

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matter of:

**ELECTRONIC 2023 INTEGRATED RESOURCE) CASE NO.
PLAN OF BIG RIVERS ELECTRIC CORPORATION) 2023-00310**

**BIG RIVERS ELECTRIC CORPORATION'S
RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUEST FOR INFORMATION**

Big Rivers Electric Corporation (“Big Rivers” or the “Company”) by counsel, files its responses to Sierra Club’s Supplemental Request for Information, issued in the above-captioned case on January 26, 2024.

FILED: February 16, 2024

IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

REQUEST NO. 2-1: *Please refer to Big Rivers' response to Sierra Club 1.8, which states, "Big Rivers has been working in coordination with the Kentucky Energy and Environment Cabinet to address EPA's concerns about regional haze, and at this point, Big Rivers does not believe that any additional actions are necessary for Big Rivers to meet its compliance obligations."*

- a. Please describe how Big Rivers has been working in coordination with the Kentucky Energy and Environment Cabinet to address EPA's concerns about regional haze.*
- b. Please provide all copies of communications with the Kentucky Energy and Environment Cabinet regarding Big Rivers' work in coordination with them to address EPA's concerns about regional haze.*
- c. Why does Big Rivers believe that no additional actions are necessary for Big Rivers to meet its compliance obligations?*
- d. Please provide any analyses, documents, or workpapers regarding Big Rivers analysis of and steps taken to comply with regional haze obligations.*

RESPONSE:

a. Since 2020 Big Rivers has been working with the Kentucky Energy and Environment Cabinet (KEEC) to address concerns regarding the Wilson facility as it relates to the State's Regional Haze State Implementation Plan (SIP). This has included numerous emails, correspondence, and meetings to discuss ways to ensure that emissions from the Wilson facility meet the State requirements. Specifically, Big Rivers has worked in conjunction with outside

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consultants and the KEEC to develop a federally enforceable emissions limit into Wilson's Title V permit. Big Rivers also had numerous discussions with the State regarding the need for a formal four-factor analysis given the installation of the reconstructed Wet Flue Gas Desulfurization Device (WFGD) from Coleman Station. Eventually the KEEC concluded that the "installation of the new WFGD equipment with the 97% efficiency should be sufficient controls to exclude Big Rivers from having to perform a four-factor analysis or take a limit." That conclusion was included in the draft Regional Haze SIP that the State submitted to EPA. On January 12, 2023, the State informed Big Rivers that EPA had issued a Finding of Failure with regard to the State's Regional Haze SIP submission and that EPA was under a two year time deadline to develop a Federal Implementation Plan (FIP).

b. Please see the attached documentation.

c. Please see the response from the KEEC, referenced in subpart a., demonstrating the KEEC's belief that "installation of the new WFGD equipment with the 97% efficiency should be sufficient controls to exclude Big Rivers from having to perform a four-factor analysis or take a limit." As EPA has yet to issue a Regional Haze FIP addressing this issue, Big Rivers presently believes that the installation of the WFGD equipment is sufficient to meet its compliance obligations.

d. Please see the attached documentation.

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Witness: Michael S. Mizell



ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

**ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION**

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601
TELEPHONE: 502-564-2150
TELEFAX: 502-564-4245

July 21, 2020

Mr. Mark Bertram
PO Box 24
Henderson, KY 42419

Re: Request for Regional Haze 4-Factor Analysis for Big Rivers – Wilson impacting the Mammoth Cave Class I Area

Dear Mr. Bertram:

Regional Haze Regulation 40 CFR § 51.308 requires each state to “address regional haze in each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State which may be affected by emissions from within the State.” 40 § CFR 51.308(f) requires that states must submit a regional haze implementation plan revision by July 31, 2021. As part of the plan revision, a reasonable progress goal must be established to work towards achieving natural visibility conditions for the one Class I area, Mammoth Cave National Park, located within Kentucky. The goal “must provide for an improvement in visibility for the most impaired days over the period of the implementation plan and ensure no degradation in visibility for the least impaired days over the same period.”

In establishing reasonable progress goals, the State must consider the four factors specified in § 169A of the Federal Clean Air Act and in 40 CFR § 51.308(f)(2)(i):

- (1) the cost of compliance,
- (2) the time necessary for compliance,
- (3) the energy and non-air quality environmental impacts of compliance, and
- (4) the remaining useful life of any potentially affected sources.

To assist its member states, the Visibility Improvement State and Tribal Association of the Southeast¹ (VISTAS) and its contractors conducted technical analyses to help states identify facilities that significantly impact visibility impairment for Class I areas within and outside of the VISTAS region. VISTAS initially used an Area of Influence (AoI) analysis to identify the areas and sources most likely contributing to poor visibility in Class I areas. This AoI analysis involved running the HYSPLIT Trajectory Model to determine the origin of the air parcels

¹ VISTAS states include Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

Mr. Mark Bertram

July 21, 2020

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affecting visibility. This information was then spatially combined with emissions data to determine the pollutants, sectors, and individual sources that are most likely contributing to the visibility impairment at each Class I area. VISTAS then used this information to determine that the pollutants and sector with the largest impact on visibility impairment were sulfur dioxide and nitrogen oxides from point sources.

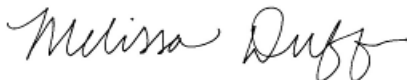
VISTAS states used the results of the AoI analysis to identify sources to “tag” for PM (Particulate Matter) Source Apportionment Technology (PSAT) modeling. PSAT modeling uses “reactive tracers” to apportion particulate matter among different sources, source categories, and regions. PSAT was implemented with the CAMx (Comprehensive Air Quality Model with extensions) photochemical model to determine visibility impairment due to individual facilities. PSAT results show that in 2028 the majority of visibility impairment at VISTAS Class I areas continues to be from point source SO₂ and NO_x emissions. Using the PSAT data, VISTAS states identified sources shown to have a sulfate or nitrate impact on one or more Class I areas that is greater than or equal to 1.00 percent of the total sulfate plus nitrate point source visibility impairment on the most impaired days for that Class I Federal area. This analysis identified Big Rivers – Wilson as one of these sources.

As previously discussed, during our call on April 16, 2020, Big Rivers – Wilson will need to complete a Four-Factor Analyses. The purpose of this letter is to formally request that you complete and return your findings from the Four-Factor analysis by October 30, 2020. The Division recommends the use of EPA’s August 20, 2019 guidance to assist with the completion of the analysis (https://www.epa.gov/sites/production/files/2019-08/documents/8-20-2019_-_regional_haze_guidance_final_guidance.pdf).

Thank you in advance for your assistance. Information collected will be shared with the other states/tribes within the Southeast and will be a part of the public record. If this information should be described as confidential, please contact the Division. We look forward to working with you further to improve Kentucky’s air quality and meet our regional haze SIP submittal deadline as this process continues. If you have any questions, please contact Ms. Kelly Lewis, Program Planning Branch Manager, Division for Air Quality at (502) 782-6687 or [REDACTED]

Sincerely,

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X 

Melissa Duff, Director
Kentucky Division for Air Quality
Signed by: Melissa Duff



ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

**ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION**

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601
TELEPHONE: 502-564-2150
TELEFAX: 502-564-4245

November 23, 2020

Mr. Mike Galbraith
Big Rivers Electric Corporation
201 3rd Street
Henderson, KY 42420

Re: Requested four-factor analysis for Big Rivers Electric Corporation - D.B. Wilson Station

Dear Mr. Galbraith:

On July 21, 2020, the Division for Air Quality (Division) sent a request for a four-factor analysis for the Big Rivers Electric Corporation (Big Rivers), D.B. Wilson Station. The D.B. Wilson Station is identified as a source impacting the Mammoth Cave Class I area through work with the Visibility Improvement State and Tribal Association of the Southeast¹ (VISTAS) and its contractors. Facilities that were identified to exceed the VISTAS threshold for contributing to poor visibility in Class I areas were asked to complete a four-factor analysis.

On October 22, 2020, the Division received a letter from Mr. Mike Zimmer of Trinity Consultants, on behalf of Big Rivers, in response to the Division's request for a four-factor analysis for the D.B. Wilson Station. Mr. Zimmer's report indicates Big Rivers intends to replace the current wet flue gas desulfurization unit (WFGD) with a more efficient vertical WFGD system. The report determines that the efficiency of the new WFGD will decrease Wilson Station's projected 2028 SO₂ emissions from 6,934 tpy to 3,178 tpy. The Division appreciates the addition of improved control measures that will significantly decrease SO₂ emissions from impacting visibility in Class I areas. However, there are no enforceable measures in place to ensure that Wilson Station will function in a manner to guarantee emissions will continue to meet the predicted 3,178 tpy. In accordance with 40 CFR 51.308(d)(3), "The long-term strategy must include enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals established by States having mandatory class I Federal areas."

The Division has completed a review of the October 22, 2020 submittal and finds that it does not adequately address the request. A four-factor analysis is still required for the D.B.

¹ VISTAS states include Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

Wilson Station. If Big Rivers determines that a four-factor analysis will not be performed and submitted to the Division, Big Rivers can submit a proposal detailing the adoption of a federally enforceable emissions limit into the facility's title V permit, along with a compliance schedule. The compliance schedule must include the date Big Rivers plans to incorporate the emissions limit into the permit, as well as a timeline for the installation of the proposed control equipment.

Kentucky is required to submit a regional haze implementation plan by July 31, 2021. As part of the plan revision, a reasonable progress goal must be established to work towards achieving natural visibility conditions for Mammoth Cave National Park. Big Rivers must submit the required four-factor analysis immediately. Big Rivers may request an extension to the four-factor submittal due date in writing to the Division Director. The extension request must include the date when the analysis will be completed and submitted to the Division.

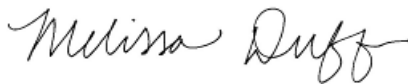
The Division recommends the use of EPA's August 20, 2019 guidance to assist with the completion of the analysis ([https://www.epa.gov/sites/production/files/2019-08/documents/8-20-2019 - regional haze guidance final guidance.pdf](https://www.epa.gov/sites/production/files/2019-08/documents/8-20-2019_-_regional_haze_guidance_final_guidance.pdf)). In establishing reasonable progress goals, the State must consider the four factors specified in § 169A of the Federal Clean Air Act and in 40 CFR § 51.308(f)(2)(i):

- (1) the cost of compliance;
- (2) the time necessary for compliance;
- (3) the energy and non-air quality environmental impacts of compliance, and
- (4) the remaining useful life of any potentially affected sources.

Thank you in advance for your assistance. Information collected will be shared with the other states/tribes within the Southeast and will be a part of the public record. If this information should be described as confidential, please contact the Division. We look forward to working with you further to improve Kentucky's air quality and meet our regional haze SIP submittal deadline as this process continues. If you have any questions, please contact Ms. Kelly Lewis, Program Planning Branch Manager, Division for Air Quality at (502) 782-6687 or [REDACTED]

Sincerely,


 Recoverable Signature

X 

Melissa Duff, Director
Kentucky Division for Air Quality
Signed by: Melissa Duff

cc: Mark Bertram, Big Rivers
Mike Zimmer, Trinity Consultants

October 22, 2020

Ms. Melissa Duff
Director
Kentucky Division for Air Quality
300 Sower Blvd
Frankfort, KY 40601


*RE: Response to the Division's Request for Regional Haze 4-Factor Analysis
Big Rivers Electric Corporation - D.B. Wilson Station; AI 3319
Centertown, Kentucky*

Dear Ms. Duff:

Trinity Consultants (Trinity) prepared this report on behalf of Big Rivers Electric Corporation (Big Rivers) in response to the July 21, 2020, Request for Regional Haze Four-Factor Analysis (4FA) from the Kentucky Division for Air Quality (KDAQ). Per KDAQ's 4FA request, this report provides information related to sulfur dioxide (SO₂) emissions reduction options for the electric generating unit (EGU) at the D.B. Wilson Station (Wilson Station) that currently operates with moderately controlled wet flue gas desulfurization unit (WFGD). As discussed below, KDAQ can rely on the SO₂ emissions reductions that result from Big Rivers' commitment to replace the current WFGD unit with a more efficient vertical WFGD system (see the permit application submitted on September 25, 2020), to avoid submitting the detailed information on all four factors because the Wilson Station will no longer have a "significant" contribution to regional haze from sulfates at any Class I Area. The remainder of this letter includes sections on the regulatory background, facility description, contribution to visibility impairment, and conclusion.

REGULATORY BACKGROUND

KDAQ notified the Big Rivers that it was developing a State Implementation Plan (SIP) for the Second Decennial Review period of the federal Regional Haze Rule (RHR) promulgated by the United States Environmental Protection Agency (US EPA) under the Clean Air Act (CAA), see 42 USC § 7491 ("Visibility Protection for Federal Class I Areas"). The RHR calls for state and federal agencies to work to improve visibility in national parks, forests and wilderness areas throughout the country, with the ultimate goal of achieving "natural background" visibility in these Class I areas by the year 2064.

Due to revisions that the US EPA made to the RHR in 2017, the RHR requires a comprehensive revision to each SIP for regional haze every ten years. The deadline for the next SIP revision is July 31, 2021 [see 40 CFR §51.308(f)]. The key elements of the SIP submittal are as follows:

- (1) Calculations of baseline, current, and natural visibility conditions; progress to date; and the uniform rate of progress;
- (2) Long-term strategy (LTS) for regional haze (i.e., enforceable emissions limits, compliance schedules, and other measures to make reasonable progress);
- (3) Establish reasonable progress goal (RPG) for each Class I area (i.e., establish a visibility metric in deciviews out to 2028 for the most impaired days and ensure no degradation in visibility for the cleanest days since the baseline);
- (4) If required by the federal land manager, perform more ambient monitoring;

HEADQUARTERS

- (5) Provide progress reports; and
- (6) Develop a monitoring strategy and other implementation plan requirements.

Each state is tasked with leading the process, working with other states and the US EPA to develop the SIP, leveraging emissions reductions achieved under 40 CFR §51.308(f)(2) as well as other programs under the CAA, with the goal of improving visibility using long-term strategies necessary to make reasonable progress.

Pursuant to 40 CFR §51.308(f)(2), Kentucky must address the regional haze visibility impairment for each Class I area that may be affected by emissions from the state. This is being accomplished through use of an 1) Area of Influence (AoI) Screening Analysis and 2) Source Apportionment Modeling study managed by Visibility Improvement State and Tribal Association of the Southeast (VISTAS).

VISTAS completed both the AoI Screening Analysis and the Source Apportionment Modeling study and identified Big River's Wilson Station, located in Centertown, Kentucky (KY), as one of the sources that impaired regional haze visibility at two (2) Class I Areas, one of which was Mammoth Cave National Park in Kentucky (see explanation in Section called **Contribution to Visibility Impairment**).

In its LTS for regional haze, the state can require additional controls on visibility affecting pollutants (VAPs) (i.e., SO₂, NO_x, PM, etc.) from existing sources within the state that are necessary to achieve Kentucky's RPG for Mammoth Cave National Park, as well as other states' RPGs for Class I areas within their boundaries that may be affected by emissions from sources within Kentucky.

Pursuant to 40 CFR §§51.308(d)(1)(i)(A) and 51.308(f)(2), a state, either by itself or, in coordination with the facility, must identify potential emissions control measures necessary to make reasonable further progress by considering the following four statutory factors to address reasonably attributable visibility impairment:

- 1) The cost of compliance (installation of controls for visibility affecting pollutants),
- 2) Time necessary for compliance (time to install controls),
- 3) Energy and non-air environmental impacts, and
- 4) Remaining useful life of the source.

Section 40 CFR §51.308(f)(2)(i) requires consideration of the four factors listed in CAA Section 169A(g)(1). However, EPA states in its guidance that neither the CAA nor the RHR prohibits the use of other factors (see EPA 2019 Regional Haze Guidance, p. 36.). In fact, because the goal of the regional haze program is to improve visibility, a state may consider whether and by how much an emission control measure will help achieve the goal (Id. at 36-37). Thus, states may consider visibility benefits in addition to the four statutory factors in making reasonable progress determinations.

FACILITY DESCRIPTION

The Wilson Station boiler is a pulverized coal, dry-bottom wall-fired unit and labeled as **Emission Unit 01 (W1): Indirect Heat Exchanger – Coal-Fired Boiler** with a maximum continuous rating of 4,585 MMBtu/hr as noted in the existing Title V permit. The Wilson Station consists of a Foster-Wheeler boiler and a Westinghouse turbine generator with a gross and net generating capacity of 440 and 417 MW, respectively. W1 commenced construction in 1980 and started firing coal on September 27, 1984, but did not start commercial operation until November 1986. The unit typically fires both Illinois Basin bituminous coal and petroleum coke with a heating value in the range of between 11,300 and 12,300 Btu/lb and a sulfur content of approximately 2.8 to 4.3 percent. Other secondary fuels are pelletized coal fines and No. 2 fuel oil, which is available for startup and stabilization.

W1 is subject to the following applicable regulations:

- ▶ 401 KAR 52:060, Acid Rain Permits
- ▶ 401 KAR 51:160, NO_x Requirements for Large Utility and Industrial Boilers
- ▶ 401 KAR 51:240, Cross-State Air Pollution Rule (CSAPR) NO_x annual trading program
- ▶ 401 KAR 51:250, CSAPR NO_x ozone season group 2 trading program
- ▶ 401 KAR 52: 260, CSAPR SO₂ group 1 trading program
- ▶ 401 KAR 51:210, 220, & 230, Clean Air Interstate Rule (CAIR) NO_x annual trading program, NO_x Ozone Season Group 2 trading program, & SO₂ Trading Program *Note: CSAPR Phase I implementation is now in place and replaces requirements under EPA's 2005 CAIR.*
- ▶ 401 KAR 59:015, New Indirect Heat Exchangers
- ▶ 401 KAR 60:005, Section 2(2)(a), 40 C.F.R. 60, Subpart Da, Standards of Performance for Electric Steam Generating Units
- ▶ 401 KAR 63:002, Section 2(4)(yyyy), 40 C.F.R. 63.9980 to 63.10042, (Subpart UUUUU), National Emission Standards for Hazardous Air Pollutants: Coal and Oil-fired Electric Utility Steam Generating Units (otherwise known as MATS)
- ▶ 40 CFR 52.21, (a) through (i) and (s) through (w), Prevention of Significant Deterioration (PSD) of Air Quality applicable to major construction or modification commenced before August 7, 1979
- ▶ To preclude from applicability of 401 KAR 51:017 for PSD, the source accepted the following synthetic limit: Emissions of SO₂ shall not exceed 12,023 tons during any twelve-month period in which any amount of petroleum coke is burned.
- ▶ 40 CFR Part 64, Compliance Assurance Monitoring (CAM)
- ▶ 40 CFR Part 75, Continuous Emissions Monitoring (CEM)

The facility is classified as a Title V major source of air pollution based on the potential to emit more than 100 tons per year (tpy) of particulate matter less than 10 microns (PM₁₀), carbon monoxide (CO), NO_x, and SO₂; and combined regulated hazardous air pollutants (HAPs) greater than 25 tpy.

W1 is equipped with the following air pollution control equipment:

- ▶ Electrostatic Precipitators (ESP), which are designed to remove 99.87 percent of the particulate matter to be in compliance with 0.03 lb/MMBtu based on a six-hour average [40 CFR 60.42Da(a)] and the 20 percent opacity limit based on a 6-minute average [40 CFR 60.42Da(b)].
- ▶ Low NO_x Burners (LNB) and Selective Catalytic Reduction (SCR) system - Babcock Borsig delta wing design for control of NO_x by 90% to be in compliance with 0.6 lb/MMBtu based on a 30-day rolling average [40 CFR 60.44Da(a)].
- ▶ Direct Sorbent Injection (DSI) System for control of SO₃/H₂SO₄ emissions.
- ▶ *Applicable prior to June 2022 =>* Weirs-Kellogg horizontal limestone WFGD system that consists of four (4) lime reagent horizontal absorbers capable of achieving the emission SO₂ limit of 1.2 lb/MMBtu heat input and 10 percent of the potential combustion concentration (90 percent reduction); or 30 percent of the potential combustion concentration (70 percent reduction), when emissions are less than 0.60 lb/MMBtu heat input [40 CFR 60.43Da(a)].
- ▶ *After June 2022 =>* Amec Foster Wheeler vertical limestone WFGD system that consists of two (2) dual flow trays with four (4) recycle pumps capable of achieving ≥ 97 percent control of SO₂, resulting in a controlled emissions rate of ≤ 0.2 lb/MMBtu.¹

¹ Based on the 2019 EPA Regional Haze Guidance, sources that already have effective control measures in place to meet a CAA requirement like MATS, the guidance document says "it may be reasonable for a state not to select an effectively controlled source" (see EPA 2019 Regional Haze Guidance, p. 22.). Moreover, the guidance document states that the 0.2 lb/MMBtu SO₂ emissions limit for coal-fired EGUs "are low enough that it is unlikely that an analysis of control measures for a source already equipped with a scrubber and meeting one of these limits would conclude that even more stringent control of SO₂ is necessary to make reasonable progress." (Id., p. 23).

CONTRIBUTION TO VISIBILITY IMPAIRMENT

Using the PM (Particulate Matter) Source Apportionment Technology (PSAT) modeling data generated by VISTAS, states identified sources shown to have a sulfate or nitrate impact on one or more Class I areas that is greater than or equal to 1.00% of the total sulfate plus nitrate point source visibility impairment on the most impaired days for that Class I area. As explained above, this advanced modeling study identified Big River's Wilson Station as one of those sources.

Based on the May 20, 2020 VISTAS presentation along with its revised 2028 model projections, the Wilson Station impacts two (2) Class I Areas at or above 1.00% contribution to regional haze from sulfates. The most impacted Class I Area is the Mammoth Cave National Park (NP) at 1.43% and is calculated as follows:

$$1.43\% = 0.361 \text{ Mm}^{-1} \text{ due to sulfate from PSAT results for Wilson} / 33.816 \text{ Mm}^{-1} \text{ due to sulfate+nitrate for total EGU \& non-EGU sources} * 1.0 \text{ ratio} * 1.337 \text{ Class I Area Adjustment for Sulfate + Nitrate Point Impact} * 1/100$$

Where, the 1.0 ratio means that Kentucky did not find an error with Big River's 2028 projections, which was established at 6,934 tons per year of SO₂. Kentucky made these projections without Big River's input.

Using the PSAT modeling for Sipsey Wilderness Area, Wilson Station is expected to have a 1.29% impact, calculated as follows:

$$1.29\% = 0.211 \text{ Mm}^{-1} \text{ due to sulfate from PSAT results for Wilson} / 22.628 \text{ Mm}^{-1} \text{ due to sulfate+nitrate for total EGU \& non-EGU sources} * 1.0 \text{ ratio} * 1.382 \text{ Class I Area Adjustment for Sulfate + Nitrate Point Impact} * 1/100$$

During the VISTAS presentation, sources were given an option of taking a federally enforceable emissions limitation by 2028 to demonstrate no adverse impact on any of the affected Class I Areas.

For example, if Big Rivers were to take a federally enforceable (by 2028) emissions limitation at 4,833 tons per year (tpy) of SO₂, which translates into a ratio of 4833/6934 = 0.697, Big Rivers could avoid a 4FA analysis for the two (2) impacted Class I Areas. The following calculation applies to the most impacted area, Mammoth Caves NP.

$$0.99\% = 0.361 \text{ Mm}^{-1} \text{ due to sulfate from PSAT results for Wilson} / 33.816 \text{ Mm}^{-1} \text{ due to sulfate+nitrate for total EGU \& non-EGU sources} * (4,833 \text{ tpy SO}_2 \text{ limit} / 6,934 \text{ tpy projection for 2028 SO}_2 \text{ Emissions}) * 1.33719 \text{ Class I Area Adjustment for Sulfate + Nitrate Point Impact} * 1/100$$

This information regarding contribution to visibility impairment is presented to provide proper context to the 4FA conclusions and should not be construed as a request for a facility-wide emissions limit. In fact, a limit would not be necessary because the replacement of the WFGD with a more advanced unit that will achieve a minimum SO₂ removal efficiency of 97%, as opposed to the current system that achieves between 91% and 92% removal. As a result, the revised potential to emit (PTE) for SO₂ after the project is as follows:

$$\text{SO}_2 \text{ PTE (tpy)} = 39.00255 \text{ lbs/ton} * S * \text{Max Hourly Operating Rate tons/hr} * 8,760 \text{ hrs/yr} * 1/2000 \text{ lbs/ton} * (1 - \text{CE}\%)$$

Where,

S = sulfur content in percent = 3.3 or less since 2011

Max Hourly Operating Rate = 187.9 tons/hr = 4,585 MMBtu/hr / 12,200 Btu/lb * 10⁶ / 2000

CE% = 97%, see Minor Permit Revision Application

$$3,178 \text{ tpy of SO}_2 = 39.00255 * 3.3 * 187.9 \text{ tons/hr} * 8,760 \text{ hrs/yr} * 1/2000 \text{ lbs/ton} * (1 - 97\%)$$

With this change in the annual PTE, the following calculations apply to Mammoth Caves NP and Sipsey Wilderness.

0.65% = 0.361 Mm⁻¹ due to sulfate from PSAT results for Wilson / 33.816 Mm⁻¹ due to sulfate+nitrate for total EGU & non-EGU sources * (3,178 tpy SO₂ PTE / 6,934 tpy projection for 2028 SO₂ Emissions) * 1.33719 Class I Area Adjustment for Sulfate + Nitrate Point Impact * 1/100

0.59% = 0.211 Mm⁻¹ due to sulfate from PSAT results for Wilson / 22.628 Mm⁻¹ due to sulfate+nitrate for total EGU & non-EGU sources * (3,178 tpy SO₂ PTE / 6,934 tpy projection for 2028 SO₂ Emissions) * 1.382 Class I Area Adjustment for Sulfate + Nitrate Point Impact * 1/100

CONCLUSIONS

The currently projected baseline for Kentucky's SO₂ emissions by 2028 in the PSAT Modeling is 6,934 tpy. If KDAQ were to set the projection at the revised SO₂ PTE of 3,178 tpy and by considering Big Rivers' continuous compliance with the MATS rule, Wilson Station's impact, as it relates to the PSAT modeling for Mammoth Cave NP, can be reduced from 1.43% to 0.65%. Meaning that Wilson Station's contribution to visibility impairment at the Mammoth Cave NP and Sipsey Wilderness would be less than one percent; therefore, the requirement to address all four factors is no longer necessary.

If you have additional questions, concerns, or requests for data then please do not hesitate to contact Mike Galbraith at (270) 844-5203 or Michael.Galbraith@bigrivers.com or me at (859) 341-8100 ext. 103 or [REDACTED]

Sincerely,

TRINITY CONSULTANTS



Michael P. Zimmer, Ohio P.E.
Principal Consultant

cc: Mr. Mike Pullen, Big Rivers
Mr. Mike Mizell, Big Rivers
Mr. Mike Galbraith, Big Rivers
Mr. Jarod Gregory, Trinity

Mizell, Mike

From: Galbraith, Mike
Sent: Monday, November 23, 2020 3:23 PM
To: Mizell, Mike; Berry, Nathan
Cc: Bertram, Mark; Mike Zimmer
Subject: FW: Division Response to Wilson 4FA Letter
Attachments: 2020-11-23 DAQ Response_Wilson_4FA.pdf

The DAQ has responded unfavorably to our Regional Haze response.

Response alternatives are to propose a federally enforceable emissions limitation or provide the 4 Factor Analysis (which will likely lead to a limitation). As discussed in the response we provided, a 4833 tpy SO2 limitation should be sufficient. Plan is to discuss further with Mike Zimmer tomorrow.

-Mike

From: Poff, Leslie M (EEC) <[REDACTED]>
Sent: Monday, November 23, 2020 1:44 PM
To: Galbraith, Mike <Michael.Galbraith@bigrivers.com>; Bertram, Mark <Mark.Bertram@bigrivers.com>; Mike Zimmer <MZimmer@trinityconsultants.com>
Cc: Duff, Melissa K (EEC) <[REDACTED]>; Lewis, Kelly (EEC) <[REDACTED]>; Cordes, Ben (EEC) <[REDACTED]>
Subject: Division Response to Wilson 4FA Letter

Good afternoon,

We have completed our review of the report submitted by Mike Zimmer, on behalf of Big Rivers Electric Corporation, responding to the Division's request that a four-factor analysis be completed for D.B. Wilson Station. Please see the attached document for details.

Thank you.

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601
Phone: 502-782-6735

Mizell, Mike

From: Poff, Leslie M (EEC) <[REDACTED]>
Sent: Thursday, April 7, 2022 12:41 PM
To: Mizell, Mike
Subject: RE: Meeting Today

Hi Mike,

No problem. It was a short meeting. I discovered after our last call that I should be able to make a demonstration showing that Wilson is effectively controlled. The installation of the new WFGD equipment with the 97% efficiency should be sufficient controls to exclude Big Rivers from having to perform a four-factor analyses or take a limit. I'm going to write-up the demonstration I plan to submit in our pre-draft Regional Haze SIP and I will send it to you all to review. That will be in the next couple of weeks. If you have any questions, please feel free to give me a call.

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601
Phone: 502-782-6735

From: Mizell, Mike <Michael.Mizell@bigrivers.com>
Sent: Thursday, April 7, 2022 1:29 PM
To: Poff, Leslie M (EEC) <[REDACTED]>
Subject: Meeting Today

Leslie

I apologize for not making our meeting today. I was tied up unexpectedly with our CEO on an urgent issues. I tried to join about 12:15 but you all had likely finished by then. I am very sorry for this. Do we need to reschedule or were others from Big Rivers on the phone who could discuss the issues?

Thanks
MSM

Michael S Mizell
Vice President Environmental Compliance
Big Rivers Electric Corporation
201 Third Street
Henderson, Kentucky 42420
office: (270) 844-6178
mobile: [REDACTED]
email: michael.mizell@bigrivers.com

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Mizell, Mike

From: Mike Zimmer <[REDACTED]>
Sent: Friday, January 6, 2023 1:29 PM
To: Poff, Leslie M (EEC); Merritt, Diana; Cole, Tracy; Caldwell, Rob; Marshall, George
Cc: Kennedy, Michael (EEC); Lewis, Kelly (EEC); Mizell, Mike
Subject: RE: EPA & FLM Comments on Draft KY Regional Haze SIP

Leslie,

Regarding Wilson, please forward all communications to Diana and her team.

BTW, Mike Galbraith is no longer employed by Big Rivers.

Mike Zimmer, Ohio and Kentucky P.E.

Principal Consultant with Trinity's Greater Cincinnati/Northern Kentucky Office

P 859.341.8100 ext. 103 M [REDACTED] (preferred)
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From: Poff, Leslie M (EEC) <[REDACTED]>
Sent: Friday, January 6, 2023 1:58 PM
To: Galbraith, Mike <mike.galbraith@bigrivers.com>; Mizell, Mike <Michael.Mizell@bigrivers.com>; Mike Zimmer <[REDACTED]>
Cc: Kennedy, Michael (EEC) <[REDACTED]>; Lewis, Kelly (EEC) <[REDACTED]>
Subject: EPA & FLM Comments on Draft KY Regional Haze SIP

Good afternoon,

I have listed comments specific to BREC – D.B. Wilson Station, from EPA and the FLMs, below. I'd like to schedule a meeting next week to discuss the comments and next steps. Are you all available for a 1 hour meeting during any of the following times next week? All times are Eastern Standard Time.

- Wednesday, January 11th: 9-11am, 1-2pm
- Thursday, January 12th: 10am–12pm, 1-3pm
- Friday, January 13th: 9-10am, 11am-1pm

Thanks.

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601

Comments from EPA (Headquarters & Region 4):

KEY COMMENTS:

- **Measures Necessary for Reasonable Progress:** The Commonwealth must determine the measures necessary for reasonable progress. Any emission control measures or emission limits that Kentucky is relying on for reasonable progress must be included in the SIP. Please identify in the SIP narrative the compliance schedule and the specific emissions limits and supporting conditions that Kentucky is requesting to be adopted into the regulatory portion of the SIP as necessary for reasonable progress for the emissions units reviewed via FFAs and/or effective controls demonstrations.
 - For example, to the extent that Kentucky is relying on the use of scrubbers at Big Rivers Electric Corporation - D.B. Wilson Station (Plant Wilson) as a reasonable progress measure, please ensure that emission limits for Plant Wilson are adopted into the regulatory portion of the SIP. To the extent that Kentucky is relying on increased scrubber control efficiencies for reasonable progress, the emission limits included in the SIP should reflect the increased control efficiencies.
 - If the full permit containing such measures will be provided for reference only, please state that in the narrative and transmittal letter.

GENERAL COMMENTS:

- **Plant Wilson (Section 7.8.1):**
 - The EPA recommends adding a statement explaining why the remaining sulfur dioxide (SO₂) emissions units at Plant Wilson are not being evaluated in some manner (e.g., either the emissions are relatively low or the percent contribution from the unit(s) to Plant Wilson's total SO₂ emissions is small) to support Kentucky's focus on Unit 1. The EPA will work with Kentucky to address this comment.
 - Consider, in addition to Table 7-32, also showing SO₂ emissions rates over time for Unit 1 if this is the only emissions unit to be analyzed for effective SO₂ controls.
 - Please specify whether the effective control (proposed wet scrubber with a 97 percent SO₂ control efficiency) operates year-round in support of the effective controls demonstration. See also Key Comment 2.
 - The EPA recommends for emissions units relying upon an effective controls demonstration: a) providing a comparison of recent, past actual emissions/emissions rates versus permitted allowable emissions/emissions rates and b) assessing whether the compliance margin is reasonable in each case. The EPA will work with Kentucky to address this comment.

OTHER COMMENTS

- **P. 172:**
 - Please confirm whether the following emissions limit is intended to read "0.2 lb SO₂/MMBtu" in the sentence on p.172: "Wilson Station is currently complying with the MATS HCl limit on an input basis (0.0020 lb/MMBtu)." Please also confirm whether the MATS HCl limit or SO₂ limit is intended to be relied upon. Note that if KY intends to rely on the MATS limit for regional haze, the SIP must specify compliance with the SO₂ limit because SO₂ is a visibility-impairing pollutant.

- The EPA recommends referencing the appendix with the November 21, 2021, Plant Wilson permit when describing the Plant Wilson. A statement could be added to the end of the first paragraph on p. 172 after "... issued November 21, 2021." Consider numbering the appendix for easier reference.

Comments from National Parks Service:

1.1 Big Rivers Electric Corporation (BREC) D.B. Wilson Station

1.1.1 Summary of NPS Recommendations for BREC D.B. Wilson Station:

SO₂ Recommendations

- The NPS agrees that the existing SO₂ scrubber system should be replaced.
- A new FGD system should be capable of achieving up to 99% SO₂ control efficiency rather than the proposed 97%.
- The NPS evaluated the incremental cost of going from 97% to 99% control efficiency and found that it would result in an incremental cost-effectiveness of \$248/ton and remove an additional 1,138 tons/year SO₂.
- The NPS recommends that Kentucky require increased scrubber efficiency as part of the Regional Haze SIP.

NO_x Recommendations

- Unit 1 has operated at much lower NO_x rates in the past (below 0.08 lb/MMBtu) and NO_x emission rates have been steadily increasing above 0.08 lb/MMBtu since 2017.
- The NPS recommends that Kentucky require DB Wilson Station to achieve a NO_x emission rate equivalent to the 0.07 lb/MMBtu rate previously achieved (2012–2016).

1.1.2 BREC D.B. Wilson Station Facility Background:

D.B. Wilson Station (Wilson) is a fossil fuel-fired electric power generating facility located near Centertown, Kentucky. Wilson is owned and operated by Big Rivers Electric Corporation (BREC) and consists of one (1) pulverized coal-fired boiler. The boiler, Unit 1 (W1), was constructed in 1984 and has an input capacity of 4,585 MMBtu/hr with a rated capacity of 509 MW. The unit is wall-fired, equipped with an electrostatic precipitator (ESP), wet flue gas desulfurization (WFGD), selective catalytic reduction (SCR), hydrated lime injection, and low nitrogen oxide burners. D.B. Wilson is one of the two facilities selected by Kentucky for four-factor analysis.

D.B. Wilson is ranked number one among the Kentucky facilities for haze contributions in NPS Class I areas in the VISTAS region based on the AOI source screening results. Based on the PSAT source apportionment results, it is the number one Kentucky facility contributing to light extinction in Mammoth Cave NP and ranked number three overall for Mammoth Cave. Using the NPS recommended screening threshold to capture 80% of the total Class I area AOI impact, this source:

- Is on the 80% of total AOI impact list for **10 VISTAS Class I areas**, including Mammoth Cave, Great Smoky Mountains and Shenandoah National Parks.
- Is ranked number 10 out of 238 VISTAS state sources that fall on any VISTAS region Class I area's 80% of total AOI impact list when ranking based on the cumulative AOI impact.

Of 1,382 power plants in EPA's Clean Air Markets Database (CAMD) in 2021, Wilson Station ranked #37 for SO₂ emissions (7,157 tons) and #131 for NO_x emissions (1,762 tons).

In their 2020 Integrated Resource Plan, BREC determined that the continued operation of the D.B. Wilson coal unit represents the "least cost option" for the company. However, BREC notes that the current FGD system is "unable to meet the facility's SO₂ allocation under the Cross State Air Pollution Rule, and therefore, continued operation will require a FGD upgrade." The BREC proposal to upgrade the Wilson FGD system involves "recycling the Coleman Station FGD/absorber system."

1.1.3 BREC D.B. Wilson Station SIP Conclusions:

Kentucky did not complete a four-factor analysis for D.B. Wilson and concluded the following:

BREC is in the process of installing an advanced wet flue gas desulfurization (WFGD) control device on Wilson Station Unit 1 that will increase the SO₂ emissions removal efficiency to 97%. The WFGD will be operational by June 2022. Considering existing installed controls, and BREC's recent investment in the WFGD, Unit 1 is effectively controlled and a four-factor analysis is not necessary for the Wilson facility.

Kentucky did not evaluate or consider whether the new scrubber system could achieve greater than 97% control.

1.1.4 NPS Review of BREC D.B. Wilson Station:

SO₂ Review

The NPS agrees that the existing scrubber system should be replaced and recommends evaluating higher control efficiencies. The revised SO₂ and Acid Gas Controls Chapter of the CCM notes that “[n]ew wet FGD systems can achieve SO₂ removal of 99% and HCl removal of over 95%.”

To verify that the emission rates associated with the potential control efficiencies are within the range of rates demonstrated in practice, the NPS compared the anticipated emission rates to values for similar coal-fired units in CAMD. Uncontrolled emissions were calculated using EIA fuels data and AP-42 emission factors for uncontrolled SO₂ emissions from bituminous coal-fired PC dry bottom wall-fired units. Based on this information, the NPS estimates that the existing scrubber system is only achieving 90% control.^[1] The NPS anticipates that a new wet scrubbing system on the D.B. Wilson facility would achieve the following SO₂ emission rates at 97%, 98% and 99% control efficiency:

- 97% Control: 0.114 lb/MMBtu (proposed emission rate)
- 98% Control: 0.076 lb/MMBtu
- 99% Control: 0.038 lb/MMBtu (NPS recommended emission rate)

When ranking all coal-fired units in the 2021 CAMD database from the tightest controlled to the least controlled on a lb/MMBtu basis, achieving 0.038 lb/mmBtu (99% SO₂ control efficiency) would rank D.B. Wilson #63. This is well within the range of achievable emission rates demonstrated in practice. The proposed 97% level of control (0.114 lb/mmBtu) would rank the EGU as 219th out of 460 total coal-fired units and does not represent a high-performing level of control, particularly for a new control system. (See attached spreadsheet CAMD_2021_coal_units_top_performers.xlsx.) Finally, to demonstrate the cost-effectiveness of this option, the NPS used the most recent CCM workbook for wet FGDs to estimate the costs of the new scrubbing system at 97%, 98% and 99% control efficiencies. This analysis demonstrates that for a negligible increase in annual operating costs (direct annual costs), an additional 1,138 tons/year of SO₂ could be removed (at an incremental cost-effectiveness of \$248/ton).

Table 2. NPS estimate of the new scrubbing system costs at 97%, 98% and 99% control efficiencies for DB Wilson Unit 1

Cost Estimation Method	Updated CCM for Wet Scrubbers for D.B. Wilson Boiler W1		
	97%	98%	99%
Control Efficiency	97%	98%	99%
Unit Size (Gross MW)	509	509	509
Inlet SO ₂ Emissions	3.79	3.79	3.79
Outlet SO ₂ Emissions	0.114	0.076	0.038
Retrofit Factor	1	1	1
CEPCI for 2021	708	708	708
Annual Interest Rate (i) (%)	5.5	5.5	5.5
Equipment Life (years)	30	30	30
Total Capital Investment	\$345,561,698	\$345,561,698	\$345,561,698
Capital Recovery Cost	\$23,774,645	\$23,774,645	\$23,774,645
Indirect Annual Cost	\$23,881,774	\$23,881,774	\$23,881,774
Direct Annual Cost	\$18,457,070	\$18,597,518	\$18,739,094

Total Annual Cost	\$42,338,844	\$42,479,292	\$42,620,868
Uncontrolled SO₂	56,885	56,885	56,885
SO₂ Removed	55,178	55,747	56,316
Direct Cost-Effectiveness	\$767	\$762	\$757
Incremental Total Annual Cost	-	\$140,448	\$282,023
Incremental SO₂ Removed	-	569	1,138
Incremental Cost-Effectiveness	-	\$247	\$248

Improving the control efficiency requirement of the new scrubber system is very cost effective. The NPS recommends that Kentucky require a 99% control efficiency for the D.B. Wilson wet FGD in the RH SIP, along with a requisite emission rate limit, ensuring that performance of the new scrubbing system is in line with other systems currently in operation.

NO_x Review

Based on CAMD data, the SCR unit on the D.B. Wilson boiler has been achieving a 0.086 lb/MMBtu NO_x emission rate (most recent 5-year average). However, the unit has operated at much lower NO_x rates in the past (below 0.08 lb/MMBtu). NO_x emissions rates have been steadily increasing above 0.08 lb/MMBtu since 2016 (see Figure 1).

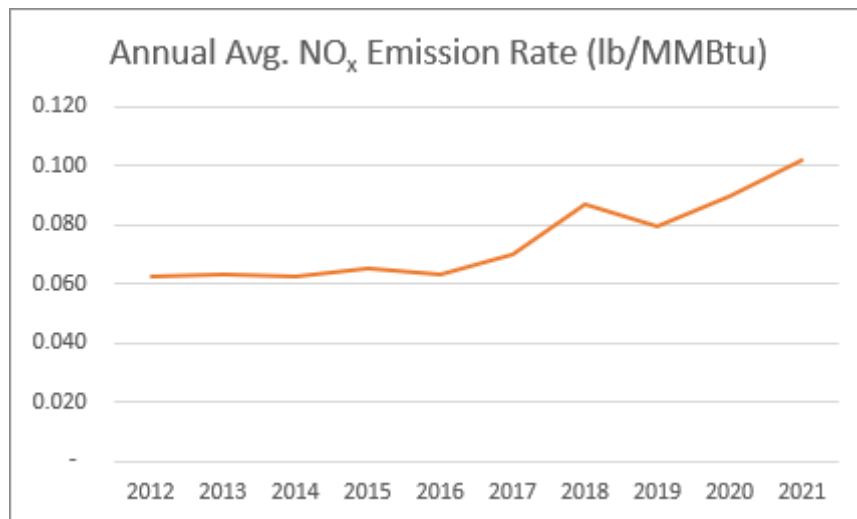


Figure 1: Ten-year trends in NO_x emission rates (lb/MMBtu, annual average) for the D.B. Wilson unit.

The NPS recommends that the Kentucky address SCR optimization under the SIP to ensure the D.B. Wilson unit consistently achieves emission rates achieved between 2012 and 2016. (Requisite limits should be incorporated into the permit to ensure the SCR system achieves optimal NO_x emission rates.) This recommendation is consistent with the EPA clarification memo which states, it “may be difficult for a state to demonstrate that a four-factor analysis is futile for a source just because it has an “effective control” if it has recently operated at a significantly lower emission rate.” Finally, the NPS notes that upgrades may be necessary under the benchmark NO_x emission limits proposed in the “Good Neighbor” rule.

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^[1] To estimate uncontrolled emissions, the NPS used five years (2017-2021) of EIA reported fuel sales data for the D.B. Wilson facility and the AP-42 emission factor (38S) for a PC, dry bottom, wall-fired, bituminous coal unit (38S). This calculated control efficiency is corroborated by control rates reported in BREC's IRP.

Mizell, Mike

From: Poff, Leslie M (EEC) <[REDACTED]>
Sent: Thursday, January 12, 2023 1:28 PM
To: Mizell, Mike; Merritt, Diana; Mike Zimmer
Cc: Lewis, Kelly M (EEC); Bittner, Zachary P (EEC); Kennedy, Michael (EEC); Shewekah, Rick S (EEC)
Subject: Regional Haze FIP Implementation Deadline
Attachments: 2022-08-30 FOF RH SIPs.pdf

Good afternoon,

I have attached the final rule for the finding of failure to submit Regional Haze SIPs for the 2nd implementation period. The effective date of this rule was September 29, 2022. EPA has 2 years to implement a FIP. Therefore, the deadline for EPA is September 29, 2024. Let me know if you have any further questions.

Thanks

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601
Phone: 502-782-6735

Mizell, Mike

From: Merritt, Diana
Sent: Friday, March 18, 2022 12:16 PM
To: Mizell, Mike
Subject: FW: Kentucky Regional Haze SIP Meeting Request

FYI

From: Galbraith, Mike <mike.galbraith@bigrivers.com>
Sent: Friday, March 18, 2022 10:22 AM
To: Merritt, Diana <Diana.Merritt@bigrivers.com>
Subject: FW: Kentucky Regional Haze SIP Meeting Request

Looks like the Regional Haze State Implementation Plan may have been accepted by the EPA. Do you want to schedule? 29th or 30th work best for me.

From: Poff, Leslie M (EEC) <[REDACTED]>
Sent: Friday, March 18, 2022 10:17 AM
To: Galbraith, Mike <mike.galbraith@bigrivers.com>
Subject: Kentucky Regional Haze SIP Meeting Request

Good morning,

I would like to schedule a time for us to meet and discuss Big Rivers – Wilson Station’s proposed limit. Are you and your team available during any of the times listed below?

Tuesday, March 22: 12-3pm
Thursday, March 24: 11am-3pm
Monday, March 28: 9-11am; 2-3pm
Thursday, March 31: 10am-2pm

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601
Phone: 502-782-6735

Mizell, Mike

From: Galbraith, Mike
Sent: Wednesday, July 15, 2020 8:47 AM
To: Mizell, Mike; Berry, Nathan
Cc: Bertram, Mark
Subject: FW: Regional Haze

FYI

Based on previous discussions with Trinity it is likely we will propose an Title V permit SO2 emissions limitation in order to preclude triggering the Regional Haze Rule and necessity to perform the four-factor analysis. The FGD from Coleman should allow us to achieve the State's desired PSAT reduction in annual tons of SO2 without hindering production. Will need to see what is specified in the request before moving forward.

Mike G

From: Mike Zimmer <[REDACTED]>
Sent: Wednesday, July 15, 2020 7:48 AM
To: Galbraith, Mike <Michael.Galbraith@bigrivers.com>; Bertram, Mark <Mark.Bertram@bigrivers.com>
Subject: FW: Regional Haze

FYI

Mike Zimmer, Principal Consultant with Trinity's Greater Cincinnati/Northern Kentucky Office



1717 Dixie Hwy, Suite 900, Covington, Kentucky 41011
P 859.341.8100 ext. 103 M [REDACTED] (preferred)

From: Poff, Leslie M (EEC) <[REDACTED]>
Sent: Wednesday, July 15, 2020 8:09 AM
To: Mike Zimmer <[REDACTED]>
Cc: Cordes, Ben (EEC) <[REDACTED]>
Subject: Regional Haze

Good morning,

Ben Cordes reached out to me and asked if I could provide an update on where we are at with Regional Haze and the four-factor analysis requests. It's most likely that Kentucky DAQ will be requesting a four-factor analysis from two facilities (Big Rivers – Wilson, TVA – Shawnee).

Ben and I have been on frequent calls with the other states within the VISTAS organization to discuss the results of modeling performed by the VISTAS contractor compared to the results of modeling performed by the National Parks Service. NPS's list of facilities suitable for a four-factor analysis was significantly longer than ours. However, we are confident in the modeling performed by the VISTAS contractor and at this time do not foresee requesting a four-factor analysis from any other facilities.

I am currently writing the letter that will be sent to Wilson and Shawnee which will request that the four-factor analysis be performed. I will need to send the letter up to the Director for review and signature. I am hoping to

get the letter sent to these facilities by the end of July. The letter will suggest the use of EPA's guidance to perform the four-factor analysis (https://www.epa.gov/sites/production/files/2019-08/documents/8-20-2019_-_regional_haze_guidance_final_guidance.pdf).

I hope you find this information helpful. Please let me know if you have any further questions. Have a nice day.

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601
Phone: 502-782-6735

Mizell, Mike

From: Galbraith, Mike
Sent: Wednesday, December 9, 2020 3:37 PM
To: Berry, Nathan; Mizell, Mike
Cc: Cole, Tracy
Subject: Regional Haze SO2 Removal

Nathan and Mike,

The Wilson Station was identified in a recent revision of the Regional Haze Rule as being a significant contributor to visibility impairment due to emissions of sulfates. Modeling data was used to identify sources at or above 1.00% contribution to regional haze at Class I areas. The Wilson Station (PSAT) impacts were determined to be 1.43% for Mammoth Cave National Park and 1.29% for Sipsy Wilderness Area. These factors were based on the 2016 annual emissions data of 6934.3 tons SO₂. If the annual emissions were limited to 4833 tons per year (tpy) the resultant (PSAT) impacts would be reduced below the 1.00% threshold for Mammoth Cave National Park (0.99%) and Sipsy Wilderness Area (0.90%). If desiring to accept an annual emissions limitation of SO₂, 4833 tpy will likely be the maximum value we could propose in order for the State to submit as a reasonable progress goal within the regional haze implementation plan.

Historical SO₂ removal efficiencies are based on the uncontrolled SO₂ emissions and actual SO₂ emissions determined by the CEMS. Uncontrolled SO₂ emissions are determined from the tons of fuel combusted and the sulfur content of the fuel. Based on historical fuel use and actual emissions of SO₂, a 95% removal efficiency will be sufficient to remain below a 4833 tpy threshold based on the current fuel sulfur content. Note that petroleum coke was utilized for fuel blending 2003 to mid-2017 which increases fuel sulfur content

Year	Fuel Usage (tpy)	Fuel Sulfur (%)	SO ₂ (tons)	Uncontrolled SO ₂ (tons)	Removal Efficiency	SO ₂ (tons) at 95% removal	SO ₂ 96%
2009	1,296,136	3.79	6,746.7	95,803	93.0	4,790.2	3,
2010	1,529,829	3.68	9,095.0	109,746	91.7	5,487.3	4,
2011	1,550,982	3.75	9,720.7	113,431	91.4	5,671.6	4,
2012	1,364,121	3.42	7,386.6	91,043	91.9	4,552.2	3,
2013	1,483,611	3.33	7,606.9	96,345	92.1	4,817.3	3,
2014	1,334,479	3.17	6,900.7	82,496	91.6	4,124.8	3,
2015	1,436,249	3.24	7,800.0	90,748	91.4	4,537.4	3,
2016	1,388,236	3.16	6,934.3	85,549	91.9	4,277.5	3,
2017*	1,230,263	2.84	5,815.0	68,136	91.5	3,406.8	2,
2018	1,062,853	2.73	5,081.9	56,584	91.0	2,829.2	2,
2019	1,234,390	2.67	5,216.6	64,273	91.9	3,213.7	2,

*Petroleum coke blending ended

Using future forecasts for coal use and fuel sulfur contents based on the current typical 2.8% and a conservative 3.2%, the required level of removal necessary to achieve an annual SO₂ emissions of 4833 tpy was determined. A removal efficiency of 94% will be sufficient to meet a limitation of 4833 tpy at an average 2.8% fuel sulfur content and 95% removal sufficient for fuels up to 3.2% sulfur.

An emission limitation below 2500 tpy SO₂ at 2.8% fuel sulfur will be very close to the FGD removal guarantee of 97% removal, 2800tpy at 3.2% sulfur. Removals at 96% correlate to 3300 tpy at 2.8% sulfur and 3750 tpy at 3.2% sulfur.

	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025	CY 2026	CY 2027
Coal Usage (tpy)	1,442,135	1,313,623	1,492,100	1,433,263	1,517,091	1,304,115	1,304,115
Uncontrolled SO₂ tpy (2.8 % sulfur fuel)	78,741	71,724	81,469	78,256	82,833	71,205	71,205
Emissions Limitation 4833 tpy							
Removal Efficiency	93.9	93.3	94.1	93.8	94.2	93.2	93.2
Emissions Limitation 2500 tpy							
Removal Efficiency	96.8	96.5	96.9	96.8	97.0	96.5	96.5
Emissions Limitation 3300 tpy							
Removal Efficiency	95.8	95.4	95.9	95.8	96.0	95.4	95.4
Uncontrolled SO₂ tpy (3.2 % sulfur fuel)	89,989	81,970	93,107	89,436	94,667	81,377	81,377
Emissions Limitation 4833 tpy							
Removal Efficiency	94.6	94.1	94.8	94.6	94.9	94.1	94.1
Emissions Limitation 2800 tpy							
Removal Efficiency	96.9	96.6	97.0	96.9	97.0	96.6	96.6
Emissions Limitation 3750 tpy							
Removal Efficiency	95.8	95.4	96.0	95.8	96.0	95.4	95.4

Let me know if additional data trending is desired.

Mike

Mizell, Mike

From: Poff, Leslie M (EEC) <[REDACTED]>
Sent: Thursday, April 15, 2021 7:45 AM
To: Galbraith, Mike
Cc: Kennedy, Michael (EEC); Bittner, Zachary (EEC); Bowman, Anna (EEC); Lewis, Kelly (EEC); Duff, Melissa K (EEC); Mizell, Mike; Berry, Nathan; Cole, Tracy; Merritt, Diana; Mike Zimmer
Subject: RE: Big Rivers - Wilson Follow-up Response to the Four-Factor Analysis Request

Thank you Mike. We appreciate you all working with us on this matter. We will reach out if we have any questions.

Have a great day.

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601
Phone: 502-782-6735

From: Galbraith, Mike <Michael.Galbraith@bigrivers.com>
Sent: Wednesday, April 14, 2021 4:44 PM
To: Poff, Leslie M (EEC) <LeslieM.Poff@ky.gov>
Cc: Kennedy, Michael (EEC) <[REDACTED]>; Bittner, Zachary (EEC) <[REDACTED]>; Bowman, Anna (EEC) <[REDACTED]>; Lewis, Kelly (EEC) <[REDACTED]>; Duff, Melissa K (EEC) <[REDACTED]>; Mizell, Mike <Michael.Mizell@bigrivers.com>; Berry, Nathan <Nathaniel.Berry@bigrivers.com>; Cole, Tracy <Tracy.Cole@bigrivers.com>; Merritt, Diana <Diana.Merritt@bigrivers.com>; Mike Zimmer <MZimmer@trinityconsultants.com>
Subject: Big Rivers - Wilson Follow-up Response to the Four-Factor Analysis Request

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Leslie,

As we discussed yesterday, please find attached Big River's follow-up response to the four-factor analysis request for the D.B. Wilson Station.

If you have additional questions or require additional information please do not hesitate to contact Diana Merritt at (270) 844-5008 or Diana.Merritt@bigrivers.com

Regards,
Mike Galbraith

Michael Galbraith
Senior Environmental Scientist
Big Rivers Electric Corporation
Wilson Station
5663 State Route 85 West
Centertown, KY 42328
(270) 844-5203 (office)
[REDACTED] (cell)
(270) 844-5044 (fax)

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Mizell, Mike

From: Mike Zimmer <[REDACTED]>
Sent: Thursday, October 22, 2020 2:08 PM
To: Poff, Leslie M (EEC)
Cc: Jarod Gregory; Galbraith, Mike; Mizell, Mike; Pullen, Mike; Kennedy, Michael (EEC); Bittner, Zachary (EEC); Cordes, Ben (EEC); Duff, Melissa K (EEC); Bertram, Mark
Subject: Big Rivers - Wilson Response to the Four-Factor Analysis Request
Attachments: Big Rivers Wilson 4FA Response 2020-1022.pdf

*RE: Response to the Division's Request for Regional Haze 4-Factor Analysis
Big Rivers Electric Corporation - D.B. Wilson Station; AI 3319
Centertown, Kentucky*

Leslie,

As we discussed yesterday, please find attached Big River's response to the four-factor analysis request for the D.B. Wilson Station.

If you have additional questions, concerns, or requests for data then please do not hesitate to contact Mike Galbraith at (270) 844-5203 or Michael.Galbraith@bigrivers.com or me at (859) 341-8100 ext. 103 or [REDACTED].

Regards,
Mike and Mike

Mike Zimmer, Ohio P.E.

Principal Consultant
Manager of Trinity's Greater Cincinnati/Northern Kentucky Office

P 859.341.8100 ext. 103 M [REDACTED] (preferred)
1717 Dixie Hwy, Suite 900, Covington, Kentucky 41011
Email: [REDACTED]



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From: Poff, Leslie M (EEC) <[REDACTED]>
Sent: Tuesday, July 21, 2020 7:24 AM
To: Bertram, Mark <Mark.Bertram@bigrivers.com>
Cc: Duff, Melissa K (EEC) <[REDACTED]> Lewis, Kelly (EEC) <[REDACTED]>; Cordes, Ben (EEC) <[REDACTED]>
Subject: Four-Factor Analysis Request for Big Rivers - Wilson

Good morning,

Please see the attached letter requesting a Four-Factor Analysis be completed for the Big Rivers - Wilson facility. Let me know if you have any questions.

Have a nice day.

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601
Phone: 502-782-6735

Mizell, Mike

From: Galbraith, Mike
Sent: Wednesday, April 14, 2021 3:44 PM
To: Poff, Leslie M (EEC)
Cc: Kennedy, Michael (EEC); Bittner, Zachary (EEC); Bowman, Anna (EEC); Lewis, Kelly (EEC); Duff, Melissa K (EEC); Mizell, Mike; Berry, Nathan; Cole, Tracy; Merritt, Diana; Mike Zimmer
Subject: Big Rivers - Wilson Follow-up Response to the Four-Factor Analysis Request
Attachments: Follow-up to the Division's Request for Regional Haze 4-Factor Analysis 2021-0414.pdf

Leslie,

As we discussed yesterday, please find attached Big River's follow-up response to the four-factor analysis request for the D.B. Wilson Station.

If you have additional questions or require additional information please do not hesitate to contact Diana Merritt at (270) 844-5008 or Diana.Merritt@bigrivers.com

Regards,
Mike Galbraith

Michael Galbraith
Senior Environmental Scientist
Big Rivers Electric Corporation
Wilson Station
5663 State Route 85 West
Centertown, KY 42328
(270) 844-5203 (office)
[REDACTED] (cell)
(270) 844-5044 (fax)

Mizell, Mike

From: Galbraith, Mike
Sent: Thursday, April 1, 2021 12:51 PM
To: Mizell, Mike
Subject: FW: Division Response to Wilson 4FA Letter
Attachments: 2020-11-23 DAQ Response_Wilson_4FA.pdf

From: Poff, Leslie M (EEC) <LeslieM.Poff@ky.gov>
Sent: Thursday, April 1, 2021 12:48 PM
To: Galbraith, Mike <Michael.Galbraith@bigrivers.com>; Bertram, Mark <Mark.Bertram@bigrivers.com>; Mike Zimmer <[REDACTED]>
Cc: Duff, Melissa K (EEC) <[REDACTED]>; Lewis, Kelly (EEC) <[REDACTED]>; Bowman, Anna (EEC) <[REDACTED]>
Subject: FW: Division Response to Wilson 4FA Letter

Good afternoon,

We sent the attached letter on November 23, 2020 requesting that a four-factor analyses be completed for D.B. Wilson Station. I am currently working on drafting Kentucky's Regional Haze SIP. In order to move forward with completing the Regional Haze SIP and providing it to the Federal Land Managers and EPA for consultation, I request that the four-factor analyses be submitted to us by April 16, 2021.

Thank you for your time.

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601
Phone: 502-782-6735

From: Poff, Leslie M (EEC)
Sent: Monday, November 23, 2020 2:44 PM
To: Galbraith, Mike <Michael.Galbraith@bigrivers.com>; Mark.bertram@bigrivers.com; Mike Zimmer <[REDACTED]>
Cc: Duff, Melissa K (EEC) <[REDACTED]>; Lewis, Kelly (EEC) <[REDACTED]>; Cordes, Ben (EEC) <[REDACTED]>
Subject: Division Response to Wilson 4FA Letter

Good afternoon,

We have completed our review of the report submitted by Mike Zimmer, on behalf of Big Rivers Electric Corporation, responding to the Division's request that a four-factor analysis be completed for D.B. Wilson Station. Please see the attached document for details.

Thank you.

Leslie Poff
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601
Phone: 502-782-6735



201 Third Street
P.O. Box 24
Henderson, KY 42419-0024
270-827-2561
www.bigrivers.com

April 14, 2021

Ms. Leslie Poff
Program Planning
Kentucky Division for Air Quality
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601

RE: Follow-up to the Division's Request for Regional Haze 4-Factor Analysis
Big Rivers Electric Corporation - D.B. Wilson Station; AI 3319
Centertown, Kentucky

Dear Ms. Poff:

In its letter dated November 23, 2020, the Kentucky Division for Air Quality (Division) requested that a formal Four-Factor Analysis (4FA) be submitted for Big Rivers Electric Corporation's (Big Rivers) D.B. Wilson Station by April 16, 2021.

Big Rivers understands that the Division is in the process of developing Kentucky's Regional Haze (RH) SIP and that the Wilson Station is one of the sources in Kentucky with long-range transport modeling showing visibility degradation at Mammoth Cave National Park.

As you are aware, Big Rivers is spending millions of dollars to decrease the Wilson Station's actual emissions of SO₂ by installing a more advanced wet flue gas desulfurization (WFGD) control device. The WFGD is currently being disassembled at Coleman Station and reconstruction work will soon occur at Wilson Station. WFGD construction will be completed and operation will occur by the end of the spring outage in June 2022. As documented in the 4FA Response letter to the Division, dated October 22, 2020, a higher emissions rate of 4,833 tpy of SO₂ is the upper acceptable emissions rate to preclude trigger a 4FA. This emission rate will be achieved as documented in the permit application for the WFGD control device project.

In our previous response to the Division, Big Rivers did not request a federally enforceable emissions limit of 4,833 tpy because it was unnecessary since the PTE after the change would be even lower. However, given our further discussions with the Division and the written response dated November 23, 2020, the Division requested 1) a formal 4FA following US EPA's guidance or 2) a formal proposal detailing the adoption of a federally enforceable emissions limit into Wilson's Title V permit, along with a compliance schedule. This letter addresses the second option.

CONTRIBUTION TO VISIBILITY IMPAIRMENT

Using the PM (Particulate Matter) Source Apportionment Technology (PSAT) modeling data generated by VISTAS, states identified sources shown to have a sulfate or nitrate impact on one or more Class I areas that is greater than or equal to 1.00% of the total sulfate plus nitrate point source visibility impairment on the most impaired days for that Class I area. This advanced modeling study identified Big River's Wilson Station as one of those sources.

Based on the May 20, 2020 VISTAS presentation along with its revised 2028 model projections, the Wilson Station impacts two (2) Class I Areas at or above 1.00% contribution to regional haze from sulfates. The most impacted Class I Area is the Mammoth Cave National Park (NP) at 1.43% and is calculated as follows:

$$1.43\% = 0.361 \text{ Mm}^{-1} \text{ due to sulfate from PSAT results for Wilson} / 33.816 \text{ Mm}^{-1} \text{ due to sulfate+nitrate for total EGU \& non-EGU sources} * 1.0 \text{ ratio} * 1.337 \text{ Class I Area Adjustment for Sulfate + Nitrate Point Impact} * 1/100$$

Where, the 1.0 ratio means that Kentucky did not find an error with Big River's 2028 projections, which was established at 6,934 tons per year of SO₂.

Using the PSAT modeling for Sipsey Wilderness Area, Wilson Station is expected to have a 1.29% impact, calculated as follows:

$$1.29\% = 0.211 \text{ Mm}^{-1} \text{ due to sulfate from PSAT results for Wilson} / 22.628 \text{ Mm}^{-1} \text{ due to sulfate+nitrate for total EGU \& non-EGU sources} * 1.0 \text{ ratio} * 1.382 \text{ Class I Area Adjustment for Sulfate + Nitrate Point Impact} * 1/100$$

During the VISTAS presentation, sources were given an option of taking a federally enforceable emissions limitation by 2028 to demonstrate no adverse impact on any of the affected Class I Areas.

For example, if Big Rivers were to take a federally enforceable (by 2028) emissions limitation at 4,833 tons per year (tpy) of SO₂, which translates into a ratio of $4833/6934 = 0.697$, Big Rivers could avoid a 4FA analysis for the two (2) impacted Class I Areas. The following calculation applies to the most impacted area, Mammoth Caves NP.

$$0.99\% = 0.361 \text{ Mm}^{-1} \text{ due to sulfate from PSAT results for Wilson} / 33.816 \text{ Mm}^{-1} \text{ due to sulfate+nitrate for total EGU \& non-EGU sources} * (4,833 \text{ tpy SO}_2 \text{ limit} / 6,934 \text{ tpy projection for 2028 SO}_2 \text{ Emissions}) * 1.33719 \text{ Class I Area Adjustment for Sulfate + Nitrate Point Impact} * 1/100$$

PROPOSAL FOR RH SIP

Big Rivers is willing to accept an annual SO₂ emissions at 4,833 tpy within our Title V permit no later than five years after the US EPA approves Kentucky's RH SIP, but not sooner than January 2024. Moreover, given that the voluntary emissions rate is less than the PTE, continuous compliance will be assured at all times, thus, no monitoring, recordkeeping, or reporting will be necessary.

Ms. Poff - Page 3
April 14, 2021

If you have any questions or comments about the information presented above, please do not hesitate to contact Diana Merritt at (270) 844-5008 or Diana.Merritt@bigrivers.com.

Sincerely,

Big Rivers

A handwritten signature in blue ink, appearing to read "Tracy Cole".

Tracy Cole
Plant Manager, Wilson Station

Attachments

cc: Ms. Diana Merritt, Big Rivers
Mr. Mike Mizell, Big Rivers
Mr. Mike Zimmer, Trinity
Mr. Mike Galbraith, Big Rivers

IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

REQUEST NO. 2-2: *Please refer to Big Rivers' response to Sierra Club 1.4,*

which states that D.B. Wilson's "retirement is not expected for decades."

- a. Please provide any analyses, documents, or workpapers considering or regarding replacement generation for D.B. Wilson.*
- b. If Big Rivers has not yet begun planning for replacement generation, please describe when Big Rivers expects to do so.*

RESPONSE:

- a. See Big Rivers' response to Commission Staff's Request Nos. 2-24 and 2-30 and Big Rivers' response to Kentuckians for the Commonwealth/Kentucky Resource Council's Request No. 2-17.
- b. Big Rivers will begin planning for replacement generation when it is in the best interest of its Member-Owners to do so.

Witness: Nathaniel A. Berry

IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

REQUEST NO. 2-3: *Please refer to Big Rivers' response to Sierra Club 1.9.*

a. *Please provide any analyses, documents, or workpapers regarding Big Rivers' conclusion that it remains in compliance with all provisions of 40 CFR Part 257.*

RESPONSE:

a. Please see Big Rivers' CCR Rule Compliance and Data Information for the Wilson and Sebree stations at the following website: <https://www.bigrivers.com/environmental-services/big-rivers-electric-corporation-ccr-rule-compliance-and-data-information/>

Witness: Michael S. Mizell

IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

REQUEST NO. 2-4: *Please refer to the IRP pp. 100-101.*

- a. Is closure of the Green Station ash pond complete?*
- b. Please provide any analyses, documents, or workpapers demonstrating the current status of the Green Station ash pond.*
- c. Is closure of the Station Two ash pond complete and/ or on track for completion by April 2024?*
- d. Please provide any analyses, documents, or workpapers demonstrating the current status of the Station Two ash pond.*
- e. Is installation of the final cover system for the Wilson Station landfill complete?*
- f. Please provide any analyses, documents, or workpapers demonstrating the current status of the final cover system for the Wilson Station landfill.*

RESPONSE:

a. No, construction closure activities for the Green Station ash pond continue as of the filing of this response, with closure anticipated to be completed by approximately July 2024. Construction activities were delayed by the need for additional safety measures to protect construction workers from the presence of Hydrogen Sulfide gas found in the ash pond and the need for additional time for CCR material disposal. Once removal of the CCR materials commenced, it was discovered that the amount of materials to be removed exceeded the engineering estimates developed during the closure planning process. Additionally, the consistency of the CCR materials being removed required additional drying time before placement

IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

in the landfill. All required updates have been placed on Big Rivers' publicly available CCR Compliance website, available at <https://www.bigrivers.com/environmental-services/big-rivers-electric-corporation-ccr-rule-compliance-and-data-information>.

b. The most recent Daily Construction Status Report for the Green Ash Pond closure (showing, among other things, the amount of materials already removed and disposed of in the landfill) is attached to this Response as Attachment No. 1.

c. Construction closure activities for the Station Two ash pond are in process. Big Rivers is currently working with its construction contractor to reevaluate when the removal of all CCR materials will be complete. It is currently anticipated that the removal will be complete in late Spring or Early Summer of 2024. Once the determination is made, the required notice will be placed on the Big Rivers publicly available CCR Compliance website, available at <https://www.bigrivers.com/environmental-services/big-rivers-electric-corporation-ccr-rule-compliance-and-data-information/>.

d. The most recent Daily Construction Status report for the Station 2 Ash Pond closure (showing, among other things, the amount of materials already removed and disposed of in the landfill) is attached to this Response as Attachment No. 2.

e. Yes, installation of the cover system is complete. Big Rivers is currently awaiting final approval from the state authorities.

IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

f. Please see the Construction Quality Assurance Report dated January 2024, attached to this Response as Attachment Nos. 3 and 4.

Witness: Michael S. Mizell



DAILY CONSTRUCTION REPORT

Report Number:	446	Project Number:	9022005	Site Phone No:	859-749-3844	Date:	2/6/24
Project Name:	Big Rivers Green Ash Pond			Site Manager:	Dan Murdoch	Weather:	Sunny, 49-31
Location of Work:	Robards, KY	H&S Officer:	Allan Finch/Caitlen Buck	Rainfall Amount:			
Project Manager:	Kyle McFerrin	Work (Y/N):	Y	TD Total Impact Days:	49		

Health and Safety		Comments (attach reports and statements)	
Incidents/Accidents	Y/N	N	
Emergency Procedures	Y/N	N	

Daily Safety Topic(s): Hard hats and head protection, look out for new employees
 H2S Hits: no significant readings detected
 Personnel in Supplied Air: see names highlighted in yellow below
 Disclaimer: Sensor drift is expected between -1 to 1 PPM due to atmospheric conditions

Work Performed by NorthStar (attached photos)
 Worked on mixing lime with wet CCR in pond and landfill mixing areas
 Worked on flipping and drying CCR in mixing areas
 Excavated CCR in ash pond and placed into pond mixing cells
 Loaded trucks from pond mixing cells to haul to landfill staging and placement areas
 Loaded trucks from staging area to haul to placement area
 Continued placing and grading CCR in landfill

G1 and G2 clarifiers overflowing. Filtered water building discharging water to green ash pond.

Water Treatment			
Water Pumped	312,960	Gallons	320,450,592 <- to date pumped
			320,137,632 <- previous to date pumped
	1500GPM System running		
	Staff Guage Reading : Silted in around guage, unable to take measurement		

Water Treatment System			
System	Hours On	Backwashing	Shifts
500 System	0.0	0 for 0 Minutes	2x12 Shifts
1500 System	6.8	1 for 20 Minutes	AM 0 Backwash PM 1 Backwash

Backwash Logs							
#	System	Shift	Start	End	Min	Note	
2423	1500T1	PM	6:40 PM	7:00 PM	20		
0							
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Work Performed by Subcontractors or Others (attached photos)

List Specific Quality Control Activities Performed and Results of These Activities (attach inspections, findings, and corrective actions)
 Paint filter tests performed, no failures on materials loaded

Meetings/Significant Decisions/Verbal Instructions Received

Daily Inspections	Y/N	Comments		Type	Y/N	Comments	
Secondary Containments							
Dust							
Special Reports							
Stoppages Delays, etc.							
Material Moved:	Daily Load Total	CY	Total CY to Date	Previous CY to Date	Loads to Date	Previous Loads to Date	Comments
CCR from Pond to Drying Area (Excavated Quantity)	253	4,620	555,639	551,019	30,820	30,567	

CCR Direct from Pond to Placement Area (Excavated Quantity)	50	1,190	252,266	251,076	11,537	11,487	Recalibrated load tracking to match 12/13/23 survey from pond	
Total CCR Excavated From Pond by Load Count	303	5,810	807,906	802,096	42,357	42,054		
CCR from Drying Area to Placement Area(Placed Quantity)	90	2,215	415,192	412,977	16,924	16,834		
CCR Direct from Pond to Placement Area (Placed Quantity)	50	1,190	252,266	251,076	11,537	11,487		
Total CCR Placed and Compacted (Placed Quantity)	140	3,406	667,459	664,053	28,461	28,321		
Estimated Compacted CCR (Special Reports)			400,475					
CCR Remaining in Drying Area			134,337	130,539				
Vegetation to Landfill		0	8,010	8,010	381	381		Aproximate CY to Date
Material Delivered	Loads	Tons	JTD Tons	Prev Tons TD	JTD Loads	Prev Loads		Comments (attach delivery tickets)
#3 Limestone			94.71	94.71	4	4		
DGA			497.03	497.03	20	20		
#57			146.11	146.11	6	6		
Quick Lime	10.00	253.00	18164	17,911.00	708	698		
4"x6" riprap			24.68	24.68	1	1		
Subcontractors:	No.	Total Hours	Comments				Totals	
IAI/Brennan								
Total Safety								
Rudd								
United Rentals								
Double A Services								
Newman Tractor								
Madisonville Tire								
Wilco								
SunBelt								
A&S Services								
Boyd Cat								
Brandeis	2	10						
XYLEM							Headcount	
Equipment Share							17	
S&ME	1	7					Previous Sub TD	
USA Debusk							5481.5	
							Sub TD	
							5498.5	
NS Personnel On-site	Hours	Employee	Hours	Employee	Hours	Employee	Hours	
Dan Caballero	10.5	Todd Smith	12	Angela Baker		Tim Furiate		
Allan Finch	11.5	John Hardesty	11	Alvin Anthony	10.5			
Nick Cruse	10	Hunter Harpstrite	10.5	Trent Sholar	10	Tim Morrow	0	
Thomas Carlisle		Mike Harris	10	John Giles	10.5	Mike Lamp	0	
Chad Phillips		Thomas Shelton	10	Govin Samaroo	10.5	Kyle McFerrin		
Dalton Giles	10	Caitlen Buck	11.5	Audrey Murdoch	10	Dan Murdoch	11.5	
Matthew Ziegler	10	Justin Patterson	12	Joe Wolfe	10.5	Robert Fulcher	12	
Amy Peek	5.5	Angelo Wynn	11.5	David Shook	10.5	Johnny Finch	12	
Jaime Perez	11	Tim Jewell	10	Tracy Harman	11	Romeana Dear	5.5	
Patrick Crombie	10.5	Josh Coryell	12.5	Tyler Rolirad	12	Brian Harrell	12	
Darren Linscomb	12	Brandon Reese	12	Zach Plowman	10			
Ernestine Smith	9	Clint Walter	11	Kenley Pierre	10			
Alvin Anthony III	10	Todd Rolirad		Clinton May	10			
Vicente Guerra	11	Jose Fuentes	10	Anjuwon Simpson	10			
Night Shift							Headcount	
Jeanie Thomason	10						39	
Brian McCreary	10						NS Daily Hours	
Amilio Kearney	10						483.5	
							Previous NS TD	
							114,356	
							NS TD	
							114,840	
							SUB TD	
							5,498.5	
							Project TD	
							120338	
Major Equipment On-site	Serial Number	Mob Date	Owned	Rental	Operator	Demob	Notes	
E.Collins Pickup 1500		9/19/2022	N	Enterprise		10/6/22		
office trailer 1		9/21/2022	N	United				
Office trailer 2		9/21/2022	N	United				
D.Caballero Pickup		9/22/2022	N	Enterprise		6/5/23		
Volvo A30G (Truck #2)	VCE0A30GV00740343	9/22/2022	N	DOZR				
4 Portajons+ 2 hand wash stations		9/23/2022	N	American				
JD 310E (Truck #1)	1DW310EXPKF694002	9/26/2022	N	DOZR		12/1/22		
Komatsu HM300 (Truck #3)		9/26/2022	N	DOZR		10/11/22		
Komatsu PC490	A43198	9/26/2022	N	Brandeis				
Komatsu PC490	A43195	9/27/2022	N	Brandeis		5/23/2023		
Komatsu PC360	A37437	9/27/2022	N	Brandeis		11/13/2023		
Takeuchi TL8	RC34444	9/27/2022	N	Brandeis				
2500 Gallon Fuel Tank		9/28/2022	N	Heritage Petroleum				
2 X 21K Frac Tanks	SV35945L, PVALS104	9/29/2022	N	United				
4" Pump	10612339	9/29/2022	N	United				
8" pump	10282094	9/29/2022	N	United				
12" pump	B-1266C	9/29/2022	N	Xylem				
8" pump	D-8114	9/29/2022	N	Xylem				
8" pump	D-8612A	9/29/2022	N	Xylem				
8" pump	D-8724	9/29/2022	N	Xylem				
528 Gal Fuel Tank	51641	9/29/2022	N	Xylem				
Komatsu WA380	A76008	9/30/2022	N	Brandeis				
Cat D5N LGP Dozer	AKD01155	10/4/2022	Y	NS				
Komatsu HM300 Water Truck	A11168	10/6/2022	N	Brandeis		3/1/2023		
Komatsu D61PXi Dozer	D12278	10/6/2022	N	Brandeis				
6" Pump	225496	10/6/2022	N	United				
21K Frac Tank	55684	10/6/2022	N	United				
E.collins Pickup 2500		10/6/2022	N	Enterprise		1/10/2023		
CAT 326 Long Reach	MFJ20139	10/10/2022	N	Cat		4/24/2023		

HAMM sheepsfoot roller	20702065	10/12/2022	N	Brandeis		
Komatsu 240 Long Reach	A22508	10/12/2022	N	Brandeis		1/21/2023
HAMM Smooth Drum Roller	19714009	10/14/2022	N	Brandeis		
Takeuchi Mini Ex		10/15/2022	N	Brandeis		10/24/2022
Komatsu D65PXI Dozer	91792	10/18/2022	N	Brandeis		1/8/2024
A.Finch Pickup 1500		10/18/2022	N	Enterprise		6/5/2023
D.Giles Pickup 1500		10/18/2022	N	Enterprise		3/23/2023
Komatsu HM400(Truck#4)	10062	10/27/2022	N	Brandeis		4/18/2023
Komatsu HM400(Truck#5)	10047	10/28/2022	N	Brandeis		
Komatsu HM400(Truck#6)	11202	10/28/2022	N	Brandeis		4/17/2023
Komatsu HM400(Truck#7)	10490	10/28/2022	N	Brandeis		11/9/2023
Komatsu HM400(Truck#8)	10637	11/2/2022	N	Brandeis		
Marsh Runner	5003	11/9/2022	N	Wilco		1/5/2024
Cat 330 Amphibious	WCH30249	11/9/2022	N	Wilco		1/30/2024
Cat 349 Excavator		11/10/2022	Y	NorthStar		3/30/2023
Volvo A40G(Truck#9)	P17223517	11/10/2022	N	Scott		12/20/2022
Pickup 2500		11/11/2022	Y	NorthStar		
Komatsu HM400(Truck#10)	11376	11/11/2022	N	Brandeis		
Komatsu HM400(Truck#11)	3650	11/11/2022	N	Brandeis		7/7/2023
Komatsu HM400(Truck#12)	10050	11/14/2022	N	Brandeis		
Komatsu HM400(Truck#13)	10049	11/14/2022	N	Brandeis		
Komatsu HM400(Truck#14)	10082	11/17/2022	N	Brandeis		7/7/2023
Volvo A40G(Truck#15)	352109	12/20/2022	N	Scott		1/30/2023
R.Fulcher Pickup			N	Enterprise		
Komatsu D71 PXI	70776	1/11/2023	N	Brandeis		3/6/2023
Komatsu HM400(Truck#16)	11079	1/12/2023	N	Brandeis		
Komatsu HM400(Truck#17)	10744	1/12/2023	N	Brandeis		
Komatsu HM400(Truck#18)	10165	1/13/2023	N	Brandeis		
Komatsu HM400(Truck#19)	10277	1/13/2023	N	Brandeis		
Komatsu PC240 EX longreach	A22069	1/21/2023	N	Brandeis		10/31/2023
Komatsu HM400(Truck#20)	11160	2/6/2023	N	Brandeis		
Komatsu Water Truck		3/1/2023	N	Brandeis		9/13/2023
Komatsu D71 PX Dozer	71360	3/6/2023	N	Brandeis		11/12/2023
Komatsu D61-PX Dozer	B60547	3/20/2023	N	Brandeis		10/17/2023
Komatsu PC360 Excavator	A37254	3/23/2023	N	Brandeis		
Fuel and Lube Truck		3/30/2023	N	City Rent a Truck		
Komatsu PC240 EX longreach		4/13/2023	N	Brandeis		10/31/2023
Komatsu PC360 Excavator	A37256	4/17/2023	N	Brandeis		
Komatsu PC240 EX longreach	A22515	4/24/2023	N	Brandeis		10/31/2023
Komatsu D61PXI Dozer	B66106	4/26/2023	N	Brandeis		
New Holland T6.165 Tractor	HACT6165LKEG01397	5/4/2023	N	Sunbelt		
Komatsu PC490 EX	A42325	5/23/2023	N	Brandeis		
Komatsu D71PXI Dozer	71322	5/25/2023	N	Brandeis		
Komatsu PC240EX longreach		5/25/2023	N	Brandeis		7/17/2023
6K Gallon Water Truck		5/25/2023	N	Boyd Cat		6/25/2023
HAMM Smooth Drum Roller		5/25/2023	N	Brandeis		
Takeuchi Mini Ex		5/26/2023	N	Brandeis		
D.Caballero Pickup		6/1/2023	N	City Rent a Truck		
D.Murdoch Pickup		6/1/2023	N	City Rent a Truck		
A.Finch Pickup		6/1/2023	N	City Rent a Truck		
Site 1500 Pickup		6/1/2023	N	City Rent a Truck		
R.Dear Expedition		6/1/2023	N	City Rent a Truck		
Volvo AG40 (Truck#21)	353575	6/2/2023	Y	NorthStar		
Volvo AG40 (Truck#22)	353103	6/3/2023	Y	NorthStar		
Cat D6T Dozer	00D6TJRADO00514	6/5/2023	N	Boyd Cat		6/27/2023
Marooka MST2200VD	A2202275	6/9/2023	N	Boyd Cat		7/13/2023
Marooka MST2200VD	A2202088	6/12/2023	N	Boyd Cat		9/19/2023
Terramac RT14R	14RH00160	6/14/2023	N	Sunbelt		9/25/2023
John Deere 850L XLT Dozer	1T0850LXLPF447468	6/20/2023	N	Equipment Share		8/28/2023
Komatsu PC240 LR	A22508	7/20/2023	N	Brandeis		
Cat 340 Long Reach Excavator		9/5/2023	N	Boyd Cat		
Cat D7 LGP Dozer		9/6/2023	N	Boyd Cat		10/17/2023
JCB Tellehandler		9/7/2023	N	Equipment Share		
Bell 30 Water truck		9/13/2023	N	Newman Tractor		
Komatsu 490 Lci Excavator	A45487	9/28/2023	N	Brandeis		
Komatsu HM300 Lime truck	3336	10/4/2023	N	Brandeis		
Komatsu D61PXI Dozer	B66009	10/17/2023	N	Brandeis		
Komatsu HM300 (Truck #23)		10/20/2023	N	Brandeis		
Komatsu PC490 EX	A42329	10/24/2023	N	Brandeis		
Komatsu PC360 Excavator	C1090-x	10/26/2023	N	Brandeis		
Komatsu PC360 Excavator	C5939	10/26/2023	N	Brandeis		
Komatsu PC290 LR Excavator		11/3/2023	N	Brandeis		
Cat 330 LR Excavator		11/13/2023	N	Boyd Cat		
Volvo A40G (Truck #24)	VCE0A40GC00353151.L	11/20/2023	Y	NorthStar		
Volvo A45G (Truck #25)		11/21/2023	Y	NorthStar		
Volvo A45G (Truck #26)		11/27/2023	Y	NorthStar		
Komatsu PC490 EX		12/23/2023	Y	NorthStar		
Cat 340 Long Reach Excavator		1/2/2024	N	Boyd Cat		
Volvo 250LR		1/3/2024	Y	NorthStar		
JD 850K Dozer		1/3/2024	Y	NorthStar		



CCR to Landfill

Daily Truck Count

Notes

CY Tons Desc

As Of 2/6/2024

Mob

Demob

Table with 26 columns for CCR types and values ranging from 101 to 1170.

Main data table with columns for Date, DOW, From, To, Note, From Pond, From Stage, %, CCR Totals (Truck, CCR Loads, JTD Loads, etc.), and Filter Tests (T1, T2).

MISSISSIPPI LIME COMPANY

STE GENEVIEVE, MO 63670

Order No: 794751
Customer No: 601429
Ship to No: 704208

Shipper's No: 794751-1

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic c Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns

From MISSISSIPPI LIME COMPANY	February 5, 2024 03:55 PM	IN 1253	Out 1354
Consigned To <u>BIG RIVER GREEN ASH POND</u>		P.O. No <u>273166</u>	
Destination <u>ROBARDS</u>		Phone <u>270-844-6029</u>	
Route <u>9000 STATE HWY 2096</u>		State <u>KY</u>	Zip <u>42452</u>
Carrier <u>BEELDMPVAN</u>		Tractor <u>2927</u>	Trailer <u>G655</u>

ITEM #	LOT #	Kind of Package, Description of Articles, Special Marks, & Exceptions	Weight (sub to car)	Subject to Section 7 of conditions of applicable bill of lading. If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement. Carrier shall look only to the broker for payment on brokered shipments and neither shipper or consignee shall have any liability for freight charges if paid by the shipper or consignee to the broker for broker shipments.
251		QUICKLIME 2"X1" -BULK	25.10 TN	MISSISSIPPI LIME COMPANY
Instructions: NO DELIVERIES PRIOR TO 6:30AM AND ABSOLUTELY NO UNLOADING WITHOUT CUSTOMER APPROVAL/SUPERVISION!!				(Signature of Consignor)
Seals: No credits or refunds will be issued for returned product. If a bagged load, pallet weight included in the gross weight. All Bagged Products are LIME CLASS 50 ITEM 42160.			Gross: 78,280 LB Tare: 28,080 LB Net: 50,200 LB	If charges are to be prepaid, write or stamp here: "To Be Prepaid." PREPAID
Promised Delivery: 02/06/2024 Sub Carrier: BEELMAN				Received \$ to apply in prepayment of the charges on the property described herein Agent or Cashier Per _____ (the signature here acknowledges only the amount prepaid.) Charges Advanced \$ C.B Point Destination Slurry Factor

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight.
NOTE--Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

MISSISSIPPI LIME COMPANY, Shipper, Agent, Per _____
Per MRC1

Permanent post-office address of shipper, Driver MICHAEL
HWAY 61 S, STE GENEVIEVE, MO 63670

Form Control No. **- COPY** page 1 of 1

MISSISSIPPI LIME COMPANY

STE GENEVIEVE, MO 63670

Order No: 794751
 Customer No: 601429
 Ship to No: 704208

Shipper's No: 794751-2

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable
 RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading.

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

From MISSISSIPPI LIME COMPANY February 5, 2024 10:15 AM IN 0859 Out 1015
 Consigned To BIG RIVER GREEN ASH POND P.O. No 273166
 Destination ROBARDS Phone 270-844-6029
 Route 9000 STATE HWY 2096 State KY Zip 42452
 Carrier BEELDMPVAN Tractor 4113 Trailer G633

ITEM #	LOT #	Kind of Package, Description of Articles, Special Marks, & Exceptions	Weight (sub to car)
251		QUICKLIME 2"X1" -BULK	25.23 TN
Instructions: NO DELIVERIES PRIOR TO 6:30AM AND ABSOLUTELY NO UNLOADING WITHOUT CUSTOMER APPROVAL/SUPERVISION!!			

Seals:

No credits or refunds will be issued for returned product.
If a bagged load, pallet weight included in the gross weight.
All Bagged Products are LIME CLASS 50 ITEM 42160.

Gross: 78,260 LB
 Tare: 27,600 LB
 Net: 50,460 LB

Promised Delivery: 02/06/2024
Sub Carrier: BEELMAN

Subject to Section 7 of conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

Carrier shall look only to the broker for payment on brokered shipments and neither shipper or consignee shall have any liability for freight charges if paid by the shipper or consignee to the broker for broker shipments.

MISSISSIPPI LIME COMPANY

(Signature of Consignor)

if charges are to be prepaid, write or stamp here 'To Be Prepaid'

PREPAID

Received \$ _____

to apply in prepayment of the charges on the property described hereon

Agent or Cashier

Per _____
 (the signature here acknowledges only the amount prepaid.)

Charges Advanced \$ _____

FOB Point

Destination

Slurry Factor

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight.
 NOTE--Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
 The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

MISSISSIPPI LIME COMPANY, Shipper.
 Per GAS Agent, Per _____
 Permanent post-office address of shipper:
 31WAY 61 S, STE GENEVIEVE, MO 63670
 Driver **CHRIS**

MISSISSIPPI LIME COMPANY

STE GENEVIEVE, MO 63670

Order No: 794751
Customer No: 601429
Ship to No: 704208

Shipper's No: 794751-3

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading.

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any part of or any part of or any route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

From MISSISSIPPI LIME COMPANY February 5, 2024 12:22 PM IN 1120 Out 1221
P.O. No 273166
Consigned To BIG RIVER GREEN ASH POND Phone 270-844-6029
Destination ROBARDS State KY Zip 42452
Route 9000 STATE HWY 2096
Carrier BEELDMPVAN Tractor 4253 Trailer G760

ITEM #	LOT #	Kind of Package, Description of Articles, Special Marks, & Exceptions	Weight (sub to car)
251		QUICKLIME 2"X1"-BULK	25.45 TN
Instructions: NO DELIVERIES PRIOR TO 6:30AM AND ABSOLUTELY NO UNLOADING WITHOUT CUSTOMER APPROVAL/SUPERVISION!!			

Seals:

No credits or refunds will be issued for returned product.
If a bagged load, pallet weight included in the gross weight.
All Bagged Products are LIME CLASS 50 ITEM 42160.

Gross: 78,060 LB
Tare: 27,160 LB
Net: 50,900 LB

Promised Delivery: 02/06/2024
Sub Carrier: BEELMAN

Subject to Section 7 of conditions of applicable bill of lading. If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

Carrier shall look only to the broker for payment on brokered shipments and neither shipper or consignee shall have any liability for freight charges if paid by the shipper or consignee to the broker for broker shipments.

MISISSIPPI LIME COMPANY

(Signature of Consignor)

If charges are to be prepaid write or stamp here: "To Be Prepaid"

PREPAID

Received \$ _____

to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____
(the signature here acknowledges only the amount prepaid.)

Charges Advanced \$ _____

FOB Point **Destination**

Slurry Factor

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight.
NOTE:--Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

MISSISSIPPI LIME COMPANY, Shipper.

Per GAS

Agent, Per _____

Permanent post-office address of shipper,
HWAY 61 S. STE GENEVIEVE, MO 63670

Driver JOSH

Josh Mable

Form Control No - **COPY**

page 1 of 1

MISSISSIPPI LIME COMPANY

Order No.: 794751
Cust. No.: 601429
Ship To No.: 704208

STE GENEVIEVE, MO 63670

Shipper's No.: 794751-4

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading.

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

From MISSISSIPPI LIME COMPANY **February 05, 2024 01:00 PM** IN: 1207 OUT: 1259

P.O. No.: 273166

Consigned to **BIG RIVER GREEN ASH POND** Phone **270-844-6029**
Destination **ROBARDS** State **KY** Zip **42452**

Route **9000 STATE HWY 2096**

Carrier **BEELDMPVAN** Tractor No.: **4171** Trailer No.: **G832**

ITEM #	LOT #	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight (Sub. to Cor.)
251		QUICKLIME 2"X1"-BULK	26.16 TN

Instructions: NO DELIVERIES PRIOR TO 6:30AM AND ABSOLUTELY NO UNLOADING WITHOUT CUSTOMER APPROVAL/SUPERVISION!!

Seals:

Subject to Section 7 of conditions of applicable bill of lading. If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.
Carrier shall look only to the broker for payment on brokered shipments and neither shipper or consignee shall have any liability for freight charges if paid by the shipper or consignee to the broker for broker shipments.

MISSISSIPPI LIME COMPANY
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "To Be Prepaid."
PREPAID

Received \$ _____ to apply in prepayment of the charges on the property described hereon.

Agent or Cashier
Per _____
(The signature here acknowledges only the amount prepaid.)

Charges Advanced
\$ _____

F.O.B. Point
Destination

Slurry Factor

No credits or refunds will be issued for returned product.

<i>If a bagged load, pallet weight included in the gross weight.</i>	Gross:	79,480 LB
ALL Bagged Products are LIME	Tare:	27,160 LB
CLASS 50 ITEM 42160.	Net:	52,320 LB

Promised Delivery : 02/06/2024

Sub Carrier : BEELMAN

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight.
NOTE--Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

MISSISSIPPI LIME COMPANY, Shipper,
Per **JAS5** Agent, Per _____

Permanent post-office address of shipper,
HWAY 61 S, STE GENEVIEVE, MO 63670

Driver: **KENNETH**

Form Control No. **1495120**

MISSISSIPPI LIME COMPANY

STE GENEVIEVE, MO 63670

Order No: 794751
 Customer No: 601429
 Ship to No: 704208

Shipper's No: 794751-5

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading.

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

From MISSISSIPPI LIME COMPANY	February 5, 2024 12:52 PM	IN 1208	Cut 1252
Consigned To <u>BIG RIVER GREEN ASH POND</u>		P.O. No <u>273166</u>	
Destination <u>ROBARDS</u>		Phone <u>270-844-6029</u>	
Route <u>9000 STATE HWY 2096</u>		State <u>KY</u>	Zip <u>42452</u>
Carrier <u>BEELDMPVAN</u>		Tractor <u>3111</u>	Trailer <u>G939</u>

ITEM #	LOT #	Kind of Package, Description of Articles, Special Marks, & Exceptions	Weight (sub to car)
251		QUICKLIME 2"X1"-BULK	26.41 TN
Instructions: NO DELIVERIES PRIOR TO 6:30AM AND ABSOLUTELY NO UNLOADING WITHOUT CUSTOMER APPROVAL/SUPERVISION!!			

Seals:

No credits or refunds will be issued for returned product.
 If a bogged load, pallet weight included in the gross weight.
 All Bagged Products are LIME CLASS 50 ITEM 42160.

Gross:	80,000 LB
Tare:	27,180 LB
Net:	52,820 LB

Promised Delivery: 02/06/2024
Sub Carrier: BEELMAN

Subject to Section 7 of conditions of applicable bill of lading. If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.

Carrier shall look only to the broker for payment on brokered shipments and neither shipper or consignee shall have any liability for freight charges if paid by the shipper or consignee to the broker for broker shipments.

MISSISSIPPI LIME COMPANY

(Signature of Consignor)

If charges are to be prepaid, write or stamp here: "To Be Prepaid."

PREPAID

Received \$ _____

to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____
 (the signature here acknowledges only the amount prepaid.)

Charges Advanced \$ _____

F.O.B Point

Destination

Surry Factor

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight
 NOTE--Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

MISSISSIPPI LIME COMPANY, Shipper,

Per JAW2

Agent, Per

Permanent post-office address of shipper,
 HWAY 61 S, STE GENEVIEVE, MO 63670

Driver **CARL**



Form Control No - **COPY**

MISSISSIPPI LIME COMPANY

STE GENEVIEVE, MO 63670

Order No: 794751
Customer No: 601429
Ship to No: 704208

Shipper's No: 794751-6

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading.

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any portion of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

From MISSISSIPPI LIME COMPANY February 5, 2024 07:50 PM IN 1833 Out 1950
P.O. No 273166
Consigned To BIG RIVER GREEN ASH POND Phone 270-844-6029
Destination ROBARDS State KY Zip 42452
Route 9000 STATE HWY 2096
Carrier BEELDMPVAN Tractor 2108 Trailer 581

Table with 3 columns: ITEM #, LOT #, Kind of Package, Description of Articles, Special Marks, & Exceptions. Includes item 251: QUICKLIME 2"X1"-BULK, weight 25.45 TN, and instructions regarding deliveries and unloading.

Administrative section containing 'Seals' information, 'Promised Delivery: 02/06/2024', 'Sub Carrier: BEELMAN', and a large signature box with 'PREPAID' and 'Received \$' fields.

Handwritten notes: 11727445, VANDAR, 2108, 581

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight.
NOTE- Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to not exceed _____ per _____

MISSISSIPPI LIME COMPANY, Shipper. Per MRC1 Agent, Per Driver DARRYL

Permanent post-office address of shipper, HWAY 61 S, STE GENEVIEVE, MO 63670. Form Control No. - COPY

MISSISSIPPI LIME COMPANY

STE GENEVIEVE, MO 63670

Order No: 794751
 Customer No: 601429
 Ship to No: 704208

Shipper's No: 794751-7

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading.

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

From MISSISSIPPI LIME COMPANY February 5, 2024 06:40 PM IN 1751 Out 1840
 P.O. No 273166
 Consigned To BIG RIVER GREEN ASH POND Phone 270-844-6029
 Destination ROBARDS State KY Zip 42452
 Route 9000 STATE HWY 2096
 Carrier BEELDMPVAN Tractor 2538 Trailer G691

ITEM #	LOT #	Kind of Package, Description of Articles, Special Marks, & Exceptions	Weight (sub to cor)
251		QUICKLIME 2"X1" - BULK	25.36 TN
Instructions: NO DELIVERIES PRIOR TO 6:30AM AND ABSOLUTELY NO UNLOADING WITHOUT CUSTOMER APPROVAL/SUPERVISION!!			

Seals:

No credits or refunds will be issued for returned product.
 If a bagged load, pallet weight included in the gross weight.
All Bagged Products are LIME CLASS 50 ITEM 42160.

Gross:	79,320 LB
Tare:	28,600 LB
Net:	50,720 LB

Promised Delivery: 02/06/2024
Sub Carrier: BEELMAN

Subject to Section 7 of conditions of applicable bill of lading. If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

Carrier shall look only to the broker for payment on brokered shipments and neither shipper or consignee shall have any liability for freight charges if paid by the shipper or consignee to the broker for broker shipments.

MISSISSIPPI LIME COMPANY

(Signature of Consignor)

If charges are to be prepaid, write or stamp here: "To Be Prepaid."

PREPAID

Received \$ _____

to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____
 (the signature here acknowledges only the amount prepaid.)

Charges Advanced \$ _____

F.O.B. Point

Destination

Slurry factor

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight
 NOTE--Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

MISSISSIPPI LIME COMPANY, Shipper,
 Per MRC1

Agent, Per _____

Permanent post-office address of shipper,
 HWAY 61 S, STE GENEVIEVE, MO 63670

Driver **STEPHEN**

Form Control No. - **COPY**

MISSISSIPPI LIME COMPANY

Order No.: 794751
 Cust. No. : 601429
 Ship To No.: 704208

STE GENEVIEVE, MO 63670

Shipper's No.: 794751-8

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable

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The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back hereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

From MISSISSIPPI LIME COMPANY **February 05, 2024 03:03 PM** IN: 1446 OUT: 1502
 P.O. No.: 273166
 Consigned to BIG RIVER GREEN ASH POND Phone 270-844-6029
 Destination ROBARDS State KY Zip 42452
 Route 9000 STATE HWY 2096
 Carrier BEELDMPVAN Tractor No.: 3528 Trailer No.: G974

ITEM #	LOT #	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight (Sub. to Cor.)
251		QUICKLIME 2"X1"-BULK	25.35 TN

Instructions: NO DELIVERIES PRIOR TO 6:30AM AND ABSOLUTELY NO UNLOADING WITHOUT CUSTOMER APPROVAL/SUPERVISION!!

Seals:

Subject to Section 7 of conditions of applicable bill of lading. If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.
 Carrier shall look only to the broker for payment on brokered shipments and neither shipper or consignee shall have any liability for freight charges if paid by the shipper or consignee to the broker for broker shipments.

MISSISSIPPI LIME COMPANY
 (Signature of Consignor)

If charges are to be prepaid, write or stamp here. "To Be Prepaid."
 PREPAID

Received \$ _____
 to apply in prepayment of the charges on the property described hereon.

Agent or Cashier
 Per _____
 (The signature here acknowledges only the amount prepaid.)

Charges Advanced
 \$ _____

F.O.B. Point
 Destination _____

Slurry Factor

No credits or refunds will be issued for returned product.

If a bagged load, pallet weight included Gross: 78,980 LB
in the gross weight. Tare: 28,280 LB
ALL Bagged Products are LIME Net: 50,700 LB
CLASS 50 ITEM 42160.

Promised Delivery : 02/06/2024
Sub Carrier : BEELMAN

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight.
 NOTE--Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

MISSISSIPPI LIME COMPANY, Shipper, Per ASA1 Agent, Per _____

Permanent post-office address of shipper:
 HWAY 61 S, STE GENEVIEVE, MO 63670

Driver: **MIKE**

Form Control No. **1495143**

MISSISSIPPI LIME COMPANY

STE GENEVIEVE, MO 63670

Order No: 794751
 Customer No: 601429
 Ship to No: 704208

Shipper's No: 794751-9

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable

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From MISSISSIPPI LIME COMPANY February 5, 2024 05:47 PM IN 1711 Ou: 1747
 Consigned To BIG RIVER GREEN ASH POND P.O. No 273166
 Destination ROBARDS Phone 270-844-6029
 Route 9000 STATE HWY 2096 State KY Zip 42452
 Carrier BEELDMPVAN Tractor 3519 Trailer G754

ITEM # **LOT #** **Kind of Package, Description of Articles, Special Marks, & Exceptions**

251 **QUICKLIME 2"X1" - BULK**
Instructions: NO DELIVERIES PRIOR TO 6:30AM AND ABSOLUTELY NO UNLOADING WITHOUT CUSTOMER APPROVAL/SUPERVISION!!

Seals:

No credits or refunds will be issued for returned product.
If a bagged load, pallet weight included in the gross weight.
All Bagged Products are LIME CLASS 50 ITEM 42160.

Weight
(sub to car)
25.71 TN

Gross: 80,000 LB
 Tare: 28,580 LB
 Net: 51,420 LB

Promised Delivery: 02/06/2024
Sub Carrier: BEELMAN

Subject to Section 7 of conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.

Carrier shall look only to the broker for payment on brokered shipments and neither shipper or consignee shall have any liability for freight charges if paid by the shipper or consignee to the broker for broker shipments.

MISSISSIPPI LIME COMPANY

(Signature of Consignor)

If charges are to be prepaid, write or stamp here. "To Be Prepaid."

PREPAID

Received \$ _____

to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____
 (the signature here acknowledges only the amount prepaid.)

Charges Advanced \$ _____

F.O.B Point
Destination

Slurry Factor

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight
 NOTE--Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

MISSISSIPPI LIME COMPANY, Shipper.

Per MRC1 Agent, Per _____

Permanent post-office address of shipper.
 HWAY 61 S, STE GENEVIEVE, MO 63670

Driver JEFF

Form Control No. - **COPY**

MISSISSIPPI LIME COMPANY

STE GENEVIEVE, MO 63670

Order No: 794752
Customer No: 601429
Ship to No: 704208

Shipper's No: 794752-1

STRAIGHT BILL OF LADING - SHORT FORM - Original - Not Negotiable

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From MISSISSIPPI LIME COMPANY	February 6, 2024 05:08 AM	IN 0437	Out 0508
Consigned To <u>BIG RIVER GREEN ASH POND</u>		P.O. No <u>273166</u>	
Destination <u>ROBARDS</u>		Phone <u>270-844-6029</u>	
Route <u>9000 STATE HWY 2096</u>		State <u>KY</u>	Zip <u>42452</u>
Carrier <u>MLDS</u>		Tractor <u>2401</u>	Trailer <u>T208</u>

ITEM #	LOT #	Kind of Package, Description of Articles, Special Marks, & Exceptions	Weight (sub to car)
251		QUICKLIME 2"X1"-BULK	23.22 TN
Instructions:	NO DELIVERIES PRIOR TO 6:30AM AND ABSOLUTELY NO UNLOADING WITHOUT CUSTOMER APPROVAL/SUPERVISION!!		

Seals:

*No credits or refunds will be issued for returned product.
If a bagged load, pallet weight included in the gross weight.
All Bagged Products are LIME CLASS 50 ITEM 42160.*

Gross:	78,940 LB
Tare:	32,500 LB
Net:	46,440 LB

Promised Delivery: 02/06/2024
Sub Carrier: MLDS

Subject to Section 7 of conditions of applicable bill of lading. If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.

Carrier shall look only to the broker for payment on brokered shipments and neither shipper or consignee shall have any liability for freight charges if paid by the shipper or consignee to the broker for broker shipments.

MISSISSIPPI LIME COMPANY

(Signature of Consignor)

If charges are to be prepaid, write or stamp here: "To Be Prepaid."

PREPAID

Received \$ _____

to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____
(the signature here acknowledges only the amount prepaid.)

Charges Advanced
\$ _____

F.O.B. Point
Destination

Slurry Factor

*If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is a carrier's or shipper's weight.
NOTE--Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

MISSISSIPPI LIME COMPANY, Shipper.

Per LAH1

Agent Per

Permanent post-office address of shipper.
HWAY 61 S, STE GENEVIEVE, MO 63670

Driver **KEVIN**

Form Control No. - **COPY**

Big Rivers Green Ash Pond Photo Log 2/6/24

Water Level in ash pond



Excavating and loading CCR from southern end of ash pond



Mixing lime with wet CCR in pond mixing cells



Loading trucks from loadout area to haul to placement area



G1 clarifier overflowing



Water level in north end of ash pond



Water being discharged from filtered building



NORTH STAR JOB SIGN IN/OUT LOG





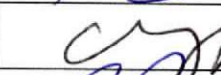




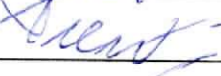

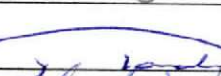
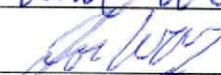

Date: 2/6/24 Project No: 90-22-005 Project Name: Big Rivers
 Manager: Kyle McFerrin Location: Robards, KY

PRINT NAME	TIME IN	TIME OUT	SIGNATURE	Hours in Air	LUNCH Y/N	
Anthony, Alvin	6:30	17:30	<i>[Signature]</i>			10.5
* Anthony, Alvin 3rd	6:30	5:00	<i>[Signature]</i>	10		10
Baker, Angela						
Buck, Caitlen	0530	1500	<i>Caitlen Buck</i>			11.5
Caballero, Dan	0630	1700	<i>[Signature]</i>			10.5
Carlisle, Tommy						
Clouse, Paul						
Coryell, Josh "Tiny"	5:30	6:00	<i>[Signature]</i>		NL	12.5
Crombie, Patrick	6:30	5:30	<i>[Signature]</i>			10.5
Cruse, Nick	6:30	5:00	<i>[Signature]</i>			10
Dear, Romena	9:30	3:00	<i>Romena Dear</i>			5.50
Finch, Allen	6:00	5:30	<i>[Signature]</i>			11.5
Finch, Johnny	5:30	5:30	<i>[Signature]</i>	10	N	12
Fulcher, Robert						
* Giles, Dalton	6:30	5:00	<i>[Signature]</i>	10		10
Giles, John	6:00	5:00	<i>[Signature]</i>			10.5
Hardesty, John	6:30	5:30	<i>[Signature]</i>		NL	11
Harman, Tracy	6:30	5:30	<i>[Signature]</i>		NL	11
* Harpstrite, Hunter	6:30	5:30	<i>[Signature]</i>	10		10.5
Harrell, Brian	5:30	5:00	<i>[Signature]</i>			12

Armon Simpson 6:30 5:00 *[Signature]*
Vicente J. Guerra 6:30-5:30 *[Signature]*

Page 1
 N 11

2/6/24

✓	Harris, Mike	6:30	5:00		10		10
✓	Jewell, Tim	6:30	5:00				10
✓	May, Clint	6:30	5:00		10		10
✓	Murdoch, Audrey	6:30	5:00	Audrey Murdoch	6		10
	Murdoch, Dan	5:30	5:00	Dan Murdoch			11.5
	Patterson, Justin	5:30	5:30			no	12
✓	Peek, Amy	6:30	12:00		2		5.5
	Perez, Jamie	6:30	5:30		10 1/2	no	11
	Phillips, Chad						
✓	Pierre, Kenley	6:30	5:00		10		10
	Plowman, Zach	6:30	5:30	Zach Plowman	10		10
	Reese, Brandon						
	Rolirad, Tyler	5:30	5:30		10	no	12
	Samaroo, Govin	6:30	5:30	G. Samaroo	10		10.5
✓	Shelton, Thomas	6:30	5:00				10
	Sholar, Trent	6:30	5:00				10
	Shook, David	06:30	17:30		0	no	10.5
✓	Smith, Ernestine	6:30	4:00	Ernestine Smith	9		9
	Smith, Todd	05:30	17:30			no	12
	Walter, Clint	6:30	5:30	Clint Walter		no	11
	Wolfe, Joe	6:30	5:30		10		10.5
✓	Wynn, Angelo	5:30	5:30		10	y	11.5
✓	Ziegler, Matthew	6:30	5:00	Matthew Ziegler	10	y	10
	JOSE m Fuller	6:30	5:00	JOSE m Fuller	5:30		10



NORTH STAR JOB SIGN IN/OUT LOG Water Treatment

Date: 2-6-24 Project No: 90-22-005 Project Name: Big Rivers

Manager: Kyle McFerrin Location: Robards, KY

PRINT NAME	TIME IN	TIME OUT	SIGNATURE	Hours in Air	LUNCH Y/N	
Kearney, Amilio	5:00	3:00	<i>[Signature]</i>		N	10
Foster, Marcus						
Shelton, Thomas						
Rolirad, Todd						
McCreary, Brian	5:00	3:00	<i>[Signature]</i>		N	10
Thomason, Jeanie	5:00	3:00	<i>[Signature]</i>		N	10
Fulcher, Robert	5:06	5:00	<i>[Signature]</i>			12
Linscomb, Darren	5:00	5:00	<i>[Signature]</i>		N	12
Brandon Rea	5:00	5:00	<i>[Signature]</i>		N	12



SUB CONTRACTOR/VISITOR SIGN IN/OUT LOG

Date: 2-6-24 Project No: 90-22-005 Project Name: Big Rivers

Manager: Kyle McFerrin Location: Robards, KY

All Personnel must have a H2S monitor on their person anywhere in the plant. We have extras if you need one, see Safety. We bump test them Daily so please leave them in the tub on shelves at end of day.

If you need help call Allen ph-317-517-7452 or Caiten 570-439-2068

PRINT NAME	TIME IN	TIME OUT	SIGNATURE	COMPANY
Blake Wilkins	7:20	3:05	<i>[Signature]</i>	Brandeis
Caleb McFadden	7:30	9:20	<i>[Signature]</i>	Brandeis
Alex Vinay	0819	1520	<i>[Signature]</i>	S3MB



Date:	Tuesday, February 6, 2024
Project Name:	Sebree - CCR Surface Impoundment Closure
Location:	Robards, Kentucky

Work Hours: 7:00 AM - 5:30 PM

Total Personnel Onsite:	32
Charah Management	2
Charah Field Staff	30
Subcontractor Employees Onsite:	-
United Rentals	-
McKim & Creed	-
Associated Engineers	-
Subcontractor Trucks Onsite:	-
GreenRock	-
Earth Images	-
	-
	-

Weather Conditions	AM	PM
	Sunny	Sunny
Temp (°F) (Low / High):	28	50
Rainfall (Inches):	0.00	
Monthly Rain Total (Inches):	0.00	
Project Rain Total (Inches):	19.52	
Project Snow Total (Inches):	2.19	
Low - Wind Speed (MPH):	1.00	
High - Wind Speed (MPH):	8.00	
Total Project Delays General + Weather (Hrs):	376.00	
Free Water Elevation (Start/End of Shift):	0.0	0.0

Delays	
Delays (Yes/No):	Yes
Delay Description:	General Delays: Weather Delays: None
EHS Incident	
EHS Incident (Yes/No):	No
EHS Incident Description:	No data to report.

Daily Safety Briefings

Safety Topics	
Morning:	360 Walk Around
Mid-Day:	3 Points of Contact
End of Shift:	End of Day

Daily Activities

Today we continued dewatering the basin. We hauled decanted material for landfill placement and flipped decant material to accelerate the drying process. We completed road maintenance and generated material from excavation area #2 and #3.

PLANNED ACTIVITIES FOR NEXT OPERATING DAY - We will continue dewatering the basin. We will haul suitable material to the landfill and generate decant material from Excavation Area #2 and #3. We will continue to maintain the haul roads as needed.

Project Tracking

Task Description	Daily Average Flow (GPM)	Daily Total (Gallons)	Cumulative Total (Gallons)	% Complete	Current Estimated Volume Remaining (Gallons)	Pump Start Time	Pump End Time	Pump Run Time (Hrs)
Free Water Pumping From Ash Pond	142	98,100	36,055,939	180%	0	7:00	18:30	11.50

Task Description	Total Hauled Loads	Estimated Volume (CY)	Estimated Volume Remaining (CY)	Month Plan Total (CY)	Month Actuals Estimate Total (CY)	Actuals Vs. Plan Delta (CY)
2/06/24 - Excavation/Hauling/Placing CCR	111	2,801.00		64,581	15,397.00	-49,184
Total to Date (as of 2/06/24) - Excavation/Hauling/Placing CCR	12,061	360,823.00	479,609.00			

Estimated Water Volume at Commencement of Dewatering	
Start Date:	8/7/2023
Original Volume (gall):	19,992,830
Starting Elevation (ft):	426.50

Water Treatment Stats as of 2/6/24	
Treating (Y/N):	Yes
Temperature (°F):	50.40
pH:	8.41
Turbidity (TSS):	0.00

Water Level Stats as of 2/6/24	
Current Elevation (ft):	0.00
Elevation Change (ft):	426.50
Target Final Elevation	410.00
Balance Remaining	(410.00)

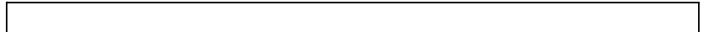
Flipping Decant Material



Hauling Decanted Material for Landfill Placement



Material Placement in the Landfill



IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

REQUEST NO. 2-5: *Please provide all studies, analyses, documents, or workpapers created by Big Rivers pertaining to the Inflation Reduction Act ("IRA"), the effects of the IRA on Big Rivers' generation portfolio, or any other potential benefits that the IRA could provide to Big Rivers and its customers.*

RESPONSE: Big Rivers objects that this request is overly broad, unduly burdensome, and seeks information protected by the attorney-client privilege. Without waiving these objections, Big Rivers states that it submitted Letters of Interest for both Empowering Rural America Program (New ERA) and Powering Affordable Clean Energy Program (PACE) under the Inflation Reduction Act (IRA) in 2023. Please see Big Rivers' responses to Kentuckians for the Commonwealth and Kentucky Resource Council's Requests No. 1-12 and 1-13. An application for PACE was submitted in January 2024 per the invitation to apply notification Big Rivers received. The projects included as part of these submissions are in their early stages, and there are no further studies to date regarding the effects of the IRA on Big Rivers, its Member-Owners, or its other customers.

Witness: Talina R. Mathews

For the Objection(s): Counsel

IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

REQUEST NO. 2-6: *Please refer to Big Rivers' response to Sierra Club 1.19.a.*

Please state whether Big Rivers is willing to provide this information pursuant to a confidentiality agreement and, if not, why not.

RESPONSE: Big Rivers considers the information requested in Sierra Club's Request No. 1-19(a) to be Critical Energy Infrastructure Information (CEII). The confidentiality of CEII must be maintained to ensure grid security and public safety, and its disclosure generally requires a showing of legitimate need.¹ Should Sierra Club believe and adequately articulate that access to the relevant information is essential to its meaningful participation in this proceeding (*i.e.*, demonstrate a legitimate need, including "the extent to which a particular function is dependent upon access to the information" and "why the function cannot be achieved or performed without access to the information"), then this CEII information may be provided subject to execution of an appropriate confidentiality agreement. *See Confidentiality Agreement for the Treatment of Critical Energy Infrastructure Information and Confidential Transmission Information (CEII NDA).*² The agreement must include a list of authorized recipients.

Witness: Christopher Bradley

¹ *See* 18 C.F.R. § 388.113(c)(1), (g)(5).

² 18 C.F.R. § 388.113(g)(5)(B).

IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

REQUEST NO. 2-7: *Please refer to Big Rivers' response to Sierra Club 1.19.b.*

- a. Please define "CWP."*
- b. Please provide any and all copies of such analysis or assessment and all communications regarding such analysis or assessment as requested in Sierra Club 1.19.b.*

RESPONSE:

- a. CWP refers to the transmission construction work plan.
- b. Big Rivers considers the information requested in Sierra Club's Request No. 1-19(a) to be Critical Energy Infrastructure Information (CEII). The confidentiality of CEII must be maintained to ensure grid security and public safety, and its disclosure generally requires a showing of legitimate need.¹ Should Sierra Club believe and adequately articulate that access to the relevant information is essential to its meaningful participation in this proceeding (*i.e.*, demonstrate a legitimate need, including "the extent to which a particular function is dependent upon access to the information" and "why the function cannot be achieved or performed without access to the information"), then this CEII information may be provided subject to execution of an appropriate confidentiality agreement. *See Confidentiality Agreement for the Treatment of*

¹ *See* 18 C.F.R. § 388.113(c)(1), (g)(5).

IN THE MATTER OF:
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Critical Energy Infrastructure Information and Confidential Transmission Information (CEII
NDA).² The agreement must include a list of authorized recipients.

Witness: Christopher Bradley

² 18 C.F.R. § 388.113(g)(5)(B).

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REQUEST NO. 2-8: *Please refer to Big Rivers' response to Sierra Club 1.19.c,
which states, "Additional information and reports are available on the MISO website."*

a. Please provide the referenced "[a]dditional information and reports."

RESPONSE: The "additional information and reports" are voluminous and are publicly accessible by selecting the Planning link on the MISO website at [misoenergy.org](https://www.misoenergy.org). More specific locations on the MISO website follow:

MISO Transmission Expansion Plan (MTEP)

<https://www.misoenergy.org/planning/transmission-planning/mtep/#t=10&p=0&s=&sd=>

MISO Long Range Transmission Planning (LRTP)

<https://www.misoenergy.org/planning/long-range-transmission-planning/>

Witness: Christopher Bradley

IN THE MATTER OF:
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REQUEST NO. 2-9: *Please refer to Big Rivers' response to Sierra Club 1.21, which states, "Big Rivers is in the early stages of evaluating carbon capture and sequestration, including its feasibility."*

- a. Please describe the steps that Big Rivers has taken to date in evaluating carbon capture and sequestration.*
- b. Please provide any analyses, documents, or workpapers relating to Big Rivers' evaluation of carbon capture and sequestration to date.*
- c. Please describe Big Rivers' plan to evaluate carbon capture and sequestration.*
- d. Please provide any analyses, documents, or workpapers relating to Big Rivers' plan to evaluate carbon capture and sequestration.*

RESPONSE: Please see Big Rivers' responses to Commission Staff's Request No. 2-44 and Office of the Attorney General's Request No. 2-2.

Witness: Nathaniel A. Berry

IN THE MATTER OF:
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
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REQUEST NO. 2-10: *For D.B. Wilson, please provide Generator Availability Data System (GADS) data in Excel format showing all forced outage events during the years 2014-2023, including the start and end time for the outage, the MW or MWh on outage, and the cause code or any other information reported to NERC about the cause of the outage.*

RESPONSE: Please see the attachment to this response.

Witness: Nathaniel A. Berry

IN THE MATTER OF
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
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I, Christopher Bradley, verify, state, and affirm that the information request responses filed with this verification for which I am listed as a witness are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.



Christopher Bradley
Vice President System Operations
Big Rivers Electric Corporation

STATE OF KENTUCKY)
) ss:
COUNTY OF DAVIESS)

14th SUBSCRIBED AND SWORN TO before me by Christopher Bradley on this the ___ day of February, 2024.

My commission expires: October 31, 2024



Notary Public

Notary ID: KYNP16841

IN THE MATTER OF
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
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I, Nathaniel A. Berry, verify, state, and affirm that the information request responses filed with this verification for which I am listed as a witness are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.



Nathaniel A. Berry
Chief Operating Officer
Big Rivers Electric Corporation

STATE OF KENTUCKY)
) ss:
COUNTY OF DAVIESS)

SUBSCRIBED AND SWORN TO before me by Nathaniel A. Berry on this the 15 day of February, 2024.

My commission expires: 1-14-2026




Notary Public

Notary ID: KVNP43026

IN THE MATTER OF
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
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CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
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I, Michael S. Mizell, verify, state, and affirm that the information request responses filed with this verification for which I am listed as a witness are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.



Michael S. Mizell
Chief Administrative Officer
Big Rivers Electric Corporation

STATE OF KENTUCKY)
) ss:
COUNTY OF DAVIESS)

15th SUBSCRIBED AND SWORN TO before me by Michael S. Mizell on this the
day of February, 2024.

My commission expires: October 31, 2024



Notary Public

Notary ID: KYNP16841

IN THE MATTER OF
ELECTRONIC 2023 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2023-00310

BIG RIVERS ELECTRIC CORPORATION'S RESPONSES TO SIERRA CLUB'S
SUPPLEMENTAL REQUESTS FOR INFORMATION

I, Talina R. Mathews, verify, state, and affirm that the information request responses filed with this verification for which I am listed as a witness are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.



Talina R. Mathews
Chief Financial Officer
Big Rivers Electric Corporation

STATE OF KENTUCKY)
) ss:
COUNTY OF DAVIESS)

15th SUBSCRIBED AND SWORN TO before me by Talina R. Mathews on this the
day of February, 2024.

My commission expires: October 31, 2024



Notary Public

Notary ID: KYNP16841