, penalty, or forfeiture of every kind and nature, including, but not limited to, costs and expenses, including professional fees and court costs of defending against the same and payment of any settlement or judgment therefor, by reason of:

a. injuries or deaths to persons,
b. damages to or destruction of real, personal, or intangible properties,
c. violations of any other rights asserted against Big Rivers Electric Corporation, including patents, trademarks, trade names, copyrights, contract rights, and easements, or
d. violations of governmental laws, regulations or orders whether suffered directly by Big Rivers Electric Corporation itself, or indirectly by reason of claims, demands or suits against it, resulting or alleged to have resulted from acts or omissions of Contractor, its employees, agents, business invitees, or other representatives or from their presence on the premises of Big Rivers Electric Corporation, either solely or in occurrence with any alleged joint negligence of Big Rivers Electric Corporation.

Big Rivers Electric Corporation shall be liable for its sole negligence and to the extent of its concurrent negligence. Indemnification of Big Rivers Electric Corporation includes its officers, employees, and agents.

ARTICLE 13 ENVIRONMENTAL

13.1 Control: As required under the OSHA Hazard Communication Standard (29 CFR 1910.1200) and certain other Applicable Laws, Contractor or its subcontractors shall provide Material Safety Data Sheets ("MSDS") covering any hazardous substances and materials furnished under or otherwise associated with the Work under this Agreement. Contractor and its subcontractors shall provide Company with either copies of the applicable MSDS or copies of a document certifying that no MSDS are required under any Applicable Laws in effect at the worksite. **No asbestos or lead containing materials shall be incorporated into any Work performed by Contractor or otherwise left on the Work site without the prior written approval of Company.** Contractor and its subcontractors shall be solely responsible for determining if any chemical or material furnished, used, applied, or stored or Work performed under this Agreement is subject to any Applicable Laws.

13.2 Labeling: Contractor and its subcontractors shall label hazardous substances and materials and train their employees in the safe usage and handling of such substances and materials as required under any Applicable Laws.

13.3 Releases: Contractor and its subcontractors shall be solely responsible for the management of any petroleum or hazardous substances and materials brought onto the Work site and shall prevent the release of petroleum or hazardous substances and materials into the environment. All petroleum or hazardous substances and materials shall be handled and stored according to Contractor's written Spill Prevention Control and Countermeasures Plan or Best Management Practices Plan as defined under the provisions of the Clean Water Act, as amended, if either such Plan must be maintained pursuant to Applicable Laws. Contractor shall provide secondary containment for the storage of petroleum or hazardous substances and materials. The prompt and proper

clean-up of any spills, leaks, or other releases of petroleum or hazardous substances and materials resulting from the performance of the Work under this Agreement and the proper disposal of any residues shall be Contractor's sole responsibility, but Contractor shall give Company immediate notice of any such spills, leaks, or other releases. Contractor shall be solely responsible for the storage, removal, and disposal of any excess or unused quantities of chemicals and materials which Contractor causes to be brought to the Work site.

13.4 Generated Wastes: Unless Company and Contractor expressly agree otherwise in writing, Contractor and its subcontractors shall be solely responsible for any wastes generated in the course of the Work, and Contractor shall handle, store, and dispose of such wastes in accordance with any Applicable Laws.

13.5 Survival: The obligations set forth in this Article shall survive termination or expiration of this Agreement.

ARTICLE 14 INSURANCE

14.1 Contractor's Insurance Obligation: Contractor shall provide and maintain, and shall require any subcontractor to provide and maintain the following insurance (and, except with regard to Workers' Compensation), naming Company as additional insured and waiving rights of subrogation against Company and Company's insurance carrier(s)), and shall submit evidence of such coverage to Company prior to the start of the Work. Seller's liability shall not be limited to its insurance coverage.

14.2 Insurance: Seller shall furnish certificates of insurance, in the name of the Big Rivers Electric Corporation, evidencing insurance coverage of the following types of minimum amounts:

a. Workman's compensation and employer's liability insurance covering all employees who perform any of the obligations under the contract or Purchase Order, in the amounts required by law. If any employer or employee is not subject to the workers compensation laws of the governing state, then insurance shall be obtained voluntarily to provide coverage to the same extent as though the employer or employee were subject to such laws.

b. Comprehensive general liability insurance covering all operation under the contract or Purchase Order: bodily injury - $1,000,000 each occurrence and aggregate; property damage - $1,000,000 each occurrence and aggregate. A combined single limit of $1,000,000 for bodily injury and property damage liability is acceptable. The insurance may be in a policy or policies of insurance. A primary policy and an excess policy including the umbrella or catastrophe form is acceptable. Coverage should include contractual liability, broad form property damage liability, owner's and contractor's protective (independent contractor's) liability, products and completed operations hazard, explosion, collapse, and underground property damage hazard.

c. Automotive liability insurance on all motor vehicles used in conjunction with the contract or Purchase Order, whether owned, non-owned, or hired; bodily injury - $1,000,000 each person and $1,000,000 each occurrence; property damage $1,000,000 each occurrence. A combined single limit of $1,000,000 for bodily injury and property damage liability is acceptable. The insurance may be in a policy or policies of insurance. A primary policy and an excess policy including the umbrella or catastrophe form is acceptable.

Certificates evidencing the insurance coverage's must be furnished before the commencement of work. If any work to be performed under this contract or Purchase Order is sublet, the contractor will be required to furnish proof of insurance from all subcontractors evidencing equal to or better coverage.

14.3 Quality of Insurance Coverage: The above policies to be provided by Contractor shall be written by insurance companies which are both licensed to do business in the state where the Work will be performed and either satisfactory to Company or having a Best Rating of not less than A-. These policies shall not be materially changed or canceled except with thirty (30) days written notice to Company from Contractor and the insurance carrier. Evidence of coverage, notification of cancellation or other changes shall be mailed to: Attn: Director, Supply Chain, Big Rivers Electric Corp., P.O. Box 24, Henderson, KY 42419.

14.4 Implication of Insurance: Company reserves the right to request and receive a summary of coverage of any of the above policies or endorsements; however, Company shall not be obligated to review any of Contractor's certificates of insurance, insurance policies, or endorsements, or to advise Contractor of any deficiencies in such documents. Any receipt of such documents or their review by Company shall not relieve Contractor from or be deemed a waiver of Company's rights to insist on strict fulfillment of Contractor's obligations under this Agreement.

14.5 Other Notices: Contractor shall provide notice of any accidents or claims at the Work site to Company's Manager, Risk Management at Big Rivers Electric Corporation., P.O. Box 24, Henderson, KY 42419 and Company's site authorized representative.

ARTICLE 15 WARRANTIES

Contractor warrants that:

a. the Work will conform to any applicable Specification / Statement of Work; and any materials supplied in connection therewith shall be new, unused, and free from defect;

b. the Work will be suitable for the purposes specified by Company and will conform to each statement, representation, and description made by Contractor to Company;

c. the Work is not and shall not be subject to any encumbrance, lien, security interest, patent, copyright or trademark claims, infringements, or other defects in title; and

d. any labor or services performed pursuant to this Agreement shall be performed in a competent, diligent, and timely manner in accordance with the highest professionally accepted standards.

Contractor shall respond in writing to any warranty claim by Company within five (5) business days of the delivery of notice

of such claim to Contractor.

ARTICLE 16 OWNERSHIP OF INTELLECTUAL PROPERTY; PATENTS

16.1 Ownership: All inventions, discoveries, processes, methods, designs, drawings, blueprints, information, software, works of authorship and know-how, or the like, whether or not patentable or copyrightable (collectively, "Intellectual Property"), which Contractor conceives, develops, or begins to develop, either alone or in conjunction with Company or others, in connection with the Work, shall be "work made for hire" and the sole and exclusive property of Company. Upon request, Contractor shall promptly execute all applications, assignments, and other documents that Company shall deem necessary to apply for and obtain letters patent of the United States and/or copyright registration for the Intellectual Property and in order to evidence Company's sole ownership thereof.

16.2 Royalties and License Fees: Contractor shall pay all royalties and license fees which may be payable on account of the Work or any part thereof. In case any part of the Work is held in any suit to constitute infringement and its use is enjoined, Contractor within a reasonable time shall, at the election of Company and in addition to Contractor's obligations under Article 12, either (a) secure for Company the perpetual right to continue the use of such part of the Work by procuring for Company a royalty-free license or such other permission as will enable Contractor to secure the suspension of any injunction, or (b) replace at Contractor's own expense such part of the Work with a non-infringing part or modify it so that it becomes non-infringing (in either case with changes in functionality that are acceptable to Company).

ARTICLE 17 RELEASE OF LIENS

Contractor hereby releases for itself and its successors in interest, and for all subcontractors and their successors in interest, any and all claim or right of mechanics or any other type lien upon Company's or any other party's property, the Work, or any part thereof as a result of performing the Work. Contractor shall execute and deliver to Company such documents as may be required by Applicable Laws to make this release effective and shall give all required notices to subcontractors with respect to ensuring the effectiveness of the foregoing release against those parties. Contractor shall secure the removal of any lien that Contractor has agreed to release in this Article within five (5) working days of receipt of written notice from Company to remove such lien. If not timely removed, Company may remove the lien and charge all costs and expenses to Contractor, including without limitation costs of bonding off such lien.

ARTICLE 18 ASSIGNMENT OF AGREEMENT; SUBCONTRACTING

Upon prior written notice given to Company, Contractor shall not, by operation of law or otherwise, assign and/or subcontract any part of the Work or this Agreement without Company's prior written approval. Such approval, if given by Company, shall not relieve Contractor from full responsibility for the fulfillment of any and all obligations under this Agreement. Under any and all circumstances, any permitted assignee of Contractor, whether or not such assignee shall be a division, subsidiary and/or affiliate entity of Contractor, shall also be fully bound by the terms of this Agreement and, furthermore, upon request by Company, each of Contractor and its permitted assignee shall provide sufficient financial information, as determined by Company in its sole discretion, necessary to validate such assignee's credit worthiness and ability to perform under this Agreement.

ARTICLE 19 INVOICES AND EFFECT OF PAYMENTS

19.1 Invoices: Within a reasonable period of time following the end of each calendar month or other agreed period, Contractor shall submit an invoice to Company that complies with this Article. Payments shall be made within thirty (30) days of Company's receipt of Contractor's proper invoice, and, in the event that Company's payment is overdue, Contractor shall promptly provide Company with a notice that such payment is overdue. Contractor's invoices shall designate the Company location which is the responsible party. Such invoices shall reference the contract / Purchase Order number and shall also show labor, material, taxes paid (including without limitation sales and use taxes, duties, fees, and other assessments imposed by governmental authorities), freight, and all other charges (including without limitation equipment rental) as separate items. All invoices shall be submitted with supporting documentation and in acceptable form and quality to Company's authorized representative. Should Company dispute any invoice for any reason, payment on such invoice shall be made within thirty (30) days of the dispute resolution. Payment of the invoice shall not release Contractor from any of its obligations hereunder, including but not limited to its warranty and indemnity obligations. Invoices shall not be delivered with goods, unless expressly authorized by the Company, but all correspondence and packages related to this Agreement shall reference the Purchase Order / contract number assigned by Company.

19.2 Surcharges: All charges must be pre-approved and referenced within the purchase order or contract. Unapproved charges will not be accepted and will cause the invoice to be rejected and returned. This includes, but is not limited to, surcharges, packing charges, core charges, deposits, and/or any other added costs.

19.3 Taxes: Do not bill Kentucky Sales Tax: Taxes: Do not bill Kentucky Sales Tax: Blanket Direct Pay Authorization Permit maintained under 103 KAR 31:030, Permit # 108814, for the various company locations. Company will determine its tax obligation and pay the tax directly to the Commonwealth of Kentucky Department of Revenue. Example applications of the permit are as follows:

a. Contractor: A contractor discussed in this section is defined as an entity that does not maintain a retail or resale certificate and does not have the ability to collect sales or use tax. The permit has no "pass-through" rights to Contractor's suppliers. Any sales or use tax requirements held by the Contractor shall be paid by the Contractor as part of the Contact. A Contractor shall list the work provided on the invoice as a single cost. The permit is non-applicable in this case.

b. Contractor/Retailer or Retailer: A contractor/retailer or retailer discussed in this section is defined as an entity that maintains a retail or resale certificate or has the ability to collect sales or use tax. Tax obligations due to materials provided to Big Rivers under the contract shall not be included on the invoice. Big Rivers will pay its tax obligation directly to the Commonwealth of Kentucky under KAR 31:030 by Permit #108814. A contractor/retailer shall list amounts for materials and labor/services separately on the invoice.

19.4 Billing of Additional Work: All claims for payments of additions to the Purchase Order / Contract Price shall be shown on separate Contractor's invoices and must refer to the specific change order or written authorization issued by Company as a condition to being considered for payment.

19.5 Effect of Payments/Offset: No payments shall be considered as evidence of the performance of or acceptance of the Work, either in whole or in part, and all payments are subject to deduction for loss, damage, costs, or expenses for which Contractor may be liable under any Purchase Order or set-off hereunder. Company, without waiver or limitation of any rights or remedies of Company, shall be entitled from time to time to deduct from any and all amounts owing by Company to Contractor in connection with this Agreement or any other contract with Company any and all amounts owed by Contractor to Company in connection with this Agreement or any other contract with Company.

19.6 Evidence of Payment to Subcontractors: Contractor shall, if requested by Company, furnish Company with a certificate showing names of Contractor's suppliers and subcontractors hereunder, and certifying to Company that said suppliers and subcontractors have been paid in full.

ARTICLE 20 ROUTING OF SHIPMENTS

Company shall have the option of specifying the routing of shipments. If freight is included in the Contract Price, and such specified routing increases Contractor's shipping costs, Contractor shall immediately so notify Company, and should Company still specify the more expensive routing, then Company shall reimburse Contractor for the increase actually incurred thereby.

ARTICLE 21 TERM AND TERMINATION

21.1 Term: This Agreement shall commence on the date set forth above and shall survive in full force and effect until terminated as set forth below. A termination under this Article 21 based on certain Work shall only apply to the Statement of Work that covers such Work. Any Statements of Work that do not relate to such Work shall not be affected by such a termination.

21.2 Termination for Contractor's Breach: If the Work to be done under this Agreement shall be abandoned by Contractor, if this Agreement or any portion thereof shall be assigned by operation of law or otherwise, if the Work or any portion thereof is sublet by Contractor without the permission of Company, if Contractor is placed in bankruptcy, or if a receiver be appointed for its properties, if Contractor shall make an assignment for the benefit of creditors, if at any time the necessary progress of Work is not being maintained, or if Contractor is violating any of the conditions or agreements of this Agreement, or has executed this Agreement in bad faith, Company may, without prejudice to any other rights or remedies it may have as a result thereof, notify Contractor to discontinue any or all of the Work and terminate this Agreement in whole or part. In the event that Section 365(a) of the Bankruptcy Code or some successor law gives Contractor as debtor-in-possession the right to either accept or reject this Agreement, then Contractor agrees to file an appropriate motion with the Bankruptcy Court to either accept or reject this Agreement within twenty (20) days of the entry of the Order for Relief in the bankruptcy proceeding. Contractor and Company acknowledge and agree that said twenty (20) day period is reasonable under the circumstances. Contractor and Company also agree that if Company has not received notice that Contractor has filed a motion with the Bankruptcy Court to accept or reject this Agreement within said twenty (20) day period, then Company may file a motion with the Bankruptcy Court asking that this Agreement be accepted or rejected, and Contractor shall not oppose such motion.

21.3 Effect of Termination for Contractor's Breach: From the effective date of such termination notice, Contractor shall vacate the site, whereupon Company shall have the right but not the obligation to take possession of the Work wherever located, and Contractor shall cooperate with Company and cause Contractor's subcontractors to cooperate with Company so that Company can effect such possession. In obtaining replacement services, Company shall not be required to request multiple bids or obtain the lowest figures for completing the Work and may make such expenditures as shall best accomplish such completion and are reasonable given the circumstances. The expenses of completing the Work in excess of the unpaid portion of the Contract Price, together with any damages suffered by Company, shall be paid by Contractor, and Company shall have the right to set off such amounts from amounts due to Contractor.

21.4 Termination for Company's Convenience: Company may terminate this Agreement or one or more Statements of Work in whole or in part for its own convenience by thirty (30) days written notice at any time. In such event, Company shall pay Contractor all direct labor and material costs incurred on the Work that is subject to such Termination prior to such notice, plus any reasonable unavoidable cancellation costs which Contractor may incur as a result of such termination, plus indirect costs or overhead on the portion of the Work completed, computed in accordance with generally accepted accounting principles less salvage value. As an alternative to salvage value reduction, Company shall have the right in its sole discretion to take possession of all or part of the Work.

ARTICLE 22 PUBLICITY

Contractor shall not issue news releases, publicize, or issue advertising pertaining to the Work or this Agreement without first obtaining the written approval of Company.

ARTICLE 23 CONFIDENTIAL INFORMATION

All information relating to the Work or the business of Company, including, but not limited to, drawings and specifications relating to the Work, and customer information, shall be held in confidence by Contractor and shall not be used by Contractor for any purpose other than for the performance of the Work or as authorized in writing by Company. In the event that the Contractor assigns the work to one or more subcontractors, a signed confidentiality agreement between the Contractor and each subcontractor(s) will be provided to the Company prior to the provision of any information described in the immediately preceding sentence or the performance of any Work by the subcontractor. All drawings, specifications, or documents furnished by Company to Contractor or developed in connection with the Work shall either be destroyed or returned to Company (including any copies thereof) upon request at any time**.**

ARTICLE 24 MISCELLANEOUS

24.1 Waiver: No waiver by Company of any provision herein or of a breach of any provision shall constitute a waiver of any other breach or of any other provision.

24.2 Headings: The headings of Articles, Sections, paragraphs, and other parts of this Agreement are for convenience only and do not define, limit, or construe the contents thereof.

24.3 Severability: If any provision of this Agreement shall be held invalid under law, such invalidity shall not affect any other provision or provisions hereof which are otherwise valid.

24.4 State Law Governing Agreement: This Agreement shall be governed by, and construed in accordance with, the laws of the Commonwealth of Kentucky, without regard to its principles of conflicts of laws.

24.5 Enforcement of Rights: Company shall have the right to recover from Contractor all expenses, including but not limited to fees for and expenses of inside or outside counsel hired by Company, arising out of Contractor's breach of this Agreement or any other action by Company to enforce or defend Company's rights hereunder.

24.6 No Third Party Beneficiaries: Except for Contractor and Company, there are no intended third party beneficiaries of this Agreement and none may rely on this Agreement in making a claim against Company.

24.7 Notices: All notices and communications respecting this Agreement shall be in writing, shall be identified by the contract number, and shall be addressed as follows (which address either party may change upon five (5) days prior notice to the other party).

To Company:	**To Contractor:**
Big Rivers Electric Corp.	
Attn: Director, Supply Chain	
P.O. Box 24	
Henderson, Kentucky 42419	

IN WITNESS WHEREOF, the parties have entered into this Agreement on the date set forth in the introductory paragraph of this Agreement.

COMPANY:	**CONTRACTOR**
Big Rivers Electric Corp.	
Name (Please Print)	*Name (Please Print)*
Title	*Title*
Signature	*Signature*
Date	*Date*

Appendix D

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EQUAL OPPORTUNITY ADDENDUM

To Be Inserted in Construction Contracts and
Subcontracts, and Materials Contracts and Purchase Orders

PART I

The Contractor represents that:

It has☐ does not have☐, 100 or more employees, and if it has, that

It has☐, has not☐, furnished the Equal Employment Opportunity -- Employers Information Report EEO-l. Standard Form 100, required of employers with 100 or more employees pursuant to Executive Order 11246 and Title VII of the Civil Rights Act of 1964.

The Contractor agrees that it will obtain, prior to the award of any subcontract for more than $10,000 hereunder to a subcontractor with 100 or more employees, a statement, signed by the proposed subcontractor, that the proposed subcontractor has filed a current report on Standard Form 100.

The Contractor agrees that if -it has 100 or more employees and has not submitted **a** report on Standard Form 100 for the current reporting year and that if this contract will amount to more than $10,000, the Contractor will file such report, as required by law, and notify the Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

PART 11

CERTIFICATION OF NONSEGREGATED FACILITIES

The Contractor certifies that it does not maintain or provide for its employees any segregated facilities at any of its -establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Contractor certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Contractor agrees that a breach of this certification is a. violation of the Equal Opportunity Clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest-rooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or. are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Contractor agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

PART III

EQUAL OPPORTUNITY CLAUSE

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race,

color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.

(5) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24. 1965- and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records and accounts by the administering agency and the Secretary of Labor for purposes of investi - gation to ascertain compliance with such rules, regulations and orders.

(6) In the event of the Contractor's noncompliance with- the nondiscrimination clauses of this contract or with any of the said rules regulations or orders, this contract may be canceled, terminated or suspended in whole- or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized.in Executive Order 11,246 of September 24, 1965, and such ocher sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such. provisions will be binding upon each subcontractor cc vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

The term "Contractor" shall also mean "Bidder" or " Seller" in case of materials and equipment contracts and purchase orders. and "Subcontractor" in the case of subcontracts.

The provisions of this addendum are not applicable to any. contract or subcontract not exceeding $10,000.

This addendum supersedes the similar representations and provisions which may be contained in the contract form to which this addendum is attached. The Contractor may disregard the superseded representations and provisions.

_____
CONTRACTOR

By _____

_____
TITLE

_____
DATE

RUS FORM 270 REV 7-70

Appendix E

U.S. DEPARTMENT OF AGRICULTURE

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION - LOWER TIER COVERED TRANSACTIONS

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency with which this transaction originated.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

(1) The prospective lower tier participant certifies, by submission of this proposal, that neither it not its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Organization Name | PR/Award Number or Project Name

Name(s) and Title(s) of Authorized Representative(s)

Signature(s) | Date

Form AD-1048 (1/92)

Instructions for Certification

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out on the reverse side in accordance with these instructions.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later than determined that the prospective lower tier participant knowingly
rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms "covered transactions," debarred," "suspended," "ineligible,", "lower tier covered transactions," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Form AD-1048

Appendix F

UNITED STATES DEPARTMENT OF AGRICULTURE

NOTICE TO APPLICANTS - CERTIFICATION/DISCLOSURE REQUIREMENTS RELATED TO LOBBYING

Section 319 of Public Law 101-121 (31 U.S.C.), signed into law on October 23, 1989, imposes new prohibitions and requirements for disclosure and certification related to lobbying on recipients of Federal contracts, grants, cooperative agreements, and loans. Certain provisions of the law also apply to Federal commitments for loan guarantees and insurance; however, it provides exemptions for Indian tribes and tribal organizations.

Effective December 23, 1989, current and prospective recipients (and their subtier contractors and/or subgrantees) will be prohibited from using Federal funds, other than profits from a Federal contract, for lobbying Congress or any Federal agency in connection with the award of a particular contract, grant, cooperative agreement or loan. In addition, for each award action in excess of $100,000 (or $150,000 for loans) on or after December 23, 1989, the law requires recipients and their subtier contractors and/or subgrantees to: (1) certify that they have neither used nor will use any appropriated funds for payment to lobbyists; (2) disclose the name, address, payment details, and purpose of any agreements with lobbyists whom recipients or their subtier contractors or subgrantees will pay with profits or **nonappropriated** funds on or after December 23, 1989; and (3) file quarterly updates about the use of lobbyists if materials changes occur in their use. The law establishes civil penalties for noncompliance.

If you are a current recipient of funding or have an application, proposal, or bid pending as of December 23, 1989, the law will have the following immediate consequences for you:

- You are prohibited from using appropriated funds (other than profits from Federal contracts) on or after December 23, 1989, for lobbying Congress or any Federal agency in connection with a particular contract, grant, cooperative agreement, or loan;

- you are required to execute the attached certification at the time of submission of an application or before any action in excess of $100,000 is awarded; and

- you will be required to complete the lobbying disclosure form if the disclosure requirements apply to you.

Regulations implementing Section 319 of Public Law 101-121 have been published as an Interim Final Rule by the Office of Management and Budget as Part III of the February 26, 1990, **Federal Register** (pages 6736-6746).

UNITED STATES DEPARTMENT OF AGRICULTURE

CERTIFICATION REGARDING LOBBYING - CONTRACTS, GRANTS, LOANS AND COOPERATIVE AGREEMENTS

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement;

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions;

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Organization Name | Award Number or Project Name

Name and Title of Authorized Representative

Signature | Date

Appendix G

Big Rivers
ELECTRIC CORPORATION

Your Touchstone Energy® Cooperative

Contractor Safety Credentials Assessment Program

(C-SCAP)

2022

Case No. 2019-00435
Filed October 18, 2022

Document 3.0

Big Rivers Electric Corporation Contractor Safety Rules

Company Name: _____ Date: _____

Address: Street/PO Box _____ City _____ State ____ Zip _____

_____	_____	_____	_____
Contact Person Name (Authorized Representative)	Signature	Email	Phone

(If someone other than the "Contact Person" is to receive the C-SCAP pocket card template, please provide the following)

Name: _____ **Email:** _____ **Phone:** _____

Big Rivers Electric Corporation (BREC) is committed to: maintaining a proactive safety, health, and loss prevention program designed to protect life and property; providing a work environment where recognized health/safety hazards are controlled; and in compliance with all applicable regulatory and legal requirements. BREC holds employee and Contractor safety as one of its most important corporate values. Accordingly, no job, operating condition, or urgency of service can ever justify endangering the health and well-being of any employee or Contractor.

These rules do not replace the contractors' existing safety and health program(s), provided that their program(s) meet or exceed these and any additional site specific minimum requirements. Contractors' employees' not following applicable rules will be subject to removal from the job site.

The contractor is required to comply with all applicable federal and state safety laws and regulations. The contractor is responsible for conducting their work and activities safely. BREC expects and requires that contractors continuously update their employees with respect to safety issues relevant to the work and to take immediate corrective action when their employees violate safety rules or procedures.

BREC reserves the right to audit your safety-related policies, plans and/or procedures to ensure compliance.

Section I. General Safety Requirements

1. Contractors must comply with all applicable federal and state regulations and BREC's safety rules and programs relevant to the work performed.
2. Contractors will be responsible for providing their employees, and any subcontracted employers with all information provided by BREC regarding:
   - Occupational health and safety;
   - Exposure to atmospheric health, serious physical or chemical hazards; and
   - Precautionary measures and procedures for performing the work.
3. BREC's policy prohibits the Contractor's employees, agents or representatives from:
   - Consuming or possessing alcohol and/or non-prescription drugs while on BREC's job sites, including the parking lots;
   - Reporting to perform work on BREC's job sites with unauthorized drugs on his/her person or while under the influence of drugs or alcohol.
   - Performing work that involves operating heavy equipment or working at elevations when using prescribed medication that can cause drowsiness or otherwise impair the employee's ability to perform the work in a safe manner.

   As referenced in section 9.4 of the Big Rivers General Services Agreement, contractors' and sub-contractor employees working on-site shall be required to complete a negative drug and alcohol pre-test within seven (7) days before reporting to work on-site at Big Rivers. The Contractor shall conduct random drug and alcohol testing on

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Filed October 18, 2022

ten percent (10%) of their on-site workforce assigned to Big Rivers within thirty (30) days of the start of work. The Contractor shall subsequently test ten percent (10%) of their on-site workforce assigned to Big Rivers on an on-going monthly basis for the duration of the contract or outage. Big Rivers reserves the right to audit the Contractor's compliance with these requirements. Testing costs are the responsibility of the Contractor. Testing should be conducted using a licensed health care facility or FDA-approved testing device consisting of, at a minimum, a 10 panel drug test (including Amphetamines, Barbiturates, Benzodiazepines, Cannabinoids, Cocaine, Methaqualone, Opiate, Phencyclidine, Methadone, and Propoxyphene) suitable for on-site testing and under the supervision of a certified Medical Review Officer.

4. The following conduct is prohibited by BREC at and about the job site:
   - Theft, horseplay, gambling, sabotage or attempted sabotage.
   - Threatening, intimidating or abusing employees, customers, vendors or guests of BREC.
   - Fighting or creating or inciting a disturbance.
5. Firearms and other weapons are not allowed on BREC's job sites and/or facilities.
6. BREC has a smoke-free policy within all its buildings.
7. Attendance at job site safety meetings is required of the Contractor at the discretion of BREC's designated representative. At least one representative of the Contractor will attend job safety meetings.
8. The Contractor will report any Contractor Employee Incident requiring medical attention to BREC's authorized representative immediately and provide a copy of the first report of injury. All injuries, requiring medical attention, must be reported within One (1) hour, even during off shifts.
9. Any Contractor employee, who appears sick, extremely tired, or otherwise unable to perform his/her job in a safe manner will be reported to the Contractor's supervision for evaluation and possibly removed from the job site.
10. Contractors are responsible for establishing control measures to protect their employees, and/or employees under their control, from exposure to hazards (chemical, atmospheric health and physical) present at the job site.
11. Contractor must provide electrical ground fault protection for employees using construction power (temporary branch circuits, to include extension cords), by using approved ground fault circuit interrupters (GFCI). Contractors must provide ground fault protection when using permanent facility power and using cord and plug equipment in wet or damp locations, which applies to 120-volt single phase 15 and 20-ampere receptacle outlets.
12. Contractor employees will work in full pants and shirts. Shorts and tank tops are not permitted unless otherwise specified. Some jobs will require wearing 100% cotton long sleeve shirts and pants, fire resistant (FR) clothing or ATPV (Arc Thermal Performance Value) rated clothing.
13. Contractors shall not transport employees in the beds of trucks.
14. All Contractors must receive authorization from BREC's authorized representative before performing work in areas posted as **"Dangerous or Hazardous."**
15. Contractors must provide a competent person to the job site as required by state and federal OSHA standards.
    - Contractor shall provide at least one safety representative for 20 – 50 on-site employees, a minimum of two safety representatives for 51 – 150 employees and a minimum of three safety representatives is required when the number of on-site employees exceed 150.
16. Contractors shall provide at a minimum, one bilingual employee for every maximum, group of eight non-English speaking employees. Any deviation requires approval from the BREC President & CEO, plant General Manager, or Vice President.
17. All contractors conducting work that require the use of a respirator or where there may be potential for atmosphere contamination must be clean-shaven and provide a documented respirator fit test.

Print and sign name on following line to indicate an understanding of the above;

_____ DATE: _____

Section II. Hazard Specific Requirements

The Contractor will ensure that the Contractor's employees are properly equipped and trained to comply with Federal and State regulations, and BREC standards; including but not limited to the following:

- **Personal Protective Equipment (PPE)**
- **Fall Management (personal fall arrest systems, scaffolding, walking work surfaces, ladders and floor/wall openings**
- **Chemical Safety/Hazard Communication**
- **Hazardous Waste and Chemical Spills**
- **Hot Work (Cutting and Welding)**
- **Asbestos**
- **High Voltage**
- **Control of Energy Sources (Lockout/Tagout)**
- **Trenching**
- **Confined Space Entry**

Section III. Enforcement of Safety Rules

The Contractor is responsible for the health and safety of employees under their control. Enforcement of these rules, as well as other recognized safety rules, is the responsibility of the Contractor. The evaluation does not constitute acceptance of the Contractor's safety programs or work practices nor, in any way relieve a Contractor of full responsibility for meeting all appropriate OSHA and other regulations to ensure the safety of employees under their control. Whenever there is a jurisdictional question of which standard will apply (e.g. Big Rivers or the Contractor's), the most stringent safety requirement will take precedence. The Contractor must document exceptions and attach them to this form. Contractors and their employees who do not follow these rules are subject to removal from this project, as well as being banned from future projects/contracts.

Document 3.0

Contractor Safety and Health Questionnaire and Checklist

Big Rivers Electric Corporation is committed to providing a safe and healthy workplace for its employees and the employees of Contractors. To qualify to perform work at BREC; companies, including sub-contractors, must complete the Contractor Safety Credentials Assessment Program. As mentioned above, sub-contractors are also required to complete the Contractor Safety Credentials Assessment Program for their company as well.

To begin that process companies shall provide BREC the following information and agree to notify all potential sub-contractors of the C-SCAP requirement.

Please provide a brief description of the work activities to be conducted for Big Rivers: (Must be completed)

_____

_____

_____

_____

In the table below, provide the three most recent full years of history for the area or region for which this questionnaire applies. In addition, attach copies of applicable OSHA 300A Forms & verification of your workers comp. Experience Modification Rate (EMR)/discount information. Applications without copies of 300A forms and/or EMR may be delayed until received. If your workers compensation insurer does not provide an EMR for your company, an explanation from the workers compensation insurer must be provided with the C-SCAP submittal.

ITEM	DESCRIPTION	2021	2020	2019
A	Interstate Experience Modification Rate (EMR)			
B	Recordable Injury Incident Rate (RIR) = (# of Injuries x 200,000 ÷ Total Hours Worked)			
C	Lost Workday Injury and Illness Incident Rate (LWDIR) = (# of Lost-time Injuries and Illnesses x 200,000 ÷ Total Hours Worked)			
D	NAICS (North American industry Classification System) Code			
E	**Using the OSHA 300 Logs from the facilities providing labor, please provide the following:** Severity Rate (Total days lost due to injury or industrial illness) = (Total # days away from work x 200,000 ÷ Total Hours Worked)			
F	Number of Injuries and Illnesses (Columns 1-6 of OSHA 300 Log)			
G	Number of Lost Workday Cases (Column H of OSHA 300 Log)			
H	Number of Injury Related Fatalities (Column G of OSHA 300 Log)			
I	Employee hours worked in each of the last 3 years (If unknown use # of employees x 2080)			
J	Total number of full time employees in each of the last 3 years			
K	Total number of temporary employees in each of the last 3 years			

If more space is needed, please use reverse side(s) or separate sheet(s)

	Question	Y / N	Comments
1.	Does your company have a written safety and health program?		
2.	Does your company have a written Hazard Communication Program? Is it available for review?		
3.	Does your company have a written environmental compliance assurance program? Is it available for review?		
4.	Who in your company is responsible for coordinating your safety and health program? Name/Job Title: _____ Phone # ( ) _____ Is safety and health a full time responsibility for this position?		
5.	Who conducts OSHA training for your employees? Name/Job Title: _____ Is this person an employee of your company or a consultant?		
6.	Has your company received a citation(s) from a regulatory agency during the last three years? If yes, describe citation(s). (Use additional sheet(s) if necessary)		
7.	Does your company perform safety audits/reviews? If yes, are safety audits documented?		
8.	Who reviews the safety audit/review and how often? Job Title: _____		
9.	Does your company provide/require the following? Hard Hats (ANSI-Z89.1)(29 CFR 1910.135 Foot Protection (ASTM-F2413)(29 CFR 1910.136) Eye Protection (ANSI-Z41.1)(29 CFR 1910.133) Hand Protection (ANSI-Z41.1)(29 CFR 1910.138) Hearing Protection (ANSI-Z41.1)(29 CFR 1910.95) Fall Protection (ANSI-Z41.1)(29 CFR 1926.501 or 1910.66) Respiratory Protection (ANSI-Z41.1)(29 CFR 1910.134) **BREC does not provide PPE (Personal Protective Equipment) to Contractor personnel**		
10.	In addition to regulatory required Personal Protective Equipment, what other PPE is required or supplied? If any, please describe or list: _____ _____		

11.	Does your company use temporary employees? If yes, what percentage of the total hours worked last year was performed by temporary employees? _____% If you are awarded a contract for work at BREC, what percentage of the estimated hours will be performed by temporary employees? _____% How do you ensure that temporary employees have the required OSHA training?		
12.	Does your company have scheduled documented employee safety meetings? If yes, how often? _____		
13.	Who conducts the safety meetings? Job Title: _____		
14.	What manager(s)/supervisor(s) participate in the safety meetings? Job Titles: _____		
15.	Are meetings reviewed and critiqued by manager(s)/supervisor(s)?		
16.	Does your company hold on-site (tailgate/toolbox) safety meetings? If yes, how often? _____ Who conducts these (tailgate/toolbox) safety meetings? Job Titles: _____ Is documentation available for review?		
17.	Does your company have policy requiring written accident/incident reports? Are follow-up investigations conducted? If yes, are corrective actions taken to prevent future incidents?		
18.	Does your company document, investigate and discuss near miss incidents? If yes, is documentation available for review?		
19.	Are accident/incident reports reviewed by manager(s)/supervisor(s)?		
20.	Does your company have a written policy regarding drug screening or testing of your employees? If yes, is a copy available for review?		

21.	Indicate the circumstances in which your company employees may be subject to drug screening. Employment Random Probable Cause Post-Incident Other		
22.	Does your company have a policy dealing with emergency actions to be taken should a chemical spill occur?		
23.	Are all documents, pertaining to this questionnaire available for auditing? If no, please explain.		
24.	Does your company use subcontractors? If you do use sub-contractors, do you qualify subcontractors based on their ability to address safety, health and environmental requirements? Do you verify that subcontractors meet regulatory requirements?		
25.	Do you employ "non-English" speaking persons or persons with limited English skills? If so, how do you insure that OSHA and your in-house safety programs are adequately communicated?		
26.	If you use or may use sub-contractors to assist with work conducted at Big Rivers Electric Corporation, please explain how you will verify that the employees of that sub-contractor have OSHA training that is commensurate for the tasks which they will be undertaking.		
27.	If you use or may use employees from a temporary labor pool or employees from a union hall, please explain how you will verify that the individuals have OSHA training that is commensurate for the tasks which they will be undertaking.		
28.	If you use or may use the services of employees from a different division of your corporation, please explain how you will verify that the individuals have OSHA training that is commensurate for the tasks which they will be undertaking.		
29.	Does your company provide and require the use of Class 2 & 3 traffic control garments to comply with work zone traffic control requirements?		
30.	Does your company require its employees to use arc protective clothing while conducting work in the vicinity of energized parts? If yes; what is the ATPV (Arc Thermal Performance Value) rating of the following items within your protective clothing system? Shirt Pants Jacket/Coat Cover-all/Bibs Rain gear Traffic Control Garment Other: (please list) _____ Have your employees received training on the hazards of electrical arcs? Have your employees received training on the proper use of your company arc protective clothing system?		

Big Rivers Electric Corporation
Contractor Health and Safety Training Acknowledgement Form

Please respond to all applicable items with "YES or NO"

PROGRAMS/TRAINING	REFERENCE SOURCE	WRITTEN PROGRAM Y/ N	EMPLOYEES ARE TRAINED Y/ N
Asbestos (awareness)	OSHA 29 CFR 1926.1101		
Asbestos Class I, II, and III (abatement)	OSHA 29 CFR 1926.1101		
Asbestos Class I, II and III (removal supervisor)	OSHA 29 CFR 1926.1101		
Bloodborne Pathogens	OSHA 29 CFR 1910.1030		
Chainsaw Safety	OSHA 29 CFR 1910.266		
Communications Facilities	OSHA 29 CFR 1910.269		
Confined Space Entry	OSHA 29 CFR 1910.146		
Crawler, Locomotive and Truck Cranes	OSHA 29 CFR 1910.180		
Daily Equipment Inspection/Walk-Around	OSHA 29 CFR 1910.1000; 29 CFR 1926.1101		
Electrical Safety	OSHA 29 CFR 1910.269		
Electrical Safety	OSHA 29 CFR 1910.332		
Emergency Action Plan	OSHA 29 CFR 1910.38		
Excavations	OSHA 29 CFR 1926.651		
Explosives	OSHA 29 CFR 1910.109		
Fall Protection	OSHA 29 CFR 1926.500		
Fire Extinguisher	OSHA 29 CFR 1910.157		
First Aid/CPR	OSHA 29 CFR 1910.151		
Forklifts	OSHA 29 CFR 1910.178		
Hand and Portable Power Tools and Equipment – General	OSHA 29 CFR 1910.241, 242, 243		
Hazard Communication	OSHA 29 CFR 1910.1200		
Hazwoper - Awareness Level	OSHA 29 CFR 1910.120		
Hazwoper 8 Hour	OSHA 29 CFR 1910.120		
Hazwoper 24 Hour	OSHA 29 CFR 1910.120		
Hazwoper 40 Hour	OSHA 29 CFR 1910.120		
Hazwoper Supervisor 8 Hour	OSHA 29 CFR 1910.120		
Hearing Conservation	OSHA 29 CFR 1910.95		
Incipient Fire Fighting	OSHA 29 CFR 1910.157		
Jacks	OSHA 29 CFR 1926.305		
Ladder Safety	OSHA 29 CFR 1926.1060		
Lead Worker	OSHA 29 CFR 1926.62		
Lead Supervisor	OSHA 29 CFR 1926.62		
Line-Clearance Tree Trimming Operations	OSHA 29 CFR 1910.269		
Lockout/Tagout Affected/Authorized Person	OSHA 29 CFR 1910.147		
Lockout/Tagout Affected/Authorized Person	OSHA 29 CFR 1910.269		
Mobile Cranes	OSHA 29 CFR 1926.550		

PROGRAMS/TRAINING	REFERENCE SOURCE	WRITTEN PROGRAM Y/ N	EMPLOYEES ARE TRAINED Y/ N
New Employee Orientation	OSHA 29 CFR 1910.119		
Overhead and Gantry Cranes	OSHA 29 CFR 1910.179		
Overhead Lines	OSHA 29 CFR 1910.269		
Oxygen-Fuel Gas Welding and Cutting	OSHA 29 CFR 1910.253		
Personal Protective Equipment	OSHA 29 CFR 1910.132		
Process Safety Management	OSHA 29 CFR 1910.119		
Radiation Awareness	902 KAR 100:019		
Respiratory Protection	OSHA 29 CFR 1910.134		
Rigging, Equipment & Material Handling	OSHA 29 CFR 1926.251		
Scaffolding (erector)	OSHA 29 CFR 1926.451		
Scaffolding (user)	OSHA 29 CFR 1926.451		
Servicing Rim Wheels	OSHA 29 CFR 1910.177		
Substations	OSHA 29 CFR 1910.269		
Trenching and Shoring	OSHA 29 CFR 1926.650; 651; 652; and Subpart P		
Underground Electrical Installations	OSHA 29 CFR 1910.269		
Work Zone Traffic Control	Manual on Uniform Traffic Control Devices		
Working on or Near Exposed Energized Parts	OSHA 29 CFR 1910.269		

Please provide any additional information that you feel would be valuable in this process:

(To be completed by Big Rivers Electric Corporation)

Company Name: _____ **Approved: Yes** _____ **No** _____

Sign & Date: _____ _____

ET&S Representative **Sebree Representative**

_____ _____

Wilson/Coleman Representative **Corporate Representative**

Appendix H

Big Rivers ELECTRIC CORPORATION
Your Touchstone Energy® Cooperative

New Vendor/Vendor Information Change Form

1. Vendor Information

Vendor Name – Please enter company name.

A) Corporate Headquarters:

Street:

Town or City:

Zip/Postal Code:

State/Prov.:

Country:

Telephone:

Facsimile:

Email address:

Website:

B) Ordering Address (where to send purchase orders)

Street:

Town or City:

Zip/Postal Code:

State/Prov.:

Telephone:

Email address:

Facsimile:

Sales Contact:

PO Delivery Method: Post, Email, or Fax:

C) Remit-To Address (where to send invoice payments)

Street:

Town or City:

Zip/Postal Code:

State/Prov.:

Country:

Accounts Receivable Contact :

Telephone:

DUNS Numbering ☐☐☐☐☐☐☐☐☐

(Data Universal Numbering System)

Apply for a D-U-N-S Number, the industry standard for business listings

Do you accept Credit Cards? Yes _____ No _____

Definitions:
Corporate Headquarters – Most active office for your company that does business with Big Rivers Electric Corporation (BREC).
Ordering Address – Location(s) to which you wish BREC to SEND purchase orders. Use attachments as necessary.
Remit-to Address – Location to which you wish BREC to SEND invoice payments. Please attach copy of invoice for reference.

D) Payment Terms (If different then Net 30)

E) Supplier Type (Select one of the following)

Professional Services	☐
Charity/Contribution	☐
Contractor (Services Only)	☐
Retailer (Materials only)	☐
Contractor/Retailer (Services & Materials)	☐
Other	☐

Specify Products and Services

_____

Does your business hold a Retail/Resale Certificate?
☐ Yes ☐ No

If yes, please provide your certificate number.

_____

Is your business one of the following (If yes, please include copy of certification) Check all the applicable categories:

MBE ☐ Yes ☐ No

WBE ☐ Yes ☐ No

Small Disadvantaged Business (SDB)? ☐ Yes ☐ No

Veteran ☐ Yes ☐ No

Service Disabled Veteran ☐ Yes ☐ No

Is your Company union affiliated?
☐ Yes ☐ No

If Yes, which union affiliated organization

_____

Under 15 U.S.C. 645(d), any person who misrepresents its size status shall (1) be punished by a fine, imprisonment, or both; (2) be subject to administrative remedies; and (3) be ineligible for participation in programs conducted under the authority of the Small Business Act.

_____ _____ _____
Signature of person providing information **Title** **Date**

Indicate the following special classifications:

☐ Standard Industry Code (SIC Code): _____

☐ North American Industry Code Standard (NAICS Code): _____

☐ European Classification Code (eClass Code): _____

F) Contact Information

Who can we contact if we have questions concerning your qualifications and/or this submission?
Name:
Telephone:
E-mail:

Who can we contact "AFTER HOURS" for EMERGENCY SERVICE requirements?
Name:
Telephone:
E-mail:

The following section is to be completed by BREC personnel only.

Date of Input: **Input By:**

Date of Certification: **Type of Certification:** GSA PSA Qualified

Is this Vendor Request for One Time use only? * Yes _____ **No** _____ *If yes, this vendor will have a future inactive date inserted at time of creation based on the Payment Terms.

G) If you are a Foreign-based company, indicate your TAX/VAT Registration: _____

H) If you are a United States-based company, complete Form W-9 as indicated. We are required by law to obtain a tax identification number when making a reportable payment to you. Failure to provide this information could result in a tax withholding of 31% and you may be subject to a $50 penalty imposed by the I.R.S. In completing Form W-9, be sure that you CHECK APPROPRIATE BOX FOR CORPORATION/SOLE PROPRIETORSHIP / PARTNERSHIP OR OTHER. If individual or sole proprietorship, please list individual's name (please print) and Social Security Number. Make sure that YOUR TAX ID NUMBER IS 9 DIGITS.
The Business Name listed here will appear on purchase orders and checks.

Appendix I

Form **W-9**
(Rev. December 2011)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type See **Specific Instructions** on page 2.

Name (as shown on your income tax return)

Business name/disregarded entity name, if different from above

Check appropriate box for federal tax classification:
☐ Individual/sole proprietor ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶

☐ Exempt payee

☐ Other (see instructions) ▶

Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

City, state, and ZIP code

List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number

			–		–				

Employer identification number

		–							

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here **Signature of U.S. person ▶** **Date ▶**

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,
- The U.S. grantor or other owner of a grantor trust and not the trust, and
- The U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person, do not use Form W-9. Instead, use the appropriate Form W-8 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.

2. The treaty article addressing the income.

3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.

4. The type and amount of income that qualifies for the exemption from tax.

5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity not subject to backup withholding, give the requester the appropriate completed Form W-8.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS a percentage of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,

2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),

3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the instructions below and the separate Instructions for the Requester of Form W-9.

Also see *Special rules for partnerships* on page 1.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account, for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of $50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a $500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your individual name as shown on your income tax return on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name/disregarded entity name" line.

Partnership, C Corporation, or S Corporation. Enter the entity's name on the "Name" line and any business, trade, or "doing business as (DBA) name" on the "Business name/disregarded entity name" line.

Disregarded entity. Enter the owner's name on the "Name" line. The name of the entity entered on the "Name" line should never be a disregarded entity. The name on the "Name" line must be the name shown on the income tax return on which the income will be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a domestic owner, the domestic owner's name is required to be provided on the "Name" line. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on the "Business name/disregarded entity name" line. If the owner of the disregarded entity is a foreign person, you must complete an appropriate Form W-8.

Note. Check the appropriate box for the federal tax classification of the person whose name is entered on the "Name" line (Individual/sole proprietor, Partnership, C Corporation, S Corporation, Trust/estate).

Limited Liability Company (LLC). If the person identified on the "Name" line is an LLC, check the "Limited liability company" box only and enter the appropriate code for the tax classification in the space provided. If you are an LLC that is treated as a partnership for federal tax purposes, enter "P" for partnership. If you are an LLC that has filed a Form 8832 or a Form 2553 to be taxed as a corporation, enter "C" for C corporation or "S" for S corporation. If you are an LLC that is disregarded as an entity separate from its owner under Regulation section 301.7701-3 (except for employment and excise tax), do not check the LLC box unless the owner of the LLC (required to be identified on the "Name" line) is another LLC that is not disregarded for federal tax purposes. If the LLC is disregarded as an entity separate from its owner, enter the appropriate tax classification of the owner identified on the "Name" line.

Other entities. Enter your business name as shown on required federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name/ disregarded entity name" line.

Exempt Payee

If you are exempt from backup withholding, enter your name as described above and check the appropriate box for your status, then check the "Exempt payee" box in the line following the "Business name/ disregarded entity name," sign and date the form.

Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends.

Note. If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

The following payees are exempt from backup withholding:

1. An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2),

2. The United States or any of its agencies or instrumentalities,

3. A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities,

4. A foreign government or any of its political subdivisions, agencies, or instrumentalities, or

5. An international organization or any of its agencies or instrumentalities.

Other payees that may be exempt from backup withholding include:

6. A corporation,

7. A foreign central bank of issue,

8. A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States,

9. A futures commission merchant registered with the Commodity Futures Trading Commission,

10. A real estate investment trust,

11. An entity registered at all times during the tax year under the Investment Company Act of 1940,

12. A common trust fund operated by a bank under section 584(a),

13. A financial institution,

14. A middleman known in the investment community as a nominee or custodian, or

15. A trust exempt from tax under section 664 or described in section 4947.

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 15.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 9
Broker transactions	Exempt payees 1 through 5 and 7 through 13. Also, C corporations.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 5
Payments over $600 required to be reported and direct sales over $5,000 [1]	Generally, exempt payees 1 through 7 [2]

[1] See Form 1099-MISC, Miscellaneous Income, and its instructions.

[2] However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney, and payments for services paid by a federal executive agency.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on page 2), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at *www.ssa.gov*. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/businesses* and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: *A disregarded domestic entity that has a foreign owner must use the appropriate Form W-8.*

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, below, and items 4 and 5 on page 4 indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on the "Name" line must sign. Exempt payees, see *Exempt Payee* on page 3.

Signature requirements. Complete the certification as indicated in items 1 through 3, below, and items 4 and 5 on page 4.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account [1]
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor [2]
4. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee [1]
b. So-called trust account that is not a legal or valid trust under state law	The actual owner [1]
5. Sole proprietorship or disregarded entity owned by an individual	The owner [3]
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulation section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	**Give name and EIN of:**
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity [4]
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulation section 1.671-4(b)(2)(i)(B))	The trust

[1] List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

[2] Circle the minor's name and furnish the minor's SSN.

[3] You must show your individual name and you may also enter your business or "DBA" name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

[4] List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 1.

***Note.** Grantor also must provide a Form W-9 to trustee of trust.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, social security number (SSN), or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to *phishing@irs.gov.* You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: *spam@uce.gov* or contact them at *www.ftc.gov/idtheft* or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

Appendix J

Appendix J

Big Rivers Electric Corporation
Green Ash Pond Closure Project

Robert D. Green Station

Rev 0

Project No. 132721

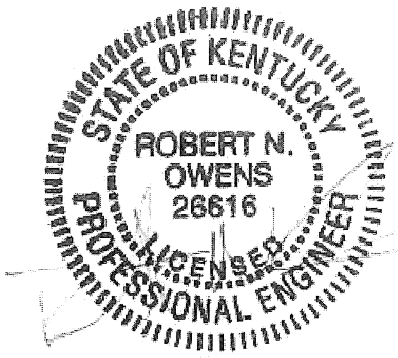
April 2022

BURNS McDONNELL

BIG RIVERS ELECTRIC CORPORATION
GREEN ASH POND CLOSURE PROJECT
ROBERT D. GREEN GENERATING STATION
PROJECT NO. 132721

DOCUMENT 00 00 05 - INDEX AND CERTIFICATION PAGE

I hereby certify, as a Professional Engineer in the state of Kentucky, that the information in this document was assembled under my direct personal charge. These specifications are not intended or represented to be suitable for reuse by the Big Rivers Electric Corporation or others without specific verification or adaptation by the Engineer.



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BIG RIVER ELECTRIC COOPERATIVE
GREEN ASH POND CLOSURE PROJECT
ROBERT D. GREEN STATION
Project No. 132721

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END OF TABLE OF CONTENTS

Case No. 2019-00435
Filed October 18, 2022

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 011100 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section summarizes the Work covered in detail in the complete Contract Documents.
B. Owner: Big Rivers Electric Corporation; Robert D. Green Station.
   1. Project Identification: Project 132721 – Green Ash Pond Closure Project.
   2. Work Site Location: 9000 Highway 2096, Robards, Kentucky 42452.
C. Engineer: The Contract Documents were prepared by Burns & McDonnell Engineering Company, Inc., 9400 Ward Parkway, Kansas City, Missouri 64114.

1.02 PROJECT DESCRIPTION:

The Contractor's Scope of Work (SOW) is to provide all specified labor, equipment, and materials in order to perform preliminary duties; demolition of piping, pipe supports and foundations associated with the Ash Ponds, removal all Coal Combustion Residual (CCR) and CCR-impacted soil using conventional excavation methods; and restore site to specified conditions. The site work is anticipated to be conducted in Level D, which includes: appropriate work clothes, steel toed boots, safety glasses, hard hat, reflective vests, and hearing protection per Owner requirements. The major tasks anticipated at the site under the Contractor's responsibility include:

- Maintain operational condition of the Work Site;
- Locate and protect utilities;
- Remove piping, pipe supports and founds of supports associated with the Ash pond;
- Unwatering of any surface waters and dewatering of interstitial water and treatment of discharge water as necessary for construction
- Discharge of water through Internal NPDES Outfall 009
- Install, operate, and maintain dewatering system required to control surface and/or groundwater.
- Contractor shall obtain approval from Owner prior to dewatering with well installation
- Remove temporary dewater system ;
- Installation and maintenance of silt fence for erosion control purposes;
- Excavate CCR and CCR-impacted material from Green Ash Pond;
- Loading and hauling of excavated materials into trucks or from temporary stockpiles;
- Final placement of CCR at on-site Landfill
- Clean trucks, equipment, plant roadways as necessary;
- Compaction testing of CCR during final placement;
- Topsoil installation to all construction disturbed areas and areas designated for seeding;
- Performing final seeding;
- Performing riprap surfacing;
- Remove temporary erosion control after final surfacing has been approved by Owner

Prior to intrusive activities, Contractor shall perform preliminary duties including location and protection of utilities, installing silt fence and other erosion control.

Contractor shall remove all piping associated with the Green Ash Ponds. Details are provided in Ash Pond drawing set. Any piping that is located below ground and cannot be removed shall be abandoned in place.

Contractor shall remove all CCR and CCR-impacted soil from the Ash Ponds. The proposed excavation plan is also provided in drawing set. The material removed from the ash ponds will be hauled to the onsite Landfill.

After the CCR and CCR-impacted subgrade material is removed, the excavated surface will be graded as indicated on drawing set.

1.03 WORK BY OTHERS:

A. Overall Project planning includes several primary work areas that are outside the scope of this Contract but that require coordination between the Contractor and others.
B. Work Under Other Contracts: None
C. Work by Owner:
   1. Owner will provide Facility operations and maintenance personnel to operate the Facility.
   2. Owner will provide utilities as specified in SECTION 015100 – Temporary Utilities and Facilities.
   3. Landfill Operation outside of Closure Contractors scope.

1.04 CONTRACTOR'S USE OF PREMISES:

A. Limited Use:
   1. Before conducting any field work, Contractor must obtain Owner approval.
   2. Coordinate with Owner to avoid interference with existing plant, switchyard, landfill operations or facility operations.
   3. Conduct operations so as to ensure the least inconvenience to Owner and the general public.
   4. Comply with security requirements and policies of plant.
   5. Available laydown space shall be as indicated and as designated by the Owner.
   6. Vehicle access to the Site is through main entrance as indicated. This entrance will be shared with the Owner and other site contractors, and it will be controlled by the Owner's Site security force.
B. Temporary Erosion and Settlement Controls: Furnish, install, construct, and maintain temporary measures to control erosion and minimize the siltation of intermittent streams and the pollution of private properties. Temporary erosion and sediment control measures shall be constructed in substantial compliance with local, state, federal, and jurisdictional agency's regulations and the Project Storm Water Pollution Prevention Plan (SWPPP). Owner shall inspect controls as required by the SWPPP. Temporary erosion and sediment control measures shall be maintained until completion of the Work. Temporary measures shall be removed as indicated in SECTION 312000.

1.05 OWNER'S USE OF PREMISES:

A. Partial Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the Plant and Facilities, prior to Substantial Completion provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1.06 WORK SEQUENCE:

A. General: Construction sequence shall be determined by Contractor subject to Owner's need for continuous operation of existing facilities.
B. Continuous Service of Existing Facilities: Exercise caution and schedule operations to ensure that functioning of present facilities will not be disrupted. Shutdown of Owner's operating facilities to perform the Work shall be held to a minimum length of time and shall be coordinated with Owner who shall have control over the timing and schedules of such shutdowns.
C. Project Milestone Schedule dates are as follows:
   1. Contractor to provide milestone schedule that meets the end date identified in the RFP Documents.

1.07 SUBSURFACE INFORMATION

A. Certain subsurface information has been obtained at, or in the vicinity of, the Site of the Work.
B. There is no expressed or implied guarantee as to the accuracy or completeness of the subsurface information, not of the interpretation thereof by the Owner, the Engineer, or any of their representatives.
C. The subsurface information or copies thereof do not form a part of this contract or any contract document issued by the Owner or Engineer.

1.08 MEASUREMENT AND PAYMENT:

A. Lump Sum with Adjustment Unit Price Contracts: All Work indicated and specified in the Contract Documents shall be included in the Lump Sum Contract Price, with adjustments to that price made upon final determination of measurements and in accordance with items and prices stated in "Schedule of Adjustment Unit Prices" in the Bid Form.

1.09 LIST OF DRAWINGS:

A. Contract Drawings:
   1. Contract Drawings included with the set of Contract Drawings are as stated on index sheet under "Contract Drawings."
B. Reference Drawings:
   1. Reference Drawings included with the set of Contract Drawings are as stated on index sheet under "Reference Drawings."

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION – Not Applicable.

END OF SECTION 011100

Case No. 2019-00435
Filed October 18, 2022

SECTION 013100 - PROJECT COORDINATION AND MEETINGS

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Preconstruction Conference.
   2. Coordination drawings.
   3. Project meetings.
   4. Requests for information (RFIs).
B. Each Contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific Contractor.
C. Related Work Specified Elsewhere:
   1. For preparing and submitting Contractor's construction progress schedule: SECTION 013200.
   2. For Submittal Requirements: SECTION 013301.
   3. For coordinating closeout of the Contract: SECTION 017800.

1.02 DEFINITIONS:

A. RFI: Request for information prepared by Contractor and submitted to Engineer seeking interpretation or clarification of the Contract Documents.

1.03 COORDINATION:

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connection, and operation.
B. Coordination: Each Contractor shall coordinate its construction operations with those of other Companies, Owner, and other entities to ensure efficient and orderly installation of each part of the Work. Each Contractor shall coordinate its operations with operations, included in different Sections, which depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components with other Companies to allow optimum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
   4. Where availability of space is limited, coordinate installation of different components to allow optimum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
   1. Prepare similar memoranda for Owner and separate Companies if coordination of their Work is required.
D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of others to avoid conflicts and to

ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of construction progress schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of Submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Startup and adjustment of systems.
8. Project closeout activities.

1.04 SUBMITTALS:

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
   a. Indicate functional and spatial relationships of components of structural, civil, mechanical, and electrical systems.
   b. Indicate required installation sequences.
   c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted Equipment and minimum clearance requirements. Provide alternate sketches to Engineer for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
   d. Crane or other construction equipment placement and motion space required.
2. Sheet Size: At least 8-1/2 by 11 inches but no larger than 30 by 42 inches.
3. Number of Copies: Submit one electronic copy of each Submittal to Engineer. Engineer will return comments electronically
4. Refer to individual Sections for coordination drawing requirements for Work in those Sections.

1.05 PROJECT MEETINGS:

A. Preconstruction Conference:

1. Owner-will conduct a meeting within 10 days prior to Contractor starting work at the Site to review items stated in the following agenda and to establish a working understanding between the parties as to their relationships during performance of the Work.
2. Preconstruction conference shall be attended by:
   a. Representative(s) of Contractor including Contractor's superintendent.
   b. Engineer.
   c. Representative(s) of Owner.
   d. At Owner's option, representatives of principal Subcontractors and Suppliers.
   e. Owner's third-party CQA personnel.
3. Meeting Agenda:
   a. Construction schedules.
   b. Phasing.
   c. Critical Work sequencing and long-lead items.

d. Designation of key personnel and their duties; lines of communication.
e. Project coordination.
f. Procedures and Processing of:
(1) RFIs.
(2) Field decisions.
(3) Substitutions.
(4) Submittals.
(5) Change Orders.
(6) Applications for Payment.
g. Procedures for testing.
h. Procedures for preparing and maintaining record documents.
i. Use of Premises:
(1) Office, work, storage, laydown, and parking areas.
(2) Owner's requirements.
(3) Work restrictions and hours.
j. Construction facilities, controls, and construction aids.
k. Temporary utilities.
l. Safety and first-aid.
m. Security.
n. Deliveries of Equipment and Materials.

4. Location of Meeting: At or near project site.
5. Reporting:
a. Within 10 working days after the meeting, Contractor will prepare and distribute minutes of the meeting to all parties.
b. Contractor shall provide copies to Subcontractors and major Suppliers.

B. Coordination Schedules:
1. Contractor will conduct a meeting at least ten days before submission of the first Application for Payment to finalize the initial coordination schedules requested under SECTION 013200 - CONSTRUCTION PROGRESS SCHEDULES AND REPORTS.
2. The meeting shall be attended by:
a. Representative(s) of Contractor including Contractor’s superintendent (and scheduler).
b. At Owner’s option, representatives of principal Subcontractors and Suppliers.
c. Engineer.
d. Representative(s) of Owner.

C. Construction Progress Meetings:
1. Owner will schedule and conduct a meeting at least monthly and at other times as necessary. Representatives of the Owner, Owner’s third-party CQA personnel, and Contractor shall be present at each meeting. With Owner’s concurrence, Contractor may request attendance by representatives of Subcontractors, Suppliers, or other entities concerned with current program or involved with planning, coordination, or performance of future activities. All participants in the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.
2. Contractor and each Subcontractor represented shall be prepared to discuss the current construction progress report and any anticipated future changes to the schedule. Each Subcontractor shall comment on the schedules of Contractor and other Subcontractors and advise if their current progress or anticipated activities are compatible with that Subcontractor's Work.
3. If one Subcontractor is delaying another, Contractor shall issue such directions as are necessary to resolve the situation and promote construction progress.

4. Meeting Agenda:
   a. Safety Issues and Topics
   b. Review of construction progress since previous meeting.
   c. Review of Planned, Earned, and Spent Earned Value Analysis.
   d. Review of construction progress since previous meeting.
   e. Field observations, interface requirements, conflicts.
   f. Issues which may impede construction schedule.
   g. Off-Site fabrication.
   h. Delivery schedules.
   i. Submittal schedules and status.
   j. Site use; coordination with other contractors.
   k. Temporary facilities, controls, and services.
   l. Hours of Work.
   m. Hazards and risks.
   n. Housekeeping.
   o. Quality and Work standards.
   p. RFIs.
   q. Status of Change Orders.
   r. Documentation of information for payment requests.
   s. Corrective measures and procedures to regain construction schedule if necessary.
   t. Revisions to construction schedule.
   u. Review of proposed activities for succeeding Work period.
   v. Review proposed Contract modifications for:
      (1) Effect on construction schedule and on completion date.
      (2) Effect on other contracts of the Project.
   w. Other business.
5. Location of Meetings: At or near project site.
6. Reporting:
   a. Within 5 (five) working days after each meeting, Contractor will prepare and distribute minutes of the meeting to Owner with action items listed for each party.
   b. Contractor shall distribute copies to principal Subcontractors and Suppliers.

D. Weekly Construction Progress Meetings:
1. Contractor will schedule and conduct a meeting at least once each week after mobilization by Contractor to the site. Owner, Owner's third-party CQA personnel, and Contractor shall be present at each meeting. All participants in the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.
2. Contractor and each Subcontractor represented shall be prepared to discuss the current construction progress in detail and the earned value analysis for the previous week.
3. Meeting Agenda:
   a. Safety Issues and Topics.
   b. Review of Planned, Earned, and Spent Earned Value Analysis.
   c. Field observations, interface requirements, conflicts.
   d. Problems impeding construction schedule (if any).
   e. Off-site fabrication.
   f. Delivery schedules.
   g. Submittal schedules and status.
   h. Site utilization.
   i. Temporary facilities and services.
   j. Hours of Work.
   k. Hazards and risks.

l. Housekeeping.
m. Quality and Work standards.
n. Corrective measures and procedures to regain construction schedule if necessary.
o. Review of proposed activities for succeeding Work period.
p. Other business.

4. Location of Meetings: At or near project site.

E. Pre-installation Conferences:

1. Contractor shall conduct a preinstallation conference at the Project Site before each construction activity that requires coordination with other construction and where required in DIVISIONS 2 through 33.
2. Installer and representatives of manufacturers and fabricators, of products furnished by this Contract or by others, involved in or affected by the installation Work and its coordination or integration with other materials and installations, shall attend the meeting. Advise Owner of scheduled meeting dates.
3. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including installation procedures and requirements for the following:
   a. Contract Documents.
   b. Options.
   c. Related Change Orders.
   d. Purchases.
   e. Deliveries.
   f. Shop Drawings, product data, and quality control Samples.
   g. Review of mockups.
   h. Possible conflicts.
   i. Compatibility problems.
   j. Time schedules.
   k. Weather limitations.
   l. Manufacturer's recommendations.
   m. Warranty requirements.
   n. Acceptability of substrates.
   o. Temporary facilities and controls.
   p. Space and access limitations.
   q. Governing regulations.
   r. Safety.
   s. Inspecting and testing requirements.
   t. Required performance results.
   u. Recording requirements.
   v. Protection of construction, personnel, and adjacent work.
4. Record significant discussions and agreements and disagreements of each conference. Distribute the minutes of the meeting within 3 working days after the meeting to everyone concerned, including Owner and Owner’s third-party CQA personnel.
5. Do not proceed with the installation if disagreements arise during the conference which cannot be successfully resolved at the time. Contractor shall take actions necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.06 REQUESTS FOR INFORMATION (RFIs):

A. Procedure: Promptly on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI with the content specified.
   1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
   2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's Work or work of Subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
   1. Project name.
   2. Date.
   3. Name of Contractor.
   4. Contract number and title.
   5. Name of Engineer.
   6. RFI number, numbered sequentially.
   7. Specification Section number and title and related paragraphs, as appropriate.
   8. Drawing number and detail references, as appropriate.
   9. Field dimensions and conditions, as appropriate.
   10. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Times or the Contract Price, Contractor shall state impact in the RFI.
   11. Contractor's signature.
   12. Attachments: Include drawings, descriptions, measurements, photos, product data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

C. Hard-Copy RFIs:
   1. Identify each page of attachments with the RFI number and sequential page number.

D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.
   1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Engineer's Action: Engineer will review each RFI, determine action required, and return it. Allow three working days for Engineer's response for each RFI. RFIs received after 1:00 p.m. local time will be considered as received the following working day.
   1. The following RFIs will be returned without action:
      a. Requests for approval of Submittals.
      b. Requests for approval of substitutions.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Times or the Contract Price.
      e. Requests for interpretation of Engineer's actions on Submittals.
      f. Incomplete RFIs or RFIs with numerous errors.
   2. Multiple RFIs addressing similar or identical issues may be addressed by Engineer with a single broad response.
   3. Engineer's action may include a request for additional information, in which case Engineer's time for response will start again upon Contractor's response and resubmittal.
   4. If Contractor believes the RFI response warrants change in the Contract Times or the Contract Price, notify Engineer in writing within five days of receipt of the RFI response.

F. On receipt of Engineer's action, update the RFI log and promptly distribute the RFI response to affected parties. Review response and notify Engineer within three days if Contractor disagrees with response.

G. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Electronic log with not less than the following:
   1. Project name.
   2. Name and address of Contractor.
   3. Contractor representative name and telephone number.
   4. Name and address of Engineer.
   5. RFI number including RFIs that were dropped and not submitted.
   6. RFI description.
   7. Date the RFI was submitted.
   8. Date Engineer's response was received.
   9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION - Not Applicable.

END OF SECTION 01 31 00

SECTION 013200 - CONSTRUCTION PROGRESS SCHEDULES AND REPORTS

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Preliminary construction progress schedule.
   2. Construction progress schedule.
   3. Schedule of Submittals.
   4. Schedule of values.
   5. Construction progress reports.
   6. Daily construction reports.
   7. Equipment and Material location reports.
   8. Field condition reports.
   9. Special reports.

B. Related Work Specified Elsewhere:
   1. For submitting and distributing meeting and conference minutes: SECTION 013100 - Project Coordination and Meetings.
   2. For submitting schedules and reports: SECTION 013300- Submittals.

1.02 REFERENCES:

A. Associated General Contractors of America (AGC):
   1. Construction Planning and Scheduling.

1.03 DEFINITIONS:

A. Activity: A discrete part of a contract that can be identified for planning, scheduling, monitoring, and controlling the construction Work. Activities included in a construction schedule consume time and resources, but shall not include planned work stoppages. Activities shall not normally reflect the Work of more than one trade.
   1. Critical activities are activities on the critical path and have zero or negative float. Critical activities must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. "Baseline" Schedule: The schedule submitted and accepted by the Owner for the Work.

C. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Price, unless otherwise approved by the Owner.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Contract duration and contains no float.

E. Event: The starting or ending point of an activity. An event has no duration.

F. Float: The measure of leeway in starting and completing an activity.
   1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
   2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
   3. Total float is the measure of leeway in starting or completing an activity without adversely affecting an intermediate deadline or the planned Contract completion date.

G. Fragment: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

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H. Milestone: A key or critical point in time for reference or measurement. A milestone has no duration.
I. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.
J. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.04 SUBMITTALS:

A. Qualification Data: For scheduling consultant.
B. Schedule of Submittals: Submit in specified electronic format. Arrange the following information in a tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (technical or informational).
   4. Name of Subcontractor or Supplier.
   5. Description of the Work covered.
   6. Scheduled date for Owner's final release or approval.
C. Preliminary Construction Progress Schedule: Submit in specified electronic format.
   1. Acceptance of cost-loaded preliminary construction schedule will not constitute acceptance of schedule of values for cost-loaded activities.
D. Construction Progress Schedule: Submit initial schedule, large enough to show entire schedule for entire construction period to Owner for review and acceptance.
   1. Submit electronically, using software indicated, labeled to comply with requirements for Submittals. Include type of schedule (Initial or Updated) and date.
E. Schedule of Values: Submit with initial construction progress schedule to Owner for review and approval in specified electronic format.
F. Construction Progress Reports: Submit in specified electronic format at monthly intervals.
G. Daily Construction Reports: Submit electronic copies at weekly intervals.
H. Special Reports: Submit electronically at time of unusual event.

1.05 QUALITY ASSURANCE:

A. Prescheduling Conference: Conduct conference at Project Site to comply with requirements in SECTION 013100 - PROJECT COORDINATION AND MEETINGS. Review methods and procedures related to the preliminary construction schedule and "baseline" construction progress schedule, including, but not limited to, the following:
   1. Review software limitations and content and format for reports.
   2. Verify availability of qualified personnel needed to develop and update schedule.
   3. Discuss constraints, including phasing, work stages, and milestones.
   4. Review delivery dates for Owner-furnished products.
   5. Review schedule for work of Owner's separate contracts.
   6. Review time required for review of Submittals and resubmittals.
   7. Review requirements for tests and inspections by independent testing and inspecting agencies.
   8. Review time required for completion and startup procedures.
   9. Review and finalize list of construction activities to be included in schedule.
   10. Review Submittal requirements and procedures.
   11. Review procedures for updating schedule.

1.06 COORDINATION:

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate construction progress schedule with the schedule of values, list of subcontracts, schedule of Submittals, Material and Equipment procurement, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.01 SCHEDULE OF SUBMITTALS:

A. Preparation: Submit a schedule of Submittals, arranged in chronological order by dates required by construction progress schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates as required in SECTION 013300 - SUBMITTALS.
   1. Coordinate Submittals schedule with list of subcontracts, the schedule of values, and "Baseline" construction progress schedule.
   2. Initial Submittal: Submit concurrently with preliminary schedule. Include Submittals required during the first (60) sixty days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
   3. Final Submittal: Submit concurrently with the first complete submittal of construction progress schedule.

2.02 CONTRACTOR'S CONSTRUCTION PROGRESS SCHEDULE, GENERAL:

A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

B. Time Frame: Extend schedule from date established in the Notice of Award to date of Final Completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each building floor or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than (30) thirty calendar days, unless specifically allowed by Owner.
   2. Procurement Activities: Include procurement process activities for long lead items and major items, as separate activities in schedule. Procurement cycle activities include, but are not limited to, Submittals, approvals, purchasing, fabrication, and delivery.
   3. Submittal Review Time: Include review and resubmittal times indicated in SECTION 013300 - SUBMITTALS in schedule. Coordinate Submittal review times in Contractor's construction progress schedule with schedule of Submittals.
   4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Owner's administrative procedures necessary for certification of Substantial Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
   1. Phasing: Arrange list of activities on schedule by phase.
   2. Work under More Than One Contract: Include a separate activity for each contract.
   3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.

4. Products Ordered in Advance: Include a separate activity for each product. Delivery dates indicated stipulate the earliest possible delivery date.
5. Work Restrictions: Show the effect of the following items on the schedule:
   a. Coordination with existing construction.
   b. Limitations of continued occupancies.
   c. Uninterruptible services.
   d. Partial occupancy before Substantial Completion.
   e. Use of premises restrictions.
   f. Provisions for future construction.
   g. Seasonal variations.
   h. Environmental control.
6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Subcontract awards.
   b. Submittals.
   c. Purchases.
   d. Mockups.
   e. Fabrication.
   f. Sample testing.
   g. Deliveries.
   h. Installation, tests, and inspections.
   i. Curing.
   j. Startup and initial operation.
   k. Performance, guarantee, and acceptance testing.
   l. Placement into final use and operation.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion of Fly Ash Landfill Area 2, Phase 1.

F. Contract Modifications: For each proposed Contract modification and concurrent with its submission, prepare a time-impact analysis using fragments to demonstrate the effect of the proposed change on the overall schedule.

G. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules and is acceptable to Owner:
   1. Primavera Project Planner (P3).
   2. Primavera 3e.
   3. Primavera 5.0.
   4. SureTrak.
   5. Owner-approved equal.

2.03 PRELIMINARY CONSTRUCTION PROGRESS SCHEDULE:

A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule with Bid and again within seven (7) calendar days of date in the Notice to Proceed.
   1. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities throughout construction.

B. Preliminary Schedule of Values:
   1. Initiate a preliminary value assigned to each significant construction activity.
   2. Values shall give an indication of cash requirement prediction, with total equal to Contract Price.
   3. Submit within ten days of Effective Date of Contract to Owner for review.

2.04 CONSTRUCTION PROGRESS SCHEDULE (GANTT CHART):

A. Gantt-Chart Schedule: After submittal of preliminary construction progress schedule as stated above, submit a detailed construction progress schedule within (20) twenty days after the Notice of Award. Base the schedule on the preliminary construction progress schedule and incorporate review comments and other feedback.

B. The schedule shall show the Work in a horizontal bar chart or other graphic format suitable for displaying scheduled and actual progress.
   1. The schedule shall indicate phases of the Work, starting date, interim milestones, and dates of Substantial Completion and Final Completion.
   2. Breakdown Work phases into separate time bar for each significant construction activity entry, with dates Work is expected to begin and be completed. Within each time bar, indicate estimated completion percentage in 5% increments.
   3. Scale and spacing shall allow room for notation and revisions.
   4. Sheet Size: Minimum 11 x 17 inches.

C. Provide sub-schedules to define in more detail critical portions of schedules, including inspections and tests.

D. Coordinate construction progress schedule with schedule of values, schedule of Submittals schedule, procurement schedule, progress reports, and payment requests.

E. Owner will review and comment on construction progress schedule and, upon agreement between Owner and Contractor on necessary changes:
   1. Contractor shall distribute copies as specified of the accepted "baseline" schedule to Owner. Contractor shall provide additional copies to Subcontractors and other parties required to comply with scheduled dates, one copy to each party.

F. Revise the construction progress schedule after each meeting, event, or activity where revisions have been recognized and accepted to reflect impacts of new developments on the schedule.

G. Update and submit electronically to Owner the revised schedule at least once each month to show actual progress compared to the originally accepted "baseline" schedule and any proposed changes in the schedule of remaining Work. Include with construction progress report.

2.05 SCHEDULE OF VALUES:

A. Based on the preliminary draft schedule of values, reviewed by Owner, submit finalized schedule of values acceptable to Owner as to form and basic details. Submit final within (30) thirty days after Notice to Proceed.

B. Coordinate preparation of schedule of values with preparation and content of construction progress schedule.

C. Content:
   1. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction.
   2. Follow the construction progress schedule breakdown of Work activities as format for listing component items and assigning values.
   3. Follow the table of contents of this Project Manual as the format for listing component items.
      a. Identify each line item, with the number and title of the respective major Division or Section of the Specifications.
   4. For each major line item, list subvalues of major products or operations under the item.
      a. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
      b. For items on which progress payments will be requested for stored materials received, but not installed, break down the value into:

(1) The cost of the materials, delivered and unloaded, including taxes paid unless taxes are exempted.
(2) The total installed value.

c. The sum of all values listed in the schedule shall equal the total Contract Price.

2.06 REPORTS:

A. Construction Progress Reports:

1. Submit a report on actual construction progress on a monthly basis. More frequent reports may be required should the Work fall behind the accepted schedule.
   a. Submit a weekly report and three-week look-ahead schedule to coordinate with and supplement the monthly construction progress report and which details Work scheduled for the following one-week interval, including:
      (1) Work activities which will occur.
      (2) Number and size of crews.
      (3) Construction equipment on Site.
      (4) Major items of Equipment and Material to be installed.
   b. Format shall be on 8-1/2 x 11-inch paper, submitted to Owner electronically.
2. Construction progress reports shall consist of the revised construction progress schedule and a narrative report which shall include but not be limited to the following:
   a. Comparison of actual progress to planned progress shown on originally accepted schedule.
   b. Summary of activities completed since the previous construction progress report.
   c. Summary of activities planned for next reporting period.
   d. Planned, earned, and spent earned value analysis for the month.
   e. Identification of problem areas.
   f. A description of current and anticipated delaying factors, if any.
   g. Impact of possible delaying factors.
   h. Proposed corrective actions.
3. Submit a construction progress report to Owner with each application for partial payment. Work reported complete but not readily apparent to Owner must be substantiated with supporting data when requested by Owner.
4. If a schedule update reveals that, through no fault of Owner, the Work is likely to be completed later than the Contract completion date, Contractor shall:
   a. Establish a plan for making up lost time, to include, but not limited to:
      (1) Increase number of workers, or
      (2) Increase amount or kinds of tools, or
      (3) Work overtime or additional shifts, or
      (4) A combination of 2 or more of the above 3 actions.
   b. Submit plan to Owner before implementing the plan.
   c. Take actions as necessary to get the Work back on schedule at no additional cost to Owner.

B. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project Site:

1. List of Subcontractors at Project Site.
2. Approximate count of personnel at Project Site, and breakdown by craft.
3. Equipment at Project Site.
4. Material deliveries.
5. High and low temperatures and general weather conditions.
6. Accidents.
7. Meetings and significant decisions.
8. Unusual events (refer to special reports).

9. Stoppages, delays, shortages, and losses.
10. Meter readings and similar recordings.
11. Emergency procedures.

C. Special Reports:
1. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
2. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project Site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.01 CONSTRUCTION PROGRESS SCHEDULE:

A. Construction Progress Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled construction progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate actual completion percentage for each activity.

B. Distribution: Distribute copies of accepted schedule to Owner, Owner’s third-party CQA personnel, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

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SECTION 01 33 00 – SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes definitions, descriptions, transmittal, and review of Submittals.

1.02 RELATED REQUIREMENTS:

A. Section 01 78 00 – "Contract Closeout."

1.03 GENERAL INFORMATION:

A. Definitions:

1. Shop Drawings, product data, and Samples are technical Submittals prepared by Contractor, Subcontractor, manufacturer, or Supplier and submitted by Contractor to Engineer as a basis for approval of the use of Equipment and Materials proposed for incorporation in the Work or needed to describe installation, operation, maintenance, or technical properties, as specified in each Division of the Specifications.
    a. Shop Drawings include custom-prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions, and similar information not in standard printed form applicable to other projects.
    b. Product data includes standard printed information on materials, products, and systems; not custom-prepared for this Project, other than the designation of selections from available choices.
    c. Samples include both fabricated and unfabricated physical examples of materials, products, and Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock-ups are a special form of Samples which are too large to be handled in the specified manner for transmittal of Sample Submittals.
    d. Descriptions of submittal requirements (as applicable) are defined in Appendix A – Submittal Descriptions.
2. Informational Submittals are those technical reports, administrative Submittals, certificates, and guarantees not defined as Shop Drawings, product data, or Samples.
    a. Technical reports include laboratory reports, tests, technical procedures, technical records, and Contractor's design analysis.
    b. Administrative Submittals are those nontechnical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, Bonds, Project photographs, physical work records, statements of applicability, copies of industry standards, Project record data, schedules, security/protection/safety data, and similar type Submittals.
    c. Certificates and guarantees are those Submittals on Equipment and Materials where a written certificate or guarantee from the manufacturer or Supplier is called for in the Specifications.
3. Refer to ARTICLES 1.04 of this Part for detailed lists of Submittals and specific requirements.

B. Quality Requirements:

1. Submittals such as Shop Drawings and product data shall be of suitable quality for legibility and reproduction purposes. Every line, character, and letter shall be clearly legible. Drawings such as reproducible shall be usable for further reproduction to yield legible hard copy.
2. Documents submitted to Engineer that do not conform to specified requirements shall be subject to rejection by Engineer, and upon request by Engineer, Contractor shall resubmit

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conforming documents. If conforming Submittals cannot be obtained, such documents shall be retraced, redrawn, or photographically restored as may be necessary to meet such requirements. Contractor's [or their Subcontractor's] failure to initially satisfy the legibility quality requirements will not relieve Contractor [or their Subcontractors] from meeting the required schedule for Submittals.

C. Language and Dimensions:
   1. All words and dimensional units shall be in the English language.

D. Submittal Completeness:
   1. Submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other information specified to enable Engineer to review the information effectively.
   2. Where standard drawings are furnished which cover a number of variations of the general class of Equipment, each drawing shall be annotated to indicate exactly which parts of the drawing apply to the Equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers" will not be an acceptable means of annotating Submittals. Annotation shall also include proper identification of the Submittal permanently attached to the drawing.
   3. Reproductions or copies of Contract Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. Contractor may use a reproduction of Contract Drawings for erection drawings to indicate information on erection or to identify detail drawing references. Whenever the Drawings are revised to show this additional Contractor information, Engineer's title block shall be replaced with Contractor's title block, and Engineer's professional seal shall be removed from the drawing. Contractor shall revise these erection drawings for subsequent Engineer revisions to the Contract Drawings.

E. Form of Submittals:
   1. Submittals and other Project documents shall be transmitted in electronic format as specified.
      a. Selected Submittals may be provided in paper ("hardcopy") copies only with advance approval of Engineer, and using procedures specified herein.
      b. Equipment instruction books and operating manuals shall be provided in paper copies in addition to specified electronic format.
   2. Electronic Format:
      a. Scanned Submittals and documents are not acceptable. Transmit Submittals and Project documents in:
         (1) Adobe *PDF files created directly from native electronic format, or
         (2) Engineer-approved equal.
         (3) Electronic submittal PDF files are not to be combined files or collections of files/drawings. Each drawing document must stand alone.
         (4) Each file will be right reading and orientation the same for all consecutive resubmissions.
         (5) For any given Submittal, the filename and format shall be consistent for initial submission and subsequent revisions of the same. Use consistent naming convention throughout. Reference to revision or dates shall not be included in a filename.
         (6) Nonconforming Submittals are subject to rejection by Engineer.
      b. Provide "as-constructed" Submittals, record documents, Equipment instruction books and operating manuals, and other documents in Adobe PDF format as required and approved by Owner.

c. Equipment instruction books and operating and maintenance manuals shall be in Adobe *PDF format combined in one pdf file for the complete O&M manual, or divided into pdf files that represent entire volumes (corresponding to hardcopy volumes). The pdf files shall be completely bookmarked with links within the index sheet to the different sections within the manuals/volumes, corresponding to the defined tabs within the hardcopy version.
(1) Digital delivery media shall be email.

1.04 TECHNICAL SUBMITTALS:

A. Items shall include, but not be limited to, the following:
1. Manufacturer's specifications.
2. Catalogs, or parts thereof, of manufactured Equipment.
3. Shop fabrication and erection drawings.
4. General outline drawings of Equipment showing overall dimensions, location of major components, weights, and location of required building openings and floor plates.
5. Detailed Equipment installation drawings, showing foundation details, anchor bolt sizes and locations, baseplate sizes, location of Owner's connections; and all clearances required for erection, operation, and disassembly for maintenance.
6. Schematic diagrams for electrical items, showing external connections, terminal block numbers, internal wiring diagrams and one-line diagrams.
7. Bills of material and spare parts list.
8. Instruction books and operating manuals.
9. Material lists or schedules.
10. Performance tests on Equipment by manufacturers.
11. Concrete mix design information.
12. Samples and color charts.
13. All drawings, catalogs or parts thereof, manufacturer's specifications and data, Samples, instructions, and other information specified or necessary:
a. For Engineer to determine that Equipment and Materials conform to the design concept and comply with intent of the Contract Documents.
b. For proper erection, installation, operation, and maintenance of Equipment and Materials which Engineer will review for general content but not for basic details.
c. For Engineer to determine what supports, anchorages, structural details, connections, and services are required for Equipment and Materials, and effects on contiguous or related structures and Equipment and Materials.

B. Schedule of Submittals:
1. Prepare for Engineer's concurrence, a schedule for submission of all Submittals specified or necessary for Engineer's approval of the use of Equipment and Materials proposed for incorporation in the Work or needed for proper installation, operation, or maintenance. Submit the schedule with the procurement schedule and construction progress schedule. Schedule submission of all Submittals to permit review, fabrication, and delivery in time so as to not cause a delay in the Work of Contractor or their Subcontractors or any other contractors as described in the Contract Documents.
2. In establishing schedule for Submittals, allow 10 days in Engineer's office for reviewing original Submittals and 10 days in Engineer's office for reviewing resubmittals.
3. Submittals requiring revision shall be resubmitted within 5 days after receipt of Engineer's review notations.

4. The schedule shall indicate the anticipated dates of original submission for each item and Engineer's approval thereof, and shall be based upon at least one resubmission of each item.
5. Schedule all Submittals (Shop Drawings, product data, and Samples) required prior to fabrication or manufacture for submission within the time specified for each days of the Notice to Proceed. Schedule Submittals pertaining to storage, installation, and operation at the Site for Engineer's approval prior to delivery of the Equipment and Materials.
6. Resubmit Submittals the number of times required for Engineer's "Submittal Approved." However, any need for resubmittals in excess of the number set forth in the accepted schedule, or any other delay in obtaining approval of Submittals, will not be grounds for extension of the Contract Times, provided Engineer completes their reviews within the times specified.

C. Transmittal of Submittals:
1. All Submittals (Shop Drawings, product data, and Samples) for Equipment and Materials furnished by Contractor, Subcontractors, manufacturers, and Suppliers shall be submitted to Engineer by Contractor.
2. After checking and verifying all field measurements, transmit all Submittals to Engineer for approval as follows:
   a. Submittal Information Block:
      (1) Affix to all paper copies whether Submittal is prepared by Contractor, Subcontractor, or Supplier. Use transparent decal type Submittal Information Blocks for Shop Drawings and use gummed paper type for product data and Sample Submittals. All Submittal Information Blocks needed for this Contract will be furnished to Contractor at no charge at the initial coordination conference.
   b. Mark each Submittal by Project name and number, Contract title and number, and applicable Specification Section and Article number. Include in the letter of transmittal the Drawing number and title, sheet number (if applicable), revision number, and electronic filename (if applicable). Unidentifiable Submittals will be returned for proper identification.
   c. Check and approve Submittals of Subcontractors, Suppliers, and manufacturers prior to transmitting them to Engineer. Contractor's submission shall constitute a representation to Owner and Engineer that Contractor approves Submittals and has determined and verified all design criteria, quantities, dimensions, field construction and installation criteria, materials, catalog numbers, compliance with Laws and Regulations, and similar data, and Contractor assumes full responsibility for doing so; and Contractor has coordinated each Submittal with the requirements of the Work and the Contract Documents.
   d. At the time of each submission, call to the attention of Engineer in the letter of transmittal any deviations from requirements of the Contract Documents.
   e. Make all modifications noted or indicated by Engineer and return the required number of revised Submittals until approved. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by Engineer on previous Submittals. After paper copy Submittals have been approved, submit copies thereof for final distribution. Previously approved Submittals transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or fabrication, correct the Submittal and resubmit for review.

f. Following completion of the Work and prior to final payment, furnish record documents and approved Samples and Shop Drawings necessary to indicate "as constructed" conditions, including field modifications, in the number of copies specified. Furnish additional copies for insertion in Equipment instruction books and operating manuals as required. All such copies shall be clearly marked "PROJECT RECORD."
   (1) Submit a final record copy of the Master Field Drawing list which shall indicate the final revision status of each drawing on the list.

g. Keep a copy or sample of each Submittal in good order at the Site.

3. Quantity Requirements:
   a. Except as otherwise specified, transmit all Shop Drawings in the following quantities:
      (1) Initial Submittal:
         (a) Electronic - One copy to Owner and Engineer.
      (2) Resubmittals:
         (a) Electronic - One copy to Owner and Engineer.
      (3) Submittal for final distribution:
         (a) Electronic - One copy to Owner and Engineer.
      (4) As-constructed documents:
         (a) Electronic - One copy to Owner and Engineer.
   b. Transmit Submittals of product data as follows:
      (1) Initial Submittal:
         (a) Electronic - One copy to Owner and Engineer.
      (2) Resubmittals:
         (a) Electronic - One copy to Owner and Engineer.
      (3) Submittal for final distribution:
         (a) Electronic - One copy to Owner and Engineer.
   c. Transmit Submittals of Equipment instruction books and operating manuals as follows:
      (1) Initial Submittal:
         (a) Electronic - One copy to Owner and Engineer.
      (2) Resubmittals:
         (a) Electronic - One copy to Owner and Engineer.
      (3) Submittal for Final Distribution – 5 paper copies to Owner.
   d. When all Submittals have been updated to "as-constructed" conditions, transmit to Engineer and to Owner in electronic format.

D. Engineer's Review:
   1. Engineer will review and take appropriate action on Submittals in accordance with the accepted schedule of Submittals. Engineer's review and approval will be only to determine if the items of Equipment and Materials covered by the Submittals will, after installation or incorporation in the Work, conform to information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
   2. Engineer's review and approval will not extend to design data reflected in Submittals which is peculiarly within the special expertise of Contractor or Contractor's Subcontractors or Suppliers. Review and approval of a component item as such will not indicate approval of the assembly in which the item functions.
   3. Engineer's review and approval of Shop Drawings, product data, or Samples will not relieve Contractor of responsibility for any deviation from requirements of the Contract

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Documents unless Contractor has in writing called Engineer's attention to such deviation at the time of submission, and Engineer has given written concurrence in and approval of the specific deviation. Approval by Engineer shall not relieve Contractor from responsibility for errors or omissions in Submittals.

E. Submittal Action Stamp:

1. Engineer's review action stamp, appropriately completed, will appear on all Submittals of Contractor when returned by Engineer. Review status designations listed on Engineer's action stamp are defined as follows:

   A - SUBMITTAL APPROVED: Signifies Equipment or Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is approved for incorporation in the Work. Contractor is to proceed with fabrication or procurement of the items and with related Work. Copies of the Submittal are to be transmitted to Engineer for final distribution.

   B - SUBMITTAL APPROVED AS NOTED (RESUBMIT): Signifies Equipment and Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is approved for incorporation in the Work in accordance with Engineer's notations. Contractor is to proceed with fabrication or procurement of the items and with related Work in accordance with Engineer's notations and is to submit a revised Submittal responsive to notations marked on the returned Submittal or written in the letter of transmittal.

   C - SUBMITTAL RETURNED FOR REVISION (RESUBMIT): Signifies Equipment and Material represented by the Submittal appears to conform with the design concept and comply with the intent of the Contract Documents but information is either insufficient in detail or contains discrepancies which prevent Engineer from completing their review. Contractor is to resubmit revised information responsive to Engineer's annotations on the returned Submittal or written in the letter of transmittal. Fabrication or procurement of items represented by the Submittal and related Work is not to proceed until the Submittal is approved.

   D - SUBMITTAL NOT APPROVED (SUBMIT ANEW): Signifies Equipment and Material represented by the Submittal does not conform with the design concept or comply with the intent of the Contract Documents and is disapproved for use in the Work. Contractor is to provide Submittals responsive to the Contract Documents.

   F - FOR REFERENCE, NO APPROVAL REQUIRED: Signifies Submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins and similar data, all of which are useful to Engineer or Owner in design, operation, or maintenance, but which by their nature do not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. Engineer reviews such Submittals for general content but not for basic details.

F. Instruction Books and Operating Manuals:

1. In addition to electronic Submittals specified above, Equipment instruction books and operating manuals prepared by the manufacturer shall include the following:
   a. Index and tabs.

b. Instructions for installation, start-up, operation, inspection, maintenance, parts lists and recommended spare parts, and data sheets showing model numbers.
c. Applicable drawings.
d. Warranties and guarantees.
e. Address of nearest manufacturer-authorized service facility.
f. All additional data specified.

2. Information listed above shall be bound into hard-back binders of Bok-Hinge Split Prong or McBee Swing Hinge three-ring type. Sheet size shall be 8-1/2 x 11. Binder color shall be black. Capacity shall be a minimum of 1-1/2 inches, but sufficient to contain and use sheets with ease.

1.05 INFORMATIONAL SUBMITTALS:

A. Informational Submittals are comprised of technical reports, administrative Submittals, and guarantees which relate to the Work, but do not require Engineer approval prior to proceeding with the Work. Informational Submittals shall include:
1. Welder qualification tests.
2. Welding procedure qualification tests.
3. Hydrostatic testing of pipes.
4. Field test reports.
5. Concrete cylinder test reports.
6. Certification on Materials:
a. Steel mill tests.
b. Galvanizing tests.
7. Soil test reports.
8. Temperature records.
9. Shipping or packing lists.
10. Job progress schedules.
11. Equipment and Material delivery schedules.
12. Progress photographs.
13. Warranties and guarantees.

B. Transmittal of Informational Submittals:
1. All informational Submittals furnished by Subcontractors, manufacturers, and Suppliers shall be submitted to Engineer by Contractor unless otherwise specified.
a. Identify each informational Submittal by Project name and number, Contract title and number, and Specification Section and Article number marked thereon or in letter of transmittal. Unidentifiable Submittals will be returned for proper identification.
b. At the time of each submission, call to the attention of Engineer in the letter of transmittal any deviations from requirements of the Contract Documents.
2. Quantity Requirements:
a. Technical reports and administrative Submittals except as otherwise specified:
(1) Electronic: One to Owner and Engineer.
b. Written Certificates and Guarantees:
(1) Owner and Engineer: 1 copy.
3. Test Reports:
a. Responsibilities of Contractor, Owner, and Engineer regarding tests and inspections of Equipment and Materials and completed Work are set forth elsewhere in these Contract Documents.

b. The party specified responsible for testing or inspection shall in each case, unless otherwise specified, arrange for the testing laboratory or reporting agency to distribute test reports as follows:
   (1) Owner: Two copies.
   (2) Engineer: One copy.
   (3) Resident Project Representative: One copy.
   (4) Contractor: Two copies.
   (5) Manufacturer or Supplier: One copy.

C. Engineer's Review:
   1. Engineer will review informational Submittals for indications of Work or Material deficiencies.
   2. Engineer will respond to Contractor on those informational Submittals which indicate Work or Material deficiency.

PART 2 - EXECUTION - NOT APPLICABLE.

PART 3 - EXECUTION - NOT APPLICABLE.

END OF SECTION 01 33 00

APPENDIX 013300-A
Submittal Matrix
LEGEND: E = Electronic, P(x) = Paper Copy (no. of copies)

Pkg ID	Package Description	With Proposal	For Approval (required prior to fabrication)	For Information/ Certification/Construction
1	Certificate of Insurance			14 days after NTP
2	Notice of Shipment			E - two weeks prior to shipment
3	Performance Bond (if required)	E		14 days after Contract Exec ution
4	Project Organizational Chart, including key personnel and equipment suppliers/fabricators	E		
5	Final Lien Waiver			With Final Invoice
6	Preliminary Work Progress Schedule	E		
7	Schedule of Values	E		E - 10 business days after NTP
8	Construction Facilities Plan			E - 30 days prior to mobilization
9	Preliminary Plan for excavating, segregating, moisture conditioning, hauling and placing CCR	E		
10	Preliminary Schedule of Submittals			E - 15 days after NTP
11	Detailed Work Progress Schedule		E - 30 days after NTP, monthly thereafter	
12	CCR Removal Plan	E		
13	Dewatering Plan	E		
14	Work Progress Reports			E - 30 days after NTP, monthly through construction
15	Test Reports			E - 10 days after each test
16	Rescue and Safety Plan			E - 30 days after NTP
17	Seed mixture and fertilizer data			E - 30 days prior to Shipment
18	CCR Bottom Verification Plan	E		
19	Waste Disposal Operational Plan			E - 30 days prior to work
20	Record Drawings including as-built drawings			E - With issue of turnover package.

SECTION 014000 – CONTRACTOR QA/QC

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality assurance and quality control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality assurance and quality control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality assurance and quality control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:

1. For developing a schedule of required tests and inspections: SECTION 013200 - Construction Progress Schedules and Reports.
2. For specific test and inspection requirements: DIVISIONS 2 through 32 sections.

1.02 REFERENCES:

A. ASTM International (ASTM):

1. E548 - Guide for General Criteria Used for Evaluating Laboratory Competence.

B. Code of Federal Regulations (CFR):

1. 29 CFR 1910, Subpart A, Section 1910.7 - Definition and Requirements for a Nationally Recognized Testing Laboratory (NRTL).

1.03 DEFINITIONS:

A. Quality Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual Equipment and Materials incorporated into the Work and completed construction comply with requirements. Services do not include Contract enforcement activities performed by Others.

C. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before Equipment and Materials are incorporated into the Work to verify performance or compliance with specified criteria.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

E. Source Quality Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

F. Field Quality Control Testing: Tests and inspections that are performed on Site for installation of the Work and for completed Work, i.e., soil compaction, concrete strength, and weld radiographs.

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G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
I. Experienced: When used with an entity, "experienced" means having successfully completed specified number of previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.04 SUBMITTALS:

A. Qualification Data: For testing agencies to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Description of test and inspection.
   3. Identification of applicable standards.
   4. Identification of test and inspection methods.
   5. Number of tests and inspections required.
   6. Time schedule or time span for tests and inspections.
   7. Entity responsible for performing tests and inspections.
   8. Requirements for obtaining samples.
   9. Unique characteristics of each quality control service.
C. Reports: Arrange for testing agency/laboratory to prepare and submit certified written reports that include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and reinspecting.
D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.05 QUALITY ASSURANCE:

A. General: Qualifications paragraphs in this Section establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing Equipment or systems or Material similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing Equipment and Material similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, Equipment, or Material that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP).

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's Equipment, Material, or systems that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
   1. Contractor responsibilities include the following:
      a. Provide test specimens representative of proposed products and construction.
      b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
      c. Provide sizes and configurations of test assemblies to adequately demonstrate capability of products to comply with performance requirements.
      d. Build Site-assembled test assemblies using installers who will perform same tasks for Project.
      e. When testing is complete, remove test specimens and assemblies; do not reuse products on Project.
   2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Owner. Interpret tests and

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inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.06 QUALITY CONTROL:

A. Owner Responsibilities: Where quality control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
   2. Payment for these services will be made directly by Owner.
   3. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Price will be adjusted by Change Order.

B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality control services specified and those required by authorities having jurisdiction. Perform quality control services required of Contractor by authorities having jurisdiction, whether specified or not.
   1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality control services. Testing agency shall be acceptable to Owner.
      a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
   2. Notify testing agencies at least 24hours in advance of time when Work that requires testing or inspecting will be performed.
   3. Where quality control services are indicated as Contractor's responsibility, submit a certified written report, electronically, of each quality control service.
   4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
   5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services:
   1. Where indicated or specified in respective Equipment specifications, provide services of an experienced, competent, factory-authorized representative of the manufacturer of each item of Equipment.
   2. Arrange for Field Services representative to visit the Site of the Work and inspect, check, adjust as necessary, and approve the Equipment installation, including service connections. Field Services representative shall be present when Equipment is started up and placed into operation and shall revisit the Site as often as necessary until problems are corrected, and Equipment installation and operation are acceptable to Owner.
   3. Submit to Owner the Field Services representative's completed record forms as required and written report certifying that the Equipment has been properly installed and lubricated; is in accurate alignment; is free from undue stress imposed by connecting piping or anchor bolts; and has been successfully operated under expected full load conditions.

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Owner and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify Owner and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
   4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
   5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
   6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Delivery of samples to testing agencies.
   6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
   7. Security and protection for samples and for testing and inspecting equipment at Project Site.

G. Coordination: Coordinate sequence of activities to accommodate required quality assurance and quality control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS - Not Applicable.

PART 3 - EXECUTION

3.01 ACCEPTABLE TESTING AGENCIES:

A. Contractor to submit with Bid their proposed testing agency for Contractor required testing.

3.02 TEST AND INSPECTION LOG:

A. Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Owner.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project Site. Post changes and modifications as they occur. Provide access to test and inspection log for Owner's reference during normal working hours.

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3.03 REPAIR AND PROTECTION:

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 01 42 00 – DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.01 SUMMARY:

A. Definitions:

1. Basic Contract definitions used in the Contract Documents are defined in the Standard Terms and Conditions and this Section. Definitions and explanations are not necessarily either complete or exclusive but are general for the Work.
2. General Requirements are the provisions or requirements of Division 01 Sections, and which apply to the entire Work of the Contract.
3. Definitions used in this Section are not intended to negate the meaning of other terms used in the Contract Documents, including such terms as "systems," "structures," "finishes," "accessories," "furnishings," "special construction," and similar terms. Such terms are self-explanatory and have recognized meanings in the construction industry.
4. When not defined in Standard Terms and Conditions and wherever used in the Contract Documents, the following terms have the meanings indicated below, which are applicable to both the singular and plural thereof.
    a. "Addenda" - written or graphic changes or interpretations of the Contract Documents issued by Engineer prior to the opening of Bids.
    b. "Agreement" - the written agreement between Owner and Contractor covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.
    c. "Application for Payment" - the form acceptable to Owner which is to be used by Contractor during the course of the Work in requesting progress and final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
    d. "Asbestos" - any material that contains more than 1% asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
    e. "Bid" - the formal offer of the Bidder submitted on the prescribed Bid Form together with the required Bid security and all information submitted with the Bid that pertains to performance of the Work.
    f. "Bidder" - any person, firm, or corporation submitting a Bid for the Work or their duly authorized representatives.
    g. “Business Day” – every Day other than Saturday, Sunday or a legal holiday recognized by the State of Kentucky.
    h. “CEMS” – Continuous Emissions Monitoring System.
    i. "Change Order" - a written document signed by Owner and Contractor authorizing an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued on or after execution of the Agreement.
    j. "Contract Drawings" - drawings and other data designated as Contract Drawings prepared by Engineer for this Contract which show the character and scope of the Work to be performed and are referred to in the Contract Documents.
    k. “Contract Documents” – the written documents that define the roles, responsibilities, and Work under the construction Contact. The individual documents that constitute “Contract Documents” include Specifications, Exhibits, and other documents included in the Agreement.

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l. “Contract Lists” – lists and other data designated as Contract Lists prepared by Engineer for this Contract which show the character and scope of the Work to be performed and are referred to in the Contract Documents.
m. "Contract Price" - the total monies payable to Contractor under the Contract Documents as stated in the Agreement.
n. "Contract Times" - the number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
o. "Contractor" - a manufacturer, fabricator, Contractor, distributor, materialman, or vendor. The person, firm or corporation with whom Owner has entered into the Agreement.
p. "Date of Contract", "Effective Date of the Agreement" - the date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
q. "Day" - a calendar day of 24 hours measured from midnight to the next midnight shall constitute a day including Saturdays, Sundays, and holidays.
r. “Deliverables” means the submittals and other documents delivered to Engineer in performance of Work hereunder including, without limitation, submittals such as design plans, models, drawings, prints, samples, transparencies, specifications, reports, manuscripts, working notes, documentation, manuals, photographs, negatives, tapes, discs, databases, software, and other information, data, and items embodied in any tangible form.
s. “Demolition Schematics” - drawings and other data designated as Demolition Schematics prepared by Engineer for this Contract which show the character and scope of the Work to be performed and are referred to in the Contract Documents.
t. "Engineer" or "Engineer-Architect" or “Owner’s Engineer” - Burns & McDonnell Engineering Company, Inc., a Missouri Corporation, or its duly authorized representatives.
u. "Engineer's Consultant" - an individual or entity having a contract with Engineer to furnish services as Engineer's independent professional associate or consultant with respect to the Project.
v. "Equipment" - a product with operational or nonoperational parts, whether motorized or manually operated, or fixed. Equipment may require service connections, such as wiring or piping.
w. "Field Order" - a written order issued by Engineer which orders minor changes in the Work, but which does not involve a change in the Contract Price or the Contract Terms.
x. "First Fire" – When the first main gas burner establishes a stable flame, the Project has reached first fire.
y. "General Requirements" - Sections of DIVISION 01 of the Specifications. The General Requirements pertain to all Sections of the Specifications.
z. "Hazardous Waste" - the term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
aa. "Law" - law of the place of the Project which shall govern the performance hereunder.

bb. "Laws and Regulations," "Laws or Regulations" - laws, rules, regulations, ordinances, codes and/or orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

cc. "Lien" - charges, security interests, or encumbrances on Project funds, real property, or personal property.

dd. "Materials" - products substantially shaped, cut, worked, mixed, finished, refined, or otherwise fabricated, processed, or installed to form a part of the Work.

ee. "Notice of Award" - the written notice by Owner to the apparent successful Bidder stating that upon compliance by the apparent successful Bidder with the conditions precedent enumerated therein, within the time specified, Owner will sign and deliver the Agreement.

ff. "Notice to Proceed" - the written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform Contractor's obligation under the Contract Documents.

gg. "Owner" means Big Rivers Electric Corporation and the public body or authority, corporation, association, partnership, or individual with whom the Contractor has entered into the Agreement and for whom the Work is to be provided.

hh. “Others” means item is to be supplied or provided by a different Contract.

ii. "Partial Utilization" - placing a portion of the Work in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion of all the Work.

jj. "PCBs" - Polychlorinated biphenyls.

kk. "Products": Items purchased for incorporation in the Work, regardless of whether they were specifically purchased for the Project or taken from the previously purchased stock. The term "product" includes the terms "Material," "Equipment," "system," and other terms of similar intent.

(1) “Named Products” are items identified by the manufacturer’s product name, including make or model number or other designation, shown or listed in the manufacturer’s published product literature that is current as of the date of the Contract Documents.

ll. "Project" - the total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

mm. "Project Manual" - The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

nn. "Radioactive Material" - source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

oo. “Record Drawings” Set of Contract Drawings marked by the Contractor to show the actual installation, “as-builts” where the installation varies substantially from the Work as originally shown.

pp. "Resident Project Representative" - the authorized representative of Engineer who is assigned to the construction Site or any part thereof.

qq. "Reference Drawings" - drawings not specifically prepared for this Contract, but which contain information pertinent to the Work.

rr. “RFQ” – Request for Quotation

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ss. "Samples" - physical examples of Equipment, Materials, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

tt. "Shop Drawings" - all drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

uu. "Site" - lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

vv. "Specifications" – as defined in the Standard Terms and Conditions and those portions of the Contract Documents consisting of written technical descriptions of the Work, and covering the Equipment, Materials, workmanship, and certain administrative details applicable thereto.

ww. "Subcontractor" - an individual, firm, or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

xx. "Submittals" - all Shop Drawings, product data, and Samples which are prepared by a Subcontractor, manufacturer, or Contractor, and submitted by Contractor to Engineer as a basis for approval of the use of Equipment and Materials proposed for incorporation in the Work or needed to describe proper installation, operation and maintenance, or technical properties.

yy. "Substantial Completion" - the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer as evidenced by their definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be used for the purposes for which it was intended.

zz. “Substitutions”: Changes in products, Materials, Equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:

(1) Revisions to the Contract Documents requested by Owner or Engineer.

(2) Specified options of products and construction methods included in the Contract Documents.

aaa. "Underground Facilities" - all pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems, or water.

bbb. "Unit Price Work" - Work to be paid on the basis of Unit Prices.

ccc. "Work” means Services and the entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, the furnishing of Bonds and insurance, furnishing labor, and furnishing and incorporating Materials and Equipment into the construction, all as required by the Contract Documents.

ddd. "Work Change Directive" - a written directive to Contractor, issued on or after the effective Date of the Agreement and signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work, or responding to

differing or unforeseen physical conditions under which the Work is to be performed. A Work Change Directive may not change the Contract Price or the Contract Times but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

eee. "Work Day or Working Day" – every Day Contactor is onsite performing Work.

fff. "Written Amendment" - a written amendment to the Contract Documents, signed by Owner and Contractor on or after the Effective Date of the Agreement, and normally dealing with the nonengineering or nontechnical rather than strictly Work-related aspects of the Contract Documents.

ggg. "electronic equipment compliance" or "electronically compliant" – means that equipment, devices, items, systems, software, hardware, and firmware included in the Work or used to produce the Work shall properly, appropriately, and consistently function and accurately process date and time data (including without limitation: calculating, comparing, and sequencing).

B. Whenever used in the Contract Documents, the following terminology shall have the intent and meaning specified below:
   1. The words "as indicated" refer to the Drawings and "as specified" refer to the remaining Contract Documents.
   2. The terms "responsible" or "responsibility" mean that the party to which the term applies shall assume all responsibilities thereto.
   3. The term "approve", when used in response to Submittals, requests, applications, inquiries, reports and claims by Contractor, will be held to limitations of Engineer's responsibilities and duties or specified in these Contract Documents. In no case will "approval" by Engineer be interpreted as a release of Contractor from responsibilities to fulfill requirements of Contract Documents.
   4. When applied to Equipment and Materials, the words "furnish", "install", and "provide" shall mean the following:
      a. The word "provide" shall mean to furnish, pay for, deliver, assemble, install, adjust, clean and otherwise make Materials and Equipment fit for their intended use.
      b. The word "furnish" shall mean to secure, pay for, deliver to Site, unload and uncrate Equipment and Materials.
      c. The word "install" shall mean to assemble, place in position, incorporate in the Work, adjust, clean, and make fit for use.
      d. The phrase "furnish and install" shall be equivalent to the word "provide."

1.02 RELATED REQUIREMENTS:

A. Specification standards and associations applicable to the Work are specified in each Section.
B. Submittals: Section 01 33 00.

1.03 SPECIFICATION FORMAT AND CONTENT EXPLANATIONS:

A. Specification Format: The Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's (CSI) Section Format and MasterFormat numbering system. Some portions may not fully comply and no particular significance will be attached to such compliance or noncompliance.
   1. Divisions and Sections: For convenience, a basic unit of Specification text is a "Section," each unit of which is numbered and named. These are organized with related Sections, into "Divisions," which are recognized as the present industry consensus on uniform

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organization and sequencing of Specifications. The Section title is not intended to limit meaning or content of Section, nor to be fully descriptive of requirements specified therein, nor to be an integral part of text.

2. Section Numbering: Used for identification and to facilitate cross-references in Contract Documents. Sections are placed in numeric sequence; however, numbering sequence is not complete, and listing of Sections in Table of Contents at beginning of the Project Manual must be consulted to determine numbers and names of Specification Sections in these Contract Documents.
3. Page Numbering: Numbered independently for each Section. Section number is shown with page number at bottom of each page, to facilitate location of text.
4. Parts: Each Section of Specifications generally has been subdivided into three basic "parts" for uniformity and convenience (PART 1 - GENERAL, PART 2 - PRODUCTS, and PART 3 - EXECUTION). These "Parts" do not limit the meaning of text within. Some Sections may not contain all three "Parts" when some are not applicable, or may contain more than three "Parts" to add clarity to organization of Section.
5. Underscoring of Titles: Used strictly to assist reader of Specification in scanning text for key words in content. No emphasis on or relative importance is intended except where underscoring may be used in body of text to emphasize a duty, critical requirement, or similar situation.
6. Project Identification: Project file number and identification are recorded at bottom of each page of Specifications to minimize possible misuse of Specifications, or confusion with other Project Specifications.

B. Specification Content:

1. These Specifications apply certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
   a. Imperative and Streamlined Language: These Specifications are written in imperative and abbreviated form. This imperative language of the technical Sections is directed at the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall," "the Contractor shall," and "shall be," and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, fulfill (perform) all indicated requirements whether stated imperatively or otherwise.
   b. Specifying Methods: The techniques or methods of specifying requirements varies throughout text, and may include "prescriptive," "compliance with standards," "performance," "proprietary," or a combination of these. The method used for specifying one unit of Work has no bearing on requirements for another unit of Work.
   c. Overlapping and Conflicting Requirements: Where compliance with two or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, notify Owner’s Engineer in writing for a decision, which Owner’s Engineer will render in writing within a reasonable time.
   d. Abbreviations: Throughout the Contract Documents are abbreviations implying words and meanings which shall be appropriately interpreted. Specific abbreviations have been established, principally for lengthy technical terminology and in conjunction with coordination of Specification requirements with notations

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on Drawings and in schedules. These are normally defined at first instance of use. Organizational and association names and titles of general standards are also abbreviated.

C. Assignment of Specialists: In certain instances, Specification text requires that specific Work be assigned to specialists in the operations to be performed. These specialists shall be engaged for performance of those units of Work, and assignments are requirements over which Contractor has no choice or option. These assignments shall not be confused with, and are not intended to interfere with, enforcement of building codes and similar regulations governing the Work, local trade and union jurisdictions, and similar conventions. Nevertheless, final responsibility for fulfillment of Contract requirements remains with Contractor.

D. Trades: Except as otherwise specified or indicated, the use of titles such as "carpentry" in Specification text, implies neither that the Work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradespersons of that corresponding generic name.

1.04 DATA DEFINITIONS:

A. Columns in the Master Device List (MDL) specify the following for a listed device:
   1. Tag: Unique functional identifier.
   2. Description: Unique abbreviated functional description.
   3. Plan Drawing: Specifies the Plan Drawing indicating either the "Mounted On" tag or the device tag. Plan drawings indicate in plan view the approximate location of:
      a. Field-mounted skids, instruments, valves, specials and equipment.
      b. Process connections for remote mounted devices.
      c. Stands.
      d. Final control elements.
      e. Air users.
   4. PID Drawing: Piping & Instrumentation Diagram or Process & Instrumentation Diagram on which the device is indicated.
   5. Datasheet: Specifies the document that details the procurement and installation responsibility of each party.
   6. Scope columns:
      a. Furnished By: Specifies the Contract required to furnish. If furnished as part of this Contract, the device and accessories shall meet the requirements of this specification and the specified datasheet or procurement list.
      b. Demo By: Specifies the Contract required to demolish. If demolished as part of this Contract, the demolition shall meet the requirements of Section 48 41 16 and the specified Exhibit C - Demolition Schematics.
      c. Installed By: Specifies the Contract required to physically place and secure the device. If installed as part of this Contract, the installation shall meet this Specification, the Location Plans and the Installation Detail or Isometric.
      d. Wire By: Specifies the Contract required to terminate electrical conductors on the device. If wired as part of this Contract, the wiring shall meet the requirements of this Specification and the specified Connection Diagram.
      e. Tube By: Specifies the Contract required to provide tubing between process connections indicated on the P&ID, Isometric or Installation Detail. If tubed as part of this Contract, the installation shall meet the requirements of this Specification, the specified Installation Detail or Isometric, and the specified Location Plan.

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f. Calibrate By: Specifies the Contract required to calibrate the device. If calibrated as part of this Contract, the calibration procedure shall meet the requirements of this Specification.
g. Mounted On: Specifies the tag number of Equipment and Material or the type of equipment from which this instrument is supported.

7. Install Detail: Specifies the installation detail on which the device is indicated.
8. Comments: Explanatory notes.

B. Columns in the Cable Schedule specify the following for a listed Cable:
1. Cable Number: Unique functional identifier.
2. Cable Status: Dictates if cable is to be installed, demolished, or by Others.
3. From: A unique functional identifier from the MDL. From and To tags describe an electrical interconnection between devices.
4. From Description: The associated unique abbreviated functional description from the MDL.
5. From Plan Drawing: The associated Location Plan or Piping Plan from the MDL, or a description of the area where the device has been installed.
6. To: A unique functional identifier from the MDL. From and To tags describe an electrical interconnection between devices.
7. To Description: The associated unique abbreviated functional description from the MDL.
8. To Plan Drawing: The associated Location Plan or Piping Plan from the MDL, or a description of the area where the device has been installed.
9. Connection Diagram: Specifies the applicable drawings that detail conductor and terminal connections.
10. Cable Description Specifies the conductor count and size.
11. Installation Contract: Specifies the Contract required to physically place and secure the device. If installed as part of this Contract, the installation shall meet this Specification and all associated Contract Drawings.
12. Cable Type: Specifies the cable specification included in Division 26 for cable procurement. It may also specify if the cable is existing where procurement and cable pulls are not applicable.
13. Comment: Explanatory notes.

1.05 DRAWING SYMBOLS:

A. Except as otherwise indicated, graphic symbols used on Drawings are those symbols recognized in the construction industry for purposes indicated. Refer instances of uncertainty to Owner's Engineer for clarification.

1.06 INDUSTRY STANDARDS:

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference and are stated in each Section.
1. Referenced standards, referenced directly in Contract Documents or by governing regulations, have precedence over non-referenced standards which are recognized in industry for applicability to the Work.
2. Where compliance with an industry standard is required, the latest standard in effect at time of opening Bids shall govern.
3. Where an applicable code or standard has been revised and reissued after the effective date of the Contract and before performance of Work affected by the revision, Owner's

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Engineer will decide whether to issue a Change Order to proceed with the revised standard.

4. In every instance the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements. Refer instances of uncertainty to Owner's Engineer for a decision before proceeding.
5. Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.
    a. Where copies of standards are needed for performance of a required construction activity, Contractor shall obtain copies directly from the publication source.

B. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision.

PART 2 - PRODUCTS - NOT APPLICABLE.

PART 3 - EXECUTION - NOT APPLICABLE.

END OF SECTION 01 42 00

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SECTION 015100 - TEMPORARY UTILITIES AND FACILITIES

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes requirements of a temporary nature not normally incorporated into final Work. It includes the following:
   1. Utility services.
   2. Construction and support facilities.
   3. Construction aids.
   4. Safety and health.
   5. Fire protection.

B. Related Work Specified Elsewhere:
   1. Temporary Barriers and Controls: SECTION 015700.
   2. Field Offices and Sheds: SECTION 015200.

1.02 REFERENCES:

A. American National Standards Association (ANSI):
   1. A10 Series - Safety Requirements for Construction and Demolition.

B. National Electrical Contractors Association (NECA):
   1. Electrical Design Library - Temporary Electrical Facilities.

C. National Fire Protection Association (NFPA):
   1. 10 - Portable Fire Extinguishers.
   2. 70 - National Electrical Code.
   3. 241 - Safeguarding Construction, Alterations, and Demolition Operations.

D. National Electrical Manufacturers Association (NEMA).

E. Underwriters Laboratories (UL).

1.03 QUALITY ASSURANCE:

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
   1. Building Code requirements.
   2. Health and safety regulations.
   3. Utility company regulations.
   4. Police, Fire Department, and rescue squad rules.
   5. Environmental protection regulations.
   6. Project permit requirements

B. Standards:
   1. Comply with NFPA 10 and 241, and ANSI A10 Series standards "Temporary Electrical Facilities."
   2. Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.04 FURNISHED BY CONTRACTOR:

A. Except as expressly set forth in Article 1.05, Contractor shall supply, install, properly maintain, and remove all temporary facilities and utilities necessary for performance of the Work, including but not limited to:
   1. All temporary buildings. Refer to SECTION 015200.
   2. Fuels and lubricants.

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3. Transportation facilities on and off Site.
4. Communication facilities.
5. Compressed gases.
6. Maintenance cleanliness of Contractor's work areas.
7. Rigging, scaffolding, and all equipment required for erection.
8. Electric panel and distribution wiring. Connection to and disconnection from the Owner's power source shall be by Owner after 24-hour notice. All electrical conductors from the load centers to the Contractor's equipment shall be provided by the Contractor.
9. All cranes and other necessary equipment for lifting and moving equipment.
10. All small tools.
11. Temporary lighting.
12. Temporary heat.
13. All standard expendable or consumable construction items and supplies.
14. Containers, ice, and drinking cups for potable water.
15. Cost of unloading, loading, and storing all Materials, Equipment, and supplies.
16. Dumpsters and waste disposal related to the Work.
17. All sanitary facilities at grade, including janitorial services.

1.05 FURNISHED BY OWNER:

A. Owner shall supply to the Contractor the following:
1. First-aid facilities.
2. Storage space adjacent to the construction Site for performance of Work. However, the Contractor shall be responsible for security of materials stored in these areas. The location of all storage areas must be approved by Owner in advance.
3. Electrical power at construction power load centers. Connection to Owner's load centers shall be performed by Owner after reasonable notice by the Contractor. All electrical conductors from the load centers to the Contractor's equipment shall be provided by the Contractor.
4. Space for the location of office trailer(s), change trailer(s), material trailer(s), and tool trailer(s), will be in the area designated by Owner.
5. Parking for Contractor Employees. All Contractor's employees shall park in the designated parking lot. Contractor will be allowed to bring onto the job Site only vehicles marked with the Contractor's name on the outside of the vehicle.
6. Maintenance of the Site roads.

1.06 PROJECT CONDITIONS:

A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility.
B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities or permit them to interfere with progress. Do not allow hazardous, dangerous, unsanitary conditions, or public nuisances to develop or persist on the Site.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

A. Provide new materials and equipment. If acceptable to Owner, undamaged previously used materials and equipment in serviceable condition may be used. Provide materials and

equipment suitable for the use intended, of capacity for required usage, and meeting applicable codes and standards. Comply with requirements of DIVISIONS 32 through 33.

B. Water: Provide potable water approved by local health authorities.

C. Water Hoses: Provide 3/4-inch, heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

D. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

E. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio. If compliance with 2.01.D is not possible, provide GFCI protection with each extension cord.

F. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

G. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.

H. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.01 TEMPORARY UTILITIES:

A. General:

1. Engage the appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
2. Provide adequate utility capacity at each stage of construction. Prior to availability of temporary utilities at the Site, provide trucked-in services as required for start-up of construction operations.
3. Obtain and pay for temporary easements required to bring temporary utilities to the Project Site, where Owner's permanent easement cannot be used for that purpose.
4. Furnish, install, and maintain temporary utilities required for adequate construction, safety, and security. Modify, relocate, and extend systems as Work progresses. Repair damage caused by installation or use of temporary facilities. Grade the areas of Site affected by temporary installations to required elevations and grades and clean the area. Remove on completion of Work or until service or facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
5. The types of temporary construction utilities and facilities required include, but not by way of limitation, water distribution, drainage, dewatering equipment, enclosure of Work, heat, ventilation, electrical power distribution, lighting, hoisting facilities, stairs, ladders, and roads.

6. Inspect and test each service before placing temporary utilities in use. Arrange for required inspections and tests by governing authorities, and obtain required certifications and permits for use.
7. Materials used for temporary service shall not be used in the permanent system unless so specified or acceptable to Owner.

B. Because of operational requirements, Owner may restrict or curtail Contractor's use of electric power, and water. If these utilities are critical to Contractor's operations and completion of the Contract on the agreed schedule, Contractor shall consider furnishing alternate sources for its own use. Restriction or curtailment of these utilities shall not be a basis for a claim against Owner or an extension of the agreed schedule.

3.02 TEMPORARY ELECTRICITY AND LIGHTING:

A. Use of Existing System:
1. Owner's existing system shall not be used for temporary electricity except as specified for office facilities.

B. Construction Power Locations: As designated by Owner.

C. Costs of Installation and Operation:
1. Pay fees and charges for permits, applications, and inspections.
2. Pay costs of installation, operation, maintenance, removal of temporary services, and restoration of any permanent facilities used.
3. Contractor shall pay cost of power.

3.03 TEMPORARY WATER:

A. Contractor shall provide approved containers for distributing potable water and provide personnel to fill and distribute water to areas needed.

B. Construction water will be available for Contractor’s use from Owner-approved location.

3.04 TEMPORARY TELEPHONE SERVICE:

A. General:
1. Arrange with local telephone service company and provide direct line telephone service at the construction Site for the use of construction personnel and employees.
2. Contractor shall arrange for cellular/mobile telephone service Contractor for use by Contractor as required.

B. Costs of Installation and Operation:
1. Pay all costs for telephone service including, but not limited to, long distance and toll charges.

3.05 TEMPORARY SANITARY FACILITIES:

A. Contractor-Furnished Facilities:
1. Contractor shall furnish, install, and maintain temporary sanitary facilities for use through construction period. Remove on completion of Work.
2. Provide for all construction workers under this Contract and representatives at the Site.
3. Toilet facilities shall be of the chemical, aerated recirculation, or combustion type, properly vented, and fully enclosed with a glass- fiber-reinforced polyester shell or similar nonabsorbent material.
4. Wash Facilities: Contractor shall provide potable water-supplied wash facilities at locations convenient to construction personnel involved in the handling of compounds and materials where wash-up is necessary to maintain a safe, healthy and sanitary condition. Where recommended or required by governing authorities and regulations or

recognized standards provide emergency safety showers, emergency eye-wash fountains, showers, and similar facilities. Dispose of drainage properly. Supply soap and other cleaning compounds appropriate for each condition.

5. Drinking Water Fixtures: Provide containerized tap-dispenser type drinking water units.
6. Supply and maintain toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility. Provide appropriate covered waste containers for used material.

B. Use of Existing Facilities:
   1. Existing restrooms facilities shall not be used.

3.06 SEWERS AND DRAINAGE:

A. General: Existing sewers or drainage facilities are not available for discharge of effluent. Provide containers to remove and dispose of effluent off the Site in a lawful manner.

3.07 TEMPORARY CONSTRUCTION AIDS:

A. General:
   1. Provide construction aids and equipment required by personnel and to facilitate the execution of the Work; scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.
   2. Owner will not furnish or loan any equipment or tools to the Contractor.
   3. Materials may be new or used, must be suitable for the intended purpose, and meet the requirements of applicable codes, regulations, and standards.
   4. All equipment shall be located to maintain utility Owner required clearances from overhead power lines at all times.

3.08 TEMPORARY ENCLOSURES:

A. New Construction:
   1. Provide temporary enclosure as Work progresses as required, to provide acceptable working conditions, weather protection for materials, allow for effective temporary heating, and to prevent entry of unauthorized persons.

3.09 TEMPORARY SAFETY AND HEALTH:

A. General: Contractor shall be solely responsible for initiating, maintaining, and supervising all safety and health precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide necessary protections to prevent injury or loss to, all employees on the Work and other persons and organizations who may be affected thereby.

3.10 TEMPORARY FIRE PROTECTION:

A. General:
   1. Contractor shall be responsible for development of a fire prevention and protection program for all Work under this Contract.
   2. The program shall comply with the applicable provisions for safety and protection specified in the Contract Documents and with applicable parts of the NFPA 10 and 241.
   3. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near such usable stairwell.
   4. Store combustible materials in containers in fire-safe locations.

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5. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
6. Provide supervision of welding operations and similar sources of fire ignition.
7. Post warning and instructions at each extinguisher location, and instruct construction personnel on proper use of extinguishers and other available facilities at Project Site. Post local fire department telephone number on or near each telephone instrument at Project Site.

3.11 INSTALLATION AND REMOVAL:

A. Relocation: Relocate construction aids as required by progress of construction, storage limitations, or Work requirements and to accommodate requirements of Owner and other contractors at the Site.

B. Removal: Remove temporary materials, equipment, and services when construction needs can be met and allowed by use of permanent construction, or at completion of the Project.

C. Repair: Clean and repair damage caused by installation or by use of temporary facilities.
   1. Remove foundations and underground installations for construction aids.
   2. Grade the areas of the Site affected by temporary installations to required elevations and clean the area.

END OF SECTION 01 51 00

SECTION 015200 - FIELD OFFICES AND SHEDS

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes requirements for temporary field offices and other structures required for office and storage space required by Contractor.

B. Related Work Specified Elsewhere:

1. Temporary Utilities and Facilities: SECTION 015100.

C. Use of Existing Facilities:

a. Existing facilities at the Site, including offices, sanitary facilities, lunch/break rooms, permanent parking and areas so designated by the Owner shall not be used by Contractor's personnel.

PART 2 - PRODUCTS

2.01 FIELD OFFICES:

A. General:

1. Provide trailers, mobile buildings, or buildings constructed with floors raised aboveground, with steps, landings, and railings at entrance doors.
2. Buildings shall be structurally sound, secure, and weathertight.
3. Provide appropriate type fire extinguishers at each office and storage area.
4. Maintain offices during progress of the Work.
5. Install office spaces ready for occupancy to support the start of construction.

B. Contractor's Office:

1. Provide a field office for Contractor's personnel on the Site and large enough to hold weekly construction meetings.
2. Contractor's office trailer shall be provided functionally complete of size required for general use, with lights, heat, furnishings, sewage holding tank, telephone service, and other necessary facilities and utilities required by Contractor's operations.
3. Contractor shall supply all necessary computers, copiers, fax machines, filing cabinets, and other office supplies necessary to support Contractor's Work.

2.02 STORAGE SHEDS AND TRAILERS:

A. On Site:

1. Owner may provide warehouse space needed for storage of Equipment and Materials that require indoor storage installed under this Contract. Contractor shall indicate in its Proposal the amount of space and duration required.

B. Off Site:

1. Advise Owner of any arrangements made for storage of Equipment and Materials in a place other than Owner's Site. Furnish evidence of insurance coverage with Application for Payment

PART 3 - EXECUTION

3.01 LOCATION, INSTALLATION AND MAINTENANCE:

A. General:

1. Place temporary buildings, trailers, and stored materials in locations acceptable to Owner.
2. Install field offices and sheds to resist winds and elements of the locality where installed.
3. Remove when no longer needed at the Site or when Work is completed.

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4. Keep approach walks free of leaves, mud, water, ice, or snow.
5. At completion of Work, remove temporary buildings and trailers, foundations (if any), utility services, and debris.
6. Prepare ground or paved areas as specified in applicable Sections.

END OF SECTION 015200

SECTION 015700 - TEMPORARY BARRIERS AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes General Requirements for:
   1. Safety and protection of Work.
   2. Safety and protection of existing property.
   3. Barriers.
   4. Security.
   5. Environmental controls.
   6. Access roads and parking areas.
   7. Traffic control and use of roadways.

B. Related Work Specified Elsewhere:
   1. Temporary Utilities and Facilities: SECTION 015100.
   2. Contract Closeout: SECTION 017800

PART 2 - PRODUCTS – Not Applicable.

PART 3 - EXECUTION

3.01 SAFETY AND PROTECTION OF WORK AND PROPERTY:

A. General:
   1. Provide for the safety and protection of the Work and of Materials and Equipment to be incorporated therein, whether in storage on or off the Site. Provide protection at all times against rain, wind, storms, frost, freezing, condensation, or heat so as to maintain all Work and Equipment and Materials free from injury or damage. At the end of each day, all new Work likely to be damaged shall be appropriately protected.
   2. Notify Owner immediately at any time operations are stopped due to conditions which make it impossible to continue operations safely or to obtain proper results.
   3. Construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations, floors, pits, trenches, manholes, and ducts free of water.

B. Property Other than Owner's:
   1. Provide for the safety and protection of property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction. Report immediately to the owners thereof and promptly repair damage to existing facilities resulting from construction operations.
   2. Representatives of agencies and utilities having jurisdiction over streets and utilities in the Work area shall be contacted a minimum of 48 hours prior to performing Work, closing streets and other traffic areas, or excavating near underground utilities or pole lines.
   3. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.
   4. Where fences are to be breached on private property, the owners thereof shall be contacted and arrangements made to ensure proper protection of any livestock or other property thus exposed.
   5. The applicable requirements specified for protection of the Work shall also apply to the protection of existing property of others.

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6. Before acceptance of the Work by Owner, restore all property affected by Company's operations to the original or better condition.

3.02 BARRIERS:

A. General:
   1. Furnish, install, and maintain suitable barriers as required to prevent public entry, to protect the public, and to protect the Work, existing facilities, trees, and plants from construction operations. Remove when no longer needed or at completion of Work.
   2. Materials may be new or used, suitable for the intended purpose, but shall not violate requirements of applicable codes and standards or regulatory agencies.
   3. Barriers shall be of a neat and reasonable uniform appearance, structurally adequate for the required purposes.
   4. Maintain barriers in good repair and clean condition for adequate visibility. Relocate barriers as required by progress of Work.
   5. Repair damage caused by installation and restore area to original or better condition. Clean the area.

B. Tree and Plant Protection:
   1. Preserve and protect existing trees and plants at the Site which are designated to remain and those adjacent to the Site.
   2. Provide temporary barriers around each, or around each group of trees and plants. Construct to a height of six feet around trees, and to a diameter at the drip line or five feet from trunk, whichever is greater, to adequately protect plants.
   3. Consult with Owner and remove agreed-on roots and branches which will interfere with construction. Employ qualified tree surgeon to remove and to treat cuts.
   4. Protect root zones of trees and plants as follows:
      a. Do not allow vehicular traffic or parking.
      b. Do not store materials or products.
      c. Prevent dumping of refuse or chemically injurious materials or liquids.
      d. Prevent puddling or continuous running water.
   5. Carefully supervise excavating, grading and filling, and subsequent construction operations to prevent damage.
   6. Remove and replace, or suitably repair, trees and plants which are damaged or destroyed due to construction operations, and which were designated to remain.

3.03 ENVIRONMENTAL CONTROLS:

A. Dust Control:
   1. Provide positive methods and apply dust control materials to minimize raising dust from construction operations; and to prevent airborne dust from dispersing into the atmosphere.

B. Water and Erosion Control:
   1. Provide methods to control surface water to prevent damage to the Project, the Site, or adjoining properties.
   2. Plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
      a. Hold the areas of bare soil exposed at one time to a minimum.
      b. Provide temporary control measures such as berms, dikes, and drains.
   3. Control fill, grading, and ditching to direct surface drainage away from excavations, pits, tunnels, and other construction areas; and to direct drainage to proper runoff.

4. Provide, operate, and maintain hydraulic equipment of adequate capacity to control surface and groundwater.
5. Treat and dispose of surface runoff water in a manner to prevent flooding, erosion, sedimentation, or other damage to any portion of the Site or to adjoining areas, and in a manner acceptable to authorities having jurisdiction.
6. Provide temporary drainage until completion of the permanent drainage piping system.

C. Rodent Control:
1. Provide rodent control as necessary to prevent infestation of construction or storage areas.
   a. Employ methods and use materials which will not adversely affect conditions at the Site or adjoining properties.
   b. Should the use of rodenticides be considered necessary, submit an informational copy of the proposed program to Owner. Clearly indicate:
      (1) The area or areas to be treated.
      (2) The rodenticides to be used, with a copy of the manufacturer's printed instructions.
      (3) The pollution preventive measures to be employed.
2. The use of any rodenticide shall be in accordance with the manufacturer's printed instructions and regulatory agencies.

D. Debris Control and Clean-Up:
1. Keep the premises free at all times from accumulations of debris, waste materials, and rubbish caused by construction operations and employees. Responsibilities shall include:
   a. Adequate trash receptacles about the Site, emptied promptly when filled.
   b. Periodic cleanup to avoid hazards or interference with operations at the Site and to maintain the Site in a reasonably neat condition.
   c. The keeping of construction materials such as forms and scaffolding neatly stacked.
   d. Immediate cleanup to protect the Work by removing splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solutions from walls, floors, and metal surfaces before surfaces are marred.
2. Prohibit overloading of trucks to prevent spillages on access and haul routes. Provide periodic inspection of traffic areas to enforce requirements.
3. Final cleanup is specified in SECTION 017800 - Contract Closeout.

E. Pollution Control:
1. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of hazardous or toxic substances from construction operations.
2. Provide equipment and personnel, perform emergency measures required to contain any spillages, and remove contaminated soils or liquids. Excavate and dispose of any contaminated earth off-Site in approved locations, and replace with suitable compacted fill and topsoil.
3. Take special measures to prevent harmful substances from entering public waters, sanitary, or storm sewers.

3.04 ACCESS ROADS AND PARKING AREAS:

A. New Temporary On-Site Roads and Parking Areas:
1. Locate roads, drives, walks, and parking facilities to provide access to construction offices, mobilization, Work, storage areas, and other areas required for execution of the Contract.

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a. Consult with Owner regarding any desired deviation therefrom.
b. Size of parking facilities shall be adequate to provide for needs of Company's personnel, Owner's third-party CQA personnel, and visits to Site by Owner and Engineer.

2. Provide access for emergency vehicles. Maintain driveways a minimum of 15 feet wide between and around combustible materials in storage and mobilization areas.
3. Maintain traffic areas free of excavated materials, construction equipment, snow, ice, and debris.
4. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
5. Keep fire hydrants and water control valves free from obstruction and accessible for use.
6. Construction:
   a. Clear areas required.
   b. Fill, compact, and grade areas as necessary to provide suitable support for vehicular traffic under anticipated loadings. Materials and construction shall be as specified in DIVISIONS 31 and 32.
   c. Provide for surface drainage of facilities and surrounding areas.
   d. Maintain roads, walks, and parking areas in a sound, clean condition. Repair or replace portions damaged during progress of Work.
7. Removal:
   a. Completely remove temporary materials and construction when construction needs can be met by use of permanent installation, unless construction is to be integrated into permanent construction. Remove and dispose of compacted materials to depths required by various conditions to be met in completed Work.
   b. Restore areas to original, better, or specified condition at completion of Work.

B. Existing On-Site Roads and Parking Areas:
1. Designated existing on-Site streets and parking facilities may be used for construction traffic.
   a. Provide temporary additional roads as needed for required construction access.
   b. Maintain existing construction, and restore to original, better, or specified condition at completion of Work.
   c. Do not allow heavy vehicles or construction equipment in parking areas.

3.05 TRAFFIC CONTROL AND USE OF ROADWAYS:

A. Traffic Control:
1. Provide, operate, and maintain equipment, services, and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow on haul routes, at Site entrances, on-Site access roads, and parking areas. This includes traffic signals and signs, flagmen, flares, lights, barricades, and other devices or personnel as necessary to adequately protect the public.
2. Remove temporary equipment and facilities when no longer required. Restore grounds to original, better, or specified condition when no longer required.
3. Provide and maintain suitable detours or other temporary expedients if necessary.
4. Bridge over open trenches where necessary to maintain traffic.
5. Consult with governing authorities to establish public thoroughfares which will be used as haul routes and Site access. All operations shall meet the approval of owners or agencies having jurisdiction.

B. Maintenance of Roadways:
   1. Repair roads, walkways, and other traffic areas damaged by operations. Keep traffic areas as free as possible of excavated materials and maintain in a manner to eliminate dust, mud, and hazardous conditions.
   2. All operations and repairs shall meet the approval of owners or agencies having jurisdiction.

3.06 RAILROAD SERVICE:

A. Maintenance:
   1. Schedule operations and exercise care to avoid any interruption to continuous service over the railroads within or adjacent to the Work area.
   2. Before transporting Equipment and Materials across railroad tracks or performing Work within any railroad right-of-way, obtain permission or any necessary permits from the railroads.
   3. The Work shall be subject to all supervision, inspection, and other conditions required by the affected railroads.

END OF SECTION 01 57 00

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SECTION 017800 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes administrative and procedural requirements for Contract closeout including, but not limited to, the following:
   1. Inspection procedures.
   2. Project record document submittal.
   3. Submittal of warranties.
   4. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections of the Specifications.

C. Related Work Specified Elsewhere:
   1. Submittals: SECTION 01 33 00.

1.02 SUBSTANTIAL COMPLETION:

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
   1. Satisfy all requirements for Substantial Completion.
   2. Advise Owner of pending insurance changeover requirements. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   3. Submit specific warranties, workmanship Bonds, maintenance agreements, final certifications, and similar documents.
   4. Obtain and submit releases enabling Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Submit record drawings, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
   6. Make final changeover of permanent locks and transmit keys to Owner. Advise Owner's personnel of changeover in security provisions.
   7. Complete start-up testing of systems and instruction of Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the Site, along with mockups, construction tools, and similar elements.
   8. Complete final cleanup requirements, including touchup painting.

B. Inspection Procedures: On receipt of a request for inspection, Owner will either proceed with inspection or advise Contractor of unfilled requirements. Owner will prepare the Certificate of Substantial Completion following inspection or advise Contractor of construction that must be completed or corrected before the certificate will be issued.
   1. Owner will repeat inspection when requested and assured by Contractor that the Work is Substantially Complete.
   2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.03 FINAL ACCEPTANCE:

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
   1. Satisfy all requirements for Final Completion.
   2. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.

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3. Submit an updated final statement, accounting for final additional changes to the Contract Price.
4. Submit a certified copy of Owner's final inspection list of items to be completed or corrected, endorsed and dated by Owner. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by Owner.
5. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the Date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
6. Submit consent of surety to final payment.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Re-inspection Procedure: Owner will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to Owner.
1. Submit a certified copy of Owner's final inspection list of items to be completed or corrected, endorsed and dated by Owner. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by Owner.
2. Upon completion of re-inspection, Owner will prepare a certificate of final acceptance. If the Work is incomplete, Owner will advise Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
3. If necessary, re-inspection will be repeated.

1.04 RECORD DOCUMENT SUBMITTALS:

A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for Owner and Engineer's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
1. Record information concurrently with construction progress.
2. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work. Mark each document "PROJECT RECORD" in neat, large, printed letters.
3. Mark new information that is important to Owner but was not shown on Contract Drawings or Shop Drawings.
4. Note related Change Order numbers where applicable.
5. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
6. Upon completion of the Work, submit record drawings to Owner for their records.
7. Include the following:
    a. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

b. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of construction.
c. Where Submittals are used for mark-up, record a cross-reference at corresponding location on Drawings.
d. Field changes of dimension and detail.
e. Changes made by Change Order or other Modifications.
f. Details not on original Contract Drawings.

C. Record Specifications: Maintain one complete copy of the Project Manual including Addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and Modifications issued in printed form during construction.
1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and product data.
4. Upon completion of the Work, submit record Specifications to Owner for Owner's records.
5. Include the following:
a. Manufacturer, trade name, catalog number, and Supplier of each product and item of Equipment actually installed, particularly optional and substitute items.
b. Changes made by Addendum, Change Order, or other Modifications.
c. Related Submittals.

D. Record Product Data: Maintain one copy of each product data Submittal. Note related Change Orders and markup of record drawings and specifications.
1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the Site and from the manufacturer's installation instructions and recommendations.
2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
3. Upon completion of markup, submit complete set of record product data to Owner for Owner's records.

E. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and Submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Final Completion, complete miscellaneous records, and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to Owner for Owner's records.

F. Electronic Documentation:
1. In addition to paper copies, provide electronic versions of record documents showing "as-constructed" conditions, "as-constructed" construction progress schedule, and master field drawing list showing final revisions on CD-ROM in AutoCAD.

G. Warranties and Bonds: Specified in BREC TERMS AND CONDITIONS and in DIVISIONS 2 through 32.

PART 2 - PRODUCTS – Not Applicable.

PART 3 - EXECUTION

3.01 FINAL CLEANING:

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A. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
   1. Complete the following cleaning operations before requesting inspection for Final Completion.
      a. Remove labels that are not permanent labels.
      c. Clean exposed exterior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Clean concrete floors to a "broom clean" condition. Vacuum carpeted surfaces.
      d. Clean the Site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.
   2. Remove temporary structures, tools, equipment, supplies, and surplus materials.
   3. Remove temporary protection devices and facilities which were installed to protect previously completed Work.
   4. Special Cleaning: Cleaning for specific units of Work is specified in applicable Sections of Specifications.

B. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

C. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the Site and dispose of lawfully.
   1. Extra materials of value remaining after completion of associated Work become Owner's property. Dispose of these materials as directed by Owner.

D. Repairs:
   1. Repair damaged protective coated surfaces.
   2. Repair roads, walks, fences, and other items damaged or deteriorated because of construction operations.
   3. Restore all ground areas affected by construction operations.

END OF SECTION 017800

DIVISION 2 – EXISTING CONDITIONS / SITE WORK

SECTION 02 95 00 – COAL COMBUSTION RESIDUAL (CCR) MATERIAL REMOVAL

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes removal, dewatering, and hauling of CCR material from existing ash pond, surveying, temporary stockpiling, loading on haul truck, hauling, spreading and compacting at the landfill. Contractor has option to hydraulically dredge, mechanically dredge, and/or mechanically excavate CCR material from existing ash pond. Contractor to provide plan with their proposal, if this option is desired, that will include means to achieve effective dewatering of the CCR material during dredging and excavation.

B. Related Work Specified Elsewhere:
   1. 31 20 00 – Site Preparation and Earthwork
   2. Technical Reference Document for the Sebree Generating Station Green Station CCR Surface Impoundment Closure Project

1.02 REFERENCES:

A. Applicable Standards:
   1. American Society for Testing and Materials (ASTM):
      a. ASTM D698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort.
   2. Occupational Health and Safety Administrator (OSHA):
      a. 29 CFR 1910.120 Safety requirements
   3. US Environmental Protection Agency (USEPA):
      a. Spill Prevention Control and Countermeasure Plan (SPCC) 40 CFR Part 112.
      b. Paint Filter Liquids Test – SW-846 Test Method 9095B

1.03 JOB CONDITIONS:

A. Runoff and decanted water control shall consist of furnishing and installing permanent and temporary measures to control runoff and water decanted from the CCR material during removal and landfill operations. Runoff and decanted water shall be contained and drained back to the existing ash pond.

B. CCR material removal activities shall not interrupt Owner's operation of the plant and of the existing landfill.

1.04 SUBMITTALS

A. Submit as specified in DIVISION 1.

B. CCR Removal Plan: Submit with bid proposal, and as a formal submittal prior to start of CCR removal. Include narrative describing method for removing and dewatering CCR material, as well as proposed method for tracking the removal progress including quantity and plans for addressing plant process flows and stormwater flows while removing CCR.

C. Contractor shall provide rescue and safety plan for equipment and personnel along with working methods.

D. Provide Preliminary Work Schedule. Work progress schedule to be provided as specified in other Section.

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PART 2 - PRODUCTS

2.01 CCR MATERIAL:

A. General: Material to be removed includes all CCR and CCR-contaminated materials contained within the indicated existing ash pond as shown in the Contract Documents to the estimated levels shown below the existing surface.

B. CCR material may contain a mixture of bottom ash, flyash, coal dust, and native soil sediments within the limits of the existing ash pond footprint. The majority of CCR will be bottom ash.

C. The thickness of CCR material is defined in the project documents. The depth to bottom of CCR shown on the drawings are approximate. Actual field excavation by Contractor and visual verifications by Owner are required for the complete CCR removal.

2.02 DEWATERING:

A. Excavated CCR material shall be dewatered prior to hauling and delivery at landfill by Contractor. Dewatering means and methods shall be by Contractor and included in the Bid Submittal for Owner approval.

B. General:

1. Design and provide a dewatering system using accepted and professional methods of design and engineering consistent with the best current practice to eliminate water entering excavation under hydrostatic head from bottom and/or sides.
2. Design system to prevent differential hydrostatic head because of rising water levels from adjoining or nearby bodies of water, proximity of excavation to phreatic groundwater level, or surface runoff, resulting in a "quick" or "boiling" condition.
3. System shall not be dependent solely upon sumps and/or pumping water from within excavation where differential head would result in a "quick" condition, and continue to worsen the excavation's stability.
4. Dewatering system discharge shall meet the water quality requirements listed for Outfall 009 and Outfall 001 in Kentucky KPDES Permit No. KY0001929.
5. Provide dewatering system of a sufficient size and capacity as required to control ground and surface water flow into excavation and to allow all Work to be installed in a dry condition, including the obtaining of a licensed well-driller, where required.
6. Control, by acceptable means, all water regardless of source and be fully responsible for disposal of water.
7. Confine all discharge piping and/or ditches to available easement or to additional easement obtained by Contractor. Provide all necessary means for disposal of water, including the obtaining of all necessary permits and of additional easement at no additional cost to Owner.
8. Control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures.
9. Where necessary to these purposes, lower water level in advance of excavation, using wells, wellpoints, jet eductors, or similar positive methods.
10. Water level as measured in piezometers shall be maintained a minimum of 3 ft. (1 m) below the prevailing excavation level.
11. Provide means for positive dewatering of all water sources prior to any appearance of water in excavation and continue until Work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.
12. Open pumping with sumps and ditches shall be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes.

13. Install wells and/or wellpoints, if required, with suitable screens and filters, so that continuous pumping of fines does not occur.
14. Install, operate, and maintain dewatering system required to control surface and/or groundwater.
15. Control grading around excavations to prevent surface water from flowing into excavation areas.
16. Drain or pump as required to continuously maintain all excavations and trenches free of water or sediment from any source, and discharge to approved drains or drainage channels. Commence when water first appears and continue until Work is complete to the extent that no damage will result from hydrostatic pressure, flotation, buoyancy, or other causes.
17. No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.

C. Design:
1. Designate and obtain services of a qualified dewatering specialist or expert to provide a dewatering plan as may be necessary to complete the Work. Provide dewatering plan at time of Bid submission. Plan items shall include, but not be limited to, the following:
2. Drawings indicating general location and size of berms, dikes, ditches, all deep wells, observation piezometer wells, wellpoints, jet eductors, sumps and discharge lines, including their relation to water disposal ditches.
3. Make, model, and capacities of pumps, prime movers, power generators, and standby equipment.
4. Design calculations, including any computer modeling, to show adequacy of system and selected equipment, estimated flow rate of water to be discharged, and estimated duration for groundwater to be drawn down to elevations required for excavation.
5. Detailed description of dewatering procedure and maintenance method.
6. Description of emergency plan to protect in-place construction during an unanticipated rise in groundwater due to loss of power or other unexpected conditions or inundation from surface water.
7. Additional details, as requested by Engineer.
8. Specific items to be included addressing dewatering operations using wells, wellpoints, or jet eductors shall consist of the following:
    a. Diameter of hole drilled.
    b. Type of equipment and method of well installation.
    c. Diameter and material type of well casing inserted.
    d. Elevation of top of each well.
    e. Screen opening sizes.
    f. Screened interval or elevations of segments in well that are screened.
    g. Backfill gravel pack zone elevations.
    h. Gravel pack gradation.
    i. Size of pumps horsepower.
    j. Anticipated pumping capacity gpm.
    k. Drawdown in well with time during pumping.
    l. Drawdown in piezometers with time during pumping.
    m. Number and location of wells.
    n. Number and location of piezometers.
    o. Wellpoint details.
    p. Certification license of well-driller, where required.

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9. In preparing dewatering plan, consider all available information, together with Site constraints, excavation/sheeting requirements, and construction schedule. Other potential problems may require specific reference and amplification within dewatering plan.
10. After completion of dewatering installation and prior to commencement of excavation, submit to Owner for review a detailed plan of dewatering system as constructed, together with test data and computations demonstrating that the system is capable of achieving specified results.
11. Contractor shall be solely responsible for proper design, installation, operation, maintenance, and any failure of any component of system. Notice to Proceed issued by Owner or submittal of dewatering plans and data by Contractor shall not relieve Contractor from full responsibility for errors therein or for complete and adequate design and performance of system in controlling water level in excavated areas and for control of hydrostatic pressures to depths specified.
12. Contractor shall be responsible for accuracy of Drawings, design data, and operational records required by this Section.
13. Piezometers and Groundwater Monitoring:
    a. Install piezometers, as required, at locations prior to excavation below the groundwater level for purpose of monitoring groundwater elevations in vicinity of excavation. Design and location of piezometers will be subject to review by Engineer.
    b. Observe and record twice daily the elevation of groundwater in all piezometers on a daily basis seven days a week, and furnish a daily written summary of observations to Resident Project Representative. Record groundwater elevations to nearest 0.1 ft. (30 mm), with observations conducted throughout duration of any dewatering, and until dewatering is no longer required.
    c. Monitor upstream and downstream river/stream levels to anticipate rising groundwater levels.
    d. Repair or replace within 24 hours piezometers that become inactive, damaged, or destroyed. If required, suspend excavation and construction activities in areas where piezometers are not functioning properly until reliable observations can be made. Add or remove water from piezometer risers and demonstrate that piezometers are functioning properly.
    e. Remove and grout piezometers when dewatering is completed, and in accordance with jurisdictional agencies.

D. Damages:
1. Repair without additional cost to Owner any damage to Work in-place, other contractors' equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, and the excavation, including damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of dewatering system, and any mechanical or electrical failure of dewatering system.
2. Remove subgrade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to Owner.

E. Maintaining Excavation in Dewatered Condition:
1. Dewatering shall be a continuous operation. Interruptions due to power outages, or any other reason shall not be permitted.
2. Continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until

critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation, or other hydrostatic pressure imbalance.

3. Provide standby equipment on Site, installed, wired, and available, for immediate operation if required to maintain dewatering on a continuous basis in event any part of system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to Owner.
4. Subsequent to completion of excavation and during installation of all Work in the excavated area, maintain the excavation in a dewatered condition.
5. System maintenance shall include but not be limited to 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components, and any other work required to maintain the excavation in a dewatered condition.

F. System Removal:
1. Remove all dewatering equipment from Site, including related temporary electrical service.
2. All wells shall be removed or cut off a minimum of 3 ft. (1 m) below the final ground surface, capped, and abandoned in accordance with regulations by agencies having jurisdiction.
3. Removal work required under this Paragraph does not include any Site cleanup work as required elsewhere in these Specifications.

PART 3 - EXECUTION

3.01 CCR MATERIAL REMOVAL:

A. In general, Contractor shall remove CCR material to the original grade of the Ash Pond. The estimated elevations and limits are indicated in the Contract Drawings. Excavation outside the limits and elevations provided of the CCR material that are in the Contract Documents must be approved by the Owner prior to the commencement of excavation. Over-excavation without prior written approval of the Owner is at Contractor's cost.

B. Owner or Owner's representative shall inspect the CCR excavation activities and to verify that the bottom of CCR material is reached.

3.02 DESIGNATED AREAS AND STAGING PHASES:

A. Parked equipment containing or requiring oil storage shall have temporary leak containment complying with EPA SPCC 40 CFR Part 112.

B. Develop an area for equipment staging and stockpiling of the CCR material for hauling. Provide the temporary staging pad for dewatering equipment/station, as required, for CCR material decanting and stockpiling operation.

C. All temporary staging areas shall be constructed to support CCR material removal equipment and truck hauling activities throughout the duration of the construction.

D. Maintain areas in good working condition throughout the construction.

3.03 CCR MATERIAL DEWATERING:

A. Dewater CCR material as required to achieve water content required to eliminate any spills or leaks from trucks while hauling CCR material to the landfill.

B. Dewatering shall be performed within the existing ash ponds or other approved dewatering areas. Submit a dewatering plan to Owner for approval.

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C. Contractor shall perform and pass the Paint Filter Test (EPA Test Method 9095B) on active area of CCR material pile prior to the material being loaded into haul trucks. Paint Filter Test shall be performed prior to loading the first haul truck of each day, prior to loading the first haul truck after lunch, and as requested by Owner or Owner's Representative unless otherwise approved by Owner. Owner maintains the right to request additional testing, if necessary. Contractor shall submit Paint Filter Test results daily to Owner.

3.04 EXISTING ROADS, AND BERMS:

A. Equipment used for CCR material removal, dewatering and loading shall be suitable for use on existing roads, berms and rail crossings unless, otherwise approved by Owner. Improvements made to roads or berms to accommodate special CCR material removal and dewatering equipment shall be done at no additional cost to Owner. Contractor to maintain roads and work areas. Road will be inspected daily and will be required to be cleaned at the end of each working day.

B. Restore all roads, berms, pavement, and areas disturbed by Contractor's operations to preconstruction condition after CCR material removal and dewatering operations are completed unless, indicated or otherwise directed by Owner.

C. Protect existing structures, including the process line discharge piping, and prevent over-excavation to avoid undermining or stability problem.

3.05 MECHANICAL EXCAVATION:

A. Mechanically excavate the CCR materials using a frontend bucket excavator. Depth of excavation shall be recorded by Contractor.

B. Contractor to determine the proper excavation sequence and bucket reach to completely remove the CCR material.

C. Excavated material shall be dewatered if wet. Allow inspection by Owner to determine if the bottom of CCR has been reached.

3.06 CCR MATERIAL PLACEMENT AT LANDFILL:

A. CCR material removed from the existing ash pond shall be transported to the landfill site for spreading and compaction by Contractor after passing the paint filter test.

B. The removed CCR material placed at the landfill shall be compacted to a minimum of 95% density as determined by ASTM D698.

C. Contractor will coordinate all placement with Owner and with BREC's current Landfill operations Contractor.

3.07 RUNOFF AND CONTAINMENT:

A. Decanted water from wet CCR material and runoff from the material loading areas shall be contained and drained back to the existing ash pond.

3.08 KPDES DISCHARGE

A. Contractor shall work with Owner to maintain adherence to the analytical effluent criterion specified in the site's current KPDES permit. Water generated by CCR removal activities will be discharged through internal Outfall 009 and ultimately to the Green River via Outfall 001. Adherence to the discharge limits is required to maintain acceptable water quality characteristics prior to combined discharge to Outfall 001. Maximum discharge limits, as enforced by Kentucky Energy and Environment Cabinet (KEEC)or the Owner. Refer to the KPDES permit for specific limitations and requirements.

3.09 DUST CONTROL:

A. Contractor is responsible to provide dust control during construction.

B. Spray affected areas with water truck to minimize dust due to construction traffic within the Contractor's limits of Work.

3.10 FIELD QUALITY CONTROL:

A. Owner will, through services of an independent Consultant, visually inspect the excavated CCR material under this Contract to determine conformance.

B. Maintain daily field notes including survey log of the excavation activities for Owner records. Submit the compiled records to Owner weekly.

C. Stockpiling for hauling:

1. Material that does not pass the paint filter test will be rejected.
2. Material too wet for haul truck loading will be rejected and require additional decanting or drying. Stockpile material shall not have liquid dripping when loaded to the truck bed.
3. Contractor is responsible to produce a relatively dry stockpile material.
4. Contractor shall maintain the staging areas and haul roads within the limits of work as well as haul road to landfill.

3.11 MEASUREMENT AND PAYMENT/UNIT PRICES:

A. Existing CCR Material Quantities:

1. Contractor shall only place material within the permitted landfill footprint. Material placed outside of the permitted landfill area will be removed at the Contractor's expense.
2. Contractor shall include the lump sum cost of excavation, CCR material dewatering, stockpiling, hauling and maintaining the construction area in the Bid based on the Contractor estimated quantities.
3. Actual CCR material quantities to be removed from existing pond shall be determined by field verifications with Owner. Approximate limits of CCR material removal shall be as indicated in the Contract Documents.
4. Contract price for any authorized decrease or increase in the CCR material quantities specified or indicated to be removed shall be adjusted based on the unit prices specified in Bid Form.
5. Owner will be responsible for obtaining a survey of the landfill prior to placement of material. Progress payments for CCR material removal will be quantified by truck counts monthly and ultimately by survey of in-place material at the landfill performed by Owner at the completion of construction.

B. Upon completion of the CCR material removal and disposal operations, the existing ash ponds shall be surveyed by a surveyor retained and compensated by Owner.

C. No compensation shall be made to the Contractor for the excess (overexcavated) pond sediment (non-CCR material) quantities actually removed and landfilled unless otherwise authorized by Owner.

END OF SECTION 02 95 00

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DIVISION 31 – EARTHWORK

SECTION 31 20 00 - SITE PREPARATION AND EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes site preparation activities and certain items of earthwork common to other related work as necessary to complete the Work including all demolition, clearing and grubbing, disposal of waste materials, subgrade preparation, excavating, trenching, backfilling, compacting, grading, crushed aggregate/granular material, seeding, maintenance and repair, and all related items necessary to complete the Work indicated or specified.

B. Related Work Specified Elsewhere:

1. Coal Combustion Residual (CCR) Material Removal: SECTION 02 95 00
2. Crushed Rock Base and Surface Course: SECTION 32 11 00.
3. Seeding: SECTION 32 92 00.

1.02 REFERENCES:

A. Applicable Standards:

1. American Society for Testing and Materials (ASTM):
   a. D698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort.
   b. D1241 - Standard Specification for Materials for Soil-Aggregate Subbase, Base, and Surface Courses
   c. D1556 - Test Method for Density and Unit Weight of Soil In-place by the Sand Cone Method.
   d. D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
   e. D2167 - Test Method for Density and Unit Weight of Soil in-Place by the Rubber Balloon Method.
   f. D2216 - Test Methods for Laboratory Determination of Water (Moisture) Content fo Soil and Rock by Mass.
   g. D2487 - Classification of Soils for Engineering Purposes (Unified Soil Classification System).
   h. D4253 - Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
   i. D4254 - Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
   j. D4318 - Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
   k. D4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc-Type Apparatus.
   l. D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
2. Occupational Safety and Health Administration (OSHA):
   a. 29 CFR Part 1926 - Safety and Health Regulations for Construction.
3. Standard Specifications for Road and Bridge Construction Kentucky Transport Cabinet (KYTC), 2019.

1.03 SUBMITTALS:

A. Submit as specified in DIVISION 1.

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B. Where selecting an option for excavation, trenching, and shoring in compliance with local, state, or federal safety regulations such as OSHA 29 CFR Part 1926 or successor regulations, which require design by a registered professional engineer, submit (for information only and not for Owner approval) the following:
   1. Copies of design calculations and notes for sloping, benching, support systems, shield systems, and other protective systems prepared by or under the supervision of a professional engineer legally authorized to practice in the State of Kentucky.
   2. Documents provided with evidence of registered professional engineer's seal, signature, and date in accordance with Kentucky state licensing requirements.

1.04 PROJECT CONDITIONS:

A. Lines and grades shall be as indicated.
B. Owner will furnish benchmarks for Contractor's use to lay out and construct the Work properly. Contractor shall be responsible for providing additional temporary staking and benchmarks as needed to properly lay out the Work.
C. Carefully maintain all benchmarks, monuments, and other reference points provided by Owner and replace as directed by Owner if disturbed or destroyed.
D. Temporary Erosion and Sediment Controls shall be per the site Erosion and Sediment Control Plan (ES&C).
E. Disposition of Utilities:
   1. Contractor shall also identify, locate and protect all underground utilities which may be affected by construction under this Contract before starting excavation or other Site construction activities which could damage existing utilities.
   2. Remove or relocate only as indicated, specified, or directed. Provide a minimum 48-hours' notice to Owner and receive written notice to proceed before interrupting any utility service.
   3. Adequately protect from damage all active utilities and remove or relocate only as indicated or approved.
   4. Report active, inactive, and abandoned utilities encountered in excavating and grading operations that are not indicated on Contract Drawings. Remove, plug, or cap as directed by Owner.
   5. Provide record drawings of Underground Facilities either not shown or found at locations that differ from those shown on Contract Drawings.
F. Survey work, to accurately determine locations, elevations, and quantities of Contract pay items, shall be performed during the course of construction by an independent Professional Land Surveyor registered in the state of Kentucky. Surveyor shall be retained and compensated by Contractor. Contractor shall notify Owner prior to commencing survey work.

PART 2 - PRODUCTS

2.01 MATERIALS ENCOUNTERED:

A. Suitable Materials: Materials suitable for use in embankment and fill include material that is free of debris, roots, organic matter, frozen matter, and which is free of stone having any dimension greater than 2-inches in areas requiring a high degree of compaction, or 4-inches in other embankment and fill areas:
   1. Cohesionless materials include gravels, gravel-sand mixtures, sands, and gravelly sands generally exclusive of clayey and silty material with the following properties:
      a. Are free-draining.
      b. Impact compaction will not produce a well-defined moisture-density relationship curve.

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c. Maximum density by impact methods will generally be less than by vibratory methods.
d. Generally, less than 15% by dry weight of soil particles pass a No. 200 square-mesh sieve.

2. Cohesive materials include materials made up predominately of silts and clays generally exclusive of sands and gravel with the following properties:
a. Impact compaction will produce a well-defined, moisture-density relationship curve.
b. Are not free draining.

B. Unsuitable Materials: Materials unsuitable for use in embankment and fill include all material that contains debris, roots, organic matter, frozen matter, shale particles, or material containing gravel or stone with any dimension greater than 2 inches in areas requiring a high degree of compaction or 4 inches in other embankment and fill areas, or other materials that are determined by Owner as too wet or otherwise unsuitable for providing a stable subgrade or stable foundation for structures.

C. All Materials encountered, regardless of type, character composition and condition thereof, shall be considered "unclassified" for the purpose of payment. Determine quantity of various materials to be excavated prior to submitting Bid. Rock encountered shall be handled at no extra cost to Owner.

D. Waste Materials:
1. Waste materials, as described for purposes of this Section, consist of unsuitable materials, excess suitable material, rock, demolition debris, and other materials considered unacceptable for use as fill, and which are not environmentally contaminated. Waste materials shall not include environmental pollutants, hazardous substances, contaminated products, by-products, samples, or waste materials of any kind that are regulated under environmental laws.
2. Dispose of waste materials at Owner designated stockpile area on-site.

2.02 GRANULAR MATERIAL:

A. Granular bedding material for pipes shall be crushed limestone, dolomite, or crushed (natural) gravel, free from lumps or balls of clay, dirt, silt, vegetable matter, or other objectionable matter and reasonably free from thin and elongated pieces of aggregate. Aggregate shall be durable, sound, and reasonably uniform in density and quality.
1. Percentage of water shall not exceed 45% when tested in accordance with ASTM C131. The magnesium sulfate soundness loss shall not exceed 18% after 5 cycles when tested in accordance with ASTM C88.

B. Granular pipe bedding material and granular cover material shall be KYTC Section 805 Gradation Size No. 10.

C. Use at all locations where granular material is required unless otherwise indicated or specified.

D. See Section 32 11 00 for road base material.

2.03 TRENCH STABILIZATION MATERIAL:

A. Granular material as specified or conform to ASTM D1241, Gradation A or B, well-graded, with not more than 10% passing No. 200 sieve.

2.04 CONTROLLED LOW-STRENGTH MATERIAL (CLSM OR FLOWABLE FILL):

A. Flowable fill shall consist of an approved mix and shall comply with the material requirements of ACI 229.

B. Flowable fill shall contain fly ash from an American Electric Power source.

C. Flowable fill shall have a slump between 8 and 12 inches, an air content of 15% (+/- 5%) and shall be pumpable under required pressure.

D. Flowable fill shall have a 3 day compressive strength of at least 25 psi, and a 28-day compressive strength between 50 and 100 psi unless, otherwise shown on the drawings.
E. Maximum particle size shall not exceed 0.5 inch.

2.05 RIPRAP:

A. Riprap Material:
   1. Quarry-run stone with stones weighing 80 to 150 pounds each. At least 90% shall weigh more than 80 pounds each.
   2. Stones shall be durable, free from cracks, seams, and other defects which would tend to increase deterioration from natural causes.
   3. Dirt, sand, or clay shall not exceed 5% by weight.
   4. Quantity of rock with an elongation greater than 3:1 shall not exceed 20% of the mass. No stone shall have an elongation greater than 4:1.
   5. Not more than 10% of the stone shall show splitting, crumbling, or spalling when subjected to 5 cycles of the sodium soundness test as required by ASTM C88.
   6. In lieu of conforming to above specified test requirements, material with a proven history of satisfactory performance may be approved for use in the Work provided certification of this history is acceptable to Engineer.

2.06 GEOTEXTILE FABRIC:

A. Geotextile material will be a polypropylene or polyester. The geotextile can be a monofilament woven or needle punched non-woven type of weave. Alternatives to these materials and weaves may be approved by the owner's engineer. Owner's engineer shall specify material type. All fabric shall be inert to commonly encountered chemicals and hydrocarbons, be mildew and rot resistant, and be resistant to insects and rodents. Geotextile for silt fences and other exposed uses shall also be treated for resistance to ultra violet light. Rolls of geotextile shall be delivered with an ultra violet light resistant covering.
B. Contractor shall provide owner's engineer with certification of compliance with the tests specified below for all geotextile materials supplied.

PART 3 - EXECUTION

3.01 DEMOLITION:

A. Remove existing structures and improvements as required to perform new construction.
B. Carefully dismantle, in a manner to avoid damage, all materials and equipment indicated to be relocated or returned to Owner.
C. Material or equipment, specified or indicated to be relocated or returned to Owner, that is damaged due to Contractor's negligence shall be repaired or replaced, as determined by Owner, at no additional cost to Owner.
D. Materials not indicated or specified to be relocated or returned to Owner shall become property of Contractor and be disposed of as specified in "Waste Materials" this Section.
E. Perform demolition work to protect existing facilities, structures, and property which are to remain, against damage from operations, falling debris, or other cause.
F. Make provisions for temporarily accommodating flows in existing facilities that are to be relocated or disturbed.
G. Take precautions to guard against movement or settlement, and provide shoring and bracing as necessary.
H. If at any time safety of existing structure to remain is endangered, cease operations, notify Owner, and do not resume operations prior to approval.

3.02 SITE PREPARATION:

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A. Erosion and sediment control measures shall be installed as specified.
B. Sediment (Silt) Fence:
   1. Install silt fence as indicated and as follows:
      a. On the downslope side(s) of all disturbed areas.
      b. On the downslope side(s) of all stockpile areas.
   2. Inspection:
      a. Daily in areas of active construction or equipment operation.
      b. Weekly in areas with no construction or equipment operation.
      c. Within 24 hours of each 0.5-inch or greater rainfall event.
      d. Complete inspection reports after each inspection and submit to Owner within 2 working days.
   3. Maintenance:
      a. Remove sediment from behind silt fence when it reaches one-third the height of fence. Place removed sediment in topsoil stockpile areas.
      b. Any silt fence damaged so it cannot perform its intended function shall be replaced as indicated or as directed by Owner.
      c. Remove silt fence after area has been surfaced or seeded and has been accepted by Owner.
C. Construction Access:
   1. Immediately remove by shoveling and/or sweeping all sediment tracked from the construction area onto Site access roads. Place sediment in pond.
D. Best Management Practices (BMP's): Install other BMP's as indicated or specified and as required to comply with ES&C Plan.
E. Clearing and Grubbing:
   1. Perform only in areas where earthwork or other construction operations are to be performed.
   2. Dispose of debris from clearing and grubbing at a location off the Site, as arranged for by Contractor, at no additional cost to Owner.
F. Stripping:
   1. Remove topsoil from areas within limits of excavation, trenching and compacted backfill as follows:
      a. Scrape areas clean of all brush, grass, weeds, roots, and other material.
      b. Stockpile topsoil in areas where it will not interfere with construction operations or existing facilities. Stockpiled topsoil shall be reasonably free of subsoil, debris, and stones larger than 2-inches in diameter.
      c. Remove waste from the Site.

3.03 EXCAVATION AND TRENCHING:

A. Sheeting and Bracing:
   1. Design, furnish, place, maintain, and subsequently remove, to extent required, a system of temporary supports for cut and cover, open cut, or trench excavations, including bracing, dewatering, and associated items to support sides and ends of excavations where excavation slopes might endanger in-place or proposed improvements, extend beyond construction rights-of-way, or as otherwise specified or indicated.
   2. Provide all materials on Site prior to start of excavation in each section, and make such adjustments as are required to meet unexpected conditions.
   3. Space and arrange sheeting and bracing as required to exclude adjacent material and according to stability of excavation slopes.
   4. Assess existing conditions including adjacent property and possible effects of proposed temporary works and construction methods; and select and design such support systems,

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methods, and details as will assure safety to the public, adjacent property, and the completed Work.

5. Modify or relocate underground facilities, at no additional cost to Owner, if existing underground facilities interfere with Contractor's proposed method of support.
6. Use caution in areas of underground facilities, which shall be exposed by hand or other excavation methods acceptable to Owner.
7. Perform sheeting, shoring, and bracing in accordance with safety and protection requirements of the Contract Documents.
8. Provide sheeting, shoring, and bracing for trench excavation in subgrade of excavation when required to prevent movement of the main excavation support system.
9. Provide shoring, sheeting, and bracing as needed to meet the following requirements:
    a. Prevent undermining and damage to all structures, buildings, underground facilities, pavements, and slabs.
    b. Perform excavations with vertical banks where necessary for construction activities, and also within all limits of excavation noted on Drawings.
    c. Design excavation support system and components to support lateral earth pressures, unrelieved hydrostatic pressures, utility loads, traffic and construction loads, and building and other surcharge loads to allow safe and expeditious construction of permanent structures without movement or settlement of the ground, and to prevent damage to or movement of adjacent buildings, structures, underground facilities, and other improvements. Design shall account for staged removal of bracing to suit the sequence of concrete placement for permanent structures and backfill.
    d. Except as otherwise specified herein, shoring and sheeting materials may be extracted and reused at Contractor's option; however, Contractor shall remove and replace any existing structure or underground facility damaged during shoring and sheeting. Remove sheeting and bracing as backfill progresses. Fill voids left after withdrawal with sand or other material approved by Owner.
    e. Where shoring and sheeting materials must be left in-place in the completed Work to prevent settlements to or damage within adjacent structures or as directed by Owner, backfill the excavation to 3-feet below finished grade and remove the remaining exposed portion of shoring before completing backfill. If soldier piles and wood lagging are used for shoring, remove wood lagging to within 3 feet of finished grade in incremental steps of approximately 6 inches as backfill is placed, or to Contractor's design if more stringent. Location of all shoring and sheeting left in-place shall be documented on Contractor-furnished construction record drawings and provided to Owner.
10. Contractor shall be solely responsible for proper design, installation, operation, maintenance, and any failure of any component of the system. Review by Owner of drawings and data submitted by Contractor shall not in any way be considered to relieve Contractor from full responsibility for errors therein or from the entire responsibility for complete and adequate design and performance of the sheeting and shoring system.
11. Provision for Contingencies:
    a. Performance of components of the support system shall be monitored for both vertical and horizontal movement daily.
    b. Provide a contingency plan or alternative procedure for implementation, if system does not adequately perform.
    c. Keep materials and equipment necessary to implement the contingency plan readily available.
12. Damages:

a. Document all existing damage to adjacent facilities and submit information to Owner prior to performing any excavation. Documentation shall include a written description, diagrams, measurements, and appropriate photographs.
b. Repair all damage resulting from Contractor's excavation and remove and replace all undermined pavements with Owner-approved equal, either concrete or asphalt, at no expense to Owner.

B. Explosives: Blasting must be approved by Owner.

C. Trenching for Underground Utilities:

1. Side Walls:
   a. Make vertical or sloped within specified trench width limitations below a plane 12-inches above top of pipe.
   b. Make vertical or sloped (stepped) as required for stability, above a plane 12-inches above top of pipe.
   c. Excavate without undercutting sidewalls.
2. Trench Depth:
   a. Excavate to depth sufficient to provide the minimum bedding requirements for the pipe being placed.
   b. Do not exceed that indicated where conditions of bottom are satisfactory.
   c. Increase depth as necessary to remove unsuitable supporting materials.
   d. Maintain a minimum of 3-feet of soil cover above top of pipe.
3. Trench Bottom:
   a. Protect and maintain when suitable natural materials are encountered.
   b. Remove rock fragments and materials disturbed during excavation or raveled from trench walls.
   c. Restore to proper subgrade with trench stabilization material. Correct at no additional cost to Owner when trench is over-excavated without authority or to stabilize bottom rendered unsuitable through negligence or improper dewatering or other operations.
4. Trench Width:
   a. Excavate trench to a width which will permit satisfactory jointing of pipe and thorough tamping of bedding and backfill.
   b. Do not exceed following trench widths:
      (1) For single pipe installation, maintain trench widths below a plane 12-inches above top of pipe as follows:

	Trench Width	
Nominal Pipe Size	Minimum	Maximum
Less than 24"	Pipe OD + 1'	Pipe OD + 2'
24” to 72”	Pipe OD + 2’	Pipe OD + 4’

      (2) For multiple pipe installations maintain trench widths below a plane 12-inches (300 mm) above the top of the largest pipe as follows:

	Trench Clearances	
Nominal Pipe Size Of Outside Pipe	Minimum from Outside Pipe	Maximum from Outside Pipe
Less than 24 inches	6 inches	12 inches
24 inches to 60 inches	12 inches	24 inches

      (3) Above plane defined in (1) and (2), no maximum limit.
      (4) Maximum trench width limitations shall apply in all areas more than 3 feet from manhole or structure walls.

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(5) Maximum width shall be as near the minimum specified as can be controlled by construction equipment and methods used.

5. Limit maximum length of open trench to 100-feet in advance and to 100-feet behind pipe installation.
6. Test Pits:
   a. Excavate test pits sufficiently in advance of trenching to enable adequate planning of construction procedure.
   b. Locate as follows:
      (1) When unstable material is suspected that may require special protective measures.
      (2) Where groundwater may require special handling methods.
      (3) Where indicated or otherwise approved.
      (4) Where interference or conflict with other utilities or structures could affect alignment of pipe.
   c. To depth required to obtain information desired.

D. Dewatering
   1. Refer to Specification 02 95 00.
E. Waste Materials:
   1. Remove unsuitable materials from Work area as excavated.

3.04 EARTHWORK:

A. Subgrades:
   1. General:
      a. Excavate or backfill as required to construct subgrades to elevations and grades indicated.
      b. Remove all unsuitable material and replace with acceptable fill material and perform all wetting, drying, shaping, and compacting required to prepare subgrade.
   2. Proofrolling: Exposed area to receive fill, backfill, or embankment shall be proofrolled to detect localized zones of excessively wet, unstable, organic, or low bearing capacity materials as follows:
      a. Proofroll within limits of proposed construction of footings, slabs, mats, or pavement and to extent of 10 feet beyond proposed exterior walls and stated limits, or as otherwise noted. Proofroll with loaded dump truck, loaded pan scrapper, 20 - ton loaded tandem axle dump truck, or equivalent. Soft spots shall be removed, backfilled, and compacted with suitable material.
B. Subgrade for Fills:
   1. Roughen top 6 inches of subgrade by discing or scarifying and recompact to 95% of maximum density within the moisture content of 2% below to 2% above optimum as determined by ASTM D698.
C. Subgrade for Roadways, and Crushed Rock Surfaced Areas:
   1. Extend subgrade the full width of the concrete slab or crushed rock surfaced area.
   2. For roadway subgrades, extend subgrade from ditch flow line to ditch flow line in cuts to prevent ponding of water on the subgrade.
   3. Subgrade Compaction:
      a. In embankment areas, compact subgrade to 95% of maximum density within the moisture content of 2% below to 2% above optimum as determined by ASTM D698.
      b. In excavation areas, scarify the top 6 inches of subgrades and recompact to the same moisture and compaction requirements as for subgrades in embankment areas.
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1. Over-excavate material below foundation as indicated on the Structural drawings.
2. Roughen top 6 inches of subgrade by discing or scarifying and recompact to 98% of maximum density within the moisture content of 2% below to 2% above optimum as determined by ASTM D698.
3. Engineered fill shall not exceed 8-inches in loose lifts when heavy compaction equipment is used.

E. Pipe Embedment:
1. Pipe bedding shall be as indicated, using granular material.
2. Place granular embedment as follows:
   a. With level bottom layer at proper grade to receive and uniformly support pipe barrel throughout its length.
   b. Form shallow depression under each joint to facilitate jointing.
   c. Add second layer simultaneously to both sides of pipe with care to avoid displacement.
   d. Complete promptly after completion of jointing operations.
   e. Substitute for any part of earth backfill to within 2-feet of final grade at Contractor's option.
3. Compact granular embedment as follows:
   a. In loose lifts not exceeding 12-inches in depth.
   b. Rod, spade, or use pneumatic or vibratory equipment:
      (1) As required to obtain not less than 100% of maximum dry density within the moisture content range from 3% below optimum to 3% above optimum.
      (2) Throughout depth of embedment.
   c. Compaction using flooding or water spraying techniques will not be allowed.
4. Earth pipe embedment shall be as indicated and shall be used at impervious trench checks. Shape trench bottom to fit pipe and backfill throughout depth of trench with suitable materials. Compact to minimum of 95% of maximum dry density within the moisture content range from 2% below optimum to 3% above optimum. Optimum moisture and maximum dry density shall be determined by ASTM D698.

F. Backfilling:
1. Trenches:
   a. Backfill for trenches shall be as specified for structures and as follows:
      (1) Complete promptly upon completion of pipe embedment and approval to proceed.
      (2) Use hand methods to 12-inches above top of pipe.
      (3) Mechanical methods shall be acceptable where hand backfill is not required.
      (4) Backfill in lifts of thickness within compacting ability of equipment used, but not greater than 8-inches.
      (5) Until compacted depth over conduit exceeds 3-feet, do not drop fill material over 5-feet. Distance may then be increased 2-feet for each additional foot of cover.

G. Site Grading:
1. Excavate, fill, compact fill, and rough grade to bring Project area to subgrades as follows:
   a. For surfaced areas, to underside of respective surfacing or base course.
   b. For areas to receive topsoil, to a minimum of 4-inches below finished grade.
   c. When rock is encountered in grading areas outside buildings, overexcavate to depth specified and backfill to grade with compacted fill:
      (1) Under surfaced areas, to 6-inches below top of respective subgrades for such areas.
      (2) Under seeded areas, to 24-inches below finished grade, except that boulder or protruding rock outcrop, if so indicated, shall be left undisturbed.

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2. Grading:
    a. Grade and compact all areas within Project area, including excavated and filled sections and adjacent transition areas, reasonably smooth, and free from irregular surface changes.
    b. Degree of finish for rough grading shall be that ordinarily obtained from blade grader or scraper operations except as otherwise specified with due allowance for topsoil.
    c. Finished grades shall generally be not more than 0.1 foot above or below those indicated.
    d. Finish all ditches, swales, and gutters to drain readily.
    e. Unless otherwise indicated, slope the subgrade evenly to provide drainage away from all structures in all directions at a grade not less than 1/4 inch per foot for a minimum distance of 10-feet.
    f. Provide rounding at top and bottom of banks and at other breaks in grade.

3.05 TOPSOILING:

A. Topsoil Materials:
    1. Shall be material excavated from within the upper layer of on-Site excavations; and be obtained from Site areas having healthy plant growth prior to stripping.
    2. Company may furnish topsoil from off-Site borrow areas at his option and without additional charge to Owner provided these materials are:
        a. From that portion of the soil profile defined as the "A" horizon by the Soil Science Society of America.
        b. Fertile, friable, and loamy soil of uniform quality without admixture of subsoil materials, gravel, hardpan, debris, or other similar impurities.
        c. Demonstrate healthy plant growth prior to stripping.
        d. From areas from which topsoil has not been previously removed by erosion or mechanical methods.
B. Place topsoil on all areas indicated and on stockpile areas and borrow areas.
C. Treatment of Subgrade Prior to Topsoil Placement:
    1. Clear Site of vegetation heavy enough to interfere with proper grading and tillage operations.
    2. Clear surfaces of all stones or other objects larger than 3 inches in thickness or diameter, all roots, brush, wire, grade stakes, or other objectionable material.
    3. Loosen subgrade by discing or scarifying to a depth of 2 inches wherever compacted by traffic or other causes to permit bonding of the topsoil to the subgrade.
D. Placement:
    1. Distribute over required areas without compaction other than that obtained with spreading equipment.
    2. Place to extent material is available within following limits:
        a. Not less than 4 inches in depth.
        b. Do not exceed 6 inches in depth.
    3. Shape cuts and fills to drain as indicated.
    4. Grade to match contours of adjacent areas and permit good natural drainage.
    5. Provide gentle mound over trenches.
E. After topsoil has been spread, clear surface of stones or other objects larger than 2 inches in thickness or diameter and all other objects that might interfere with planting and maintenance operations.
F. Protect topsoiled areas from the elements until grass is established. Repair eroded areas as required.
G. Keep paved areas clean. Promptly remove topsoil or other dirt dropped on surfacing.

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3.06 RIPRAP:

A. Foundation Preparation:
   1. Uniformly trim and dress areas on which Rip Rap is placed, conforming to cross sections indicated within an allowable tolerance of plus or minus 1 inch from indicated slope lines and grades of subgrade.
   2. Fill areas below tolerance limit with suitable material and compact.
   3. Do not place riprap until the base has been accepted by Owner.

B. Placement of Geotextile Fabric:
   1. Place on slopes within limits as indicated.
   2. Roll geotextile fabric on prepared base in a neat manner and anchor.
   3. Any damages to geotextile fabric during placement shall be repaired before proceeding with the Work.

C. Placement of Riprap:
   1. Trim and dress areas requiring riprap to conform with lines as indicated within an allowable tolerance of 3 inches from indicated slope lines and grades of geotextile fabric. When regrading is required, existing geotextile fabric shall be removed and then replaced when slope meets specified tolerance.
   2. Geotextile fabric shall be free of tears, holes, and sags prior to placement of riprap.
   3. Place stone to full course thickness in one operation and in a manner to avoid displacing underlying material or damaging geotextile fabric.
   4. Place stone on prepared base to produce a reasonably well-graded mass of stone in close contact and with a minimum of voids.
   5. Place within a tolerance of plus or minus 3 inches from the theoretical slope lines and grades.
   6. Finished riprap shall be free from pockets of small stones and clusters of larger stones. Hand-place if necessary to secure the desired results.
   7. Maintain riprap protection until accepted; replace any material displaced.

3.07 MAINTENANCE:

A. Protect newly graded and vegetative soil covered and topsoiled areas from actions of the elements.

B. Fill and repair settling or erosion occurring prior to acceptance of the Work, and re-establish grades to required elevations and slopes.

C. Correction of Settlement:
   1. Correct any settlement of embankment, fill, or backfill and damages created thereby within 1 year after acceptance of the Work.
   2. Make repairs within 10 days after notification by Owner of settlement.
   3. Make own arrangements for access to the Site for purposes of repair.

3.08 FIELD QUALITY CONTROL:

A. Owner will, through services of an independent laboratory, test all embankments, fills, and subgrades under this Contract to determine conformance with specified density relationships. Contractor shall permit and facilitate Owner's representative to perform testing and observations.

B. At Owner's discretion, Owner may check calibration on Contractor's testing equipment.

C. Material Properties:
   1. Perform at least one classification test (ASTM D2487) and one moisture-density test (ASTM D698) for every 1,000 cubic yards of material used in fill or backfill operations during construction.

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a. Each sample shall be taken from trenches or other excavations as directed by Owner and should be generally representative of distinguishably differing materials encountered and used for backfilling or fill.
b. Perform one set of tests at the beginning of excavation and one additional set of tests when material properties vary (more or less plastic, different color, more or less granular, or other conditions) from the material initially tested.
c. Additional tests shall be performed when directed by Owner.

D. Granular Pipe Bedding:
1. Perform following tests at intervals specified during granular pipe bedding construction from material source to ensure compliance with Specification.
a. Particle size test (ASTM C136): at least one test for every 3,000 cubic yards of granular pipe bedding material placed.
b. Laboratory hydraulic conductivity tests (ASTM D2434): at least one test for every 9,000 cubic yards of granular pipe bedding material placed.

E. Compaction:
1. Method of test may be ASTM D6938.
a. Alternative methods may be ASTM D1556/ D2216, or ASTM D2167/ D2216, as approved by Owner.
2. The frequency of in-place compaction testing including density and moisture content will be as follows:
a. At least one test for every 1,000 cubic yards of material placed in a mass fill.
b. At least one test for every 100 cubic yards of embankment and structural fill placed.
c. At least one test for every 100 cubic yards of fill placed in trenches or surrounding structures.
d. At least one test for every 2,500 square feet of subgrade for roads or crushed rock surfacing.
e. At least one test for every 500 square feet per lift in structural fill or on subgrades for foundations.
f. At least one test for every shift of compaction operation on a mass fill.
3. At least one test when Owner suspects quality of moisture control or effectiveness of compaction. Remove or scarify fill failing to meet required densities and recompact as necessary to achieve specified results.
4. Removal of in-place material and replacement with approved new material will be required if scarifying and re-compaction do not meet specifications.

F. Subgrades:
1. Owner will inspect all subgrades to determine conformance with indicated lines and grades.
2. Subgrades for roadways shall have a maximum deviation of not more than 1/2 inch in any 10-feet when tested with a 10-foot straightedge applied parallel with and at right angles to centerlines of subgrade areas. Actual grade shall not be more than 0.1 foot from indicated grade.

END OF SECTION 31 20 00

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DIVISION 32 – EXTERIOR IMPROVEMENTS

SECTION 32 11 00 - CRUSHED ROCK BASE AND SURFACE COURSE

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes crushed rock base and surface course and method of placement.

B. Related Work Specified Elsewhere:

1. Site Preparation and Earthwork: SECTION 31 20 00.

1.02 REFERENCES:

A. Applicable Standards:

1. American Society for Testing and Materials (ASTM): Equivalent AASHTO standards may be substituted as approved.
   a. C88 Test Method for Soundness of Aggregates by use of Sodium Sulfate or Magnesium Sulfate.
   b. C117 – Test Method for Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing.
   c. C131 – Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
   d. D75 – Practice for Sampling Aggregates.
   e. D698 – Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3).
   f. D2419 – Test Methods for Sand Equivalent Value of Soils and Fine Aggregate.
   g. D4318 – Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
   h. D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
2. Standard Specifications for Road and Bridge Construction Kentucky Transport Cabinet (KYTC), 2019.
   a. Section 805 – Coarse Aggregate.

1.03 QUALITY ASSURANCE:

A. Sampling and Testing:

1. Tests to determine conformance with all requirements of this Specification for quality and properties of all Contractor-secured sources of materials shall be performed by an independent commercial laboratory retained and compensated by Contractor and approved by Owner. In lieu of testing, Contractor may submit certified state test results indicating the aggregate meets Specification requirements to Owner for approval.
2. Obtain representative samples of material in accordance with ASTM D75 for testing. Furnish laboratory sufficient material for testing from each sample at the time obtained. Copies of reports and certificates regarding tests and inspection of materials shall be distributed as specified in DIVISION 1. Furnish specific schedule for sampling to provide Owner the opportunity to observe sampling.
3. When incorporating materials into the Work, quality control testing will be performed during construction by a testing laboratory retained and compensated by Owner.

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PART 2 - PRODUCTS

2.01 GENERAL:

A. Crushed rock base and surface course shall consist of aggregate specified.

2.02 CRUSHED ROCK BASE COURSE:

A. Aggregate shall be crushed stone, crushed slag, or crushed (natural) gravel, free from lumps or balls of clay, dirt, silt, vegetative matter, or other objectionable matter and reasonably free from thin and elongated pieces of aggregate. Aggregates shall consist of angular fragments, durable and sound, and shall be reasonably uniform in density and quality. Fine aggregate passing the No. 4 sieve shall consist of fines from the operation of crushing the coarse aggregate. If necessary, fine aggregate may be added to produce the correct gradation. The fine aggregate shall be produced by crushing stone, gravel, or slag that meets the requirements for wear and soundness specified for coarse aggregate.

B. Percentage of wear shall not exceed 45% when tested in accordance with ASTM C131. The sodium sulfate soundness loss shall not exceed 12% after 5 cycles when tested in accordance with ASTM C88.

C. Portion of aggregate which is retained on a 3/8-inch sieve shall contain 75% by weight of pieces with two or more fractured surfaces if the material is crushed gravel.

D. Portion of aggregate passing No. 40 sieve shall be as follows:

1. Liquid Limit: Not more than 25 determined by ASTM D4318.
2. Plastic Index: Not more than 4 determined by ASTM D4318.
3. The fine aggregate shall have a minimum sand equivalent value of 35 when tested in accordance with ASTM D2419.
4. Gradation No.57 per Section 805 Coarse Aggregate KYTC 2019.

2.03 EQUIPMENT:

A. General Requirements:

1. Maintain all equipment, tools, and machines used in the performance of the Work always required by this Section in a satisfactory working condition.
2. Equipment shall be subject to the approval of Owner.

B. Steel-Wheeled Rollers shall be self-propelled three-wheeled rollers, two-axle tandem rollers, or three-axle tandem rollers.

1. Rollers shall weigh not less than 8 tons and develop contact pressures under the compression rolls of not less than 200-pounds-per-square-inch width.
2. Three-axle tandem rollers shall be so constructed that when locked in position for all treads to be in one plane, the roller wheels are held with such rigidity that if either front of center wheel is unsupported, the other two wheels will not vary from the plane more than 1/4-inch.
3. Roller wheels shall not have flat areas, openings, or projections.
4. All steel wheels shall be equipped with scrappers, so adjusted to keep the wheels always clean.

C. Rubber-Tired Rollers:

1. Rollers shall consist of two axles on which are mounted not less than nine pneumatic-tired wheels, mounted so the rear group of tires do not follow in the tracks of the forward wheels but will be centered between the forward wheels.
2. The axles shall be mounted in a rigid frame provided with a loading platform or body suitable for ballast loading.
3. Inflate tires uniformly.

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4. May be self-propelled.
5. Tow with pneumatic-tired tractors or other pneumatic-tired equipment.

D. Vibratory Rollers:
1. Have either one or two smooths-surfaced steel drum(s) with a minimum diameter of 42 inches.
2. Have a minimum vibrating force of 300 pounds per cycle per inch of drum width.
3. Have a minimum vibrating frequency of 1,200 cycles per minute and shall be provided with a means of adjusting the resonance of the dynamic force.
4. May be self-propelled or towed.

E. Blade graders shall be self-propelled with a wheelbase of not less than 15 feet, and a blade of not less than 10 feet.

F. Sprinkling equipment shall consist of tank trucks, pressure distributors, or other similar equipment designed to apply water uniformly and in controlled quantities to variable width of surface.

G. Hauling equipment shall consist of pneumatic-tired vehicles and dump bodies suitable for dumping materials in windrows or layers on the subgrade.

H. Tampers shall be mechanical (of an approved type) and hand-operated, weigh not less than 50 pounds and have a face area of not more than 100 square inches.

I. Miscellaneous equipment shall consist of scarifiers, tractors, spring-tooth or spike-tooth harrows, windrow equalizers, spreaders, and other equipment suitable for construction of select material base course.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS:

A. Stockpiles:
1. Clear and level storage sites prior to stockpiling.
2. Place in the manner and at locations designated by Owner, providing separate stockpiles for materials from separate sources.
3. Prevent aggregate from segregating during placement, storage, and handling at stockpiles.

B. Cold-Weather Limitations:
1. Base course construction shall be prohibited when atmospheric temperature is below 35°F unless approved by writing by Owner.
2. Do not place base course on frozen subgrade.
3. Protect base course and subgrade in freezing weather and repair areas damaged by freezing by reshaping and recompacting.

C. Preparation of Subgrade:
1. Clean of all foreign substances.
2. Owner will inspect for adequate compaction and surface tolerances as specified in SECTION 31 20 00.
3. Correct any ruts or soft yielding spots or any areas with inadequate compaction, as specified in SECTION 31 20 00.

D. Grade Control: Establish and maintain grade by means of grade stakes placed in lanes parallel to the centerline of the area to have crushed rock and spaced so string lines may be stretched between stakes, or by other method as approved by Owner.

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3.02 MIXING AND PLACING OF MATERIALS:

A. Road-Mix Method:
   1. Place material without segregation of sizes and spread from spreader boxes or moving vehicles equipped to spread material in layers of uniform thickness.
   2. Mix materials with blade graders, harrows, discs, or other approved equipment. Continue initial mixing until the mixture is uniform throughout.
   3. Add water to the extent necessary to prevent segregation during mixing operations and as needed to meet density requirements.
   4. Add material to the mixture in such amounts and sizes as requested by Owner.

B. Shaping and Compacting Mixed Materials:
   1. Compact in layers neither less than 3 inches nor more than 7 inches thick. If the total depth of the compacted material is more than 7 inches, it shall be constructed in two or more layers and each layer shall be of approximately equal thickness.
   2. Roll to specified compaction requirements throughout full depth of layer with vibratory rollers, steel-wheeled rollers, rubber-tired rollers, or combination.
   3. Shape and smooth by blading and rolling with power roller or rubber-tired roller or both.
   4. Hand-tamp in places not accessible to rolling equipment.
   5. Aerate by blade graders, harrows, or other approved equipment when mixture is moistened by rain.

C. Degree of Compaction:
   1. Compaction Testing:
      a. The method of in-place compaction testing shall be as follows:
         (1) Density - ASTM D6938.
         (2) Moisture Content - ASTM D6938.
      b. The minimum frequency of density tests will be as follows:
         (1) At least one test every 100 feet along a roadway or one test every 1,200 square yards of base and surface course placed.
         (2) At least one test when Owner suspects the quality of moisture control or effectiveness of compaction.
   2. Base compaction on weight per cubic foot of material passing 3/4-inch sieve and compact each layer to at least 100% of maximum density at plus or minus 1.5% of the optimum moisture as determined by ASTM D698.
   3. Density and moisture content of compacted material shall be measured following the procedures of ASTM D6938. Calibration tests shall be conducted on the first load of material placed that meets density requirements. Calibration checks shall be made at the beginning of the work and at intervals as determined by Owner.
   4. Remove or scarify and recompact base course failing to meet required densities.
   5. Removal of in-place material and replacement with approved new material will be required if scarifying and recompaction do not produce the required densities.

D. Smoothness Test:
   1. Surface shall show no deviation more than 3/8-inch in any 10 feet when tested with a 10-foot straightedge applied parallel with and at right angles to the centerlines of the paved area.
   2. Correct any deviation more than this amount by loosening, adding or removing material, reshaping, watering, and compacting as requested by Owner. In no case will the addition of thin layers of material be added to the top layer of base course to meet grade. If the elevation of the top layer is 1/2 inch or more below grade, the top layer of base shall be scarified to a depth of at least 3 inches, new material added, and the layer shall be

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blended and recompacted to bring it to grade. If the finished surface is above plan grade, it shall be cut back to grade and rerolled.

3.03 MAINTENANCE:

A. Maintain finished base course in a moist condition until the next layer is placed and as approved by Owner.

END OF SECTION 32 11 00

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SECTION 32 92 00 - SEEDING

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes requirements for the following:
   1. Seedbed preparation, seeding, mulching, liming, and fertilizing of all areas disturbed by Contractor's construction activities and areas not to be covered with surfacing or paved.
   2. Maintaining seeded areas, including re-seeding and mowing as necessary.
   3. Use erosion control material specified in areas where seeding is not possible.
B. Related Work Specified Elsewhere:
   1. SECTION 312000 - Site Preparation and Earthwork.

1.02 REFERENCES:

A. Applicable Standards:
   1. Standard Specifications for Road and Bridge Construction Kentucky Transport Cabinet (KYTC), 2019.
      a. Section 212 – Erosion Control

1.03 SUBMITTALS:

A. Submit as specified in DIVISION 1.
B. Certificates: Includes, but not limited to, the following:
   1. Seed shall be accompanied by certificate from vendor that seed meets requirements of these specifications.
   2. Fertilizer shall be accompanied by certificate from vendor that fertilizer meets requirements of these specifications.
C. Product Data: Submit manfacturer’s product data and installation instructions. Includes, but not limited to the following:
   1. Erosion Control Mulch, Flexterra, Flexible Growth Medium (FGM) (or engineer approved equal)
   2. Soil amendments
   3. Fertilizers
   4. Non-selective herbicide

PART 2 - PRODUCTS

2.01 SEED:

A. Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America and as required below.
B. Seed shall conform to all applicable laws of the State of Kentucky.
C. Seed shall be labeled according to the U.S. Department of Agriculture Federal Seed Act and shall be furnished in containers with tags showing seed mixture, purity, germination, weed content, name of seller, and date on which seed was tested.
   1. Seed mixture shall be Type I as indicated Section 212 of the KYTC.
D. Moldy seed or seed that has been damaged in storage shall not be used. Seeding shall not be performed during the months of November through February.

2.02 FERTILIZER:

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A. Commercial fertilizer containing a minimum 1 pound of actual nitrogen per 1,000 square feet, with some elements derived from organic sources. Provide nitrogen in form that will be available to the lawn during initial period of growth.
B. Deliver to site in labeled bags or containers.

2.03 EROSION CONTROL MULCH

A. Flexterra Flexible Growth Medium Fiber Mulch: Hydraulically apply according to manufacturer recommendations. This product should be applied at a minimum rate of 3000lbs/acre (70lbs/1000 square feet). Contractor shall follow recommended application rates specific to slope condition.
B. Manufacturer approved by Owner.

2.04 EQUIPMENT

A. Equipment shall have a built in mechanical agitation system and operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry containing not less than 44 lbs or organic mulching amendment plus fertilizer, chemical additives, and solids for each 150 gallons of water. Use approved hydro-spraying machines with fan-type nozzle (50- degree tip).

PART 3 - EXECUTION

3.01 SEEDBED PREPARATION:

A. Grade areas to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges and fill depressions to meet finish grades. Limit fine grading to areas which can be planted within the immediate future.
B. Dispose of any growth, rocks, or other obstructions which might interfere with tilling, seeding, or later maintenance operations.
C. Thoroughly loosen and pulverize topsoil to a depth of at least 4 inches. Minimum depth of topsoil at seeded areas will be 4 inches.
D. Maintain tilled areas until seeded and mulched to provide a smooth area with no gullies or depressions.
E. Restore prepared areas to specified condition if eroded or otherwise disturbed after fine grading and prior to seeding.
F. All disturbed areas not receiving riprap, granular material, concrete, or asphalt shall receive topsoil and seed.

3.02 APPLICATION - FERTILIZER:

A. Apply fertilizer and agricultural limestone to properly prepared seedbeds as specified in KYTC.
B. Incorporate fertilizer and agricultural limestone into the soil to a depth of at least 3 inches by discing, harrowing or raking. If fertilizer is applied hydraulically, incorporation into the soil will not be required.
C. Incorporation of fertilizer and agricultural limestone may be part of the tillage operations specified above.

3.03 INSTALLATION/APPLICATION:

A. Do not use wet seed or seed which is moldy or otherwsie damaged in transit or storage.
B. Strictly comply with manufacturer’s installation instructions and recommendations.

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C. Apply fertilizer, other approved soil amendments and 50% of seed with a small amount of Flexible Growth Medium for visual metering. Apply from opposing directions to provide a 100% soil surfce coverage.
D. Mix and apply the balance of seed and apply Flexible Growth Medium at a rate of 50 lbs per 125 gallons of water over freshly seeded areas. Hydromulch should be applied in multiple directions so that shadowing does not occur and to insure uniformity of the application. Confirm the loading rates with equipment manufacturers. Do not leave seeded surfaces unprotected, especially if precipitation is imminent.
E. Exercise special care to prevent any of the slurry from being sprayed onto any hardscape areas including concrete walks, fences, walls, buildings, etc. Remove all slurry sprayed onto these surfaces immediately.

3.04 MAINTENANCE:

A. Mow grass to a height of 3 inches whenever average height of grass exceeds 5 inches.
B. Remove weeds by approved chemical treatment.
C. Erect and maintain signs or barricades to exclude traffic from seeded areas.
D. Perform maintenance after planting as specified until the desired cover is obtained and accepted by Owner.
E. Seeded Areas:
    1. Water as required by good practice until accepted by Owner.
    2. Prior to acceptance, repair at the Contractor's expense any portion of the seeded surface, which becomes gullies or otherwise damaged, or destroyed.

3.05 ACCEPTANCE OF SEEDED AREAS:

A. When seeding Work is Substantially Complete, including maintenance, Owner will, upon request, make an inspection to determine the acceptability:
    1. Seeding Work may be inspected for acceptance in parts agreeable to Owner, provided Work offered for inspection is complete, including maintenance.
    2. To be acceptable, seeded areas shall have a good, uniform color and sturdy growth with no bare soil spots, over a minimum of 80 percent of the area seeded.
B. Replant rejected Work and continue specified maintenance until reinspected by Owner and found to be acceptable.

3.06 CLEANUP:

A. Promptly remove soil and debris created by seeding Work from paved areas. Clean wheels of vehicles prior to leaving Site to avoid tracking soil onto surfacing of roads, walks, or other paved areas.

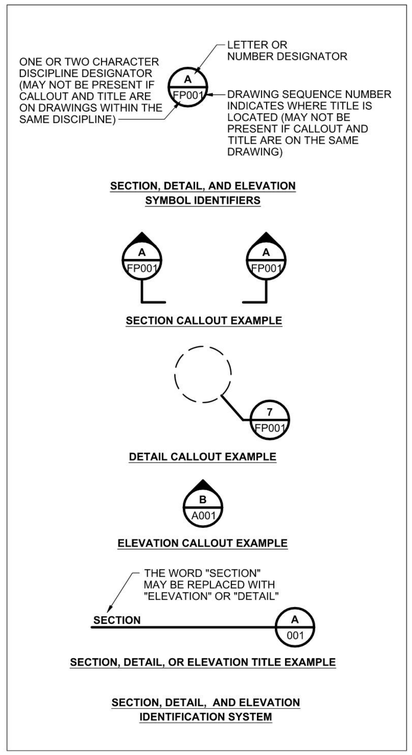
END OF SECTION 32 92 00

ATTACHMENT A- CONTRACT DRAWINGS

Robert D. Green Generating Station
Green Ash Pond Closure
Webster County, Kentucky

2022

132721



Contract Drawings

GENERAL DRAWINGS	
DWG. NO.	**TITLE**
CVRIDX	COVER-INDEX
G001	LEGEND, ABBREVIATIONS, VICINITY MAP AND NOTES
CS001	EXISTING CONDITIONS PLAN

CIVIL DRAWINGS	
DWG. NO.	**TITLE**
CG100	DEMOLITION PLAN
CG101	NOT USED
CG102	HAULING PLAN
CG103	EXCAVATION GRADING KEY PLAN
CG104	EXCAVATION GRADING SHEET 1
CG105	EXCAVATION GRADING SHEET 2
CG106	GRADING SECTION SHEET 1
CG107	GRADING SECTION SHEET 2
CG109	SITE FINISHING PLAN
CG110	EROSION CONTROL PLAN
CG110	EROSION CONTROL DETAILS
CG111	DETAILS

REFERENCE DRAWINGS	
DWG. NO.	**TITLE**
4-G381-52-1	WATER DISCHARGE MODIFICATIONS TO GREEN ASH POND
4-G385-2-1	PLAN VIEW AND SECTION VIEW OF EARTHWORK AND OVERFLOW PIPE
4-G380C-13	PLAN SITE GRADING
4-G380C-14	PLAN SITE GRADING
3280-C026	BOTTOM ASH POND AND SOLID WASTER SECTION AND DETAIL
3280-M098	MECHANICAL PLOT PLAN AREA
3280-S048	DRAWDOWN STRUCTURE

Apr 17 2022 12:39 PM

FOR BID - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
0	04/14/22	MDB	RNO	ISSUED FOR BID

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.
LICENSEE NO. 0043

Robert D. Green Generating Station
Green Ash Pond Closure
-

Cover-Index

Case No. 2019-00435
Filed October 18, 2022

LEGEND

NEW		EXISTING
	RAILROAD	
	ROADS	
750	CONTOURS	750
✳TOP OF SLOPE		
✳TOE OF SLOPE		
	FLOWLINE	
ST ST-1 ST	STORM SEWER	ST ST ST
	CRUSHED ROCK	
	RIPRAP	
	TOPSOIL & SEED	
	FENCES	
	SILT FENCE	
	STRUCTURES	
	SURVEY MONUMENTS	BM ___

✳ TOP OR TOE OF SLOPE TO MATCH EXISTING GRADE UNLESS AN ELEVATION OR SLOPE IS INDICATED.

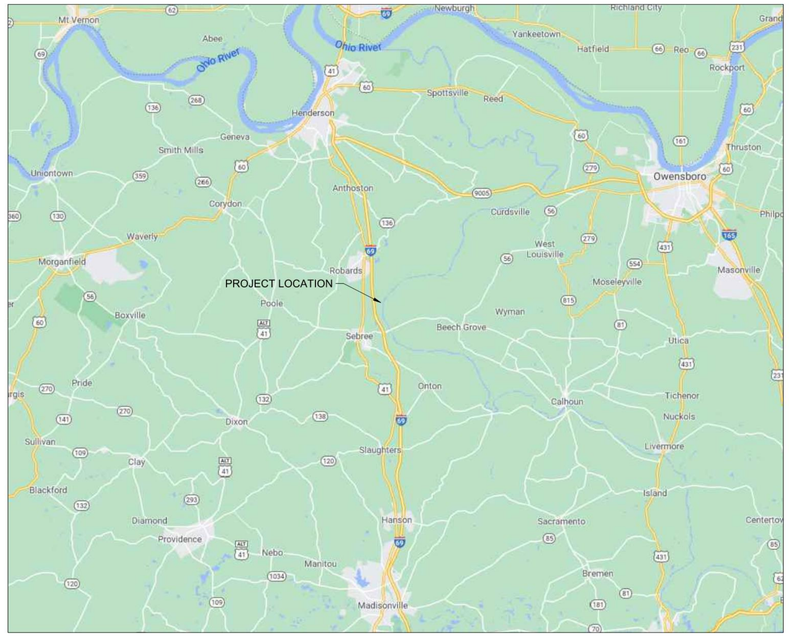
ALL SYMBOLS ARE STANDARD WITHOUT RESPECT TO CONTRACTS.

ABBREVIATIONS

ABBREVIATION	TERM	ABBREVIATION	TERM
@	AT	M.O.	MID-ORDINATE
AHD	AHEAD	N	NORTH
ASPH	ASPHALT	NO	NUMBER
AUX	AUXILIARY	OD	OUTSIDE DIAMETER
BK	BACK	OPNG	OPENING
BLDG	BUILDING	±	PLUS OR MINUS
BM	BENCHMARK	PC	POINT OF CURVE
BOT	BOTTOM	PCC	PORTLAND CEMENT CONCRETE
CB	CATCH BASIN	PI	POINT OF INTERSECTION
C TO C	CENTER TO CENTER	PL	PROPERTY LINE
CL	CENTERLINE	PT	POINT OF TANGENT
CHDPE	CORRUGATED HIGH DENSITY POLYETHYLENE	P.R.C.	POINT OF REVERSE CURVE
CJ	CONSTRUCTION JOINT	P.V.C.	POINT OF VERTICAL CURVE
CMAP	CORRUGATED METAL ARCH PIPE	P.V.I.	POINT OF VERTICAL INTERSECTION
CMP	CORRUGATED METAL PIPE	P.V.R.C.	POINT OF VERTICAL REVERSE CURVE
CONC	CONCRETE	P.V.T.	POINT OF VERTICAL TANGENT
CPT	CORRUGATED POLYETHYLENE TUBING	R	RADIUS
DBL	DOUBLE	RD	ROAD
DET	DETAIL	RPT	RADIUS POINT
DI	DROP INLET	RCP	REINFORCED CONCRETE PIPE
DIA	DIAMETER	RR	RAILROAD
DWG	DRAWING	RT	RIGHT
ECB	EXISTING CATCH BASIN	ROW	RIGHT-OF-WAY
EDB	ELECTRICAL DUCT BANK	S	SOUTH
E	EAST	SLP	SLOPE
EF	EACH FACE	SS	STAINLESS STEEL
EJ	EXPANSION JOINT	SHLDR	SHOULDER
EL	ELEVATION	STD	STANDARD
EMH	ELECTRICAL MANHOLE	ST	STORM SEWER
EQN	EQUATION	STA	STATION
EXIST	EXISTING	SWG	SWING
EW	EACH WAY	T&B	TOP AND BOTTOM
FBD	FLAT BOTTOM DITCH	TEMP	TEMPORARY
FLL	FLOWLINE	TOA	TOP OF ASPHALT
GA	GAGE	TOC	TOP OF CONCRETE
GALV	GALVANIZED	TO GRATING	TOP OF GRATING
HDPE	HIGH DENSITY POLYETHYLENE	TOM	TOP OF MANHOLE
HORIZ	HORIZONTAL	TOP	TOP OF PIPE
HPT	HIGH POINT	TOR	TOP OF RAIL
HWY	HIGHWAY	TOSB	TOP OF SUBBALLAST
ID	INSIDE DIAMETER	TOSG	TOP OF SUBGRADE
IF	INSIDE FACE	TYP	TYPICAL
INTSCT	INTERSECTION	UON	UNLESS OTHERWISE NOTED
INVT EL	INVERT ELEVATION	VC	VERTICAL CURVE
L	LONG	VERT	VERTICAL
LT	LEFT	W	WEST
MAX	MAXIMUM	W/	WITH
MH	MANHOLE	W/O	WITH OUT
MIN	MINIMUM	WWF	WELDED WIRE FABRIC
MISC	MISCELLANEOUS		

NOTES:

1. ALL ABBREVIATIONS ARE BURNS & McDONNELL STANDARDS WITHOUT RESPECT TO CONTRACTS.
2. ABBREVIATIONS ARE APPLICABLE TO ALL DWGS.



VICINITY MAP
NOT TO SCALE

NOTES:

1. ALL COORDINATES AND ELEVATIONS OF PERMANENT BENCHMARKS ARE PROVIDED BY BIG RIVER GREEN STATION PRIOR TO THE START OF CONSTRUCTION. THE COORDINATES AND ELEVATIONS SHALL BE VERIFIED PRIOR TO THE START OF WORK. COORDINATES ARE PLANT GRID.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS OF CONSTRUCTION UNLESS NOTED OTHERWISE. CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, MATERIALS, AND TOOLS NECESSARY TO COMPLETELY PERFORM THE WORK IN SAFE, EXPEDITIOUS, AND WORKMAN LIKE MANNER. CONTRACTOR SHALL COORDINATE SCHEDULE OF THE WORK WITH OWNER. THE CONTRACTOR ACCEPTS FULL RESPONSIBILITY FOR PROPER HANDLING AND INSTALLATION OF MATERIALS.
3. CONTRACTOR SHALL UNDERTAKE ALL NECESSARY MEASURES TO ENSURE SAFETY OF ALL PERSONS AND STRUCTURES AT THE SITE AND ADJACENT TO THE SITE. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CLAIMS RESULTING FROM CONTRACTOR OR SUBCONTRACTOR ACTIVITIES. VISITS TO THE SITE BY THE ENGINEER OR OWNER SHALL NOT RELIEVE THE CONTRACTOR OF SUCH RESPONSIBILITY.
4. THE CONTRACTOR SHALL ACCEPT FULL RESPONSIBILITY FOR MATERIALS THROUGH PROJECT COMPLETION. CONTRACTOR SHALL STORE MATERIALS IN A SECURE LOCATION (ON OR OFF-SITE).
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SAFEGUARDING OF THE INSTALLATION AND MATERIALS STORED ON THE SITE TO PREVENT THEFT, VANDALISM OR DAMAGE.
6. CONTRACTOR SHALL NOT DISTURB ADJACENT PROPERTIES THAT ARE NOT THE PROPERTY WHERE THE PROJECT IS LOCATED.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL CONSTRUCTION PERMITS REQUIRED TO PERFORM THE WORK. CONTRACTOR SHALL PROVIDE CERTIFICATES OF INSURANCE AND OTHER DOCUMENTATION REQUIRED BEFORE PERFORMING THE WORK.
8. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA STANDARDS.
9. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
10. THESE NOTES AND OTHER DRAWING NOTES CONTAINED HEREWITH ARE PROVIDED TO MEET SPECIFIC REQUIREMENTS AND TO SUPPLEMENT THE CONTRACT DOCUMENTS. THESE NOTES NEITHER REPLACE NOR OVERRIDE THE PROVISIONS AND REQUIREMENTS OF THE CONTRACT DOCUMENTS.
11. UNKNOWN SITUATIONS OR CONDITIONS NOT COVERED IN THE CONTRACT DOCUMENTS MAY ARISE DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNER IF SUCH A CONDITION IS IDENTIFIED.
12. ALL DIMENSIONS, ELEVATIONS, AND CONDITIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR AND ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER FOR CLARIFICATION BEFORE PROCEEDING WITH THE AFFECTED PART OF WORK.
13. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF/HERSELF WITH THE EXISTING CONDITIONS BEFORE SUBMITTING HIS/HER BID.
14. IF CERTAIN FEATURES ARE NOT FULLY SHOWN OR CALLED FOR ON THE CONTRACT DRAWINGS OR SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS FOR SIMILAR CONDITIONS THAT ARE SHOWN OR CALLED FOR, SUBJECT TO THE APPROVAL OF THE ENGINEER AND THE OWNER.
15. ALL WORK SHALL BE DONE TO THE LINES, SLOPES, THICKNESS, AND GRADES INDICATED IN THE CONTRACT DRAWINGS. MAXIMUM SLOPE SHALL BE 3H:1V UNLESS INDICATED OTHERWISE. ALL ESTABLISHED MONUMENTS, BENCHMARKS, REFERENCE POINTS, STAKES, AND OTHER CENTRAL POINTS SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR. CONTRACTOR SHALL NOTIFY OWNER IN WRITING OF BENCHMARKS, REFERENCE LINES, OR OTHER CONTROL POINTS WHICH MAY HAVE BEEN DISTURBED OR WHICH APPEAR TO BE OFF LINE OR GRADE.
16. ONCE THE WORK HAS BEEN STARTED, THE CONTRACTOR SHALL COMPLETE THE WORK WITHOUT ANY INTERRUPTIONS.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POTABLE WATER AND TEMPORARY SANITARY FACILITIES FOR CONTRACTOR'S PERSONNEL. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR INSTALLING AND REMOVING ANY REQUIRED TEMPORARY UTILITY CONNECTIONS.
18. GRADES AND ELEVATIONS SHOWN ARE FINISHED SURFACING.
19. INSTALL EROSION CONTROL MEASURES AS NECESSARY TO PERFORM WORK IN ACCORDANCE WITH ALL APPLICABLE LAND DISTURBANCE ORDINANCES AND REGULATIONS.
20. SEE SPECIFICATION APPENDIX C FOR BEST MANAGEMENT PRACTICES PLAN AND PERMIT.
21. SEE APPENDIX D OF THE SPECIFICATION FOR SURVEY CONTROL.

STATE OF KENTUCKY
ROBERT N. OWENS
28616
LICENSED PROFESSIONAL ENGINEER

Apr 17 2022 12:40 PM

FOR BID - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
0	04/14/22	MDB	RNO	ISSUED FOR BID

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400

designed M. BLEYTHING | detailed D. PIEDRAHITA

Big Rivers ELECTRIC CORPORATION

ROBERT D. GREEN STATION
WEBSTER, KENTUCKY

BREC GREEN STATION
GREEN ASH POND CLOSURE
LEGEND, ABBREVIATIONS, VICINITY MAP AND NOTES

project 132721 | contract CONTRACT
drawing **G001** – rev. **0**
sheet of sheets
file 132721G001.DWG

Case No. 2019-00435
Filed October 18, 2022

Millimeters
Inches
Scale For Microfilming

Scale For Microfilming
Millimeters
Inches

WASTE STREAM	DESCRIPTION	ESTIMATED FLOW
CLARIFIER BLOWDOWN	SOLIDS FLUSHING FROM CLARIFIER	10.3 GPM
PLANT ISLAND RUNOFF	STORMWATER RUNOFF FROM APPROX. 20 ACRES	INTERMMITTENT
IW-1	G1 PLANT DRAINS, FLUE GAS QUENCH, DEMIN REGEN NEUTRILIZATIONS, RO AND ACTIVATED CARBON UNIT WASTE, G1 BOILER BLOWDOWN, WASTEWATER CLARIFIER SYSTEM	434 GPM
IW-2	G2 PLANT DRAINS, COAL PILE RUNOFF, G2 BOILER BLOWDOWN, BOTTOM ASH HOPPER SEAL WATER	885 GPM
BOTTOM ASH PIPES	DECOMMISSIONED	NA
RUNOFF POND 011	IU YARD SUMP OVERFLOW	INTERMMITTENT
RUNOFF POND 012	LANDFILL RUNOFF	10 GPM
RUNOFF POND 014	TARGET MANHOLE LANDFILL SEEPAGE COLLECTION, LANDFILL RUNOFF	10 GPM
METAL CLEANING POND 008	MISC. CLEANING WASTES, STORMWATER RUNOFF, WASTEWATER CLARIFIER SYSTEM	INTERMMITTENT

NOTES:

1. WATER FROM THE ASH POND CAN BE USED FOR NON-POTABLE USE BY CONTRACTOR.
2. WHEN ASH POND WATER IS NO LONGER AVAILABLE, OTHER SOURCES OF NON-POTABLE WATER WILL BE PROVIDED BY BREC.

NORTH

0 100' 200'
SCALE IN FEET

STATE OF KENTUCKY
ROBERT N. OWENS
26616
LICENSED PROFESSIONAL ENGINEER

Apr 17 2022 12:39 PM

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Big Rivers ELECTRIC CORPORATION

ROBERT D. GREEN STATION
WEBSTER, KENTUCKY

BREC GREEN STATION
GREEN ASH POND CLOSURE
EXISTING CONDITIONS PLAN

project 132721 | contract -
drawing **CS001** | rev. **0**
sheet | of | sheets
file 132721SKT-1.DWG

Case No. 2019-00435
Filed October 18, 2022

NOTES:

1. BOTTOM ASH PIPING TO BE CLEANED OF ASH AND HAULED TO ONSITE STOCKPILE AS DIRECTED BY OWNER.
2. ALL DEMOLISHED MATERIAL EXCLUDING BOTTOM ASH PIPING WILL BE HAULED OFFSITE AT EXPENSE OF CONTRACTOR.

NORTH

0 100' 200'
SCALE IN FEET

STATE OF KENTUCKY
ROBERT N. OWENS
26616
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9400 WARD PARKWAY
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816-333-9400

designed M. BLEYTHING | detailed D. PIEDRAHITA

Big Rivers ELECTRIC CORPORATION

ROBERT D. GREEN STATION
WEBSTER, KENTUCKY

BREC GREEN STATION
GREEN ASH POND CLOSURE
DEMOLITION PLAN

project 132721 | contract -
drawing CG100 | rev. 0
sheet of sheets
file 132721SKT-1.DWG

Case No. 2019-00435
Filed October 18, 2022

Scale For Microfilming
Millimeters
Inches

NOTES:

1. CONTRACTOR TO USE THE PROPOSED ROUTE FOR HAULING OF CCR MATERIAL FROM PRIMARY BOTTOM ASH POND TO LANDFILL.
2. CONTRACTOR TO UPGRADE ROAD AS NEED FOR CONSTRUCTION ACTIVITY.
3. ROAD SHALL BE IN EQUAL OR BETTER CONDITION AT THE COMPLETION OF CONSTRUCTION. CONTRACTOR SHALL DOCUMENT CONDITION OF ROAD PRIOR TO CONSTRUCTION.
4. CONTRACTOR WILL BE RESPONSIBLE FOR DUST CONTROL AND ROAD MAINTENANCE OR HAUL ROAD DURING CONSTRUCTION.

NORTH

0 200' 400'
SCALE IN FEET

STATE OF KENTUCKY
ROBERT N. OWENS
26616
LICENSED PROFESSIONAL ENGINEER

Apr 17 2022 12:35 PM

FOR BID - NOT FOR CONSTRUCTION

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0	04/14/22	MDB	RNO	ISSUED FOR BID

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO. 64114
816-333-9400

designed M. BLEYTHING | detailed D. PIEDRAHITA

Big Rivers ELECTRIC CORPORATION

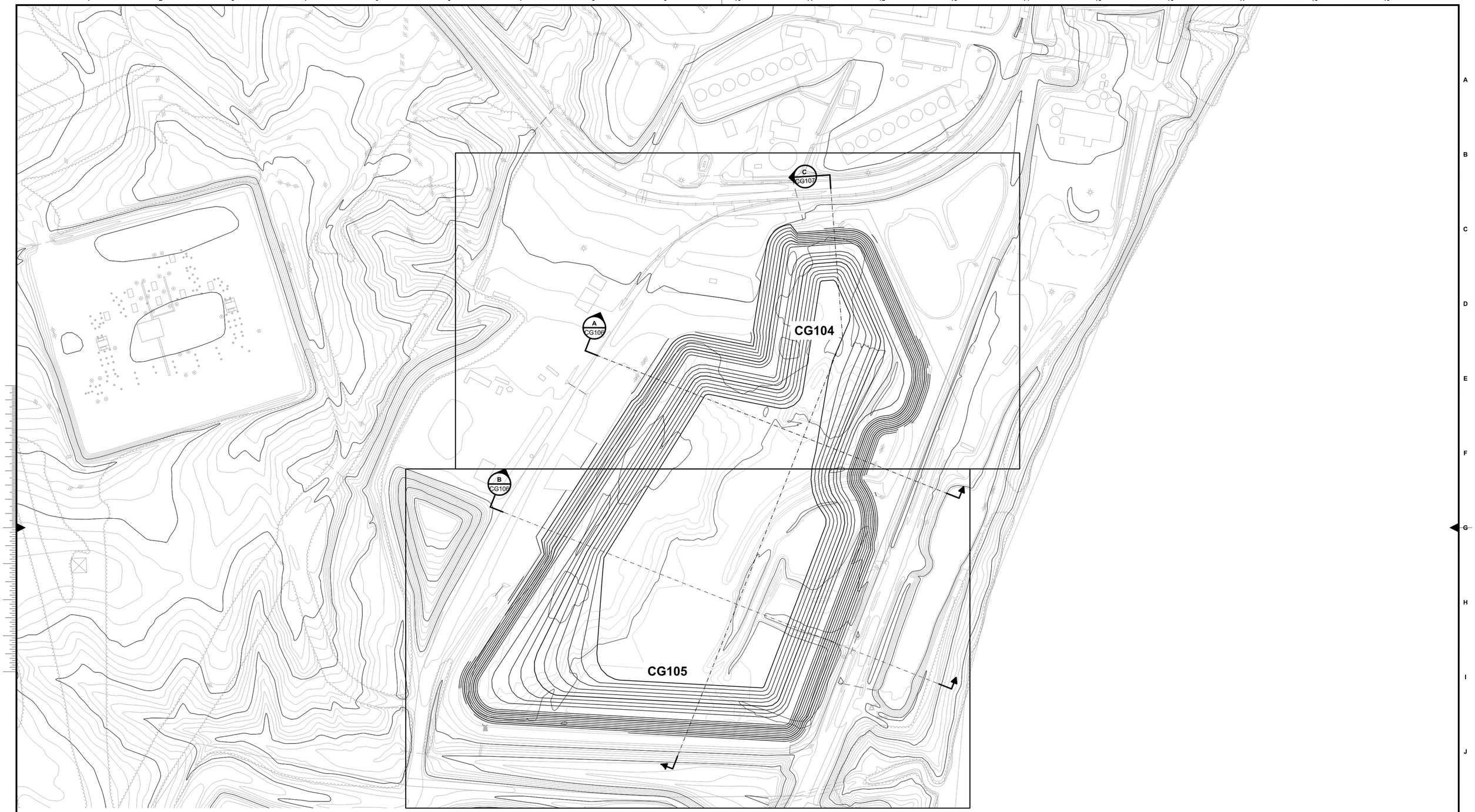
ROBERT D. GREEN STATION
WEBSTER, KENTUCKY

BREC GREEN STATION
GREEN ASH POND CLOSURE
HAULING PLAN

project 132721 | contract -
drawing CG102 | rev. 0
sheet of sheets
file 132721SKT-1.DWG

Case No. 2019-00435
Filed October 18, 2022

Scale For Microfilming
Millimeters
Inches



Scale For Microfilming
Millimeters
Inches

NORTH

0 100' 200'
SCALE IN FEET

FOR BID - NOT FOR CONSTRUCTION

STATE OF KENTUCKY
ROBERT N. OWENS
26616
LICENSED
PROFESSIONAL ENGINEER

Apr 17 2022 12:36 PM

no.	date	by	ckd	description
0	04/14/22	MDB	RNO	ISSUED FOR BID

no.	date	by	ckd	description

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400

designed M. BLEYTHING | detailed D. PIEDRAHITA

Big Rivers ELECTRIC CORPORATION

ROBERT D. GREEN STATION
WEBSTER, KENTUCKY

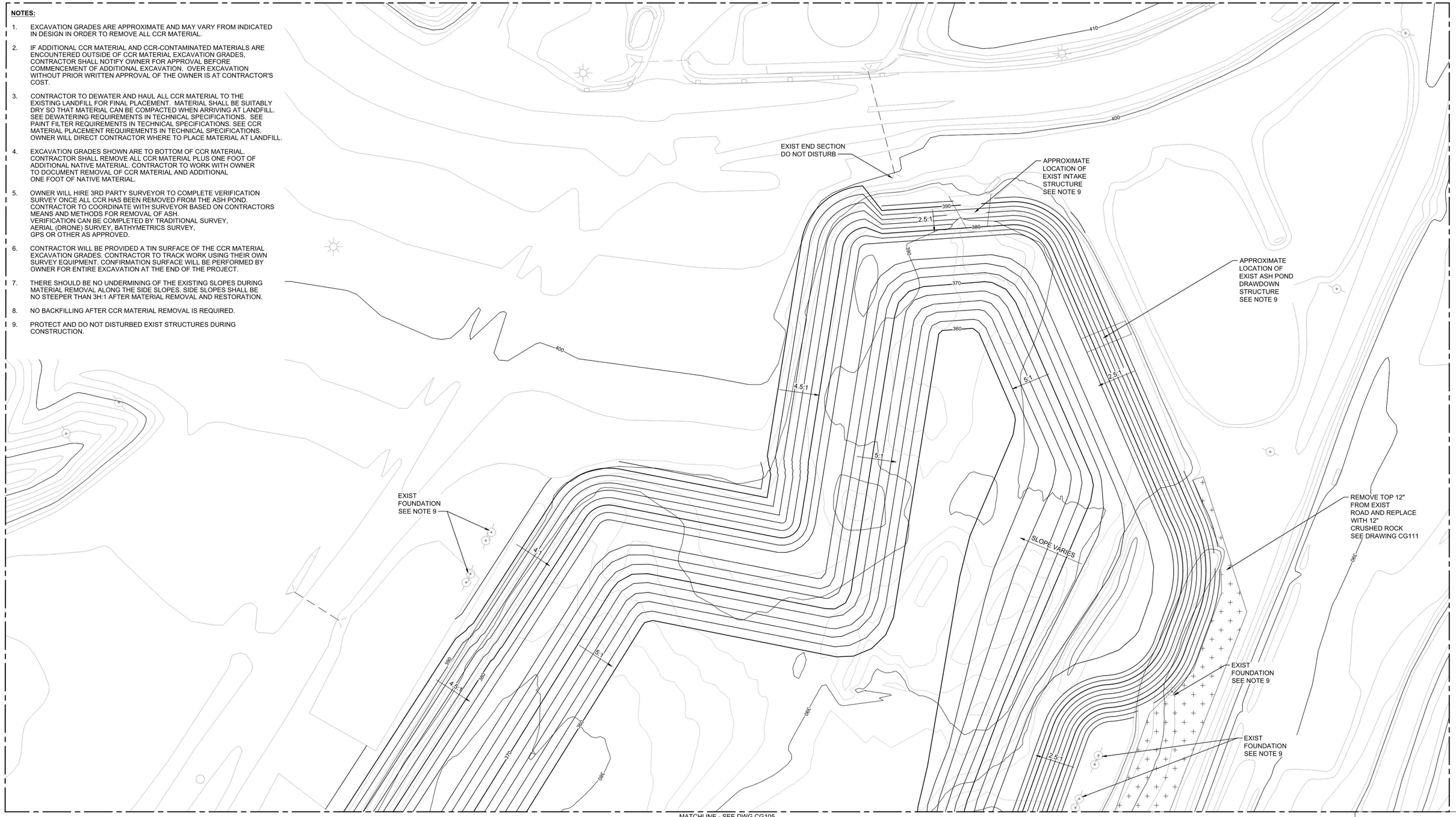
BREC GREEN STATION
GREEN ASH POND CLOSURE
EXCAVATION GRADING KEY PLAN

project 132721 | contract -
drawing **CG103** | rev. **0**
sheet | of | sheets
file 132721SKT-1.DWG

Case No. 2019-00435
Filed October 18, 2022

NOTES:

1. EXCAVATION GRADES ARE APPROXIMATE AND MAY VARY FROM INDICATED IN DESIGN IN ORDER TO REMOVE ALL CCR MATERIAL.
2. IF ADDITIONAL CCR MATERIAL AND CCR-CONTAMINATED MATERIALS ARE ENCOUNTERED OUTSIDE OF CCR MATERIAL EXCAVATION GRADES, CONTRACTOR SHALL NOTIFY OWNER FOR APPROVAL BEFORE COMMENCEMENT OF ADDITIONAL EXCAVATION. OVER EXCAVATION WITHOUT PRIOR WRITTEN APPROVAL OF THE OWNER IS AT CONTRACTOR'S COST.
3. CONTRACTOR TO DEWATER AND HAUL ALL CCR MATERIAL TO THE EXISTING LANDFILL FOR FINAL PLACEMENT. MATERIAL SHALL BE SUITABLY DRY SO THAT MATERIAL CAN BE COMPACTED WHEN ARRIVING AT LANDFILL. SEE DEWATERING REQUIREMENTS IN TECHNICAL SPECIFICATIONS. SEE PAINT FILTER REQUIREMENTS IN TECHNICAL SPECIFICATIONS. SEE CCR MATERIAL PLACEMENT REQUIREMENTS IN TECHNICAL SPECIFICATIONS. OWNER WILL DIRECT CONTRACTOR WHERE TO PLACE MATERIAL AT LANDFILL.
4. EXCAVATION GRADES SHOWN ARE TO BOTTOM OF CCR MATERIAL. CONTRACTOR SHALL REMOVE ALL CCR MATERIAL PLUS ONE FOOT OF ADDITIONAL NATIVE MATERIAL. CONTRACTOR TO WORK WITH OWNER TO DOCUMENT REMOVAL OF CCR MATERIAL AND ADDITIONAL ONE FOOT OF NATIVE MATERIAL.
5. OWNER WILL HIRE 3RD PARTY SURVEYOR TO COMPLETE VERIFICATION SURVEY ONCE ALL CCR HAS BEEN REMOVED FROM THE ASH POND. CONTRACTOR TO COORDINATE WITH SURVEYOR BASED ON CONTRACTORS MEANS AND METHODS FOR REMOVAL OF ASH. VERIFICATION CAN BE COMPLETED BY TRADITIONAL SURVEY, AERIAL (DRONE) SURVEY, BATHYMETRICS SURVEY, GPS OR OTHER AS APPROVED.
6. CONTRACTOR WILL BE PROVIDED A TIN SURFACE OF THE CCR MATERIAL EXCAVATION GRADES. CONTRACTOR TO TRACK WORK USING THEIR OWN SURVEY EQUIPMENT. CONFIRMATION SURFACE WILL BE PERFORMED BY OWNER FOR ENTIRE EXCAVATION AT THE END OF THE PROJECT.
7. THERE SHOULD BE NO UNDERMINING OF THE EXISTING SLOPES DURING MATERIAL REMOVAL ALONG THE SIDE SLOPES. SIDE SLOPES SHALL BE NO STEEPER THAN 3H:1 AFTER MATERIAL REMOVAL AND RESTORATION.
8. NO BACKFILLING AFTER CCR MATERIAL REMOVAL IS REQUIRED.
9. PROTECT AND DO NOT DISTURBED EXIST STRUCTURES DURING CONSTRUCTION.



NORTH

0 20' 40' 80'
SCALE IN FEET

STATE OF KENTUCKY
ROBERT N. OWENS
26616
LICENSED PROFESSIONAL ENGINEER

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KANSAS CITY, MO 64114
816-333-9400

designed M. BLEYTHING | detailed D. PIEDRAHITA

Big Rivers ELECTRIC CORPORATION

ROBERT D. GREEN STATION
WEBSTER, KENTUCKY

BREC GREEN STATION
GREEN ASH POND CLOSURE
EXCAVATION GRADING SHEET 1

project 132721 | contract -
drawing **CG104** | rev. **0**
sheet | of | sheets
file 132721SKT-1.DWG

Case No. 2019-00435
Filed October 18, 2022

Scale For Microfilming
Millimeters
Inches

MATCHLINE - SEE DWG CG104

TRANSITION
FROM SLOPE 4:1
TO SLOPE 2.5:1

SLOPE VARIES

EXIST
OVERFLOW PIPE
SEE NOTE 9

REMOVE TOP 12"
FROM EXIST
ROAD AND REPLACE
WITH 12"
CRUSHED ROCK
SEE DRAWING CG111

NOTES:

1. EXCAVATION GRADES ARE APPROXIMATE AND MAY VARY FROM INDICATED IN DESIGN IN ORDER TO REMOVE ALL CCR MATERIAL.
2. IF ADDITIONAL CCR MATERIAL AND CCR-CONTAMINATED MATERIALS ARE ENCOUNTERED OUTSIDE OF CCR MATERIAL EXCAVATION GRADES, CONTRACTOR SHALL NOTIFY OWNER FOR APPROVAL BEFORE COMMENCEMENT OF ADDITIONAL EXCAVATION. OVER EXCAVATION WITHOUT PRIOR WRITTEN APPROVAL OF THE OWNER IS AT CONTRACTOR'S COST.
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7. THERE SHOULD BE NO UNDERMINING OF THE EXISTING SLOPES DURING MATERIAL REMOVAL ALONG THE SIDE SLOPES. SIDE SLOPES SHALL BE NO STEEPER THAN 3H:1 AFTER MATERIAL REMOVAL AND RESTORATION.
8. NO BACKFILLING AFTER CCR MATERIAL REMOVAL IS REQUIRED.
9. PROTECT AND DO NOT DISTURBED EXIST STRUCTURES DURING CONSTRUCTION.

NORTH

0 20' 40' 80'
SCALE IN FEET

STATE OF KENTUCKY
ROBERT N. OWENS
28616
LICENSED
PROFESSIONAL ENGINEER

Apr 17 2022 12:36 PM

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Scale For Microfilming
Millimeters
Inches

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816-333-9400

designed M. BLEYTHING | detailed D. PIEDRAHITA

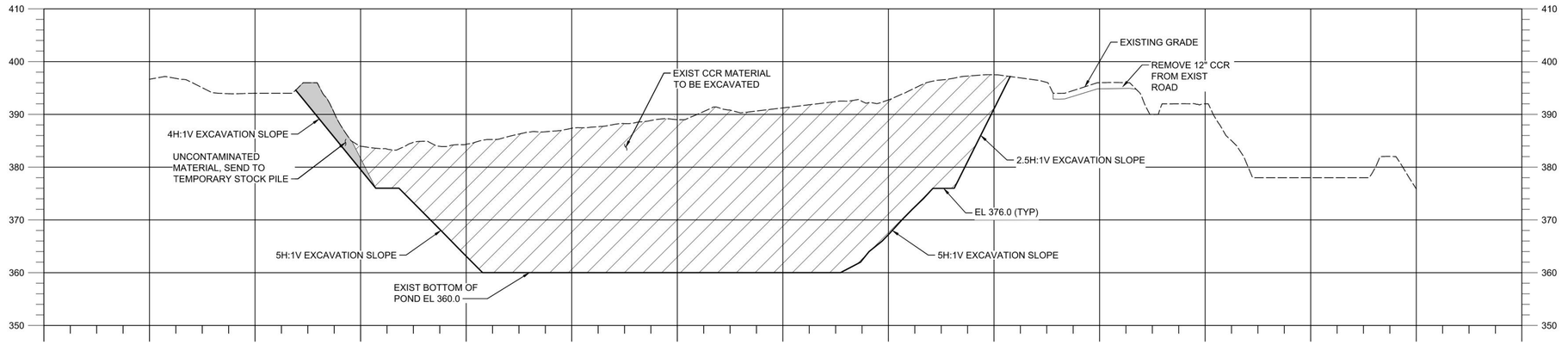
Big Rivers ELECTRIC CORPORATION

ROBERT D. GREEN STATION
WEBSTER, KENTUCKY

BREC GREEN STATION
GREEN ASH POND CLOSURE
EXCAVATION GRADING SHEET 2

project 132721 | contract -
drawing **CG105** | rev. **0**
sheet of sheets
file 132721SKT-1.DWG

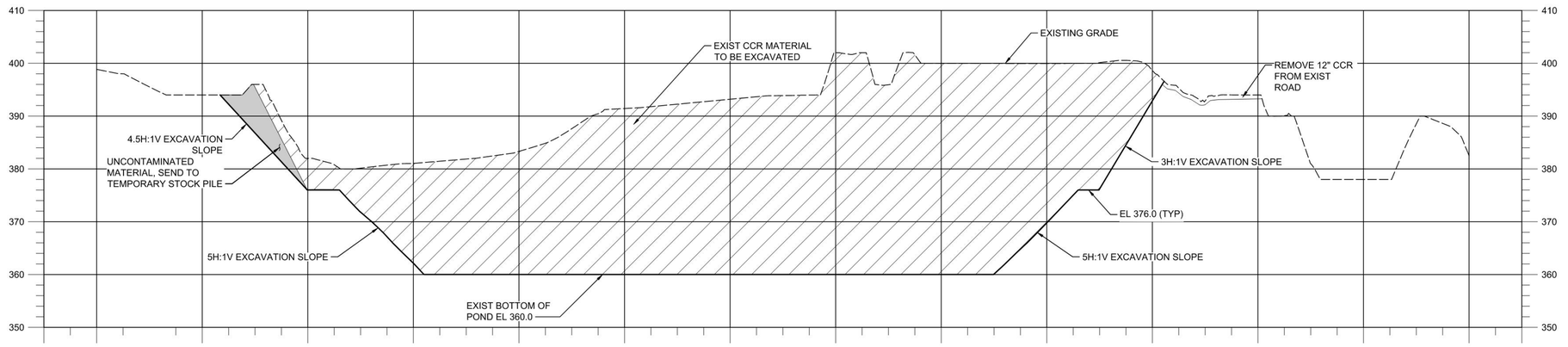
Case No. 2019-00435
Filed October 18, 2022



CROSS SECTION - A

HORIZONTAL 0 50' 100' SCALE IN FEET

VERTICAL 0 10' 20' SCALE IN FEET



CROSS SECTION - B

HORIZONTAL 0 50' 100' SCALE IN FEET

VERTICAL 0 10' 20' SCALE IN FEET

Millimeters Scale For Microfilming Inches

STATE OF KENTUCKY ROBERT N. OWENS 26616 LICENSED PROFESSIONAL ENGINEER

Apr 17 2022 12:36 PM

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0	04/14/22	MDB	RNO	ISSUED FOR BID

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9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400

designed M. BLEYTHING | detailed D. PIEDRAHITA

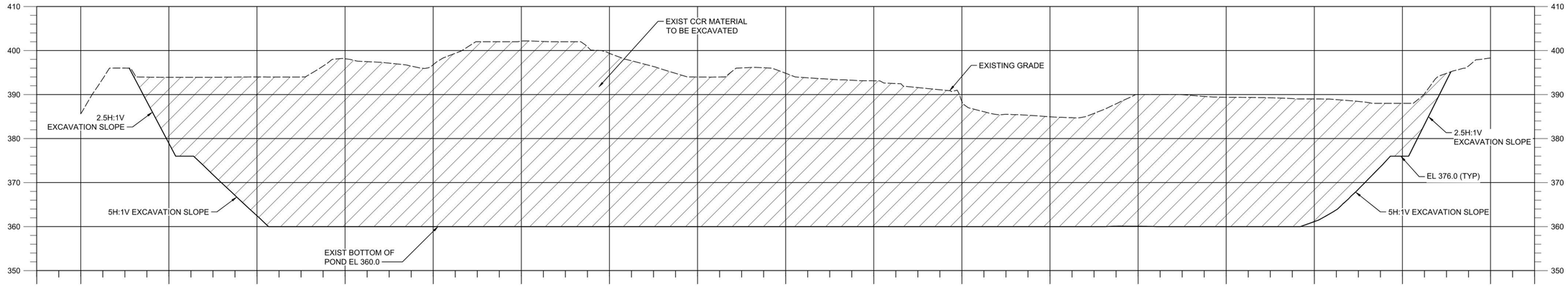
Big Rivers ELECTRIC CORPORATION

ROBERT D. GREEN STATION
WEBSTER, KENTUCKY

BREC GREEN STATION
GREEN ASH POND CLOSURE
GRADING SECTION SHEET 1

project 132721 | contract -
drawing **CG106** | rev. **0**
sheet of sheets
file 132721SKT-2.DWG

Case No. 2019-00435
Filed October 18, 2022



CROSS SECTION - C

HORIZONTAL 0 50' 100' SCALE IN FEET

VERTICAL 0 10' 20' SCALE IN FEET

Scale For Microfilming
Millimeters
Inches

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GRADING SECTION SHEET 2

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drawing CG107 | rev. 0

sheet | of | sheets

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LEGENDS:

- HYDRO-SEEDING
- RIP RAP
- CRUSHED ROCK

NOTES:

SEE DETAILS SHEET CG111 FOR CRUSHED ROCK ROAD AND RIP RAP DETAIL

NORTH

0 100' 200'
SCALE IN FEET

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BREC GREEN STATION
GREEN ASH POND CLOSURE
SITE FINISHING PLAN

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drawing CG108 | rev. 0
sheet | of | sheets
file 132721SKT-1.DWG

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Scale For Microfilming
Millimeters
Inches

LEGENDS:

SF SILT FENCE

CONSTRUCTION ENTRANCE

NOTES:

1. CONSTRUCTION ENTRANCE TO BE PLACED AT ASH POND ENTER/EXIT AS DETERMINED BY CONTRACTOR HAUL PLAN.
2. REFER TO "BEST MANAGEMENT PRACTICES PLAN" IN SPECIFICATION FOR FURTHER EROSION AND SEDIMENTATION CONTROL REQUIREMENTS.

NORTH

0 100' 200'
SCALE IN FEET

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designed M. BLEYTHING | detailed D. PIEDRAHITA

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BREC GREEN STATION
GREEN ASH POND CLOSURE
EROSION CONTROL PLAN

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sheet of sheets

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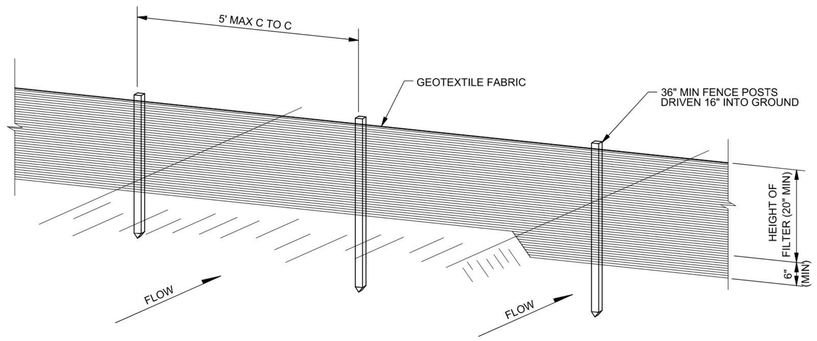
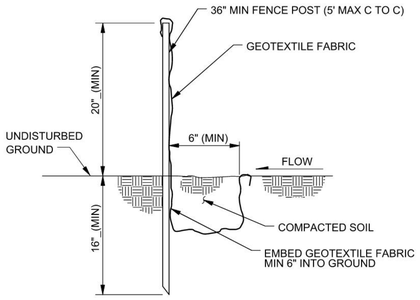
Scale For Microfilming
Millimeters
Inches



PERSPECTIVE VIEW



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

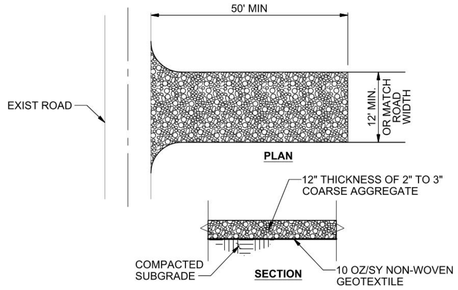
1. GEOTEXTILE FABRIC TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES.
2. WHEN TWO SECTIONS OF GEOTEXTILE FABRIC ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPEDBY SIX INCHES AND FOLDED.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS: STEEL EITHER "T" OR "U" TYPE OR 2" HARDWOOD

GEOTEXTILE FABRIC: FILTER X, MIRAFI 100X,
STABILINKA T140N OR APPROVED EQUAL.

DETAIL 1

SILT FENCE TRENCH INSTALLATION DETAIL
NOT TO SCALE



TYPICAL STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS
(STABILIZED CONSTRUCTION ENTRANCE)

1. STONE SIZE - USE 2"-3" COARSE AGGREGATE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET
3. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY -FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
4. GEOTEXTILE - SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
5. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT OUT OF THE CONSTRUCTION AREA, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED OUT OF THE CONSTRUCTION AREA SHALL BE REMOVED IMMEDIATELY.
7. WHEN VEHICLE WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
8. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN EVENT.

DETAIL 2

Millimeters
Inches
Scale For Microfilming

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no.	date	by	ckd	description

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WEBSTER, KENTUCKY

BREC GREEN STATION
GREEN ASH POND CLOSURE
EROSION CONTROL DETAILS

project 132721 | contract -
drawing CG110 | rev. 0
sheet of sheets
file 132721SKT-1.DWG

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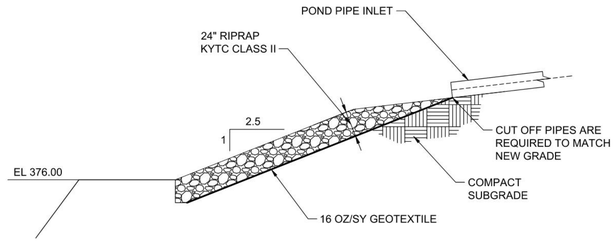
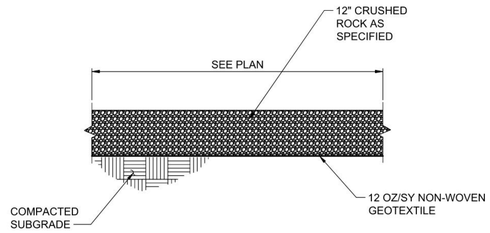


TYPICAL SLOPE PROTECTION DETAIL FOR POND INLET PIPE
NOT TO SCALE



TYPICAL ROCK ROAD SECTION
NOT TO SCALE

Scale For Microfilming
Millimeters
Inches

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GREEN ASH POND CLOSURE
DETAILS

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drawing **CG111** – rev. **0**
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Filed October 18, 2022

ATTACHMENT B – TECHNICAL REFERENCE DOCUMENT

Technical Reference Document for the Sebree Generating Station Green Station CCR Surface Impoundment Closure Project, Robards, Kentucky

THERE IS NO EXPRESS OR IMPLIED GUARANTEE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION AND DATA CONTAINED HEREIN, NOR OF THE INTERPRETATION THEREOF BY THE OWNER, BURNS & McDONNELL ENGINEERING COMPANY, OR ANY OF THEIR REPRESENTATIVES.

THE SUBSURFACE INFORMATION AND DATA CONTAINED HEREIN DO NOT FORM A PART OF ANY CONTRACT DOCUMENT ISSUED BY BURNS & McDONNELL.

Big Rivers Electric Corporation
Sebree Generating Station,
Robards, Kentucky
Project No. 132721
April 2022

Case No. 2019-00435
Filed October 18, 2022

Technical Reference Document for the Sebree Generating Station Green Station CCR Surface Impoundment Closure Project, Robards, Kentucky

prepared for

Big Rivers Electric Corporation
Sebree Generating Station,
Robards, Kentucky

Project No. 132721

April 2022

prepared by

Burns & McDonnell
Kansas City, Missouri

Case No. 2019-00435
Filed October 18, 2022

TABLE OF CONTENTS

Page No.

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Filed October 18, 2022

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LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
AEI	Associated Engineers, Inc
bTOC	below top of casing
BREC	Big Rivers Electric Corporation
CCR	coal combustion residuals
cm/sec	centimeters per second
Document	Technical Reference Document
Sebree	Sebree Generating Station
cm/sec	centimeters per second

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Filed October 18, 2022

1.0 GENERAL

This Technical Reference Document (Document) has been prepared for Big Rivers Electric Corporation (BREC) Sebree Generating Station (Sebree Station) to present subsurface data collected from the vicinity of the Green Station Coal Combustion Residual (CCR) Surface Impoundment located in Robards, Kentucky (Webster County). This Document is intended for use as a resource in supporting means and methods for closure, as deemed necessary to achieve project objectives associated with the Green Station Surface Impoundment Closure Project as detailed in the *Technical Specifications For the Green Ash Pond Closure Project*. Although the data and observations presented in this Document can be used to assess potential subsurface conditions and construction challenges associated with surface impoundment closure activities, variabilities in CCR properties and subsurface conditions should be expected. Consequently, the data and information presented herein should not be interpreted as a complete representation of subsurface conditions across the project site.

1.1 Surface Impoundment Description

The Green Station CCR Surface Impoundment is one of three CCR units within the Sebree Station and is located approximately 200 feet north of the Green Station CCR Landfill and approximately 1,500 feet southeast of the Reid/HMP&L Station CCR Surface Impoundment. A site location map is provided in **Figure 1**.

The Green Station CCR Surface Impoundment is an approximate 26-acre unlined CCR surface impoundment that was used to manage the CCR and non-CCR waste streams at Sebree Station and has been in service for the life of the plant (more than 40 years). The CCR waste streams included sluiced bottom ash and economizer ash. All fly ash was dry handled. The various non-CCR wastewaters routed to the CCR Surface Impoundment originated from Unit 1 and Unit 2 boiler sumps, metal cleaning wastes, clarifier blowdown, bottom ash hopper seal water, miscellaneous drains including roof drains, CCR landfill leachate, coal pile runoff, and various stormwater sources. As reported in the *History of Construction for Green Station CCR Surface Impoundment* (Associated Engineers, Inc. [AEI], 2016c), the CCR Surface Impoundment is a combined incised/diked earthen embankment structure that is diked on the west, south, and east sides, while the north side is incised. The CCR Surface Impoundment is located directly south of the Sebree Generating Station and north of the Green Station CCR Landfill (see **Figure 1**).

The conceptual site model for the Green Station CCR Surface Impoundment with respect to the physical setting, geology, hydrogeology, and history of impoundment design/construction is provided in the

Case No. 2019-00435
Filed October 18, 2022

following references available in BREC's publicly available CCR website (https://www.bigrivers.com/ccr-rule-compliance-and-data-informationsebree-station/):

- *Initial Structural Stability Assessment, Structural Integrity Criteria for Existing CCR Surface Impoundments, Green Station CCR Surface Impoundment* (AEI, 2016b)
- *History of Construction, Structural Integrity Criteria for Existing CCR Surface Impoundments, Green Station CCR Surface Impoundment* (AEI, 2016c)
- *CCR Impoundment Liner Assessment Report, Green Station CCR Surface Impoundment* (AEI, 2016d)
- *Placement Above Uppermost Aquifer Demonstration For Coal Combustion Residuals (CCR) Rule Green Surface Impoundment Sebree Station, Kentucky* (AECOM Technical Services [AECOM], 2018)
- *Assessment of Corrective Measures Under the CCR Rule for the Reid/HMP&L Station CCR Surface Impoundment* (AECOM, 2019a) and the
- *Assessment of Corrective Measures Under the CCR Rule for the Green Station CCR Landfill* (AECOM, 2019b).

1.2 Groundwater Occurrence

The uppermost transmissive aquifer (yielding usable groundwater) underlying the Green Station CCR Surface Impoundment is reported to be the Sebree Sandstone (AECOM, 2018) and is comprised of interbedded sandstone, siltstone, and shale of the Carbondale Formation. However, previous site-specific investigations have noted the presence of zones of saturation in the overlying unconsolidated materials.

Four bedrock monitoring wells, MW-11 through MW-14, were installed around the perimeter of the Green Station CCR Surface Impoundment in January 2016 to assess water levels and groundwater quality in the uppermost aquifer. Four temporary piezometers, PZ-1, PZ-1A, PZ-2, and PZ-2A were installed in December 2021 to further assess water levels west of the Green Station CCR Surface Impoundment. Except for PZ-1, all monitoring wells and temporary piezometers are screened in bedrock. Piezometer PZ-1 is screened in unconsolidated material overlying bedrock. At the clustered piezometers, PZ-1 and PZ-2 are shallow completions and PZ-1A and PZ-2A are deep completions. Near the Green Station CCR

Surface Impoundment, existing monitoring wells associated with the established groundwater monitoring networks for the adjacent Green CCR Landfill (MW-1 and MW-2) and the Reid/HMP&L Station CCR Surface Impoundment (MW-8, MW-9, MW-10, and MW-110) were utilized for water level gauging purposes to support development of a potentiometric surface map of the area. Locations of these monitoring wells and temporary piezometers are provided in **Figure 2**.

Groundwater level data was collected from existing monitoring wells and temporary piezometers in the vicinity of the Green Station CCR Surface Impoundment on December 15, 2021, December 22, 2021, and January 13, 2022. Groundwater levels were measured using a decontaminated, battery-operated, electronic water level probe. At the Green Station CCR Surface Impoundment, the depths to groundwater measured in the monitoring wells and temporary piezometers ranged from 4.39 feet below top of casing (bTOC) at PZ-2 to 27.52 feet bTOC at MW-12. Groundwater elevations from the Green Station CCR Surface Impoundment were calculated using the measured water levels and surveyed top of well casing elevations ranged from 420.61 feet amsl at PZ-1 to 368.02 feet amsl at MW-14. Groundwater level and elevation data are summarized in **Table 1**. A summary of available historical groundwater elevations in the vicinity of the Green Station CCR Surface Impoundment from January 2016 through March 2022 is provided in **Table 2**.

Potentiometric surface contours were generated using the January 13, 2022 groundwater elevation data (see **Table 1**). A map presenting groundwater elevations for each monitoring well and temporary piezometers PZ-1 and PZ-2 and depicting the potentiometric surface contours and groundwater flow direction, denoted by arrows drawn perpendicular to the potentiometric contour lines, is included as **Figure 3**. The potentiometric surface depicted in the figure represents the uppermost groundwater surface within the bedrock and overlying unconsolidated units. Based on the data presented on **Figure 3**, groundwater flow beneath the Green Station CCR Surface Impoundment is generally to the east-southeast toward the Green River. Groundwater flow west of the Green Station CCR Surface Impoundment has west, northwest, and northern components associated with a groundwater mound/ridge in the vicinity of PZ-1.

Generalized geologic cross-sections at the Green Station CCR Surface Impoundment are presented in **Figures 4** and **5** that illustrate the subsurface geology, groundwater elevation, and interpolated/estimated extent of the CCR impoundment.

Based on review of historical groundwater elevations (see **Table 2**) and as illustrated on **Figures 3** through **5**, the average groundwater surface elevation is generally approximately 17 feet higher west of

the Green Station CCR Surface Impoundment in comparison to the area east of the Green Station CCR Surface Impoundment. Based on available groundwater elevations, site geology, and physical limits of the impoundment, evidence does not support a lack of hydraulic connectivity between the Green Station CCR Surface Impoundment and groundwater (AECOM, 2018).

1.3 In-Situ Hydraulic Conductivity Results

As reported in the *Assessment of Corrective Measures Under the CCR Rule* (AECOM, 2019a and 2019b), the estimated hydraulic conductivity of tested Monitoring Wells MW-10 and MW-110 screened in interbedded sandstone and shale ranged from $3x10^{-6}$ centimeters per second (cm/sec) to $5x10^{-4}$ cm/sec at the Reid/HMP&L Station CCR Surface Impoundment (located approximately 1,500 feet northwest of the Green Station CCR Surface Impoundment) while at the Green Station CCR Landfill (located approximately 200 feet south of the Green Station CCR Surface Impoundment) test results ranged from $2x10^{-5}$ to $3x10^{-3}$ cm/sec from Monitoring Wells MW-3A (silty clay and shale), MW-4 (interbedded limestone and shale), MW-6 (sandstone), and MW-104 (interbedded sandstone and shale). There was no available estimated hydraulic conductivity results reported for monitoring wells at the Green Station CCR Surface Impoundment.

2.0 ADDITIONAL SUBSURFACE INFORMATION

In addition to the available references available in BREC's publicly available CCR website (https://www.bigrivers.com/ccr-rule-compliance-and-data-informationsebree-station/) listed in Section 1.1, a geotechnical investigation and stability analysis was performed by Associated Engineers, Inc. in May/June 2010 and May 2016 to support structural integrity criteria of the Green Station CCR Surface Impoundment (AEI, 2016a). This geotechnical investigation and stability analysis report, including all data and results, is available upon request.

Further available subsurface or CCR material properties information may be reviewed on BREC's publicly available CCR website (https://www.bigrivers.com/ccr-rule-compliance-and-data-informationsebree-station/) or may be made available by BREC upon request.

3.0 REFERENCES

AECOM, 2018. Placement Above Uppermost Aquifer Demonstration For Coal Combustion Residuals (CCR) Rule, Green Surface Impoundment, Sebree Station, Sebree, Kentucky, October 17, 2018.

AECOM, 2019a. *Assessment of Corrective Measures Under the CCR Rule, CCR Surface Impoundment, Reid/HMP&L Station, Webster County, Kentucky*, June 13, 2019.

AECOM, 2019b. *Assessment of Corrective Measures Under the CCR Rule, Green Station CCR Landfill, Green Station, Webster County, Kentucky*, June 13, 2019.

AEI, 2016a. *Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule Green Station CCR Surface Impoundment Structural Integrity Criteria for Existing CCR Surface Impoundments, Report of Geotechnical Investigation and Stability Analysis,* October 14, 2016.

AEI, 2016b. *Big Rivers Corporation Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule Initial Structural Stability Assessment Green Station CCR Surface Impoundment Structural Integrity Criteria for Existing CCR Surface Impoundments,* October 11, 2016.

AEI, 2016c. *Big Rivers Corporation Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule History of Construction Green Station CCR Surface Impoundment Structural Integrity Criteria for Existing CCR Surface Impoundments,* October 11, 2016.

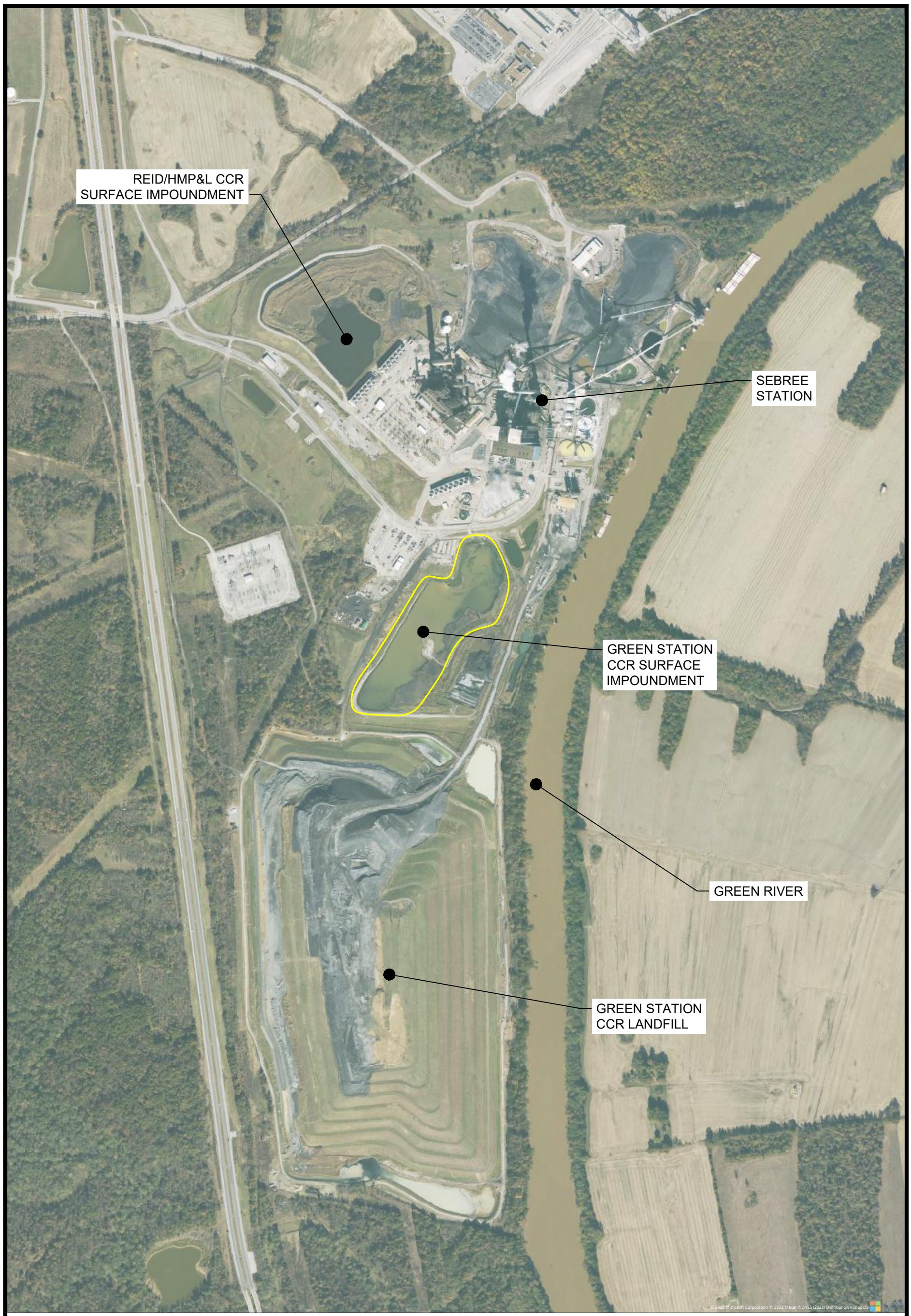
AEI, 2016d. *Big Rivers Corporation Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule CCR Impoundment Liner Assessment Report Green Station CCR Surface Impoundment,* June 28, 2016.

AEI, 2018. *Big Rivers Corporation Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule CCR Impoundment Groundwater Monitoring System and Statistical Methods Assessment and Certification*, June 28, 2016, amended February 1, 2018.

BREC, Sebree Station "CCR Rule Compliance and Data Information", https://www.bigrivers.com/ccr-rule-compliance-and-data-informationsebree-station/.

FIGURES

FIGURES



LEGEND

(IMPOUNDMENT) UNIT BOUNDARY (APPROX.)

0 750' 1500'

SCALE IN FEET

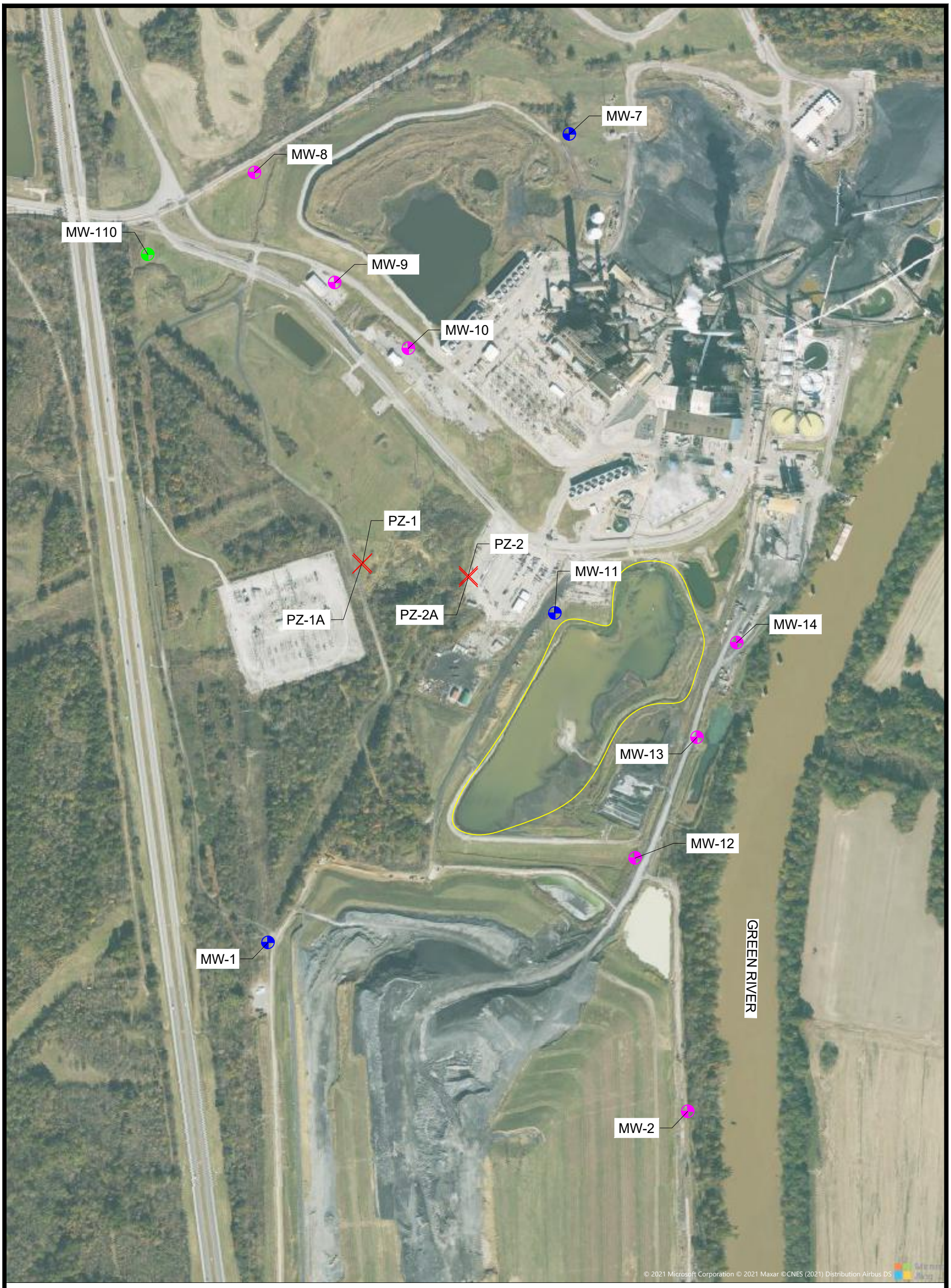
N

BURNS McDONNELL

Figure 1

SITE LOCATION MAP
GREEN STATION CCR
SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

Z:\CLIENTS\ENR\BIGRIVERSEC\132721_GREENPONDCLOSE\2_DESIGN\CIVIL\DSGN_MGMT\TECHNICAL REFERENCE DOCUMENT - SUBSURFACE AND GW\FIGURES\CAD\FIGURE 1 - SITE LOCATION MAP.DWG 3/31/2022 12:55 PM HWEBB



LEGEND:

- (IMPOUNDMENT) UNIT BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CHARACTERIZATION WELL
- TEMPORARY PIEZOMETER

N

0 500' 1000'

SCALE IN FEET

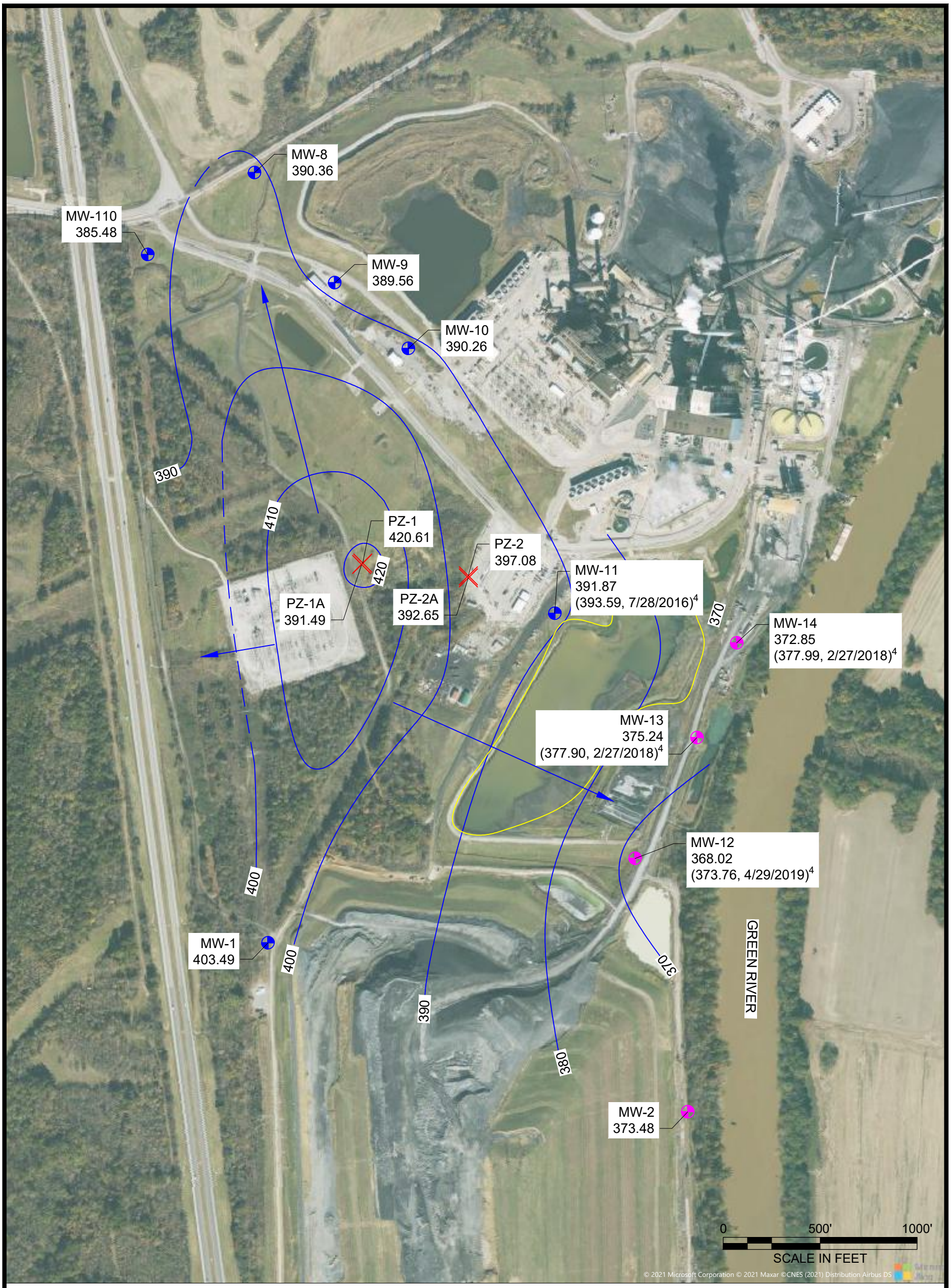
NOTE: MAP IMAGE: GOOGLE EARTH PRO

BURNS McDONNELL

Figure 2

MONITORING WELL LOCATION MAP
GREEN STATION CCR SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

Z:\CLIENTS\ENR\BIGRIVERSEC\132721_GREENPONDCLOSE\2_DESIGN\CIVIL\DSGN_MGMT\TECHNICAL REFERENCE DOCUMENT - SUBSURFACE AND GW\FIGURES\CAD\FIGURE 2 - MONITORING WELL LOCATION MAP.DWG 3/31/2022 12:54 PM HWEBB



LEGEND:

- (IMPOUNDMENT) UNIT BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- PIEZOMETER WELL
- 403.49 GROUNDWATER ELEVATION (MEASURED JANUARY 13, 2022)
- GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. ALL MEASUREMENTS TAKEN FROM TOP OF WELL CASING.
2. ELEVATIONS IN NAD27; DATA FROM SEBREE STATION GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT.
3. DEEP PIEZOMETERS PZ-1A AND PZ-2A NOT INCLUDED IN POTENTIOMETRIC CONTOURING.
4. REPRESENTS MAXIMUM MEASURED GROUNDWATER ELEVATION FROM WELL FROM 2016-2022.

N

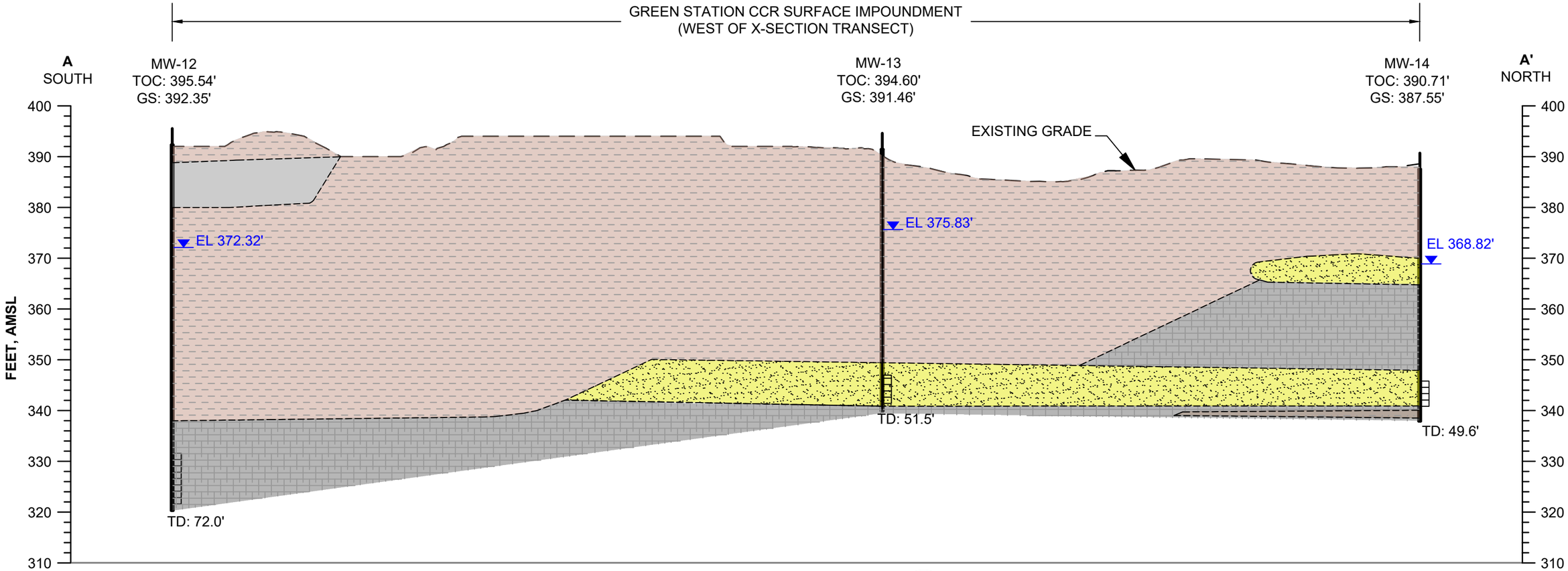
BURNS McDONNELL

Figure 3

POTENTIOMETRIC SURFACE MAP
JANUARY 13, 2022
GREEN STATION CCR
SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

Z:\CLIENTS\ENR\BIGRIVERSEC\132721_GREENPONDCLOSE\2_DESIGN\CIVIL\DSGN_MGMT\TECHNICAL REFERENCE DOCUMENT - SUBSURFACE AND GW\FIGURES\CAD\FIGURE 3 - POTENTIOMETRIC SURFACE MAP.DWG 3/31/2022 12:57 PM HWEBE

GREEN STATION CCR SURFACE IMPOUNDMENT
(WEST OF X-SECTION TRANSECT)



SECTION A-A'

HORIZ: 0 50' 100' 200' — SCALE IN FEET

VERT: 0 10' 20' 40' — SCALE IN FEET

LEGEND:

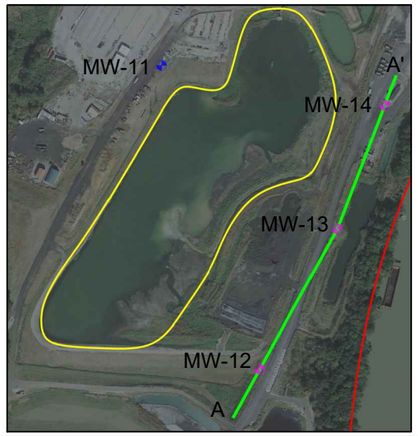
UNCONSOLIDATED MATERIAL:
- CCR
- SILTY CLAY

BEDROCK LITHOLOGY:
- SANDSTONE
- SHALE
- INTERBEDDED SANDSTONE AND SHALE

- POTENTIOMETRIC SURFACE (MEASURED ON 8/31/20)
- MW-12 MONITORING WELL LOCATION ID
- SCREEN INTERVAL
- GS GROUND SURFACE
- TD TOTAL DEPTH
- TOC TOP OF CASING
- CCR COAL COMBUSTION RESIDUALS
- EL ELEVATION (FEET ABOVE MEAN SEA LEVEL [FT AMSL])
- GS GROUND SURFACE ELEVATION (FT AMSL)

NOTES:

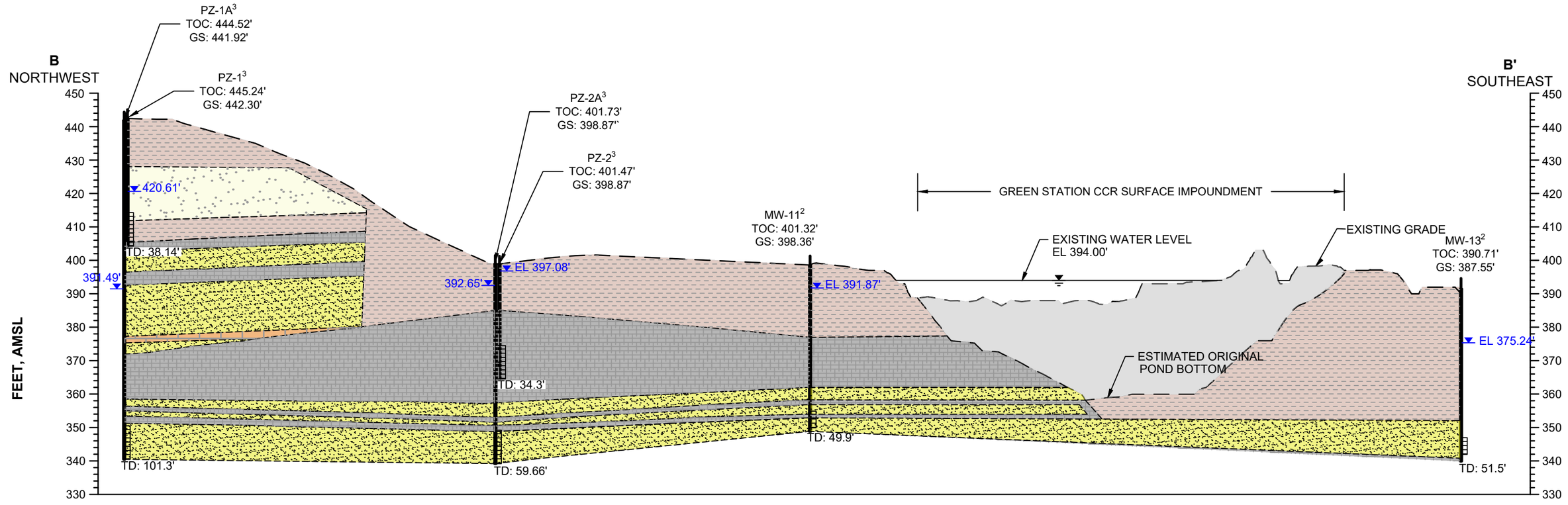
1. CORRELATION OF UNITS IS AN INTERPRETATION AND NOT NECESSARILY A DELINEATION OF ACTUAL EXTENT AND THICKNESS OF INDIVIDUAL UNITS (DASHED WHERE INFERRED).
2. LITHOLOGY WAS LOGGED BY ASSOCIATED ENGINEERS, INC. PERSONNEL.
3. EXISTING GRADE FROM ASSOCIATED ENGINEERS, INC. (DATED 12/8/2015).



BURNS McDONNELL

Figure 4

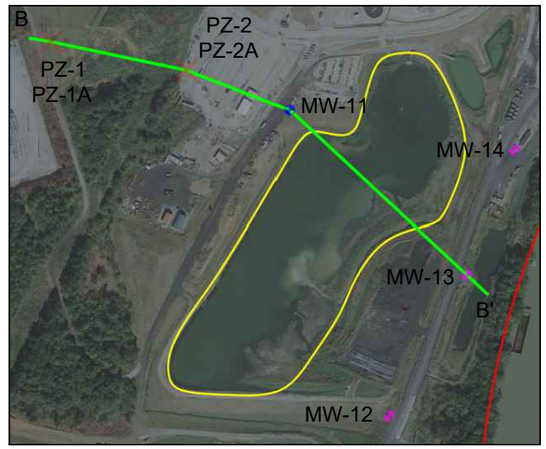
GENERALIZED GEOLOGIC CROSS-SECTION A-A'
GREEN STATION CCR
SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY



SECTION B-B'

HORIZ: 0 75' 150' 300'
SCALE IN FEET

VERT: 0 10' 20' 40'
SCALE IN FEET



LEGEND:

UNCONSOLIDATED MATERIAL:
- CCR
- SILTY CLAY
- LIMESTONE
- SAND (LOOSE; WEATHERED SANDSTONE)

BEDROCK LITHOLOGY:
- SANDSTONE
- SHALE

- POTENTIOMETRIC SURFACE (MEASURED ON 8/31/20)
- MW-12 MONITORING WELL LOCATION ID
- SCREEN INTERVAL
- GS GROUND SURFACE
- TD TOTAL DEPTH
- TOC TOP OF CASING
- CCR COAL COMBUSTION RESIDUALS
- EL ELEVATION (FEET ABOVE MEAN SEA LEVEL [FT AMSL])
- GS GROUND SURFACE ELEVATION (FT AMSL)

NOTES:

1. CORRELATION OF UNITS IS AN INTERPRETATION AND NOT NECESSARILY A DELINEATION OF ACTUAL EXTENT AND THICKNESS OF INDIVIDUAL UNITS (DASHED WHERE INFERRED).
2. LITHOLOGY WAS LOGGED BY ASSOCIATED ENGINEERS, INC. PERSONNEL.
3. LITHOLOGY WAS LOGGED BY BURNS & MCDONNELL PERSONNEL.
4. EXISTING GRADE FROM ASSOCIATED ENGINEERS, INC. (DATED 12/8/2015).

BURNS McDONNELL

Figure 5

GENERALIZED GEOLOGIC CROSS SECTION B-B'
GREEN STATION CCR SURFACE IMPOUNDMENT
WEBSTER COUNTY, KENTUCKY

TABLES

Table 1
Groundwater Elevation Data, December 2021 - January 2022
Green Station CCR Surface Impoundment
Webster County, Kentucky

				12/15/2021		12/22/2021		1/13/2022	
	Monitoring Well	GS Elev. (ft amsl)	TOC Elev. (ft amsl)	DTW (ft bTOC)	GW Elev. (ft amsl)	DTW (ft bTOC)	GW Elev. (ft amsl)	DTW (ft bTOC)	GW Elev. (ft amsl)
Green Station CCR Surface Impoundment	MW-11	398.36	401.32	9.39	391.93	9.49	391.83	9.45	391.87
	MW-12	392.35	395.54	29.19	366.35	28.83	366.71	27.52	368.02
	MW-13	391.46	394.60	21.16	373.44	20.75	373.85	19.36	375.24
	MW-14	387.55	390.71	24.20	366.51	24.14	366.57	17.86	372.85
	PZ-1	442.30	445.24	25.75	419.49	25.49	419.75	24.63	420.61
	PZ-1A	441.92	444.52	54.92	389.60	54.48	390.04	53.03	391.49
	PZ-2	398.97	401.47	6.78	394.69	4.62	396.85	4.39	397.08
	PZ-2A	398.87	401.73	24.06	377.67	10.01	391.72	9.08	392.65
Green Station CCR Landfill	MW-1	420.2	423.23	21.76	401.47	21.55	401.68	19.74	403.49
	MW-2	389.9	392.37	21.11	371.26	21.85	370.52	18.89	373.48
Reid/HMPL Station CCR Surface Impoundment	MW-8	385.54	394.29	5.19	389.10	4.65	389.64	3.93	390.36
	MW-9	392.85	395.4	7.03	388.37	6.65	388.75	5.84	389.56
	MW-10	419.98	422.27	33.20	389.07	32.87	389.40	32.01	390.26
	MW-110	382.14	388.7	4.79	383.91	4.29	384.41	3.22	385.48

amsl - above mean sea level
bTOC - below top of casing
DTW - depth to water
Elev. - elevation
ft - feet
GS - ground surface
GW - groundwater

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Filed October 18, 2022

Table 2
Historical Groundwater Elevation Data, 2016-2022
Green Station CCR Surface Impoundment
Webster County, Kentucky

Monitoring Well												
	MW-11			MW-12			MW-13			MW-14		
Installed:	1/7/2016			1/14/2016			1/11/2016			1/7/2016		
MW Top of Casing	401.32			395.54			394.6			390.71		
Date:	TOC	DTW	GW ELEV	TOC	DTW	GW ELEV	TOC	DTW	GW ELEV	TOC	DTW	GW ELEV
1/29/2016	401.32	8.08	393.24	395.54	42.10	353.44	394.60	19.28	375.32	390.71	23.56	367.15
2/26/2016	401.32	7.95	393.37	395.54	32.62	362.92	394.60	18.80	375.80	390.71	19.15	371.56
3/28/2016	401.32	8.75	392.57	395.54	32.75	362.79	394.60	18.89	375.71	390.71	22.90	367.81
4/8/2016	401.32	8.49	392.83	395.54	38.02	357.52	394.60	18.90	375.70	390.71	23.40	367.31
5/3/2016	401.32	8.19	393.13	395.54	33.16	362.38	394.60	18.79	375.81	390.71	23.21	367.50
6/7/2016	401.32	7.91	393.41	395.54	42.97	352.57	394.60	19.18	375.42	390.71	24.36	366.35
7/28/2016	401.32	7.73	393.59	395.54	42.41	353.13	394.60	18.92	375.68	390.71	24.08	366.63
8/16/2016	401.32	8.45	392.87	395.54	27.79	367.75	394.60	20.60	374.00	390.71	25.55	365.16
9/8/2016	401.32	8.49	392.83	395.54	35.56	359.98	394.60	19.79	374.81	390.71	26.04	364.67
10/25/2016	401.32	9.06	392.26	395.54	29.57	365.97	394.60	20.30	374.30	390.71	26.52	364.19
11/30/2016	401.32	9.62	391.70	395.54	33.42	362.12	394.60	20.06	374.54	390.71	26.61	364.10
12/30/2016	401.32	9.62	391.70	395.54	30.13	365.41	394.60	19.69	374.91	390.71	24.56	366.15
1/27/2017	401.32	9.94	391.38	395.54	27.96	367.58	394.60	18.54	376.06	390.71	19.35	371.36
2/28/2017	401.32	9.86	391.46	395.54	31.79	363.75	394.60	19.71	374.89	390.71	25.80	364.91
3/27/2017	401.32	9.01	392.31	395.54	29.41	366.13	394.60	18.95	375.65	390.71	22.02	368.69
4/28/2017	401.32	9.44	391.88	395.54	27.65	367.89	394.60	19.42	375.18	390.71	23.87	366.84
5/1/2017	401.32	10.12	391.20	395.54	26.93	368.61	394.60	19.23	375.37	390.71	24.01	366.70
6/5/2017	401.32	9.98	391.34	395.54	27.02	368.52	394.60	19.57	375.03	390.71	24.82	365.89
7/28/2017	401.32	10.21	391.11	395.54	27.32	368.22	394.60	20.22	374.38	390.71	25.46	365.25
8/11/2017	401.32	9.95	391.37	395.54	27.51	368.03	394.60	20.73	373.87	390.71	26.53	364.18
9/20/2017	401.32	9.97	391.35	395.54	32.20	363.34	394.60	20.68	373.92	390.71	26.03	364.68
10/9/2017	401.32	9.33	391.99	395.54	39.04	356.50	394.60	20.66	373.94	390.71	26.26	364.45
11/30/2017	401.32	9.71	391.61	395.54	34.11	361.43	394.60	20.71	373.89	390.71	26.15	364.56
12/14/2017	401.32	9.84	391.48	395.54	30.82	364.72	394.60	20.77	373.83	390.71	26.07	364.64
1/18/2018	401.32	8.96	392.36	395.54	28.51	367.03	394.60	18.59	376.01	390.71	22.41	368.30
2/27/2018	401.32	8.51	392.81	395.54	26.44	369.10	394.60	16.70	377.90	390.71	12.72	377.99
3/29/2018	401.32	9.24	392.08	395.54	27.06	368.48	394.60	17.40	377.20	390.71	18.92	371.79
4/6/2018	401.32	9.92	391.40	395.54	26.82	368.72	394.60	17.62	376.98	390.71	20.26	370.45
5/7/2018	401.32	9.78	391.54	395.54	26.37	369.17	394.60	18.80	375.80	390.71	22.50	368.21
6/29/2018	401.32	9.61	391.71	395.54	26.85	368.69	394.60	19.51	375.09	390.71	21.84	368.87
7/10/2018	401.32	9.74	391.58	395.54	27.43	368.11	394.60	18.96	375.64	390.71	23.68	367.03
8/30/2018	401.32	10.18	391.14	395.54	27.21	368.33	394.60	25.40	369.20	390.71	26.25	364.46
9/13/2018	401.32	10.18	391.14	395.54	27.45	368.09	394.60	20.50	374.10	390.71	25.54	365.17
10/25/2018	401.32	9.82	391.50	395.54	28.20	367.34	394.60	21.72	372.88	390.71	25.27	365.44
11/7/2018	401.32	9.41	391.91	395.54	27.94	367.60	394.60	21.63	372.97	390.71	25.38	365.33
12/6/2018	401.32	9.22	392.10	395.54	27.42	368.12	394.60	21.74	372.86	390.71	23.53	367.18
1/2/2019	401.32	9.03	392.29	395.54	26.74	368.80	394.60	20.96	373.64	390.71	21.41	369.30
2/4/2019	401.32	8.89	392.43	395.54	25.14	370.40	394.60	20.41	374.19	390.71	20.75	369.96
3/1/2019	401.32	8.96	392.36	395.54	23.81	371.73	394.60	19.97	374.63	390.71	19.26	371.45
4/29/2019	401.32	9.13	392.19	395.54	21.78	373.76	394.60	18.21	376.39	390.71	18.18	372.53
5/14/2019	401.32	8.76	392.56	395.54	22.41	373.13	394.60	18.76	375.84	390.71	18.36	372.35
6/7/2019	401.32	9.06	392.26	395.54	22.94	372.60	394.60	18.94	375.66	390.71	20.20	370.51
7/3/2019	401.32	9.78	391.54	395.54	23.59	371.95	394.60	19.22	375.38	390.71	22.76	367.95
8/9/2019	401.32	9.98	391.34	395.54	24.62	370.92	394.60	19.36	375.24	390.71	23.96	366.75
9/5/2019	401.32	10.36	390.96	395.54	25.24	370.30	394.60	19.85	374.75	390.71	25.20	365.51
10/3/2019	401.32	9.95	391.37	395.54	26.85	368.69	394.60	20.48	374.12	390.71	25.65	365.06
11/5/2019	401.32	9.84	391.48	395.54	26.11	369.43	394.60	20.11	374.49	390.71	23.40	367.31
12/2/2019	401.32	9.81	391.51	395.54	25.21	370.33	394.60	19.40	375.20	390.71	21.90	368.81
1/30/2020	401.32	9.92	391.40	395.54	24.19	371.35	394.60	19.08	375.52	390.71	19.38	371.33
2/28/2020	401.32	9.77	391.55	395.54	23.56	371.98	394.60	18.68	375.92	390.71	16.65	374.06
3/30/2020	401.32	9.19	392.13	395.54	22.39	373.15	394.60	17.33	377.27	390.71	15.22	375.49
4/30/2020	401.32	9.72	391.60	395.54	24.16	371.38	394.60	19.07	375.53	390.71	20.80	369.91
5/31/2020	401.32	9.85	391.47	395.54	24.16	371.38	394.60	19.70	374.90	390.71	23.52	367.19
6/30/2020	401.32	9.63	391.69	395.54	23.91	371.63	394.60	19.13	375.47	390.71	22.40	368.31
7/31/2020	401.32	9.44	391.88	395.54	23.36	372.18	394.60	18.94	375.66	390.71	22.11	368.60
8/31/2020	401.32	9.12	392.20	395.54	23.22	372.32	394.60	18.77	375.83	390.71	21.89	368.82
9/22/2020	401.32	9.90	391.42	395.54	26.29	369.25	394.60	19.78	374.82	390.71	24.38	366.33
10/29/2020	401.32	9.82	391.50	395.54	28.20	367.34	394.60	21.72	372.88	390.71	25.27	365.44
11/25/2020	401.32	9.41	391.91	395.54	27.94	367.60	394.60	21.63	372.97	390.71	25.38	365.33
12/29/2020	401.32	9.22	392.10	395.54	27.42	368.12	394.60	21.74	372.86	390.71	23.53	367.18
1/28/2021	401.32	9.03	392.29	395.54	26.74	368.80	394.60	20.96	373.64	390.71	21.41	369.30
2/25/2021	401.32	8.89	392.43	395.54	25.14	370.40	394.60	20.41	374.19	390.71	20.75	369.96
3/29/2021	401.32	8.96	392.36	395.54	23.81	371.73	394.60	19.97	374.63	390.71	19.26	371.45
4/22/2021	401.32	9.81	391.51	395.54	23.77	371.77	394.60	19.11	375.49	390.71	23.46	367.25
5/28/2021	401.32	9.78	391.54	395.54	26.37	369.17	394.60	18.80	375.80	390.71	22.50	368.21
6/17/2021	401.32	9.61	391.71	395.54	26.85	368.69	394.60	19.51	375.09	390.71	21.84	368.87
7/29/2021	401.32	9.74	391.58	395.54	27.43	368.11	394.60	18.96	375.64	390.71	23.68	367.03
8/18/2021	401.32	10.18	391.14	395.54	27.21	368.33	394.60	25.40	369.20	390.71	26.25	364.46
9/24/2021	401.32	10.18	391.14	395.54	27.45	368.09	394.60	20.50	374.10	390.71	25.54	365.17
10/21/2021	401.32	9.82	391.50	395.54	28.20	367.34	394.60	21.72	372.88	390.71	25.27	365.44
11/18/2021	401.32	9.41	391.91	395.54	27.94	367.60	394.60	21.63	372.97	390.71	25.38	365.33
12/15/2021	401.32	9.39	391.93	395.54	29.19	366.35	394.60	21.16	373.44	390.71	24.20	366.51
1/26/2022	401.32	9.74	391.58	395.54	27.43	368.11	394.60	18.96	375.64	390.71	23.68	367.03
2/25/2022	401.32	10.18	391.14	395.54	27.21	368.33	394.60	25.40	369.20	390.71	26.25	364.46
3/23/2022	401.32	10.18	391.14	395.54	27.45	368.09	394.60	20.50	374.10	390.71	25.54	365.17

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Table 2
Historical Groundwater Elevation Data, 2016-2022
Green Station CCR Surface Impoundment
Webster County, Kentucky

	2016 - 2022											
	MW-11			MW-12			MW-13			MW-14		
	Date	DTW	GW Elev.	Date	DTW	GW Elev.	Date	DTW	GW Elev.	Date	DTW	GW Elev.
Maximum	7/28/2016	7.73	393.59	4/29/2019	21.78	373.76	2/27/2018	16.70	377.90	2/27/2018	12.72	377.99
Average	--	9.44	391.88	--	28.07	367.47	--	19.94	374.66	--	23.08	367.63
Minimum	9/5/2019	10.36	390.96	6/7/2016	42.97	352.57	8/30/2018	25.40	369.20	11/30/2016	26.61	364.10
Difference (max-min)		2.63	2.63		21.19	21.19		8.70	8.70		13.89	13.89
Difference (max-avg.)		1.71	1.71		6.29	6.29		3.24	3.24		10.36	10.36
Screened Material	Sandstone and Shale			Gray Shale			Soft, Weathered Sandstone			Sandstone		

Overall Site

Max Elev.	393.59	MW-11
Avg. Elev.	375.41	
Min. Elev.	352.57	MW-12

Maximum recorded groundwater elevation at monitoring well
Minimum recorded groundwater elevation at monitoring well

DTW - depth to water (measured from TOC)
GW Elev. - groundwater elevation

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BURNS McDONNELL

CREATE AMAZING.

Burns & McDonnell Engineering Company, Inc.
425 South Woods Mill Road, Suite 300
St. Louis, MO 63017
O 314-682-1500
F 314-682-1600
www.burnsmcd.com

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Filed October 18, 2022

ATTACHMENT C – BEST MANAGEMENT PRACTICIES PLAN

Big Rivers
ELECTRIC CORPORATION

Your Touchstone Energy® Cooperative

BEST MANAGEMENT PRACTICES PLAN

(Revised: December 18, 2020)

SEBREE STATION
Green, Reid and HMPL Generating Stations

KPDES PERMIT NO. KY0001929

(Effective: October 1, 2018)

Case No. 2019-00435
Filed October 18, 2022

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INDEX (continued)

Appendices

Certification of Document Compliance

In accordance with 401 KAR 5:065, Section 2(4) a review and evaluation of this Best Management Practices (BMP) Plan is conducted every three years. As a result of this review and evaluation, Big Rivers Electric Corporation will amend the BMP Plan within six months of the review to include more effective control technology if: (1) such technology will significantly reduce the likelihood of a spill event from the facility, and (2) if such technology has been field-proven at the time of review.

Signature	Title	Date
Greg Quick	Environmental Scientist	12/18/2020

Management Approval

Big Rivers Electric Corporation is committed to the prevention of accidental release of toxic, hazardous or potentially hazardous pollutants from plant operations to the environment. The BMP Plan is intended to provide a means to constantly review and improve plant operations pertaining to material storage areas, loading in-plant operations, process and material handling areas, loading and unloading operations, plant site runoff, sludge and waste disposal areas. The management policy is to operate and maintain all facilities in accordance with the best engineering practices and to adhere to all local, state and federal regulations as well as provide a safe work environment to all employees, contractors, and visitors to the facility.

Authorized Facility Representative: Keith Scott
(Please Print)

Signature: Keith Scott

Title: Plant Manager

Phone: 270 844 5530

Plan Review Log

Revision Information				
Reviewer	**Date**	**Activity**	**Approved**	**Comments**
Greg Dick	7/12/19	Addition of proposed KPDES outfall, SDS' and spill clean-up locations, handling procedures for discharged wastewater not specifically covered by effluent conditions, & incorporation of SOPs in regards to surface water leachate inspection, maintenance of CCR structures, and corrective measures	7/19/2019	
Greg Dick	7/22/19	Revised SOP for Leachate Management Standard Operating Procedures	7/22/2019	
Greg Dick	12/20/2019	Revised SOP for Leachate Management Standard Operating Procedures. Updated Appendix D (table) to reflect KPDES outfall 016, amended KPDES permit effective 12/1/2019	12/20/2019	
Greg Dick	12/16/2020	Amended employee training requirements. Updated Appendices B (SPCC Inventory Tables & Map,) and D (Leachate Management SOP)	12/18/2020	

I. Spill Reporting Requirements

Purpose

The purpose of the Best Management Practice (BMP) Plan is to minimize the potential of accidental release of toxic, hazardous or potentially hazardous pollutants from plant operation to the environment. Under Section 304(e) of the CWA (Clean Water Act) authorized regulations to control discharges of significant amounts of toxic pollutants listed under Section 307 or hazardous substances listed under Section 311 from industrial activities that the Administrator determines are associated with or ancillary to industrial manufacturing or treatment processes. As defined by the CWA, the discharges to be controlled by BMPs are plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage.

On September 1, 1978, EPA proposed regulations (43 FR 39282) addressing the use of procedures and practices to control discharges from activities associated with or ancillary to industrial manufacturing or treatment processes. The proposed rule indicated how BMPs would be imposed in NPDES permits to prevent the release of toxic and hazardous pollutants to surface waters. The regulations (40 CFR Part 125, Subpart K, Criteria and Standards for Best Management Practices Authorized under Section 304(e) of the CWA) were proposed on August 21, 1978, in the NPDES regulations (43 FR 37078). While this Subpart never became effective, it remains in the Code of Federal Regulations and can be used as guidance by permit writers.

The BMP plan is intended to provide a means to constantly review and improve plant operations pertaining to material storage areas, in-plant transfer operations, process material handling areas, loading and unloading operations, plant site runoff, sludge and waste disposal areas. Best management practices are defined in 40 C.F.R. §122.2 as "schedules of activities, prohibitions, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage." Best management practices are inherently pollution prevention practices. Traditionally, BMPs have focused on good housekeeping measures and good management techniques intending to avoid contact between pollutants and water media as a result of leaks, spills, and improper waste disposal. However, based on the authority granted under the regulations, BMPs may include the universe of pollution prevention encompassing production modifications, operational changes, materials substitution, materials and water conservation, and other such measures.

EPA endorses pollution prevention as one of the best means of pollution control. In 1990, the Pollution Prevention Act was enacted and set forth a national policy that;

> "…pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner."

EPA recognizes that significant opportunities exist for industry to reduce or prevent pollution through cost-effective changes in production, operation, and raw materials use. In addition, such changes may offer industry substantial savings in reduced raw materials, pollution control, and liability costs, as well as protect the environment and reduce health and safety risks to workers. Where pollution prevention practices can be both environmentally beneficial and economically feasible, EPA finds their implementation to be prudent.

It is the management policy of Big Rivers Electric Corporation (BREC) to operate and maintain its facilities in accordance with the best engineering practices and to adhere to all local, state and federal regulations. Releases to the environment are considered a BMP incident and should be reported.

Spill Reporting Procedure

In the event of an accidental release of chemical substance to the environment the following steps shall be taken:

- The person finding the spilled or leaking material shall immediately report to his operations or maintenance team leader, the location and type of spill. Any discharge of oil that causes a visible sheen on water must be reported.

- The team leader shall ascertain the type, extent and location of the spill and act to prevent imminent hazard to personnel and contain or stop the spillage as appropriate.

- Following the preventive measures taken, the team leader shall check the SDS for the chemical spilled to determine if it contains hazardous substances. Spills, which are identified as Hazardous Materials, should not be handled without the proper training.

- The shift supervisor shall complete a BMP Spill Report Form (page 6) and have the information available when making the following calls. All spills require a BMP Spill Report Form to be completed regardless of quantity.

Immediately call the following list until **one** contact has been made:
(Notification List reviewed on 7/18/2019)

Chad Phillips, Lab Supervisor
Office: (270) 844-5659
Cell: [redacted]

Mark Bertram, Manager Environmental Services
Office: (270) 844-5708
Cell: [redacted]
Home: [redacted]

Phillip Hill, Plant Engineer
Office: (270) 844-5565
Cell: [redacted]
Home: [redacted]

If none of the above can be contacted, please call the Plant Manager or other Plant Environmental Department representative and have them call all phone numbers listed on **Notifications** page 8.

The Plant Environmental Department personnel will take the following action:

- Notify the appropriate local, state and federal agencies.
- Assist with notification for mobilization of appropriate personnel and contractors.
- Direct the spill cleanup.

BMP and Spill Reporting Form

1. Name of person reporting spill: _____ Telephone: _____

2. Reported to: _____ Telephone: _____

3. Incident location: _____
   Date & Time: _____ Duration: _____
   Weather conditions at time of spill: _____

4. Source & material spilled: _____
   Volume: _____ Concentration: _____
   Cause: _____
   _____

5. Name & location of soils / water impacted: _____

6. Other dangers posed by spill: _____

7. Injuries or Damages: _____

8. Response organization responding to spill (BREC or outside professional responders): _____
   _____

9. Spill response measures taken or to be taken: _____
   _____
   _____
   _____
   _____
   _____

10. Other information or comments that may be significant to the response action or which may help emergency personnel respond to the incident: _____
    _____
    _____
    _____

The person reporting the spill is to send copies of the BMP/Spill Report to the following:

Plant / Facility Manager, Plant / Facility Engineer, Environmental Department

	Time	Date	By
Agency _____	_____	_____	_____
Contact Name _____			
Agency _____	_____	_____	_____
Contact Name _____			
Agency _____	_____	_____	_____
Contact Name _____			

Spill Reporting Guide

The following will help in determining when notifications are mandatory; however, **all** spills require a **BMP and Spill Report Form** to be completed regardless of quantity.

For Spills on Land:

OIL: greater than 25 gallons within a 24-hour period

DIESEL: greater than 75 gallons within a 24-hour period

SARA TITLE III CHEMICALS in quantities greater than or equal to:

(**Note: chemicals that are struck through are currently no longer on site, due to HMP&L Station II plant retirement effective February 1, 2019.)**

Hydrazine	35% hydrazine	1 lb.	0.3 gallons
~~Ammonia~~	~~30% ammonia~~	~~100 lbs.~~	~~45.0 gallons~~
Chlorine			10.0 pounds
Sulfuric Acid		1,000 lbs.	65.0 gallons
Ethylene Glycol	50% 100%	10,000 lbs. 5,000 lbs.	
Sodium Hydroxide		1,000 lbs.	84 gallons
Mercury		1.0 pound or 33.5 milliliters	

For Spills on Water:

Oil spills that produce sheen on the water surface of a stream or navigable waterway.

All spills require a BMP notification form to be completed regardless of quantity.

Notifications

(Notification contact numbers verified on 7/12/2019)

Contact the agencies below if listed personnel with the environmental department are unavailable.

For Spills on Land:

Kentucky Response Center	(502) 564-2380 (800) 928-2380
National Response Center	(800) 424-8802
Henderson County Emergency Management Office	(270) 831-1235
Local Emergency 24 Hour Number	911
Henderson County Fire Department	(270) 827-8700
Webster County Emergency Management Office	(270) 639-8000
Providence Fire Department and EMS	(270) 667-2011

For Spills on Water:

Oil spills that produce a sheen on the water surface of a stream or navigable waterway.

Contact:	**National Response Center**	(800) 424-8802
	Kentucky Response Center	(800) 928-2380
	U.S. Coast Guard Owensboro	(270) 685-0650
	U.S. Coast Guard Louisville	(502) 969-4006

All spills require a BMP notification form to be completed regardless of quantity.

Officer, National Response Center
Washington, D.C. 20590
Telephone: (800) 424-8802

*Notify only in case a spill is discharged to the river.

Division of Water (Disaster Team)
Frankfort, Kentucky 40601
Telephone: (502) 564-3410 or 800-928-2380

Kentucky Emergency Management Services (502) 607-1611
All other times - (800) 928-2380

U.S. Environmental Protection Agency Region IV
Atlanta, Georgia 30309
Telephone: (404) 562-8700 or 1-800-424-8802

II. Requirements of BMP Plan

BMP Committee

A committee was established to assist plant management in the implementation, maintenance and updating of a BMP Plan. The BMP committee is composed of the following personnel listed by title:

Sebree Station - Plant Manager
Sebree Station - Manager of Environmental Services
Sebree Station - Lab Supervisor
Sebree Station - Plant Engineer
Sebree Station - Environmental Scientist

Please note that different positions are pulled into the committee to do the plant walk around and all individuals listed above may not participate in each BMP Plan review.

Risk Identification and Assessment

Areas where chemicals are stored in sufficient quantities to constitute a spill hazard were identified and assessed as a possibility of accidental discharge to the environment. Chemical storage is found in the following identified points at the Green, Reid and HMPL Stations. The following is a list of risk identification areas where chemicals are stored in sufficient quantities to constitute a spill hazard, or areas that have potential to release pollutants from the facility to the waters of the U.S. The locations are marked on the **Risk Identification Location Map** using the corresponding alphabetical letters (**Note: Areas no longer housing chemicals or no longer in use are struck through).** All onsite storm-water and spill drainage flow patterns are listed in the SPCC Plan (see site maps in Appendix section).

I. Common Areas
   A. Warehouse “A”
   B. Warehouse “B”
   C. Warehouse “C”
   D. Coal Handling Heavy Equipment Building
   E. Lubricant and Waste Oil Storage Area (Oil Storage Shed)
   F. Central Machine Shop
   G. Main Gate Storage Area (Site Mobile Equipment Fueling Station at Main Gate)
   H. Bulk Fuel Oil Storage Tanks
      Environmental Building
      Conveyor System Area - Propylene Glycol Tanks

II. Green Station
   I. Turbine Building
      1. Maintenance Shop
      2. Lubricant Storage Area

3. Boiler Chemical Feed Room
4. Paint Storage Area
5. Mercury Devices

J. Green Water Plant Area
K. Filtered Water Building Area
L. Potable Water Building Area
M. Fire Water Pump House
N. Units 1 and 2 Cooling Towers (Units 1 and 2 Cooling Tower Scale Inhibitor and Biocide Storage Tanks)
O. Coal Handling Area & Coal Stockpile Runoff Ponds
P. Solid Waste Disposal Area
Q. Battery Storage Areas
R. Green Landfill
S. Green Surface Impoundment

III. Reid and HMPL Stations

~~T. Turbine Building~~
~~1. Maintenance Shop~~
~~2. Lubricant Storage Area~~
~~3. HMPL Boiler Chemical Feed Room~~
~~4. Reid Boiler Chemical Feed Room~~
~~5. Paint and Solvent Storage Cabinet~~
~~6. Battery Rooms~~
~~U. Water Plant~~
~~V. Cooling Towers~~
W. Mercury Devices
X. Oil Storage Building (unused oil - building located by coal handling)
Y. Reid/HMP&L Surface Impoundment

I. Common Areas

A. Warehouse "A"

The main warehouse is located adjacent to the Reid and HMPL Service Building. The chemical storage inside this warehouse is primarily for small containers (quart, gallon) located on shelves in the warehouse. The products are maintenance materials. This area is well maintained and secured. Any spill that might occur would be small in nature and would be rapidly cleaned-up and disposed of per Safety Data Sheet (SDS) information by personnel assigned to the warehouse. The warehouse is staffed on day shift, Monday through Friday and is kept locked at all times when there are no personnel working in the building. All materials needed from the warehouse are checked out through the warehouse staff during normal work hours and through a Supervisor, who has the key to the warehouse, during hours when the warehouse staff is not on-site. Any employee needing material from the warehouse after normal hours must be accompanied by a Supervisor.

B. Warehouse "B"

Warehouse "B" is located to the southwest of the coal handling heavy equipment building. This warehouse building is kept locked at all times and is not staffed. The keys to the building are held by personnel in Warehouse "A" and by the Production Leaders. Normal entry into this area is by requesting delivery of the needed materials from the staff in Warehouse "A". A Supervisor shall accompany any employee into the warehouse during hours when the Warehouse Staff is not on site. This warehouse is used for the storage of dry chemicals in 50- and 100-pound bags. It also has some small volume (quart and gallon) chemicals stored therein. The floor of the building is concrete and any material spilled would be quickly cleaned up and disposed of per the SDS information.

C. Warehouse "C"

Warehouse "C" is located in the Panama Mine Building which is at the north end of the complex. This warehouse building is kept locked at all times and is not staffed. The keys to the building are held by personnel in Warehouse "A", the Production Leader and in the Central Machine Shop. Normal entry into this building is by requesting delivery of the needed materials from the staff in Warehouse "A". A supervisor shall accompany any employee into the warehouse during hours when the warehouse staff is not on site. This warehouse is used for the storage of dry chemicals in 100-pound bags. The floor of the building is concrete and any material spilled would be quickly cleaned up and disposed of according to the proper requirements.

D. Coal Handling Heavy Equipment Building

The Coal Handling Heavy Equipment Building is located north of the Reid and HMPL Stations. Located inside the building is a 550-gallon used oil tank. The tank is located in a heavily traveled area. The coal handling heavy equipment building is occupied by the department mechanics during the day shift and any spill that might occur would be addressed by the employees in that building. The building is used as a maintenance shop area for servicing heavy equipment. Chemicals found in this building include lubricating oils and greases stored within a diked area. Drainage outside the diked area is to the building floor drain which discharges to the yard area sump and then to the Reid and HMPL ash pond.

E. Lubricant and Waste Oil Storage Area (Oil Storage Shed)

The oil storage shed is located immediately south of the Main Entry Gate guard house. It is used primarily for the storage of used materials. It is situated just inside gate one. The shed has a bermed floor and any oil that would escape from 55-gallon drums or tanks stored in the shed would be contained in the bermed area. The building is in direct view of the guard house which is manned 24 hours per day, seven days per week.

F. Central Machine Shop

The Central Machine Shop is located at the north end of the company property and adjoins Warehouse "C". The building contains a quantity of lubricants in 55 gallon containers. A tank volume of 300 to 500 gallons of non-hazardous Sani-Kleen parts washer solvent is also located here along with miscellaneous shop chemicals such as WD40 and acetone. Spills or leaks would not leave the area but would be contained by the concrete floor which has elevated curbing and no floor drains. Small volume lubricants and solvents are stored in an enclosed cabinet. Any spills or leaks would be cleaned up immediately. This building is locked at all times when personnel assigned to the shop are not working.

G. Main Gate Storage Area (Site Mobile Equipment Fueling Station at Main Gate)

Elevated fuel storage containers are located at the Main Gate to the plant. The tanks are within view of the guard shack which is occupied 24 hours per day. The tanks are inspected daily by the Maintenance Department and the inspection logged. Employees filling vehicles and equipment with fuel would report spills to the guard on duty for the initiation of proper clean-up. Site area runoff from outside the diked area is directed to the Green ash pond.

In addition to the fuel storage containers a 400-gallon propane tank used for portable heaters during cold weather is stored in this area (tank is stored in shed across from fueling station.)

H. Bulk Fuel Oil Storage Tanks

There are five bulk fuel oil storage tanks on site. All bulk storage tanks are situated inside of dikes. Spills or leaks from any of these tanks would be contained within the diked area. During the transfer of bulk deliveries the tank will be attended at all times. Rainwater discharged from within the diked area is inspected prior to discharge to either the Green or Reid and HMPL ash ponds.

Environmental Building

The Environmental Building is located in the contractor's parking lot. The building is a covered annex to a two bay garage that houses the Environmental Response Trailer and boat. The building contains oil remediation material, a boat and trailer. Although the building lies outside the fenced perimeter of the plant site, it is in direct view of the guard house which is manned 24 hours per day, seven days per week.

Conveyor System Area - Propylene Glycol Tanks

- Mouth of Reclaim Tunnel has a 2,000-gallon tank
- Green Crusher Tower has a 1,500-gallon tank / 2nd level has a 300-gallon day tank
- Green Hopper area has a 2,000-gallon tank

- Reid Truck Hopper has a 500-gallon tank – all spills would be contained in either dikes or coal pile runoff pond.

II. Green Station

I. Turbine Building

1. Maintenance Shop

The Green Station Maintenance Shop is located on the ground floor at the north end of the Service Building. Some low volume lubricants are kept within a suitable enclosed cabinet inside the shop area. The shop has a non-hazardous Sani-Kleen solvent filled parts washer that is used for the cleaning of small mechanical parts. Access to this area of the plant is not controlled but is normally occupied three shifts per day. Any spills or leaks would be promptly cleaned up using appropriate procedures.

2. Lubricant Storage Area

Various lubricants are stored in an area to the south of the G-1 Condenser. The lubricants are in 55-gallon drums and 30-gallon dispenser bins stored on polyethylene containment devices. Also 5-gallon, 1-gallon, and smaller containers for transport of lubricants to the site are found in this area. The lubricators who have access to this area are trained in the proper use of the products and in spill control. Small spills in the immediate area would be promptly cleaned up. Drainage in this area is directed to the floor drain and then out of the building to the oil separator located at the southwest corner of the turbine building. Any oil that might pass through the oil separator would travel to the Green ash pond and be collected on the surface. In the event there is a noticeable oil spill or sheen on the ash pond surface, the intake pumps would be shut down and not restarted until all oil has been removed. The oil separator located outside the turbine building is inspected once per week by Operations and when necessary a certified Used Oil Recycler is employed to remove the waste from the site.

3. Boiler Chemical Feed Room

The boiler chemical feed room is located on the ground floor of the turbine building between the Green 1 and Green 2 Units. This room contains feed tanks and equipment for the metering of chemicals into the boiler feed water. These chemicals are dilute sodium phosphate solutions, a 250-gallon stainless steel stand mounted tank of 35% Hydrazine and a 15-gallon drum of aqua ammonia. A drum of aqua ammonia is located outside of the room. If a spill were to occur the drum would go to the oil separator and then to the ash pond. Any spills in this area would be contained within the room, which is bermed. During area maintenance, wash water may be routed to the Green ash pond via the Green IW-1 system by removing the floor drain plug. The IW-1 system has the capability of being routed to the industrial waste pond, but normal valving is to the ash pond. The chemical feed room is inspected once each shift for leak or spills and the inspection is logged. Personnel working in this area are Laboratory Technicians who would identify any spills or leaks and report for remediation. This area is not locked.

4. Paint Storage Area

The Green Maintenance Department has a paint and solvent storage locker located on the ground floor of the Green 2 Turbine Building. This locker is kept locked and the key is held in a locker key cabinet in the Maintenance Leader's office. Personnel having access to this locker is the Maintenance Department. Materials stored here are in small volume containers (5 gallons or less). Any leaks or spills from the locker would be onto a concrete floor. The area drains to the building floor drains. Minor spills would be localized in the area of the locker and would be addressed using standard procedures for clean-up and disposal of wastes.

5. Mercury Devices

The Instrumentation Shop and Control Room possess instruments containing mercury. The following is a list and location of the devices that contain at least one pound of mercury.

a. Instrument Shop: Three Manometers used as test instrument.

b. Control Room: Two Barometers.

Anyone finding a mercury leak or spill shall attempt to contain the spill and immediately contact a member of the Plant Environmental Department.

J. Green Water Plant Area

The Green Water Plant is located to the south of the Green Station Turbine Building. Personnel assigned to this work area are Laboratory Technicians and Operational Personnel who make rounds through the building at least once per shift. Laboratory Personnel inspect and log conditions of all bulk tanks once per day. The building is not locked. Any leaks or spills from chemicals stored in this area would flow to the building floor drains which are routed to a sump equipped with two 100 gallon per minute (gpm) pumps that discharge to a 58,000-gallon Waste Neutralization tank located outside the water plant. Major spills up to 4,000 gallons will be contained within the building by the floor drains and the building curbing until discharged to the neutralization tank. Water Plant problem alarms are located in the Green Station Control Room and would be investigated. After treatment in the Neutralization tank, waste would be released to the Green ash pond or the Green IW pond. Miscellaneous small volume containers of chemicals are stored within the building and the following list of bulk storage containers is located within or adjacent to this structure. During the transfer of bulk quantities of material the tanker will be attended at all times.

Sulfuric Acid. The water plant has a 66 degree Baume bulk sulfuric acid tank constructed of baked phenolic lined carbon steel with a capacity of 12,000 gallons located outside the Green water plant on the southeast corner. This tank is surrounded by a concrete walled dike that would contain 100% of the tank's volume if a major spill were to occur. A full tank contains 183,746 pounds of acid @ 1.836 specific gravity. Rainfall held within the diked area is visually analyzed prior to discharge to the Green ash pond.

Sulfuric Acid. The water plant has two cooling tower acid day tanks located at the northwest corner of the water plant. Each day tank contains 450 gallons of 66 degree Baume sulfuric acid. Any spills or leaks would flow to the building's floor drains and then to the waste neutralization tank.

Sulfuric Acid. The water plant has one regeneration acid day storage tank located at the northeast corner of the water plant. The tank contains 235 gallons (3,596 pounds) of 66 degree Baume sulfuric acid. Any spills or leaks from this tank would flow to the building floor drains which are routed to the waste neutralization tank.

Sodium Hydroxide. The water plant has a 12,000-gallon bulk storage tank for 50% aqueous solution of sodium hydroxide. The tank is unlined carbon steel. The sodium hydroxide has a specific gravity of 1.525, total maximum capacity of 127,180 pounds.

There is no diking around the caustic tank. Any spills or leaks from the tank would flow to the water plant floor drains which are routed to the waste neutralization tank.

Sodium Hydroxide. The water plant has one regeneration caustic day tank located in the northeast corner of the water plant. The day tank contains 465 gallons (3,180 pounds) of 50% sodium hydroxide. Any spills or leaks from this tank would flow to the building floor drains which are routed to the waste neutralization tank.

Sodium Hydroxide. The water plant has one waste neutralization caustic day tank located on the south side of the water plant. The day tank contains 400 gallons (5,090 pounds) of 50% sodium hydroxide. Any spills or leaks from the tank would flow to the building floor drains which are routed to the waste neutralization tank.

Organic Phosphate (Nalco 1393) in addition to acids and caustics, the Water Plant Building also contains a 1,074-gallon horizontal, stand mounted polyethylene storage tank for an organic phosphate chemical used for cooling water treatment. The product has a specific gravity of 1.331, total maximum capacity of 11,100 pounds. This system has a low tank level alarm. In the event of failure of the system, the Green Station Operations Supervisor will be notified and will investigate.

In addition, miscellaneous small volume water treatment chemicals are stored in this area such as: antiscalant GE Betz Hypersperse MDC 700, Brenntag Sodium Hypochlorite 12.5% 55-gallon, GE Betz Citric Acid 55-gallon, Brenntag Sodium Bisulfite 55-gallon, aqueous ammonia in 15-gallon drums, glycerin in 5-gallon containers, Nalco PC-96 Alkaliner cleaner 5-gallon Dowex Marathon A 141. 5-liter (anion exchange resin), and soda ash. Caustic Soda flakes are also kept in the water plant in units of 114 lbs. per unit.

Chlorine. The water plant chlorine room has 2 to 4 one ton cylinders of chlorine stored on the floor of the room. The cylinders rest in cradles. Due to the fact that chlorine liquid will evaporate to a gas at ambient conditions, there should be no escape of the liquid to a receiving body of water if a cylinder were to leak. The chlorine room is equipped with chlorine gas detector which produces an audible alarm in the Green Water

Plant if a leak occurs. Appropriate safety equipment and procedures are in place to address a cylinder leak should it occur.

Reverse Osmosis System (RO)/Ultra Filtration (UF). The water plant houses the RO/UF system and GE Betz provides KLEEN MCT 103 & 511 detergent cleaners for the unit. Buckman Lab's Bulab 8809 tote is also stored in this area. The following Nalco chemicals are in this location: Nalco biocide Perma Clean PC-11 55 gal, and an antiscalant Nalco 8103 15 gal. GE Betz biomate 15 gallon is used in this RO area as well. Nalclear 7768 a cationic floc for thickeners is also stored here in 55-gallon containers.

K. Filtered Water Building Area

Chemicals located in this area are a cationic polymer (DP 2500 Nalco) with an aluminum salt base used as a flocculant for the Intake Clarifiers contained in an 8,500-gallon capacity polyethylene storage tank located between the filtered water building and the number two clarifier. A Nalco Cat Floc 8103 tote is also located in this area. In the event of a leak or spill from these tanks, the contents would follow the drainage ditch to the Green ash pond. Laboratory Personnel inspect these tanks once/day for spills or leaks and log this inspection. Delpac 2500 in 330-gallon totes is in temporary storage here.

L. Potable Water Building Area

The potable water building is located to the North of the Green Unit 1 Cooling Tower. There is a 1,074-gallon, polyethylene, elevated storage tank located outside the potable water building that contains an organic phosphate based cooling tower water scale inhibitor. Any leak or spill from this tank would follow the surface drainage to the Green ash pond. This system is equipped with a low level tank alarm. Upon failure of the system, the Green Station Operations Supervisor will be notified and will investigate. The tank is inspected daily by Laboratory Personnel and the inspection is logged. During the transfer of bulk quantities of material the tanker will be attended at all times.

Green Ash Pond A 6,000-gallon empty tank is located at the Green ash pond and was once used to contain skimmed oil and later as a caustic soda pH adjustment chemical.

M. Fire Water Pump House

The fire water pump house has a 500-gallon, stand mounted carbon steel fuel oil storage tank located to the left of the south entry door. Any leak from this tank would go to the floor drain which is equipped with a level probe controlled sump pump in the pit. Discharge from this pump is directed to the Industrial Waste Water piping which is routed to the Green ash pond. During the transfer of bulk quantities of material the tanker will be attended at all times.

N. Units 1 and 2 Cooling Towers (Units 1 and 2 Cooling Tower Scale Inhibitor and Biocide Storage Tanks)

Both Green cooling towers have scale inhibitor storage tanks used to provide chemical treatment of the circulating cooling water of each unit. The storage tank for Green 1 is located adjacent to the potable water building and the storage tank for Green 2 is located in the east end of the demineralized water plant. The scale inhibitor is used to control to formation of scale in the cooling towers. The Green 1 storage tank is a 1,000-gallon horizontal, stand mounted polyethylene tank. The Green 2 storage tank is a 300-gallon tote tank which sits above a containment tub. The biocide is used to control biological growth in the cooling towers. Both biocide storage tanks are 500-gallon horizontal, stand mounted polyethylene tanks. (EMPTY).

O. Coal Handling Area & Coal Stockpile Runoff Ponds

There are two ground mounted, horizontal, carbon-steel storage tanks for storage of propylene glycol in the coal handling area. One tank is located at the mouth of the Reid/HMPL reclaim tunnel and has a capacity of 2,000 gallons. The other tank is located at the Green crusher tower and has a capacity of 1,000 gallons. Both of these tanks are located inside concrete containment berms. During the transfer of bulk quantities of material the tanker will be attended at all times.

Coal stockpile and thickener area storm water runoff is directed to a storm water pond on-site located near the Reid/HMP&L barge unloader. The runoff pond routinely discharges to the Green Surface Impoundment area, and is also permitted for emergency discharges to the Green River. Dust suppressants and/or water trucks are also used to minimize runoff from landfill and coal handling roads.

P. Solid Waste Disposal Area

The solid waste disposal area includes the IUCS building and the stack out pad. The IUCS building contains a lubricant cabinet that has miscellaneous small volume (5-gallon or less) lubricant containers. The actual cabinet is located at the basin of the West silo. Spills or leaks in this area would be immediately addressed. Surface drainage is directed to the IUCS Runoff Pond and then pumped to the Green ash pond.

Q. Battery Storage Areas

There are three storage battery rooms located at the Green Station. The IUCS (solid waste processing) building houses a storage battery room. This room is normally accessed by Solid Waste Operational personnel and Electricians. Spills or leaks from these battery cells could reach floor drains in the building if the volume of the electrolyte spilled was of sufficient quantity. The floor drains are plugged except during maintenance periods. Discharge is to the Green ash pond. The Green barge un-loader transfer tower motor control center building has a storage battery area within it. This room is normally accessed by Coal Handling personnel and

Electricians. Spills or leaks from these battery cells would be contained within the building. There is a battery storage room located on the ground floor of the Green Station between the G-1 and G-2 Units. This room is normally accessed by the Electricians. Spills or leaks from the battery cells in the room would be contained inside the room itself since the entire room area is bermed, making the floor drains inaccessible. The floor drains are plugged except during maintenance periods. Discharge would be to the Green ash pond. The maximum quantity of liquid held in any one battery is 7 gallons.

R. Green Landfill

Two 2,500 gallon above ground storage tanks (ASTs) containing diesel product are maintained by the landfill contractor. One AST is located at the north end of the landfill and the other AST is staged outside the landfill contractor office. Both are monitored as part of monthly inspections under BMP/SPCC plans.

Pursuant to 40 C.F.R. §423.11(r,) coal combustion residual (CCR) leachate is defined as "leachate from landfills or surface impoundments containing combustion residuals. Leachate is composed of liquid, including any suspended or dissolved constituents in the liquid, that has percolated through waste or other materials emplaced in a landfill, or that passes through the surface impoundment's containment structure (e.g. bottom, dikes, berms). Combustion residual leachate includes seepage and/or leakage from a combustion residual landfill or impoundment unit. Combustion residual leachate includes wastewater from landfills and surface impoundments located on non-adjoining property when under the operation control of the permitted facility."

Kentucky Pollutant Discharge Elimination System (KPDES) facility permit #KY0001929 authorizes the discharge of leachate from KPDES outfalls such as the main plant discharge (001,) and landfill runoff ponds (012, and 014). Newly discovered leachate seeps from a CCR landfill to the surface or have the potential to discharge to a water of the commonwealth other through outfalls 001, 009, 012, and 014 must be addressed through this plan. Weekly inspections (Appendix F) are conducted by BREC personnel to document any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit as required by 40 C.F.R. §257.83(a)(1) and 40 C.F.R. §257.84(a)(1). In addition, a standard operating procedure (Appendix G) is followed for any seeps and subsequent leachate identified from the Green Landfill, as well as corrective action procedures for seeps and leachate outbreaks. A seep operating log (Appendix H) is maintained at the facility for seeps/leachate outbreaks identified as well as leachate analyses, corrective measures, and notifications made to permitting authority.

S. Green Surface Impoundment

The CCR unit has a footprint of approximately 21 acres. Weekly inspections (Appendix F) are conducted by BREC personnel to document any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit as required by 40 C.F.R. §257.83(a)(1) and 40 C.F.R. §257.84(a)(1). In addition, annual inspections are conducted by a qualified professional

engineer to determine any signs of distress or malfunction of the CCR unit as required per 40 C.F.R. §257.83(b).

Kentucky Pollutant Discharge Elimination System (KPDES) facility permit #KY0001929 authorizes the discharge of leachate from KPDES outfalls such as the main plant discharge (001) and Green Surface Impoundment (009). Newly discovered leachate seeps from a CCR surface impoundment to the surface or have the potential to discharge to a water of the commonwealth other through outfalls 001, 009, 012, and 014 must be addressed through this plan.

Weekly inspections (Appendix F) are conducted by BREC personnel to document any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit as required by 40 C.F.R. §257.83(a)(1) and 40 C.F.R. §257.84(a)(1).

III. Reid and HMPL Stations

T. Turbine Building (*Plant is retired. Areas listed no longer in use.)*

1. Maintenance Shop

The Reid/HMPL Maintenance Shop is located in the northeast corner of the Reid Station Turbine Building. Located in this area is a Sani-Kleen parts washing basin that is filled with a non-hazardous solvent. Spills or leaks in this area would be addressed immediately. A major spill from the parts basin would flow to the floor drain and from there into the Reid/HMPL ash pond. Operation of this piece of equipment is by Maintenance Department Mechanics, who occupy this area approximately six days a week for two shifts and are acquainted with its proper use.

2. Lubricant Storage Area

Reid/HMPL Units Lubricant Storage is located in the basement between the R-1 and H-1 Units and is used for the storage of miscellaneous lubricants in 55-gallon drums located on polyethylene containment devices and various small volume (5-gallon or less) containers. This storage section also contains a rack of approximately twelve oil tanks. This area is bermed and would be contained. Spills or leaks would be immediately addressed. Flows in this area are directed to the floor drains which discharge to the Main Plant Sump and then to the Reid/HMPL ash pond.

3. HMPL Boiler Chemical Feed Area

The chemical feed equipment and tanks for storing boiler treatment chemicals for the H-1 and H-2 Units are located at ground elevation on the north side of the Turbine Building. There is a 250-gallon stainless steel 35% hydrazine tank *(Tank is empty,)* located between H-1 and H-2 Units which is bermed that will catch all leaks or spills. Outside the turbine building there is a drum of 30% Aqua Ammonia that is used in the boiler feedwater daily. During the transfer of bulk quantities of material the tanker will be attended at all times.

Laboratory Personnel inspect the tanks for leaks or spills once/day and the inspection is logged.

Chemical feed day tanks *(Tanks are empty)* of 150 gallons are located beneath the H-1 boiler on the ground elevation. The tanks hold dilute solutions of boiler treatment chemicals. This area is inspected daily by Laboratory Personnel and the inspection is logged. Any spills or leaks would be immediately addressed. Spills from these tanks would flow into the floor drain which discharges to the Main Plant Sump and then to the Reid/HMPL ash pond.

4. Reid Boiler Chemical Feed Area

Chemical feed day tank of approximately 100 gallons containing hydrazine and aqua ammonia are located the DA Level of the Reid Unit *(Tank is empty)*. This area also contains a phosphate tank *(Tank is empty)*. These Chemicals are in dilute concentrations and are used for the feed water treatment of the boiler water. ~~Daily inspections of these tanks are made by Laboratory personnel when unit is operational. Water Plant shifts are days (seven days a week) and evening shift (Monday through Friday). The tank inspections are logged.~~ Any leaks or spills would be immediately addressed. Drainage in this area is to the floor drains and then to the yard sump which discharges to the Reid/HMPL ash pond.

5. Paint and Solvent Storage Cabinet

A storage cabinet containing various paints and solvents (mineral spirits) in small volume containers is located near the H-1 boiler feed pumps. Access to this storage cabinet is by the Maintenance Department. Any leaks or spills from the cabinet would be onto the concrete floor and would be immediately cleaned up. Drainage in this area is to floor drains and then to the yard area sump which discharges to the Reid/HMPL ash pond.

6. Battery Rooms

There are four storage battery compartments located at the Reid and HMPL Stations. Each of the three units has a battery room located on the ground floor. The combustion turbine has a battery storage compartment located adjacent to the turbine, which is located at the West end of the HMPL units. Access to the battery rooms and compartment is limited to Electric Shop personnel who routinely maintain and inspect the batteries. In the event of a leak, contents of the batteries would be contained by berms constructed inside the room. The floor drains are outside the bermed area. The floor drains discharge to the main plant sump and then to the Reid/HMPL ash pond. The maximum amount of liquid in any one battery is 7 gallons.

U. Water Plant *(Plant is retired. Area no longer in use.)*

The Reid/HMPL Water Plant is located to the north of the H-1 boiler. Laboratory Personnel are assigned to this area seven days a week and five evenings per week. Logged inspections of the

equipment and tanks are made at this time. During periods when there are no assigned personnel in the building, inspections are made by Operational personnel and/or Laboratory technicians once per shift. The building is locked. Leaks or spills internal to the building are directed to floor drains that discharge to the Main Plant Sump and then to the Reid/HMPL ash pond. During the transfer of bulk quantities of material the tanker will be attended at all times. The following chemicals are stored in and immediately adjacent to the building:

Sulfuric Acid (*Tank is empty)* The water plant has a 66 degree Baume bulk sulfuric acid storage tank, constructed of baked phenolic lined carbon steel with a capacity of 8000 gallons, located outside the water plant to the north. The tank is surrounded by a concrete dike that would contain 100% of the tank's volume if a major spill were to occur. A full tank would contain 76,561 pounds of acid at 1.836 specific gravity. Rainwater collected within the dike is analyzed prior to discharge to the Main Plant Sump and then to the Reid/HMPL ash pond.

Sulfuric Acid *(Tank is empty)* The water plant has one 110-gallon acid storage day tank located in the east end of the water plant. The day tank has a capacity of 1,684 pounds of acid @ 1.836 specific gravity. This tank is a baked phenolic lined carbon steel tank.

Sodium Hydroxide. *(Tank is empty)* The water plant has one 8000-gallon bulk storage tank for 50% aqueous solution of sodium hydroxide. The tank is unlined carbon steel. The capacity of the tank is 101,748 pounds @ 1.525 specific gravity.

Sodium Hydroxide *(Tank is empty).* The water plant has a 159-gallon (2,022 pound) storage day tank for 50% sodium hydroxide. The day tank is located in the east end of the water plant on the demineralization side of the building.

Other Water Treatment Chemicals (*Area no longer in use. Chemical totes removed)* This area including a cationic polymer with aluminum salt base contained in a 546-gallon (5,085 pound) horizontal stand mounted tank, Aqua Ammonia barrels and Bulab 6060, 5532, 5086, 8861, 5011, & 5091 totes all located on the clarified water side of the water plant. Additional chemicals in this area include control 330-gallon totes, corrsheild MD4100, polyfloc AS1002 partial 330-gallon tote, hydrazine 35% temporary, soda ash in 50-pound bags and disodium phosphate 50-pound units.

Chlorine. ~~The water plant has two to three 150-pound cylinders of chlorine stored in the chlorine room at the southeast corner of the building. The cylinders are attached to stabilized support systems to prevent overturning.~~ (*Cylinders removed and collected from site by supplier, Brenntag Mid-South)* There is a chlorine leak detector in the building with local alarm annunciation. If there were a leak from a cylinder, the chlorine would evaporate to the gaseous state and no liquid would reach the environment. Appropriate leak repair kits and trained personnel are on site to address cylinder leaks.

HMPL Fly Ash Silo. This houses a 9,200-gallon tank of 50% aluminum sulfate and 004 Reid/HMPL ash pond coagulant (*Tank is empty).*

V. Cooling Towers *(Plant is retired. Area no longer in use).*

The HMPL Cooling Towers are located to the west of the HMPL boilers. The area surrounding the cooling towers is unpaved and rainfall runoff from around the towers flows south into Permitted Discharge Point 015, and then exits the plant property to Groves Creek. Access to this area is open to all departments of the plant. ~~Laboratory Personnel make trips through the cooling tower area at least once per shift on first and second shifts. Operational personnel make rounds through the cooling tower area at least once per shift daily.~~ Any spill from chemicals stored in this area would flow to the scrubber runoff pond (015), located south and directly across the road from the cooling towers. This pond has a manually controlled discharge.

Corrosion/Scale Inhibitors. The cooling towers have one 300-gallon tote *(Tote removed)* filled with an inhibitor for chemically treating the cooling water. The storage tank has a secondary containment device beneath the tank stand mountings, to contain any spills and leaks.

Organic Phosphate. A 300-gallon vertical polyethylene storage tank *(Tank is empty)* containing an organic phosphate (specific gravity of 1.333, and a weight of 2,896 pounds) based chemical used for cooling water treatment is located in this area. The tank is refilled with a tote and usually contains approximately 200-300 gallons of chemical when refilled. This tank is inspected once per day and logged.

Chlorine. ~~The cooling towers have 3-4 one ton chlorine cylinders stored on the ground by the towers.~~ *(Cylinders removed and collected from site by supplier, Brenntag Mid-South)* Due to the fact that chlorine liquid will evaporate to a gas at ambient pressure, there would be no escape of the liquid to a receiving body of water if a cylinder were to leak. Appropriate safety equipment and leak containment kits are on site as well as procedures and trained personnel to address a cylinder leak.

Sulfuric Acid *(Tank is empty).* One 8000-gallon baked phenolic lined carbon steel sulfuric acid feed tank is located just east of the towers. This tank is surrounded by a concrete walled dike that will contain 100% of the tank's volume if a major spill occurred. A full tank contains 76,561 lbs. of acid @ 1.836 specific gravity. Rainwater discharged from within the diked area will be analyzed before released.

W. Mercury Devices

Throughout the plant site there are various instruments, such as Transmitters, Manometers, Barometers, and Coal Vibrators (V.F. Wheel) that contain Mercury. The following is a list and location of these devices that contain at least one pound of Mercury.

a. Instrument Shop: ~~Two Manometers, used as test instruments.~~ *No longer in use per instrument shop.*
b. Control Room: Three Manometers BTG board for R1, H1, H2.
c. Reid Barge Un-loader: One Coal Vibrator (V.F. Wheel)

d. Coal Yard Area: One Coal Vibrator (V.F. Wheel), located near the Crusher House. Anyone finding a mercury leak or spill shall attempt to contain the spill and immediately contact a member of the Hazardous Waste Clean-up Team.

X. Oil Storage Building (unused oil – building located by coal handling)

The oil storage building is located near the main guard gate to store bulk used oil, 55-gallon drums of used oil, oil clean-up waste, and routine maintenance used oil debris. In addition to the 55-gallon drums and portable 50-gallon tanks, 2 X 1,000-gallon tanks are located in the building to store bulk used oil and water contaminated with oil. The building's concrete floor is diked and sloped inward to contain any spills that may occur. Spillage from the area around the oil storage building will flow to the Green ash pond. The used oil storage building is also inspected by BREC personnel on a monthly basis to account for waste accumulations as well as note condition of drums/waste containers.

Y. Reid/HMP&L Surface Impoundment

The CCR unit has a footprint of approximately 25.4 acres. Weekly inspections (Appendix F) are conducted by BREC personnel to document any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit as required by 40 C.F.R. §257.83(a)(1) and 40 C.F.R. §257.84(a)(1). In addition, annual inspections are conducted by a qualified professional engineer to determine any signs of distress or malfunction of the CCR unit as required per 40 C.F.R. §257.83(b).

PCB

All fluid filled equipment located at the Green, Reid and HMPL Stations are classified as non-PCB contaminated equipment (per 40 CFR 761.3 definitions). Some old capacitors located around plant site may have low level PCBs found in them but all transformers are considered non-PCB (< 50ppm).

Reporting of BMP Incidents

A BMP incident reporting system is used to keep records of incidents such as spills, leaks, runoff and other improper discharges for the purpose of minimizing recurrence, expediting mitigation or cleanup activities, and complying with legal requirements. In the event of an accidental release of a chemical substance to the environment see pages 2-7 Spill Reporting Requirements.

Materials Compatibility & Safety Data Sheets

It is Big Rivers Electric Corporation's policy that all new chemical purchases be accompanied by a Safety Data Sheet (SDS). The SDS is consulted to determine those chemicals that would be strongly reactive. Bulk storage of chemicals is in specially designed tanks with protective dikes. Transfer of chemicals is through pipes located above ground; any leak or spill would be

immediately noticed and reported. In addition, electronic copies of all previous and current Safety Data Sheets are maintained on a sharedrive (Appendix I) and are routinely accessible by all Sebree Station employees. Employees are also informed annually on access of SDS', locations of spill-clean up kits, and spill response reporting and procedures.

Good Housekeeping & Spill Clean-Up Equipment

Good housekeeping refers to the storage of chemicals and the orderly cleanup of spills. Bulk high volume low hazard materials such as coal, flyash, and bottom ash, are found on the plant site. Spills from the systems using or producing these materials are cleaned up on a regular basis. Employees are trained as part of their job functions to maintain their immediate work station. Spill cleanup procedures for chemical hazards are presented in the hazard communication training program to all employees. Disposal containers are provided for cleanup materials throughout the facility and the employees are instructed to dispose of small spills according to SDS instructions. Small spill clean-up kit materials are maintained on-site and are located at the Environmental Building, within the Environmental Response trailer, and stored near entrance to facility.

Preventative Maintenance

Refers to an established program to effectively schedule and maintain plant equipment which will increase equipment reliability and availability. This will include any maintenance necessary to prolong the life of a piece of equipment, i.e., lubrication, calibration, vibration monitoring and cleaning. Priority one items consists of any condition that has or would cause a unit outage, a safety hazard or environmental problem that requires immediate attention.

Inspections and Records

This refers to periodic inspections of areas identified in the risk identification and assessment. Monthly BMP Plan, monthly SPCC Plan, and weekly CCR impoundment and landfill inspections are also conducted and kept on record. Records are located in the third floor black environmental cabinet in the Green Building. A complete chemical inventory of the facility is performed every three years. All inspection reports shall be maintained for three years.

Security

There is some perimeter fencing located on the Green, Reid and HMPL Stations facility. Both entrance roads are secured by gates, and patrolled by security guards. There is a security building located at each entrance. The main gate is manned 24 hours a day. The Panama Mine gate is manned a minimum of 8 hours per day, Monday thru Saturday. The inside plant area is manned 24 hours a day with three shifts in which operational personnel inspect the various systems twice per shift.

Employee Training

Refers to the training received by the employees regarding the BMP Plan. All Big Rivers Electric Corporation plant employees receive training to ensure their knowledge of chemical hazards they might face on the job. The BMP Plan and spill cleanup training is contained in the annual environmental training presented to all employees. If an annual environmental training cannot be presented in person due to pandemic related restrictions and social distancing

requirements, then BREC will provide alternative training options to facility personnel. For 2020, the BMP Plan and spill response training were presented to all facility personnel in a weekly safety meeting format. In addition, all employees receive both informal and on the job training covering their assigned duties, prevention of accidental releases, good housekeeping practices and safety and environmental precautions during cleanup operations. Applicable topics of training include oil handling, operation and maintenance of equipment to prevent oil discharges, discharge procedures protocols, applicable pollution control laws, rules and regulations, general facility operations, and the contents of the BMP Plan and related plans such as the Spill Prevention Control and Countermeasure (SPCC) Plan and the Groundwater Protection (GP) Plan.

III. General Information

Facility Description

Big Rivers Electric Corporation operates the Green, Reid and HMPL Stations located east of the intersection of U.S. 41 South and State Road 2097, near Sebree, in Webster County, Kentucky. This complex is composed of five fossil fuel fired boilers consisting of two separate Power Plants adjacent to each other. The Reid and HMPL Stations consist of one 70-megawatt and two 160-megawatt fossil fuel boilers. The two 160 megawatt units are owned by the City of Henderson, Kentucky and operated by Big Rivers Electric Corporation. The Green Station consists of two 240 megawatt fossil fuel fired boilers. Both Power Plants have transmission facilities, and the complex is located on approximately 573 acres. Effective February 1st, 2019, the HMPL station was retired and is no longer operational.

The systems contained within these plants are:

- A water intake structure for each facility
- A wastewater discharge outfall for both facilities
- Two barge unloading and coal conveyance systems and one coal storage area for all five units
- A steam generator per unit
- A hydroveyor fly ash system for Reid and HMPL Stations
- An electrostatic precipitator per unit
- A pneumatic dry fly ash handling system
- A condenser and heaters per unit
- A cooling tower per unit (except R-1)
- A bottom ash sluice system per unit
- A scrubber flue gas desulfurization system per unit (except R-1)
- Each unit utilizes a 350-foot tall smoke stack (the Reid smoke stack is 250-foot tall)
- A boiler feed water treatment system per unit
- Wastewater treatment ponds and discharge structures
- Conveyors and above/below ground piping
- Demineralizer Units
- Green, Reid and HMPL Process Plants
- HMPL Selective Catalyst Reduction Units
- Reverse Osmosis Units

Rainfall runoff from the above systems drains to the two ash ponds which are permitted to discharge to the Green River at Mile Marker 41.3.

- Two transmission switchyards
- A solid waste landfill

Rainfall runoff from the switchyards discharges to natural drainage. The landfill rainfall flows to runoff control ponds. They have the capability of being discharged through specified

KPDES (012 & 014) outfalls to the Green River when high-flow conditions dictate but are routinely pumped to the Green ash pond.

Process Description

A power plant generates electricity by converting water into steam that drives a turbine and generator into producing electrical energy. In order to produce this energy, combustion of fuel inside a boiler is needed to convert water into steam. Each power plant boiler requires a supply of fossil fuel (coal), and highly purified water. The fossil fuel is delivered by either trucks or river barges directly to the plant site. The coal is then conveyed to a stock storage pile for future use.

All water required to feed the power plant boilers is withdrawn from the Green River prior to purification. The fossil fuel is pulverized and blown into the boiler through the burners. The following by-products are created by the boilers in producing steam:

1. Bottom ash is disposed of by sluicing it to an ash holding pond.

2. Fly ash is mixed with lime slurry, dewatered, and hauled to a landfill.

3. Leftover intake water from associated systems (excluding once thru cooling water) goes through a wastewater treatment process before being discharged to the river.

Flue gases from the boiler go through a desulfurization process prior to being discharged through the smoke stacks.

The units located at the Green Station burn coal to produce superheated steam which is then used to drive the turbines. The steam is made from highly purified water referred to as boiler water. The superheated steam passes through the turbines converting heat energy to mechanical energy thereby producing electricity. It is then condensed to water by passing through the condensers and returned to the boilers to be reheated.

The condensers are composed of a series of enclosed tubes through which water flows. The steam passing over these tubes loses heat to the circulating water. The warmed water, at the Green units, is pumped to the mechanical draft cooling towers where heat is lost by evaporation and the water is recycled back through the condenser cooling system. Periodic blowdown is discharged to the river.

The Reid Unit is a once through system. Water is taken from the Green River passed through the condenser and returned to the river.

Boiler water make-up is pumped from the filtered water treatment building for the Green Station, and from the potable water tank at the Reid Station. The water is then treated by each water plant demineralizer according to Power Plant specifications. Discharges from in-plant processes such as, service water usage, waste from water treatment processes, bottom ash sluicing as well as contaminated rainfall runoff are directed to the plant sumps or drains which discharge to the ash ponds through industrial waste lines. The ash ponds are designed to settle

solids before reuse or discharge. Water from the Green ash pond is recirculated back for ash sluicing. Both ponds are designed to discharge excess water to the river and must meet KPDES Permit limits.

Plant Water Intake

The Sebree Station pumps water from the Green River to the Green and HMPL clarifiers, the HMPL cooling towers, the Reid condenser and the Henderson Water Utility South plant. The Green clarified water is then directed to the Green cooling towers, slakers, or demineralizer systems.

Plant Water Discharge

Big Rivers Electric Corporation's Green, Reid and HMPL Power Plants discharge waste water according to the requirements of its KPDES permit (KY0001929). There are sixteen permit controlled point sources which are sampled and analysis ran if discharged. Rainfall runoff from the plant site, liquid wastes and under normal operation coal pile runoff are directed to the ash ponds. After settling, the ash ponds are designed to discharge to the Green River. Rainfall runoff, not contaminated by plant processes, is directed to natural drainage to the Green River.

Chemical Storage and Controls

Bulk chemical storage is located in various areas around the plant site and especially the coal handling area. Each area is evaluated for proper storage, usage, containment, security, and the possibility of discharge to the environment. See Risk Identification and Assessment Section for additional information on specific areas.

Solid Waste Storage and Controls

Normal operational wastes that are transported offsite for disposal or recycling include: garbage, scrap metal, used oil, batteries, sewage treatment plant solids, fly ash and bottom ash and FGD by-product. All of these waste products are either stored in special containers or in isolated, protected areas until being transported off-site for disposal. Dewatered FGD solids may be land-filled on-site. The disposal of all solid wastes is in accordance with local, state and federal regulations.

Dewatering Surface Impoundment Controls

The KPDES permit for the facility requires additional monthly monitoring parameters of the main plant discharge (001) if dewatering commences for either surface impoundment (Reid/HMP&L or Green).

If a monthly average or daily maximum for a listed metal is exceeded for two consecutive months the facility is required to initiate an evaluation of the current BMP practices related to dewatering.

Prior to commencement of dewatering and/or closure activities of either surface impoundment, BREC will review BMP practices of selected contractor.

Truck Unloading Controls

Procedures for unloading tanker trucks delivering chemicals or oil products within the facility are as follows:

- The manifest will be checked and the contents verified and the tanker directed to the proper unloading area.
- The unloading area will be protected with warning signs if appropriate, as in the case of flammable product no smoking signs shall be used.
- A ground strap shall be attached to all flammable product tankers and only spark-proof tools will be used.
- Unloading operations shall be performed only by reliable persons, properly instructed and made responsible for careful compliance with the applicable regulations.
- During unloading, the tanker will be attended at all times.
- The contents of the tanker will be verified by the person supervising the unloading.
- Inspection of the storage tank to ensure that it is vented before connecting to the unloading line will be done by the person supervising the unloading.
- A portable container suitable in construction and capacity will be used to collect any possible leaks.
- The tank level meter will be checked and/or a visual inspection made to insure that sufficient space is available for transfer of the contents to the tank.
- The connections and hose will be inspected during the unloading to determine if leakage is observed, stop procedure and take corrective action.
- After unloading procedure is complete, inspect the area for spillage. If spillage has occurred, notify the appropriate department supervisor to initiate proper procedures.

Asbestos Storage and Loading Controls

Employees involved in the handling, storage and loading of barrels containing asbestos material have documented training in the hazards associated with the exposure to asbestos. These same employees are given an annual physical examination and a qualitative respirator fit test. All documentation is submitted to Big Rivers Electric Corporation's Reid/Green Safety Department

before the start of any project. Employees are required to have, at a minimum, Tyvek disposal coveralls with head and foot coverings and half-mask dual cartridge respirators.

Storm Water Released from Diked Area

Storm water collected in diked areas around chemical or fuel tanks shall be discharged when necessary to the site drainage pond. Prior to discharge from any diked area a visual inspection is conducted for contaminants and sheen on the water. If contamination is observed analysis of a sample of the contaminated rainfall shall be performed and the water disposed of in an appropriate manner if necessary. If storm water is discharged from diked area a Secondary Containment Drainage Form is filled out.

Storm Water Area Runoff

Storm water originating from unnamed tributaries of the Green River flow have been identified on-site. These include areas around Reid/HMP&L impoundment and Green Landfill. Areas identified have been previously sampled and indicate no impact of storm water runoff from the aforementioned areas. Storm water runoff from Reid/HMP&L impoundment and Green Landfill continue to be directed to permitted KPDES outfalls on-site.

Hazardous Waste Management

Sebree Station, though not a routine generator of hazardous waste, is registered with the state of Kentucky, Division of Waste Management, as a Very Small Quantity Generator (VSQG) of hazardous waste (EPA) Identification Number KYD-991-276-775.

Hazardous waste generated from the various operations is placed in an appropriate container from the warehouse inventory, see descriptions below:

- Stock #260-01-123 – Rule 40 open top. This container is to be used for non hazardous waste such as oil and oil dry, asbestos, waste grease etc. There can be no free liquids remaining in the container.

- Stock #260-01-124 – 5-gallon bucket ID: UN1H2/Y 1.5/30 or UN1H2Y/Y 24S. This container is to be used for small quantities of liquids and/or solids if any one cleanup will use more than three buckets. The Rule 40 metal drum should be used.

- Stock #260-01-122 – 85-gallon overpack drum ID: UN1A2/X 440/S. This container is to be only for leaking drums. Warehouse personnel should call the environmental department before issuing drum.

- Stock #260-01-121 – 55-gallon steel drum bung type ID UN1A1/Y 1.4/250. This container is to be used for liquid waste only. Can be used for both hazardous and non-hazardous waste, e.g., waste oil, antifreeze, etc.

Periodically Discharged Wastewaters Not Specifically Covered by Effluent Conditions

Section 3.12 of the KPDES permit requires the facility to include procedures and controls necessary for handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects. The following procedures and controls have been identified for Sebree Station wastewater effluent not routinely discharged:

- Meter Calibration – Instrumentation (i.e. flow meters) are calibrated on a routine basis.

- Hydrostatic Testing Water – Containment vessels are not hydrostatically tested on-site. Instead most vessels are tested using API 653 visual inspection standards or ultrasonic testing.

- Demolition Projects – No demolition projects are currently scheduled at this time. If it is determined that on-site structures will be demolished, then handling procedures of contact wastewater will be relayed to demolition contractor, and on-site BMP will be amended.

All wastewater effluent not routinely discharged is directed to on-site permitted outfalls and monitored per the conditions set forth in the KPDES permit.

Appendix A

Areas of Risk Identification Table & Map

Risk Assessment Locations:

I. Common Areas
A. Warehouse "A"
B. Warehouse "B"
C. Warehouse "C"
D. Coal Handling Heavy Equipment Building
E. Lubricant and Waste Oil Storage Area (Oil Storage Shed)
F. Central Machine Shop
G. Main Gate Storage Area (Site Mobile Equipment Fueling Station at Main Gate)
H. Bulk Fuel Oil Storage Tanks
Environmental Building
Conveyor System Area - Propylene Glycol Tanks

II. Green Station
I. Turbine Building
1. Maintenance Shop
2. Lubricant Storage Area
3. Boiler Chemical Feed Room
4. Paint Storage Area
5. Mercury Devices
K. Green Water Plant Area
L. Filtered Water Building Area
M. Potable Water Building Area
N. Fire Water Pump House
O. Units 1 and 2 Cooling Towers (Units 1 and 2 Cooling Tower Scale Inhibitor and Biocide Storage Tanks)
P. Coal Handling Area & Coal Stockpile Runoff Ponds
Q. Solid Waste Disposal Area
R. Battery Storage Areas
S. Green Landfill
T. Green Surface Impoundment

III. Reid and HMPL Stations
~~U. Turbine Building~~
~~1. Maintenance Shop~~
~~2. Lubricant Storage Area~~
~~3. HMPL Boiler Chemical Feed Room~~
~~4. Reid Boiler Chemical Feed Room~~
~~5. Paint and Solvent Storage Cabinet~~
~~6. Battery Rooms~~
~~V. Water Plant~~
~~W. Cooling Towers~~
X. Mercury Devices
Oil Storage Building (unused oil - building located by coal handling)
Y. Reid/HMP&L Surface Impoundment


COAL SCALES
CENTRAL MACHINE SHOP
OIL STORAGE BLDG.
COAL TRUCK HOPPER
GREEN COAL STORAGE
HENDERSON COUNTY
McLEAN COUNTY
REID & HMPL ASH POND
FLYASH
BOTTOM ASH
LAYDOWN AREA
BULK FUEL OIL STORAGE
REID & HMPL COAL STORAGE
GREEN BARGE UNLOADER
HENDERSON COUNTY
WEBSTER COUNTY
SCR AMMONIA STORAGE
HWY. MAINT. SHOP
HMPL WAREHOUSE
FGD STACK
FLY ASH SILO
FUEL OIL TANK
CONVEYOR
RECLAIM HOPPER
CONVEYORS 4A & 4B
REID CRUSHER HOUSE
COAL PILE RUNOFF
STACK-OUT CONVEYOR
CONVEYOR 1J
HMPL BARGE UNLOADER
COOLING TOWER
GAS TURBINE STACK
UNDERGRD. FALSE START TANK
POTABLE WTR. STORAGE TANK
HYV EQUIP. FUEL PUMP
REID FUEL OIL TANK
BYPASS STACK
COND. TANK 2
REID STACK
COND. TANK 1
WTR. PLANT
CONVEYOR 2
LIME TRANSFER TOWER
HMPL CRUSHER HOUSE
SITE DRAINAGE CONTROL POND
BOILER TUBE BLDG.
REID-HMPL ELEC. STORAGE WHSE.
NATURAL GAS LINE
CONVEYORS 3A & 3B
GREEN FUEL OIL TANK
SLAKER BLDG.
ADDITIVE HOLD TANKS
LIME STORAGE SILOS
1C2
1C1
2C2
2C1
1B
1A
SOLID WASTE THICKENER
THICKENER RETURN TANK
2A
2B
FILTRATE RETURN TANK
PARKING
BRDG. PILE STORAGE
161kV OCB
XFMR
H2
H1
R1
R2
WAREHOUSE
SAFETY/TRAINING
WEBSTER COUNTY
McLEAN COUNTY
SUBSTATION YARD
69kV OCB
EQUIPMENT LAYDOWN AREA
10% OWNERSHIP - 161kV TO HENDERSON COUNTY
161kV LINE TO HMPL SUB #1
69kV LINE TO HMPL SUB #2
G1
G2
GREEN ADMINISTRATIVE BUILDING
UNDERGROUND TURBINE LUBE OIL TANK
COND. TANK 1
WATER TREATMENT BLDG.
COND. TANK 2
COOLING TOWER
EMERGENCY FIRE PUMP BLDG.
WASTE WATER CLARIFIER
SEWAGE TREATMENT PLANT
GREEN SLURRY SURGE TANKS
SOLID WASTE BLDG.
GREEN FLY ASH SILOS
REID INTAKE STRUCTURE
OIL STORAGE BLDG.
GREEN SLAKER WATER BLDG.
RIVER WATER CLARIFIER
FUELING STATION
SCRUBBER BYPASS POND
INDUSTRIAL WASTEWATER POND
SLUDGE CONVEYORS AND STACKOUT AREA
LANDFILL CONTRACTOR BULK FUEL OIL STORAGE
EHV SWITCHYARD
ENV. WHSE.
WHSE.
GREEN ASH POND
EQUIPMENT LAYDOWN AREA
SITE DRAINAGE CONTROL POND
GREEN RIVER
LANDFILL

Appendix B

SPCC Oil Storage & Site Drainage Map & Tables

BIG RIVERS ELECTRIC CORPORATION

REID / GREEN / HMP&L STATION II POWER PLANTS

SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN

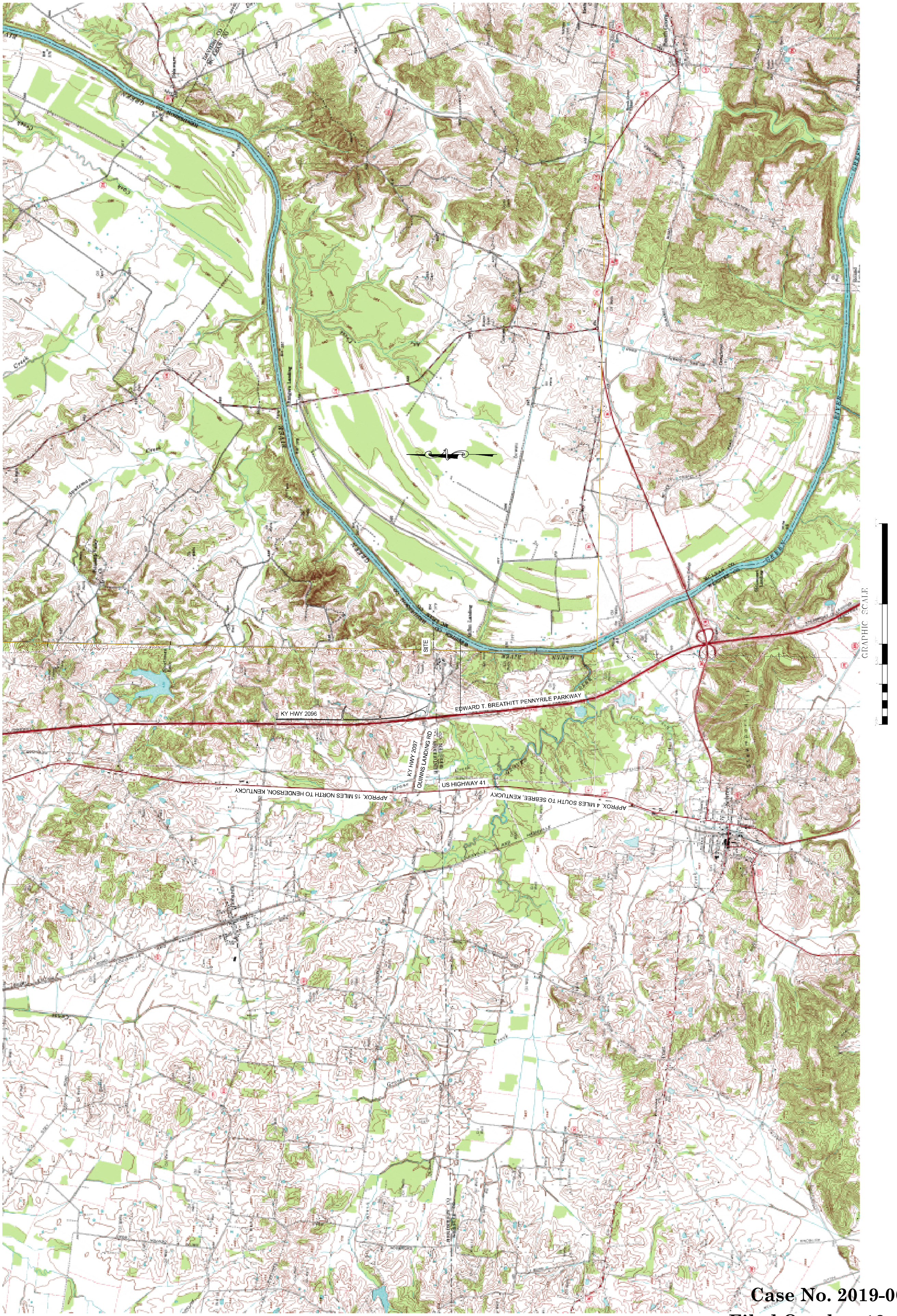
LOCATION MAP

JOB NUMBER	20-0124
DRAWN BY	DLM
CHECKED BY	DAL
DATE	06/15/2020

REVISIONS

SHEET NUMBER

ASSOCIATED ENGINEERS, INC.
ENGINEERS • GEOLOGISTS • SURVEYORS



Case No. 2019-00435

Filed October 18, 2022

BIG RIVERS ELECTRIC CORPORATION	JOB NUMBER 20-0124	REVISION 06-15-2020
REID / GREEN / HMP&L STATION II POWER PLANTS	DRAWN BY BJMP	
SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN	CHECKED BY DAL	
SITE PLAN	DATE 06/15/2020	

SHEET NUMBER

ASSOCIATED ENGINEERS, INC.
ENGINEERS • GEOLOGISTS • SURVEYORS

ASSOCIATED ENGINEERS, INC.
ENGINEERS • GEOLOGISTS • SURVEYORS

REVISIONS

JOB NUMBER 20-0124
DRAWN BY BJMP
CHECKED BY DAL
DATE 06/15/2020

BIG RIVERS ELECTRIC CORPORATION
REID / GREEN / HMP&L STATION II POWER PLANTS
SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN
SITE PLAN

SHEET NUMBER

Case No. 2019-00435
Filed October 18, 2022

Oil Storage Inventory - 1 of 4

ID	Qty.	Description	Storage Cap. (gal) Each	Storage Cap. (gal) Total	*Type	Secondary Containment
		Reid - Outside Main Building				
R1	1	Auxiliary. Transformer	1,823	1,823	TX	GBAP and/or Active Containment
R2	1	Step-Up Transformer S/N D574327	9,370	9,370	TX	GBAP and/or Active Containment
R3	1	96 KVA Transformer S/N PMR 427988	198	198	TX	GBAP and/or Active Containment
R4	2	Precipitator Transformers	147	294	TX	GBAP and/or Active Containment
		Reid - Inside Main Building				
R5	1	Reusable Lube Oil Tank (Basement)	10,000	10,000	ST,VC	RHAP and/or Active Containment
R6	1	Hydrogen Seal Oil System (Basement)	1,100	1,100	EQ	RHAP and/or Active Containment
R7	1	Turbine Lube Oil Tank and System (Ground Floo	5,000	5,000	ST,R	RHAP and/or Active Containment
R8	1	EHC	113	113	EQ	RHAP and/or Active Containment
		Reid - Gas Turbine Area				
R9	1	False Start Drain Tank - UST	6,000	6,000	UST	NA
R10	1	H 1/2 FGD Feed Transformer A-42090494	3,685	3,685	TX	SD 015 and/or Active Containment
R11	1	Transformer (Gas Turb. Step-Up) S/N M100334	4,450	4,450	TX	DIKE
R12	1	Combustion Turbine Transformer S/N ST0309A2	488	488	TX	SD 015 and/or Active Containment
R13	1	Aux. Combustion Turbine Trans. S/N H-884613	154	154	TX	SD 015 and/or Active Containment

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Oil Storage Inventory - 2 of 4

ID	Qty.	Description	Storage Cap. (gal) Each	Storage Cap. (gal) Total	*Type	Secondary Containment
		Green 1 - Outside Main Building				
G1	1	Start-Up Transformen S/N 9H1042	3,715	3,715	TX	GBAP and/or Active Containment
G2	1	Auxiliary Transformer S/N 9H1043	4,800	4,800	TX	GBAP and/or Active Containment
G3	1	Step-Up Transformer S/N C-05567-5-1	14,397	14,397	TX	GBAP and/or Active Containment
G4	1	Lube Oil UST (divided into 1/2 clean, 1/2 used)	12,000	12,000	UST	NA
G5	28	Precipitator Transformers	170	4,760	TX	SD 003 and/or Active Containment
G6	1	1B3 S/N 18J19172 Sunbelt	587	587	TX	GBAP and/or Active Containment
		Green 2 - Outside Main Building				
G7	1	Auxiliary Transformer S/N RUS2548-1	5,087	5,087	TX	GBAP and/or Active Containment
G8	1	Step-Up Transformer S/N C-05567-5-2	14,397	14,397	TX	GBAP and/or Active Containment
G9	1	Lube Oil UST (divided into 1/2 clean, 1/2 used)	12,000	12,000	UST	NA
G10	28	Precipitator Transformers	170	4,760	TX	GBAP and/or
G11	1	2B3 S/N ST0815A39685-1	387	387	TX	GBAP and/or Active Containment
G12	1	Back Up Generator	797	797	GEN	GBAP and/or Active Containment
G13		Sunbelt Transformer S/N ST0107T15698-1-S	395	395	TX	GBAP and/or Active Containment
		Green 1 - Inside Main Building				
G14	16	Rack-mounted, Lube Oil	55	880	EL,ST,D	G1-OS and/or Active Containment

Oil Storage Inventory - 3 of 4

ID	Qty.	Description	Storage Cap. (gal) Each	Storage Cap. (gal) Total	*Type	Secondary Containment
G15	1	Hydrogen Seal Oil System	400	400	EQ	G1-OS and/or Active Containment
G15A	4	Misc. Oil Drum Storage	55	220	ST, D	G1-OS and/or Active Containment
G16	1	Turbine Lube Oil System Including Bowser	5,400	5,400	EQ	G1-OS and/or Active Containment
G17	1	Lube Oil Tank	8,200	8,200	ST,R	G1-OS and/or Active Containment
G18	1	EHC	400	400	ST, R	G1-OS and/or Active Containment
		Green 2 - Inside Main Building				
G19	1	Hydrogen Seal Oil System	300	300	EQ	G1-OS and/or Active Containment
G20	1	Turbine Lube Oil System Including Bowser	5,100	5,100	EQ	Active
G21	1	Lube Oil Tank	3,500	3,500	ST,R	G1-OS and/or Active Containment
G23	1	EHC	400	400	ST, R	G1-OS and/or Active Containment
		Service Transformers Elsewhere on Site				
T1	1	Crusher Bldg. Trans. 500 KVA, S/N PAV-8655-(	188	188	TX	SD 003 and/or Active Containment
T2	1	Coal Handling Transformer 500 KVA, S/N 7026(	160	160	TX	SD 003 and/or Active Containment
T3	1	Intake Transformer-300 KVA S/N 7023817	265	265	TX	DIKE
T4	1	Machine Shop Trans. 750 KVA S/N TAV 8897-(	248	248	TX	Active
T5	1	Barge Unloader Trans. 1500 KVA S/N 11-08-11-	440	440	TX	DIKE
		Cooling Tower Transformers 750 KVA:				
T6	1	South - S/N PBV8654-02	210	210	TX	SD 015 and/or Active Containment
T7	1	South - S/N PBV8684-02	210	210	TX	SD 015 and/or Active Containment
T8	1	North - S/N PBV8654-01	210	210	TX	SD 015 and/or Active Containment
T9	1	North - S/N PBV8684-01	210	210	TX	SD 015 and/or Active Containment
		Miscellaneous Oil Storage				
M1	1	Green Ignition Oil Tank (Walled - In)	60,000	60,000	ST,VC	DIKE
M2	1	Reid / HMPL Ignition Oil Tank (diked)	47,000	47,000	ST,VC	DIKE

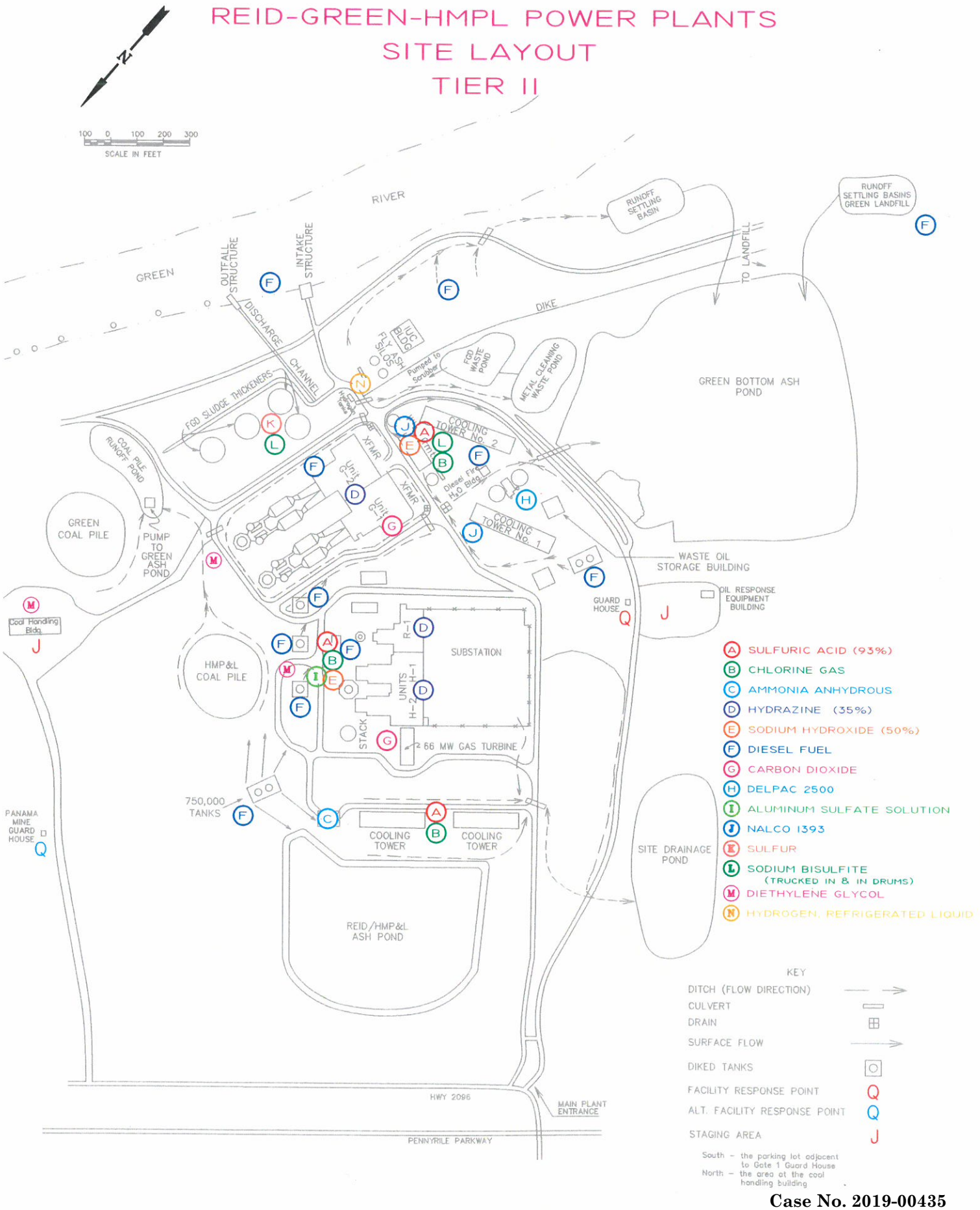
Oil Storage Inventory - 4 of 4

ID	Qty.	Description	Storage Cap. (gal) Each	Storage Cap. (gal) Total	*Type	Secondary Containment
M3	1	Coal Handling Equipment Fuel Tank (diked)	20,000	20,000	ST,VC	DIKE
M4	75	Lubrication Storage Building	55	4,125	ST,D	DIKE
M5	1	Miscellaneous K-1 Kerosene	250	250	EL,ST,HC	DIKE
M6	1	Coal Handling Maint. Shop Used Oil Collection	500	500	ST,HC	SD 015 and/or Active Containment
M6 A	1	Coal Handling Maint. Shop Used Oil Collection (	250	250	PL	SD 015 and/or Active Containment
M6 B	10	Coal Handling Maint. Shop Misc. Oil Drums	55	550	ST. D	SD 015 and/or Active Containment
M6 C	1	Coal Handling Maint. Shop Portable Diesel Fuel	250	250	ST,HC	SD 015 and/or Active Containment
M7	6	Coal Handling Maint. Shop Lube Oil Drums (Ra	55	330	EL,ST,D	DIKE
M7 A	2	Coal Handling Maint. Shop Antifreeze Drums	55	110	ST,D	DIKE
M7 B	2	Coal Handling Maint. Shop Portable Antifreeze T	250	500	PL	DIKE
M7 C	1	Coal Handling Maint. Shop Portable Diesel Tank	250	250	PL	DIKE
M8	2	Bulk Fuel Oil Storage Tanks (diked)	750,000	1,500,000	ST,VC	DIKE
M9	1	Diesel Fire Pump Fuel Storage Tank	500	500	ST,HC	GBAP and/or Active Containment
M10	1	Reid/HMP&L Diesel Fire Pump Fuel Tank	250	250	ST,HC	DIKE
M11	1	Oil Insulated Conduit	100	100	CONDUIT	GBAP and/or Active Containment
		Landfill Contractor				
L1	1	Diesel Fuel	10,000	10,000	ST,HC	DIKE
L2	1	Diesel Fuel	10,000	10,000	ST,HC	DW
		Site Mobile Equipment Fueling Station				
F1	1	Highway Diesel Tank	500	500	ST,HC	DIKE
F2	1	Unleaded Gas Tanks	950	950	ST,HC	DIKE
F3	1	Unleaded Gas Tanks	500	500	EL,ST,HC	DIKE
F4	1	Kerosene	250	250	EL,ST,HC	DIKE
F5	1	Kerosene	500	500	ST,HC	DIKE
F6	25	Site Mobile Equipment Storage Building Drums	55	890	ST,D	GBAP and/or Active Containment
F7	2	Site Mobile Equip. Storage Bldg. Used Oil Storag	1,050	2,100	PL,VC	GBAP and/or Active Containment
F7 A	4	Site Mobile Equip. Storage Bldg. Portable Used (	250	1,000	PL, VC	GBAP and/or Active Containment
F7 B	1	Site Mobile Equip. Storage Bldg. Portable Used (	250	250	PL, VC	GBAP and/or Active Containment
				1,810,403		

Appendix C

Bulk Chemical Map

REID-GREEN-HMPL POWER PLANTS
SITE LAYOUT
TIER II



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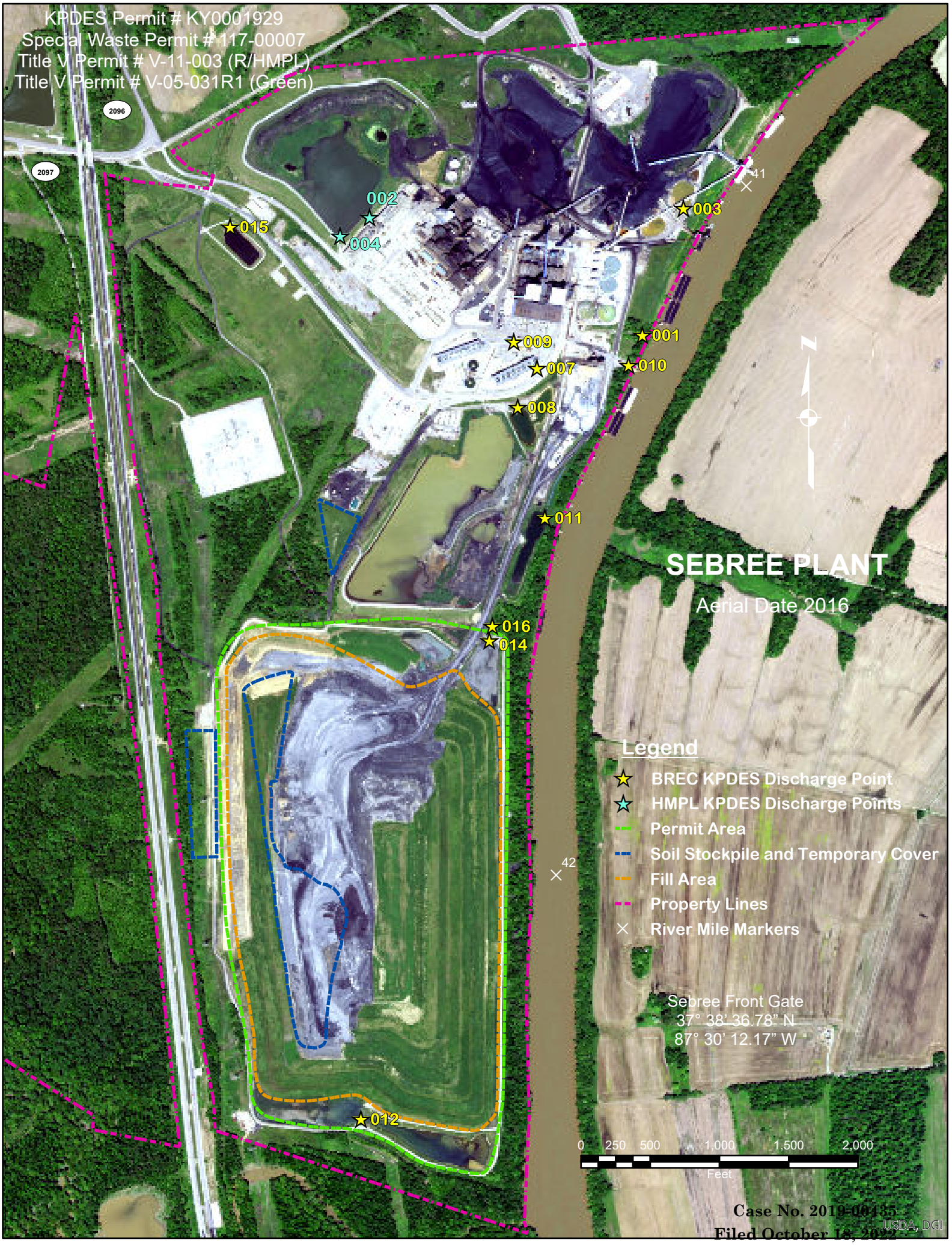
Appendix D

KPDES Outfall Map & Table



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1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. Compliance Monitoring Locations (Outfalls)

The following table lists the outfalls authorized by this permit, the location and description of each, and the DOW assigned KPDES outfall number:

TABLE 1.

Outfall No.	Outfall Type	Latitude (N)	Longitude (W)	Receiving Water	Description of Outfall
001	External	37.64472°	87.49778°	Green River	Combination of Once-Through Cooling Water, Ash Pond Discharge, City of Henderson Wastewater Treatment Plant discharge, stormwater runoff from FGD landfill, landfill leachate, and Cooling Tower Blowdown
002	Internal	37.64694°	87.50472°	Outfall 001 and Outfall 004	Henderson Units 1 & 2 Cooling Towers Blowdown
003	External	37.64722°	87.49667°	Green River under Emergency Conditions; Outfall 009 under Normal Conditions	Coal Stockpile Runoff and slaker building sump pumps
004	Internal	37.64667°	87.50528°	Outfall 001	Current - Reid Ash Pond Discharge containing process waters (ash transport waters, air preheater and precipitator wash waters, and low volume wastewater), cooling tower blowdown, and stormwater. Future – Same flows except ash sluicing will cease by July 1, 2023.
007	Internal	37.64417°	87.50028°	Outfall 001	Green Units 1 & 2 Cooling Towers Blowdown
008	External	37.64333°	87.50083°	Outfall 009	Metal Cleaning Wastewater and stormwater
009	Internal	37.64667°	87.50528°	Outfall 001	Current – Green Ash Pond Discharge containing process waters (ash transport waters, metal cleaning wastes, coal pile runoff, precipitator wash waters, and low volume wastewater), landfill leachate, and stormwater. Future – Same flows except ash sluicing will cease by July 1, 2023.
010	External	37.64317°	87.49806°	Green River	Plant Intake
011	External	37.64111°	87.51167°	Green River	Stormwater runoff from CSI yard
012	External	37.62917°	87.50444°	Green River under Emergency Conditions; Outfall 009 under Normal Conditions	Stormwater runoff from the south area of the FGD landfill and landfill leachate
014	External	37.63861°	87.50139°	Green River under Emergency Conditions; Outfall 009 under Normal Conditions	Stormwater runoff from the east and north areas of the FGD landfill and landfill leachate

TABLE 1.					
Outfall No.	**Outfall Type**	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
015	External	37.64694°	87.50806°	Unnamed Tributary to Groves Creek	Stormwater runoff from Henderson Units H-1 and H-2 (plant area, cooling tower, and scrubber)

1.2. Effluent Limitations and Monitoring Requirements

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 001 shall comply with the following effluent limitations:

TABLE 2.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Day	Instantaneous
Temperature	°F	N/A	N/A	N/A	Report	96	N/A	1/Day	Log
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Month	Grab
Total Recoverable Iron	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Month	Grab
Chronic WET[1]	TU_C	N/A	N/A	N/A	N/A	N/A	2.35	1/Quarter	([2])
Acute WET[1,3]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Month	([4])
Total Recoverable Antimony[5]	mg/l	N/A	N/A	N/A	0.562	Report	N/A	1/Month	Grab
Total Recoverable Arsenic[5]	mg/l	N/A	N/A	N/A	0.135	0.306	N/A	1/Month	Grab
Total Recoverable Beryllium[5]	mg/l	N/A	N/A	N/A	0.401	Report	N/A	1/Month	Grab
Total Recoverable Cadmium[5]	mg/l	N/A	N/A	N/A	Report	0.005	N/A	1/Month	Grab
Total Recoverable Chromium[5]	mg/l	N/A	N/A	N/A	10.033	Report	N/A	1/Month	Grab
Total Recoverable Copper[5]	mg/l	N/A	N/A	N/A	0.017	0.028	N/A	1/Month	Grab
Total Recoverable Lead[5]	mg/l	N/A	N/A	N/A	0.008	0.217	N/A	1/Month	Grab
Total Recoverable Mercury[5]	mg/l	N/A	N/A	N/A	0.000046	0.0013	N/A	1/Month	Grab
Total Recoverable Nickel[5]	mg/l	N/A	N/A	N/A	0.096	0.867	N/A	1/Month	Grab
Total Recoverable Selenium[5]	mg/l	N/A	N/A	N/A	0.0045	Report	N/A	1/Month	Grab
Total Recoverable Silver[5]	mg/l	N/A	N/A	N/A	Report	0.015	N/A	1/Month	Grab
Total Recoverable Thallium[5]	mg/l	N/A	N/A	N/A	0.00042	Report	N/A	1/Month	Grab
Total Recoverable Zinc[5]	mg/l	N/A	N/A	N/A	0.222	0.222	N/A	1/Month	Grab
[1]WET – Whole Effluent Toxicity									

Appendix E

Storm Water Pollution Prevention Practices

Storm Water Pollution Prevention Practices for Big Rivers Electric Corporation Sebree Station

Big Rivers Electric Corporation Reid/Green/HMP&L Station II is regulated under a KPDES (Kentucky Pollutant Discharge and Elimination System) permit KY0001929. Since the facility is a KPDES regulated facility, the plant is not required to have a Storm Water Pollution Prevention Plan instead the site maintains a BMP (Best Management Practices Plan). Therefore, as part of our Best Management Practices we have included information in regards to our efforts to prevent storm water pollution.

Big Rivers will individually evaluate special circumstance discharges and implement practices that will minimize any adverse impact to human health and the environment. Some of these methodologies could include, but are not limited to:

1. Riprap rock to minimize scour or erosion;
2. Valving to outfall structures to slow or eliminate flow as needed;
3. Benching and/or hydroseeding of areas where vegetation is inadequate;
4. Fiber rolls;
5. Polyacylamide application (or equivalent, as permitted by discharge permits);
6. Bioswale usage;
7. Other erosion control methodologies.

The facility participates in a multitude of prevention methods to keep from polluting storm water. The facility practices good housekeeping by cleaning up trash and debris and routinely checking areas of risk that could possibly lead to contamination of storm water. Inspection of the drum storage area is part of the best management practices check that is done on a routine basis. The area is examined for any unlabeled and leaking drums. Secondary containment is the method utilized to ensure that bulk tanks at the station are not causing storm water pollution.

The tanks listed in the BMP illustrate the use of secondary containment in many forms such as double walled tanks or earthen berms. In addition, all staff are trained on an annual basis on how to take care of spills as part of our annual Spill Prevention Control and Counter Measure plan. The potential to affect storm water from day to day practices on site exist, but the facility puts the upmost effort into maintaining compliance through the preventative methods listed above. The site has also created a storm water pollution check sheet for the silt fences that is completed when required to illustrate the facility's ongoing efforts to prevent storm water pollution. Please note, the silt fence form is completed only when there is greater than one acre of disturbance of the soil.

Silt fences are routinely inspected as shown on the check sheet, when applicable. The silt fences aid in preventing the routine dirt work that occurs at Reid/ Green/HMP&L Station II from causing any erosion or pollution of storm water. In areas where dirt work has occurred, the areas will be vegetated as soon as is practical and routinely inspected thereafter. The silt fences will aid in preventing any further erosion resulting from the dirt work. Other control measures will be put in place as seen needed during our annual plant review of the Best Management Plan.

Storm Water Pollution Prevention Plan Silt Fence Weekly Inspection List				
Silt Fencing Inspection Date	**Location**	**Condition**	**Notes**	**Initials**
Please note any signs of erosion or need for additional silt fencing and any other items that would result in storm water pollution that were identified during this site inspection, in the adjacent space.				

Appendix F

BREC Final Rule CCR Impoundment 7-Day Comprehensive Inspection & BREC Final Rule CCR Landfill 7-Day Comprehensive Inspection Checklists

BREC Final Rule CCR Impoundment 7-Day Comprehensive Inspection Checklist

Generating Station: _____	Weather: _____
Impoundment: _____	Temperature: _____
Date: _____	Inspector/Qualified Person: _____

	ITEM	STATUS YES	STATUS NO	STATUS N/A	OBSERVATIONS	ACTION Repair
1	**TOP OF DAM**					
	Visual settlement	☐	☐	☐		☐
	Misalignment	☐	☐	☐		☐
	Cracking	☐	☐	☐		☐
	Access road deterioration (potholes, rutting, etc.)	☐	☐	☐		☐
2	**UPSTREAM SLOPE**					
	Any erosion	☐	☐	☐		☐
	Longitudinal cracks	☐	☐	☐		☐
	Transverse cracks	☐	☐	☐		☐
	Adequate vegetative cover	☐	☐	☐		☐
	Are trees growing on the slope	☐	☐	☐		☐
	Adequate riprap/slope protection	☐	☐	☐		☐
	Visual depressions	☐	☐	☐		☐
	Visual settlement	☐	☐	☐		☐
	Any stone deterioration	☐	☐	☐		☐
	Debris or trash present	☐	☐	☐		☐
3	**DOWNSTREAM SLOPE AND TOE**					
	Any erosion	☐	☐	☐		☐
	Longitudinal cracks	☐	☐	☐		☐
	Transverse cracks	☐	☐	☐		☐
	Adequate vegetative cover	☐	☐	☐		☐
	Are trees growing on the slope	☐	☐	☐		☐
	Visual depressions or bulges	☐	☐	☐		☐
	Visual settlement	☐	☐	☐		☐
	Animal Burrows	☐	☐	☐		☐
	Are boils present at the toe or slopes	☐	☐	☐		☐
	Are drainage features obstructed or damaged	☐	☐	☐		☐
	Are drainage features flowing	☐	☐	☐		☐
	Is seepage present	☐	☐	☐		☐

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	ITEM	STATUS			OBSERVATIONS	ACTION
		YES	NO	N/A		Repair
	Is seepage or discharge carrying sediment	☐	☐	☐		☐
	Soft or spongy zones present	☐	☐	☐		☐
4	**ABUTMENTS**					
	Any erosion	☐	☐	☐		☐
	Visual differential movement	☐	☐	☐		☐
	Any cracks	☐	☐	☐		☐
	Are drainage features flowing	☐	☐	☐		☐
	Is seepage present	☐	☐	☐		☐
	Is seepage or discharge carrying sediment	☐	☐	☐		☐
5	**PRINCIPAL SPILLWAY**					
	Any deterioration of the spillway structure	☐	☐	☐		☐
	Any deterioration of the spillway conduit	☐	☐	☐		☐
	Spillway clear from obstructions	☐	☐	☐		☐
	Is the spillway functioning and discharging correctly	☐	☐	☐		☐
	Trash racks or skimmer operational	☐	☐	☐		☐
	Any signs of leakage with the structure or conduit	☐	☐	☐		☐
	Abnormally high or low pool elevation	☐	☐	☐		☐
6	**EMERGENCY SPILLWAY**					
	Any deterioration of the spillway structure	☐	☐	☐		☐
	Spillway clear from obstructions	☐	☐	☐		☐
	Signs or erosion or slope sloughing	☐	☐	☐		☐
	Adequate vegetative cover	☐	☐	☐		☐
	Signs of or currently discharging water	☐	☐	☐		☐
7	**VALVES/GATES**					
	Are the valves/gates operational	☐	☐	☐		☐
	Are the valves/gates broken or bent	☐	☐	☐		☐
	Are the valves/gates corroded or rusted	☐	☐	☐		☐
	Have the valves/gates been maintained	☐	☐	☐		☐
8	**HYDRAULIC STRUCTURES UNDER/THROUGH DAM**					
	Hydraulic structures under/through embankment are in safe and reliable operating condition	☐	☐	☐		☐
	Abnormal flow	☐	☐	☐		☐
	Abnormally colored discharge	☐	☐	☐		☐
	Debris or sediment in discharge	☐	☐	☐		☐
9	**SITE SPECIFIC AREAS OF CONCERN**					
	Seepage from toe drain	☐	☐	☐		☐

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ITEM		STATUS			OBSERVATIONS	ACTION
		YES	NO	N/A		Repair
	Seepage from abutment drain	☐	☐	☐		☐
	Seepage from blanket drain	☐	☐	☐		☐
	Seepage from previously identified areas	☐	☐	☐		☐

COMMENTS AND OBSERVATIONS

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BREC Final Rule CCR Landfill 7-Day Comprehensive Inspection Checklist

Generating Station: _____	Weather: _____
Landfill: _____	Temperature: _____
Date: _____	Inspector/Qualified Person: _____

	ITEM	STATUS			OBSERVATIONS	ACTION
		YES	NO	N/A		Repair
1	**CONDITION OF INACTIVE AREA**					
	Access road deterioration (potholes, rutting, etc.)	☐	☐	☐		☐
	Any erosion	☐	☐	☐		☐
	Longitudinal cracks	☐	☐	☐		☐
	Transverse cracks	☐	☐	☐		☐
	Visual depressions	☐	☐	☐		☐
	Visual settlement	☐	☐	☐		☐
	Bulging or slumping	☐	☐	☐		☐
	Any drainage features obstructed or damaged	☐	☐	☐		☐
	Are drainage features flowing	☐	☐	☐		☐
	Is seepage present	☐	☐	☐		☐
	Is seepage or discharge carrying sediment	☐	☐	☐		☐
	Adequate vegetative cover	☐	☐	☐		☐
	Are trees growing on the slope	☐	☐	☐		☐
	Adequate riprap/slope protection	☐	☐	☐		☐
	Debris or trash present	☐	☐	☐		☐
	Is there exposed CCR material	☐	☐	☐		☐
2	**CONDITION OF ACTVE AREA**					
	Access road deterioration (potholes, rutting, etc.)	☐	☐	☐		☐
	Any erosion	☐	☐	☐		☐
	Any cracks	☐	☐	☐		☐
	Any slides	☐	☐	☐		☐
	Visual depressions	☐	☐	☐		☐
	Visual settlement	☐	☐	☐		☐
	Bulging or slumping	☐	☐	☐		☐
	Any drainage features obstructed or damaged	☐	☐	☐		☐
	Are drainage features flowing	☐	☐	☐		☐
	Is seepage present	☐	☐	☐		☐
	Is seepage or discharge carrying sediment	☐	☐	☐		☐
	Adequate vegetative cover	☐	☐	☐		☐

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	ITEM	STATUS			OBSERVATIONS	ACTION
		YES	NO	N/A		Repair
	Are trees growing on the slope	☐	☐	☐		☐
	Adequate riprap/slope protection	☐	☐	☐		☐
	Any stone deterioration	☐	☐	☐		☐
	Debris or trash present	☐	☐	☐		☐
3	**LINER AND LEACHATE COLLECTION**					
	Are liners intact and being installed correctly	☐	☐	☐		☐
	Is the leachate collection operating correctly	☐	☐	☐		☐
	Is the leachate collection pond functioning correctly	☐	☐	☐		☐
	Is there any slope/bank erosion	☐	☐	☐		☐
	Are there any animal burrows	☐	☐	☐		☐
	Is the spillway functioning and discharging correctly	☐	☐	☐		☐
4	**RUN-ON/RUNOFF-CONTROLS**					
	Are run-on/runoff controls in place	☐	☐	☐		☐
	Are run-on/runoff controls functioning	☐	☐	☐		☐
	Are run-on/runoff controls effective	☐	☐	☐		☐
	Are run-on runoff controls being maintained	☐	☐	☐		☐
	Signs of seepage or wetness	☐	☐	☐		☐
	Sediment transport or deposition	☐	☐	☐		☐

COMMENTS AND OBSERVATIONS

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Appendix G

Leachate Management Standard Operating Procedures

Exhibit 1

Leachate Management Standard Operating Procedures

Green Landfill and Green Surface Impoundment

Subject: Surface Seep and Leachate Outbreaks Repair

To ensure compliance with 40 CFR 257 Subpart D and 401 KAR Chapters 45 and 46, the following procedure will be utilized for identification and repair of seeps and leachate outbreaks at CCR landfills and surface impoundments. For purposes of this SOP, a leachate outbreak is wastewater/seepage flowing directly from the covered CCR that has passed through or emerged from solid waste and contains soluble, suspended or miscible materials removed from such wastes. Seeps are flows that emerge from the ground immediately below the actual waste disposal area and that may contain leachate that is mixed with water from saturated soils or surface water infiltration.

- An inspection by a qualified person will be conducted once per week to identify any seeps and leachate outbreaks at CCR landfills and CCR surface impoundments. The inspection will include the entire perimeter of both the Green Landfill and Green Surface Impoundment as weather conditions allow at the time of the inspection. The weather conditions at the time of the inspection must be documented on the inspection form.
- Identified seeps and leachate outbreaks must be located and documented by Global Positioning Satellite (GPS) and digital photography.
- Identified seeps and leachate outbreaks must be quantified as to the amount of standing or flowing water in gallons per minute. Measurements or estimates of the impacted area in square feet must be included. Other information relevant to remediation of the outbreak or seep shall be included on the BREC inspection form.
- All information fields on the BREC inspection form shall be completed.
- Categorize the seep or leachate outbreak into one of three categories:
    - Category 1 – Leachate/seep flow is contained within a drainage ditch and pond system that flows to a KPDES permitted outfall and the outbreak or seep is readily repairable by removing the impacted area and replacing the cover dirt with compacted clay, seeded and mulched, when the soil conditions are not too wet to preclude typical construction activities or the ambient temperature is not too low to preclude typical construction activities. For purposes of this determination, readily repairable is an outbreak or seep that can reasonably be believed to be remediated by removing the impacted area and replacing the cover with compacted clay. This determination requires the judgment of the inspector based upon the size, flow, and any repeat history of the outbreak or seep. For any area where there is no visible flow and no rutting/erosion of the soil from prior flow(s),but only saturated soil, then such an area will not be

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identified as a seep/leachate outbreak but will be identified and recorded as "saturated soil" in the log and monitored during subsequent weekly inspections.
    - Category 2 – Leachate/seep is contained within a drainage ditch and pond system that flows to a KPDES permitted outfall but requires further investigation and evaluation prior to any attempt at remediation or if initial remediation efforts prove to be unsuccessful.
    - Category 3 – Leachate/seep is not contained within the KPDES permitted ditch and pond system. Any areas of leachate/seep discharges that are identified must be remediated, contained or routed to the KPDES permitted ditch and pond system if the seep displays a visible flow. Actions must begin immediately to prevent an unpermitted point source discharge to a water of the United States by remediating the outbreak or seep.
- Steps to take if a Category 1 seep/leachate outbreak reappears:
    - If a Category 1 seep/leachate outbreak reappears more than 30 days after a previous repair and the flow from the seep/leachate outbreak has been reduced or the extent of the impact is reduced from the initial identification of the seep/leachate outbreak, then Big Rivers may classify the reappearance of the seep/leachate outbreak as a Category 1 seep/leachate outbreak and commence repairs per the Agreed Order (excavate, compact, seed, and mulch.)
    - For any area where there is no visible flow and no rutting/erosion of the soil from prior flow(s), but only saturated soil, then such an area will not be identified as a seep/leachate outbreak but will be identified and recorded as "saturated soil" in the log and monitored during subsequent weekly inspections.
    - Seeps/leachate outbreaks that reappear less than 30 days after a repair or that reappear at a later date with increased flow or impact area will be classified as a Category 2.
- Collect water samples for constituents listed in Table 1. A water sample will only be collected for analysis when a sufficient amount of water is flowing on the surface to collect a sample without disturbing the underlying soil. Samples will be collected once for each categorization unless there are visual changes such as color in the leachate. Seep/leachate water samples will be collected once when identified as a Category 1 and again if reclassified as a Category 2. The analysis will be performed by a laboratory certified in the State of Kentucky. The analysis must contain the chain of custody and complete analysis with QA/QC results. Results will be maintained in the Landfill operating log on-site.
- Place categorized information in the Landfill operating log.
- Corrective actions for readily repairable seeps and leachate outbreaks must begin as soon as reasonably feasible with consideration given to inclement weather patterns and soil moisture conditions.
- Remediation areas outside the KPDES permitted ditch and pond system must include the installation of sedimentation controls as found in the Storm Water Pollution Prevention Plan/Best Management Plan guidance document published by the Kentucky Division of Water. Water samples from seeps containing a visible flow shall be taken for impacted

areas outside the KPDES permitted ditch and pond system and analyzed for the constituents found in Table 1.

- Cover soil and/or special waste removed during the remediation process must be placed in an active area of a CCR landfill or reused during the remediation of the unit if practicable.
- Replacement soil must be compacted, seeded and mulched.
- Environmental Services shall evaluate and determine remediation plans for a Category 2 seep/leachate outbreak that is deemed not readily repairable based upon flow and landfill conditions. Until remediation occurs, the seep/leachate flow shall be visually monitored, conveyed to a KPDES permitted outfall, and treated as necessary to ensure compliance with KPDES discharge limits and applicable water quality standards in the receiving stream. Remediation activities required for a Category 2 outbreak will be sent to the Division of Waste Management, 300 Sower Boulevard, Frankfort, Kentucky 40601 within five (5) business days of finalizing the report.
- Category 3 seeps displaying a visual flow will be reported to the Kentucky Division of Water – Surface Water Permits Branch in Frankfort, Kentucky and the Madisonville Field Office consistent with the Section 2.12 reporting provisions of the KPDES permit for leachate/seep outbreaks. Category 3 seeps with a visual flow will also be reported to the Kentucky Division of Waste Management – Field Operations Branch in Frankfort, Kentucky and the Madisonville Field Office. Reporting of the seeps shall occur as soon as feasible after discovery of such a seep, but no later than ten (10) days after discovery. Environmental Services shall evaluate and determine remediation plans for a Category 3 seep that is deemed not readily repairable based upon flow and landfill conditions.

These protocols shall be followed at CCR units subject to the federal CCR Rule and 401 KAR Chapter 46.

- Table 1
  - From 40 CFR 257 App. III
    - Boron
    - Calcium
    - Chloride
    - Fluoride
    - pH
    - Sulfate
    - Total Dissolved Solids
  - From 40 CFR 257 App. IV
    - Antimony
    - Arsenic
    - Barium
    - Beryllium
    - Cadmium
    - Chromium
    - Cobalt

        - Fluoride
        - Lead
        - Lithium
        - Mercury
        - Molybdenum
        - Selenium
        - Thallium
        - Radium 226 and 228 combined
    - From 401 KAR 45:160
        - *Chemical Oxygen Demand
        - *Total Organic Carbon
        - *Specific Conductance
        - *Copper
        - *Nickel
        - *Zinc
        - *Iron
        - *Sodium
        - *Magnesium
        - *Potassium
        - *Bicarbonate
        - *Carbonate

Appendix H

Seep Operating Log

Big Rivers Electric Corporation Sebree Station - Seep Identification Log

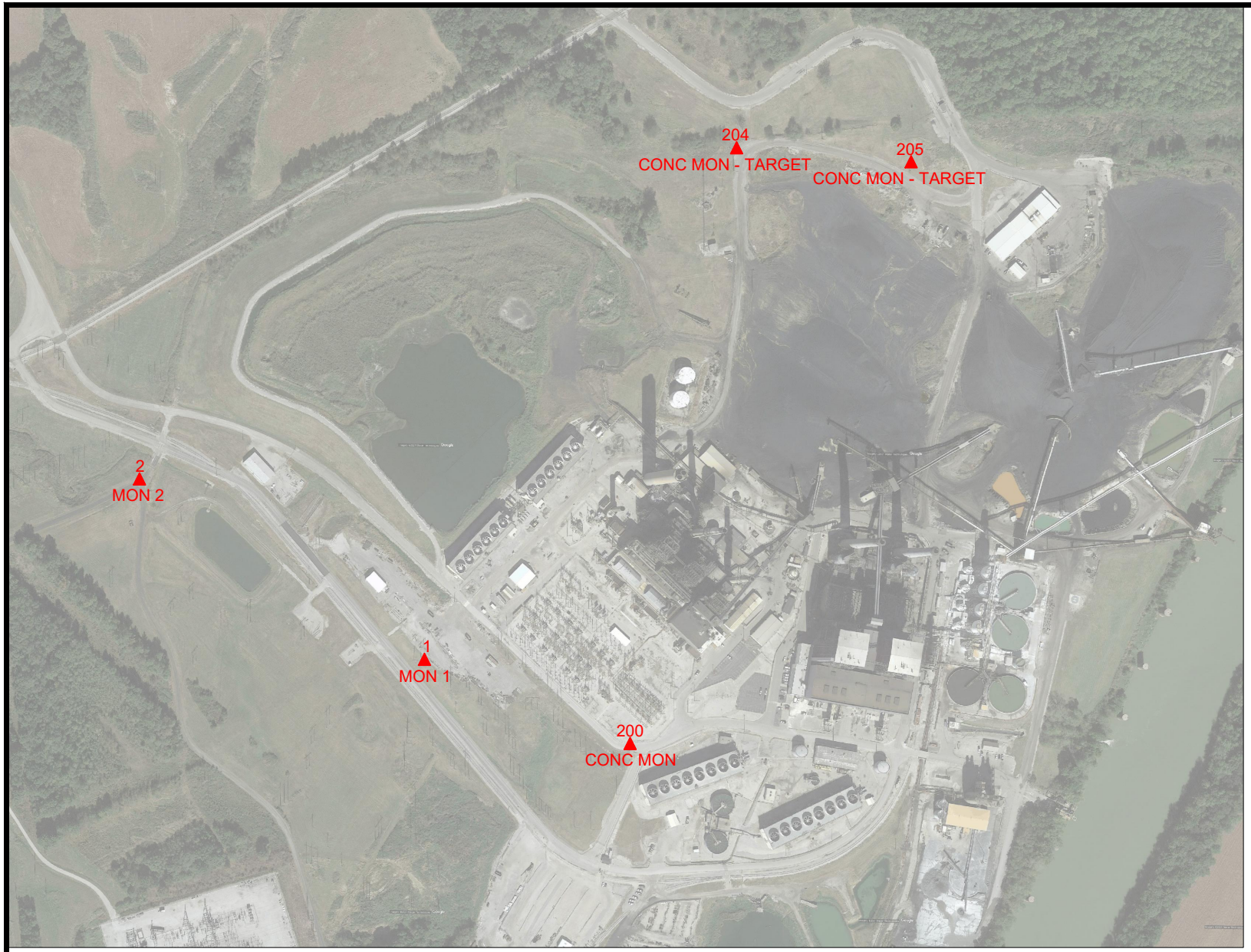
Name on GPS	Date Created	Category	Agency Notification	Latitude	Longitude	Elevation (ft)	Description/Size of Area	Flow (~gpm)	Link to Pictures of affected area	GPS of Soil Disposal Location			Corrective Action Taken	Laboratory Analyses	Comment	Note:
										Latitude	Longitude	Elevation				

Appendix I

Sebree Station Safety Data Sheets

Located on Sebree station msds on msserver2

ATTACHMENT D – SURVEY CONTROL



PointNo.	Northing(Y)	Easting(X)	Elev(Z)	Description
1	482455.470	1491729.920	425.84	MON 1
2	483068.070	1490762.880	389.50	MON 2
200	482169.715	1492427.956	423.32	CONC MON
204	484191.765	1492790.065	457.89	CONC MON - TARGET
205	484144.337	1493381.966	451.65	CONC MON - TARGET

SEBREE STATION - SURVEY CONTROL

BIG RIVERS

Job Number:	21-0031
Date:	03-23-21
Scale:	1"=500'
Drawn By:	M. CURRY

PAGE 1 OF 1

0 500 1,000

SCALE: 1" = 500'

ASSOCIATED ENGINEERS, INC.
ENGINEERS • GEOLOGISTS • SURVEYORS
2740 North Main St. • Madisonville, KY 42431
Phone: (270) 821-7732 • Fax: (270) 821-7789
www.associatedengineers.com

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Filed October 18, 2022

REFERENCE – S&ME GEOTECHNICAL EXPLORATION DATA REPORT

Geotechnical Exploration – Data Report
Green Station
Robards, Kentucky
S&ME Project No. 1178-19-003

PREPARED FOR:

Big Rivers Electric Cooperative
201 Third Street
Henderson, KY 42420

PREPARED BY:

S&ME, Inc.
862 East Crescentville Road
Cincinnati, OH 45246

August 1, 2019

August 1, 2019

Big Rivers Electric Corporation
201 Third Street
Henderson, KY 42420

Attention: Mr. Ronald Gregory
Ronald.Gregory@bigrivers.com

Reference: **Geotechnical Exploration – Data Report**
Green Station
Robards, Kentucky
S&ME Project No. 1178-19-003

Dear Mr. Gregory:

S&ME, Inc. (S&ME) has completed geotechnical explorations for the above referenced project in accordance with our proposal dated February 18, 2019, which was authorized by Big Rivers Electric Cooperative (BREC) by Purchase Order No. 253766 dated March 12, 2019. For this portion of the project, a total of 14 explorations (soil borings and CPT soundings) were performed in the field by S&ME personnel, as directed by Burns & McDonnell (B&McD) personnel. The exploration associated with Coleman Station is submitted under separate cover.

We appreciate having been given the opportunity to be of service on this project. If you require additional assistance or have any questions, please feel free to contact our office at any time.

Sincerely,

S&ME, Inc.

Andrew M. Fiehler, PE
Project Manager

Benjamin C. Dusina, PE
Senior Engineer

Submitted: Electronic copy to BREC and B&McD

Table of Contents

Appendices

1.0 Introduction

S&ME, Inc. (S&ME) has completed geotechnical explorations for the above referenced project in accordance with our proposal dated February 18, 2019, which was authorized by Big Rivers Electric Cooperative (BREC) by Purchase Order No. 253766 dated March 12, 2019. For this portion of the project, a total of 14 explorations (soil borings and CPT soundings) were performed in the field by S&ME personnel, as directed by Burns & McDonnell (B&McD) personnel.

2.0 Field Exploration Procedures

2.1.1 Drilling and CPT Soundings

Between April 1 and May 24, 2019, a total of 10 soil test borings and four cone penetrometer (CPT) soundings were performed at the site. The borings as B-1 through B-10 and the CPT soundings were labeled as P-1 through P-4.

Depending on the location, the soil test borings were drilled using either an amphibious Diedrich D-50, a barge with a CME 45C or ATV-mounted CME 550 drill rig. The CPT soundings were performed with an ATV mounted direct-push/CPT rig. The exploration locations are shown as Figure 2of Appendix I. Boring locations and surface elevations for the land based borings were located with survey grade GPS equipment. The water based borings locations (those performed with the amphibious drill rig) were measured with a hand-held GPS unit with sub-meter horizontal accuracy. A description of the Field Testing Procedures is included in Appendix II and summarized below.

The borings performed were advanced using a combination of conventional augers and mud rotary drilling techniques. Disturbed, but representative, soil samples were attempted at regular intervals using a 2-inch O.D. split barrel sampler. The sampler was lowered through the auger to the bottom of the boring and then driven 18 inches into the soil with blows from a 140 pound hammer freely falling 30 inches (Standard Penetration Test, ASTM D-1586). The SPT hammer efficiency for the amphibious D-50 drill rig is 84%, the hammer efficiency for the barge CME 45C is 94%, and the hammer efficiency for the ATV CME-550 drill rig is 85%. Split-barrel samples were examined immediately after recovery and representative portions of each sample were placed in air-tight jars and retained for subsequent laboratory testing. Undisturbed samples were collected using pushed Shelby tubes. Shelby tubes were cleaned and sealed with wax to prevent loss of moisture and retained for subsequent laboratory testing.

In the field, S&ME personnel provided overall supervision of the drilling and sampling procedures including the following specific duties: 1) examined all samples recovered from the borings; 2) preserved representative portions of all samples in airtight glass jars; 3) prepared a log of the borings; 4) made seepage and groundwater observations;; and, 5) provided liaison between the field work and the undersigned Senior Reviewer so that the exploration program could be modified in the event unusual or unexpected subsurface conditions were encountered.

At the completion of drilling, the borings were backfilled with cement bentonite grout. The recovered samples were then transported to the soils laboratory of S&ME for further examination and testing.

2.2 Geophysical Exploration

2.2.1 Geophysical Testing Methodology

S&ME performed downhole seismic measurements in two (2) of the CPT soundings in general accordance with ASTM D7400 at the requested locations. The downhole seismic testing from the CPT soundings are included in Appendix V.

2.2.2 Limitations

The geophysical methods of this survey have inherent limitations and active site activity (e.g. generators, heavy equipment, etc.) can cause noise/interference in the data sets. Depth restrictions are also associated with the methods and the energy source. Depth of penetration using surface wave methods is mainly controlled by the shear properties of the subsurface materials and frequency range of site surface waves (generated active or ambient passive). Generally, penetration depth is greater for stiffer profiles as the signal does not attenuate as rapidly. However, because very small strain is required to determine the shear properties, sometimes velocities of very stiff materials are difficult to obtain using traditional active or ambient sources. Regardless of the thoroughness of a geophysical study, there is always a possibility that actual conditions may not match the interpretations. The results should be considered accurate only to the degree implied by the methods used and the method's limitations and data coverage.

This report has been prepared in accordance with generally accepted geophysical practice for specific application to this project. The conclusions contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, expressed or implied, is made.

3.0 Subsurface Conditions

3.1 Geology

The Geologic map of the Robards Quadrangle (1973) indicates the Green Generating Station is underlain by a combination of alluvial deposits from the Green River, Pleistocene Era loess deposits, and the Middle Pennsylvanian aged Carbondale Formation.

The alluvium is comprised of silt, clay, sand and gravel deposited during periodic flooding events. The mapping indicates the alluvium can be greater than 60 feet. Loess is windblown silt deposited in varying patterns and depths across the Midwest. In the region deposits of up to 20 feet thick have been mapped.

The Carbondale Formation is a mixture of siltstone, sandstone, shale and coal. Coring of the bedrock was not included in our exploration; however, several of our borings encountered weathered siltstone and shale at elevations ranging from about 378 feet to 328 feet. Coal mining as well as oil and gas wells are common in the

region. A review of the mine mapping database indicates an underground coal mine of the No. 9 Coal Bed is located about 1,000 feet north of the generating station.

A review of the Kentucky Geological Survey map reveals that no mapped Karst deposits or mapped abandoned underground mines are present in the vicinity of the site. Based on the Kentucky Karst Map, there is little Karst (sinkhole) formation in the vicinity of the site.

Soil samples were obtained with SPT and Shelby tube samples were obtained from numerous borings drilled and sampled in the ash pond, on the impoundment dikes and at selected sites around the dikes.

3.2 Soil Stratification

The soil test boings and CPT soundings encountered soils consistent with ash ponds constructed over alluvial soils. The berms around the ponds consisted of low plasticity (lean) clay (CL) with varying amounts of silt and sand. Beneath the berms, or in undeveloped portions of the site, we encountered layers of lean clay and sand that graded to sand and gravel with depth. Typically, the sand becomes coarser and the gravel diameter increases with depth along the Green River. Seven of the 10 borings and each of the four CPT soundings encountered bedrock at depths ranging from 25 to 71 feet below the ground surface.

Detailed Test Boring Records are included in Appendix II.

3.3 Groundwater Levels

Groundwater observations were made as each boring was being advanced based on moisture content of samples. Where possible, water level measurements were made upon completion of the boring and prior to backfilling. Where mud rotary drilling techniques were used, water level measurements were not possible at the completion of drilling operations. The water levels reported on the boring logs may not be representative of a "true" groundwater table. Note that the water level is dependent on the water level of the adjacent Green River. As the river level rises and falls so will the groundwater levels.

4.0 Laboratory Testing

The S&ME geologist and engineer sealed the soil samples in air tight glass jars and the Shelby Tube samples were sealed with wax and caps after retrieval. The samples were returned to our laboratory where the applicable laboratory tests were assigned. These tests are used to assess the engineering properties of the soil. The soil samples were visually classified by a geotechnical engineer according to the Unified Soil Classification System (ASTM D2487). We conducted the following laboratory testing:

- Natural moisture contents
- Atterberg limits tests
- Particle Size Analysis including percent finer than #200 and Specific Gravity measurements
- Unconfined Compressive strength tests
- Consolidated-Undrained (CU) triaxial shear strength test
- Unit weight determinations

The laboratory testing results and descriptions of tests performed are provided in Appendix III. The procedures used by S&ME for field and laboratory sampling and testing are in general accordance with ASTM procedures and established engineering practice. Brief descriptions of the procedures used are included in the Appendices.

5.0 Limitations of Report

This report has been prepared for the exclusive use of BREC and its affiliates for specific application to this project. Our conclusions and recommendations have been prepared using generally accepted standards of geotechnical engineering practice in the Commonwealth of Kentucky. No other warranty is expressed or implied. S&ME is not responsible for the conclusions, opinions, or recommendations of others based on this data.

The findings discussed in this data report are based on conditions as they exist at the time of our field exploration and further on the consideration that the explorations are representative of subsurface conditions within the project site. They do not reflect variations in the subsurface conditions that are likely to exist between our borings, and in unexplored areas of the site due to the inherent variability of the encountered fill and the subsurface conditions in this geologic region. If such variations are found during construction, re-evaluating our conclusions and recommendations will be necessary.

The Test Boring Records present our interpretation of the subsurface conditions at specific boring locations at the time of our exploration. The stratification lines represent the approximate boundary between soil types. The actual transitions may be more gradual than implied.

For more information on the use and limitations of this report, please read the Geoprofessional Business Association (GBA) document that follows this page.

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

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problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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Appendix

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Appendix I – Vicinity Map and Boring Location Plan

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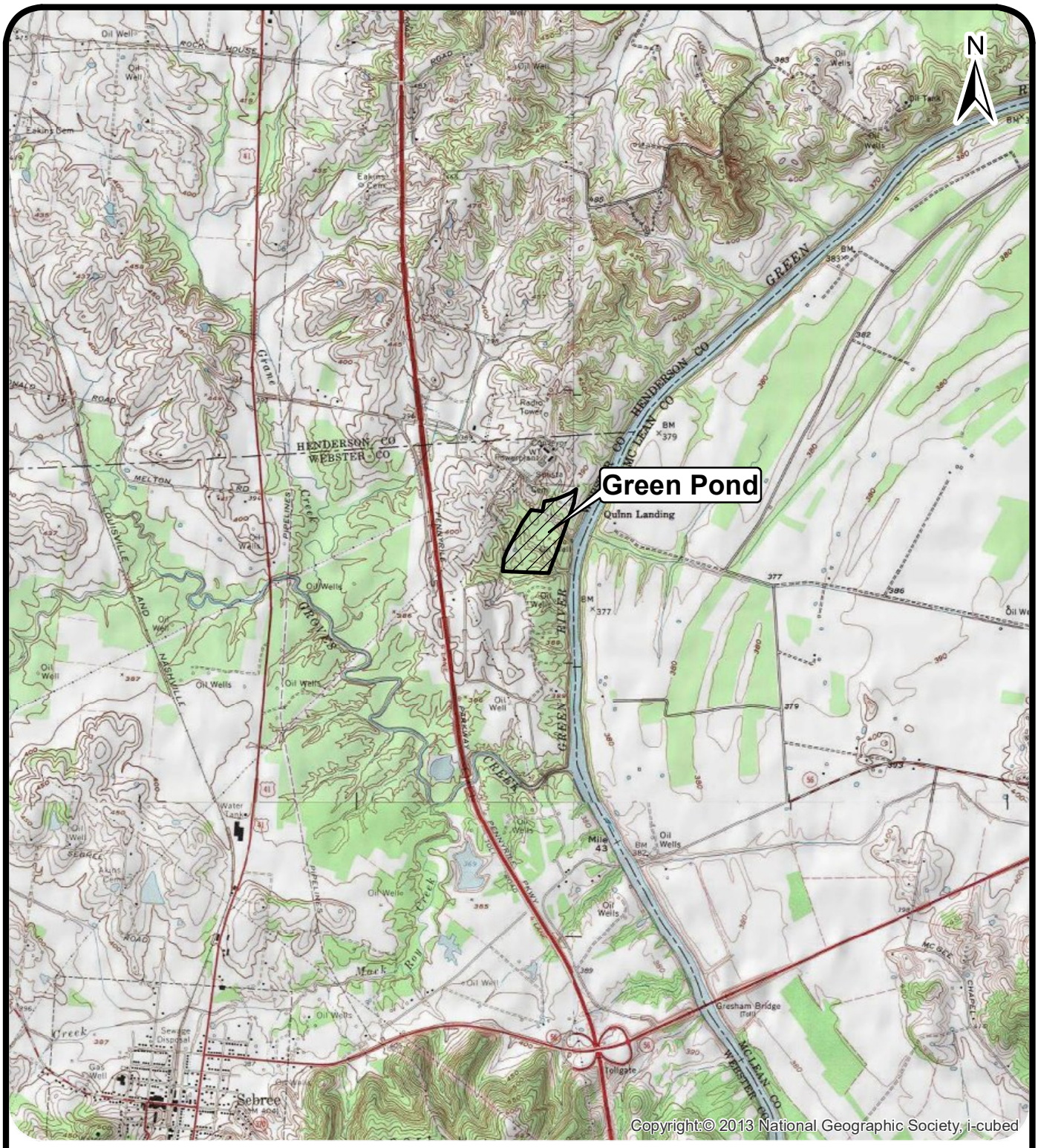
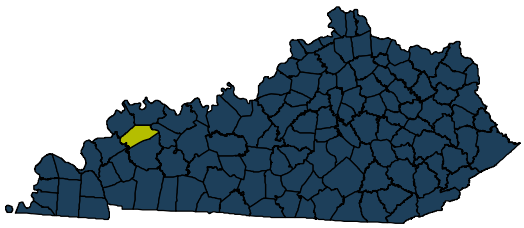




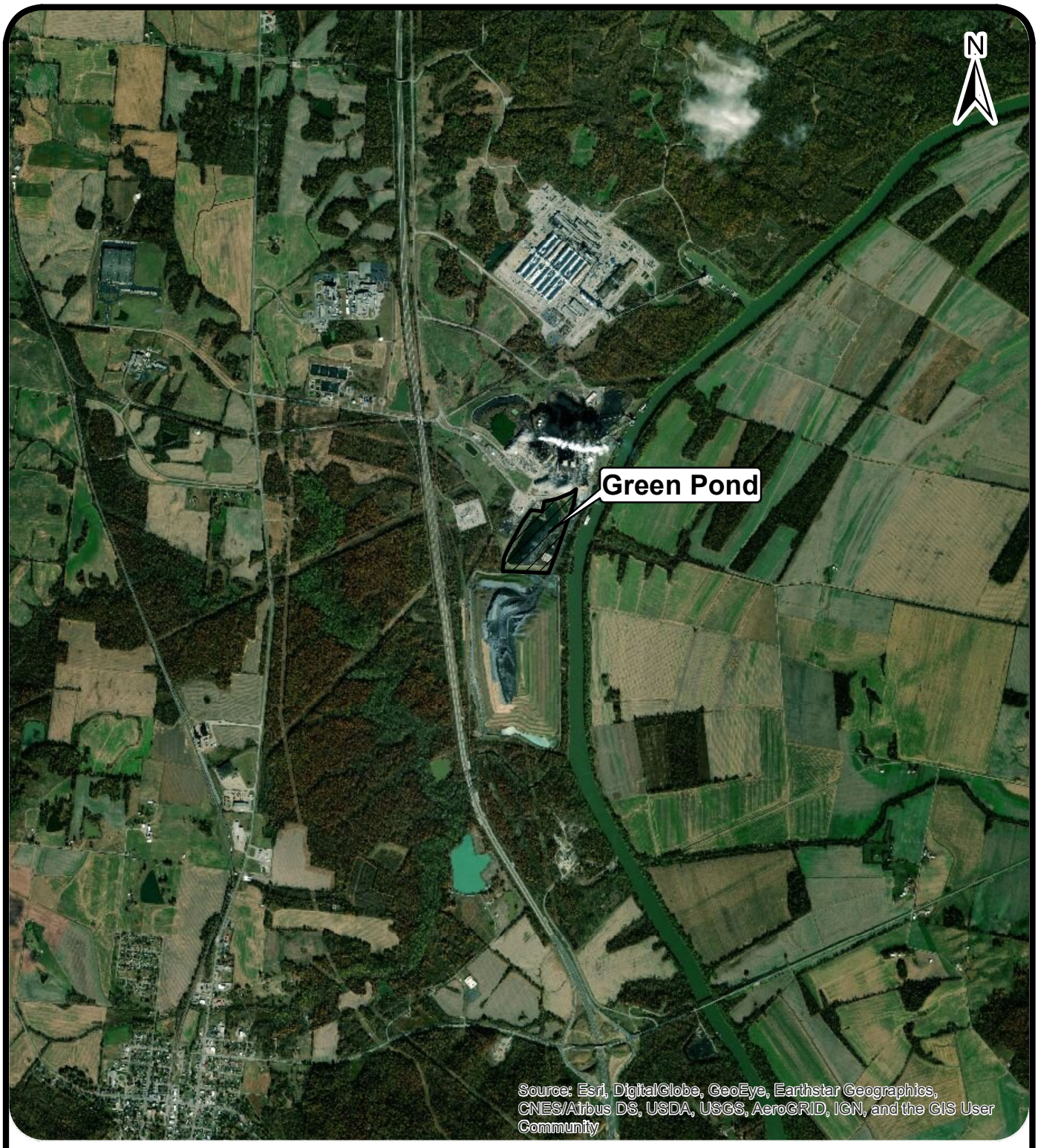
VICINITY MAP

BREC - GREEN GENERATING STATION
CCR IMPOUNDMENT
SEBREE, WEBSTER COUNTY, KY

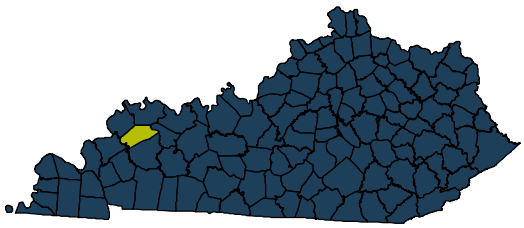
FIGURE NO. **1A**

SCALE:	1 inch = 4,000 feet
DATE:	7/31/2019
DRAWN BY:	JCH
PROJECT NO:	1178-19-003

Document Path: T:\Projects\2019\GEO\1178-19-003_BREC_Ash Ponds\GIS\1178-19-003 Vicinity_Map_Green Pond_TOPO.mxd



0 2,000 4,000 8,000 Feet



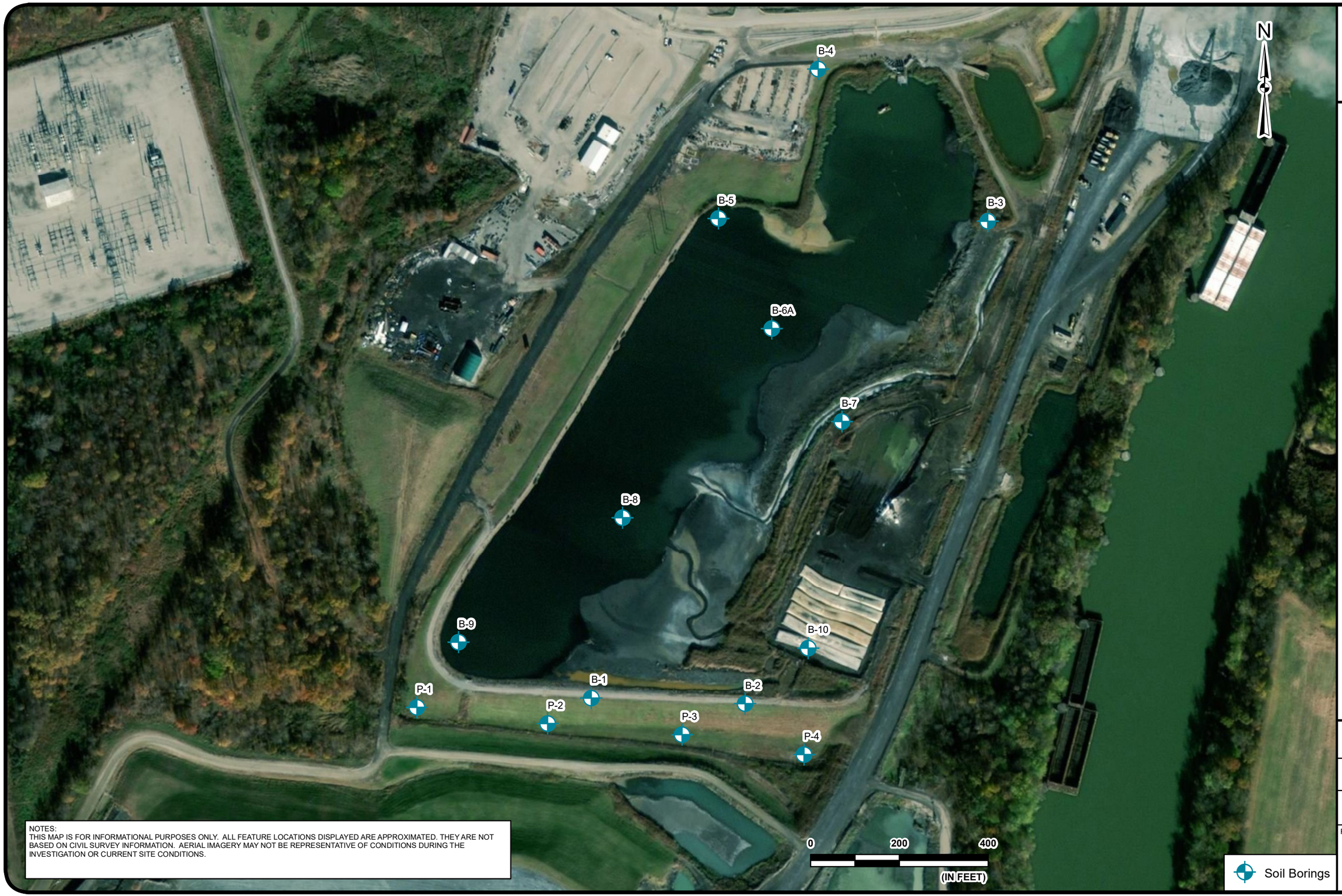
VICINITY MAP

BREC - GREEN GENERATING STATION
CCR IMPOUNDMENT
SEBREE, WEBSTER COUNTY, KY

FIGURE NO. **1B**

SCALE:	1 inch = 4,000 feet
DATE:	7/31/2019
DRAWN BY:	JCH
PROJECT NO:	1178-19-003

Document Path: T:\Projects\2019\GEO\1178-19-003_BREC_Ash Ponds\GIS\1178-19-003 Vicinity_Map_Green Pond_AERIAL.mxd



NOTES:
THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION. AERIAL IMAGERY MAY NOT BE REPRESENTATIVE OF CONDITIONS DURING THE INVESTIGATION OR CURRENT SITE CONDITIONS.

PLAN OF BORINGS
BREC - GREEN POND
SEBREE, WEBSTER COUNTY, KY

SCALE: 1 " = 200 '

DATE: 7/31/2019

PROJECT NO. 1178-19-003

FIGURE NO. **2**

T:\Projects\2019\GEO\1178-19-003_BREC_Ash Ponds\GIS\1178-19-003 POB_Green Station.mxd plotted by JHaydu 07-31-2019

Appendix II – Test Boring Records

Case No. 2019-00435
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TEST BORING RECORD LEGEND

FINE AND COARSE GRAINED SOIL INFORMATION

COARSE GRAINED SOILS (SANDS & GRAVELS)

N	Relative Density
0-4	Very Loose
5-10	Loose
11-20	Firm
21-30	Very Firm
31-50	Dense
Over 50	Very Dense

FINE GRAINED SOILS (SILTS & CLAYS)

N	Consistency	Qu, KSF Estimated
0-1	Very Soft	0-0.5
2-4	Soft	0.5-1
5-8	Firm	1-2
9-15	Stiff	2-4
16-30	Very Stiff	4-8
Over 31	Hard	8+

PARTICLE SIZE

Boulders	Greater than 300 mm (12 in)
Cobbles	75 mm to 300 mm (3 to 12 in)
Gravel	4.74 mm to 75 mm (3/16 to 3 in)
Coarse Sand	2 mm to 4.75 mm
Medium Sand	0.425 mm to 2 mm
Fine Sand	0.075 mm to 0.425 mm
Silts & Clays	Less than 0.075 mm

The **STANDARD PENETRATION TEST** as defined by ASTM D 1586 is a method to obtain a disturbed soil sample for examination and testing and to obtain relative density and consistency information. A standard 1.4-inch I.D./2-inch O.D. split-barrel sampler is driven three 6-inch increments with a 140 lb. hammer falling 30 inches. The hammer can either be of a trip, free-fall design, or actuated by a rope and cathead. The blow counts required to drive the sampler the final two increments are added together and designate the N-value defined in the above tables.

ROCK PROPERTIES

ROCK QUALITY DESIGNATION (RQD)

Percent RQD	Quality
0-25	Very Poor
25-50	Poor
50-75	Fair
75-90	Good
90-100	Excellent

ROCK HARDNESS

Very Hard:	Rock can be broken by heavy hammer blows.
Hard:	Rock cannot be broken by thumb pressure, but can be broken by moderate hammer blows.
Moderately Hard:	Small pieces can be broken off along sharp edges by considerable hard thumb pressure; can be broken with light hammer blows.
Soft:	Rock is coherent but breaks very easily with thumb pressure at sharp edges and crumbles with firm hand pressure.
Very Soft:	Rock disintegrates or easily compresses when touched; can be hard to very hard soil.

$$\text{Recovery} = \frac{\text{Length of Rock Core Recovered}}{\text{Length of Core Run}} \times 100$$

63 REC

$$\text{RQD} = \frac{\text{Sum of 4 in. and longer Rock Pieces Recovered}}{\text{Length of Core Run}} \times 100$$

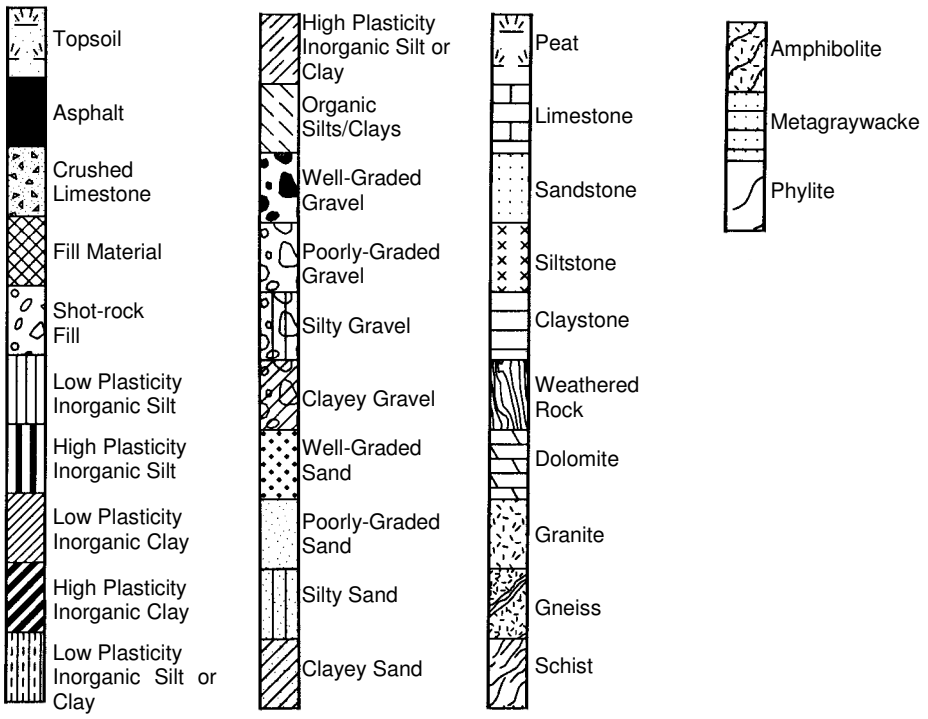
NQ

43 RQD

Core Diameter	Inches
BQ	1-7/16
NQ	1-7/8
HQ	2-1/2

SYMBOLS

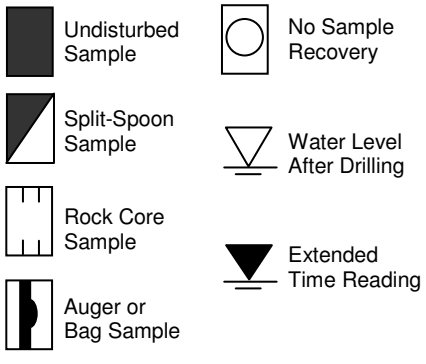
KEY TO MATERIAL TYPES



SOIL PROPERTY SYMBOLS

N:	Standard Penetration, BPF
M:	Moisture Content, %
LL:	Liquid Limit, %
PI:	Plasticity Index, %
Qp:	Pocket Penetrometer Value, TSF
Qu:	Unconfined Compressive Strength Estimated Qu, TSF
γ_D:	Dry Unit Weight, PCF
F:	Fines Content

SAMPLING SYMBOLS



Case No. 2019-00435

Filed October 18, 2022

BORING NO: **B-01**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 395.9	BORING STARTED: 4/17/2019	BORING COMPLETED: 4/17/2019
DRILLING METHOD: 3.25" HSA	RIG TYPE: ATV 550X	HAMMER: Auto
GROUNDWATER (ft): 27.1	BORING DIAMETER (IN):	SHEET 1 OF 2

Remarks:
- Encountered groundwater at 27.1 feet.
- Groundwater measured at 33.7 feet at completion.
- Boring sealed with bentonite-cement grout.

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	396	0								
	395.6		DENSE GRADED AGGREGATE - 3 INCHES							
			Very-stiff to hard light brown LEAN CLAY (CL), trace fine gravel, dry to damp.			17		HP = 4.5+ tsf		3 - 7 - 7
		5				11		HP = 4.5+ tsf		3 - 5 - 4
						18		HP = 3.5 tsf		3 - 5 - 6
		10				17		HP = 4.5+ tsf		2 - 5 - 7
						24				
		15				18		HP = 4.5+ tsf		4 - 6 - 10
	376.9		Very-stiff to hard bluish-gray LEAN CLAY (CL), contains sandy clay seams at 25.0 feet, damp.			18		HP = 4.0-4.5 tsf		3 - 5 - 8
		20								
						18		HP = 3.5-4.0 tsf		4 - 8 - 15
		25								
▽	368.9		Very-stiff brown with light gray SANDY CLAY (CLS), trace iron oxide nodules, damp.			18		HP = 3.0-3.5 tsf		3 - 3 - 6
		30								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

Case No. 2019-00435
Filed October 18, 2022

BORING NO: **B-01**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 395.9	BORING STARTED: 4/17/2019	BORING COMPLETED: 4/17/2019
DRILLING METHOD: 3.25" HSA	RIG TYPE: ATV 550X	HAMMER: Auto
GROUNDWATER (ft): 27.1	BORING DIAMETER (IN):	SHEET 2 OF 2

Remarks:
- Encountered groundwater at 27.1 feet.
- Groundwater measured at 33.7 feet at completion.
- Boring sealed with bentonite-cement grout.

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
		30	Very-stiff brown with light gray SANDY CLAY (CLS), trace iron oxide nodules, damp.*(Continued)*							
		35				24				
	359.9		Very-dense light brown POORLY GRADED SAND (SP), trace iron oxide nodules, moist to dry.							
		40				4			●	50/4"
	352.9		Bedrock							
						2			●	50/2"
	350.9	45	- Boring terminated at 45.0 feet.							
		50								
		55								
		60								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

Case No. 2019-00435
Filed October 18, 2022

BORING NO: **B-02**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 395.9	BORING STARTED: 4/18/2019	BORING COMPLETED: 4/18/2019
DRILLING METHOD: 3.25" HSA	RIG TYPE: ATV 550X	HAMMER: Auto
GROUNDWATER (ft): 27.6	BORING DIAMETER (IN):	SHEET 1 OF 3

Remarks:
- Encountered groundwater at 27.6 feet.
- Auger refusal at 71.2 feet.
- Boring sealed with bentonite-cement grout.

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	396	0								
	395.6		DENSE GRADED AGGREGATE - 3 INCHES							
			Hard brown and light brown LEAN CLAY (CL), dry to damp.			11		HP = 4.5+ tsf	●	3 - 4 - 4
		5				17		HP = 4.5+ tsf	●	3 - 4 - 7
						18		HP = 4.5+ tsf	●	3 - 6 - 2
		10				11		HP = 4.5 tsf	●	3 - 3 - 4
						24				
	381.9	15	Very-stiff grayish-blue LEAN CLAY (CL), contains organics at 14.0 feet, damp.			18		HP = 3.0-3.5 tsf	●	4 - 7 - 10
	377.9		Very-stiff to hard brown LEAN CLAY (CL), damp to moist.			17		HP = 3.5-4.0 tsf	●	5 - 14 - 19
		20				18		HP = 4.5+ tsf	●	6 - 12 - 18
▽		25								
						18		HP = 2.0-4.0 tsf	●	7 - 8 - 10
		30								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-02**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 395.9	BORING STARTED: 4/18/2019	BORING COMPLETED: 4/18/2019
DRILLING METHOD: 3.25" HSA	RIG TYPE: ATV 550X	HAMMER: Auto
GROUNDWATER (ft): 27.6	BORING DIAMETER (IN):	SHEET 2 OF 3

Remarks:
- Encountered groundwater at 27.6 feet.
- Auger refusal at 71.2 feet.
- Boring sealed with bentonite-cement grout.

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
		30	Very-stiff to hard brown LEAN CLAY (CL), damp to moist.*(Continued)*							
		35				18		HP = 3.5-4.0 tsf	●	3 - 6 - 9
		40				18		HP = 3.5 tsf	●	3 - 5 - 8
		45				18		HP = 3.0 tsf	●	3 - 6 - 8
		50				24				
	344.9		Hard reddish-brown SANDY CLAY (CLS), moist.							
		55				18		HP = 4.0 tsf	●	6 - 10 - 12
	339.9		Stiff brown and gray CLAYEY SAND (SC), wet.							
		60				18		HP = 1.5-2.0 tsf	●	3 - 4 - 3

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-02**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 395.9	BORING STARTED: 4/18/2019	BORING COMPLETED: 4/18/2019
DRILLING METHOD: 3.25" HSA	RIG TYPE: ATV 550X	HAMMER: Auto
GROUNDWATER (ft): 27.6	BORING DIAMETER (IN):	SHEET 3 OF 3

Remarks:
- Encountered groundwater at 27.6 feet.
- Auger refusal at 71.2 feet.
- Boring sealed with bentonite-cement grout.

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
		60	Stiff brown and gray CLAYEY SAND (SC), wet.*(Continued)*							
						18		HP = 1.5-2.0 tsf		7 - 19 - 12
	330.9	65	Dense brown and gray POORLY GRADED SAND (SP), wet.							
	327.9		Siltstone/Mudstone							
						9			>>	6 - 13 - 39
		70								
	324.7		- Boring terminated at 71.2 feet.							
		75								
		80								
		85								
		90								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-03**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 397.4	BORING STARTED: 5/22/2019	BORING COMPLETED: 5/22/2019
DRILLING METHOD: Mud Rotary	RIG TYPE: Amphib	HAMMER: Auto
GROUNDWATER (ft):	BORING DIAMETER (IN):	SHEET 1 OF 1

Remarks: -Sample refusal at 25.4

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	397	0	Loose black to gray Coal Combustion Residuals (CCR)							8 - 9 - 5
		5								WH - WH - WH
		10								WR - WR - WR
		15								1 - WH - 1
	378.9		Brown LEAN CLAY (CL)							
		20								3 - 8 - 9
	373.4		Gray Weathered SHALE							
	372.0	25	- Boring terminated at 25.4 ft.							50/5"
		30								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

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BORING NO: **B-04**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 409.8	BORING STARTED: 5/29/2019	BORING COMPLETED: 5/29/2019
DRILLING METHOD: Mud Rotary	RIG TYPE: Amphib	HAMMER: Auto
GROUNDWATER (ft):	BORING DIAMETER (IN):	SHEET 1 OF 1
Remarks:		

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	410	0	Brown LEAN CLAY (CL), with gravel							2 - 3 - 4
		5								3 - 2 - 4
	402.3		- Boring terminated at 7.5 feet.							
		10								
		15								
		20								
		25								
		30								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-05**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 389.5	BORING STARTED: 5/24/2019	BORING COMPLETED: 5/24/2019
DRILLING METHOD: Wash Rotary	RIG TYPE: CME Barge	HAMMER: Auto
GROUNDWATER (ft):	BORING DIAMETER (IN):	SHEET 1 OF 1

Remarks:

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	390	0	Loose black to gray Coal Combustion Residuals (CCR)							
		5								WR - WR - WR
										WR - WR - WR
		10								
										WH - WH - 1
	375.0	15	Gray LEAN CLAY (CL)							
	373.5		Brown Weathered SHALE						●	23 - 50/4"
	372.2	20								
		25								
		30								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 8/1/19

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Filed October 18, 2022

BORING NO: **B-06A**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 385.1	BORING STARTED: 5/23/2019	BORING COMPLETED: 5/23/2019
DRILLING METHOD:	RIG TYPE: CME Barge	HAMMER: Auto
GROUNDWATER (ft): 7.0	BORING DIAMETER (IN):	SHEET 1 OF 2
Remarks:		

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	385	0	WATER							
		5								
▽	378.1		Loose black to gray Coal Combustion Residuals (CCR)							WR - WR - WR
		10								WR - WR - WR
		15								WR - WR - WR
		20								WR - WR - WR
		25								WR - WR - WR
		30								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

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BORING NO: **B-06A**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 385.1	BORING STARTED: 5/23/2019	BORING COMPLETED: 5/23/2019
DRILLING METHOD:	RIG TYPE: CME Barge	HAMMER: Auto
GROUNDWATER (ft): 7.0	BORING DIAMETER (IN):	SHEET 2 OF 2

Remarks:

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	354.1	30	Gray Weathered SHALE							
	352.3		- Boring terminated at 32.8 feet.						●	15 - 50/5"
		35								
		40								
		45								
		50								
		55								
		60								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

Case No. 2019-00435
Filed October 18, 2022

BORING NO: **B-07**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 398.1	BORING STARTED: 5/22/2019	BORING COMPLETED: 5/22/2019
DRILLING METHOD:	RIG TYPE: Amphib	HAMMER: Auto
GROUNDWATER (ft):	BORING DIAMETER (IN):	SHEET 1 OF 2

Remarks:

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	398	0	Brown SILT, with SAND, trace gravel							4 - 4 - 6
	394.1	5	Loose black to gray Coal Combustion Residuals (CCR)							6 - 21 - 16
		10								3 - 2 - 2
		15								3 - 1 - 1
		20								2 - 1 - 1
		25								2 - 1 - 2
		30								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-07**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 398.1	BORING STARTED: 5/22/2019	BORING COMPLETED: 5/22/2019
DRILLING METHOD:	RIG TYPE: Amphib	HAMMER: Auto
GROUNDWATER (ft):	BORING DIAMETER (IN):	SHEET 2 OF 2

Remarks:

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
		30	Loose black to gray Coal Combustion Residuals (CCR)*(Continued)*							2 - 1 - 4
		35								4 - 1 - 2
		40								
	356.6		Gray LEAN CLAY (CL)							4 - 9 - 13
	355.6		- Boring terminated at 42.5 feet.							
		45								
		50								
		55								
		60								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-08**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 388.5	BORING STARTED: 5/23/2019	BORING COMPLETED: 5/23/2019
DRILLING METHOD:	RIG TYPE: CME Barge	HAMMER: Auto
GROUNDWATER (ft): 6.0	BORING DIAMETER (IN):	SHEET 1 OF 2

Remarks:

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	389	0	WATER							
▽	382.5	5	Loose black to gray Coal Combustion Residuals (CCR)							WR - WR - WR
		10								WR - WR - WR
		15								WR - WR - WR
		20								WR - WR - WR
		25								WR - WR - WR
		30								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-08**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 388.5	BORING STARTED: 5/23/2019	BORING COMPLETED: 5/23/2019
DRILLING METHOD:	RIG TYPE: CME Barge	HAMMER: Auto
GROUNDWATER (ft): 6.0	BORING DIAMETER (IN):	SHEET 2 OF 2

Remarks:

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	357.5	30	Gray Weathered SHALE							
	355.1	35	- Boring terminated at 33.4 feet.						●	3 - 34 - 50/4"
		40								
		45								
		50								
		55								
		60								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-09**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 395.4	BORING STARTED: 5/23/2019	BORING COMPLETED: 5/23/2019
DRILLING METHOD:	RIG TYPE: CME Barge	HAMMER: Auto
GROUNDWATER (ft): 8.0	BORING DIAMETER (IN):	SHEET 1 OF 1
Remarks:		

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	395	0	WATER							
▽	387.4	5	Loose black to gray Coal Combustion Residuals (CCR)							WR - WR - WR
	382.4	10	Gray Weathered SHALE						●	1 - 3 - 5
	376.9	15	- Boring terminated at 18.5 feet.						>>●	32 - 31 - 41
		20								
		25								
		30								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-10**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 398.0	BORING STARTED: 4/22/2019	BORING COMPLETED: 4/22/2019
DRILLING METHOD: 3.25" HSA	RIG TYPE: ATV 550X	HAMMER: Auto
GROUNDWATER (ft): 6.0	BORING DIAMETER (IN):	SHEET 1 OF 2
Remarks:		

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	398	0	Loose red to black Coal Combustion Residuals (CCR)							
						18			●	20 - 18 - 19
		5				18			●	12 - 9 - 8
▽						18			●	3 - 2 - 1
		10				18			●	WH - 1 - 1
						18				WH - WH - 1
		15				18				WH - 1 - WH
	381.0		Loose black Coal Combustion Residuals (CCR)							
		20				18				WH - WH - WH
		25				18				1 - WH - 2
		30				18				WH - WH

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

BORING NO: **B-10**

TEST BORING RECORD

PROJECT: Big Rivers CCR/ELG Compliance Project	JOB NO: 1178-19-003	REPORT NO:
PROJECT LOCATION: Sebree, KY		
ELEVATION: 398.0	BORING STARTED: 4/22/2019	BORING COMPLETED: 4/22/2019
DRILLING METHOD: 3.25" HSA	RIG TYPE: ATV 550X	HAMMER: Auto
GROUNDWATER (ft): 6.0	BORING DIAMETER (IN):	SHEET 2 OF 2
Remarks:		

Groundwater	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	Lithology	Sample Type	Recovery (in)	RQD (%)	Qu (tsf)	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50	BLOWS /6"
	368.0	30	very stiff red-brown LEAN CLAY (CL)			18				- 4 8 - 10 - 12
	366.5		- Boring terminated at 31.5 feet.							
		35								
		40								
		45								
		50								
		55								
		60								

S&ME NEW LOGO 1178-19-003 BREC_GREEN.GPJ QOR_CORP.GDT 7/31/19

FIELD TESTING PROCEDURES

Field Operations: The general field procedures employed by S&ME, Inc. are summarized in ASTM D 420 which is entitled "Investigating and Sampling Soils and Rocks for Engineering Purposes." This recommended practice lists recognized methods for determining soil and rock distribution and ground water conditions. These methods include geophysical and in situ methods as well as borings.

Borings are drilled to obtain subsurface samples using one of several alternate techniques depending upon the subsurface conditions. These techniques are:

a. Continuous 2-1/2 or 3-1/4 inch I.D. hollow stem augers;
b. Wash borings using roller cone or drag bits (mud or water);
c. Continuous flight augers (ASTM D 1425).

These drilling methods are not capable of penetrating through material designated as "refusal materials." Refusal, thus indicated, may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

The subsurface conditions encountered during drilling are reported on a field test boring record by a field engineer who is on site to direct the drilling operations and log the recovered samples. The record contains information concerning the boring method, samples attempted and recovered, indications of the presence of various materials such as coarse gravel, cobbles, etc., and observations between samples. Therefore, these boring records contain both factual and interpretive information. The field boring records are on file in our office.

The soil and rock samples plus the field boring records are reviewed by a geotechnical engineer. The engineer classifies the soils in general accordance with the procedures outlined in ASTM D 2488 and prepares the final boring records that are the basis for all evaluations and recommendations.

The final boring records represent our interpretation of the contents of the field records based on the results of the engineering examinations and tests of the field samples. These records depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the subsurface soil and ground water conditions at these boring locations. The lines designating the interface between soil or refusal materials on the records and on profiles represent approximate boundaries. The transition between materials may be gradual. The final boring records are included with this report. The detailed data collection methods using during this study are discussed on the following pages.

Soil Test Borings: Soil test borings were made at the site at locations shown on the attached Boring Plan. Soil sampling and penetration testing were performed in accordance with ASTM D 1586.

The borings were made by mechanically twisting a 5-5/8" outer diameter auger into the soil. At regular intervals, the drilling tools were removed and samples obtained with a standard 1.4 inch I.D., 2 inch O.D., split tube sampler. The sampler was first seated 6 inches to penetrate any loose cuttings, then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated the "penetration resistance".

Representative portions of the samples, thus obtained, were placed in glass jars and transported to the laboratory. In the laboratory, the samples were examined to verify the driller's field classifications. Test Boring Records are attached which graphically show the soil descriptions and penetration resistances.

Soil Auger Soundings: Soil auger soundings were made at the site at the locations shown on the attached Boring Location Plan. The soundings were performed by mechanically twisting a steel auger into the soil. However, unlike the soil test borings, a smaller diameter solid stem auger was used and no split-spoon samples were obtained. The driller provided a general description of the soil encountered by observing the soils brought to the surface by the twisting auger. The auger was advanced until refusal materials were encountered and the refusal depth was noted by the driller. The auger is then withdrawn and the depths to water or caved materials are then measured and recorded by the driller.

Soil auger soundings provide a rapid, economical method of obtaining the approximate bedrock depth, groundwater depth, and general soil conditions at locations where detailed soil testing and sampling is not required.

Water Level Readings: Water table readings are normally taken in conjunction with borings and are recorded on the "Test Boring Records". These readings indicate the approximate location of the hydrostatic water table at the time of our field investigation. Where impervious soils are encountered (clayey soils) the amount of water seepage into the boring is small, and it is generally not possible to establish the location of the hydrostatic water table through water level readings. The ground water table may also be dependent upon the amount of precipitation at the site during a particular period of time. Fluctuations in the water table should be expected with variations in precipitation, surface run-off, evaporation and other factors.

The time of boring water level reported on the boring records is determined by field crews as the drilling tools are advanced. The time of boring water level is detected by changes in the drilling rate, soil samples obtained, etc. Additional water table readings are generally obtained at least 24 hours after the borings are completed. The time lag of at least 24 hours is used to permit stabilization of the ground water table which has been disrupted by the drilling operations. The readings are taken by dropping a weighted line down the boring or using an electrical probe to detect the water level surface. Occasionally the borings will cave-in, preventing water level readings from being obtained or trapping drilling water above the caved-in zone. The cave-in depth is also measured and recorded on the boring records.

Appendix III – Laboratory Testing Results

Case No. 2019-00435
Filed October 18, 2022

Form No. TR-2370-LEX-SUM-1
Revision No. : 3
Revision Date: 09/29/17

Lab Summary

S&ME, Inc - Lexington 2020 Liberty Road, Suite 105, Lexington, KY 40505

Project No.: 1178-19-003 Report Date: 07/03/19

Project Name: Ash Pond Closure Exploration

Client Name: Big Rivers Electrical Corporation

Client Address: 201 3rd St., Henderson, Kentucky 42420

BORING NO.	SAMPLE DEPTH, FT.	SAMPLE TYPE	USCS	NATURAL MOISTURE CONTENT,%	ATT. LIMITS			APPROX % RET.ON #40	MAX DRY DENSITY, PCF @ OPT MC % (STD. PROCTOR)	WET UNIT WEIGHT, PCF	DRY UNIT WEIGHT, PCF	APPROX ROCK UNCONFINED COMPRESSIVE STRENGTH, PSI	SOIL UNCONFINED COMPRESSIVE STRENGTH, PSF	% FINER THAN NO. 200	SPECIFIC GRAVITY AT 20°C
					L.L.	P.L.	P. I.								
B-1	11-13	ST	CL	16.6	37	20	17	<5		136.3	116.9			82.9	
B-1	23.5-25	SPT	CL	18.3	25	16	9	5.3						68.7	
B-1	33-35	ST	SC	17.5	26	15	11	15		132.5	112.8			48.2	
B-2	11-13	ST	CL	14.8	41	23	18	<5		134.1	116.8		3,601	90.9	
B-2	13.5-15	SPT	CL	21.7	42	20	22								
B-2	33-35	SPT	CL	22.7	38	20	18								
B-2	48.5-50.5	ST	CL	17.6	36	18	18	<5		149.8	127.4			77.3	
B-2	63.5-65	SPT	SC					16.2						32.0	

Notes: * - Gravel excluded. † - Gravel significant portion of sample and was included in MC. **Gravelly material, low recovery, insufficient for mc test.

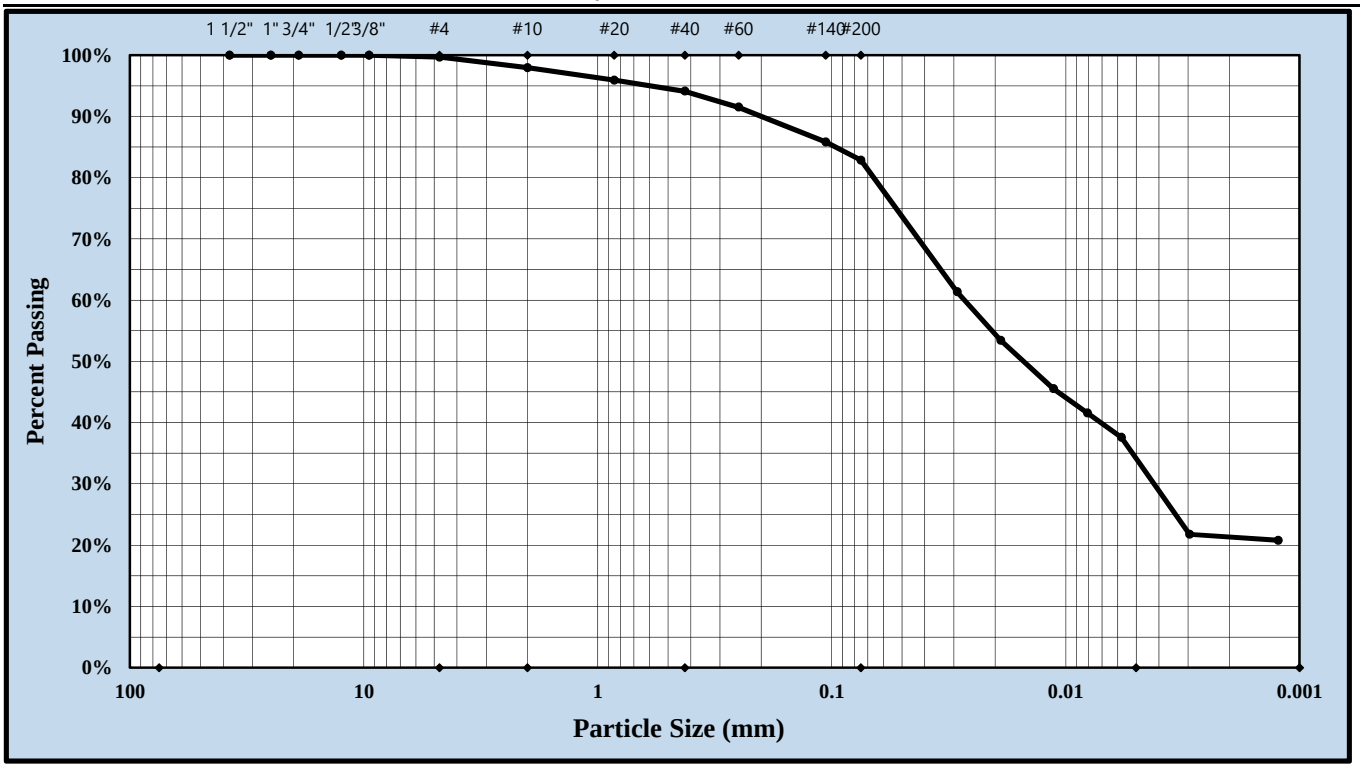
Form No. TR-D422-3
Revision No. 2 e1
Revision Date: 08/29/17
e08/12/18

PARTICLE SIZE ANALYSIS OF SOIL

ASTM D422

S&ME, Inc. - Lexington: 2020 Liberty Road, Suite 105, Lexington, KY 40505

S&ME Project #:	1178-19-003	Report Date:	7/1/19
Project Name:	Ash Pond Closure Exploration	Test Date(s):	6/28/19 - 07/01/19
Client Name:	Big Rivers Electrical Corporation		
Address:	201 3rd St., Henderson, KY 42420		
		Sample Date:	3/25/19 - 4/5/19
Location:	B-1	Depth (ft.):	11.0 - 13.0
Sample Description:	CL - Brown Lean clay with sand		



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt Size	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay Size	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Nom. Maximum Particle Size:	No. 4	Gravel:	0.3%	Silt Size:	48.7%
Silt & Clay (% Passing #200):	82.9%	Total Sand:	16.8%	Clay Size:	34.2%
Assumed Relative Density:	2.720	Moisture Content:	15.1%		
Liquid Limit:	37	Plastic Limit:	20	Plastic Index:	17
Coarse Sand:	1.7%	Medium Sand:	3.9%	Fine Sand:	11.3%

Description of Sand and Gravel — Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus A — Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References / Comments / Deviations:

Jacob Folsom	Jacob Folsom	Associate Project Manager	7/1/2019
Technical Responsibility	*Signature*	*Position*	*Date*

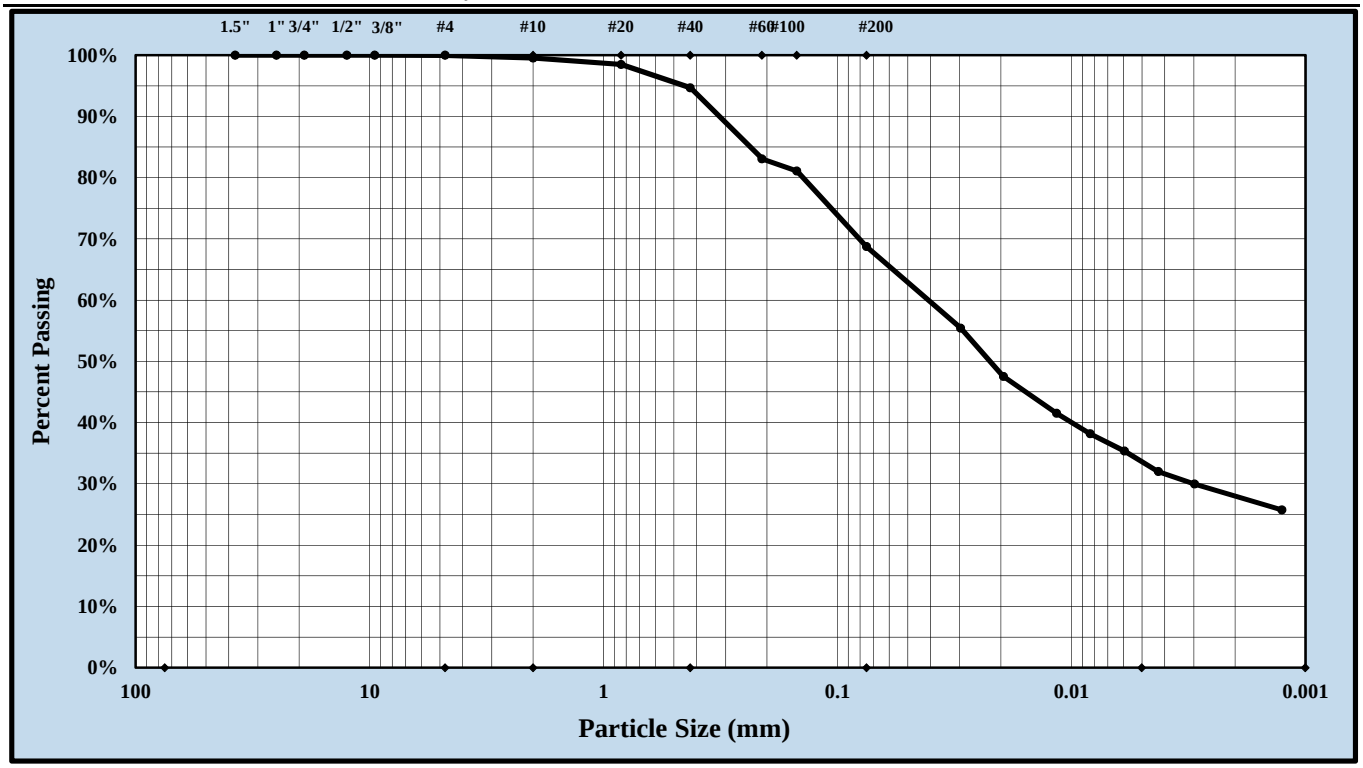
Form No. TR-D422-3
Revision No. 2
Revision Date: 08/29/17

PARTICLE SIZE ANALYSIS OF SOIL

ASTM D422

S&ME, Inc. Cincinnati: 862 East Crescentville Road, West Chester, OH 45246

S&ME Project #:	1178-19-003	Report Date:	12/20/2017
Project Name:	Big Rivers Assignment 4	Test Date(s):	6/11-6/13/19
Client Name:			
Address:			
Boring #:	B-1	Sample #:	Sample Date:
			Elevation: 23.5'-25.0'
Sample Description:	Lean clay (CL)		



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size:	#4	Gravel:	0.0%	Silt	34.7%
Silt & Clay (% Passing #200):	68.7%	Total Sand:	31.2%	Clay	34.0%
Apparent Relative Density	2.710	Moisture Content	15.5%	Colloids	0.0%
Liquid Limit	25	Plastic Limit	16	Plastic Index	9
Coarse Sand:	0.4%	Medium Sand:	4.9%	Fine Sand:	25.9%

Description of Sand and Gravel	Rounded	Angular	Hard & Durable	Soft	Weathered & Friable
	☒	☐	☒	☐	☐

References / Comments / Deviations: AASTM D 4318, D 854, D 2487

Kristy Cannady		QAS	6/17/2019
Technical Responsibility	*Signature*	*Position*	*Date*

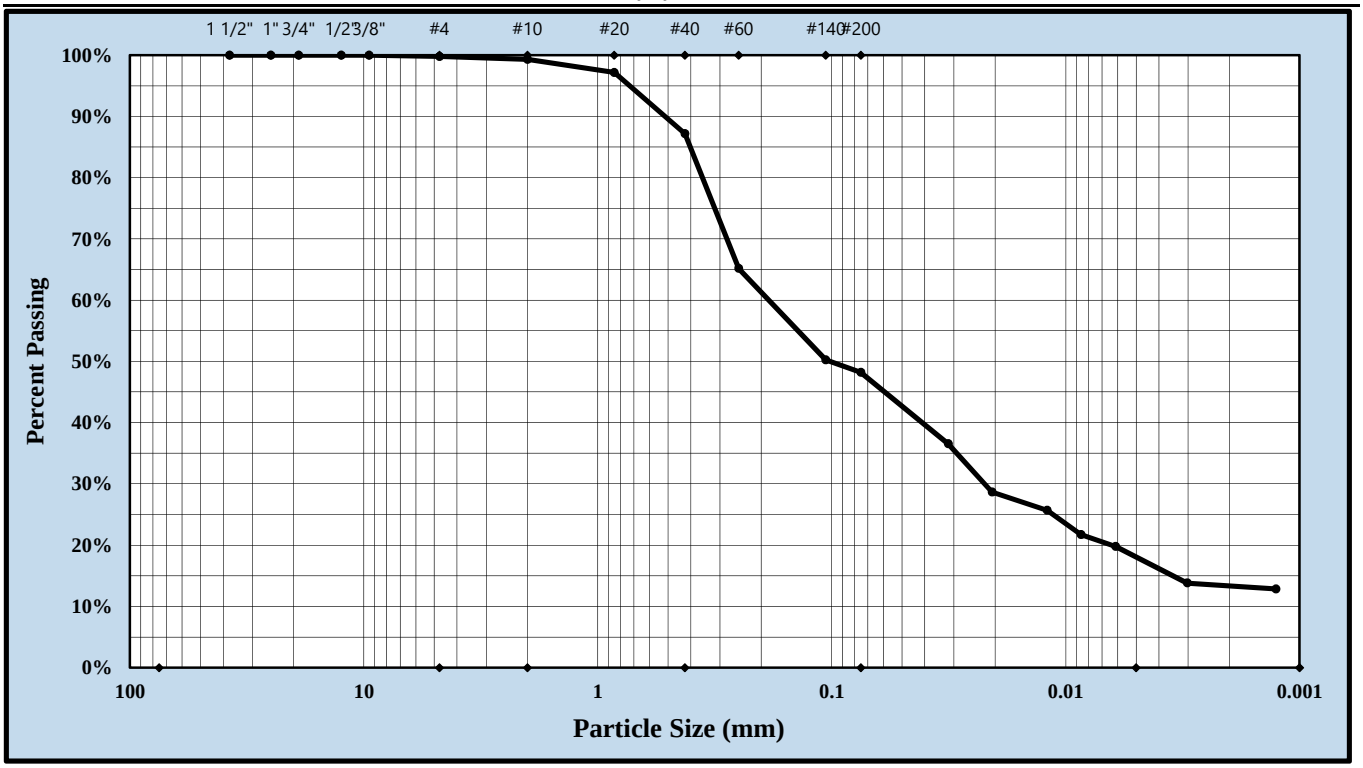
Form No. TR-D422-3
Revision No. 2 e1
Revision Date: 08/29/17
e08/12/18

PARTICLE SIZE ANALYSIS OF SOIL

ASTM D422

S&ME, Inc. - Lexington: 2020 Liberty Road, Suite 105, Lexington, KY 40505

S&ME Project #:	1178-19-003	Report Date:	7/1/19
Project Name:	Ash Pond Closure Exploration	Test Date(s):	6/28/19 - 07/01/19
Client Name:	Big Rivers Electrical Corporation		
Address:	201 3rd St., Henderson, KY 42420		
		Sample Date:	3/25/19 - 4/5/19
Location:	B-1	Depth (ft.):	33.0 - 35.0
Sample Description:	CL - Reddish brown Clayey sand		



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt Size	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay Size	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Nom. Maximum Particle Size:	No. 4	Gravel:	0.2%	Silt Size:	30.2%
Silt & Clay (% Passing #200):	48.2%	Total Sand:	51.6%	Clay Size:	18.1%
Assumed Relative Density:	2.720	Moisture Content:	17.5%		
Liquid Limit:	26	Plastic Limit:	15	Plastic Index:	11
Coarse Sand:	0.5%	Medium Sand:	12.1%	Fine Sand:	39.0%

Description of Sand and Gravel — Rounded ☐ Angular ☒ Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus A — Dispersion Period: 1 min. — Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References / Comments / Deviations:

Jacob Folsom	Jacob Folsom	Associate Project Manager	7/1/2019
Technical Responsibility	*Signature*	*Position*	*Date*

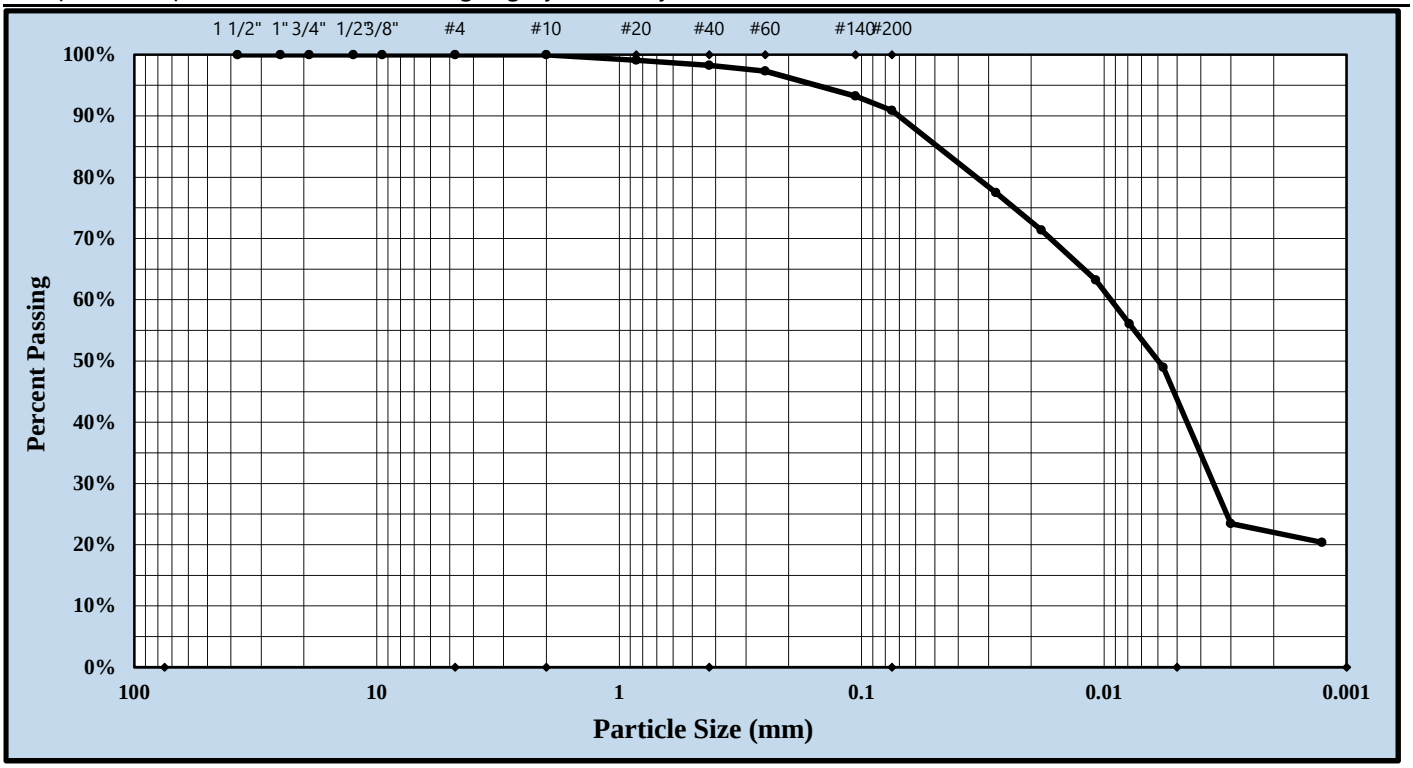
Form No. TR-D422-3
Revision No. 2 e1
Revision Date: 08/29/17
e08/12/18

PARTICLE SIZE ANALYSIS OF SOIL

ASTM D422

S&ME, Inc. - Lexington: 2020 Liberty Road, Suite 105, Lexington, KY 40505

S&ME Project #:	1178-19-003	Report Date:	7/1/19
Project Name:	Ash Pond Closure Exploration	Test Date(s):	6/28/19 - 07/01/19
Client Name:	Big Rivers Electrical Corporation		
Address:	201 3rd St., Henderson, KY 42420		
		Sample Date:	3/25/19 - 4/5/19
Location:	B-2	Depth (ft.):	11.0 - 13.0
Sample Description:	CL - Light gray Lean clay		



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt Size	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay Size	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Nom. Maximum Particle Size:	No. 20	Gravel:	0.0%	Silt Size:	47.2%
Silt & Clay (% Passing #200):	90.9%	Total Sand:	9.1%	Clay Size:	43.7%
Assumed Relative Density:	2.650	Moisture Content:	14.8%		
Liquid Limit:	41	Plastic Limit:	23	Plastic Index:	18
Coarse Sand:	0.0%	Medium Sand:	1.8%	Fine Sand:	7.3%

Description of Sand and Gravel	Rounded ☐	Angular ☒	Hard & Durable ☒	Soft ☐	Weathered & Friable ☐		
Mechanical Stirring Apparatus A	Dispersion Period:	1 min.	Dispersing Agent:	Sodium Hexametaphosphate:	40 g./ Liter		

References / Comments / Deviations:

Jacob Folsom		Associate Project Manager	7/1/2019
Technical Responsibility	*Signature*	*Position*	*Date*

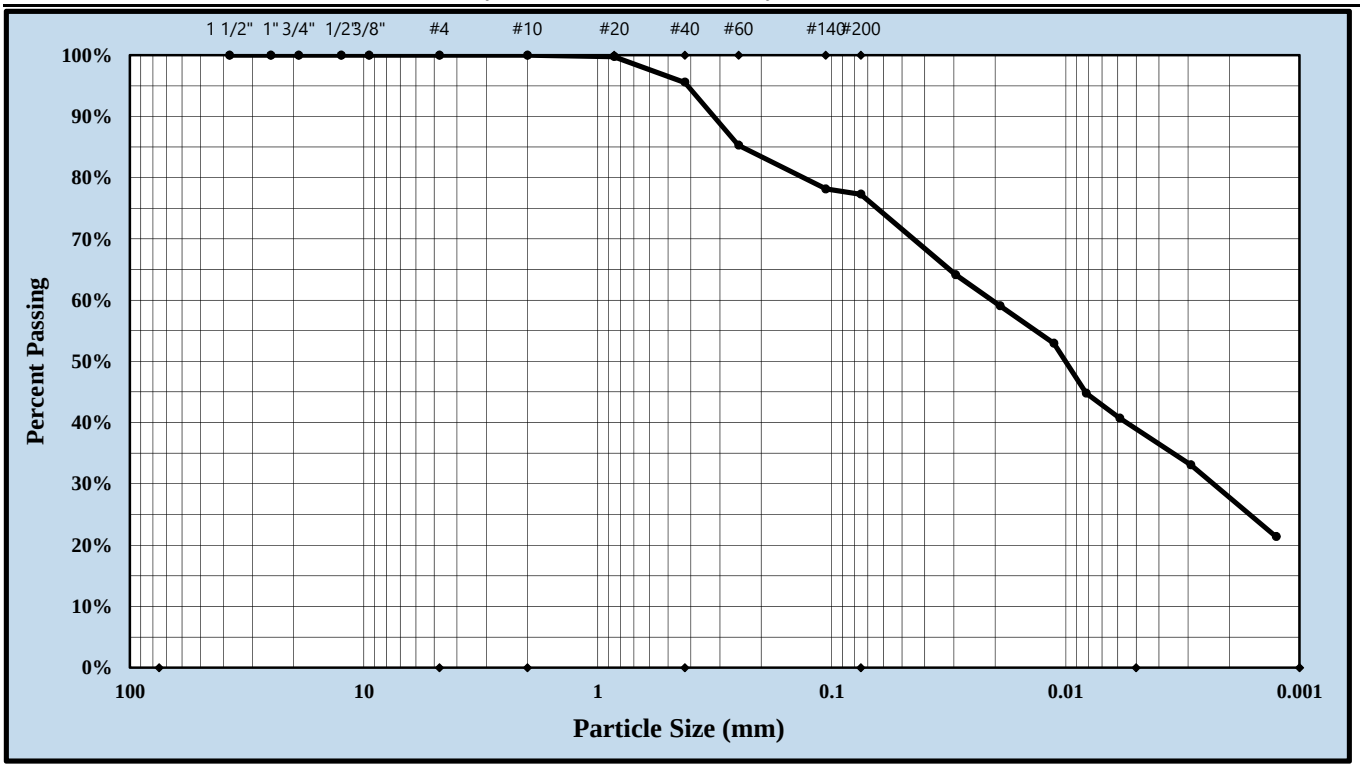
Form No. TR-D422-3
Revision No. 2 e1
Revision Date: 08/29/17
e08/12/18

PARTICLE SIZE ANALYSIS OF SOIL

ASTM D422

S&ME, Inc. - Lexington: 2020 Liberty Road, Suite 105, Lexington, KY 40505

S&ME Project #:	1178-19-003	Report Date:	7/1/19
Project Name:	Ash Pond Closure Exploration	Test Date(s):	6/28/19 - 07/01/19
Client Name:	Big Rivers Electrical Corporation		
Address:	201 3rd St., Henderson, KY 42420		
		Sample Date:	3/25/19 - 4/5/19
Location:	B-2	Depth (ft.):	48.5 - 50.5
Sample Description:	CL - Dark yellowish brown Lean clay with sand		



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt Size	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay Size	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Nom. Maximum Particle Size:	No. 20	Gravel:	0.0%	Silt Size:	38.3%
Silt & Clay (% Passing #200):	77.3%	Total Sand:	22.7%	Clay Size:	39.0%
Assumed Relative Density:	2.650	Moisture Content:	17.6%		
Liquid Limit:	36	Plastic Limit:	18	Plastic Index:	18
Coarse Sand:	0.0%	Medium Sand:	4.4%	Fine Sand:	18.3%

Description of Sand and Gravel	Rounded	☐	Angular	☒	Hard & Durable	☒	Soft	☐	Weathered & Friable ☐
Mechanical Stirring Apparatus A	Dispersion Period:	1 min.	Dispersing Agent:	Sodium Hexametaphosphate:	40 g./ Liter				

References / Comments / Deviations:

Jacob Folsom	Jacob Folsom	Associate Project Manager	7/1/2019
Technical Responsibility	*Signature*	*Position*	*Date*

Form No: TR-D422-WH-1Ga
Revision No. 1
Revision Date: 8/10/17

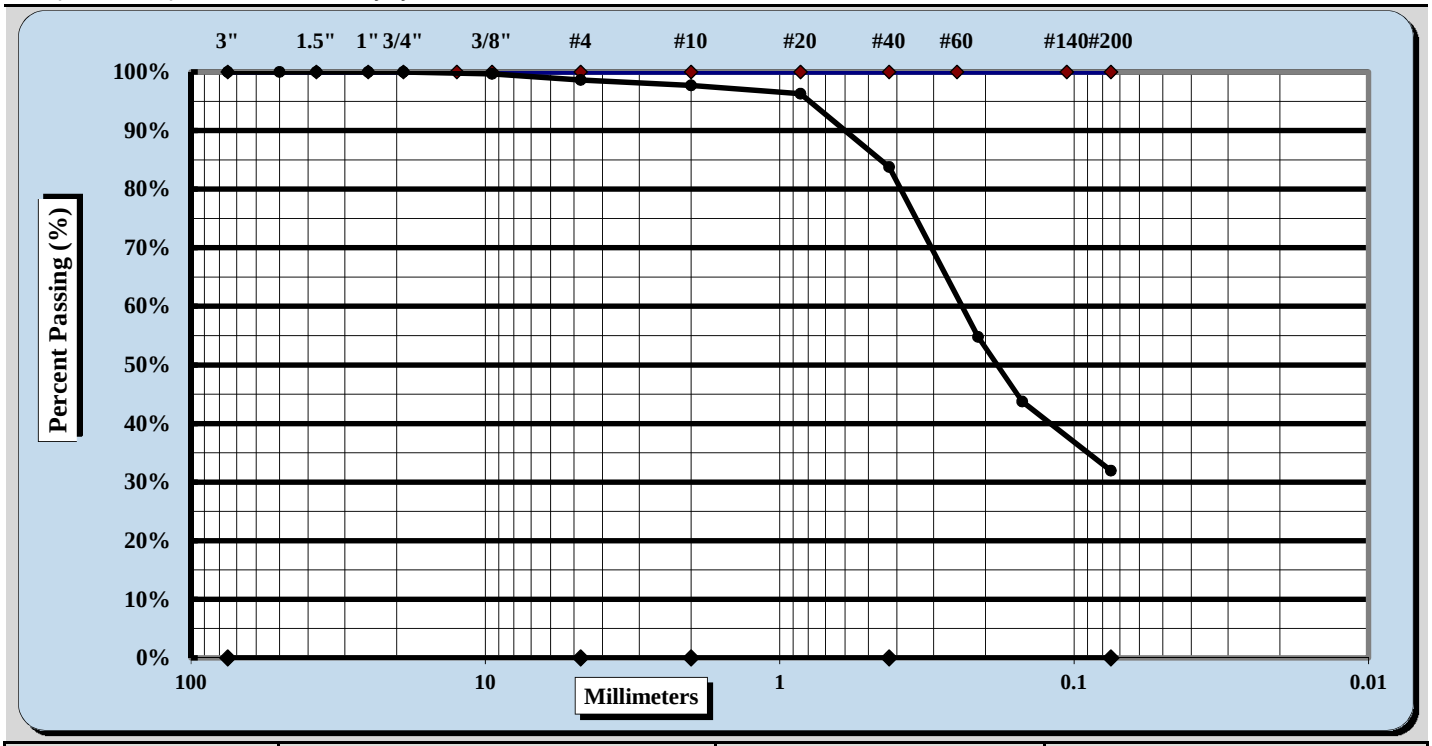
SIEVE ANALYSIS OF SOILS

ASTM D 422

S&ME, Inc. - Cincinnati: 862 E. Crescentville Road, West Chester, OH 45246

Project #:	1178-19-003	Report Date:	06/17/19
Project Name:	Ash Pond Closure Exploration	Test Date(s):	6/10-6/12/19
Client Name:	Big Rivers Electrical Corporation		
Client Address:	201 3rd St., Henderson, KY 42420		
Location: B-2	Type: SPT	Sample Date:	3/25/19 - 4/5/19
		Depth (ft.):	63.5'-65.0.'

Sample Description: Clayey Sand **SC**



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	3/8"	Coarse Sand	1%	Fine Sand	52%
Gravel	1%	Medium Sand	14%	Silt & Clay	32%
Liquid Limit	0	Plastic Limit	0	Plastic Index	0
	Cc = #N/A	Cu =	#N/A	Moisture Content	25%
Coarse Sand	1%	Medium Sand	14%	Fine Sand	52%

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐
Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Notes / Deviations / References: Insufficient sample based on maximum particle size. All of sample used.

Kristy Cannady		QAS	6/17/2019
Technical Responsibility	*Signature*	*Position*	*Date*

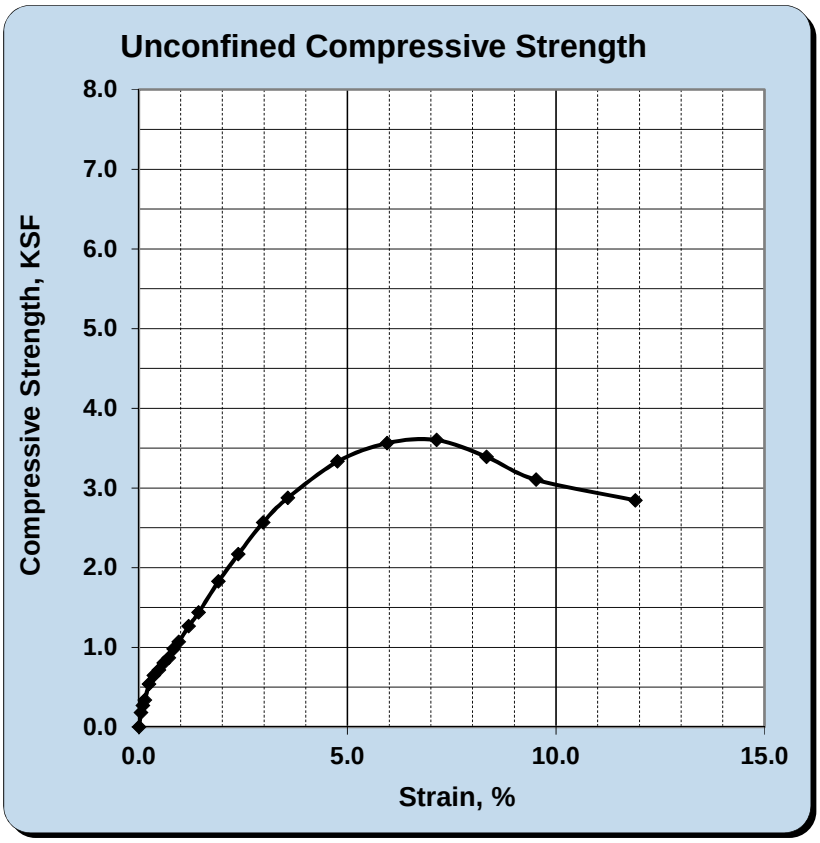
Form No. TR-D2166-01
Revision No. : 1
Revision Date: 08/16/17

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS

ASTM D2166

S&ME, Inc. - Lexington: 2020 Liberty Road, Suite 105, Lexington, KY 40505

Project No.:	1178-19-003	Report Date:	7/1/2019
Project Name:	Ash Pond Closure Exploration	Test Date(s):	6/28/2019
Client Name:	Big Rivers Electrical Corporation		
Client Address:	201 3rd St., Henderson, KY 42420		
		Sample Date:	3/25/19 - 4/5/19
Location:	B-2	Depth (ft.):	11.0 - 13.0
Sample Description:	Light gray Lean clay		CL



Failed Specimen

Type of Sample: UD
Source of Moisture Sample: Trimmings

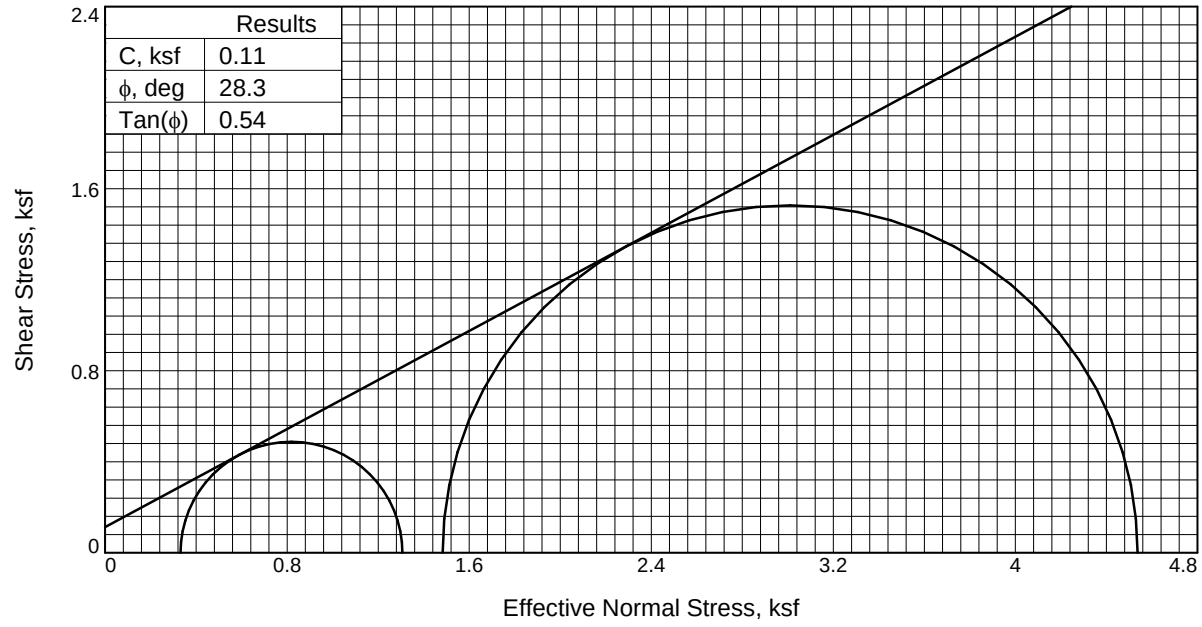
Initial Dry Unit Weight: 116.8 pcf
Initial Water Content: 14.8%
Unconfined Compressive Strength, q_u: **3.601** KSF
Undrained Shear Strength, s_u: **1.800** KSF

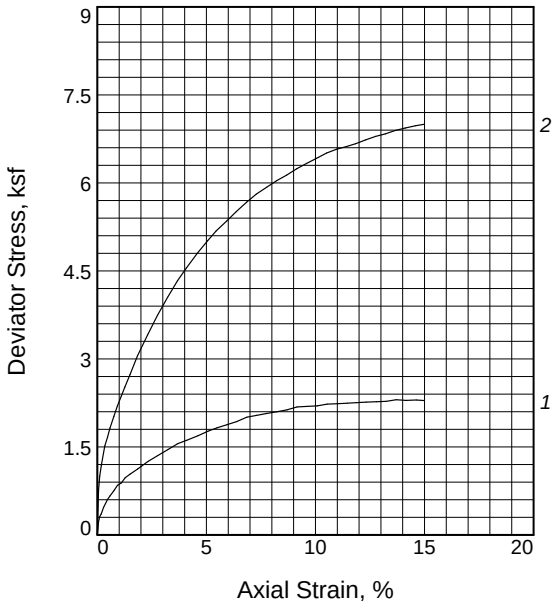
Liquid Limit: 41
Plasticity Index: 18
Height to Diameter Ratio: 1.5
Rate of Strain (%/min.): 1.2
Strain at Failure: 7.1

References / Comments / Deviations: Unable to obtain a 2-to-1 height to diameter ratio specimen.

Jacob Folsom	Jacob Folsom	Associate Project Manager	7/1/2019
Technical Responsibility		*Position*	*Date*

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.





Sample No.		1	2
Initial	Water Content, %	15.1	17.0
	Dry Density, pcf	120.3	115.9
	Saturation, %	99.7	99.5
	Void Ratio	0.4119	0.4649
	Diameter, in.	2.853	2.855
	Height, in.	5.627	5.596
At Test	Water Content, %	15.4	17.0
	Dry Density, pcf	119.7	116.1
	Saturation, %	100.0	100.0
	Void Ratio	0.4189	0.4624
	Diameter, in.	2.858	2.862
	Height, in.	5.636	5.558
Strain rate, %/min.		0.04	0.03
Eff. Cell Pressure, ksf		0.75	2.95
Fail. Stress, ksf		0.98	3.05
Total Pore Pr., ksf		9.20	10.09
Strain, %		1.3	1.8
Ult. Stress, ksf		2.29	7.00
Total Pore Pr., ksf		8.37	7.88
Strain, %		15.0	15.0
$\bar{\sigma}_1$ Failure, ksf		1.31	4.54
$\bar{\sigma}_3$ Failure, ksf		0.33	1.48

Type of Test:
CU with Pore Pressures

Sample Type: Intact specimen

Description: Brown Clayey sand

LL= 37 **PL=** 20 **PI=** 17

Assumed Specific Gravity= 2.72

Remarks: Failure criterion is peak pore pressure.
Specimen 1: 12.4-12.9 ft
Specimen 2: 11.8-12.3 ft

Figure 1 of 2

Client: Big Rivers Electrical Corporation

Project: Ash Pond Closure Exploration

Source of Sample: B-1 **Depth:** 11.0 - 13.0 ft

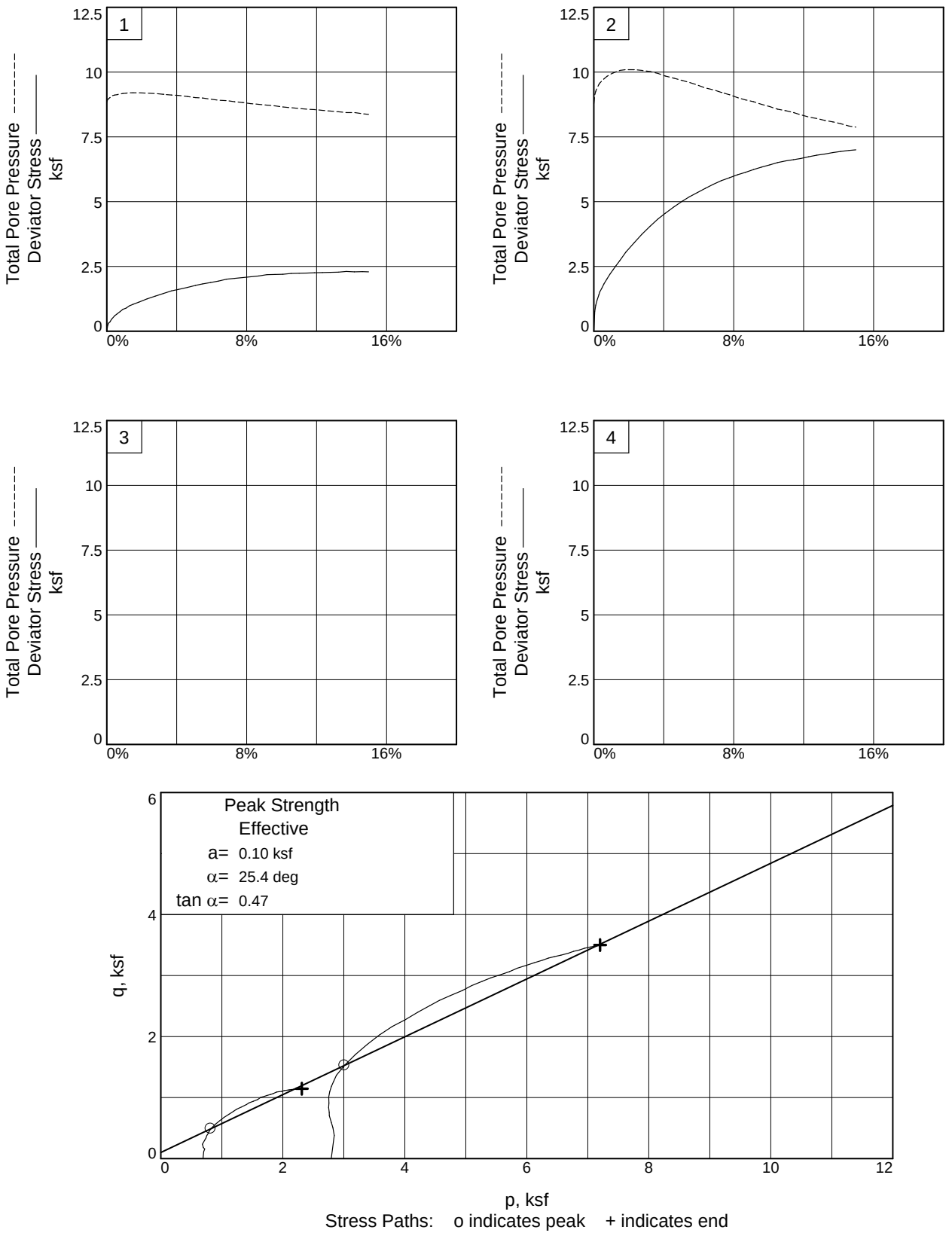
Proj. No.: 1178-19-003 **Date Sampled:** 03/25-04/05/19

TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Cincinnati, Ohio

Tested By: M. Weber

Case No. 2019-00435
Filed October 18, 2022

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.



Client: Big Rivers Electrical Corporation
Project: Ash Pond Closure Exploration
Source of Sample: B-1 **Depth:** 11.0 - 13.0 ft
Project No.: 1178-19-003 **Figure** 2 of 2

S&ME, Inc.

Tested By: M. Weber

TRIAXIAL COMPRESSION TEST 7/1/2019

CU with Pore Pressures 4:31 PM

Date: 03/25-04/05/19
Client: Big Rivers Electrical Corporation
Project: Ash Pond Closure Exploration
Project No.: 1178-19-003
Location: B-1
Depth: 11.0 - 13.0 ft
Description: Brown Clayey sand
Remarks: Failure criterion is peak pore pressure.
Specimen 1: 12.4-12.9 ft
Specimen 2: 11.8-12.3 ft
Type of Sample: Intact specimen
Assumed Specific Gravity=2.72 **LL=**37 **PL=**20 **PI=**17
Test Method: ASTM D 4767 Method B

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	115.100			115.400
Moisture content: Dry soil+tare, gms.	100.000			100.000
Moisture content: Tare, gms.	0.000			0.000
Moisture, %	15.1	16.2	15.4	15.4
Moist specimen weight, gms.	1307.09			
Diameter, in.	2.853	2.881	2.858	
Area, in.²	6.393	6.519	6.414	
Height, in.	5.627	5.627	5.636	
Net decrease in height, in.		0.000	-0.009	
Net decrease in water volume, cc.			8.700	
Wet density, pcf	138.4	137.0	138.1	
Dry density, pcf	120.3	117.9	119.7	
Void ratio	0.4119	0.4397	0.4189	
Saturation, %	99.7	100.0	100.0	

Test Readings for Specimen No. 1

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 66.20 psi (9.53 ksf)
Consolidation back pressure = 61.00 psi (8.78 ksf)
Consolidation effective confining stress = 0.75 ksf
Strain rate, %/min. = 0.04
Fail. Stress = 0.98 ksf **at reading no.** 10
Ult. Stress = 2.29 ksf **at reading no.** 41

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	0.69	0.69	1.00	61.40	0.69	0.00
1	0.0030	10.0	10	0.1	0.22	0.59	0.81	1.38	62.10	0.70	0.11
2	0.0060	14.0	14	0.1	0.31	0.56	0.88	1.56	62.30	0.72	0.16
3	0.0100	16.0	16	0.2	0.36	0.52	0.88	1.69	62.60	0.70	0.18
4	0.0160	21.0	21	0.3	0.47	0.45	0.92	2.05	63.10	0.68	0.24
5	0.0260	27.0	27	0.5	0.60	0.42	1.02	2.44	63.30	0.72	0.30
6	0.0330	30.0	30	0.6	0.67	0.40	1.07	2.66	63.40	0.74	0.33
7	0.0430	34.0	34	0.8	0.76	0.37	1.13	3.02	63.60	0.75	0.38
8	0.0520	38.0	38	0.9	0.85	0.36	1.21	3.35	63.70	0.78	0.42
9	0.0620	40.0	40	1.1	0.89	0.35	1.23	3.57	63.80	0.79	0.44
10	0.0720	44.0	44	1.3	0.98	0.33	1.31	3.94	63.90	0.82	0.49
11	0.0850	47.0	47	1.5	1.04	0.33	1.37	4.14	63.90	0.85	0.52
12	0.1040	51.0	51	1.8	1.12	0.33	1.46	4.39	63.90	0.89	0.56
13	0.1300	57.0	57	2.3	1.25	0.35	1.60	4.62	63.80	0.97	0.63
14	0.1560	62.0	62	2.8	1.35	0.36	1.71	4.76	63.70	1.04	0.68
15	0.1820	67.0	67	3.2	1.46	0.39	1.84	4.74	63.50	1.12	0.73
16	0.2080	72.0	72	3.7	1.56	0.42	1.97	4.73	63.30	1.20	0.78
17	0.2310	75.0	75	4.1	1.61	0.43	2.05	4.74	63.20	1.24	0.81
18	0.2600	79.0	79	4.6	1.69	0.48	2.17	4.56	62.90	1.32	0.85
19	0.2860	83.0	83	5.1	1.77	0.52	2.29	4.41	62.60	1.40	0.88
20	0.3090	86.0	86	5.5	1.82	0.53	2.36	4.43	62.50	1.45	0.91
21	0.3350	89.0	89	5.9	1.88	0.58	2.46	4.26	62.20	1.52	0.94
22	0.3600	92.0	92	6.4	1.93	0.62	2.55	4.12	61.90	1.59	0.97
23	0.3860	96.0	96	6.8	2.01	0.63	2.64	4.17	61.80	1.64	1.00
24	0.4120	98.0	98	7.3	2.04	0.68	2.72	4.01	61.50	1.70	1.02
25	0.4380	100.0	100	7.8	2.07	0.71	2.78	3.93	61.30	1.74	1.04
26	0.4640	102.0	102	8.2	2.10	0.75	2.85	3.81	61.00	1.80	1.05
27	0.4900	104.0	104	8.7	2.13	0.78	2.91	3.74	60.80	1.84	1.07
28	0.5160	107.0	107	9.2	2.18	0.81	2.99	3.71	60.60	1.90	1.09
29	0.5420	108.0	108	9.6	2.19	0.84	3.03	3.62	60.40	1.93	1.10
30	0.5680	109.0	109	10.1	2.20	0.88	3.08	3.51	60.10	1.98	1.10
31	0.5940	111.0	111	10.5	2.23	0.91	3.14	3.46	59.90	2.02	1.11
32	0.6200	112.0	112	11.0	2.24	0.94	3.17	3.39	59.70	2.05	1.12
33	0.6460	113.0	113	11.5	2.25	0.96	3.21	3.33	59.50	2.09	1.12
34	0.6690	114.0	114	11.9	2.26	0.98	3.23	3.30	59.40	2.11	1.13
35	0.6950	115.0	115	12.3	2.26	1.01	3.27	3.25	59.20	2.14	1.13
36	0.7210	116.0	116	12.8	2.27	1.04	3.31	3.19	59.00	2.17	1.14
37	0.7470	117.0	117	13.3	2.28	1.07	3.34	3.14	58.80	2.20	1.14
38	0.7720	119.0	119	13.7	2.31	1.09	3.40	3.11	58.60	2.25	1.15
39	0.7980	119.0	119	14.2	2.29	1.09	3.39	3.10	58.60	2.24	1.15
40	0.8240	120.0	120	14.6	2.30	1.14	3.44	3.02	58.30	2.29	1.15
41	0.8440	120.0	120	15.0	2.29	1.17	3.46	2.96	58.10	2.31	1.15

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	117.000			117.000
Moisture content: Dry soil+tare, gms.	100.000			100.000
Moisture content: Tare, gms.	0.000			0.000
Moisture, %	17.0	18.7	17.0	17.0
Moist specimen weight, gms.	1275.37			
Diameter, in.	2.855	2.897	2.862	
Area, in.²	6.402	6.589	6.435	
Height, in.	5.596	5.596	5.558	
Net decrease in height, in.		0.000	0.038	
Net decrease in water volume, cc.			18.200	
Wet density, pcf	135.6	133.6	135.9	
Dry density, pcf	115.9	112.6	116.1	
Void ratio	0.4649	0.5078	0.4624	
Saturation, %	99.5	100.0	100.0	

Test Readings for Specimen No. 2

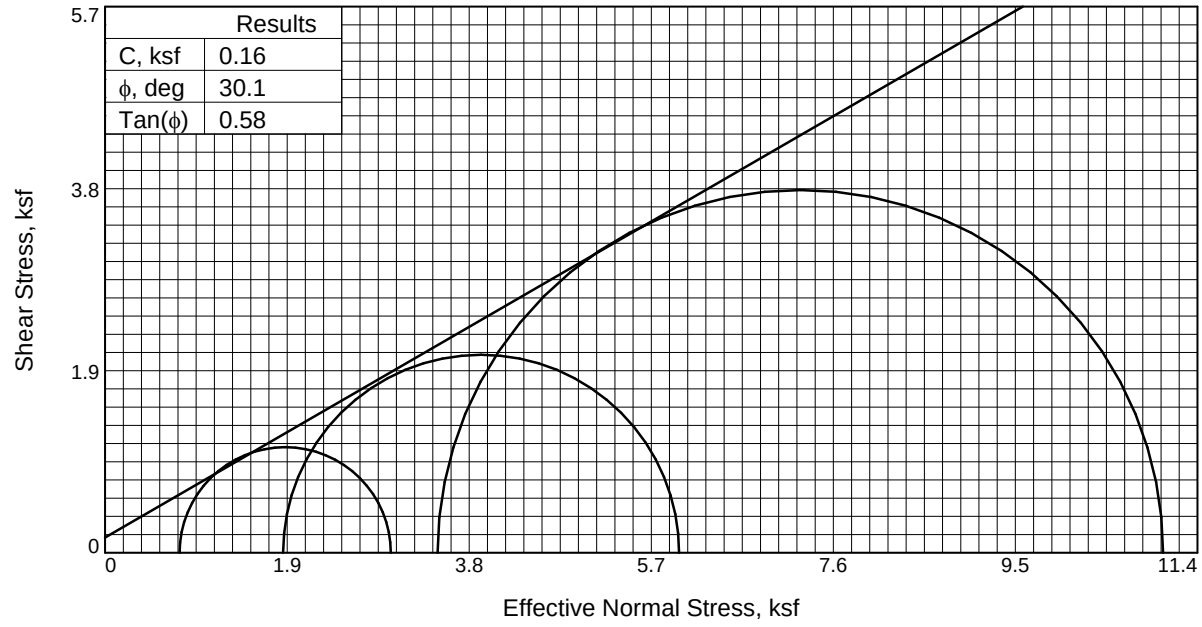
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 80.40 psi (11.58 ksf)
Consolidation back pressure = 59.90 psi (8.63 ksf)
Consolidation effective confining stress = 2.95 ksf
Strain rate, %/min. = 0.03
Fail. Stress = 3.05 ksf **at reading no.** 13
Ult. Stress = 7.00 ksf **at reading no.** 42

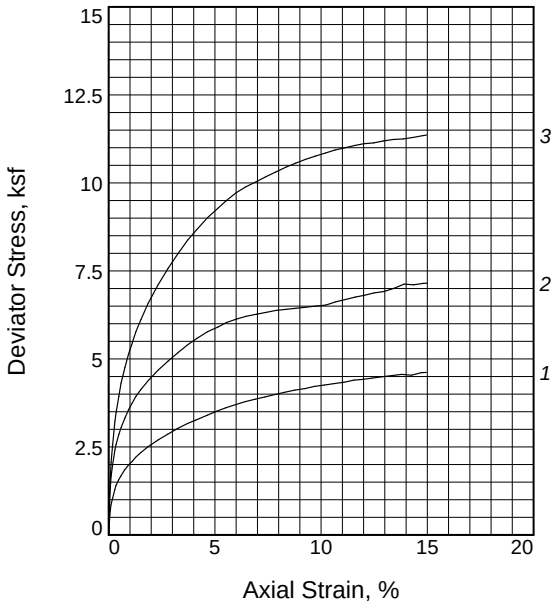
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	2.79	2.79	1.00	61.00	2.79	0.00
1	0.0030	34.0	34	0.1	0.76	2.46	3.22	1.31	63.30	2.84	0.38
2	0.0060	45.0	45	0.1	1.01	2.32	3.32	1.43	64.30	2.82	0.50
3	0.0100	53.0	53	0.2	1.18	2.20	3.39	1.54	65.10	2.80	0.59
4	0.0160	63.0	63	0.3	1.41	2.06	3.46	1.68	66.10	2.76	0.70
5	0.0190	68.0	68	0.3	1.52	2.00	3.52	1.76	66.50	2.76	0.76
6	0.0260	75.0	75	0.5	1.67	1.92	3.59	1.87	67.10	2.75	0.84
7	0.0320	82.0	82	0.6	1.82	1.84	3.67	1.99	67.60	2.76	0.91
8	0.0420	91.0	91	0.8	2.02	1.74	3.76	2.16	68.30	2.75	1.01
9	0.0510	99.0	99	0.9	2.20	1.67	3.87	2.31	68.80	2.77	1.10
10	0.0610	107.0	107	1.1	2.37	1.61	3.98	2.47	69.20	2.80	1.18
11	0.0700	114.0	114	1.3	2.52	1.57	4.09	2.60	69.50	2.83	1.26
12	0.0830	124.0	124	1.5	2.73	1.51	4.25	2.81	69.90	2.88	1.37
13	0.1020	139.0	139	1.8	3.05	1.48	4.54	3.06	70.10	3.01	1.53
14	0.1280	156.0	156	2.3	3.41	1.48	4.89	3.30	70.10	3.19	1.71
15	0.1530	172.0	172	2.8	3.74	1.51	5.26	3.48	69.90	3.38	1.87
16	0.1790	187.0	187	3.2	4.05	1.56	5.61	3.60	69.60	3.58	2.03
17	0.2040	201.0	201	3.7	4.33	1.63	5.96	3.66	69.10	3.79	2.17
18	0.2270	212.0	212	4.1	4.55	1.73	6.28	3.63	68.40	4.00	2.28
19	0.2550	225.0	225	4.6	4.80	1.81	6.62	3.65	67.80	4.22	2.40
20	0.2810	236.0	236	5.1	5.01	1.90	6.92	3.64	67.20	4.41	2.51
21	0.3030	245.0	245	5.5	5.18	1.97	7.16	3.63	66.70	4.56	2.59
22	0.3290	254.0	254	5.9	5.35	2.07	7.42	3.58	66.00	4.75	2.67

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
23	0.3540	263.0	263	6.4	5.51	2.19	7.70	3.52	65.20	4.94	2.76
24	0.3800	272.0	272	6.8	5.67	2.26	7.93	3.51	64.70	5.10	2.84
25	0.4050	280.0	280	7.3	5.81	2.36	8.17	3.46	64.00	5.27	2.90
26	0.4310	287.0	287	7.8	5.92	2.45	8.37	3.42	63.40	5.41	2.96
27	0.4570	294.0	294	8.2	6.04	2.56	8.60	3.36	62.60	5.58	3.02
28	0.4820	300.0	300	8.7	6.13	2.65	8.78	3.31	62.00	5.72	3.07
29	0.5080	307.0	307	9.1	6.24	2.72	8.96	3.29	61.50	5.84	3.12
30	0.5330	313.0	313	9.6	6.33	2.82	9.16	3.24	60.80	5.99	3.17
31	0.5590	319.0	319	10.1	6.42	2.91	9.33	3.21	60.20	6.12	3.21
32	0.5840	325.0	325	10.5	6.51	3.01	9.52	3.16	59.50	6.26	3.25
33	0.6100	330.0	330	11.0	6.57	3.07	9.64	3.14	59.10	6.35	3.29
34	0.6350	334.0	334	11.4	6.62	3.14	9.76	3.11	58.60	6.45	3.31
35	0.6580	338.0	338	11.8	6.67	3.23	9.89	3.07	58.00	6.56	3.33
36	0.6830	343.0	343	12.3	6.73	3.31	10.04	3.03	57.40	6.68	3.37
37	0.7090	348.0	348	12.8	6.79	3.37	10.16	3.02	57.00	6.77	3.40
38	0.7340	352.0	352	13.2	6.84	3.44	10.28	2.99	56.50	6.86	3.42
39	0.7600	357.0	357	13.7	6.90	3.50	10.40	2.97	56.10	6.95	3.45
40	0.7850	361.0	361	14.1	6.94	3.57	10.51	2.94	55.60	7.04	3.47
41	0.8110	365.0	365	14.6	6.98	3.66	10.63	2.91	55.00	7.15	3.49
42	0.8330	368.0	368	15.0	7.00	3.70	10.70	2.89	54.70	7.20	3.50

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.





Sample No.		1	2	3
Initial	Water Content, %	17.5	19.9	14.8
	Dry Density, pcf	112.8	109.6	116.3
	Saturation, %	95.7	99.9	88.9
	Void Ratio	0.4938	0.5377	0.4496
	Diameter, in.	2.866	2.835	2.865
	Height, in.	5.634	5.560	5.656
At Test	Water Content, %	16.3	17.8	13.8
	Dry Density, pcf	117.1	113.9	122.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.4396	0.4798	0.3736
	Diameter, in.	2.823	2.804	2.833
	Height, in.	5.598	5.468	5.480
Strain rate, %/min.		0.09	0.09	0.09
Eff. Cell Pressure, ksf		2.0	4.1	8.0
Fail. Stress, ksf		2.2	4.1	7.6
Total Pore Pr., ksf		9.9	11.0	9.9
Strain, %		1.3	1.5	2.8
Ult. Stress, ksf		4.6	7.2	11.4
Total Pore Pr., ksf		9.0	9.9	7.5
Strain, %		15.0	15.0	15.0
$\bar{\sigma}_1$ Failure, ksf		3.0	6.0	11.0
$\bar{\sigma}_3$ Failure, ksf		0.8	1.9	3.5

Type of Test:
CU with Pore Pressures

Sample Type: Intact specimen

Description: Reddish brown Lean clay with sand

LL= 26 **PL=** 15 **PI=** 11

Assumed Specific Gravity= 2.70

Remarks: Failure criterion is peak pore pressure.
Specimen 1: 33.8-34.3 ft
Specimen 2: 33.2-33.7 ft
Specimen 3: 34.4-34.9 ft

Figure 1 of 2

Client: Big Rivers Electrical Corporation

Project: Ash Pond Closure Exploration

Source of Sample: B-1 **Depth:** 33.0 - 35.0 ft

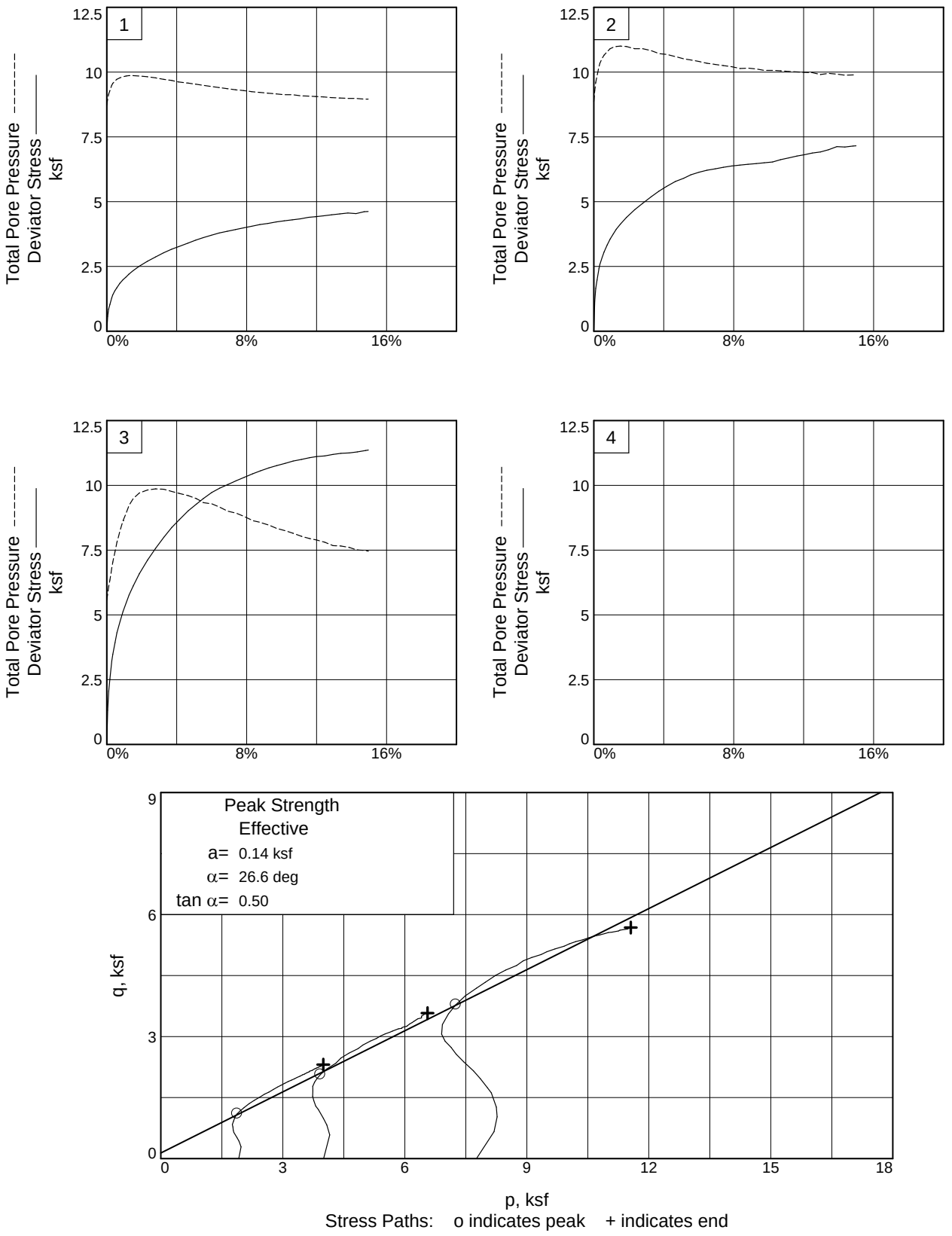
Proj. No.: 1178-19-003 **Date Sampled:** 03/25-04/05/19

TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Cincinnati, Ohio

Tested By: M. Weber

Case No. 2019-00435
Filed October 18, 2022

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.



Client: Big Rivers Electrical Corporation
Project: Ash Pond Closure Exploration
Source of Sample: B-1 **Depth:** 33.0 - 35.0 ft
Project No.: 1178-19-003 **Figure** 2 of 2

S&ME, Inc.

Tested By: M. Weber

TRIAXIAL COMPRESSION TEST 7/1/2019

CU with Pore Pressures 4:32 PM

Date: 03/25-04/05/19
Client: Big Rivers Electrical Corporation
Project: Ash Pond Closure Exploration
Project No.: 1178-19-003
Location: B-1
Depth: 33.0 - 35.0 ft
Description: Reddish brown Lean clay with sand
Remarks: Failure criterion is peak pore pressure.
Specimen 1: 33.8-34.3 ft
Specimen 2: 33.2-33.7 ft
Specimen 3: 34.4-34.9 ft
Type of Sample: Intact specimen
Assumed Specific Gravity=2.70 **LL=**26 **PL=**15 **PI=**11
Test Method: ASTM D 4767 Method B

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	117.500			325.900
Moisture content: Dry soil+tare, gms.	100.000			282.380
Moisture content: Tare, gms.	0.000			15.070
Moisture, %	17.5	17.7	16.3	16.3
Moist specimen weight, gms.	1264.91			
Diameter, in.	2.866	2.850	2.823	
Area, in.²	6.451	6.379	6.257	
Height, in.	5.634	5.634	5.598	
Net decrease in height, in.		0.000	0.036	
Net decrease in water volume, cc.			15.000	
Wet density, pcf	132.6	134.3	136.1	
Dry density, pcf	112.8	114.1	117.1	
Void ratio	0.4938	0.4772	0.4396	
Saturation, %	95.7	100.0	100.0	

Test Readings for Specimen No. 1

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 73.90 psi (10.64 ksf)
Consolidation back pressure = 60.00 psi (8.64 ksf)
Consolidation effective confining stress = 2.00 ksf
Strain rate, %/min. = 0.09
Fail. Stress = 2.20 ksf **at reading no.** 11
Ult. Stress = 4.62 ksf **at reading no.** 42

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	1.92	1.92	1.00	60.60	1.92	0.00
1	0.0030	25.0	25	0.1	0.58	1.68	2.26	1.34	62.20	1.97	0.29
2	0.0060	37.0	37	0.1	0.85	1.50	2.35	1.57	63.50	1.92	0.43
3	0.0100	45.0	45	0.2	1.03	1.35	2.39	1.76	64.50	1.87	0.52
4	0.0160	56.0	56	0.3	1.29	1.15	2.44	2.12	65.90	1.79	0.64
5	0.0190	61.0	61	0.3	1.40	1.08	2.48	2.30	66.40	1.78	0.70
6	0.0260	68.0	68	0.5	1.56	0.99	2.55	2.57	67.00	1.77	0.78
7	0.0320	73.0	73	0.6	1.67	0.92	2.59	2.81	67.50	1.76	0.84
8	0.0420	81.0	81	0.8	1.85	0.86	2.71	3.14	67.90	1.79	0.93
9	0.0520	87.0	87	0.9	1.98	0.82	2.80	3.42	68.20	1.81	0.99
10	0.0620	92.0	92	1.1	2.09	0.79	2.89	3.64	68.40	1.84	1.05
11	0.0710	97.0	97	1.3	2.20	0.78	2.98	3.83	68.50	1.88	1.10
12	0.0840	103.0	103	1.5	2.33	0.78	3.11	4.00	68.50	1.95	1.17
13	0.1040	111.0	111	1.9	2.51	0.79	3.30	4.17	68.40	2.05	1.25
14	0.1300	120.0	120	2.3	2.70	0.82	3.52	4.29	68.20	2.17	1.35
15	0.1560	128.0	128	2.8	2.86	0.86	3.73	4.31	67.90	2.30	1.43
16	0.1820	136.0	136	3.3	3.03	0.92	3.95	4.29	67.50	2.44	1.51
17	0.2080	143.0	143	3.7	3.17	0.96	4.13	4.28	67.20	2.55	1.58
18	0.2300	148.0	148	4.1	3.27	1.02	4.29	4.19	66.80	2.66	1.63
19	0.2600	155.0	155	4.6	3.40	1.07	4.47	4.19	66.50	2.77	1.70
20	0.2850	161.0	161	5.1	3.52	1.11	4.63	4.17	66.20	2.87	1.76
21	0.3080	166.0	166	5.5	3.61	1.15	4.76	4.13	65.90	2.96	1.81
22	0.3340	171.0	171	6.0	3.70	1.20	4.90	4.10	65.60	3.05	1.85
23	0.3600	176.0	176	6.4	3.79	1.24	5.03	4.06	65.30	3.13	1.90
24	0.3860	180.0	180	6.9	3.86	1.28	5.14	4.01	65.00	3.21	1.93
25	0.4120	184.0	184	7.4	3.92	1.32	5.25	3.96	64.70	3.29	1.96
26	0.4380	188.0	188	7.8	3.99	1.35	5.34	3.95	64.50	3.35	1.99
27	0.4640	192.0	192	8.3	4.05	1.40	5.45	3.90	64.20	3.42	2.03
28	0.4900	196.0	196	8.8	4.12	1.43	5.54	3.89	64.00	3.48	2.06
29	0.5160	199.0	199	9.2	4.16	1.45	5.61	3.86	63.80	3.53	2.08
30	0.5420	203.0	203	9.7	4.22	1.48	5.70	3.84	63.60	3.59	2.11
31	0.5680	206.0	206	10.1	4.26	1.51	5.77	3.82	63.40	3.64	2.13
32	0.5940	209.0	209	10.6	4.30	1.51	5.81	3.84	63.40	3.66	2.15
33	0.6200	212.0	212	11.1	4.34	1.56	5.89	3.79	63.10	3.72	2.17
34	0.6460	216.0	216	11.5	4.40	1.57	5.97	3.80	63.00	3.77	2.20
35	0.6680	218.0	218	11.9	4.42	1.58	6.00	3.79	62.90	3.79	2.21
36	0.6940	221.0	221	12.4	4.46	1.60	6.05	3.79	62.80	3.83	2.23
37	0.7200	224.0	224	12.9	4.49	1.63	6.12	3.76	62.60	3.87	2.25
38	0.7460	227.0	227	13.3	4.53	1.64	6.17	3.76	62.50	3.91	2.26
39	0.7720	230.0	230	13.8	4.56	1.66	6.22	3.76	62.40	3.94	2.28
40	0.7980	230.0	230	14.3	4.54	1.66	6.19	3.74	62.40	3.93	2.27
41	0.8240	235.0	235	14.7	4.61	1.68	6.30	3.74	62.20	3.99	2.31
42	0.8370	236.0	236	15.0	4.62	1.68	6.30	3.74	62.20	3.99	2.31

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	119.900			1203.170
Moisture content: Dry soil+tare, gms.	100.000			1024.000
Moisture content: Tare, gms.	0.000			15.660
Moisture, %	19.9	19.5	17.8	17.8
Moist specimen weight, gms.	1210.86			
Diameter, in.	2.835	2.824	2.804	
Area, in.²	6.312	6.264	6.177	
Height, in.	5.560	5.560	5.468	
Net decrease in height, in.		0.000	0.092	
Net decrease in water volume, cc.			17.240	
Wet density, pcf	131.4	132.0	134.1	
Dry density, pcf	109.6	110.5	113.9	
Void ratio	0.5377	0.5258	0.4798	
Saturation, %	99.9	100.0	100.0	

Test Readings for Specimen No. 2

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 89.30 psi (12.86 ksf)
Consolidation back pressure = 61.00 psi (8.78 ksf)
Consolidation effective confining stress = 4.08 ksf
Strain rate, %/min. = 0.09
Fail. Stress = 4.13 ksf **at reading no.** 12
Ult. Stress = 7.15 ksf **at reading no.** 42

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	4.00	4.00	1.00	61.50	4.00	0.00
1	0.0030	50.0	50	0.1	1.16	3.57	4.74	1.33	64.50	4.15	0.58
2	0.0060	71.0	71	0.1	1.65	3.25	4.91	1.51	66.70	4.08	0.83
3	0.0100	85.0	85	0.2	1.98	3.01	4.99	1.66	68.40	4.00	0.99
4	0.0160	104.0	104	0.3	2.42	2.66	5.08	1.91	70.80	3.87	1.21
5	0.0190	111.0	111	0.3	2.58	2.52	5.10	2.02	71.80	3.81	1.29
6	0.0260	123.0	123	0.5	2.85	2.33	5.19	2.22	73.10	3.76	1.43
7	0.0320	132.0	132	0.6	3.06	2.20	5.26	2.39	74.00	3.73	1.53
8	0.0420	144.0	144	0.8	3.33	2.07	5.40	2.61	74.90	3.74	1.67
9	0.0510	154.0	154	0.9	3.56	1.96	5.52	2.82	75.70	3.74	1.78
10	0.0610	163.0	163	1.1	3.76	1.90	5.66	2.98	76.10	3.78	1.88
11	0.0700	171.0	171	1.3	3.94	1.87	5.81	3.10	76.30	3.84	1.97
12	0.0830	180.0	180	1.5	4.13	1.86	5.99	3.22	76.40	3.92	2.07
13	0.1020	192.0	192	1.9	4.39	1.87	6.26	3.35	76.30	4.07	2.20
14	0.1280	206.0	206	2.3	4.69	1.96	6.65	3.39	75.70	4.30	2.34
15	0.1530	218.0	218	2.8	4.94	1.96	6.90	3.52	75.70	4.43	2.47
16	0.1790	230.0	230	3.3	5.19	2.03	7.22	3.55	75.20	4.62	2.59
17	0.2040	241.0	241	3.7	5.41	2.15	7.55	3.52	74.40	4.85	2.70
18	0.2270	250.0	250	4.2	5.59	2.17	7.76	3.57	74.20	4.97	2.79
19	0.2550	260.0	260	4.7	5.78	2.26	8.04	3.56	73.60	5.15	2.89
20	0.2810	267.0	267	5.1	5.90	2.35	8.25	3.52	73.00	5.30	2.95
21	0.3030	274.0	274	5.5	6.03	2.39	8.42	3.52	72.70	5.41	3.02
22	0.3290	280.0	280	6.0	6.13	2.45	8.58	3.51	72.30	5.52	3.07

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
23	0.3540	285.0	285	6.5	6.21	2.52	8.73	3.47	71.80	5.63	3.11
24	0.3800	289.0	289	6.9	6.27	2.56	8.83	3.45	71.50	5.70	3.13
25	0.4050	293.0	293	7.4	6.32	2.61	8.93	3.43	71.20	5.77	3.16
26	0.4310	297.0	297	7.9	6.38	2.65	9.03	3.41	70.90	5.84	3.19
27	0.4570	300.0	300	8.4	6.41	2.72	9.13	3.35	70.40	5.93	3.20
28	0.4820	303.0	303	8.8	6.44	2.71	9.15	3.38	70.50	5.93	3.22
29	0.5080	306.0	306	9.3	6.47	2.74	9.21	3.37	70.30	5.97	3.24
30	0.5330	309.0	309	9.7	6.50	2.79	9.30	3.33	69.90	6.04	3.25
31	0.5590	312.0	312	10.2	6.53	2.79	9.32	3.34	69.90	6.06	3.26
32	0.5840	318.0	318	10.7	6.62	2.81	9.43	3.36	69.80	6.12	3.31
33	0.6100	323.0	323	11.2	6.69	2.84	9.53	3.36	69.60	6.18	3.34
34	0.6350	328.0	328	11.6	6.76	2.85	9.61	3.37	69.50	6.23	3.38
35	0.6580	332.0	332	12.0	6.81	2.87	9.67	3.38	69.40	6.27	3.40
36	0.6830	337.0	337	12.5	6.88	2.88	9.76	3.39	69.30	6.32	3.44
37	0.7090	341.0	341	13.0	6.92	2.95	9.87	3.34	68.80	6.41	3.46
38	0.7340	347.0	347	13.4	7.00	2.91	9.91	3.41	69.10	6.41	3.50
39	0.7600	355.0	355	13.9	7.13	2.94	10.06	3.43	68.90	6.50	3.56
40	0.7850	356.0	356	14.4	7.11	2.98	10.09	3.38	68.60	6.53	3.55
41	0.8110	360.0	360	14.8	7.15	2.97	10.11	3.41	68.70	6.54	3.57
42	0.8200	361.0	361	15.0	7.15	2.98	10.13	3.40	68.60	6.56	3.58

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	114.800			354.370
Moisture content: Dry soil+tare, gms.	100.000			313.200
Moisture content: Tare, gms.	0.000			15.670
Moisture, %	14.8	19.2	13.8	13.8
Moist specimen weight, gms.	1277.61			
Diameter, in.	2.865	2.933	2.833	
Area, in.²	6.447	6.756	6.305	
Height, in.	5.656	5.656	5.480	
Net decrease in height, in.		0.000	0.176	
Net decrease in water volume, cc.			60.000	
Wet density, pcf	133.5	132.3	139.7	
Dry density, pcf	116.3	111.0	122.7	
Void ratio	0.4496	0.5192	0.3736	
Saturation, %	88.9	100.0	100.0	

Test Readings for Specimen No. 3

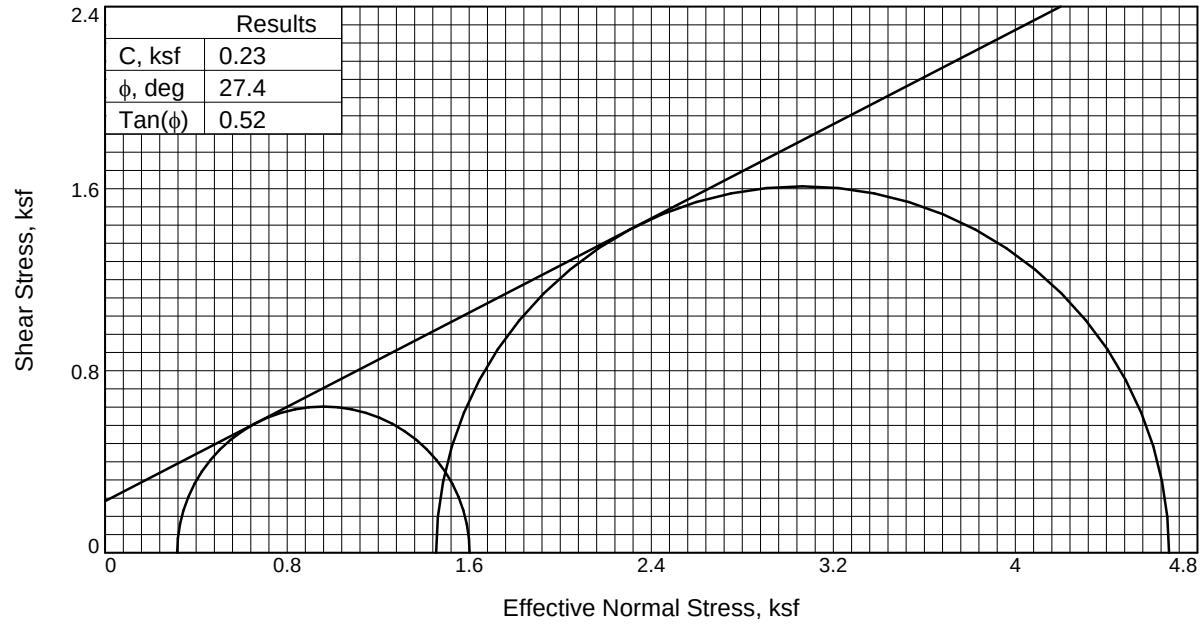
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 92.60 psi (13.33 ksf)
Consolidation back pressure = 37.00 psi (5.33 ksf)
Consolidation effective confining stress = 8.01 ksf
Strain rate, %/min. = 0.09
Fail. Stress = 7.57 ksf **at reading no.** 15
Ult. Stress = 11.36 ksf **at reading no.** 42

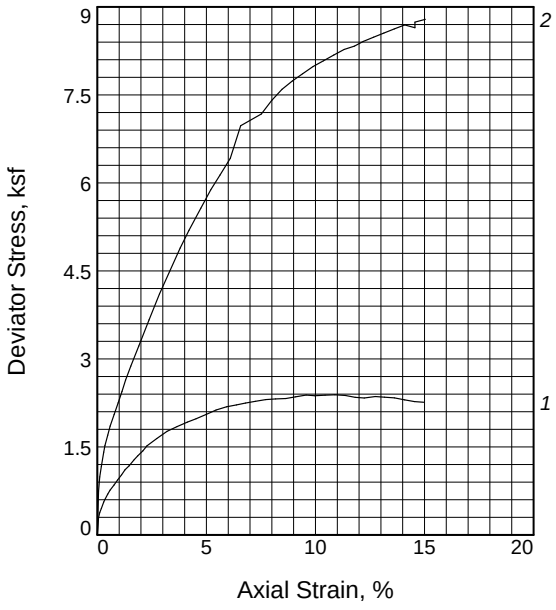
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	7.76	7.76	1.00	38.70	7.76	0.00
1	0.0030	58.0	58	0.1	1.32	7.53	8.86	1.18	40.30	8.19	0.66
2	0.0060	90.0	90	0.1	2.05	7.24	9.30	1.28	42.30	8.27	1.03
3	0.0100	111.0	111	0.2	2.53	6.98	9.51	1.36	44.10	8.25	1.27
4	0.0160	142.0	142	0.3	3.23	6.51	9.74	1.50	47.40	8.13	1.62
5	0.0190	153.0	153	0.3	3.48	6.29	9.78	1.55	48.90	8.03	1.74
6	0.0260	173.0	173	0.5	3.93	5.89	9.82	1.67	51.70	7.86	1.97
7	0.0320	190.0	190	0.6	4.31	5.53	9.84	1.78	54.20	7.69	2.16
8	0.0420	210.0	210	0.8	4.76	5.07	9.83	1.94	57.40	7.45	2.38
9	0.0510	227.0	227	0.9	5.14	4.69	9.83	2.09	60.00	7.26	2.57
10	0.0610	242.0	242	1.1	5.47	4.41	9.87	2.24	62.00	7.14	2.73
11	0.0700	256.0	256	1.3	5.77	4.10	9.88	2.41	64.10	6.99	2.89
12	0.0830	272.0	272	1.5	6.12	3.84	9.96	2.59	65.90	6.90	3.06
13	0.1020	294.0	294	1.9	6.59	3.63	10.22	2.82	67.40	6.92	3.29
14	0.1280	319.0	319	2.3	7.12	3.51	10.63	3.03	68.20	7.07	3.56
15	0.1530	341.0	341	2.8	7.57	3.47	11.04	3.18	68.50	7.26	3.79
16	0.1790	362.0	362	3.3	8.00	3.48	11.48	3.30	68.40	7.48	4.00
17	0.2040	381.0	381	3.7	8.38	3.57	11.95	3.35	67.80	7.76	4.19
18	0.2270	396.0	396	4.1	8.67	3.64	12.31	3.38	67.30	7.98	4.33
19	0.2550	414.0	414	4.7	9.02	3.73	12.75	3.42	66.70	8.24	4.51
20	0.2810	428.0	428	5.1	9.27	3.84	13.12	3.41	65.90	8.48	4.64
21	0.3030	440.0	440	5.5	9.49	4.00	13.50	3.37	64.80	8.75	4.75
22	0.3290	453.0	453	6.0	9.73	4.05	13.77	3.40	64.50	8.91	4.86

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
23	0.3540	463.0	463	6.5	9.89	4.18	14.07	3.37	63.60	9.12	4.95
24	0.3800	472.0	472	6.9	10.03	4.33	14.37	3.31	62.50	9.35	5.02
25	0.4050	481.0	481	7.4	10.17	4.41	14.58	3.31	62.00	9.49	5.09
26	0.4310	490.0	490	7.9	10.31	4.54	14.85	3.27	61.10	9.69	5.16
27	0.4570	499.0	499	8.3	10.45	4.69	15.14	3.23	60.00	9.92	5.22
28	0.4820	507.0	507	8.8	10.56	4.77	15.33	3.22	59.50	10.05	5.28
29	0.5080	515.0	515	9.3	10.67	4.87	15.54	3.19	58.80	10.20	5.34
30	0.5330	522.0	522	9.7	10.76	5.00	15.76	3.15	57.90	10.38	5.38
31	0.5590	529.0	529	10.2	10.85	5.08	15.93	3.13	57.30	10.51	5.42
32	0.5840	536.0	536	10.7	10.94	5.18	16.12	3.11	56.60	10.65	5.47
33	0.6100	542.0	542	11.1	11.00	5.30	16.30	3.08	55.80	10.80	5.50
34	0.6350	548.0	548	11.6	11.07	5.39	16.45	3.05	55.20	10.92	5.53
35	0.6580	553.0	553	12.0	11.11	5.44	16.56	3.04	54.80	11.00	5.56
36	0.6830	557.0	557	12.5	11.14	5.53	16.67	3.01	54.20	11.10	5.57
37	0.7090	563.0	563	12.9	11.20	5.66	16.85	2.98	53.30	11.26	5.60
38	0.7340	568.0	568	13.4	11.24	5.67	16.91	2.98	53.20	11.29	5.62
39	0.7600	572.0	572	13.9	11.25	5.73	16.98	2.96	52.80	11.36	5.63
40	0.7850	577.0	577	14.3	11.29	5.83	17.12	2.94	52.10	11.48	5.65
41	0.8110	583.0	583	14.8	11.34	5.85	17.19	2.94	52.00	11.52	5.67
42	0.8200	585.0	585	15.0	11.36	5.88	17.24	2.93	51.80	11.56	5.68

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.





Sample No.		1	2
Initial	Water Content, %	14.8	14.8
	Dry Density, pcf	116.0	116.0
	Saturation, %	88.4	88.4
	Void Ratio	0.4528	0.4528
	Diameter, in.	2.858	2.858
	Height, in.	5.523	5.523
At Test	Water Content, %	16.4	16.3
	Dry Density, pcf	116.8	117.1
	Saturation, %	100.0	100.0
	Void Ratio	0.4428	0.4389
	Diameter, in.	2.852	2.855
	Height, in.	5.507	5.480
Strain rate, %/min.		0.04	0.04
Eff. Cell Pressure, ksf		0.76	3.00
Fail. Stress, ksf		1.29	3.22
Total Pore Pr., ksf		9.89	10.35
Strain, %		1.7	1.9
Ult. Stress, ksf		2.26	8.79
Total Pore Pr., ksf		8.96	7.26
Strain, %		15.0	15.0
$\bar{\sigma}_1$ Failure, ksf		1.60	4.68
$\bar{\sigma}_3$ Failure, ksf		0.32	1.45

Type of Test:
CU with Pore Pressures
Sample Type: Intact specimen
Description: Light gray Lean clay

LL= 41 **PL=** 23 **PI=** 18
Assumed Specific Gravity= 2.70
Remarks: Failure criterion is
Specimen 1: 11.7-12.2 ft
Specimen 2: 11.3-11.7 ft

Figure 1 of 2

Client: Big Rivers Electrical Corporation

Project: Ash Pond Closure Exploration

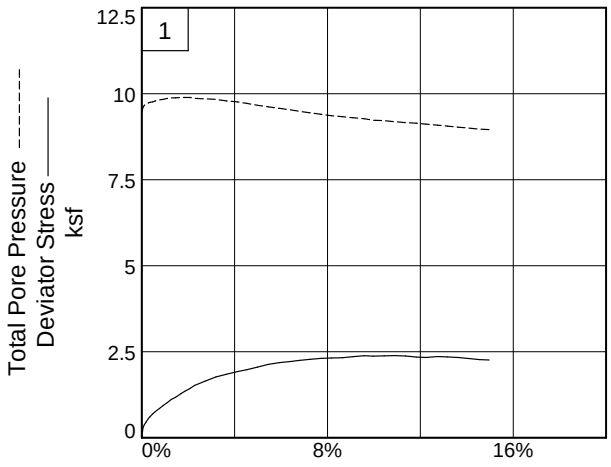
Source of Sample: B-2 **Depth:** 11.0 - 13.0 ft

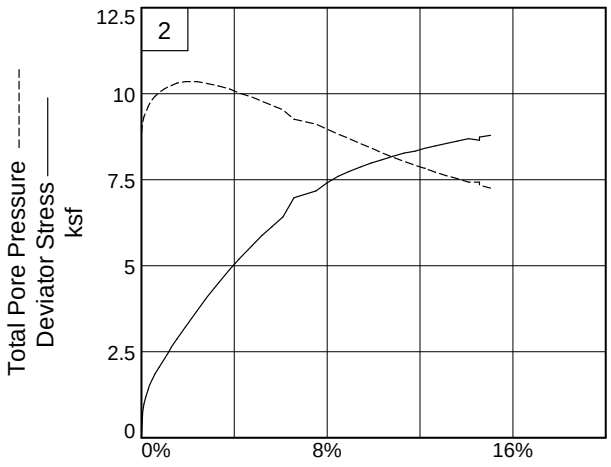
Proj. No.: 1178-19-003 **Date Sampled:** 03/25-04/05/19

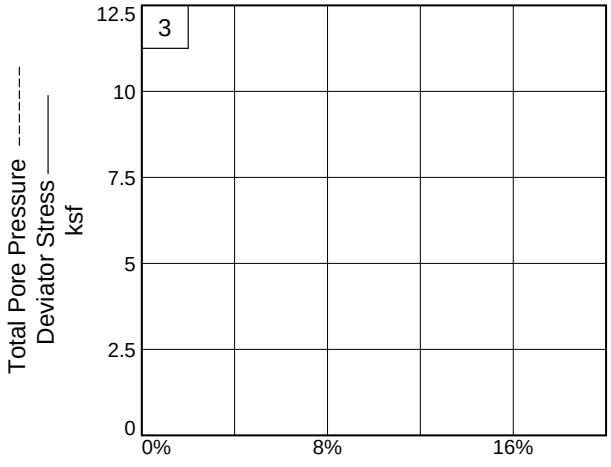
TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Cincinnati, Ohio

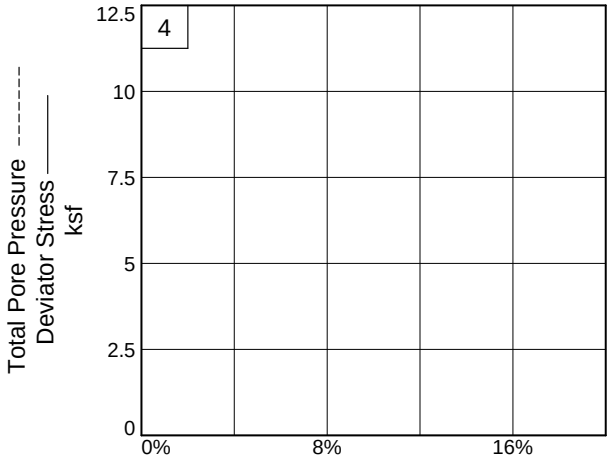
Tested By: M. Weber

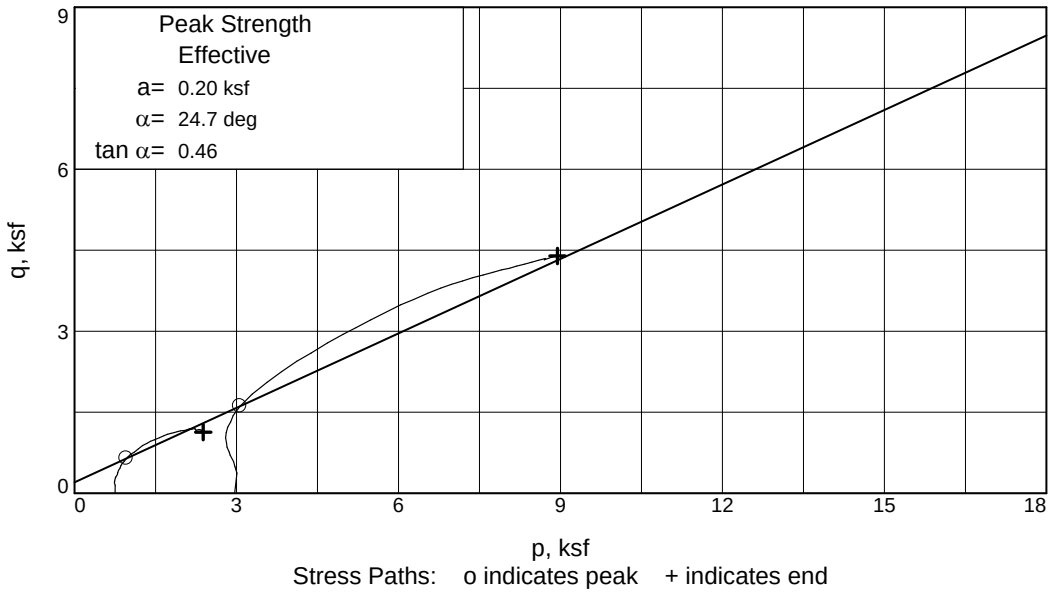
C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.











Stress Paths: o indicates peak + indicates end

Client: Big Rivers Electrical Corporation
Project: Ash Pond Closure Exploration
Source of Sample: B-2 **Depth:** 11.0 - 13.0 ft
Project No.: 1178-19-003 **Figure** 2 of 2

S&ME, Inc.

Tested By: M. Weber

TRIAXIAL COMPRESSION TEST 7/1/2019

CU with Pore Pressures 4:32 PM

Date: 03/25-04/05/19
Client: Big Rivers Electrical Corporation
Project: Ash Pond Closure Exploration
Project No.: 1178-19-003
Location: B-2
Depth: 11.0 - 13.0 ft
Description: Light gray Lean clay
Remarks: Failure criterion is
Specimen 1: 11.7-12.2 ft
Specimen 2: 11.3-11.7 ft
Type of Sample: Intact specimen
Assumed Specific Gravity=2.70 **LL=**41 **PL=**23 **PI=**18
Test Method: ASTM D 4767 Method B

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	243.090			116.400
Moisture content: Dry soil+tare, gms.	234.640			100.000
Moisture content: Tare, gms.	177.650			0.000
Moisture, %	14.8	16.8	16.4	16.4
Moist specimen weight, gms.	1239.02			
Diameter, in.	2.858	2.859	2.852	
Area, in.²	6.415	6.420	6.389	
Height, in.	5.523	5.523	5.507	
Net decrease in height, in.		0.000	0.016	
Net decrease in water volume, cc.			4.450	
Wet density, pcf	133.2	135.4	136.0	
Dry density, pcf	116.0	115.9	116.8	
Void ratio	0.4528	0.4539	0.4428	
Saturation, %	88.4	100.0	100.0	

Test Readings for Specimen No. 1

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 70.90 psi (10.21 ksf)
Consolidation back pressure = 65.60 psi (9.45 ksf)
Consolidation effective confining stress = 0.76 ksf
Strain rate, %/min. = 0.04
Fail. Stress = 1.29 ksf **at reading no.** 13
Ult. Stress = 2.26 ksf **at reading no.** 44

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	0.75	0.75	1.00	65.70	0.75	0.00
1	0.0030	13.0	13	0.1	0.29	0.60	0.90	1.48	66.70	0.75	0.15
2	0.0060	17.0	17	0.1	0.38	0.55	0.93	1.70	67.10	0.74	0.19
3	0.0100	20.0	20	0.2	0.45	0.52	0.97	1.87	67.30	0.74	0.22
4	0.0160	25.0	25	0.3	0.56	0.48	1.04	2.18	67.60	0.76	0.28
5	0.0190	27.0	27	0.3	0.61	0.46	1.07	2.32	67.70	0.76	0.30
6	0.0260	31.0	31	0.5	0.70	0.45	1.14	2.56	67.80	0.79	0.35
7	0.0320	34.0	34	0.6	0.76	0.42	1.18	2.82	68.00	0.80	0.38
8	0.0420	38.0	38	0.8	0.85	0.39	1.24	3.19	68.20	0.81	0.42
9	0.0510	42.0	42	0.9	0.94	0.37	1.31	3.50	68.30	0.84	0.47
10	0.0610	46.0	46	1.1	1.03	0.35	1.37	3.97	68.50	0.86	0.51
11	0.0700	50.0	50	1.3	1.11	0.33	1.44	4.36	68.60	0.89	0.56
12	0.0800	53.0	53	1.5	1.18	0.33	1.51	4.55	68.60	0.92	0.59
13	0.0930	58.0	58	1.7	1.29	0.32	1.60	5.06	68.70	0.96	0.64
14	0.1020	61.0	61	1.9	1.35	0.32	1.67	5.26	68.70	0.99	0.67
15	0.1150	65.0	65	2.1	1.43	0.32	1.75	5.53	68.70	1.03	0.72
16	0.1250	69.0	69	2.3	1.52	0.35	1.87	5.40	68.50	1.11	0.76
17	0.1500	75.0	75	2.7	1.64	0.36	2.00	5.57	68.40	1.18	0.82
18	0.1760	81.0	81	3.2	1.77	0.37	2.14	5.72	68.30	1.26	0.88
19	0.2010	85.0	85	3.6	1.85	0.42	2.26	5.42	68.00	1.34	0.92
20	0.2270	89.0	89	4.1	1.92	0.45	2.37	5.31	67.80	1.41	0.96
21	0.2490	92.0	92	4.5	1.98	0.49	2.47	5.04	67.50	1.48	0.99
22	0.2750	96.0	96	5.0	2.06	0.55	2.60	4.76	67.10	1.57	1.03
23	0.3000	100.0	100	5.4	2.13	0.59	2.72	4.61	66.80	1.66	1.07
24	0.3260	103.0	103	5.9	2.18	0.63	2.82	4.45	66.50	1.73	1.09
25	0.3510	105.0	105	6.4	2.22	0.68	2.89	4.27	66.20	1.78	1.11
26	0.3740	107.0	107	6.8	2.25	0.72	2.97	4.12	65.90	1.84	1.12
27	0.3990	109.0	109	7.2	2.28	0.76	3.04	3.99	65.60	1.90	1.14
28	0.4250	111.0	111	7.7	2.31	0.81	3.11	3.86	65.30	1.96	1.15
29	0.4500	112.0	112	8.2	2.32	0.85	3.17	3.73	65.00	2.01	1.16
30	0.4760	113.0	113	8.6	2.33	0.88	3.20	3.65	64.80	2.04	1.16
31	0.5010	115.0	115	9.1	2.36	0.91	3.26	3.60	64.60	2.09	1.18
32	0.5270	117.0	117	9.6	2.38	0.94	3.32	3.55	64.40	2.13	1.19
33	0.5490	117.0	117	10.0	2.37	0.98	3.35	3.42	64.10	2.17	1.19
34	0.5750	118.0	118	10.4	2.38	0.99	3.38	3.40	64.00	2.18	1.19
35	0.6000	119.0	119	10.9	2.39	1.02	3.41	3.34	63.80	2.22	1.19
36	0.6260	119.0	119	11.4	2.38	1.05	3.43	3.26	63.60	2.24	1.19
37	0.6510	118.0	118	11.8	2.35	1.07	3.41	3.20	63.50	2.24	1.17
38	0.6740	118.0	118	12.2	2.33	1.09	3.43	3.13	63.30	2.26	1.17
39	0.7020	120.0	120	12.7	2.36	1.12	3.48	3.10	63.10	2.30	1.18
40	0.7250	120.0	120	13.2	2.35	1.15	3.50	3.04	62.90	2.33	1.17
41	0.7500	120.0	120	13.6	2.34	1.18	3.52	2.98	62.70	2.35	1.17
42	0.7760	119.0	119	14.1	2.30	1.21	3.51	2.90	62.50	2.36	1.15
43	0.8010	118.0	118	14.5	2.27	1.24	3.51	2.84	62.30	2.37	1.14
44	0.8240	118.0	118	15.0	2.26	1.25	3.51	2.81	62.20	2.38	1.13

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	243.090			1332.240
Moisture content: Dry soil+tare, gms.	234.640			1148.180
Moisture content: Tare, gms.	177.630			15.800
Moisture, %	14.8	17.4	16.3	16.3
Moist specimen weight, gms.	1239.02			
Diameter, in.	2.858	2.875	2.855	
Area, in.²	6.415	6.492	6.404	
Height, in.	5.523	5.523	5.480	
Net decrease in height, in.		0.000	0.043	
Net decrease in water volume, cc.			12.500	
Wet density, pcf	133.2	134.6	136.2	
Dry density, pcf	116.0	114.7	117.1	
Void ratio	0.4528	0.4701	0.4389	
Saturation, %	88.4	100.0	100.0	

Test Readings for Specimen No. 2

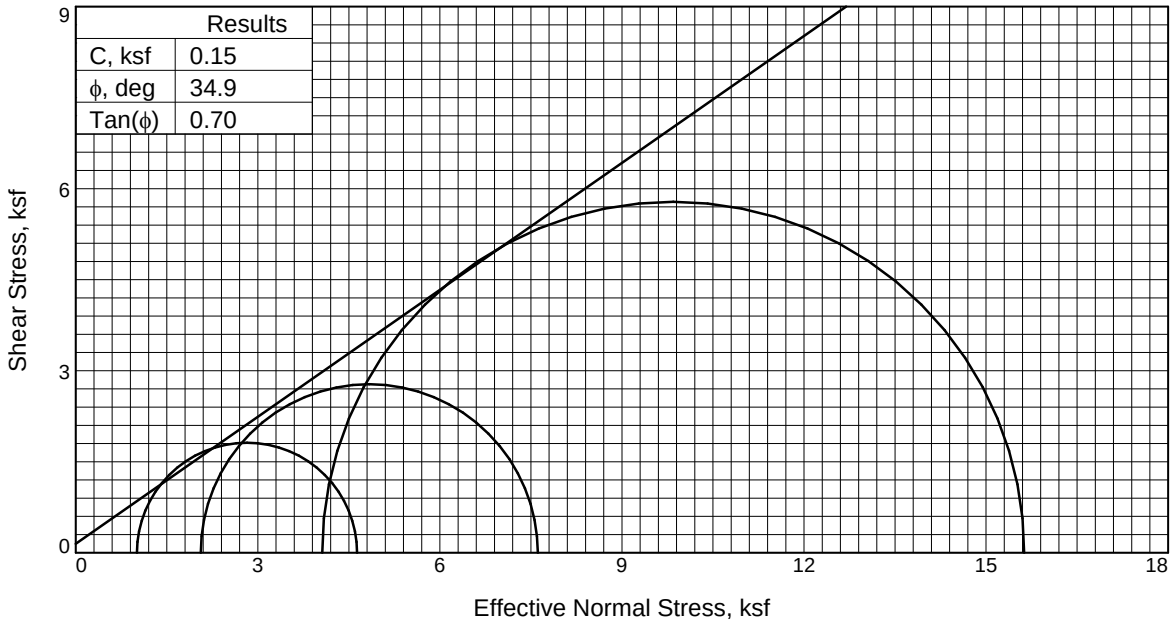
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 82.00 psi (11.81 ksf)
Consolidation back pressure = 61.20 psi (8.81 ksf)
Consolidation effective confining stress = 3.00 ksf
Strain rate, %/min. = 0.04
Fail. Stress = 3.22 ksf **at reading no.** 13
Ult. Stress = 8.79 ksf **at reading no.** 41

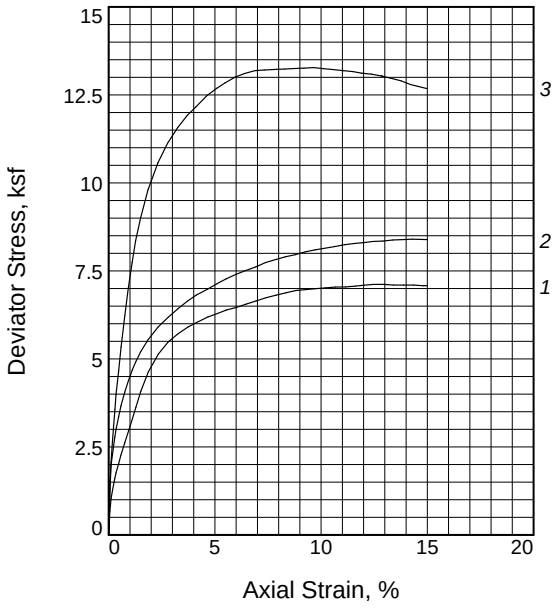
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	2.97	2.97	1.00	61.40	2.97	0.00
1	0.0030	33.0	33	0.1	0.74	2.64	3.38	1.28	63.70	3.01	0.37
2	0.0060	44.0	44	0.1	0.99	2.48	3.47	1.40	64.80	2.97	0.49
3	0.0100	52.0	52	0.2	1.17	2.36	3.53	1.49	65.60	2.95	0.58
4	0.0160	63.0	63	0.3	1.41	2.17	3.59	1.65	66.90	2.88	0.71
5	0.0190	68.0	68	0.3	1.52	2.10	3.63	1.72	67.40	2.86	0.76
6	0.0260	76.0	76	0.5	1.70	1.97	3.67	1.86	68.30	2.82	0.85
7	0.0320	83.0	83	0.6	1.86	1.89	3.74	1.98	68.90	2.81	0.93
8	0.0420	92.0	92	0.8	2.05	1.77	3.82	2.16	69.70	2.80	1.03
9	0.0520	101.0	101	0.9	2.25	1.68	3.93	2.34	70.30	2.81	1.12
10	0.0620	110.0	110	1.1	2.45	1.61	4.06	2.52	70.80	2.84	1.22
11	0.0710	119.0	119	1.3	2.64	1.57	4.21	2.68	71.10	2.89	1.32
12	0.0840	130.0	130	1.5	2.88	1.50	4.38	2.92	71.60	2.94	1.44
13	0.1040	146.0	146	1.9	3.22	1.45	4.68	3.21	71.90	3.06	1.61
14	0.1300	167.0	167	2.4	3.67	1.45	5.12	3.52	71.90	3.29	1.83
15	0.1560	188.0	188	2.8	4.11	1.51	5.62	3.72	71.50	3.57	2.05
16	0.1820	207.0	207	3.3	4.50	1.58	6.08	3.84	71.00	3.83	2.25
17	0.2080	226.0	226	3.8	4.89	1.67	6.56	3.93	70.40	4.12	2.44
18	0.2300	241.0	241	4.2	5.19	1.79	6.98	3.91	69.60	4.38	2.60
19	0.2600	260.0	260	4.7	5.57	1.90	7.47	3.93	68.80	4.69	2.78
20	0.2850	276.0	276	5.2	5.88	2.03	7.91	3.90	67.90	4.97	2.94
21	0.3080	289.0	289	5.6	6.13	2.15	8.28	3.86	67.10	5.21	3.07
22	0.3340	304.0	304	6.1	6.42	2.28	8.69	3.82	66.20	5.48	3.21

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
23	0.3600	332.0	332	6.6	6.98	2.55	9.52	3.74	64.30	6.04	3.49
24	0.4120	345.0	345	7.5	7.17	2.69	9.87	3.66	63.30	6.28	3.59
25	0.4380	358.0	358	8.0	7.41	2.84	10.24	3.61	62.30	6.54	3.70
26	0.4640	369.0	369	8.5	7.60	2.98	10.58	3.55	61.30	6.78	3.80
27	0.4900	378.0	378	8.9	7.74	3.11	10.85	3.49	60.40	6.98	3.87
28	0.5160	386.0	386	9.4	7.86	3.25	11.12	3.42	59.40	7.19	3.93
29	0.5420	394.0	394	9.9	7.98	3.38	11.37	3.36	58.50	7.38	3.99
30	0.5680	401.0	401	10.4	8.08	3.53	11.61	3.29	57.50	7.57	4.04
31	0.5940	408.0	408	10.8	8.18	3.66	11.84	3.24	56.60	7.75	4.09
32	0.6200	415.0	415	11.3	8.28	3.77	12.05	3.19	55.80	7.91	4.14
33	0.6460	420.0	420	11.8	8.33	3.89	12.22	3.14	55.00	8.05	4.17
34	0.6680	426.0	426	12.2	8.41	3.97	12.39	3.12	54.40	8.18	4.21
35	0.6940	432.0	432	12.7	8.48	4.09	12.57	3.07	53.60	8.33	4.24
36	0.7200	438.0	438	13.1	8.56	4.19	12.75	3.04	52.90	8.47	4.28
37	0.7460	444.0	444	13.6	8.63	4.28	12.90	3.02	52.30	8.59	4.31
38	0.7720	450.0	450	14.1	8.69	4.38	13.07	2.99	51.60	8.72	4.35
39	0.7980	450.0	450	14.6	8.65	4.38	13.02	2.97	51.60	8.70	4.32
40	0.7980	455.0	455	14.6	8.74	4.46	13.21	2.96	51.00	8.83	4.37
41	0.8240	460.0	460	15.0	8.79	4.55	13.34	2.93	50.40	8.94	4.39

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.





Sample No.		1	2	3
Initial	Water Content, %	17.6	18.4	17.4
	Dry Density, pcf	108.3	111.5	112.0
	Saturation, %	85.3	97.0	93.0
	Void Ratio	0.5569	0.5119	0.5049
	Diameter, in.	2.872	2.870	2.869
	Height, in.	5.629	5.657	5.639
At Test	Water Content, %	19.5	19.0	18.0
	Dry Density, pcf	110.4	111.4	113.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.5265	0.5130	0.4860
	Diameter, in.	2.861	2.891	2.880
	Height, in.	5.562	5.579	5.524
Strain rate, %/min.		0.17	0.17	0.17
Eff. Cell Pressure, ksf		2.5	4.9	8.7
Fail. Stress, ksf		3.6	5.6	11.6
Total Pore Pr., ksf		10.2	10.9	8.5
Strain, %		1.3	1.9	3.2
Ult. Stress, ksf		7.1	8.4	12.7
Total Pore Pr., ksf		8.2	9.1	5.3
Strain, %		15.0	15.0	15.0
$\bar{\sigma}_1$ Failure, ksf		4.6	7.6	15.6
$\bar{\sigma}_3$ Failure, ksf		1.0	2.1	4.1

Type of Test:
CU with Pore Pressures

Sample Type: Intact specimen

Description: Dark yellowish brown Lean clay with sand

LL= 36 **PL=** 18 **PI=** 18

Assumed Specific Gravity= 2.70

Remarks: Failure criterion is peak pore pressure.
Specimen 1: 49.2-49.7 ft
Specimen 2: 49.8-50.9 ft
Specimen 3: 48.6-49.1 ft

Figure 1 of 2

Client: Big Rivers Electrical Corporation

Project: Ash Pond Closure Exploration

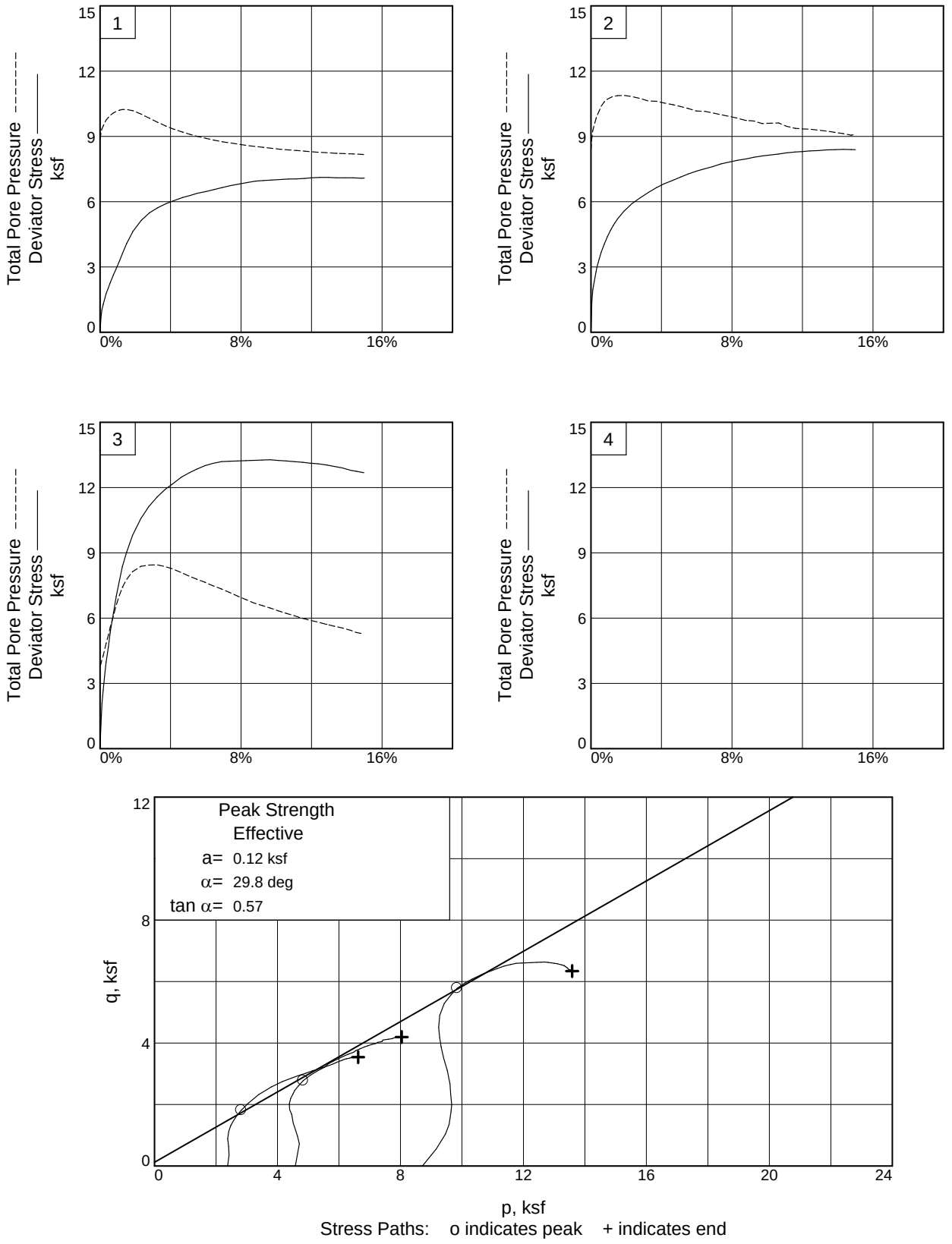
Source of Sample: B-2 **Depth:** 48.5 - 50.5 ft

Proj. No.: 1178-19-003 **Date Sampled:** 03/25-04/05/19

TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Cincinnati, Ohio

Tested By: M. Weber

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.



Client: Big Rivers Electrical Corporation
Project: Ash Pond Closure Exploration
Source of Sample: B-2 **Depth:** 48.5 - 50.5 ft
Project No.: 1178-19-003 **Figure** 2 of 2

S&ME, Inc.

Tested By: M. Weber

TRIAXIAL COMPRESSION TEST 7/1/2019

CU with Pore Pressures 4:33 PM

Date: 03/25-04/05/19
Client: Big Rivers Electrical Corporation
Project: Ash Pond Closure Exploration
Project No.: 1178-19-003
Location: B-2
Depth: 48.5 - 50.5 ft
Description: Dark yellowish brown Lean clay with sand
Remarks: Failure criterion is peak pore pressure.
Specimen 1: 49.2-49.7 ft
Specimen 2: 49.8-50.9 ft
Specimen 3: 48.6-49.1 ft
Type of Sample: Intact specimen
Assumed Specific Gravity=2.70 **LL=**36 **PL=**18 **PI=**18
Test Method: ASTM D 4767 Method B

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	117.600			119.500
Moisture content: Dry soil+tare, gms.	100.000			100.000
Moisture content: Tare, gms.	0.000			0.000
Moisture, %	17.6	20.6	19.5	19.5
Moist specimen weight, gms.	1218.69			
Diameter, in.	2.872	2.872	2.861	
Area, in.²	6.478	6.480	6.428	
Height, in.	5.629	5.629	5.562	
Net decrease in height, in.		0.000	0.067	
Net decrease in water volume, cc.			11.800	
Wet density, pcf	127.3	130.6	132.0	
Dry density, pcf	108.3	108.2	110.4	
Void ratio	0.5569	0.5572	0.5265	
Saturation, %	85.3	100.0	100.0	

Test Readings for Specimen No. 1

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 78.10 psi (11.25 ksf)
Consolidation back pressure = 60.90 psi (8.77 ksf)
Consolidation effective confining stress = 2.48 ksf
Strain rate, %/min. = 0.17
Fail. Stress = 3.63 ksf **at reading no.** 11
Ult. Stress = 7.08 ksf **at reading no.** 42

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	2.38	2.38	1.00	61.60	2.38	0.00
1	0.0030	30.0	30	0.1	0.67	2.09	2.76	1.32	63.60	2.42	0.34
2	0.0060	46.0	46	0.1	1.03	1.90	2.93	1.54	64.90	2.42	0.51
3	0.0100	57.0	57	0.2	1.27	1.77	3.05	1.72	65.80	2.41	0.64
4	0.0160	72.0	72	0.3	1.61	1.58	3.19	2.02	67.10	2.39	0.80
5	0.0190	79.0	79	0.3	1.76	1.50	3.26	2.18	67.70	2.38	0.88
6	0.0260	91.0	91	0.5	2.03	1.38	3.41	2.47	68.50	2.40	1.01
7	0.0320	102.0	102	0.6	2.27	1.28	3.55	2.77	69.20	2.42	1.14
8	0.0420	118.0	118	0.8	2.62	1.17	3.79	3.25	70.00	2.48	1.31
9	0.0520	133.0	133	0.9	2.95	1.09	4.05	3.70	70.50	2.57	1.48
10	0.0620	149.0	149	1.1	3.30	1.04	4.34	4.18	70.90	2.69	1.65
11	0.0710	164.0	164	1.3	3.63	1.01	4.63	4.60	71.10	2.82	1.81
12	0.0840	185.0	185	1.5	4.08	1.01	5.09	5.05	71.10	3.05	2.04
13	0.1040	211.0	211	1.9	4.64	1.07	5.70	5.35	70.70	3.38	2.32
14	0.1300	235.0	235	2.3	5.14	1.22	6.37	5.20	69.60	3.79	2.57
15	0.1560	252.0	252	2.8	5.49	1.41	6.90	4.89	68.30	4.15	2.74
16	0.1820	264.0	264	3.3	5.72	1.60	7.32	4.58	67.00	4.46	2.86
17	0.2080	274.0	274	3.7	5.91	1.77	7.68	4.34	65.80	4.73	2.95
18	0.2300	281.0	281	4.1	6.03	1.90	7.94	4.17	64.90	4.92	3.02
19	0.2600	290.0	290	4.7	6.19	2.04	8.24	4.03	63.90	5.14	3.10
20	0.2850	296.0	296	5.1	6.29	2.16	8.45	3.91	63.10	5.31	3.15
21	0.3080	302.0	302	5.5	6.39	2.25	8.64	3.84	62.50	5.44	3.20
22	0.3340	307.0	307	6.0	6.46	2.33	8.80	3.77	61.90	5.56	3.23
23	0.3600	313.0	313	6.5	6.56	2.42	8.98	3.71	61.30	5.70	3.28
24	0.3860	319.0	319	6.9	6.65	2.49	9.14	3.67	60.80	5.82	3.33
25	0.4120	325.0	325	7.4	6.74	2.55	9.29	3.64	60.40	5.92	3.37
26	0.4380	330.0	330	7.9	6.81	2.61	9.42	3.61	60.00	6.01	3.41
27	0.4640	335.0	335	8.3	6.88	2.66	9.54	3.58	59.60	6.10	3.44
28	0.4900	340.0	340	8.8	6.95	2.71	9.65	3.57	59.30	6.18	3.47
29	0.5160	343.0	343	9.3	6.97	2.75	9.72	3.53	59.00	6.24	3.49
30	0.5420	346.0	346	9.7	7.00	2.79	9.79	3.50	58.70	6.29	3.50
31	0.5680	349.0	349	10.2	7.02	2.84	9.86	3.47	58.40	6.35	3.51
32	0.5940	352.0	352	10.7	7.04	2.87	9.91	3.46	58.20	6.39	3.52
33	0.6200	354.0	354	11.1	7.05	2.89	9.94	3.43	58.00	6.42	3.52
34	0.6460	357.0	357	11.6	7.07	2.92	9.99	3.42	57.80	6.46	3.53
35	0.6680	360.0	360	12.0	7.10	2.95	10.05	3.40	57.60	6.50	3.55
36	0.6940	363.0	363	12.5	7.12	2.98	10.10	3.39	57.40	6.54	3.56
37	0.7200	365.0	365	12.9	7.12	3.00	10.11	3.38	57.30	6.55	3.56
38	0.7460	366.0	366	13.4	7.10	3.02	10.12	3.35	57.10	6.57	3.55
39	0.7720	368.0	368	13.9	7.10	3.04	10.14	3.34	57.00	6.59	3.55
40	0.7980	370.0	370	14.3	7.10	3.05	10.15	3.33	56.90	6.60	3.55
41	0.8240	371.0	371	14.8	7.08	3.07	10.15	3.31	56.80	6.61	3.54
42	0.8340	372.0	372	15.0	7.08	3.08	10.17	3.30	56.70	6.62	3.54

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	118.400			119.000
Moisture content: Dry soil+tare, gms.	100.000			100.000
Moisture content: Tare, gms.	0.000			0.000
Moisture, %	18.4	21.4	19.0	19.0
Moist specimen weight, gms.	1268.02			
Diameter, in.	2.870	2.932	2.891	
Area, in.²	6.469	6.753	6.564	
Height, in.	5.657	5.657	5.579	
Net decrease in height, in.		0.000	0.078	
Net decrease in water volume, cc.			25.900	
Wet density, pcf	132.0	129.7	132.6	
Dry density, pcf	111.5	106.8	111.4	
Void ratio	0.5119	0.5783	0.5130	
Saturation, %	97.0	100.0	100.0	

Test Readings for Specimen No. 2

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 89.90 psi (12.95 ksf)
Consolidation back pressure = 55.90 psi (8.05 ksf)
Consolidation effective confining stress = 4.90 ksf
Strain rate, %/min. = 0.17
Fail. Stress = 5.55 ksf **at reading no.** 13
Ult. Stress = 8.39 ksf **at reading no.** 41

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	4.58	4.58	1.00	58.10	4.58	0.00
1	0.0030	66.0	66	0.1	1.45	3.99	5.44	1.36	62.20	4.71	0.72
2	0.0060	89.0	89	0.1	1.95	3.67	5.62	1.53	64.40	4.65	0.98
3	0.0100	105.0	105	0.2	2.30	3.44	5.74	1.67	66.00	4.59	1.15
4	0.0160	127.0	127	0.3	2.78	3.12	5.90	1.89	68.20	4.51	1.39
5	0.0190	137.0	137	0.3	3.00	3.00	5.99	2.00	69.10	4.49	1.50
6	0.0260	154.0	154	0.5	3.36	2.78	6.14	2.21	70.60	4.46	1.68
7	0.0320	168.0	168	0.6	3.66	2.56	6.23	2.43	72.10	4.40	1.83
8	0.0420	186.0	186	0.8	4.05	2.36	6.41	2.71	73.50	4.39	2.02
9	0.0520	202.0	202	0.9	4.39	2.23	6.62	2.97	74.40	4.43	2.19
10	0.0620	216.0	216	1.1	4.69	2.16	6.85	3.17	74.90	4.50	2.34
11	0.0710	227.0	227	1.3	4.92	2.10	7.02	3.34	75.30	4.56	2.46
12	0.0840	241.0	241	1.5	5.21	2.07	7.28	3.51	75.50	4.68	2.60
13	0.1040	258.0	258	1.9	5.55	2.06	7.61	3.70	75.60	4.84	2.78
14	0.1300	276.0	276	2.3	5.91	2.12	8.03	3.79	75.20	5.07	2.96
15	0.1560	290.0	290	2.8	6.18	2.20	8.39	3.81	74.60	5.30	3.09
16	0.1820	303.0	303	3.3	6.43	2.32	8.75	3.77	73.80	5.53	3.21
17	0.2080	315.0	315	3.7	6.65	2.33	8.99	3.85	73.70	5.66	3.33
18	0.2300	324.0	324	4.1	6.81	2.40	9.22	3.83	73.20	5.81	3.41
19	0.2600	334.0	334	4.7	6.99	2.49	9.48	3.80	72.60	5.98	3.49
20	0.2850	343.0	343	5.1	7.14	2.58	9.72	3.77	72.00	6.15	3.57
21	0.3080	351.0	351	5.5	7.27	2.66	9.94	3.73	71.40	6.30	3.64
22	0.3340	359.0	359	6.0	7.40	2.78	10.18	3.66	70.60	6.48	3.70

Case No. 2019-00435
Filed October 18, 2022

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
23	0.3600	366.0	366	6.5	7.51	2.79	10.30	3.69	70.50	6.55	3.76
24	0.3860	373.0	373	6.9	7.62	2.87	10.48	3.66	70.00	6.67	3.81
25	0.4120	381.0	381	7.4	7.74	2.95	10.69	3.62	69.40	6.82	3.87
26	0.4380	387.0	387	7.9	7.82	3.02	10.85	3.59	68.90	6.94	3.91
27	0.4640	393.0	393	8.3	7.90	3.11	11.01	3.54	68.30	7.06	3.95
28	0.4900	398.0	398	8.8	7.96	3.21	11.18	3.48	67.60	7.19	3.98
29	0.5160	404.0	404	9.2	8.04	3.24	11.28	3.48	67.40	7.26	4.02
30	0.5420	409.0	409	9.7	8.10	3.36	11.46	3.41	66.60	7.41	4.05
31	0.5940	418.0	418	10.6	8.19	3.33	11.52	3.46	66.80	7.42	4.10
32	0.6200	423.0	423	11.1	8.25	3.48	11.73	3.37	65.70	7.61	4.12
33	0.6460	427.0	427	11.6	8.28	3.57	11.85	3.32	65.10	7.71	4.14
34	0.6680	430.0	430	12.0	8.30	3.60	11.90	3.31	64.90	7.75	4.15
35	0.6940	434.0	434	12.4	8.34	3.61	11.95	3.31	64.80	7.78	4.17
36	0.7200	437.0	437	12.9	8.35	3.66	12.01	3.28	64.50	7.83	4.17
37	0.7460	441.0	441	13.4	8.38	3.70	12.08	3.26	64.20	7.89	4.19
38	0.7720	444.0	444	13.8	8.39	3.76	12.15	3.23	63.80	7.95	4.20
39	0.7980	447.0	447	14.3	8.40	3.82	12.22	3.20	63.40	8.02	4.20
40	0.8240	449.0	449	14.8	8.39	3.89	12.28	3.16	62.90	8.09	4.20
41	0.8370	450.0	450	15.0	8.39	3.84	12.24	3.18	63.20	8.04	4.20

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	117.400			118.000
Moisture content: Dry soil+tare, gms.	100.000			100.000
Moisture content: Tare, gms.	0.000			0.000
Moisture, %	17.4	20.8	18.0	18.0
Moist specimen weight, gms.	1258.29			
Diameter, in.	2.869	2.924	2.880	
Area, in.²	6.465	6.714	6.516	
Height, in.	5.639	5.639	5.524	
Net decrease in height, in.		0.000	0.115	
Net decrease in water volume, cc.			30.500	
Wet density, pcf	131.5	130.3	133.8	
Dry density, pcf	112.0	107.9	113.4	
Void ratio	0.5049	0.5628	0.4860	
Saturation, %	93.0	100.0	100.0	

Test Readings for Specimen No. 3

Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 86.90 psi (12.51 ksf)
Consolidation back pressure = 26.30 psi (3.79 ksf)
Consolidation effective confining stress = 8.73 ksf
Strain rate, %/min. = 0.17
Fail. Stress = 11.57 ksf **at reading no.** 16
Ult. Stress = 12.68 ksf **at reading no.** 43

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.0	0	0.0	0.00	8.71	8.71	1.00	26.40	8.71	0.00
1	0.0030	50.0	50	0.1	1.10	8.61	9.72	1.13	27.10	9.16	0.55
2	0.0060	94.0	94	0.1	2.07	8.42	10.50	1.25	28.40	9.46	1.04
3	0.0100	122.0	122	0.2	2.69	8.24	10.93	1.33	29.70	9.58	1.35
4	0.0160	162.0	162	0.3	3.57	7.86	11.43	1.45	32.30	9.65	1.78
5	0.0190	181.0	181	0.3	3.99	7.68	11.66	1.52	33.60	9.67	1.99
6	0.0260	212.0	212	0.5	4.66	7.30	11.96	1.64	36.20	9.63	2.33
7	0.0320	243.0	243	0.6	5.34	6.94	12.28	1.77	38.70	9.61	2.67
8	0.0420	284.0	284	0.8	6.23	6.41	12.64	1.97	42.40	9.52	3.11
9	0.0510	320.0	320	0.9	7.01	5.90	12.91	2.19	45.90	9.41	3.50
10	0.0610	354.0	354	1.1	7.74	5.46	13.19	2.42	49.00	9.33	3.87
11	0.0700	383.0	383	1.3	8.36	5.10	13.45	2.64	51.50	9.28	4.18
12	0.0830	414.0	414	1.5	9.01	4.74	13.75	2.90	54.00	9.24	4.51
13	0.1020	452.0	452	1.8	9.80	4.38	14.18	3.24	56.50	9.28	4.90
14	0.1280	490.0	490	2.3	10.58	4.13	14.71	3.56	58.20	9.42	5.29
15	0.1530	518.0	518	2.8	11.13	4.08	15.20	3.73	58.60	9.64	5.56
16	0.1790	541.0	541	3.2	11.57	4.06	15.63	3.85	58.70	9.84	5.78
17	0.2040	560.0	560	3.7	11.92	4.15	16.06	3.87	58.10	10.11	5.96
18	0.2270	574.0	574	4.1	12.16	4.25	16.41	3.86	57.40	10.33	6.08
19	0.2550	592.0	592	4.6	12.48	4.42	16.90	3.82	56.20	10.66	6.24
20	0.2810	605.0	605	5.1	12.69	4.59	17.28	3.76	55.00	10.94	6.34
21	0.3030	615.0	615	5.5	12.84	4.72	17.57	3.72	54.10	11.15	6.42
22	0.3290	626.0	626	6.0	13.01	4.87	17.88	3.67	53.10	11.37	6.50

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
23	0.3540	634.0	634	6.4	13.11	5.03	18.14	3.61	52.00	11.58	6.56
24	0.3800	641.0	641	6.9	13.19	5.17	18.36	3.55	51.00	11.76	6.60
25	0.4050	645.0	645	7.3	13.21	5.33	18.54	3.48	49.90	11.93	6.60
26	0.4310	649.0	649	7.8	13.22	5.50	18.72	3.40	48.70	12.11	6.61
27	0.4570	653.0	653	8.3	13.24	5.66	18.90	3.34	47.60	12.28	6.62
28	0.4820	657.0	657	8.7	13.25	5.82	19.07	3.28	46.50	12.44	6.63
29	0.5080	661.0	661	9.2	13.26	5.93	19.20	3.24	45.70	12.56	6.63
30	0.5330	665.0	665	9.6	13.28	6.05	19.33	3.20	44.90	12.69	6.64
31	0.5590	667.0	667	10.1	13.25	6.18	19.43	3.14	44.00	12.80	6.62
32	0.5840	669.0	669	10.6	13.22	6.29	19.51	3.10	43.20	12.90	6.61
33	0.6100	671.0	671	11.0	13.19	6.41	19.60	3.06	42.40	13.00	6.60
34	0.6350	673.0	673	11.5	13.16	6.52	19.69	3.02	41.60	13.10	6.58
35	0.6580	674.0	674	11.9	13.12	6.61	19.73	2.98	41.00	13.17	6.56
36	0.6830	676.0	676	12.4	13.09	6.70	19.79	2.96	40.40	13.24	6.55
37	0.7090	677.0	677	12.8	13.04	6.80	19.84	2.92	39.70	13.32	6.52
38	0.7090	677.0	677	12.8	13.04	6.80	19.84	2.92	39.70	13.32	6.52
39	0.7340	677.0	677	13.3	12.97	6.88	19.86	2.88	39.10	13.37	6.49
40	0.7600	677.0	677	13.8	12.90	6.97	19.87	2.85	38.50	13.42	6.45
41	0.7850	675.0	675	14.2	12.80	7.07	19.87	2.81	37.80	13.47	6.40
42	0.8030	675.0	675	14.5	12.75	7.17	19.92	2.78	37.10	13.55	6.37
43	0.8270	675.0	675	15.0	12.68	7.24	19.93	2.75	36.60	13.58	6.34

LABORATORY TESTING PROCEDURES

Soil Classification: Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply past experience to current problems. In our investigations, samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The soils are classified according to consistency (based on number of blows from standard penetration tests), color and texture. These classification descriptions are included on our "Test Boring Records."

The classification system discussed above is primarily qualitative and for detailed soil classification two laboratory tests are necessary: grain size tests and plasticity tests. Using these test results the soil can be classified according to the AASHTO or Unified Classification Systems (ASTM D 2487). Each of these classification systems and the in-place physical soil properties provides an index for estimating the soil's behavior. The soil classification and physical properties obtained are presented in this report.

Compaction Tests: Compaction tests are run on representative soil samples to determine the dry density obtained by a uniform compactive effort at varying moisture contents. The results of the test are used to determine the moisture content and unit weight desired in the field for similar soils. Proper field compaction is necessary to decrease future settlements, increase the shear strength of the soil and decrease the permeability of the soil.

The two most commonly used compaction tests are the Standard Proctor test and the Modified Proctor test. They are performed in accordance with ASTM D 698 and D 1557, respectively. Generally, the Standard Proctor compaction test is run on samples from building or parking areas where small compaction equipment is anticipated. The Modified compaction test is generally performed for heavy structures, highways, and other areas where large compaction equipment is expected. In both tests a representative soil sample is placed in a mold and compacted with a compaction hammer. Both tests have four alternate methods.

Test	Method	Hammer Wt./Fall	Mold Diam.	Run on Matl. Finer Than	No. of Layers	No. of Blows/Layer
Standard	A	5.5 lb./12"	4"	No. 4 sieve	3	25
D 698	B	5.5 lb./12"	4"	3/8" sieve	3	25
	C	5.5 lb./12"	6"	3/4" sieve	3	56

Test	Method	Hammer Wt./Fall	Mold Diam.	Run on Matl. Finer Than	No. of Layers	No. of Blows/Layer
Modified	A	10 lb./18"	4"	No. 4 sieve	5	25
D 1557	B	10 lb./18"	4"	3/8" sieve	5	25
	C	10 lb./18"	6"	3/4" sieve	5	56

The moisture content and unit weight of each compacted sample is determined. Usually 4 to 5 such tests are run at different moisture contents. Test results are presented in the form of a dry unit weight versus moisture content curve. The compaction method used and any deviations from the recommended procedures are noted in this report.

Atterberg Limits: Portions of the samples are taken for Atterberg Limits testing to determine the plasticity characteristics of the soil. The plasticity index (PI) is the range of moisture content over which the soil deforms as a plastic material. It is bracketed by the liquid limit (LL) and the plastic limit (PL). The liquid limit is the moisture content at which the soil becomes sufficiently "wet" to flow as a heavy viscous fluid. The plastic limit is the lowest moisture content at which the soil is sufficiently plastic to be manually rolled into tiny threads. The liquid limit and plastic limit are determined in accordance with ASTM D 4318.

Moisture Content: The Moisture Content is determined according to ASTM D 2216.

Appendix IV – CPT Data

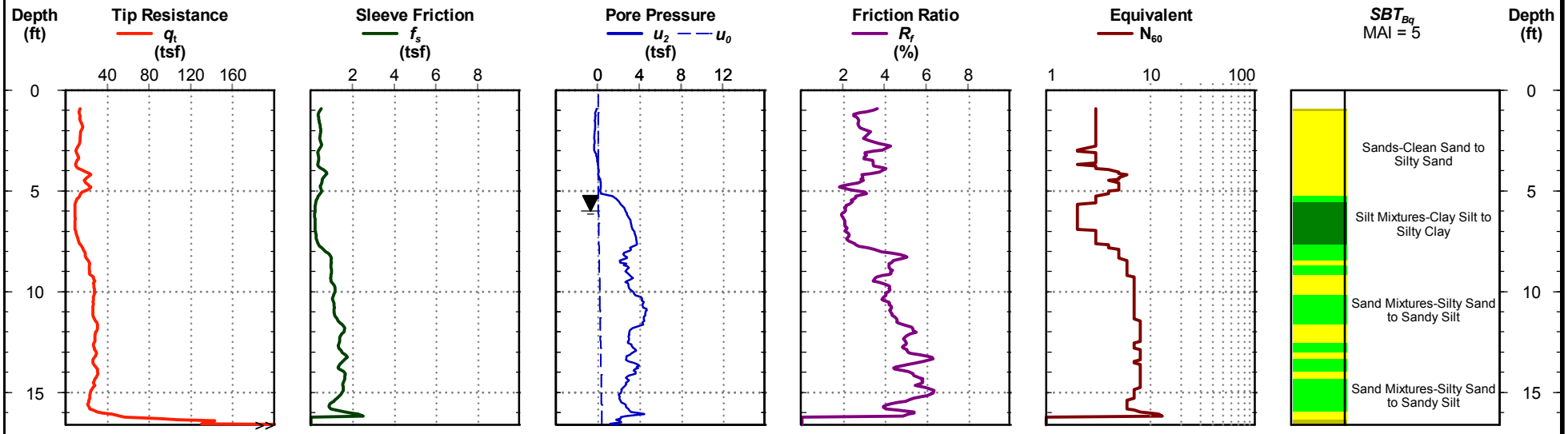
Case No. 2019-00435
Filed October 18, 2022

Big Rivers - Green CCR/ELG
Robards, KY
S&ME Project No: 1178-19-003 Ph. 01

Sounding ID: P-1

Date: Apr. 1, 2019
Estimated Water Depth: 6 ft
Rig/Operator: Gyrotrack/D. Watson

Total Depth: 16.6 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

Electronic Filename: P-1(006).DAT

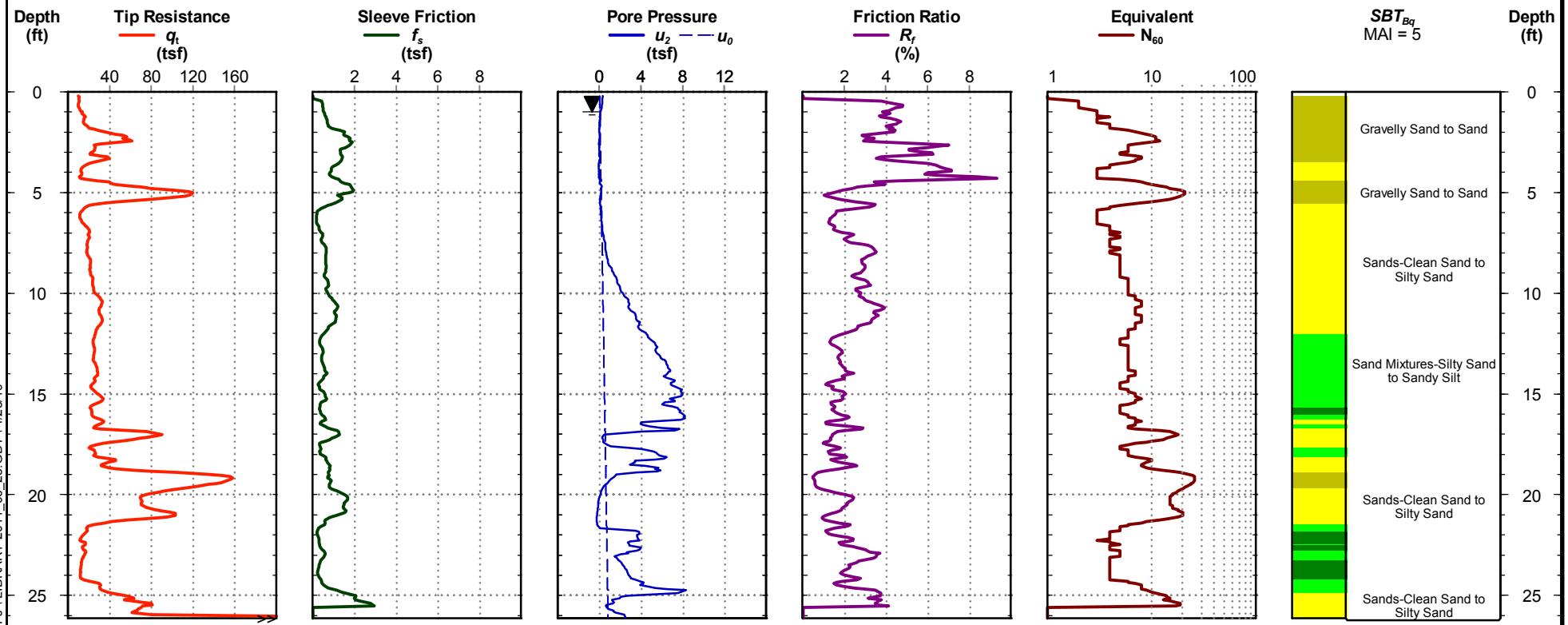
CPT REPORT - STANDARD - SBT BQ \ 1178-18-003 CPT.GPJ \ LIBRARY 2011_06_28.GDT \ 4/23/19

Big Rivers - Green CCR/ELG
Robards, KY
S&ME Project No: 1178-19-003 Ph. 01

Sounding ID: P-2

Date: Apr. 1, 2019
Estimated Water Depth: 1 ft
Rig/Operator: Gyrotrack/D. Watson

Total Depth: 26.1 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT BQ \ 1178-18-003 CPT.GPJ \ LIBRARY 2011_06_28.GDT \ 4/23/19

Cone Penetration Test

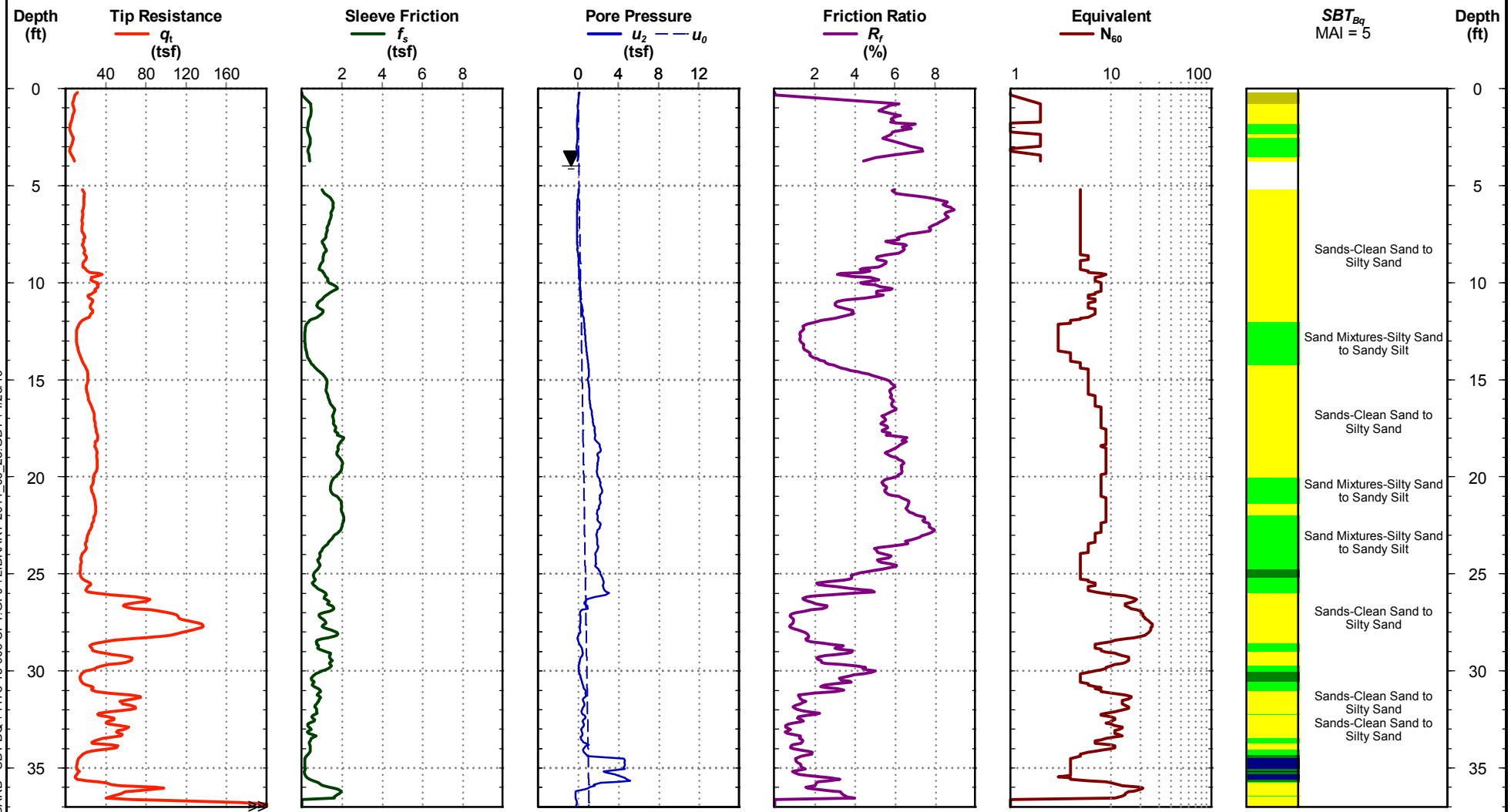
Electronic Filename: P-2(007).DAT

Big Rivers - Green CCR/ELG
Robards, KY
S&ME Project No: 1178-19-003 Ph. 01

Sounding ID: P-3

Date: Apr. 1, 2019
Estimated Water Depth: 4 ft
Rig/Operator: Gyrotrack/D. Watson

Total Depth: 37.0 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



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Cone Penetration Test

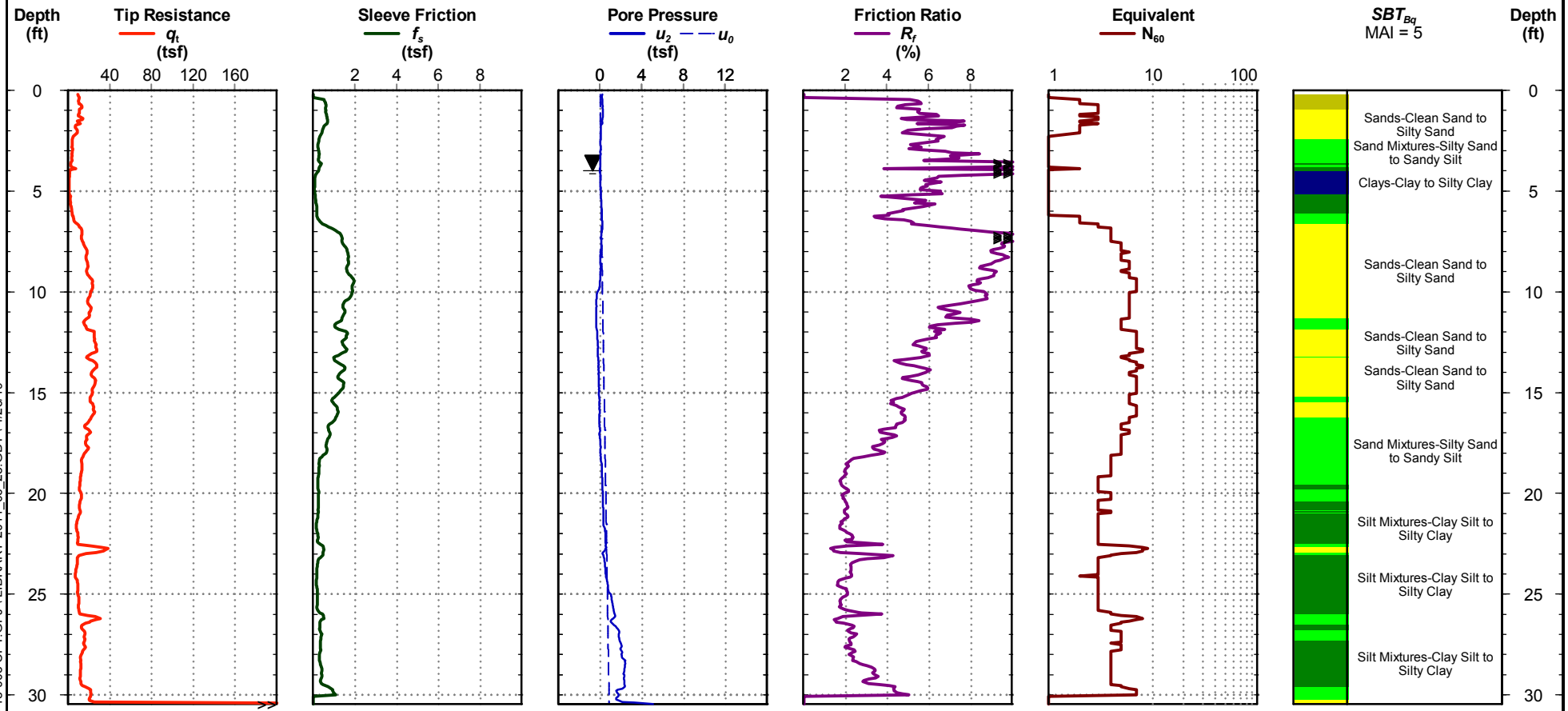
Electronic Filename: P-3(009).DAT

Sounding ID: P-4

Big Rivers - Green CCR/ELG
Robards, KY
S&ME Project No: 1178-19-003 Ph. 01

Date: Apr. 1, 2019
Estimated Water Depth: 4 ft
Rig/Operator: Gyrotrack/D. Watson

Total Depth: 30.5 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



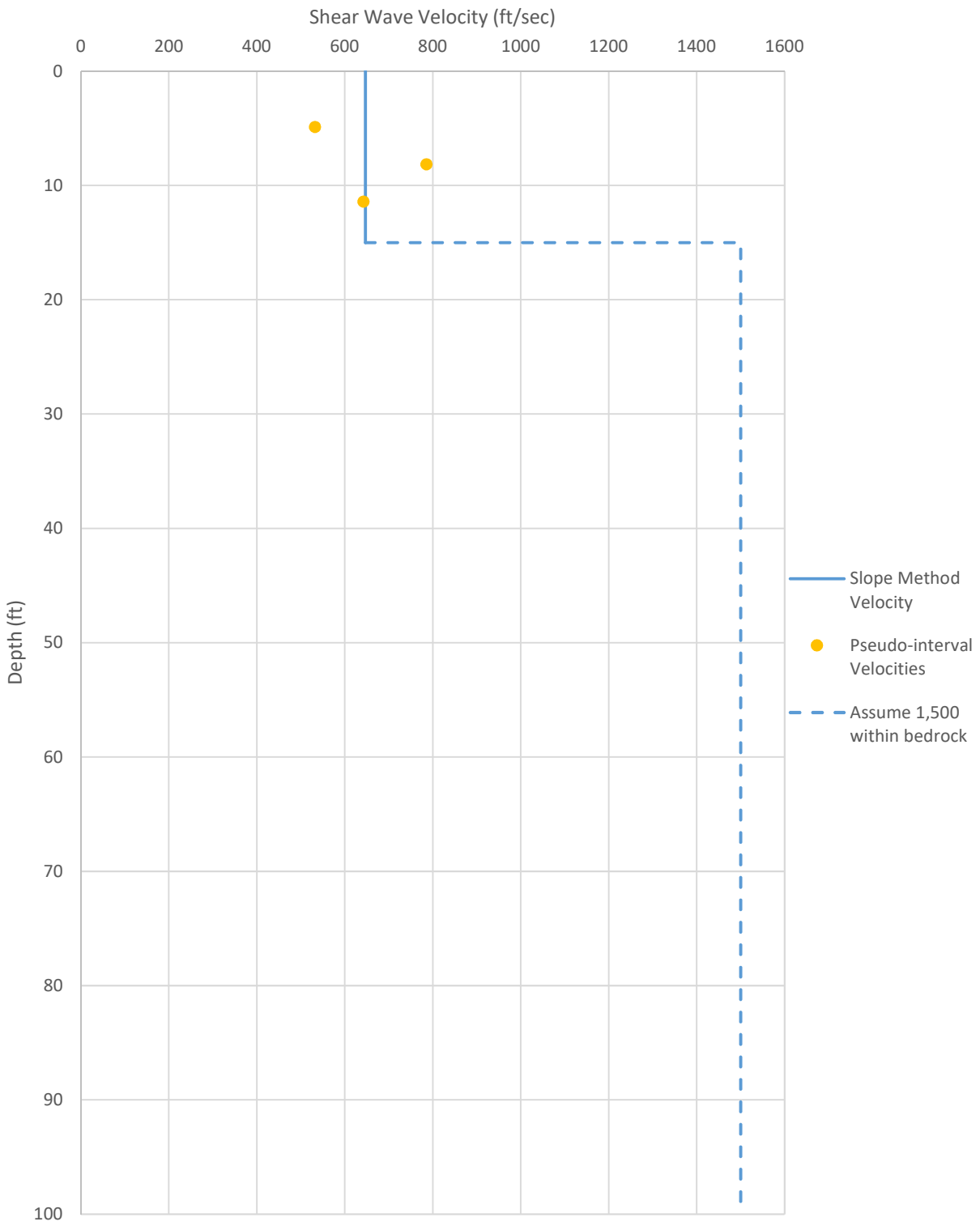
Cone Penetration Test

CPT REPORT - STANDARD - SBT BQ \ 1178-18-003 CPT.GPJ \ LIBRARY 2011_06_28.GDT \ 4/23/19

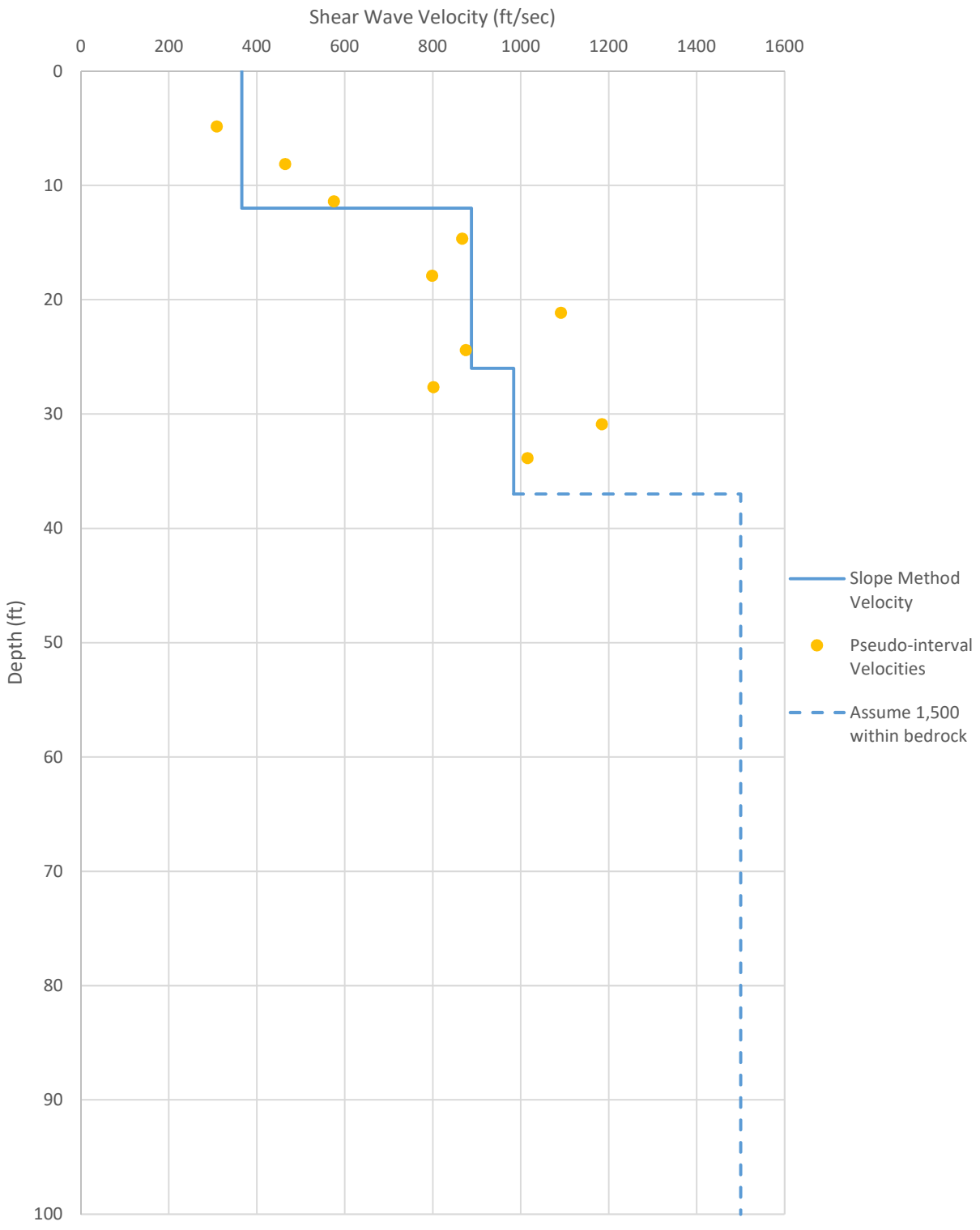
Electronic Filename: P-4(010).DAT

Appendix V – Geophysical Data

Case No. 2019-00435
Filed October 18, 2022



Drawn by: A. Yetman		**Shear Wave Velocity Profile**	Fig. No. 1
Checked by: B. Dusina		Big Rivers - Green CCR/ELG Robards, KY	
Date: 3/28/2019		Proj. No. 1178-19-003 P-1	



Drawn by: A. Yetman		**Shear Wave Velocity Profile**	Fig. No.
Checked by: B. Dusina		Big Rivers - Green CCR/ELG Robards, KY	2
Date: 4/1/2019		Proj. No. 1178-19-003 P-3	

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