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OCT 03 2018

PUBLIC SERVICE COMMISSION

October 3, 2018

VIA HAND DELIVERY

Ms. Gwen Pinson, Executive Director
Kentucky Public Service Commission
P.O. Box 615
211 Sower Boulevard
Frankfort, KY 40602

Re: *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs Pursuant to its Environmental Surcharge, and for the Issuance of a Certificate and Public Convenience and Necessity*; PSC Case No. 2018-00270

Dear Ms. Pinson:

Please find enclosed for filing with the Commission in the above-referenced case an original and ten copies of the Application of East Kentucky Power Cooperative, Inc. ("EKPC"). In addition, EKPC is filing an original and ten copies of a Motion for Confidential Treatment and a Motion for a Filing Deviation in the same case. Along with the Motion for Confidential Treatment, EKPC is filing one copy of un-redacted documents containing confidential information under seal.

Please return a file stamped copy of this filing to my office.

Sincerely,

David S. Samford

Enclosure

RECEIVED

OCT 03 2018

PUBLIC SERVICE COMMISSION

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)))))))	**CASE NO. 2018-00270**

MOTION FOR CONFIDENTIAL TREATMENT

Comes now East Kentucky Power Cooperative, Inc. ("EKPC"), by counsel, pursuant to KRS 61.878, 807 KAR 5:001, Section 13 and other applicable law, and in support of its request that the Commission afford confidential treatment to certain information contained in exhibits to EKPC's Application filed in the above-captioned proceeding, respectfully states as follows:

1. Contemporaneously with this Motion, EKPC is filing an Application seeking, *inter alia*, approval to amend its Environmental Compliance Plan to include projects undertaken to satisfy environmental obligations at its John S. Cooper Station in Pulaski County, Kentucky ("Cooper Station"), and its Hugh L. Spurlock Station in Mason County, Kentucky ("Spurlock Station"). EKPC is also seeking the issuance of a Certificate of Public Convenience and Necessity for one of these projects, specifically the project involving the modification and expansion of the Coal Pile Runoff Pond at the Spurlock Station (the "CPR Project").

2. EKPC has attached to its Application (as Exhibit A and Exhibit B, respectively) a map of the Spurlock Station and map of the Cooper Station with relevant facilities and infrastructure identified. Further, preliminary plans and specifications for the CPR Project have

been provided as an appendix to the Scoping Report prepared by Burns & McDonnell Engineering Co., Inc. (*see* Attachment SY-2 to Exhibit J, the Direct Testimony of Mr. Sam Yoder, at Appendix A). These documents, which contain detailed information regarding the location and characteristics of actual and proposed facilities at the Spurlock and Cooper Stations, are referred to herein collectively as the "Confidential Information."

3. KRS 61.878(1)(m)(1) protects "[p]ublic records the disclosure of which would have a reasonable likelihood of threatening public safety by exposing a vulnerability in preventing, protecting against, mitigating, or responding to a terrorist act...," and specifically exempts from public disclosure certain records pertaining to public utility critical systems. *See* KRS 61.878(1)(m)(1)(f).

4. The Confidential Information includes identifications and depictions of certain critical energy infrastructure presently located and proposed to be located at EKPC's coal-fired generating stations. If disclosed, the Confidential Information could be utilized to commit or further a criminal or terrorist act, disrupt critical public utility systems, and/or intimidate or coerce the civilian population. Disclosure of the Confidential Information could also result in the disruption of innumerable other infrastructure systems which relate to, or rely upon, the safe and reliable provision of electricity. Moreover, disclosure of the Confidential Information could have a reasonable likelihood of threatening the public safety, particularly because it reflects detailed, highly-technical information about the inner-workings of sizeable generation stations fueled by combustible materials. Put plainly, maintaining the confidentiality of the Confidential Information relating to the location, configuration, and security of critical electric systems is necessary to protect the interests of EKPC, its Owner-Members and end-use Members, and the region at large.

5. The Confidential Information is proprietary information that is retained by EKPC on a "need-to-know" basis and that is not publicly available. The Confidential Information is distributed within EKPC only to those employees who must have access for business reasons, and it is generally recognized as confidential and proprietary in the energy industry.

6. EKPC does not object to limited disclosure of the Confidential Information, pursuant to an acceptable confidentiality and nondisclosure agreement, to the Attorney General or any other intervenors with a legitimate interest in reviewing the same for the sole purpose of participating in this case.

7. EKPC seeks confidential treatment for the entirety of Exhibit A and Exhibit B to its Application, as well as the entirety of Appendix A to Attachment SY-2 to Exhibit J to its Application. In accordance with the provisions of 807 KAR 5:001, Section 13(2), EKPC is filing one (1) unredacted copy of each of these documents in a separate sealed envelope marked confidential. An original and ten (10) redacted copies of EKPC's Application have also been tendered to the Commission.

8. Further in accordance with the provisions of 807 KAR 5:001, Section 13(2), EKPC respectfully requests that the Confidential Information be withheld from public disclosure indefinitely, as the critical energy infrastructure information reflected in the Confidential Information should remain confidential at least as long as the relevant facilities are in service. If, and to the extent, the Confidential Information becomes publicly available or otherwise no longer warrants confidential treatment., EKPC will notify the Commission and have its confidential status removed, pursuant to 807 KAR 5:001, Section 13(10).

WHEREFORE, on the basis of the foregoing, EKPC respectfully requests an Order from the Commission granting this Motion and protecting the Confidential Information from public disclosure indefinitely.

This 3rd day of October, 2018.

Respectfully submitted,

David S. Samford
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Counsel for East Kentucky Power Cooperative, Inc.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	))))))))	**CASE NO. 2018-00270**

MOTION TO DEVIATE FROM FILING REQUIREMENTS

Comes now East Kentucky Power Cooperative, Inc. ("EKPC"), by counsel, pursuant to 807 KAR 5:001 Section 22, and in support of its request for an Order permitting a deviation from the filing requirements contained in 807 KAR 5:001 Section 15(2)(d)(2), respectfully states as follows:

1. Contemporaneously with this Motion, EKPC is filing an Application seeking, *inter alia*, approval to amend its Environmental Compliance Plan and a Certificate of Public Convenience and Necessity ("CPCN") to modify and expand the Coal Pile Runoff Pond at its Hugh L. Spurlock Station ("Spurlock Station") in Mason County, Kentucky (the "CPR Project"). As part of a filing requesting the issuance of a CPCN, 807 KAR 5:001 Section 15(2)(d)(2) requires the applicant to submit "plans and specifications and drawings of the proposed plant, equipment, and facilities."

2. EKPC has attached as Exhibit A to its Application a map of the Spurlock Station with relevant facilities and infrastructure identified. Further, preliminary plans and specifications for the CPR Project have been provided as an appendix to the relevant Scoping Report prepared

by Burns & McDonnell Engineering Co., Inc. (*see* Attachment SY-2 to Exhibit J, the Direct Testimony of Mr. Sam Yoder). Because these documents include critical energy infrastructure information, they are being filed under seal with an accompanying motion for confidential treatment. Although additional design work is being undertaken, the maps, plans and specifications set forth in Exhibit A and Attachment SY-2 to Exhibit J are currently the most detailed drawings available to EKPC.

3. EKPC seeks Commission authorization to deviate from applicable filing requirements which may require the submission of final, fully-detailed plans and specifications and drawings related to the CPR Project. To the extent plans and specifications are created during the pendency of this proceeding that are more detailed than (or materially differ from) those submitted with EKPC's Application, EKPC commits to filing such documents once they are available.

WHEREFORE, on the basis of the foregoing and for good cause shown, EKPC respectfully requests an Order from the Commission granting a deviation pursuant to 807 KAR 5:001 Section 22 from the filing requirements contained in 807 KAR 5:001 Section 15(2)(d)(2).

This 3rd day of October, 2018.

Respectfully submitted,

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Counsel for East Kentucky Power Cooperative, Inc.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	))))))))	**CASE NO. 2018-00270**

APPLICATION

Comes now East Kentucky Power Cooperative, Inc. ("EKPC"), by counsel, pursuant to KRS 278.020, KRS 278.183, 807 KAR 5:001 and other applicable law, and hereby requests this Commission enter an Order: (i) approving EKPC's proposed amendment of its Environmental Compliance Plan ("Compliance Plan"); (ii) granting EKPC authority to recover the costs associated with said Compliance Plan amendment through its existing environmental surcharge; and (iii) issuing a Certificate of Public Convenience and Necessity ("CPCN") for the construction of certain facilities associated with said Compliance Plan amendment. In support of its requested relief, EKPC respectfully states as follows:

I. Introduction

1. EKPC requests Commission authorization to amend its Compliance Plan to include additional projects necessary to comply with the Effluent Limitation Guidelines and Standards for the Steam Electric Power Generating Point Source Category ("ELG Rule"), the Disposal of Coal Combustion Residuals ("CCR") from Electric Utilities Rule ("CCR Rule"), and other

environmental requirements and obligations that arise from the use of coal in the generation of electric energy. Nearly all of the projects EKPC seeks to include in its Compliance Plan have been undertaken (or will soon be undertaken) without a CPCN, consistent with the exception reflected in KRS 278.020(1) and 807 KAR 5:001, Section 15(3);[1] however, EKPC also seeks to include in its Compliance Plan a proposed project for which it requests Commission pre-approval and a CPCN—specifically, a project to modify and expand the Coal Pile Runoff Pond ("CPR Pond") at its Hugh L. Spurlock Station in Mason County, Kentucky ("Spurlock Station") (as further described herein, the "CPR Project"). Finally, in conjunction with its request to amend its Compliance Plan and seek issuance of an appropriate CPCN, EKPC also proposes to recover the costs associated with these activities through its environmental surcharge pursuant to KRS 278.183.

II. Background

A. General Filing Requirements

2. Pursuant to 807 KAR 5:001 Section 14(1), EKPC's mailing address is P.O. Box 707, Winchester, Kentucky 40392-0707. EKPC's electronic mail address to receive service is psc@ekpc.coop. Applicant's counsel should be served at david@gosssamfordlaw.com and ebuckley@gosssamfordlaw.com.

3. Pursuant to 807 KAR 5:001, Section 14(1), the grounds for EKPC's request for an amendment of its Compliance Plan, recovery of costs through its environmental surcharge and issuance of a CPCN are set forth herein and in the testimony filed in support hereof.

4. Pursuant to 807 KAR 5:001, Section 14(2), EKPC is a Kentucky corporation, in good standing, and was incorporated on July 9, 1941.

[1] Pursuant to KRS 278.020(1), a CPCN is required to begin construction of certain facilities except for "ordinary extensions of existing systems in the usual course of business."

B. Overview of East Kentucky Power Cooperative, Inc.

5. EKPC is a not-for-profit, rural electric cooperative corporation established under KRS Chapter 279 with its headquarters in Winchester, Kentucky. Pursuant to various agreements, EKPC provides electric generation capacity and electric energy to its sixteen (16) Owner-Member Cooperatives ("owner-members"), which in turn serve approximately 530,000 Kentucky homes, farms and commercial and industrial establishments in eighty-seven (87) Kentucky counties. EKPC's Board has stated its strategic objective is to maintain a generation fleet that prudently diversifies its fuel sources while maximizing its capital investments and minimizing stranded assets.

6. EKPC is a "utility" as that term is defined in KRS 278.010(3)(a) and a "generation and transmission cooperative" as that term is defined in KRS 278.010(9). Each of EKPC's sixteen (16) owner-members is a "utility" under KRS 278.010(3)(a), as well as a "distribution cooperative" under KRS 278.010(10) and a "retail electric supplier" under KRS 278.010(4).

7. In total, EKPC owns and operates approximately 2,965 MW of net summer generating capability and 3,267 MW of net winter generating capability. EKPC owns and operates coal-fired generation at the John S. Cooper Station in Pulaski County, Kentucky (341 MW) ("Cooper Station") and the Spurlock Station (1,346 MW). EKPC also owns and operates natural gas-fired generation at the J. K. Smith Station in Clark County, Kentucky (753 MW (summer)/989 MW (winter)) ("Smith Station") and the Bluegrass Station in Oldham County, Kentucky (501 MW (summer)/567 MW (winter)), and landfill gas-to-energy facilities in Boone County, Laurel County, Greenup County, Hardin County, Pendleton County and Barren County (16 MW total). In November 2017, EKPC added a Community Solar facility (8 MW) in Winchester, Kentucky to its generation portfolio. Finally, EKPC purchases hydropower from the Southeastern Power

Administration at Laurel Dam in Laurel County, Kentucky (70 MW), and the Cumberland River system of dams in Kentucky and Tennessee (100 MW). EKPC's record peak demand of 3,507 MW occurred on February 20, 2015.

8. EKPC owns 2,940 circuit miles of high voltage transmission lines in various voltages. EKPC also owns the substations necessary to support this transmission line infrastructure. Currently, EKPC has seventy-four (74) free-flowing interconnections with its neighboring utilities.

C. The Spurlock Station

9. EKPC's largest coal-fired electric generation facility is the Spurlock Station located a few miles west of downtown Maysville, Kentucky.[2] The Spurlock Station is situated along the Ohio River and consists of four (4) electric generation units. Spurlock Station Unit #1 ("Spurlock 1") began commercial operation on September 1, 1977, and has a net capacity of 300 MW. Spurlock Station Unit #2 ("Spurlock 2") became operational on March 2, 1981; at 510 MW of net capacity, it is the largest electric generation unit at the Spurlock Station. Spurlock 1 and Spurlock 2 are both conventional, pulverized coal units. Spurlock Station Unit #3 is known as the E. A. Gilbert Unit ("Gilbert Unit") and began commercial operations on March 1, 2005. The Gilbert Unit utilizes a Circulating Fluidized Bed ("CFB") technology and boasts a net generating capacity of 268 MW. Spurlock Station Unit #4 ("Spurlock 4") is a sister unit to the Gilbert Unit and also has 268 MW of generating capacity. Spurlock 4 became operational on April 1, 2009. The combined coal storage capacity of the Spurlock Station is 490,000 tons and the Spurlock Station primarily burns a range of eastern bituminous coals delivered by barge.

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[2] Aerial maps/photographs of the Spurlock Station with its major components labeled are attached hereto and incorporated herein as Exhibit A. The Exhibit is subject to a Motion for Confidential Treatment filed herewith.

10. EKPC has already heavily invested in environmental control equipment at the Spurlock Station. Spurlock 1 is equipped with low NOx burners, selective catalytic reduction ("SCR") technology, a cold-side electrostatic precipitator ("ESP"), a wet flue gas desulfurization ("FGD") scrubber; and a wet ESP. Spurlock 2 is equipped with low NOx burners, SCR technology, a hot-side ESP, wet FGD scrubber and a wet ESP. The Gilbert Unit and Spurlock 4 employ CFB combustion technology which in itself is an environmental control technology. The Gilbert Unit and Spurlock 4 are further equipped with selective non-catalytic reduction technology, dry FGD scrubbers and baghouses.

11. On May 18, 2018, the Commission approved EKPC's 2018 Environmental Compliance Plan and various proposed modifications of existing Spurlock Station facilities to comply with state and federal environmental requirements.[3] These improvements include conversion of the plant's bottom ash handling system, construction of a new wastewater treatment plant and fly ash storage silo, the closure and repurposing of the on-site coal ash pond, and the expansion of the existing landfill. These projects help ensure the ongoing safety and stability of EKPC's generation fleet.

12. The four (4) units at the Spurlock Station are among the least expensive electric generation units in the EKPC fleet and have maintained favorable capacity factors following EKPC's full integration into the Reliability Pricing Model ("RPM") Capacity Market administered by PJM Interconnection, LLC ("PJM"). Likewise, prudent management practices have assured that the Spurlock Station's units have a high availability factor. In light of their consistent

[3] *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs pursuant to its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief*, Order, Case No. 2017-00376 (Ky. P.S.C., May 18, 2018).

availability and low-cost operations, the Spurlock Station's units are the workhorses of the EKPC electric generation fleet.

D. The Cooper Station

13. The Cooper Station is EKPC's other coal-fired electric generation facility and is located in the Burnside community of Pulaski County, Kentucky.[4] The Cooper Station is situated adjacent to Lake Cumberland and consists of two (2) electric generation units. Cooper Station Unit #1 ("Cooper 1") is rated at 116 MW and began commercial operation on February 9, 1965. Cooper Station Unit #2 ("Cooper 2") is larger with 225 MW of electric generation capacity and entered service for EKPC on October 28, 1969. The combined coal storage capacity of the Cooper Station is 250,000 tons. The Cooper Station units burn eastern bituminous coal, delivered exclusively by truck.

14. The Cooper Station has a dry ash handling system. In addition, the Cooper Station has a common flue gas desulfurization system including a pulse jet fabric filter that services both Cooper 1 and Cooper 2, and a selective catalytic reduction system that services only Cooper 2. Because of these and other investments made by EKPC, the Cooper Station is well-positioned to remain in compliance with existing federal and state environmental mandates.

15. The Cooper Station's operating costs are higher than those of the Spurlock Station. Accordingly, the capacity factor for the Cooper Station has decreased since EKPC's entry into PJM and remains below that of the Spurlock Station. Nevertheless, the Cooper Station's two (2) units continue to be reliable and affordable sources of capacity and energy and have maintained very favorable availability factors. The Cooper Station also provides EKPC with a physical hedge against price volatility in the energy market during peak demand periods.

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[4] Aerial maps/photographs of the Cooper Station with its major components labeled are attached hereto and incorporated herein as Exhibit B. This Exhibit is also subject to a Motion for Confidential Treatment filed herewith.

E. Overview of Environmental Regulation

1. Breadth of Requirements at the State and Federal Levels

16. Electric utilities are among the most heavily environmentally regulated companies in the United States. Authorities at the federal and state levels oversee nearly every aspect of EKPC's operations, with particular emphasis on the monitoring and abatement of the wastes and by-products that accompany coal-fired electric generation. EKPC has devoted and continues to devote substantial resources to ensure its continued compliance with environmental requirements, especially at its Cooper and Spurlock Stations as described herein.

17. EKPC currently complies with nearly a dozen federal rules that have been promulgated under the authority of the Clean Air Act ("CAA"), including: New Source Performance Standards; New Source Review; Title IV of the CAA, including rules governing pollutants that contribute to acid deposition; Title V operating permit requirements; Mercury Air Toxics Standards; summer ozone trading program requirements promulgated after the United States Environmental Protection Agency ("EPA") acted upon Section 126 Petitions and the Ozone State Implementation Plan Call; National Ambient Air Quality Standards for Sulfur Dioxide, Nitrogen Dioxide, Carbon Monoxide, Ozone, Particulate Matter, Particulate Matter of 2.5 microns or less and Lead; the Cross State Air Pollution Rule; and the Regional Haze Rule. Additionally, EKPC was preparing to comply with the Clean Power Plan ("CPP") as proposed by the Obama Administration;[5] however, due to actions by current federal authorities, EKPC has suspended its CPP compliance planning and awaits further guidance from federal and state environmental

[5] While seeking to comply with the CPP, EKPC was also one of the lead plaintiffs in a legal challenge to the legality of the EPA's proposed rule. *See National Rural Electric Cooperative Association, et al. v. U.S. Environmental Protection Agency,* Case No. 15-1376 (D.C. Cir. Filed Oct. 23, 2015). On February 9, 2016, the U.S. Supreme Court issued an Order preventing the EPA from enforcing the CPP until such time as the pending legal challenge is resolved. *See Basin Electric Power Cooperative, et al., v. U.S. Environmental Protection Agency, et. al.,* Case No. 15A776 (U.S. Sup. Ct., Feb. 9, 2016).

regulators as to whether the CPP will be pursued further. EKPC is examining both the proposed Affordable Clean Energy Rule released for publication on August 21, 2018, and the latest federal court guidance on the CCR Rule. EKPC is also discussing these developments with the Kentucky Energy and Environmental Cabinet. It is anticipated that the EPA will seek further judicial review and engage in addition rulemaking.

18. As the Commission is aware, much of EKPC's environmental compliance activity in recent years has been undertaken as a result of the CCR Rule, which governs the classification, collection and disposal of certain by-products of the combustion of coal (fly ash, bottom ash, boiler slag and flue gas desulfurization materials). The final CCR Rule,[6] which became effective October 19, 2015, applies to owners and operators of new and existing landfills and new and existing surface impoundments (including all lateral expansions of such landfills and surface impoundments) where CCR material is disposed. The CCR Rule also has applicability to inactive CCR surface impoundments.[7] The principal objectives of the CCR Rule are as follows: (1) to impose structural integrity requirements to reduce the risk of catastrophic failure of CCR landfills and impoundments; (2) protecting groundwater through monitoring and corrective actions, location restrictions and landfill and impoundment liner design criteria; (3) adopting operating criteria for CCR landfills and impoundments; (4) record-keeping, notification and publicly-available internet website posting obligations; (5) obligations for inactive CCR landfills and impoundments; (6) administration of state programs to implement the CCR Rule; (7) CCR landfill

[6] *See* 80 Fed. Reg. 21302 (April 17, 2015).

[7] The CCR Rule does not apply to: CCR landfills that ceased receiving CCR materials prior to the effective date of the CCR Rule; CCR landfills and impoundments at facilities that have ceased producing electricity prior to the effective date of the CCR Rule; CCR materials generated at facilities that are not part of an electric utility or independent power producer, such as manufacturing facilities, universities and hospitals; CCR materials generated primarily from the combustion of fuels other than coal; CCR that is beneficially reused; CCR placement at active or abandoned underground or surface coal mines; or CCR material that is placed at municipal solid waste landfills.

and impoundment closure obligations; and (8) guidelines for beneficial reuse of CCR materials. Numerous projects contained in EKPC's existing and proposed Environmental Compliance Plan are the result of the CCR Rule, as further detailed in testimony submitted herewith.

2. The Clean Water Act and Related Regulation

19. The federal Clean Water Act ("CWA"), and particularly the EPA's promulgation of the current ELG Rule thereunder, also serve as significant stimuli for EKPC's recent environmental compliance investment and activities. The ELG Rule was published in its proposed form by the EPA on June 7, 2013. The ELG Rule established revised technology-based effluent limitations and standards for various wastewater streams generated by coal-fired steam electric generating stations. As such, the ELG Rule establishes the best available technology economically achievable requirements for existing facilities. After taking considerable public comment, the ELG Rule became effective on January 4, 2016. The ELG Rule requires that all permits issued in the first permitting cycle following the third anniversary of the effective date of the ELG Rule should include a compliance schedule established by the Kentucky Energy and Environment Cabinet's Division of Water ("Division of Water"). However, in a letter dated April 12, 2017, the EPA announced it was reconsidering portions of the ELG Rule that applied to bottom ash transport water and FGD wastewater. On September 18, 2017, the EPA published a new Final Postponement Rule that postponed the earliest compliance deadline for these two ELG waste streams but otherwise maintained the ELG standards during the reconsideration. Although EPA is reconsidering the rule for bottom ash transport water and FGD wastewater, as it stands today, the new requirements will apply for bottom ash transport water and FGD wastewater "as soon as possible beginning November 1, 2020, but no later than December 31, 2023."

20. The standards set forth in the ELG Rule are incorporated into the Kentucky Pollutant Discharge Elimination System ("KPDES") requirements imposed upon EKPC by the Division of Water. EKPC's KPDES permit with respect to the Spurlock Station is in the process of being renewed and, upon renewal, is expected to reflect revised and new limitations for discharges of various effluents via designated KPDES Outfalls.[8] Most notable among the new limitations to be imposed (as reflected in the draft KPDES permit) is that concerning Total Suspended Solids ("TSS"), which is based on the ELG Rule's requirements for coal pile runoff (CPR) found at 40 C.F.R. 423. As further described below and in testimony submitted herewith, concerns with continued compliance with the CWA and related rules and regulations require EKPC's proposal to undertake the CPR Project.

3. Additional Environmental Obligations

21. While the CCR Rule and the ELG Rule are primary factors behind EKPC's recent requests to amend its existing Compliance Plan, there are other environmental authorities which also make the proposed Compliance Plan amendments a prudent course of action for EKPC. For instance, separate and apart from EKPC's obligations under the ELG Rule as implemented during the current KPDES permit renewal cycle, EKPC anticipates that the KPDES permitting process itself will include requirements addressing total suspended solids and pH. Thus, even if the CCR Rule or the ELG Rule were to be suspended, revoked or not enforced, other legal authorities will still likely require EKPC and other coal-generating electric utilities in the state to move forward with most, if not all, of the proposed Compliance Plan amendments.

[8] A draft revised KPDES permit was recently issued by the Kentucky Division of Water and is attached hereto as Attachment JP-2 to Exhibit H, the Direct Testimony of Mr. Jerry Purvis. The draft permit reflects the revised and new discharge limitations.

III. Environmental Compliance Efforts – Completed, Underway, and Planned

22. EKPC's Board and managers have invested considerable time and attention to ensuring continued compliance with the myriad of environmental requirements applicable to coal-fired facilities owned by EKPC. Many of the projects pursued in this regard are relatively minor in nature, undertaken in the usual course of EKPC's business, and involve the expenditure of limited funds; these projects, for which no CPCN is required or requested, are detailed in numerical paragraph 34 below and in the testimony accompanying this Application. EKPC also proposes to undertake a project it believes does require a CPCN involving the modification of Spurlock Station's CPR Pond, which project is also further described below. EKPC seeks to add each of these projects to its Environmental Compliance Plan as reasonable and cost-effective means of complying with applicable environmental requirements.

23. In accordance with the Commission's directive in Administrative Case 2008-00408,[9] EKPC also considered whether energy efficiency offered a viable alternative to compliance with the various state and federal obligations attendant to coal-fired generation. While EKPC is committed to cost-effective energy efficiency and other demand response programs, each of the projects—and particularly the CPR Project—is necessary to sustain approximately 1,687 MW of reliable, coal-fired generation at the Cooper and Spurlock Stations; it is unrealistic to

[9] *See In the Matter of Consideration of the New Federal Standards of the Energy Independence and Security Act of 2007*, Rehearing Order, Case No. 2008-00408, p. 10 (Ky. P.S.C. July 24, 2012) ("Each electric utility shall integrate energy efficiency resources into its plans and shall adopt policies establishing cost-effective energy efficiency resources with equal priority as other resource options. In each integrated resource plan, certificate case, and rate case, the subject electric utility shall fully explain its consideration of cost-effective energy efficiency resources as defined in the Commission's IRP regulation (807 KAR 5058)."). During the Commission's consideration of EKPC's proposal to include Cooper Station Unit 1 in the air quality control system being construction for Cooper Station Unit 2, the Sierra Club intervened and suggested that EKPC could develop replacement capacity primarily through energy efficiency and demand response investments. The Commission rejected this outlandish notion at that time. Given that the potential retirement of Spurlock 1 or Spurlock 2 would be an even more significant loss of capacity, the Sierra Club's suggestions would make even less sense in this situation.

believe EKPC could replace this existing capacity (or a significant portion thereof) with energy efficiency and demand response investments.

A. The CPR Project

24. As aforementioned, the Spurlock Station is EKPC's largest coal-fired electric generation facility with a combined coal storage capacity of approximately 490,000 tons. In order to capture and retain coal pile runoff (essentially, stormwater that falls atop and through the coal pile and plant contributing areas), the Spurlock Station currently utilizes a 3.3-acre lined CPR Pond. The CPR Pond includes a geosynthetic clay liner ("GCL") on the bottom and side slopes, with concrete above the GCL on the bottom of the pond, and rip rap liner above the GCL on the side slopes. The principal spillway consists of two (2) pumps that convey the CPR Pond water to the Spurlock Station's ash pond through a 10" polyethylene force main. The emergency spillway consists of three 24" pipes that are designed to discharge to a receiving stream of the Ohio River, specifically through a designated KPDES Outfall (Outfall 005). EKPC's ability to collect, contain, and transport CPR is an essential element of its operations at the Spurlock Station.

25. The existing CPR Pond and pump system at EKPC's Spurlock Station can contain the volume of water and CPR of a 2-year, 24-hour storm event. The limited capacity of the CPR Pond results in occasional overflows of the pond through the emergency spillway, which in turn results in discharges through Outfall 005. These conditions increase EKPC's risk of non-compliance with respect to Spurlock Station's KPDES permitting, particularly as that permitting becomes more restrictive with respect to TSS consistent with the EPA's ELG Rule.

26. Based on the Steam Electric Effluent Limitation Guidelines (40 CFR 423.12(b)(10)) and good engineering practices for sedimentation pond design, EKPC determined that its CPR facilities must now be designed and built to contain a 10-year, 24-hour storm event,

and that other improvements should be made to ensure the safe, compliant, and effective operation of the CPR Pond and related facilities. Specifically, EKPC proposes to modify the existing CPR Pond and infrastructure to include new pumps, modifications to the northern coal pile ditch, and the construction of a supplemental storage wall. The anticipated cost of the CPR Project is $11.21 million.

27. EKPC has determined that modifying its existing CPR Pond to include new pumps and infrastructure presents the best solution to the challenges presented by Spurlock Station's current CPR Pond inadequacies. Fundamentally, the CPR Project is necessitated by EKPC's decision to ensure that the Spurlock Station remains a valuable coal-fired generation resource going forward.[10] The CPR Project, as proposed by EKPC, is the reasonable, least-cost option to address the Spurlock Station CPR Pond inadequacy, and the EKPC Board of Directors has directed management to pursue this Commission's approval of same.[11]

28. EKPC engaged the engineering firm Burns and McDonnell Engineering Company, Inc. ("Burns and McDonnell") to prepare a Scoping Report that would be useful to further develop the CPR Project. The Scoping Report issued by Burns and McDonnell involves four (4) major project components,[12] which are as follows:

[10] EKPC made minor modifications to the CPR Pond in 2016. Those modifications, discussed below, are included as part of Project #21 in EKPC's proposed amended Environmental Compliance Plan.

[11] A copy of the Board's August 14, 2018 Resolution is attached hereto and incorporated herein as Exhibit C.

[12] A copy of the Burns and McDonnell Scoping Report is attached hereto as Attachment SY-2 to Exhibit J, the Direct Testimony of Mr. Sam Yoder.

a. CPR Pond Pumps – EKPC will install new submersible pumps in a 4x33% line-up (three (3) operating and one (1) spare) to convey excessive rainfall through new and existing pipes to the planned Water Mass Balance ("WMB") Pond;[13]

b. Coal Pile North Ditch Development – EKPC will modify the northern coal pile ditch with a new geosynthetic clay liner ("GCL"), concrete bottom and side slopes;

c. CPR Pond Supplemental Wall – EKPC will erect a 3-foot high concrete wall to provide additional storage/freeboard in the CPR Pond and ditch to satisfy a 100-year, 24-hour precipitation event; and

d. Balance of Plant Systems – EKPC will install new controls, instrumentation and electrical equipment, as well as a new Power Control Module to operate the new systems.

29. The schedule for implementing the CPR Project is designed to complement the other construction activities taking place at Spurlock Station and will be carried out in a manner that is cognizant and consistent with all the other normal operations taking place on the Spurlock Station campus. Based upon the current schedule, construction should be completed in February 2021.

30. In addition to approval from the Commission, the CPR Project requires EKPC to seek and obtain authorization from the United States Department of Agriculture's Rural Utilities Service, as well as a revised KPDES permit for the Spurlock Station from the Division of Water. EKPC has begun the process of obtaining these approvals. A draft revised KPDES permit was

[13] Presently, the pumps and related facilities of the CPR Pond convey stormwater from coal pile runoff and the back-end of the plant through existing piping to the existing coal ash pond; however, as the Commission is aware, the ash pond is scheduled for closure and partial replacement by a WMB Pond in late 2021. The proposed CPR Project recognizes this fact and is designed with facilities for the conveyance of CPR to the new WMB Pond upon the pond's completion.

issued by the Division of Water on September 10, 2018, and a copy of it is attached hereto as Attachment JP-2 to Exhibit H, the Direct Testimony of Mr. Jerry Purvis.

31. EKPC will finance the CPR Project through funds available to it from normal operations or funds available through its unsecured Credit Facility. Once completed, any short-term debt associated with the CPR Project will be refinanced using long-term debt available under EKPC's Trust Indenture.

32. EKPC intends to use a multiple contract approach with adjustment unit pricing to develop and construct the CPR Project. This approach allows EKPC and its engineer to create and procure the necessary construction and major equipment contracts. The approach involves the use of multiple equipment and material contracts and multiple construction contracts and will allow EKPC to minimize procurement costs by providing for competitive bidding to reduce contractor markups.

33. In summary, the CPR Project will provide many benefits to EKPC, including, without limitation, the following:

a. Complying with the ELG Rule and the Spurlock Station's KPDES Permit requirements in a reasonable, least-cost manner;

b. Furthering EKPC's efforts to provide reliable, safe, adequate and reasonable service to its owner-members at rates that are fair, just and reasonable;

c. Ensuring the continued safe and responsible containment and conveyance of CPR, particularly in light of Spurlock Station's proximity to one of the largest rivers in North America and its location within the 100-year flood plain; and

d. Preserving EKPC's ability to comply with future environmental regulations that may be imposed by state and federal authorities.

B. Other Environmental Projects

34. EKPC is also seeking to include ten (10) additional projects in its amended Compliance Plan. These projects are relatively small in nature and may be listed summarily as follows:

Project	Location	Description	Waste Byproduct Controlled	Applicable Regulation	Completion	Project Costs (A) Actual (E) Estimated
Amended #12	Spurlock	Spurlock Expansion of Area C Landfill - Phase Two	Special Waste	401 KAR Chap 45 CWA Section 404	November 21, 2014	$3,382,670 (A)
	Spurlock	Spurlock Landfill Area C - Phase Three	CCR Special Waste	40 CFR 257 401 KAR Chap 45 CWA Section 404	Fall 2018	$4,737,105 (E)
	Spurlock	Spurlock Landfill Area C - Phase Four	CCR	40 CFR 257 401 KAR Chap 46 CWA Section 404	Fall 2018	$6,000,000 (E)
	Spurlock	Spurlock Landfill Area C Phases 3-5 - Haul Road Extension	CCR	40 CFR 257 401 KAR Chap 46 CWA Section 404	Fall 2017	$3,272,457 (A)
	Spurlock	Spurlock Landfill Final Cap and West Side Regrade - ARO	Special Waste	401 KAR Chap 45 CWA Section 404	2017	$1,964,650 (A)
#17	Cooper	Cooper Station New Landfill - Phase 1A	Special Waste	401 KAR Chap 45 KRS Chap 224	May 2014	$2,732,569 (A)
	Cooper	Cooper Station New Landfill - Phase 1B	Special Waste	401 KAR Chap 45 KRS Chap 224	December 2014	$2,891,887 (A)
	Cooper	Cooper Landfill - Transmission, Distribution & Communication Line Relocation	Special Waste	401 KAR Chap 45 KRS Chap 224	2016	$618,945 (A)
#18	Cooper	Cooper Station Landfill - Sediment Pond	Special Waste	401 KAR Chap 45 KRS Chap 224	May 2013	$2,163,009 (A)

Project	Location	Description	Waste Byproduct Controlled	Applicable Regulation	Completion	Project Costs (A) Actual (E) Estimated
#19	Cooper	Cooper Ash Mixer Unloaders	Special Waste	401 KAR Chap 45 KRS Chap 224 401 KAR 63:010	November 2013	$260,441 (A)
#20	Cooper	Cooper Ditch and Sediment Trap Design / Construction	Special Waste	401 KAR Chap 45 KRS Chap 224	December 2017	$1,242,055 (A)
#21	Spurlock	Spurlock Station Drainage Improvement - Gypsum Stackout Wall	CCR	40 CFR 257 401 KAR 63:010	October 2015	$160,574 (A)
	Spurlock	Station Drainage Improvement - Coal Pile Runoff Pond Modifications	Stormwater	CWA Section 402 KRS Chapter 224	November 2016	$2,615,080 (A)
	Spurlock	Station Drainage Improvement - Units 1 & 2 Silo Area Paving	Stormwater	CWA Section 402 KRS Chapter 224	October 2016	$3,701,821 (A)
	Spurlock	Station Drainage Improvement - Back Side Grading & Paving	Stormwater	CWA Section 402 KRS Chapter 224	November 2016	$4,467,880 (A)
	Spurlock	Station Drainage Improvement - Eliminate Collection Pits and Cleanup Areas	Stormwater CCR	40 CFR 257 CWA Section 402 KRS Chapter 224	October 2015	$696,603 (A)
	Spurlock	Spurlock Station Drainage Improvement - FGD	CCR	40 CFR 257 CWA Section 402	September 2015	$1,492,930 (A)

Project	Location	Description	Waste Byproduct Controlled	Applicable Regulation	Completion	Project Costs (A) Actual (E) Estimated
		Blowdown Reroute				
#22	Spurlock	Spurlock Power Station HG Compliance - Unit Nos. 1 & 2	Mercury	40 CFR 60 40 CFR 63 401 KAR 63:020	March 2015	$2,755,438 (A)
#23	Spurlock	Spurlock Anhydrous Ammonia Secondary Containment	NH3	40 CFR 112 CAA Sec 112(r)	December 29, 2017	$1,050,780 (A)
#24	Spurlock	Spurlock Vacuum Truck Ash Transfer Station	CCR and Particulate Matter	40 CFR 257 401 KAR Chap. 46 401 KAR 59:010	Fall 2018	$2,664,200 (E)
#25	Spurlock	Spurlock Units 1 and 2 Dry Sorbent Injection (DSI) System	SO3, NH3	40 CFR 63	August 2017	$3,876,376 (A)
	Total All Projects					$52,747,470

35. Each project EKPC proposes to include in its amended Compliance Plan reflects the cooperative's reasonable and cost-effective efforts to satisfy environmental obligations imposed upon its facilities utilized for the production of energy from coal. These projects are described in greater detail in the testimony of Mr. Craig Johnson. Mr. Isaac Scott describes in his testimony how some of these non-CPCN projects will be used to partially settle existing Asset Retirement Obligations.

IV. Requests for CPCN and Amendment of Environmental Compliance Plan

36. It is well established that the Commission only possesses such powers as granted by the General Assembly.[14] However, the scope of the powers expressly granted by the General Assembly to the Commission to regulate the "rates" and "service" of utilities is plenary in nature, unless otherwise expressly limited or expressed by statute.[15] In the context of a request for issuance of a CPCN, the Commission's authority under KRS 278.020(1) remains very broad. The General Assembly has, however, chosen to limit the Commission's authority to prohibit or delay recovery of certain costs arising from compliance with environmental laws and regulations by enacting KRS 278.183, the environmental surcharge statute.

A. Certificate of Public Convenience and Necessity

1. KRS 278.020(1) Requires Analysis of "Need" and "Wasteful Duplication"

37. Before undertaking a construction project that is not in the ordinary course of business, a utility must obtain a CPCN from the Commission under the authority of KRS 278.020(1), which states in relevant part:

> No person, partnership, public or private corporation, or combination thereof shall...begin the construction of any plant, equipment, property, or facility for furnishing to the public any of the services enumerated in KRS 278.010...until that person has obtained from the Public Service Commission a certificate that public convenience and necessity require the service or construction.... The commission, when considering an application for a certificate to construct a base load electric generating facility, may consider the policy of the General Assembly to

[14] *See Boone Co. Water and Sewer Dist. v. Public Service Comm'n,* Ky., 949 S.W.2d 588, 591 (1997); *Simpson Co. Water Dist. v. City of Franklin*, 872 S.W.2d 460, 462 (Ky. 1994); *Com., ex rel. Stumbo v. Kentucky Public Service Comm'n*, 243 S.W.3d 374, 378 (Ky. App. 2007); *Cincinnati Bell Tel. Co. v. Kentucky Public Service Comm'n,* 223 S.W.3d 829, 836 (Ky. App. 2007); *Public Service Comm'n v. Jackson Co. Rural Elec. Co-op., Inc.*, 50 S.W.3d 764, 767 (Ky. App. 2000).

[15] *See* KRS 278.040(2); *Kentucky Public Service Comm'n v. Commonwealth of Kentucky, ex rel. Conway*, 324 S.W.3d 373, 383 (Ky. 2010); *Southern Bell Tel. & Tel. Co. v. City of Louisville*, 265 Ky. 286, 96 S.W.2d 695, 697 (Ky. 1936).

> foster and encourage use of Kentucky coal by electric utilities serving the Commonwealth.

38. The statute is silent, however, with regard to the criteria which the Commission should apply to any such request from a utility. Accordingly, case law construing KRS 278.020(1) provides the appropriate standard for evaluating EKPC's request for a CPCN in this proceeding. The leading authority on CPCNs is *Kentucky Utilities Co. v. Public Service Comm'n*, which articulates a two-part test for demonstrating entitlement to a CPCN: (1) need; and (2) absence of wasteful duplication. *Kentucky Utilities Co.* provides significant guidance as to what further considerations should be taken into account when evaluating a request for a CPCN under these two criteria.

39. As to "need," Kentucky's highest Court wrote:

> We think it is obvious that the establishment of convenience and necessity for a new service system or a new service facility requires first a showing of a substantial inadequacy of existing service, involving a consumer market sufficiently large to make it economically feasible for the new system or facility to be constructed and operated. Second, the inadequacy must be due either to a substantial deficiency of service facilities, beyond what could be supplied by normal improvements in the ordinary course of business; or to indifference, poor management or disregard of the rights of consumers, persisting over such a period of time as to establish an inability or unwillingness to render adequate service.[16]

40. The need for the CPR Project described herein is demonstrated by the fact that, without it, EKPC would be unable to continue to safely and appropriately operate the Spurlock Station in a manner consistent and compliant with federal and state environmental mandates.

41. With regard to what constitutes "wasteful duplication", the Court opined:

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[16] *Kentucky Utilities Co.*, at 890.

> [W]e think that 'duplication' also embraces the meaning of an excessive investment in relation to productivity or efficiency, and an unnecessary multiplicity of physical properties, such as right of ways, poles and wires. An inadequacy of service might be such as to require construction of an additional service facility to supplement an inadequate existing facility, yet the public interest would be better served by substituting one large facility, adequate to serve all the consumers, in place of the inadequate existing facility, rather than constructing a new small facility to supplement the existing small facility. A supplementary small facility might be constructed that would not create duplication from the standpoint of an excess of capacity, but would result in duplication from the standpoint of an excessive investment in relation to efficiency and a multiplicity of physical properties.[17]

42. In evaluating the "wasteful duplication" aspect of CPCN analysis, the Court further instructed, "[w]e are of the opinion that the Public Service Commission should have considered the question of duplication from the standpoints of excessive investment in relation to efficiency, and an unnecessary multiplicity of physical properties."[18] While the avoidance of "wasteful duplication" is a primary consideration for evaluating a request for a CPCN, *Kentucky Utilities Co.* makes clear that the Commission must not focus exclusively upon the cost of a proposal alone. The Commission must also look at an application for a CPCN in relation to the service to be provided by the utility:

> [W]e do not mean to say that *cost* (as embraced in the question of duplication) is to be given more consideration than the need for *service*. If, from the past record of an existing utility, it should appear that the utility cannot or will not provide adequate service, we think it might be proper to permit some duplication to take place, and some economic loss to be suffered so long as the duplication and resulting loss be not greatly out of proportion to the need for service.[19]

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[17] *Id.*, at 891.

[18] *Id.*

[19] *Id.*, at 892 (emphasis in original).

43. In other words, the complete absence of "wasteful duplication" need not be shown to an absolute certainty, "it is sufficient that there is a reasonable basis of anticipation" that the "consumer market in the immediately foreseeable future will be sufficiently large to make it economically feasible for a proposed system or facility to be constructed...."[20] As recently as 2012, the Commission affirmed this point:

> To demonstrate that a proposed facility does not result in wasteful duplication, we have held that the applicant must demonstrate that a thorough review of all alternatives has been performed. Selection of a proposal that ultimately costs more than an alternative does not necessarily result in wasteful duplication. All relevant factors must be balanced.[21]

44. EKPC satisfies the "wasteful duplication" component of the CPCN analysis by virtue of the considerable due diligence it has undertaken to determine that targeted investment should be made in the Spurlock Station to ensure its continued use as a valuable coal-fired generation resource. The proposed CPR Project presents the reasonable, least cost option for continued operation of the Spurlock Station and the safe and compliant storage of coal on the property.

2. Filing Requirements

45. Pursuant to 807 KAR 5:001, Section 15(2)(a), the facts relied upon to show that the proposed construction or extension is or will be required by public convenience or necessity are specifically set forth in numerical paragraphs 16 through 33 of this Application and in the testimony submitted herewith.

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[20] *Kentucky Utilities Co. v. Public Service Commission*, 59 P.U.R.3d 219, 390 S.W.2d 168, 172 (Ky. 1965).

[21] *In re the Application of Big Rivers Electric Corporation for Approval of its 2012 Environmental Compliance Plan*, Case No. 2012-00063, Final Order, pp. 14-15 (Ky. P.S.C. Oct. 1, 2012) (citations omitted).

46. Pursuant to 807 KAR 5:001, Section 15(2)(b), EKPC states that it is in the process of obtaining all environmental permits and approvals necessary for the proposed construction. A matrix reflecting the permits and approvals relevant to the CPR Project is provided as Attachment JP-1 to Exhibit H, the Direct Testimony of Mr. Jerry Purvis. Mr. Purvis's testimony (at Attachment JP-2) contains the Draft KPDES Permit relevant to the Spurlock Station and CPR Project.

47. Pursuant to 807 KAR 5:001, Section 15(2)(c), a full description of the proposed location, route, or routes of the proposed construction or extension is contained in the testimonies of Mr. Craig Johnson (Exhibit I) and Mr. Sam Yoder (Exhibit J), as well as reflected in the map attached as Exhibit A hereto and incorporated herein. A description of the manner of construction is set forth fully in the testimonies of Mr. Craig Johnson and Mr. Sam Yoder, and specifically in Attachment SY-2 to Mr. Yoder's testimony (the Burns & McDonnell Scoping Report). There are no public utilities, corporations or persons with whom the proposed construction or extension is likely to compete.

48. Pursuant to 807 KAR 5:001, Section 15(2)(d), EKPC is providing herewith one (1) copy in portable document format on electronic storage medium and two (2) copies in paper medium of the following information: maps to suitable scale showing the location or route of the proposed construction or extension, as well as the location to scale of like facilities owned by others located anywhere within the map area with adequate identification as to the ownership of the other facilities (see Exhibit A); and plans and specifications and drawings of the proposed plant, equipment, and facilities (see Attachment SY-2 to Exhibit J, at Appendix A). The Exhibits are the subject of a motion for confidential treatment and a motion for a filing deviation that are filed contemporaneously herewith.

49. Pursuant to 807 KAR 5:001, Section 15(2)(e), a detailed description of the manner in which EKPC intends to finance the proposed construction or extension is set forth in numerical paragraph 31 herein and the testimony of Mr. Thomas Stachnik.

50. Pursuant to 807 KAR 5:001, Section 15(2)(f), EKPC estimates that the annual cost of operation of the Spurlock Station will increase approximately $74,000 after the proposed facilities are placed into service.

B. Request for Approval of an Environmental Compliance Plan Amendment

51. When a utility applies for a CPCN for the construction of a facility that is necessary to comply with an environmental mandate, KRS 278.183 is also implicated. The environmental surcharge statute was enacted "to promote the use of high sulfur Kentucky coal by permitting utilities to surcharge their customers for the cost of a scrubber which is part of a power plant that cleans high sulfur coal in order to meet the acid rain provisions of the Federal Clean Air Act amendments of 1990."[22] Section 1 of the statute contains the guarantee of cost recovery for such environmental compliance costs:

> Notwithstanding any other provision of this chapter, effective January 1, 1993, a utility shall be entitled to the current recovery of its costs of complying with the Federal Clean Air Act as amended and those federal, state, or local environmental requirements which apply to coal combustion wastes and by-products from facilities utilized for production of energy from coal in accordance with the utility's compliance plan as designated in subsection (2) of this section. These costs shall include a reasonable return on construction and other capital expenditures and reasonable operating expenses for any plant, equipment, property, facility, or other action to be used to comply with applicable environmental requirements set forth in this section. Operating expenses include all costs of operating and maintaining environmental facilities, income taxes, property taxes, other applicable taxes, and depreciation

[22] *Kentucky Indus. Utility Customers, Inc. v. Kentucky Utilities Co.*, 983 S.W.2d 493, 496 (Ky. 1998).

> expenses as these expenses relate to compliance with the environmental requirements set forth in this section.[23]

52. In order to obtain rate relief under the environmental surcharge statute, a utility must "submit to the commission a plan, including any application required by KRS 278.020(1), for complying with the applicable environmental requirements set forth in [KRS 278.183(1)]." Following that:

> ...[T]he commission shall conduct a hearing to: (a) Consider and approve the plan and rate surcharge if the commission finds the plan and rate surcharge reasonable and cost-effective for compliance with the applicable environmental requirements set forth in subsection (1) of this section; (b) Establish a reasonable return on compliance-related capital expenditures; and (c) Approve the application of the surcharge.[24]

53. The Kentucky Supreme Court characterized KRS 278.183 as "a new right" that "did not exist before the enactment of the surcharge."[25] Thus, the Kentucky General Assembly has chosen to encourage the use of coal by enacting a surcharge mechanism that guarantees a utility the ability to recover costs associated with compliance with environmental mandates. The Commission has commented upon the prescriptive nature of the KRS 278.183 by observing that it "must consider the plan and the proposed rate surcharge, and approve them if [the Commission] finds the plan and rate surcharge to be reasonable and cost effective."[26] The environmental surcharge statute, therefore, relates to and is an important adjunct to the traditional CPCN analysis required by KRS 278.020(1).

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[23] KRS 278.183(1).

[24] KRS 278.183(2).

[25] *Kentucky Indus. Utility Customers, Inc.*, at 500.

[26] *In re the Application of Big Rivers Electric Corporation for Approval of its 2012 Environmental Compliance Plan*, Case No. 2012-00063, Final Order, p. 16 (Ky. P.S.C. Oct. 1, 2012).

54. EKPC implemented its first Compliance Plan following Commission approval in 2005.[27] EKPC has subsequently amended its Compliance Plan on five (5) occasions.[28]

55. EKPC is seeking approval to amend its Compliance Plan to include the eleven (11) environmental compliance projects described herein,[29] including the CPR Project, as well as recover through its environmental surcharge the costs associated with those projects, which is approximately $64.0 million. In addition, EKPC estimates that the incremental annual operations and maintenance expense associated with the projects EKPC seeks to add to its Compliance Plan will be approximately $3.3 million.

56. EKPC intends to finance the CPR Project as set forth in numerical paragraph 31 above. The other projects for which no CPCN is required were, or will be, financed through EKPC's normal budgeting process and draws upon its unsecured credit facility. Ultimately these projects will be financed through long-term debt instruments issued pursuant to EKPC's Trust Indenture.

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[27] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval of an Environmental Compliance Plan and Authority to Implement an Environmental Surcharge*, Order, Case No. 2004-00321 (Ky. P.S.C., Mar. 17, 2005).

[28] *See In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2008-00115, (Ky. P.S.C., Sep. 29, 2008); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2010-00083, (Ky. P.S.C., Sep. 24, 2010); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for Alteration of Certain Equipment at the Cooper Station and Approval of a Compliance Plan Amendment for Environmental Surcharge Cost Recovery*, Order, Case No. 2013-00259, (Ky. P.S.C., Feb. 20, 2014); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for construction of an Ash Landfill at J.K. Smith Station, the Removal of Impounded Ash from William C. Dale Station for Transport to J.K. Smith and Approval of a Compliance Plan Amendment for Environmental Surcharge Recovery*, Order, Case No. 2014-00252 (Ky. P.S.C., Mar. 6, 2015); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs pursuant to its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief*, Order, Case No. 2017-00376 (Ky. P.S.C., May 18, 2018).

[29] One of these projects amends an existing Environmental Compliance Plan project, Project No. 12 – Spurlock Landfill Area C Expansion. Project No. 12 was originally approved and included in EKPC's Environmental Compliance Plan in Case No. 2010-00083.

57. EKPC has given the required notice of intent as to the filing of this Application and has provided the requisite notice to its owner-members as well.[30]

58. Under KRS 278.183(2), EKPC is entitled to earn a return on its investment. The original (and still used) methodology for determining an appropriate return is the product of the weighted average debt cost of the debt issuances directly related to the projects in EKPC's Compliance Plan, multiplied by a Times Interest Earned Ratio ("TIER") factor.[31] EKPC has updated its weighted average debt cost at each six-month review of its Compliance Plan and states that its current weighted average debt cost is 4.015%. Moreover, the Commission has consistently applied a 1.50 TIER factor.[32] EKPC is requesting the Commission use its updated weighted average debt cost of 4.015% and a 1.50 TIER factor to arrive at an overall rate of return of 6.023%.[33]

59. Based upon the foregoing, EKPC estimates that the annual environmental surcharge impact of its amended Compliance Plan to a residential customer using 1,150 kWh of electricity each month will be as follows:

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[30] A copy of the Notice of Intent is attached hereto and incorporated herein as Exhibit D. A copy of the Notice given to EKPC's owner-members is attached hereto and incorporated herein as Exhibit E.

[31] *See In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of an Environmental Compliance Plan and Authority to Implement an Environmental Surcharge*, Order, Case No. 2004-00321 (Ky. P.S.C. Mar. 17, 2005).

[32] *See e.g. In the Matter of an Examination by the Public Service Commission of the Environmental Surcharge Mechanism of East Kentucky Power Cooperative, Inc. for the Six-Month Billing Period Ending December 31, 2010; and the Pass-Through Mechanism for Its Sixteen Member Distribution Cooperatives*, Order, Case No. 2011-00032 (Ky. P.S.C. Aug. 2, 2011); *In the Matter of an Examination by the Public Service Commission of the Environmental Surcharge Mechanism of East Kentucky Power Cooperative, Inc. for the Six-Month Billing Period Ending June 30, 2016 and the Pass Through Mechanism for its Sixteen Member Distribution Cooperatives*, Order, Case No. 2016-00335 (Ky. P.S.C. May 11, 2017).

[33] *See In the Matter of An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of East Kentucky Power Cooperative, Inc. for the Six-Month Billing Period Ending December 31, 2017, and the Pass-Through Mechanism for Its Sixteen Member Distribution Cooperatives*, Order, Case No. 2018-00075 (Ky. P.S.C. July 23, 2018). In its response to Request 5 of the Commission Staff's First Request for Information, EKPC proposed a weighted average cost of debt of 4.015% based on the debt cost for each debt issuance directly related to the projects in the environmental compliance plan as of November 30, 2017.

12 Months Ending	Percentage Wholesale Increase	Percentage Retail Increase	Estimated Increase in Average Residential Monthly Bill
March 31, 2020	1.12%	0.81%	$0.64
March 31, 2021	1.16%	0.84%	$0.66
March 31, 2022	1.00%	0.72%	$0.57

V. Overview of Testimony

60. EKPC is providing written testimony to support its Application from the following individuals:

a. Mr. Don Mosier, P.E., Executive Vice President and Chief Operating Officer, will offer testimony supporting EKPC's corporate profile, strategic objectives and the due diligence that has gone into the development of this proposal.

b. Mr. Thomas Stachnik, Vice President of Finance and Treasurer, will provide testimony concerning EKPC's plans to finance the CPR Project and other projects described herein, as well as the calculation of EKPC's weighted average cost of debt associated with debt issuances relating to its Compliance Plan as of November 30, 2017. He will also provide testimony concerning EKPC's requested authorized return.

c. Mr. Jerry Purvis, Vice President of Environmental Affairs, will offer testimony concerning the environmental obligations that EKPC must satisfy. He will also offer detailed testimony as to the purpose, scope and requirements of the CCR Rule, the ELG Rule and other applicable environmental authorities.

d. Mr. Craig Johnson, P.E., Senior Vice President of Power Production, will offer testimony detailing the CPR Project and the other projects EKPC has proposed for inclusion in its amended Compliance Plan.

e. Mr. Sam Yoder, P.E., Energy Division Project Manager at Burns and McDonnell, will provide testimony concerning the Scoping Report prepared by his firm for the CPR Project.

f. Mr. Isaac Scott, Manager of Pricing, will provide testimony concerning the cost and rate impact of the proposed Compliance Plan amendment. He will also discuss the proposed revisions to the environmental reporting forms.

VI. Conclusion

61. For the past several years, state and federal environmental regulations have required EKPC to make significant modifications to its Spurlock and Cooper coal-fired generating stations. Each of these projects is detailed in this Application and its supporting materials, and each is appropriate for inclusion in EKPC's proposed amended Compliance Plan under KRS 278.183. Accordingly, EKPC respectfully requests that the Commission allow EKPC to recover the costs of these projects through its environmental surcharge as described herein. Finally, EKPC requests that the Commission approve and issue a CPCN for the CPR Project.

WHEREFORE, on the basis of the foregoing, EKPC respectfully requests the Commission enter an Order:

1) Approving the proposed amendment of EKPC's Environmental Compliance Plan to include eleven (11) additional projects, including the CPR Project;
2) Authorizing recovery of the costs associated with said amendment, approximately $64.0 million, through EKPC's existing environmental surcharge;
3) Issuing a CPCN for the CPR Project, as described herein; and
4) Granting all other relief to which EKPC may be entitled.

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Comes now Don Mosier, Executive Vice President and Chief Operating Officer of East Kentucky Power Cooperative, Inc., and, after being duly sworn, does hereby verify, swear and affirm that the averments set forth in the foregoing Application are true and correct based upon my personal knowledge and belief, formed after reasonable inquiry, as of this 3rd day of October, 2018.

Don Mosier, Executive Vice President
and Chief Operating Officer

East Kentucky Power Cooperative, Inc.

The foregoing Verification was verified, sworn to and affirmed before me, the NOTARY PUBLIC by Don Mosier, Executive Vice President and Chief Operating Officer of East Kentucky Power Cooperative, Inc. on this 3rd day of October, 2018.

NOTARY PUBLIC

Commission No. 11/30/2021

My Commission Expires: 59 0567

This 3rd day of October, 2018.

Respectfully submitted,

David S. Samford
M. Evan Buckley
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Counsel for East Kentucky Power Cooperative, Inc.

VII. Exhibits

A. Aerial Maps/Photographs of Spurlock Station with Identified Facilities/Infrastructure (per 807 KAR 5:001, Section 15(2)(d)(1))

B. Aerial Maps/Photographs of Cooper Station with Identified Facilities/Infrastructure (per 807 KAR 5:001, Section 15(2)(d)(1))

C. EKPC Board of Directors Resolution dated August 14, 2018

D. EKPC's Notice of Intent to File Application, dated August 14, 2018

E. EKPC's Notice to Owner-Member Cooperatives of Intent to File, dated October 2, 2018

F. Testimony of Don Mosier

G. Testimony of Thomas Stachnik

H. Testimony of Jerry Purvis
   1. Matrix of CPR Project permits and approvals (Attachment JP-1)
   2. Draft Kentucky Division of Water KPDES Permit (Attachment JP-2)

I. Testimony of Craig Johnson
   1. Fact Sheets of Environmental Projects not requiring CPCN (Attachment CJ-1)

J. Testimony of Sam Yoder
   1. *Curriculum Vitae* (Attachment SY-1)
   2. Burns & McDonnell Scoping Report, September 2017 (Attachment SY-2) (including Plans, Specifications and Drawings per 807 KAR 5:001, Section 15(2)(d)(2))

K. Testimony of Isaac Scott
   1. Schedule of Current Environmental Compliance Plan and the Project Amendments/Additions (Attachment ISS-1)
   2. Sample Copy of the Monthly Environmental Surcharge Reporting Formats which Reflect Inclusion of the Amended/Additional Projects (Attachment ISS-2)
   3. Estimate of Revenue Increase and Estimated Bill Impact (Attachment ISS-3)

EXHIBIT

A

EXHIBIT A

MAPS OF SPURLOCK STATION

Subject to Motion for Confidential Treatment

EXHIBIT

B

EXHIBIT B

MAP OF COOPER STATION

Subject to Motion for Confidential Treatment

EXHIBIT

C

FROM THE MINUTE BOOK OF PROCEEDINGS
OF THE BOARD OF DIRECTORS OF
EAST KENTUCKY POWER COOPERATIVE, INC.

At a regular meeting of the Board of Directors of East Kentucky Power Cooperative, Inc. held at the Headquarters Building, 4775 Lexington Road, located in Winchester, Kentucky, on Tuesday, August 14, 2018, at 9:30 a.m., EDT, the following business transacted:

Approval to Amend the Environmental Compliance Plan and Seek to Recover Costs Associated with the Specifically Identified Projects

After review of the applicable information, a motion to approve to Amend the Environmental Compliance Plan and Seek to Recover Costs Associated with the Specifically Identified Projects was made by Strategic Issues Committee Chairman Bill Shearer, seconded by Ted Holbrook, and passed by the full Board to approve the following:

Whereas, East Kentucky Power Cooperative, Inc., ("EKPC") presently operates coal fired generating units located at the John Sherman Cooper ("Cooper Station") and H.L. Spurlock ("Spurlock Station") generating stations located in Burnside and Maysville, Kentucky, respectively;

Whereas, The projects identified below ("identified projects") have been completed, are in process or have been approved for implementation by the EKPC Board of Directors ("Board") to meet the requirements of the Federal Clean Air Act:

- Amendment to Project #12 – Spurlock Landfill Area C Expansion – ($19,356,882) approved
- New Project #17 – Cooper Station New Landfill – ($6,243,401) complete
- New Project #18 – Cooper Station Landfill Sediment Pond – ($2,163,009) complete
- New Project #19 – Cooper Ash Mixer Unloaders – ($260,441) complete
- New Project #20 – Cooper Ditch and Sediment Trap – ($1,242,055) complete
- New Project #21 – Spurlock Station Drainage Improvement – ($13,134,888) complete
- New Project #22 – Spurlock Station HG Compliance Units 1 & 2 – ($2,755,438) complete
- New Project #23 – Spurlock Anhydrous Ammonia Secondary Containment – ($1,050,780) complete
- New Project #24 – Spurlock Vacuum Truck Ash Transfer Station – ($2,664,200) approved
- New Project #25 – Spurlock Dry Sorbent Injection System Units 1 & 2 – ($3,876,376) complete
- New Project #26 – Spurlock Coal Pile Runoff Pond Supplemental Storage – ($11,210,000) approved

Whereas, The Environmental Surcharge statute was made effective on July 14, 1992, as a means to allow recovery of costs incurred to meet Federal Clean Air Act requirements at coal fired generating plants;

Whereas, EKPC received approval to implement an environmental surcharge by Order of the Kentucky Public Service Commission ("KYPSC") on March 17, 2005, and EKPC and its Member Systems implemented the surcharge beginning in July 2005;

Whereas, The costs associated with the identified projects ($63,957,470) are subject to recovery under the Environmental Surcharge statute;

Whereas, The approval by the KYPSC of this amendment to the Environmental Compliance Plan would result in EKPC recovering additional costs associated with meeting Federal Clean Air Act requirements and would increase annual revenues by an estimated $9 million; now, therefore, be it

Resolved, The Board hereby authorizes the submittal of an application to the KYPSC for an amendment to the Environmental Compliance Plan to include the identified projects and to seek recovery of those projects costs per the Environmental Surcharge statute.

The foregoing is a true and exact copy of a resolution passed at a meeting called pursuant to proper notice at which a quorum was present and which now appears in the Minute Book of Proceedings of the Board of Directors of the Cooperative, and said resolution has not been rescinded or modified.

Witness my hand and seal this 14th day of August 2018.

Jody E. Hughes, Secretary

Corporate Seal

EXHIBIT

D

Goss Samford

ATTORNEYS AT LAW PLLC

David S. Samford
david@gosssamfordlaw.com
(859) 368-7740

August 14, 2018

VIA HAND DELIVERY

RECEIVED
AUG 14 2018
PUBLIC SERVICE COMMISSION

Gwen R. Pinson
Executive Director
Kentucky Public Service Commission
P.O. Box 615
211 Sower Boulevard
Frankfort, KY 40602

Re: *In the Matter of: The Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs Pursuant to its Environmental Surcharge, and for the Issuance of a Certificate of Public Convenience and Necessity*; Case No. 2018-00 270

Dear Ms. Pinson:

On behalf of East Kentucky Power Cooperative, Inc. ("EKPC"), please accept this letter as notice, pursuant to KRS 278.183(2), of EKPC's intent to file an Application in the above-styled matter on or after September 14, 2018. The Application will request approval of:

1. An Amended Environmental Compliance Plan;

2. Authorization to recover the costs associated with said Amended Environmental Compliance Plan through EKPC's existing Environmental Surcharge Tariff;

3. Issuance of a Certificate of Public Convenience and Necessity for one of the projects included in the Amended Environmental Compliance Plan; and

4. Granting all other relief to which EKPC may be entitled.

We respectfully request that the following parties representing EKPC be included on the Commission's service list in this proceeding:

David S. Samford
M. Evan Buckley
Goss Samford, PLLC
david@gosssamfordlaw.com
ebuckley@gosssamfordlaw.com

Patrick Woods
East Kentucky Power Cooperative, Inc.
patrick.woods@ekpc.coop

Please let me know if you have any questions or require additional information.

Sincerely,

David S. Samford

cc: Hon. Rebecca W. Goodman
Hon. Kent Chandler
Hon. Michael L. Kurtz

EXHIBIT

E

MEMORANDUM

TO: Member System CEO's

FROM: Anthony S. Campbell

DATE: October 2, 2018

SUBJECT: Notice of Amendment to EKPC Environmental Compliance Plan and Environmental Surcharge Mechanism

Following a recommendation from its Strategic Issues Committee, the Board of East Kentucky Power Cooperative, Inc. ("EKPC"), during its regularly scheduled Board Meeting on Tuesday, August 14, 2018, authorized the submittal of an application to the Kentucky Public Service Commission ("Commission") for approval to amend its Environmental Compliance Plan and Environmental Surcharge Mechanism. Subsequently, that same day, EKPC gave notice to the Commission of its intent to file an Application for Approval of an Amendment to its Environmental Compliance Plan and Environmental Surcharge Mechanism. The notice also indicated EKPC would be seeking a Certificate of Public Convenience and Necessity ("CPCN"). EKPC plans to file this Application on or after Wednesday, October 3, 2018.

The amendment will enable EKPC to recover costs associated with the installation of facilities at the Spurlock and Cooper Stations that are necessary to comply with federal regulations like the Disposal of Coal Combustion Residuals from Electric Utilities Rule and the Effluent Limitation Guidelines and Standards for the Steam Electric Power Generating Point Source Category as well as state regulations like the Kentucky Pollutant Discharge Elimination System requirements. Several of the facilities have already been completed and are in service while others are under development and construction of those facilities are expected to be completed by 2021.

EKPC's largest coal-fired electric generation facility is the Spurlock Station. The four electric generation units began commercial operation between 1977 and 2009. EKPC has already heavily invested in environmental control equipment at the Spurlock Station. The four units at the Spurlock Station are among the least-expensive electric generation units in the EKPC fleet and have a high availability factor.

EKPC's other coal-fired electric generation facility is the Cooper Station. The two electric generation units began commercial operation in 1965 and 1969. Like the Spurlock Station, EKPC has made significant investments in environmental control equipment at the Cooper Station. While the two units at the Cooper Station have higher operating costs, these units have maintained very favorable availability factors and serve as a physical hedge against price volatility in the energy market during peak demand periods.

With the proposed environmental compliance plan amendment, EKPC is seeking to add eleven projects to the plan. Ten of the projects have been or are nearing completion and did

not require CPCNs, consistent with the exception provided in KRS 278.020(1) and 807 KAR 5:001, Section 15(3). EKPC is seeking a CPCN for one of the projects – a project to modify and expand the Coal Pile Runoff Pond at the Spurlock Station. The compliance options reflected by these projects will preserve the long-term usefulness of the Spurlock and Cooper Stations. The total estimated capital cost of the eleven projects is $64.0 million.

Pursuant to KRS 278.183(2), the Commission must issue its decision on the proposed compliance plan amendment and revisions to the surcharge mechanism within six months of the filing of the application. If EKPC files its application by October 3, 2018 and it is accepted as filed, a decision on the application could be expected by April 3, 2019. If the application is approved, cost recovery for the amendment could begin with the first monthly surcharge filing submitted after April 3, 2019.

EKPC's surcharge mechanism, as well as the Member Systems' surcharge pass-through mechanism, reflect formula-based calculations that are prepared each month to provide for the recovery of actual environmental compliance costs incurred during the period. EKPC's surcharge factor and the Member Systems' surcharge pass-through factors are billed to customers using the percentage of revenues approach. Consequently, there are no present or proposed rates associated with this application.

If approved, construction would be completed in 2021. The expected increase in the environmental surcharge at the wholesale level, retail level, and the estimated impact on the average monthly residential bill during the 2020 through 2022 period is shown in the table below. The estimated impact on average monthly residential bills is based on a monthly usage of 1,150 kWh.

12 Months Ending	Estimated Annual Revenue Requirement	Increase at Wholesale Level	Increase at Retail Level	Impact on Average Monthly Residential Bill
March 31, 2020	$9,010,852	1.12%	0.81%	$0.64
March 31, 2021	$9,347,421	1.16%	0.84%	$0.66
March 31, 2022	$8,035,673	1.00%	0.72%	$0.57

Once it is filed, a person may examine this Application at the offices of EKPC located at 4775 Lexington Road, Winchester, Kentucky. This Application may also be examined at the offices of the Commission located at 211 Sower Boulevard, Frankfort, Kentucky, Monday through Friday, 8:00 a.m. to 4:30 p.m., or through the Commission's Web site at http://psc.ky.gov . Any comments regarding this Application may be submitted to the Commission through its Web site or by mail to Public Service Commission, P. O. Box 615, Frankfort, Kentucky 40602.

The estimated bill impact contained in this notice is based on the environmental compliance plan amendment as proposed by EKPC but the Commission may order an environmental compliance plan that differs from the proposed environmental compliance plan and resulting estimated bill impacts contained in this notice.

A person may submit a timely written request for intervention to the Public Service Commission, P. O. Box 615, Frankfort, Kentucky 40602, establishing the grounds for the request including the status and interest of the party. If the Commission does not receive a written request for intervention within thirty (30) days of the initial publication or mailing of the notice, the Commission may take final action on the Application.

EXHIBIT

F

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)))))))	CASE NO. 2018-00270

DIRECT TESTIMONY OF DON MOSIER
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: October 3, 2018

Q. Please state your name, position, and business address.

A. My name is Don Mosier and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4775 Lexington Road, Winchester, Kentucky 40391. I am Executive Vice President and Chief Operating Officer at EKPC.

Q. Please briefly describe your education and professional experience.

A. I obtained my Bachelor of Science degree in civil engineering from the University of Virginia and my Master of Business Administration degree from the Kenan-Flagler Business School at the University of North Carolina. My professional experience includes work at Carolina Power & Light (now Duke Energy Carolinas) in Raleigh, North Carolina, developing merchant generation projects and marketing activities, regulatory affairs, and nuclear power plant engineering and operations. I also was an engineering manager of U.S. Operations for Canatom Corp., a Toronto-based engineering firm that provides nuclear plant engineering and construction services. Immediately prior to joining EKPC, I served as Vice President of St. Louis-based Ameren Energy Marketing ("AEM"), a subsidiary of Ameren Corp. At AEM, I managed wholesale power trading, plant dispatch, North American Electric Reliability Corporation and SERC compliance, transmission and congestion management activities, and customer account management for Ameren Corporation's unregulated merchant generation fleet located in the Midcontinent ISO and PJM Interconnection, LLC ("PJM"), a Regional Transmission Organization.

Q. Please provide a brief description of your duties at EKPC.

A. I manage the day-to-day operations of power production and construction, power delivery, power supply, and system operations. I report directly to EKPC's President and Chief Executive Officer, Mr. Anthony S. Campbell.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to support EKPC's application in this proceeding by first discussing EKPC's corporate profile and strategic goals. I will describe EKPC's generation fleet, with a particular emphasis on its coal-fired generation facilities and the efforts undertaken to ensure those facilities remain compliant with environmental regulation. Finally, I will discuss the overall advantages and benefits that will inure to EKPC, its Owner-Member Cooperatives ("owner-members") and their End-Use Retail Members ("retail members") as a result of EKPC's proposal to modify and expand the Coal Pile Runoff Pond ("CPR Pond") at its Hugh L. Spurlock Station in Mason County, Kentucky ("Spurlock Station") (as further described herein, the "CPR Project"), and the other projects EKPC seeks to add to its Environmental Compliance Plan.

Q. Are you sponsoring any exhibits?

A. No.

Q. Please describe EKPC and its owner-members' system.

A. EKPC is a not-for-profit, rural electric cooperative corporation established under KRS Chapter 279 with its headquarters in Winchester, Kentucky. EKPC has $3.8 billion in assets and 688 employees. In 2017, EKPC's energy sales exceeded 12.5 million megawatt hours, contributing to an operating revenue of $862 million and

a net margin of $22 million. Pursuant to various agreements, EKPC provides electric generation capacity and electric energy to its sixteen (16) owner-members: Big Sandy RECC, Blue Grass Energy, Clark Energy, Cumberland Valley Electric, Farmers RECC, Fleming-Mason Energy, Grayson RECC, Inter-County Energy, Jackson Energy, Licking Valley RECC, Nolin RECC, Owen Electric, Salt River Electric, Shelby Energy, South Kentucky RECC and Taylor County RECC. Those owner-members in turn serve approximately 530,000 Kentucky homes, farms and commercial and industrial establishments in eighty-seven (87) Kentucky counties.

In total, EKPC owns and operates approximately 2,965 MW of net summer generating capability and 3,267 MW of net winter generating capability. EKPC owns and operates coal-fired generation at the John S. Cooper Station in Pulaski County, Kentucky (341 MW) ("Cooper Station") and the Spurlock Station (1,346 MW). EKPC also owns and operates natural gas-fired generation at the J. K. Smith Station in Clark County, Kentucky (753 MW (summer)/989 MW (winter)) ("Smith Station") and the Bluegrass Station in Oldham County, Kentucky (501 MW (summer)/567 MW (winter)), and landfill gas-to-energy facilities in Boone County, Laurel County, Greenup County, Hardin County, Pendleton County and Barren County (16 MW total). In November 2017, EKPC added a Community Solar facility (8 MW) in Winchester, Kentucky to its generation portfolio. Finally, EKPC purchases hydropower from the Southeastern Power Administration at Laurel Dam in Laurel County, Kentucky (70 MW), and the Cumberland River system of dams in Kentucky and Tennessee (100 MW). EKPC's record peak demand of 3,507 MW occurred on February 20, 2015.

EKPC also owns 2,940 circuit miles of high voltage transmission lines in various voltages and the substations necessary to support this transmission line infrastructure. Currently, EKPC has seventy-four (74) free-flowing interconnections with its neighboring utilities.

Q. Please describe EKPC's Strategic Plan.

A. EKPC's Board of Directors has developed a strategic plan that it reviews and updates regularly with a goal of guiding management in the day-to-day operations of the cooperative while also providing a roadmap for what EKPC hopes to accomplish over the long-term. The current Strategic Plan was last updated in 2016 and includes eight (8) strategic objectives in the areas of governance, people, financial integrity, generation and transmission assets, rates and regulatory relations, communications and public relations, economic development and cyber and physical security. The Strategic Plan has been instrumental in guiding management to identify and develop the best possible solutions to challenges presented by environmental regulations, operational constraints, and other influences. EKPC's decision to pursue the CPR Project, as well as the other projects it seeks to add to its Environmental Compliance Plan, is consistent with its Strategic Plan, and particularly the cooperative's objective to "maximize returns on capital investments and mitigate exposure to stranded costs to limit impact on system reliability and exposure to future regulatory changes."

Q. How has EKPC's Strategic Plan influenced decisions relative to EKPC's generation fleet?

A. First, EKPC has stated that one of its strategic objectives is to "provide leadership and vision to identify, exercise due diligence and recommend...supply resources that diversify the portfolio via increased reliance on natural gas, viable renewable resources, distributed generation and bilateral market purchases." At the same time, EKPC also has a strategic objective to "maximize returns on capital investments and mitigate exposure to stranded costs to limit impact on system reliability and exposure to future regulatory changes." Two (2) examples from recent history illustrate how these strategic objectives are actually put into practice.

In 2016, EKPC was forced to retire the Dale Station as a coal-fired electric generating station due to impacts of the Mercury Air Toxics Standards Rule ("MATS"). The retirement of the four (4) units at the Dale Station resulted in a loss of 200 megawatts (MW) of electric generating capacity. After a lengthy process, EKPC was able to secure 567 MW of new winter capacity by acquiring the Bluegrass Station following receipt of Commission approval in Case No. 2015-00267.[1] The Bluegrass Station acquisition represented a shift in EKPC's generation portfolio away from coal towards natural gas, but it also allowed us to maximize our peak diversity within PJM. It was a good business transaction that achieved value for our owner-members while also advancing the Board's efforts to

[1] *See In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of the Acquisition of Existing Combustion Turbine Facilities from Bluegrass Generation Company, LLC at the Bluegrass Generating Station in LaGrange, Oldham County, Kentucky and for Approval of the Assumption of Certain Evidences of Indebtedness*, Order, Case No. 2015-00267 (Ky. P.S.C. Dec. 1, 2015).

diversify EKPC's generation portfolio. EKPC is presently seeking this Commission's approval to implement dual fuel capability at the Bluegrass Station to promote the Station's continued reliable and economic operation in light of Capacity Performance requirements instituted by PJM.[2]

Prior to the Bluegrass Station acquisition, EKPC was confronted with the question of what to do at the Cooper Station in light of the MATS requirements. In that situation, the most prudent course of action was to tie Cooper 2 into the existing air quality control system serving Cooper 1.[3] By taking this course of action, EKPC was able to preserve a valuable, existing coal-fired generation resource at a very favorable price.

The lesson from these two prior situations is that EKPC's strategic objectives to diversify its fleet and mitigate the risk of stranded assets are not mutually exclusive options. Sometimes it makes sense to make additional investments in the coal-fired generation that we already have in place. Other times, diversification is the better option. EKPC's Strategic Plan is flexible enough to not rigidly dictate any particular outcome which may or may not be in the best interest of EKPC's owner-members. The relief EKPC seeks in this proceeding, and specifically the CPR Project and its proposed amended Environmental Compliance

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[2] Case No. 2018-00292, *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for the Construction of Backup Fuel Facilities at its Bluegrass Generating Station* (filed August 24, 2018).

[3] *See* Case No. 2013-00259, *Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for Alteration of Certain Equipment at the Cooper Station and Approval of a Compliance Plan Amendment for Environmental Surcharge Cost Recovery* (Ky. P.S.C. Feb. 20, 2014).

Plan, falls squarely within the scope of what the Board is trying to accomplish strategically.

Q. Please explain the relief EKPC seeks in this proceeding.

A. EKPC seeks to amend its Environmental Compliance Plan to include the CPR Project and several other projects as described herein. These projects include completed, ongoing, and proposed undertakings pursued for the purpose of environmental compliance at the Spurlock Station or Cooper Station. Further, EKPC seeks authority to recover the costs associated with said Compliance Plan amendment through its existing environmental surcharge, pursuant to KRS 278.183, and to settle certain Asset Retirement Obligations ("AROs") associated with the relevant projects. Finally, EKPC seeks a Certificate of Public Convenience and Necessity ("CPCN") for the CPR Project.

Q. Please describe EKPC's Environmental Compliance Plan.

A. Pursuant to KRS 278.183, EKPC implemented its first Environmental Compliance Plan following Commission approval in 2005.[4] EKPC has subsequently amended its Compliance Plan on five (5) occasions[5] to include new or amended projects

[4] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval of an Environmental Compliance Plan and Authority to Implement an Environmental Surcharge*, Order, Case No. 2004-00321 (Ky. P.S.C., Mar. 17, 2005).

[5] *See In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2008-00115, (Ky. P.S.C., Sep. 29, 2008); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2010-00083, (Ky. P.S.C., Sep. 24, 2010); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for Alteration of Certain Equipment at the Cooper Station and Approval of a Compliance Plan Amendment for Environmental Surcharge Cost Recovery*, Order, Case No. 2013-00259, (Ky. P.S.C., Feb. 20, 2014); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for construction of an Ash Landfill at J.K. Smith Station, the Removal of Impounded Ash from William C. Dale Station for Transport to J.K. Smith and Approval of a Compliance Plan Amendment for Environmental Surcharge Recovery*, Order, Case No. 2014-00252 (Ky. P.S.C., Mar. 6, 2015); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance*

undertaken in connection with its coal-fired generation assets. All of the projects approved for inclusion in EKPC's Compliance Plan have been reasonable and cost-effective for compliance with "those federal, state, or local environmental requirements which apply to coal combustion wastes and by-products from facilities utilized for production of energy from coal," as required by statute.

Q. When was EKPC's Environmental Compliance Plan last amended?

A. On May 18, 2018, the Commission approved EKPC's 2018 Environmental Compliance Plan and various proposed modifications of existing Spurlock Station facilities to comply with state and federal environmental requirements.[6] These improvements include conversion of the plant's bottom ash handling system, construction of a new wastewater treatment plant and fly ash storage silo, the closure and repurposing of the on-site coal ash pond, and the expansion of the existing landfill. These projects help ensure the ongoing safety and stability of EKPC's generation fleet.

Q. How many projects does EKPC seek to add to its Environmental Compliance Plan?

A. EKPC seeks to amend its Environmental Compliance Plan to reflect eleven (11) additional projects, including the CPR Project. One of these projects amends an existing Environmental Compliance Plan project, Project No. 12 – Spurlock

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Plan and Recover Costs pursuant to its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief, Order, Case No. 2017-00376 (Ky. P.S.C., May 18, 2018).

[6] *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs pursuant to its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief*, Order, Case No. 2017-00376 (Ky. P.S.C., May 18, 2018).

Landfill Area C Expansion. Project No. 12 was originally approved and included in EKPC's Environmental Compliance Plan in Case No. 2010-00083.

Q. Please briefly describe the environmental rules and regulations that necessitated or necessitate the projects EKPC proposes to add to its Environmental Compliance plan.

A. As the Commission is aware, electric utilities like EKPC are among the most heavily environmentally regulated companies in the United States. Authorities at the federal and state levels oversee nearly every aspect of EKPC's operations, with particular emphasis on the monitoring and abatement of the wastes and by-products that accompany coal-fired electric generation. EKPC has devoted and continues to devote substantial resources to ensure its continued compliance with environmental requirements, especially at its Cooper and Spurlock Stations.

The testimony submitted herewith of Mr. Jerry Purvis, EKPC's Vice President of Environmental Affairs, provides extensive detail concerning the purpose, scope and requirements of various state and federal environmental regulations that have necessitated the projects EKPC proposes to add to its Compliance Plan. These include the Effluent Limitation Guidelines and Standards for the Steam Electric Power Generating Point Source Category ("ELG Rule"), the Disposal of Coal Combustion Residuals from Electric Utilities Rule ("CCR Rule"), and other applicable environmental regulations and requirements (including those associated with the Kentucky Pollutant Discharge Elimination System ("KPDES")), all of which apply to coal combustion wastes and by-products from EKPC facilities utilized for production of energy from coal.

Q. Please briefly summarize EKPC's efforts to comply with the CCR Rule, as well as the ELG Rule, KPDES, and other environmental requirements, with respect to its Spurlock and Cooper Stations.

EKPC has invested significant resources in its Spurlock and Cooper Stations to ensure continued compliance with environmental requirements. These investments, both in the generation assets and the plant infrastructure necessary to support those assets, are specifically targeted to comply with regulations and rules imposed by various governmental authorities.

With respect to the generation assets themselves, Spurlock Station Units #1 and #2 are equipped with low NOx burners, selective catalytic reduction technology, a cold-side (or, in the case of Spurlock Station Unit #2, hot-side) electrostatic precipitator ("ESP"), a wet flue gas desulfurization ("FGD") scrubber, and a wet ESP. The Spurlock Station's other two (2) units employ Circulating Fluidized Bed combustion technology and are further equipped with selective non-catalytic reduction technology, dry FGD scrubbers and baghouses. EKPC's Cooper Station has a dry ash handling system. The Cooper Station's two (2) units share a common FGD system including a pulse jet fabric filter, and one of its units is serviced by a selective catalytic reduction system.

In addition to modifications to its generating assets, EKPC has made many other investments and undertaken numerous other measures to comply with applicable requirements governing the collection, storage, and disposal of wastes and by-products from the production of energy from coal. These have included projects related to waste water treatment, fly ash storage, site drainage, ash pond

and landfill construction and maintenance, and other plant systems. Each of these projects has been designed to best position EKPC's coal-fired generation assets for continued compliance and economic operation in light of significant environmental regulation.

Q. Has EKPC sought and obtained the Commission's approval to undertake certain of its compliance measures at the Cooper Station or Spurlock Station?

A. Yes. On several past occasions, EKPC has sought the Commission's approval to pursue environmental compliance projects necessitating construction at the Cooper and Spurlock Stations. For example, in 2009 EKPC was granted a Certificate of Public Convenience and Necessity ("CPCN") to retrofit Cooper Station Unit #1 to include its existing Air Quality Control System ("AQCS"),[7] and in 2014 EKPC was granted a CPCN to re-route Cooper Station Unit #2's duct work in order to utilize the AQCS.[8] Most recently, EKPC was granted a CPCN to proceed with extensive modifications to the Spurlock Station's coal ash handling and storage systems (among other items) in order to comply primarily with the CCR Rule and the ELG Rule.[9] These are some of the more significant projects that comprise EKPC's continuum of compliance efforts; many others pursued by EKPC, though also

[7] Case No. 2008-00472, *Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for the Construction of an Air Quality Control System at Cooper Power Station* (Ky. P.S.C. May 1, 2009).

[8] Case No. 2013-00259, *Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for Alteration of Certain Equipment at the Cooper Station and Approval of a Compliance Plan Amendment for Environmental Surcharge Cost Recovery* (Ky. P.S.C. Feb. 20, 2014).

[9] Case No. 2017-00376, *Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs pursuant to its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief* (Ky. P.S.C. May 18, 2018).

necessary to satisfy environmental requirements imposed upon coal-fired generation, have been relatively minor in nature, undertaken in the usual course of EKPC's business, and not the subject of earlier Commission proceedings.

Q. Can you describe the deliberative process that EKPC undertook when considering how to best comply with the CCR Rule, the ELG Rule, and other relevant regulatory and permitting requirements at the Spurlock and Cooper Stations?

A. EKPC's Board and managers have invested considerable time and attention to ensuring continued compliance with the myriad of environmental requirements applicable to coal-fired facilities owned by EKPC, particularly the CCR Rule and ELG Rule. Once the initial drafts of the CCR Rule and ELG Rule were published, EKPC staff began evaluating the potential fleet impacts of pending environmental regulations for CCR and ELG and started communicating on a regular basis with the EKPC Board regarding the emergence of the rules and the status of the evaluation. Additionally, a cross-functional team of internal and external attorneys and engineers were engaged to evaluate and assess strategies and site-specific options for meeting the combined CCR Rule, ELG Rule and KDOW's requirements in their preliminary forms. That work continued and the team closely monitored the federal rulemaking process until the rules were issued in final form and went into effect. The EKPC Board was informed regularly regarding the details of the rulemaking, as well as the development of actions that became or may become necessary for compliance.

Most of the projects EKPC seeks to include in its amended Environmental Compliance Plan are relatively minor in nature and were undertaken by EKPC as part of its normal course of business. These projects are detailed more fully in the testimony submitted herewith of Mr. Craig Johnson. Though this Commission's pre-approval was not sought or obtained by EKPC for these projects, each was necessary and appropriate to comply with environmental requirements imposed upon the Spurlock Station and/or Cooper Station.

With specific reference to the CPR Project, EKPC undertook extensive examination of applicable permitting limitations and the risk posed by its existing CPR Pond and associated facilities. EKPC engaged the engineering firm Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell") to prepare a Scoping Report in further development of the CPR Project, a copy of which is provided as Attachment SY-2 to the testimony of Mr. Sam Yoder. The Scoping Report is intended to provide EKPC and other interested parties, such as this Commission, an understanding of the CPR Project scope, assumptions, conceptual design, schedule and associated cost estimate.

Q. Please explain the proposed CPR Project.

A. The CPR Project, the technical specifications for which are more fully described in the testimonies of Mr. Craig Johnson and Mr. Sam Yoder submitted herewith, includes modification of the Spurlock Station's existing CPR Pond and infrastructure to better capture and retain coal pile runoff (essentially, stormwater that falls atop and through the coal pile and plant contributing areas). The Spurlock Station currently utilizes a 3.3-acre lined CPR Pond, a principal spillway that

conveys the CPR Pond water to the Spurlock Station's ash pond, and an emergency spillway designed to discharge to a receiving stream of the Ohio River, specifically through a designated KPDES Outfall (Outfall 005). The limited capacity of the existing CPR Pond, which the CPR Project is intended to address, results in occasional overflows of the pond through the emergency spillway, which in turn results in discharges through Outfall 005. The Burns & McDonnell Scoping Report estimates the CPR Project will cost $11.21 million.

Q. How will the proposed CPR Project allow EKPC to comply with applicable environmental regulation?

A. Spurlock Station's existing CPR Pond and related facilities can contain the volume of water of a 2-year, 24-hour storm event; following completion of the CPR Project, the relevant facilities will be capable of containing a 100-year, 24-hour storm event. EKPC's CPR Project is designed based on the Steam Electric Effluent Limitation Guidelines (40 CFR 423.12(b)(10)) and good engineering practices for sedimentation pond design, and to ensure the safe, compliant, and effective operation of the CPR Pond and related facilities. By expanding and improving the capacity and operation of the CPR Pond and related facilities, there will be fewer discharges through KPDES Outfall 005; as a result, EKPC's risk of non-compliance with the Spurlock Station's KPDES Permit is minimized.

Q. Are there other reasons to support EKPC's pursuit of the CPR Project?

A. Yes. On September 10, 2018, the Kentucky Division of Water issued a draft revised KPDES permit for the Spurlock Station. The draft permit reflects new and revised discharge limitations, including requirements addressing Total Suspended Solids

and pH. The CPR Project is designed to promote EKPC's compliance with these environmental obligations, as more fully discussed in the testimony of Mr. Purvis submitted herewith.

Q. How will the CPR Project be financed?

A. Mr. Stachnik provides a more detailed response to this question in his testimony submitted herewith, but in brief EKPC intends to finance the CPR Project through funds available to it from normal operations or funds available through its unsecured Credit Facility. Once completed, any short-term debt associated with the CPR Project will be refinanced using long-term debt available under EKPC's Trust Indenture.

Q. What benefits to EKPC and its owner-members are expected to result from the CPR Project?

A. EKPC has identified multiple benefits that will accrue to it and its owner-members as a result of pursuing the CPR Project. The CPR Project presents the reasonable, least-cost method for pursuing compliance with environmental regulation of EKPC's CPR Pond and resulting outfalls. It will ensure the continued safe and responsible containment and conveyance of CPR, particularly in light of Spurlock Station's proximity to one of the largest rivers in North America and its location within the 100-year flood plain. Most importantly, the CPR Project will promote EKPC's compliance with the ELG Rule and the Spurlock Station's KPDES Permit, thereby furthering EKPC's efforts to provide reliable, safe, adequate and reasonable service to its owner-members at rates that are fair, just and reasonable.

Q. Why is the CPR Project needed?

A. Put simply, and as described in EKPC's Application, in the testimony of EKPC's other witnesses and in my own testimony herein, the need for the CPR Project is demonstrated by the fact that, without it, EKPC would be unable to continue to safely and appropriately operate the Spurlock Station in a manner consistent and compliant with federal and state environmental mandates.

Q. Will the project result in wasteful duplication of facilities?

A. No, and in fact, the CPR Project prevents the wasteful duplication of facilities because it allows EKPC to utilize its existing generation resources to their fullest potential. EKPC has conducted considerable due diligence to determine that targeted investment should be made in the Spurlock Station to ensure its continued use as a reliable and cost-effective generation resource. The proposed CPR Project presents the reasonable, least-cost option for mitigation of risk associated with environmental non-compliance resulting from the Spurlock Station's CPR Pond and related facilities and helps ensure the Station's units may continue to be valuable resources within the PJM marketplace. Moreover, the CPR Project helps ensure that EKPC's owner-members and their retail members are able to recognize and achieve the full value of the investments they have already made in the Spurlock Station through rates by minimizing the amount of stranded or unavailable assets.

Q. Has EKPC provided its customers with the requisite notice of its filing?

A. Yes, EKPC filed its notice of intent as to the filing of this Application on August 14, 2018, and has provided the requisite notice of its filing to its owner-members

as well. Copies of these notices are attached to the Application as Exhibits D and E, respectively.

Q. Please summarize your testimony.

A. The CPR Project is a prudent solution to EKPC's need to comply with applicable environmental regulation impacting its Spurlock Station. Based on this fact and others, EKPC seeks a CPCN to pursue the CPR Project. Additionally, EKPC seeks authorization to amend its Environmental Compliance Plan to include not only the CPR Project, but also the other projects that were/are necessary to comply with state and federal rules and regulations impacting coal-fired generation facilities. Finally, pursuant to KRS 278.183, EKPC requests approval to recover the costs of the relevant projects through its environmental surcharge mechanism.

Q. Does this conclude your testimony?

A. Yes.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

VERIFICATION OF DON MOSIER, P.E.

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Don Mosier, P.E., Executive Vice President and Chief Operating Officer at East Kentucky Power Cooperative, Inc., being duly sworn, states that he has read the foregoing prepared direct testimony and that he would respond in the same manner to the questions if so asked upon taking the stand, and that the matters and things set forth therein are true and correct to the best of his knowledge, information and belief.

Don Mosier, P.E.

The foregoing Verification was signed, acknowledged and sworn to before me this 3rd day of October, 2018 by Don Mosier.

NOTARY PUBLIC

Commission No. 590567

My Commission Expires: 11/30/2021

EXHIBIT

G

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	CASE NO. 2018-00270

DIRECT TESTIMONY OF THOMAS STACHNIK ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: October 3, 2018

Q. Please state your name, position, and business address.

A. My name is Thomas Stachnik and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4775 Lexington Road, Winchester, Kentucky 40391. I am Vice President of Finance and Treasurer at EKPC.

Q. Please briefly describe your education and professional experience.

A. I have a Bachelor's degree in Chemical Engineering from the University of Illinois and an MBA from the University of Chicago; additionally, I hold the Chartered Financial Analyst and Certified Treasury Professional designations. Prior to establishing a career in finance, I enjoyed work as a chemical engineer for approximately ten (10) years. I worked in the Treasury Department of Brown-Forman Corporation for thirteen (13) years before joining EKPC in August 2015. In 2017, I was promoted from Treasurer and Director of Finance to Vice President of Finance and Treasurer at EKPC.

Q. Please briefly describe your duties at EKPC.

A. I am responsible for the management and direction of the treasury area including borrowing, investing, and cash management. I also oversee the financial forecasting, budgeting, and risk management functions. I report directly to EKPC's Executive Vice President and Chief Financial Officer, Mr. Mike McNalley.

Q. What is the purpose of your testimony in this proceeding?

A. My testimony is intended first to generally describe the financial condition of EKPC and its strategic objectives with respect thereto. I will discuss EKPC's plan to finance its proposal to modify and expand the Coal Pile Runoff Pond ("CPR

Pond") at its Hugh L. Spurlock Station in Mason County, Kentucky ("Spurlock Station") (as further described herein, the "CPR Project"), and the other projects EKPC seeks to add to its Environmental Compliance Plan. I will further describe the calculation of EKPC's weighted average cost of debt associated with debt issuances relating to its Compliance Plan as of November 30, 2017; I have provided that calculation to Mr. Isaac Scott to utilize in his calculations and testimony regarding the impact of the proposed CPR Project and other projects upon EKPC's rates. Finally, I will discuss EKPC's requested authorized return.

Q. Are you sponsoring any exhibits?

A. No.

Q. Please generally describe EKPC's financial performance during the most recent year.

A. EKPC has enjoyed several years of solid performance and has benefitted from weather patterns, cost control, and advantages from its membership in PJM Interconnection, LLC ("PJM"). For the year ended December 31, 2017, EKPC had sales to Owner-Member Cooperatives ("owner-members") of 12,536,264 MWh resulting in total operating revenue of $862 million. EKPC earned a net margin of $22 million and ended the year with $612 million in Members' Equities. EKPC's equity-to-assets ratio was 16.0%. EKPC's Debt Service Coverage ("DSC") ratio was 1.26 and its Times Interest Earned Ratio ("TIER") was 1.19.

Q. What are some of EKPC's long-term strategic objectives with regard to its financial position?

A. EKPC always seeks to balance three goals: financial strength, financial flexibility and affordability. To ensure financial strength, EKPC seeks to maintain appropriate ratios for DSC and TIER metrics. Likewise, EKPC's equity is managed to ensure adequacy for anticipated major investments while also allowing for the eventual return of excess equity to owner-members through the payment of capital credits. EKPC maintains its financial flexibility by tracking liquidity measures that are in line with "A" credit-rated generation and transmission cooperatives around the country. Finally, EKPC seeks to be affordable to its owner-members by striving to keep its costs as low as possible while continuing to safely provide reliable service.

Q. What resources does EKPC have available to it to fund large capital projects?

A. EKPC has a number of options available to it in order to pay the costs of construction of capital projects. While working capital funds are generally available to fund all or some of such costs, in most cases that involve a significant capital investment EKPC will use the proceeds of its existing Credit Facility to finance the construction of a project. EKPC's Credit Facility is essentially a line of credit in the amount of $600 million that was approved by the Commission in Case No. 2013-00306 and reauthorized in Case No. 2016-00116.[1] Most recently,

[1] *See In the Matter of East Kentucky Power Cooperative, Inc. Application for Approval of the Issuance of Up to $200,000,000 of Secured Private Placement Debt, for the Amendment and Extension of an Unsecured Revolving Credit Agreement in an Amount Up to $500,000,000, and for the Use of Interest-Rate Management Instruments*, Order, Case No. 2013-00306, (Ky. P.S.C. Sep. 27, 2013); *In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval of the Amendment and Extension or Refinancing of an Unsecured Revolving Credit Agreement in an Amount Up to $800,000,000 of Which Up to $100,000,000 May Be in the Form of an Unsecured Renewable Term Loan and $200,000,000 of Which Will Be in the Form of a Future Increase Option*, Order, Case No. 2016-00116, (Ky. P.S.C. Apr. 11, 2016).

the Commission approved EKPC's application to issue up to $300 million of secured private placement debt in anticipation of necessary future capital investments.[2]

While utilizing EKPC's Credit Facility is generally a financially-sound financing approach in the short term, EKPC and its owner-members are best served if large portions of the Credit Facility do not remain tied up in construction debt. Accordingly, EKPC routinely rolls short-term indebtedness into long-term indebtedness in accordance with the terms of its Trust Indenture. EKPC's Trust Indenture was approved by the Commission in Case No. 2012-00249.[3]

Q. How much of the $600 million authorized under the Credit Facility is currently available to EKPC?

A. As of September 25, 2018, $350 million is available under EKPC's credit facility.

Q. Please explain how the Credit Facility works.

A. The Credit Facility allows EKPC to borrow, with as little as one day notice, up to the available amount. Our existing rate under the credit facility is LIBOR + 95 bps, currently about 3.0%. Amounts extended to EKPC under the credit facility are fully pre-payable and may be replaced by other debt or paid with operational cash at EKPC's option.

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[2] *See In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of the Authority to Issue up to $300,000,000 of Secured Private Placement Debt and/or Secured Tax Exempt Bonds and For the Use of Interest Rate Management Instruments*, Order, Case No. 2018-00115 (Ky. P.S.C. July 24, 2018).

[3] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval to Obtain a Trust Indenture*, Order, Case No. 2012-00249 (Ky. P.S.C. Aug. 9, 2012).

Q. Please describe the process for converting short-term debt to long-term debt through the Trust Indenture.

A. EKPC's two (2) main avenues for borrowing under the Trust Indenture are the Private Placement market and the Rural Utilities Service ("RUS")/Federal Financing Bank. As I stated, proceeds from the issuance of long-term debt can be used to pay down the Credit Facility when advantageous to EKPC.

Q. Does the Trust Indenture have a limit as to the amount that EKPC can borrow?

A. Yes. EKPC must show sufficient bondable additions or principal repayments for the Trustee to authorize new debt under the Indenture. The current amount that EKPC may borrow after certifying available bondable additions is at least $700 million, so these requirements will not constrain EKPC from borrowing what is necessary to fund this project.

Q. What are the advantages of having the Credit Facility and Trust Indenture available to EKPC?

A. The credit facility allows EKPC to borrow to fund short-term needs or to temporarily finance long-term projects until long-term financing can be put into place. Notably, for RUS borrowing in particular, the Credit Facility is utilized because EKPC cannot generally receive RUS funds until the subject asset is on EKPC's books. The advantage of the Trust Indenture is that it allows EKPC to borrow on a secured basis from different lenders without having to seek permission from other lenders; prior to the Indenture, any non-RUS debt would require a Lien Accommodation, and thus the Indenture effectively opened up the Private

Placement market to EKPC. The Private Placement market, while incrementally more expensive than RUS, can be accessed in a matter of weeks rather than years (which can help to opportunistically lock-in fixed rates) and will sometimes finance items (such as regulatory assets) for which RUS funding is not available.

Q. Are you familiar with the CPR Project and its estimated costs?

A. Yes, as I have been involved in meetings and discussions relating to the financing of the CPR Project. According to estimates prepared by EKPC's consultant, Burns & McDonnell Engineering Co., Inc. ("Burns & McDonnell"), the total anticipated cost of the CPR Project is $11.21 million and will be incurred almost entirely during the 2019-2020 timeframe. Additionally, Burns & McDonnell estimates that the annual cost of operation of the Spurlock Station will increase approximately $74,000 after the proposed facilities are placed into service. EKPC has recognized these figures in its budgeting and financial planning processes.

Q. How does EKPC intend to finance the construction of the proposed CPR Project?

A. EKPC intends to finance the CPR Project through funds available to it from normal operations or funds available through its unsecured Credit Facility. Once completed, any short-term debt associated with the CPR Project will be refinanced using long-term debt available under EKPC's Trust Indenture.

Q. Will the Credit Facility and Trust Indenture be sufficient to accommodate the borrowing needs of EKPC during the development, planning and construction of the CPR Project?

A. Yes.

Q. Will the CPR Project have any adverse impact upon EKPC's credit ratings?

A. I would not expect it to have any impact on EKPC's ratings.

Q. Do you have any concern as to whether EKPC will see its financial position deteriorate as a result of the CPR Project?

A. No. Of course, an important financial consideration with respect to the CPR Project is its eligibility for cost recovery under KRS 278.183.

Q. Please describe EKPC's Environmental Compliance Plan.

A. Pursuant to KRS 278.183, EKPC implemented its first Environmental Compliance Plan following Commission approval in 2005.[4] EKPC has subsequently amended its Compliance Plan on five (5) occasions[5] to include new or amended projects undertaken in connection with its coal-fired generation assets. EKPC is "entitled to the current recovery of its costs" with respect to projects approved for inclusion in its Environmental Compliance Plan, as well as a reasonable return.

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[4] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval of an Environmental Compliance Plan and Authority to Implement an Environmental Surcharge*, Order, Case No. 2004-00321 (Ky. P.S.C., Mar. 17, 2005).

[5] *See In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2008-00115, (Ky. P.S.C., Sep. 29, 2008); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2010-00083, (Ky. P.S.C., Sep. 24, 2010); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for Alteration of Certain Equipment at the Cooper Station and Approval of a Compliance Plan Amendment for Environmental Surcharge Cost Recovery*, Order, Case No. 2013-00259, (Ky. P.S.C., Feb. 20, 2014); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for construction of an Ash Landfill at J.K. Smith Station, the Removal of Impounded Ash from William C. Dale Station for Transport to J.K. Smith and Approval of a Compliance Plan Amendment for Environmental Surcharge Recovery*, Order, Case No. 2014-00252 (Ky. P.S.C., Mar. 6, 2015); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs pursuant to its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief*, Order, Case No. 2017-00376 (Ky. P.S.C., May 18, 2018).

Q. Please generally explain the Compliance Plan amendments EKPC proposes as part of this proceeding.

A. EKPC seeks to amend its existing Environmental Compliance Plan to reflect eleven (11) additional projects (ten (10) new projects and one (1) amended project), including the CPR Project. These projects include completed, ongoing, and proposed undertakings pursued for the purpose of environmental compliance at EKPC's coal-fired generation facilities. EKPC seeks to recover the costs of these projects through its environmental surcharge.

Q. Are not several of the projects EKPC seeks to add to its Environmental Compliance Plan long-complete and "paid for"?

A. While several of the projects included in the amended Environmental Compliance Plan were completed in previous years and have been in service for some time, these are not necessarily "paid for". As noted elsewhere in my testimony, EKPC would have initially financed these projects utilizing the unsecured credit facility and then later utilizing long-term debt. It should also be remembered that all of these projects have been added since the end of the test year in EKPC's last base rate case. Consequently, there has been no recovery of either the investment through depreciation expense or the on-going operation and maintenance expenses through base rates or the environmental surcharge. These expenses have placed downward pressure on the margins EKPC earned in the years since these investments went into service.

Q. Other than with respect to the CPR Project, how did EKPC finance (or how does EKPC intend to finance) the projects it seeks to add to its Environmental Compliance Plan?

A. As stated previously, EKPC intends to finance the CPR Project through funds available to it from normal operations or funds available through its unsecured Credit Facility. The other projects were, or will be, similarly financed through EKPC's normal budgeting process and draw upon EKPC's unsecured credit facility. Ultimately these projects will have been financed through long-term debt instruments issued pursuant to EKPC's Trust Indenture.

Q. What is the total cost of all the projects EKPC seeks to add to its Environmental Compliance Plan?

A. The total anticipated cost of the projects EKPC seeks to include in its Environmental Compliance Plan is $64.0 million. EKPC estimates that the incremental annual operations and maintenance expense associated with these is approximately $3.3 million.

Q. Does EKPC also seek to earn a return?

A. Yes. One of the components of the environmental surcharge is the return that is allowed on the utility's investment. For investor owned utilities, this return is based upon their overall capital structure. For cooperatives such as EKPC, the original (and still used) methodology for determining an appropriate return is the product of the weighted average debt cost of the debt issuances directly related to the projects in EKPC's Compliance Plan, multiplied by a TIER factor.

Q. What is EKPC proposing to use for its average cost of debt and TIER in this case?

A. EKPC has updated its weighted average debt cost at each six-month review of its Compliance Plan and proposes an average cost of debt factor equal to 4.015% be used in this case as this figure is based upon EKPC's average cost of debt as of November 30, 2017. With respect to TIER, EKPC proposes to keep the 1.50 TIER that is currently in place and that was most-recently approved in Case No. 2018-00075.[6] Utilizing these figures results in an overall return of 6.023%. Although EKPC's preferred metric for measuring financial strength is the DSC ratio, TIER closely approximates the DSC calculation and is an acceptable method for calculating the return.

Q. What is the difference between TIER and DSC?

A. TIER measures the amount of income that is available to cover interest expenses; DSC measures the amount of cash flow that is available to cover debt service (principal and interest payments). While they are both similar measures, the rating agencies tend to concentrate on DSC.

Q. Why do you believe that a 1.50 TIER is still appropriate?

A. Achieving a 1.50 TIER results in nearly the same result as achieving our target DSC. This has been shown in EKPC's Environmental Surcharge cases and is described more fully in the testimony provided in those cases by Mr. Isaac Scott.

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[6] *In the Matter of An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of East Kentucky Power Cooperative, Inc. for the Six-Month Billing Period Ending December 31, 2017, and the Pass-Through Mechanism of Its Sixteen Member Distribution Cooperatives*, Order, Case No. 2018-00075, (Ky. P.S.C., July 23, 2018).

Q. Do you believe that EKPC's plan to finance the development and construction of the CPR Project is reasonable and will result in the lowest possible cost to EKPC's owner-members?

A. Yes.

Q. Do you believe EKPC has proceeded reasonably and prudently with respect to the financing of the other projects it seeks to add to its Environmental Compliance Plan?

A. Yes.

Q. Does this conclude your testimony?

A. Yes.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

VERIFICATION OF THOMAS STACHNIK

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Thomas Stachnik, Vice President of Finance and Treasurer at East Kentucky Power Cooperative, Inc., being duly sworn, states that he has read the foregoing prepared direct testimony and that he would respond in the same manner to the questions if so asked upon taking the stand, and that the matters and things set forth therein are true and correct to the best of his knowledge, information and belief.

Thomas Stachnik

The foregoing Verification was signed, acknowledged and sworn to before me this 3rd day of October, 2018 by Thomas Stachnik.

NOTARY PUBLIC

Commission No. 590567

My Commission Expires: 11/30/2021

EXHIBIT

H

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	CASE NO. 2018-00270

DIRECT TESTIMONY OF JERRY B. PURVIS
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: October 3, 2018

Q. Please state your name, business address, and occupation.

A. My name is Jerry B. Purvis and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4775 Lexington Road, Winchester, Kentucky 40391. I am the Vice President of Environmental Affairs for EKPC.

Q. Please state your education and professional experience.

A. I received a B.S. degree in Chemistry from Morehead State University and a B.S. degree in Chemical Engineering from the University of Kentucky. I also received a Master of Business Administration from Morehead State University. I have been employed by EKPC for 23 years serving in various positions. In 2011, I became the Director of Environmental Affairs at EKPC. I was promoted in 2017 to the position of Vice President of Environmental Affairs.

Q. Please provide a brief description of your duties at EKPC.

A. I am responsible for compliance with environmental laws, the preparation of applications for all environmental permits required for the construction and operation of generation stations, transmission facilities and landfills, and the preparation of supplemental environmental impact statements and documentation necessary to demonstrate compliance with the National Environmental Policy Act. I have also been heavily involved in the development of compliance plans for EKPC. I report directly to the Chief Operating Officer/Executive Vice President, Mr. Don Mosier.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is first to describe the environmental obligations EKPC must satisfy, particularly with respect to its coal-fired generation. I will

discuss in detail the impetus of EKPC's proposal to modify and expand the Coal Pile Runoff Pond ("CPR Pond") at its Hugh L. Spurlock Station in Mason County, Kentucky ("Spurlock Station") (as further described herein, the "CPR Project"), and the other projects EKPC seeks to add to its Environmental Compliance Plan. I will also explain the purpose, scope and requirements of the Effluent Limitation Guidelines and Standards for the Steam Electric Power Generating Point Source Category ("ELG Rule"), the Disposal of Coal Combustion Residuals from Electric Utilities Rule ("CCR Rule"), and other applicable environmental regulations and requirements (including those associated with the Kentucky Pollutant Discharge Elimination System ("KPDES")), all of which apply to coal combustion wastes and by-products from EKPC facilities utilized for production of energy from coal.

Q. Are you sponsoring any exhibits?

A. Yes. Attached hereto as Attachment JP-1 is a matrix reflecting the permits and approvals relevant to the CPR Project. Attached hereto as Attachment JP-2 is a draft revised KPDES permit issued by the Kentucky Enegy and Environmental Cabinet's Divison of Water ("Division of Water") with respect to the Spurlock Station. The draft permit, issued September 10, 2018, incorporates restrictions and obligations contained in the Environmental Protection Agency's ELG Rule and the Clean Water Act Section 316(b).

Q. Please briefly describe EKPC's generation assets.

A. EKPC owns and operates a total of approximately 2,965 MW of net summer generating capability and 3,267 MW of net winter generating capability. In addition to multiple landfill gas-to-energy facilities and a Community Solar facility,

EKPC's generation portfolio includes two (2) natural gas-fired power plants (the J. K. Smith Station in Clark County, Kentucky, and the Bluegrass Station in Oldham County, Kentucky) and two (2) coal-fired power plants (the Spurlock Station in Mason County, Kentucky, and the John S. Cooper Station in Pulaski County, Kentucky (the "Cooper Station"). All of these facilities are subject to state and federal environmental regulation; however, the Spurlock and Cooper Stations are most heavily burdened and are the focus of my testimony and this proceeding.

Q. Please generally describe the environmental mandates and obligations with which EKPC and other electric utilities must comply.

A. Electric utilities are among the most heavily environmentally regulated companies in the United States. Authorities at the federal and state levels oversee nearly every aspect of EKPC's operations, with particular emphasis on the monitoring and abatement of the wastes and by-products that accompany coal-fired electric generation; for instance, EKPC currently complies with nearly a dozen federal rules that have been promulgated under the authority of the Clean Air Act ("CAA") and Clean Water Act ("CWA") alone. EKPC has devoted and continues to devote substantial resources to ensure its continued compliance with environmental requirements, especially at its Cooper and Spurlock Stations.

Q. Please generally describe EKPC's obligations under the CAA.

A. EKPC is subject to a plethora of rules under the CAA, including: New Source Performance Standards ("NSPS"); New Source Review ("NSR"); Title IV of the CAA, including rules governing pollutants that contribute to acid deposition ("Acid Rain Program"); Title V operating permit requirements ("Title V"); Mercury Air

Toxics Standards ("MATS"); summer ozone trading program requirements promulgated after the United States Environmental Protection Agency ("EPA") acted upon Section 126 Petitions and the Ozone State Implementation Plan Call ("Summer Ozone Program"); National Ambient Air Quality Standards ("NAAQS") for Sulfur Dioxide ("SO_2"), Nitrogen Dioxide ("NO_2"), Carbon Monoxide ("CO"), Ozone, Particulate Matter ("PM"), Particulate Matter of 2.5 microns or less ("PM 2.5") and Lead; the Cross State Air Pollution Rule ("CSAPR"); and the Regional Haze Rule.

Q. What is the status of the federal Clean Power Plan?

A. EKPC was preparing to comply with the Clean Power Plan ("CPP") as proposed by the Obama Administration; however, due to actions by current federal authorities, EKPC has suspended its CPP compliance planning and awaits further guidance from federal and state environmental regulators as to whether the CPP will be pursued further. EKPC is examining both the proposed Affordable Clean Energy Rule released for publication on August 21, 2018, and the latest federal court guidance on the CCR Rule. EKPC is also discussing these developments with the Kentucky Energy and Environmental Cabinet. It is anticipated that the EPA will seek further judicial review and engage in addition rulemaking.

Q. What obligations does EKPC have under the CWA?

A. EKPC's obligations under the CWA are numerous and varied, particularly in light of the current ELG Rule promulgated thereunder. The ELG Rule was published in its proposed form by the Environmental Protection Agency ("EPA") on June 7, 2013. The ELG Rule established revised technology-based effluent limitations and

standards for various wastewater streams generated by coal-fired steam electric generating stations. As such, the ELG Rule establishes the best available technology economically achievable requirements for existing facilities. After taking considerable public comment, the ELG Rule became effective on January 4, 2016. The ELG Rule requires that all permits issued in the first permitting cycle following the third anniversary of the effective date of the ELG Rule should include a compliance schedule established by the Division of Water. However, in a letter dated April 12, 2017, the EPA announced it was reconsidering portions of the ELG Rule that applied to bottom ash transport water and wet flue gas desulfurization ("FGD") wastewater. On September 18, 2017, the EPA published a new Final Postponement Rule that postponed the earliest compliance deadline for these two ELG waste streams but otherwise maintained the ELG standards during the reconsideration. Although EPA is reconsidering the rule for bottom ash transport water and FGD wastewater, as it stands today, the new requirements will include bottom ash transport water and FGD wastewater "as soon as possible beginning November 1, 2020, but no later than December 31, 2023."

Q. Did EKPC take any actions to comply with the ELG Rule prior to the issuance of the Final Postponement Rule?

A. Yes. EKPC has been actively engaged in designing a compliance option that would satisfy the ELG Rule's requirements. To illustrate, prior to the EPA announcing its partial reconsideration of the ELG Rule, EKPC elected to seek the alternative technology allowed under the rule for evaporation, which allowed EKPC to comply with the ELG Rule no later than December 31, 2023. While EKPC will monitor

any changes in the ELG standards for bottom ash transport water and FGD wastewater due to the EPA's reconsideration of those standards, the underlying mandates have not yet actually changed. EKPC must, under the September 18, 2017 Final Postponement Rule still meet the current ELG standards by these two waste-streams by no later than December 31, 2023. The EPA has stated that it hopes to complete its reconsideration of the standards by the Fall of 2020, but without an extension of the compliance deadlines right away, that reconsideration will likely come too late, practically speaking.

Q. Are the standards set forth in the ELG Rule reflected in EKPC's environmental permitting?

A. Yes. In Kentucky, the EPA has delegated authority under the National Pollution Discharge Elimination System ("NPDES") program to the Division of Water, and the standards set forth in the ELG Rule and CWA 31(b) (and subsequent, new water quality-based standards) are incorporated into the KPDES requirements imposed upon EKPC by the Division of Water. In addition, after the issuance of the new KPDES water permits, the Division of Water becomes the lead enforcement agency for those standards on behalf of the EPA.

Q. Is EKPC's Spurlock Station permitted under KPDES?

A. Yes. EKPC's KPDES permit with respect to the Spurlock Station is in the process of being renewed and, upon renewal, is expected to reflect revised and new limitations for discharges of various effluents designated by KPDES Outfalls. Most notable among the new limitations to be imposed is that concerning Total Suspended Solids ("TSS"), which is based on the ELG Rule's requirements for coal

pile runoff (CPR); as further discussed herein, concerns with continued compliance with the CWA and related rules and regulations require EKPC's proposal to undertake the CPR Project. Moreover, the CWA, ELG Rule, and related Division of Water requirements have necessitated other compliance projects undertaken by EKPC at its Cooper and Spurlock Stations, as described below.

Q. In addition to the ELG Rule, what other EPA promulgations significantly impact EKPC's coal-fired generation?

A. As the Commission is aware, much of EKPC's environmental compliance activity in recent years has been undertaken as a result of the CCR Rule, which governs the classification, collection and disposal of certain by-products of the combustion of coal (fly ash, bottom ash, boiler slag and flue gas desulfurization materials). The CCR Rule was first published in its proposed form by the EPA on June 21, 2010. Initially, the EPA offered alternative methods for classifying CCR materials as either hazardous or non-hazardous, "special" waste under Subtitle C of the Resource Conservation and Recovery Act ("RCRA") or as a solid waste under Subtitle D of the RCRA. Under either proposal, the EPA stated that it supported and endeavored to maintain the beneficial reuse of CCR material. Ultimately, the EPA's final CCR Rule was issued on December 19, 2014 and determined that CCR is a solid waste, classified as non-hazardous. The final CCR Rule is set forth in 80 Fed. Reg. 21301-21501 (April 17, 2015), with the effective date corrected in Fed. Reg. 21302 from October 14, 2015 to become effective on October 19, 2015. The CCR Rule applies to owners and operators of new and existing landfills and new

and existing surface impoundments, including all lateral expansions of such landfills and surface impoundments, where CCR material is disposed.

Q. Does the CCR Rule apply to inactive surface impoundments?

A. Yes. The CCR Rule also has applicability to inactive CCR surface impoundments. However, the CCR Rule does not apply to: CCR landfills that ceased receiving CCR materials prior to the effective date of the CCR Rule; CCR landfills and impoundments at facilities that have ceased producing electricity prior to the effective date of the CCR Rule; CCR materials generated at facilities that are not part of an electric utility or independent power producer, such as manufacturing facilities, universities and hospitals; CCR materials generated primarily from the combustion of fuels other than coal; CCR that is beneficially reused; CCR placement at active or abandoned underground or surface coal mines; or CCR material that is placed at municipal solid waste landfills.

Q. What was the EPA's objective in promulgating the CCR Rule?

A. The principle objectives of the CCR Rule are as follows: (1) to impose structural integrity requirements to reduce the risk of catastrophic failure of CCR landfills and impoundments; (2) protecting groundwater through monitoring and corrective actions, location restrictions and landfill and impoundment liner design criteria; (3) adopting operating criteria for CCR landfills and impoundments; (4) record-keeping, notification and publicly-available internet website posting obligations; (5) obligations for inactive CCR impoundments; (6) administration of state programs to implement the CCR Rule; (7) CCR landfill and impoundment closure obligations; and (8) guidelines for beneficial reuse of CCR materials.

Q. Why is the structural integrity of CCR landfills and impoundments important?

A. The structural integrity of CCR landfills and surface impoundments are important in order to safely protect the public and the environment from spillage of the contained coal combustion by-products. The new CCR Rule changes the standards by which CCR landfills and surface impoundments are designed, located, lined, managed, and rated. New safety and seismic factors standards and more frequent structural inspections are required by the CCR Rule to further minimize structural failures. The goal of the CCR Rule is to close surface impoundments and ash landfills that pose a threat to the public, health and welfare.

Q. What new structural integrity requirements has the EPA imposed?

A. Except for incised units, owner/operators of all CCR surface impoundments are required to comply with technical requirements designed to maintain the structural integrity of the unit. For all CCR surface impoundments, owner/operators must identify units with a permanent ID marker and conduct periodic hazard potential classification assessments. The three classifications are "high hazard," "significant hazard" and "low hazard."

Owner/operators must develop an Emergency Action Plan ("EAP") if a unit is designated as a "high" or "significant" hazard. They must also cover embankment or dike slopes with either vegetation or an alternative form of slope protection. Additional structural integrity requirements apply to CCR surface impoundments that exceed a specified size threshold, either: a height of five feet or more and a storage volume of 20-acre feet or more; or a height of 20 feet or more.

Owner/operators of these units are required to compile a history of construction for existing units or design and retain construction plans for new units. They must also conduct periodic structural stability assessments to identify any structural stability deficiencies and recommend any necessary improvements. Owner/operators must remedy deficiencies as soon as feasible. They must also conduct periodic safety factor assessments to ensure that each unit meets a calculated static factor of safety ("FOS") under end-of construction loading equal to, or exceeding, 1.30 for new units or a calculated static FOS under long-term, maximum storage pool conditions equal to, or exceeding, 1.50. A calculated FOS under the maximum surcharge pool loading condition must equal or exceed 1.40. A calculated seismic FOS must equal or exceed 1.00. The calculated liquefaction FOS must equal or exceed 1.20. Units that fail to meet the requisite FOS, or fail to conduct the FOS assessment, must stop receiving CCR and initiate closure.

All assessments (*i.e.*, Hazard Potential, Structural Stability, FOS) must be conducted and completed every five years. The Key Implementation Dates for existing units to install a permanent marker is within eight months of the CCR Rule's publication. A history of construction must be prepared within 18 months of the CCR Rule's publication. Likewise, the initial hazard potential classification assessment, structural stability assessment, and FOS assessment must be completed within 18 months of the CCR Rule's publication. If applicable, an owner/operator must prepare an EAP within 24 months of the CCR Rule's publication. New units must meet all structural integrity requirements prior to placing CCR materials in the unit.

Q. How does the CCR Rule use monitoring and corrective action activities to protect groundwater?

A. All CCR surface impoundments, landfills and lateral expansions must install a groundwater monitoring system network to conduct groundwater monitoring. This includes inactive surface impoundments at active facilities unless they are closing within the three-year timeframe.[1] CCR units must be in compliance with requirements (up through detection monitoring and determination of background levels) within two years of the effective date of the CCR Rule.

The CCR Rule requires an annual report certifying compliance, including data, to be posted on the facility's website. Groundwater requirements must be met throughout the active life and closure/post-closure period. The System Requirements Performance Standards must consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer that accurately represent background quality and the groundwater passing the waste boundary. There is a minimum of one upgradient and three downgradient wells, however, owner/operators must justify using the minimum number of wells.

Alternatively, owner/operators may choose to install a multi-unit system, certified by a professional engineer, that is equally as capable of detecting monitored constituents at the waste boundary of the CCR unit as the individual groundwater monitoring system. The engineer must specify sampling and analysis procedures and test methods and establish background levels based upon a

[1] The CCR Extension Rule came after the promulgated CCR Rule and required inactive surface impoundments closing within three years to install a groundwater monitoring system.

minimum of eight samples. The engineer must choose a statistical procedure to compare the background to upgradient concentrations. The number of samples for assessment and detection monitoring must be consistent with the statistical procedure chosen. The CCR Rule uses these requirements to monitor and measure the specified parameters and mathematical techniques to determine if a CCR unit may or may not be affecting groundwater.

Q. What location restrictions does the CCR Rule impose on CCR landfills and impoundments?

A. The CCR Rule establishes five location restrictions to ensure units are appropriately sited: 1) placement above the uppermost aquifer; 2) wetlands; 3) fault areas; 4) seismic impact zones; and 5) unstable areas. Units are prohibited from being sited in these areas unless specific demonstrations can be made and certified by a qualified professional engineer.[2]

Q. What liner design criteria are imposed upon CCR landfills and impoundments under the CCR Rule?

A. The CCR Rule requires new CCR units to have either a composite or alternative composite liner. The composite liner must consist of an upper component consisting of a 30-mil geomembrane ("GM") and a lower component of at least two feet of compacted soil with a hydraulic conductivity of no more than $1x10^{-7}$ cm/sec. A GM of high density polyethylene must be at least 60 mil thick. The upper and lower component must be installed in direct and uniform contact with one another. The alternative composite liner must consist of an upper component consisting of

[2] The CCR Rule does not require location restrictions until October 17, 2018.

a 30 mil GM and a lower component that is not a GM with a liquid flow rate of no more than two feet of compacted soil with a hydraulic conductivity of no more than $1x10^{-7}$ cm/sec using Darcy's law.[3] If the lower component is compacted soil, the GM or upper component must be installed in direct and uniform contact.

New CCR landfills must also have a leachate collection and removal system that maintains less than 30-centimeter depth of leachate over the liner. Existing CCR landfills, regardless of liner type, can continue to operate for the remainder of their useful life. Existing CCR surface impoundments can continue to operate but must identify the liner design (composite, alternative composite, or a two-foot layer of compacted soil with hydraulic conductivity no more than $1 x10^{-7}$ cm/sec) no later than 18 months from the date of publication. Existing CCR surface impoundments that do not meet any of these three criteria for liner types or fail to make the designation within the specified timeframe are to be designated as "unlined." Existing "unlined" CCR surface impoundments that, as a result of leakage, exceed a groundwater protection standard must retrofit or close in accordance with requirements of the CCR Rule.

[3] Darcy's Law is a widely-recognized method for determining the simple proportional relationship between the instantaneous discharge rate through a porous medium, fluid viscosity and the decrease in pressure over a known distance at a constant elevation. It is defined as:

$$Q = - \frac{\kappa A (p_b - p_a)}{\mu L}$$

Q. You mentioned the adoption of operating requirements for CCR landfills and impoundments. Can you please elaborate on that subject matter?

A. Yes. The operating requirements fall into four main categories: fugitive dust control; run-on/run-off ("RORO"); hydrologic and hydraulic capacity requirements; and inspections. I will briefly describe each of these categories.

With regard to fugitive dust control, owner/operators of CCR units must adopt measures that will effectively minimize CCR from becoming airborne at the facility by developing and operating in accordance with a fugitive dust plan with adequate dust control measures for each site. Examples of control measures include: conditioning CCR with water or other liquid, locating CCR inside an enclosure or partial enclosure; operating a water spray or fogging system; using wind barriers, compaction, or vegetative covers; paving and sweeping roads; covering trucks transporting CCR; reducing or halting operations during high wind events; or applying a daily cover. In addition, they must log citizen complaints about fugitive dust; prepare an annual CCR fugitive dust report that must include a description of the controls used, any citizen complaints received, and a summary of any corrective actions taken.

With regard to landfill RORO, all landfills must have a control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 24-hour, 25-year storm and collect and control the water volume from, at minimum, a 24-hour, 25- year storm. Owner/operators must prepare an initial RORO control system plan within 18 months of the CCR Rule's publication and

revise these plans at least every five years. A RORO control system plan must document the system's design and construction, including engineering calculations.

The operating requirements relating to hydrologic and hydraulic capacity for surface impoundments state that all surface impoundments must have an inflow design flood control system to manage flow into and from the unit during, and following, the peak discharge of the inflow design flood. The inflow design flood is determined based on the hazard potential rating. Incised units must be designed for a 25-year flood and the owner/operator must prepare initial and periodic (every five years) inflow design flood control plans documenting how the system has been designed and constructed, including appropriate engineering calculations.

Finally, the operating requirements include specific mandates for inspections of surface impoundments and landfills. For instance, all CCR surface impoundments must be inspected weekly by a qualified person for any signs of structural weakness or other conditions that are disrupting, or have the potential to disrupt, the operation or safety of the unit. This would include abnormal discoloration, flow, or discharge of debris or sediment from all outlets of hydraulic structures that pass underneath the base of, or through, the dike of the unit. All CCR surface impoundments must also be inspected monthly by a person qualified to monitor instrumentation. Any CCR surface impoundment exceeding a height of five feet or more and a storage volume of 20-acre feet or more, or having a height of 20 feet or more, must be inspected annually by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the unit is consistent with recognized and generally accepted good engineering practices.

These annual inspections must include a review of all available information and documentation regarding the status and condition of the unit. Visual inspection of the unit and appurtenant structures (including any hydraulic structure underlying the base, or passing through, the dike of the unit) for signs of distress or malfunction is also required. Inspection results must be entered into the operating record. If a deficiency or release is identified during any inspection, the owner/operators must remedy the deficiency or release as soon as feasible. Weekly inspections must begin six months from the date of the CCR Rule's publication. The initial annual inspection must be completed nine months from publication.

All CCR landfills must be inspected weekly by a qualified person for any signs of structural weakness or other conditions that are disrupting or have the potential to disrupt the operation or safety of the unit. All CCR landfills must be inspected annually by a qualified professional engineer. These annual inspections must include:

1) A review of all available information/documentation regarding the status and condition of the unit;
2) Visual inspection of the unit for signs of distress or malfunction of the unit;
3) Inspection results must be entered into the operating record;
4) If a deficiency or release is identified during any inspection, the owner or operator must remedy the deficiency or release as soon as feasible; and
5) Weekly inspections must begin six months from rule publication. The initial annual inspection must be completed nine months from rule publication.

Q. What additional record-keeping, notification and internet posting obligations does a utility have under the CCR Rule?

A. Owner/operators are required to document how the provisions of the CCR Rule are being satisfied by placing information in an operating record and providing notification of these actions to the State Director, which in this case is the Director of the Division of Waste Management. The owner/operator must also establish and maintain a publicly accessible internet site that posts documentation that has in many instances also been entered into the operating record. Most files must be maintained in the operating record and on the internet site for five years. As long as the facility remains active, the following documents must be maintained: 1) an Emergency Action Plan (only required for "high hazard" and "significant hazard" ash impoundments); 2) a Fugitive Dust Control Plan; and 3) a Closure Plan. The State Director may request any demonstration or documentation required by the CCR Rule if such information is not available via the facility's publicly accessible internet site.

Q. What additional obligations are imposed for inactive CCR landfills and impoundments under the CCR Rule?

A. The CCR Rule also applies to inactive CCR surface impoundments that contain both CCR and liquid located at active facilities. If a unit closes within three years of publication of the CCR Rule,[4] it is excluded from further regulation. Inactive CCR landfills are not subject to the CCR Rule.

[4] The CCR Extension Rule came after the promulgated CCR Rule and required inactive surface impoundments closing within three years to install a groundwater monitoring system.

Q. Can you describe the CCR landfill and impoundment closure obligations that arise from the CCR Rule?

A. Owner/operators must prepare closure and post-closure care plans. Closure of a CCR unit must be completed either by leaving the CCR material in place and installing a final cover system or by removing the CCR material and rehabilitating the unit (clean closure). The CCR Rule establishes timeframes to initiate and complete closure activities and authorizes an owner/operator to obtain extensions of time due to circumstances beyond the facility's control. Thus, CCR landfills must complete closure within six months, with the possibility of one two-year extension. CCR surface impoundments must complete closure within five years, with the possibility of one two-year extension for units smaller than 40 acres and five two-year extensions for units greater than 40 acres. The CCR Rule also establishes alternative closure procedures in situations where an owner/operator has no alternative disposal capacity or is permanently closing the coal-fired boiler in the foreseeable future. Extensions are not available for units that fail to demonstrate or meet FOS requirements.

Q. What guidelines for beneficial reuse of CCR materials are included in the CCR Rule?

A. The CCR Rule does not regulate CCR that is beneficially used. The CCR Rule provides a comprehensive description of beneficial reuse to distinguish between beneficial reuse and disposal. Any beneficial reuse projects started six months after publication of the CCR Rule need to determine if they comply with the criteria

contained in the definition of beneficial reuse of CCR. For instance, the CCR Rule clarifies that a use of CCR material that does not satisfy the regulation is disposal.

There are two types of beneficial reuse. The first category is encapsulated beneficial reuses which bind the CCR material into a solid matrix that minimizes mobilization to the surrounding environment. Examples include filler or lightweight aggregate in concrete, a replacement for, or a raw material used in, the production of cementitious components in concrete or bricks. The second category is unencapsulated beneficial reuses, which does not bind the CCR material into a solid matrix. Examples of unencapsulated beneficial reuses include flowable fill, structural fill and soil modification/stabilization.

To qualify as beneficial reuse, the CCR material must: 1) provide a functional benefit; 2) substitute for the use of a virgin material, thereby conserving natural resources that would otherwise need to be attained through practices such as extraction; 3) meet relevant product specifications, regulatory standards, or design standards when available, and when such standards are not available, the CCR material must not be used in excess quantities; and 4) be comparable to or lower than environmental releases to ground water, surface water, soil, and air from analogous products made without CCR materials, or below relevant regulatory and health-based benchmarks for human and ecological receptors, if the CCR material is used in an unencapsulated form involving placement on the land of 12,400 tons or more in non-roadway applications.

Q. You also mentioned that there are portions of the CCR Rule that describe the administration of state programs to implement the CCR Rule. Can you please describe those portions of the CCR Rule in more detail?

A. Kentucky adopted and promulgated the federal CCR Rule under 401 KAR 46. The state regulations are developing a mechanism by which new facilities can be permitted and existing special waste landfills can be transitioned to federal CCR program. In addition, Kentucky's regulations implement and adopt the federal CCR regulations by reference and will provide a permit program, likely including financial assurances and transitional documentation. Once guidance for permitting is complete at the federal level, Kentucky will enhance and revise its existing permit program under the standards of 401 KAR 46.

Notably, Kentucky's CCR program has been challenged in the Franklin County District Court by a third party and, as a result, Kentucky authorities are working to build a quasi- 401 KAR 45 program with public notice and comment under the federal CCR standards promulgated within 401 KAR 46.110. The Kentucky Energy and Environmental Cabinet is in the process of developing the new set of CCR permit program regulations; upon information and belief, the earliest scheduled set of regulations could be released in March 2019.

Q. Please briefly summarize EKPC's efforts to comply with the CCR Rule, as well as the ELG Rule, KPDES, and other environmental requirements, with respect to its Spurlock and Cooper Stations.

EKPC has invested significant resources in its Spurlock and Cooper Stations to ensure continued compliance with environmental requirements. These

investments, both in the generation assets and the plant infrastructure necessary to support those assets, are specifically targeted to comply with regulations and rules imposed by various governmental authorities.

With respect to the generation assets themselves, Spurlock Station Unit #1 and Unit #2 are equipped with low NOx burners, selective catalytic reduction ("SCR") technology, a cold-side (or, in the case of Spurlock Station Unit #2, hot-side) electrostatic precipitator ("ESP"), a wet flue gas desulfurization ("FGD") scrubber, and a wet ESP. The Spurlock Station's other two (2) units employ Circulating Fluidized Bed ("CFB") combustion technology and are further equipped with selective non-catalytic reduction technology, dry FGD scrubbers and baghouses. EKPC's Cooper Station has a dry ash handling system. The Cooper Station's two (2) units share a common dry CFB FGD system including a pulse jet fabric filter, and additionally, Unit 2 has a SCR system for NOx. As a result of the Cooper Station's design, it does not have to comply with ELG.

As a prudent utility, EKPC has made many other investments and undertaken numerous other measures to comply with applicable environmental requirements governing the collection, storage, and disposal of wastes and by-products from the production of energy from coal. These have included projects related to waste water treatment, fly ash storage, site drainage, ash pond and landfill construction and maintenance, and other plant systems. Each of these projects has been designed to best position EKPC's coal-fired generation assets for continued compliance and economic operation in light of significant environmental regulation.

Q. Has EKPC sought and obtained the Commission's approval to undertake certain of its compliance measures at the Cooper Station or Spurlock Station?

A. Yes. On several past occasions, EKPC has sought the Commission's approval to pursue environmental compliance projects necessitating construction at the Cooper and Spurlock Stations. For example, in 2009 EKPC was granted a Certificate of Public Convenience and Necessity ("CPCN") to retrofit Cooper Station Unit #1 to include its existing Air Quality Control System ("AQCS"),[5] and in 2014 EKPC was granted a CPCN to re-route Cooper Station Unit #2's duct work in order to utilize the AQCS.[6] Most recently, EKPC was granted a CPCN to proceed with extensive modifications to the Spurlock Station's coal ash handling and storage systems (among other items) in order to comply primarily with the CCR Rule and the ELG Rule.[7] These are some of the more significant projects that comprise EKPC's continuum of compliance efforts; many others pursued by EKPC, though also necessary to satisfy environmental requirements imposed upon coal-fired generation, have been relatively minor in nature, undertaken in the usual course of EKPC's business, and not the subject of earlier Commission proceedings.

Q. Please describe EKPC's Environmental Compliance Plan.

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[5] Case No. 2008-00472, *Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for the Construction of an Air Quality Control System at Cooper Power Station* (Ky. P.S.C. May 1, 2009).

[6] Case No. 2013-00259, *Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for Alteration of Certain Equipment at the Cooper Station and Approval of a Compliance Plan Amendment for Environmental Surcharge Cost Recovery* (Ky. P.S.C. Feb. 20, 2014).

[7] Case No. 2017-00376, *Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs pursuant to its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief* (Ky. P.S.C. May 18, 2018).

A. Pursuant to KRS 278.183, EKPC implemented its first Environmental Compliance Plan following Commission approval in 2005.[8] EKPC has subsequently amended its Compliance Plan on five (5) occasions[9] to include new or amended projects undertaken in connection with its coal-fired generation assets. All of the projects approved for inclusion in EKPC's Compliance Plan have been reasonable and cost-effective for compliance with "those federal, state, or local environmental requirements which apply to coal combustion wastes and by-products from facilities utilized for production of energy from coal," as required by statute.

Q. Please generally explain the Compliance Plan amendments EKPC proposes as part of this proceeding.

A. EKPC seeks to amend its existing Environmental Compliance Plan to reflect eleven (11) additional projects (ten (10) new projects and one (1) amended project). These projects include completed, ongoing, and proposed undertakings pursued for the purpose of environmental compliance at the Spurlock Station or Cooper Station.

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[8] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval of an Environmental Compliance Plan and Authority to Implement an Environmental Surcharge*, Order, Case No. 2004-00321 (Ky. P.S.C., Mar. 17, 2005).

[9] *See In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2008-00115, (Ky. P.S.C., Sep. 29, 2008); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2010-00083, (Ky. P.S.C., Sep. 24, 2010); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for Alteration of Certain Equipment at the Cooper Station and Approval of a Compliance Plan Amendment for Environmental Surcharge Cost Recovery*, Order, Case No. 2013-00259, (Ky. P.S.C., Feb. 20, 2014); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for construction of an Ash Landfill at J.K. Smith Station, the Removal of Impounded Ash from William C. Dale Station for Transport to J.K. Smith and Approval of a Compliance Plan Amendment for Environmental Surcharge Recovery*, Order, Case No. 2014-00252 (Ky. P.S.C., Mar. 6, 2015); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs pursuant to its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief* , Order, Case No. 2017-00376 (Ky. P.S.C., May 18, 2018).

Consistent with historical practice, EKPC has assigned a numeric identifier (Project Nos. 17 through 26) to each project newly added and references the amended project by its original identifier (Amended Project No. 12).

Q. What regulated coal combustion wastes or by-products were/are the relevant projects designed to address?

A. *De minimis* amounts of coal combustion wastes, special wastes as defined by 401 KAR 45 and 46, controlling coal related sedimentation as a result of precipitation that becomes stormwater run-off is what is relevant for the project to address.

Q. Please briefly explain the proposed Compliance Plan Project No. 26, the CPR Project.

A. The CPR Project, the technical specifications for which are more fully described in the testimony of Mr. Craig Johnson and Mr. Sam Yoder submitted herewith, includes modification of the Spurlock Station's existing CPR Pond and infrastructure to better capture and retain coal pile runoff (essentially, stormwater that falls atop and through the coal pile and plant contributing areas). The Spurlock Station currently utilizes a 3.3-acre lined CPR Pond, a principal spillway that conveys the CPR Pond water to the Spurlock Station's ash pond, and an emergency spillway designed to discharge to a receiving stream of the Ohio River, specifically through a designated KPDES Outfall (Outfall 005). The limited capacity of the existing CPR Pond, which the CPR Project is intended to address, results in occasional overflows of the pond through the emergency spillway, which in turn results in discharges through Outfall 005.

Q. Are the contents of discharges from KPDES Outfalls monitored and required to be within certain legal limits?

A. In general terms, the KPDES requires facilities to monitor industrial activity, report in units of measure, monthly averages, daily maximums, and concentrations for effluent characteristics as required by EPA Steam Electric Effluent Limitation Guidelines and the Kentucky Water Quality based standards.

The limitations imposed upon Outfall 005 at the Spurlock Station are reflected in the relevant KPDES permit; on September 10, 2018, the Kentucky Division of water issued a draft revised version of the Spurlock Station's KPDES Permit (see Attachment JP-2). Consistent with 40 C.F.R. 423, EKPC expects its CPR facilities will need to accept and control 4 to 5 inches of rainfall to meet limitations for Total Suspended Solids of 50 mg/l as a daily maximum, as well as maintain concentrations of pH from a minimum of 6 and a maximum of 9.

Q. Is EKPC at risk of non-compliance with Spurlock Station's KPDES permit as a result of the limited capacity of the existing CPR Pond?

A. Yes. As aforementioned, EKPC's draft KPDES permit with respect to the Spurlock Station is in the process of being renewed and, upon renewal, is expected to reflect revised and new limitations for discharges of various effluents via designated KPDES Outfalls. The draft permit issued by the Division of Water on September 10, 2018, reflects the revised and new discharge limitations; most notable among the new limitations to be imposed are Total Suspended Solids ("TSS"), which is based on 40 CFR 423 (b)(9) and (10), specifically, the Kentucky Water Quality based standards 401 KAR 10 and the ELG Rule's requirementsfor Steam Electric.

Q. How will the proposed CPR Project allow EKPC to comply with its KPDES permit and applicable environmental regulation?

A. Spurlock Station's existing CPR Pond and related facilities can contain the volume of water and CPR of a 2-year, 24-hour storm event; following completion of the CPR Project, the relevant facilities will be capable of containing a 100-year, 24-hour storm event. EKPC's CPR Project is designed based on the Steam Electric Effluent Limitation Guidelines (40 CFR 423.12(b)(10)) and good engineering practices for sedimentation pond design, and the ensure the safe, compliant, and effective operation of the CPR Pond and related facilities. By expanding and improving the capacity and operation of the CPR Pond and related facilities, there will be fewer discharges through KPDES Outfall 005; as a result, EKPC's risk of non-compliance with the Spurlock Station's KPDES Permit is minimized. Moreover, the updated design of the CPR Pond and related infrastructure is intended to expand the time period during which stormwater and CPR is subject to retention and settling, thereby improving the quality and constituencies of the Spurlock Station's internal wastewater stream.

Q. Are there other reasons to support EKPC's pursuit of the CPR Project?

A. Yes. EKPC must comply with the ELG Rule until such time as it is vacated. Under the NPDES rules, Kentucky must demonstrate whether existing effluent sources cause, or contribute to, harm to streams. Industrial activity that includes discharging effluents into receiving streams must meet water quality-based effluent limitations ("WQBELs") under the delegated EPA water program. The final authority on WQBELs under the NPDES / KPDES program is the Division of

Water pursuant to 401 KAR 10:026 – 10:031. The Division of Water reviews the water quality data submitted by EKPC and determines through a reasonable potential analysis ("RPA") if the industrial activity causes, or contributes to, harm to the receiving stream. For Spurlock Station that stream is primarily the Ohio River.

If current or projected water quality data shows the Spurlock Station's discharge will have a reasonable potential to exceed an applicable water quality standard, limits will be imposed on the discharge point. Importantly, these WQBELs are in addition to any ELG limits that have been imposed. Often, however, the same control equipment used to meet ELGs will ensure compliance with WQBELs.

Q. Is the Division of Water's regulation of WQBELs in addition to the regulations that EKPC faces under the ELG Rule?

A. Yes. Under the applicable administrative regulation, 401 KAR 10:031, industrial water dischargers are required to meet the state-based WQBELs. The administrative regulation establishes water quality standards to protect surface waters in regards to human health, ecology and the environment. Sections 2(1)(a), (b), (d) & (e) of 401 KAR 10:031 require facilities to meet the minimum criteria applicable to all surface waters by not degrading receiving streams (aesthetically or otherwise) with objectionable deposits that settle, float as debris, injure or produce physiologically or behavioral responses in humans, animals, fish and other aquatic life, or produce undesirable aquatic life or result in the dominance of nuisance species. Section 4(1)(b) provides that for aquatic life in warm water habitat the pH

shall not be less than 6 and zero tenths (6.) nor more than nine and zero tenths (9.0) and not fluctuate more than one and a tenth (1.1) over the period of twenty-four (24) hours. Sections 4(f) and 4(g) provide that the total dissolved solids or specific conductance shall not be changed to the extent that the indigenous aquatic community is adversely affected; and the KPDES permit sets a daily maximum of 50 mg/l for the coal pile run-off pond.

Q. What is the status of EKPC's efforts to comply with the Division of Water rules?

A. EKPC developed a KPDES permit renewal application and submitted it to the Division of Water. In issuing the renewal permit, the Division of Water must make a determination on whether EKPC's industrial activity wastewater discharges cause, or contribute to, instream exceedances of water quality standards or otherwise harms the receiving stream in accordance with the CWA and pursuant to the NPDES program. Should the RPA demonstrate that pollutants will be above the water quality standards, the Division of Water will place new WQBELs in the permit. EKPC will have to comply with the new WQBELs as authorized in the KPDES permit. Regardless of the compliance timeline for ELG, EKPC will be required to meet new WQBELs contained in the KPDES permit as authorized by the Division of Water at the Ohio River. In order to meet the new WQBELs and the ELGs, EKPC has determined to pursue the CPR Project.

Q. In addition to the CCR Rule, the ELG Rule and the Division of Water WQBELs mandate, are there any other environmental standards which support EKPC's plan to construct the CCR/ELG Project?

A. Yes. EKPC is also subject to the authority of the Ohio River Valley Water Sanitation Commission ("ORSANCO"), which is proposing its own onerous permitting limitations on discharges into the Ohio River.

Q. What is the source of ORSANCO's authority?

A. The 74th Congress of the United States authorized by Public Resolution 104 and approved a Compact between the States of Indiana, West Virginia, Ohio, New York, Illinois, Kentucky, Pennsylvania, Virginia and Tennessee by Public Act No. 739 on June 8, 1936, effective July 11, 1940 to protect the drainage area basin of the Ohio River. Each of the signatory States pledge to faithfully cooperate to control future pollution in, and abatement of, the existing pollution from the rivers, streams and water in the Ohio River basin: 1) in a satisfactory sanitary condition suitable for use as a public and industrial water supply after reasonable treatment; 2) for recreational usage; 3) capable of maintaining fish and other aquatic life; 4) free from unsightly or malodorous nuisances due to floating solids or sludge deposits; and 5) adaptable to such other uses as may be legitimate.

Q. What is ORSANCO planning?

A. ORSANCO plans to protect human health, by instituting the following criteria for bacteria and chemical constituents to be met outside the mixing zone:

A. BACTERIA:

1. Protection of public water supply use -- public water supply

use shall be protected at all times. Fecal coliform bacteria content shall not exceed 2,000/100 mL as a monthly geometric mean based on not less than five samples per month.

2. Maximum allowable level of E. coli bacteria for contact recreation -- for the months of April through October, measurements of E. coli bacteria shall not exceed 130/100 mL as a 90-day geometric mean, based on not less than five samples per month, nor exceed 240/100 mL in more than 25 percent of samples.

B. CHEMICAL CONSTITUENTS:

Not to exceed the following concentrations:

Constituent	Concentration (mg/L)
Arsenic (total)	0.010
Barium (total)	1.0
Chloride	250.0
Fluoride	1.0
Mercury (total)	0.000012
Nitrite + Nitrate Nitrogen	10.0
Nitrite Nitrogen	1.0
Phenolics	0.005
Silver (total)	0.05
Sulfate	250.0

Q. How would you summarize all of these authorities?

A. Even if the CCR Rule or the ELG Rule were to be suspended, revoked or not enforced, other environmental agencies will still likely require EKPC to move forward with the CPR Project because of the requirements contained in the KPDES permit and the risk of new and more onerous ORSANCO limitations.

Q. Is the CPR Project necessary for EKPC to be able to comply with the ELG Rule and the other environmental mandates you mentioned?

A. Yes.

Q. Were/are each of the remaining projects proposed for inclusion in the EKPC's amended Environmental Compliance Plan also necessary to satisfy applicable environmental requirements applicable to coal combustion wastes and by-products?

A. Yes. The Fact Sheets for each of these non-CPCN projects, which are included as Attachment CJ-1 to the direct testimony of Mr. Craig Johnson, provide a summary of the environmental mandates that are driving each of these compliance actions. As with the CPR Pond Project, the non-CPCN projects are intended to address federal and state rules regulating coal combustion wastes and by-products.

Q. Does this conclude your testimony?

A. Yes.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

VERIFICATION OF JERRY PURVIS

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Jerry Purvis, Vice President of Environmental Affairs at East Kentucky Power Cooperative, Inc., being duly sworn, states that he has read the foregoing prepared direct testimony and that he would respond in the same manner to the questions if so asked upon taking the stand, and that the matters and things set forth therein are true and correct to the best of his knowledge, information and belief.

Jerry Purvis

Jerry Purvis

The foregoing Verification was signed, acknowledged and sworn to before me this 3rd day of October, 2018 by Jerry Purvis.

NOTARY PUBLIC

Commission No. 590567

My Commission Expires: 11/30/2021

ATTACHMENT JP-1

Matrix of CPR Project permits and approvals

Item No.	Permit/Clearance	Regulatory Agency	Details	Applicability	Required	Submitted	Regulatory Position
Federal							
1	Clean Water Act - Section 404 Permit	U.S. Army Corps of Engineers, Louisville District	Required to dredge or place fill in jurisdictional waters of the U.S. (WOUS), including wetlands. Nationwide Permit (NWP): Less than 0.5 acre/300 linear feet of wetland/stream impacts, Individual Permit: Greater than 0.5 acre/300 linear feet of wetland/stream impacts.	Not Applicable (NA)	No	No	Not required - no jurisdictional WOUS impacts anticipated. Pond is a Clean Water Act treatment system that is serving a KPDES permitted waste management purpose; therefore, it is considered a non-jurisdictional feature.
2	Section 7 Threatened and Endangered Species Consultation and Clearance	U.S. Fish & Wildlife Service (FWS), Ecological Services	If the project will potentially impact protected species or their respective habitat, or if a Section 404 permit is required, then the FWS must be contacted. The FWS will determine the level of effort needed for the project to proceed (e.g., habitat assessment, species surveys, avian impact studies, etc.).	NA	No	No	Not required - due to the nature of the proposed construction activities, no Endangered Species impactes anticipated
3	Migratory Bird Treaty Act / Bald and Golden Eagle Protection Act Compliance	U.S. Fish & Wildlife Service (FWS), Ecological Services	Required when construction or operation of a proposed facility could impact migratory birds, their nests, and especially threatened or endangered species	No	No	NA	NA - Due to the nature of the proposed construction activities, no impacts to migratory birds are anticipated.
4	Spill Prevention, Control, and Countermeasure (SPCC) Plan Amendment	U.S. Environmental Protection Agency (EPA)	SPCC Plan is up-to-date	NA	No	Not required to submit the SPCC Plan to the EPA for review	SPCC plan is up-to-date
5	Facility Response Plan (FRP)	U.S. Environmental Protection Agency (EPA)	A FRP is required for facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters.	NA	No determination required	No	No
6	National Environmental Policy Act (NEPA) Review	USDA Rural Utility Services (RUS)	Per RUS's Environmental Policy and Procedures (7 CFR Part 1970), the proposed action meets the criteria for a Categorical Exclusion due to the site being previously disturbed. NHPA -Section 106 Addressed through this process	Yes	Yes	Categorically Excluded	RUS agrees with EKPC assessment that the project is categorically excluded
State - Kentucky							
7	CPCN	Kentucky Public Service Commission	Required for the construction of electric generating facilities	Yes	Yes	Yes	in progress
8	Title V - Air Permit	Kentucky Division of Air Quality	Clean Air Act and title V authorization is for any plant modifications with regards to air emissions.	NA	No	No	Coal pile pond run-off does not have an air emissions impact
9	Section 402, KPDES	Kentucky Division of Water	Plant modifications that constitutes Industrial Activity and impact internal and external waste streams must seek approval under NPDES and KPDES programs.	Applicable	Yes	Yes	KY Divison of Water issued a draft KPDES permit on September 10, 2018.

ATTACHMENT JP-2

Draft Kentucky Division of Water KPDES Permit

KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT NO.: KY0022250

AGENCY INTEREST NO.: 3004

Pursuant to Authority in KRS 224,

East Kentucky Power Cooperative, Inc.
4775 Lexington Road
Winchester, Kentucky 40391

is authorized to discharge from a facility located at

EKPC H.L. Spurlock Power Station
1301 West Second Street
Maysville, Mason County, Kentucky

to receiving waters named

Ohio River

UT to Lawrence Creek

in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

{Signature}

Peter T. Goodmann, Director

Division of Water

Date Signed

THIS KPDES PERMIT CONSISTS OF THE FOLLOWING SECTIONS:

SECTION 1

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. Compliance Monitoring Locations (Outfalls)

The following table lists the outfalls authorized by this permit, the location and description of each, and the DOW assigned KPDES outfall number:

TABLE 1.

Outfall No.	Outfall Type	Latitude (N)	Longitude (W)	Receiving Water	Description of Outfall
001	External	38°42'9.1"	83°48'52.8"	Ohio River	Current- Discharge from the Secondary Lagoon which contains flows from the following: Cooling tower blowdown, coal pile runoff, FGD wastewater, low volume waste, ash sluice water, chemical and nonchemical metal cleaning wastewater, and stormwater
					Ash Pond Dewatering-The ash pond will be decanted and pumped to the Secondary Lagoon. The discharge will contain all the flows mentioned above.
					Future- Discharge from the Secondary Lagoon which contains flows from the following: Cooling tower blowdown, coal pile runoff, treated FGD wastewater, low volume waste, chemical and nonchemical metal cleaning wastewater, stormwater and new water mass balance pond
002	Internal	38°41'59.4"	83°48'46.3"	Outfall 001	Unit #1 Cooling Tower Blowdown
003	Internal	38°41'59.6"	83°48'46.3"	Outfall 001	Unit #2 Cooling Tower Blowdown
004	Internal	Varies	Varies	Outfall 001	Chemical Metal Cleaning Wastewater
005	External	38°42'9.8"	83°48'59.3"	Ohio River	Emergency Coal Pile Runoff
006	External	38°42'7.9"	83°48'50.4"	Ohio River	Stormwater Runoff
007	External	38°42'0.2"	83°48'46.9"	Ohio River	Reverse Osmosis Reject
008	External	38°41'9.01"	83°49'46.76"	UT to Lawrence Creek	Coal Combustion Residual Landfill Leachate and Stormwater Runoff
009	External	38°42'9.6"	83°48'23.5"	Plant Intake from Ohio River	Raw Water Intake
010	Internal	38°41'59.5"	83°48'47.9"	Outfall 001	Unit #3 Cooling Tower Blowdown
011	External	38°41'43.15"	83°50'16.77"	UT to Lawrence Creek	Tier 1 - Coal Combustion Residual Landfill Stormwater Runoff
					Tier 2- Coal Combustion Residual Landfill Leachate and Stormwater Runoff
012	Internal	38°41'51.5"	83°48'39.56"	Outfall 001	Unit #4 Cooling Tower Blowdown
013	Internal	38°42'06.7"	83°49'22.3"	Outfall 001	FGD Wastewater
00A	External	N/A[1]	N/A[1]	Ohio River	Stormwater from Road west of Coal Storage Area
00B	External	N/A[1]	N/A[1]	Ohio River	Stormwater from area around Fuel Oil Tanks
00C	External	N/A[1]	N/A[1]	Ohio River	Stormwater from area around Waste Water Treatment

TABLE 1.					
Outfall No.	**Outfall Type**	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
00D	External	N/A[1]	N/A[1]	Ohio River	Stormwater from Unit 1 and 2 Cooling Towers
00E	External	N/A[1]	N/A[1]	Ohio River	Stormwater from Unit 3 and 4 Cooling Towers and Acid storage tanks
00F	External	N/A[1]	N/A[1]	Ohio River	Stormwater from area between Ash Pond and Railroad tracks and road west of Ash Pond
00G	External	N/A[1]	N/A[1]	Lawrence Creek	Stormwater from main Entrance Road
00H	External	N/A[1]	N/A[1]	Lawrence Creek	Stormwater from Road south Coal Storage Area
00I	External	N/A[1]	N/A[1]	UT to Lawrence Creek	Stormwater from north Haul Road drainage
00J	External	N/A[1]	N/A[1]	Lawrence Creek	Stormwater from east Haul Road drainage
00K	External	N/A[1]	N/A[1]	UT to Lawrence Creek	Stormwater from landfill access road
00L	External	N/A[1]	N/A[1]	UT to Lawrence Creek	Stormwater from landfill access road
[1]These outfall represent drainage areas for stormwater that are to be covered under BMP's. Plant Drainage Area Map can be found in the KPDES application					

1.2. Effluent Limitations and Monitoring Requirements

1.2.1. Outfall 001

Outfall 001 will undergo operational changes as the facility transitions from existing conditions of an active ash pond to proposed conditions of a process water basin. To accomplish this, the ash pond will be dewatered and closed. To capture the transition, effluent limitations tables have been developed for three phases. Please note that the permittee shall notify the Division of Water, Surface Water Permits Branch at least 30 days prior to commencement of dewatering operations. The permittee shall also notify the Division of Water, Surface Water Permits Branch at least 30 days prior to when dewatering operations are complete.

Beginning on the effective date and lasting through the term of this permit or commencement of Ash Pond dewatering, discharges from Outfall 001 shall comply with the following effluent limitations:

TABLE 2.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	78.9	N/A	2/Month	Grab

TABLE 2.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Oil & Grease	mg/l	N/A	N/A	N/A	8.9	11.9	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([3])	([3])
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Year	([2])
[1]WET – Whole Effluent Toxicity									
[2]Two (2) discrete grab samples shall be collected 12 hours apart									
[3]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

Upon commencement of Ash Pond dewatering and lasting through the term of this permit or completion of Ash Pond dewatering, discharges from Outfall 001 shall comply with the following effluent limitations:

TABLE 3.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	78.9	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	8.9	11.9	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Month	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([4])	([4])
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Month	Grab
Total Recoverable Antimony[1]	mg/l	N/A	N/A	N/A	9.27	Report	N/A	1/Month	Grab
Total Recoverable Arsenic[1]	mg/l	N/A	N/A	N/A	0.31	0.31	N/A	1/Month	Grab
Total Recoverable Beryllium[1]	mg/l	N/A	N/A	N/A	6.60	Report	N/A	1/Month	Grab
Total Recoverable Cadmium[1]	mg/l	N/A	N/A	N/A	0.0081	0.0081	N/A	1/Month	Grab
Total Recoverable Chromium[1]	mg/l	N/A	N/A	N/A	164.4	Report	N/A	1/Month	Grab
Total Recoverable Copper[1]	mg/l	N/A	N/A	N/A	0.047	0.047	N/A	1/Month	Grab
Total Recoverable Lead[1]	mg/l	N/A	N/A	N/A	0.020	0.020	N/A	1/Month	Grab
Total Recoverable Mercury[1]	mg/l	N/A	N/A	N/A	0.000046	0.0013	N/A	1/Month	Grab
Total Recoverable Nickel[1]	mg/l	N/A	N/A	N/A	1.37	1.37	N/A	1/Month	Grab
Total Recoverable Silver[1]	mg/l	N/A	N/A	N/A	Report	0.037	N/A	1/Month	Grab
Total Recoverable Thallium[1]	mg/l	N/A	N/A	N/A	0.40	0.40	N/A	1/Month	Grab
Total Recoverable Zinc[1]	mg/l	N/A	N/A	N/A	0.35	0.35	N/A	1/Month	Grab
Acute WET[2]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Month	([3])

TABLE 3.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[1]The Monthly Average and Daily Maximum concentrations for these pollutants are not effluent limitations, but water quality triggers that, if exceeded for two (2) consecutive months, require permittee action. See the Best Management Practices Plan Section - Additional BMP Conditions Subsection for additional requirements related to these triggers.									
[2]WET – Whole Effluent Toxicity									
[3]Two (2) discrete grab samples shall be collected 12 hours apart									
[4]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

Upon completion of Ash Pond dewatering and water mass balance pond is operational and lasting through the term of this permit, discharges from Outfall 001 shall comply with the following effluent limitations:

TABLE 4.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	66.7	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	6.0	8.0	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([3])	([3])
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Year	([2])
[1]WET – Whole Effluent Toxicity									
[2]Two (2) discrete grab samples shall be collected 12 hours apart									
[3]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									

TABLE 4.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

1.2.2. Outfall 002

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 002 shall comply with the following effluent limitations:

TABLE 5.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]
[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.									
[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.									
[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.									
[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.									
[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									

TABLE 5.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[6]Compliance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

1.2.3. Outfall 003

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 003 shall comply with the following effluent limitations:

TABLE 6.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]
[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.									
[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.									
[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.									
[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.									

TABLE 6.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									
[6]Compliance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

1.2.4. Outfall 004

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 004 shall comply with the following effluent limitations:

TABLE 7.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Batch[1]	Instantaneous
Total Recoverable Copper	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch[1]	Grab
Total Recoverable Iron	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch[1]	Grab
[1]Monitoring shall be conducted once per metal cleaning operation.									

1.2.5. Outfall 005

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 005 shall comply with the following effluent limitations:

TABLE 8.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Discharge	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	50	N/A	1/Discharge	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Discharge	Grab
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Lead,	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Mercury	ng/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
The monitoring frequency for this outfall is once per discharge, but no more frequent than once per quarter. Should more than one discharge occur during a given quarter the permittee will be responsible for collection at least one of those discharges.									

1.2.6. Outfall 006

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 006 shall comply with the following effluent limitations:

TABLE 9.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Settleable Solids	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	10	15	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab

1.2.7. Outfall 007

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 007 shall comply with the following effluent limitations:

TABLE 10.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Dissolved Solids	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab
Total Recoverable Thallium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

1.2.8. Outfall 008

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 008 shall comply with the following effluent limitations:

TABLE 11.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
Total Recoverable Thallium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	Report	1/Year	([1])

[1]See Section 5.11 of the permit for additional requirements.

1.2.9. Outfall 009

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 009 shall comply with the following effluent limitations:

TABLE 12.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Daily	Grab
Temperature	°F	N/A	N/A	N/A	Report	Report	N/A	Daily	Grab
[1]Cooling Water Intake Inspection	Fail=1 Pass=0	N/A	N/A	N/A	N/A	N/A	Report[2]	1/Week	Inspection[3]

[1]Weekly monitoring of the cooling water intake system shall be performed, during the period the cooling water intake structure is in operation, to ensure that the design and construction technology required by §125.94 (i.e., intake flow commensurate with closed cycle cooling) is functioning as designed and are being appropriately maintained and operated.

TABLE 12.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[2]If the intake flow through the screen is not commensurate with closed cycle cooling a "1" is to be reported. If intake flow is commensurate with closed cycle cooling "0" is to be reported									
[3]This inspection may take the form of either visual inspections or the use of remote monitoring devices.									

1.2.10. Outfall 010

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 010 shall comply with the following effluent limitations:

TABLE 13.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]
[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.									
[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.									
[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.									
[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.									
[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic									

TABLE 13.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									
[6]Compliance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

1.2.11. Outfall 011 Tier 1

Beginning on the effective date and lasting through the term of this permit or until land leachate starts discharging through this outfall, discharges from Outfall 011 shall comply with the following effluent limitations:

TABLE 14.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	100.0	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab

1.2.12. Outfall 011 Tier 2

Once landfill leachate starts discharging through this outfall and lasting through the term of this permit, discharges from Outfall 011 shall comply with the following effluent limitations. The permittee shall notify the Division of Water, Surface Water Permits Branch at least 30 days prior to commencement of land fill leachate discharging through outfall 011 requesting to switch to the Tier 2 limits

TABLE 15.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Antimony	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Beryllium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Lead	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Mercury	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

1.2.14. Outfall 012

Beginning on the effective date and lasting through the term of this permit, discharges from Outfall 012 shall comply with the following effluent limitations:

TABLE 16.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]

[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.

[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.

[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.

[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.

[6]Compliance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.

1.2.15. Outfall 013

Beginning on December 1, 2023 and lasting through the term of this permit, discharges from Outfall 013 shall comply with the following effluent limitations:

TABLE 17.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Recoverable Arsenic	µg/l	N/A	N/A	N/A	8	11	N/A	1/Month	Grab
Total Recoverable Mercury	ng/l	N/A	N/A	N/A	356	788	N/A	1/Month	Grab
Total Recoverable Selenium	µg/l	N/A	N/A	N/A	12	23	N/A	1/Month	Grab
Nitrate/nitrite as N	mg/l	N/A	N/A	N/A	4.4	17.0	N/A	1/Month	Grab

1.2.16. Outfalls 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, and 00L

Beginning on the effective date and lasting through the term of this permit, discharges from Outfalls 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, and 00L shall comply with the following effluent limitations:

TABLE 18.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Due to the absence of any industrial processes, equipment or storage areas being located within the areas served by theses outfalls, the DOW has determined that implementation of BMPs would be the most effective approach for controlling pollutants from these areas. The BMP Plan shall specifically mention controls and practices used to control or abate the discharge of pollutants in stormwater discharges from these outfalls.									

1.3. Standard Effluent Requirements

The discharges to Waters of the Commonwealth shall not produce floating solids, visible foam or a visible sheen on the surface of the receiving waters.

SECTION 2

STANDARD CONDITIONS

2. STANDARD CONDITIONS

The following conditions apply to all KPDES permits.

2.1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of KRS Chapter 224 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Any person who violates applicable statutes or who fails to perform any duty imposed, or who violates any determination, permit, administrative regulation, or order of the Cabinet promulgated pursuant thereto shall be liable for a civil penalty as provided at KRS 224.99.010.

2.2. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit.

2.3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.4. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

2.5. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2.6. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

2.7. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

2.8. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

2.9. Inspection and Entry

The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

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

(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

2.10. Monitoring and Records

(1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 401 KAR 5:065, Section 2(10) [40 CFR 503]), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

(3) Records of monitoring information shall include:

a) The date, exact place, and time of sampling or measurements;
b) The individual(s) who performed the sampling or measurements;
c) The date(s) analyses were performed;
d) The individual(s) who performed the analyses;
e) The analytical techniques or methods used; and
f) The results of such analyses.

(4) Monitoring must be conducted according to test procedures approved under 401 KAR 5:065, Section 2(8) [40 CFR 136] unless another method is required under 401 KAR 5:065, Section 2(9) or (10) [40 CFR subchapters N or O].

(5) KRS 224.99-010 provides that any person who knowingly violates KRS 224.70-110 or other enumerated statutes, or who knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall be guilty of a Class D felony and, upon conviction, shall be punished by a fine of not more than $25,000, or by imprisonment for not less than one (1) year and not more than five (5) years, or by both fine and imprisonment for each separate violation.. Each day upon which a violation occurs shall constitute a separate violation..

2.11. Signatory Requirement

(1) All applications, reports, or information submitted to the Director shall be signed and certified pursuant to 401 KAR 5:060, Section 4 [40 CFR 122.22].

(2) KRS 224.99-010 provides that any person who knowingly provides false information in any document filed or required to be maintained under KRS Chapter 224 shall be guilty of a Class D felony and upon conviction thereof, shall be punished by a fine not to exceed twenty-five thousand dollars ($25,000), or by imprisonment, or by fine and imprisonment, for each separate violation. Each day upon which a violation occurs shall constitute a separate violation.

2.12. Reporting Requirements

2.12.1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in KRS 224.16-050 [40 CFR 122.29(b)]; or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under KRS 224.16-050 [40 CFR 122.42(a)(1)].

(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

2.12.2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

2.12.3. Transfers

This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under KRS 224 [CWA; see 40 CFR 122.61; in some cases, modification or revocation and reissuance is mandatory].

2.12.4. Monitoring Reports

Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 401 KAR 5:065, Section 2(8) [40 CFR 136], or another method required for an industry-specific waste stream under 401 KAR 5:065, Section 2(9) or (10) [40 CFR subchapters N or O], the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

2.12.5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

2.12.6. Twenty-four-Hour Reporting

(1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(2) The following shall be included as information which must be reported within twenty-four (24) hours under this paragraph.

a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See §122.41(g))
b) Any upset which exceeds any effluent limitation in the permit.
c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within twenty-four (24) hours.

(3) The Director may waive the written report on a case-by-case basis under 40 CFR 122.41 (l), if the oral report has been received within twenty-four (24) hours.

2.12.7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Sections 2.12.1, 2.12.4, 2.12.5 and 2.12.6, at the time monitoring reports are submitted. The reports shall contain the information listed in Section 2.12.6.

2.12.8. Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

2.13. Bypass

2.13.1. Definitions

(1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

(2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

2.13.2. Bypass Not Exceeding Limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Section 2.13.3 and 2.13.4.

2.13.3. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section 2.12.6.

2.13.4. Prohibition of Bypass

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
c) The permittee submitted notices as required under Section 2.13.3.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three (3) conditions listed above in Section 2.13.4

2.14. Upset

2.14.1. Definition

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2.14.2. Effect of an Upset

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Section 2.14.3 are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2.14.3. Conditions Necessary for a Demonstration of Upset

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in Section 2.12.6; and

(4) The permittee complied with any remedial measures required under Section 2.4.

2.14.4. Burden of Proof

In any enforcement preceding the permittee seeking to establish the occurrence of an upset has the burden of proof.

SECTION 3

BEST MANAGEMENT PRACTICES PLAN (BMPP) REQUIREMENTS

3. BEST MANAGEMENT PRACTICES PLAN (BMPP) REQUIREMENTS

The permittee shall develop and implement a Best Management Practices Plan (BMPP) consistent with 401 KAR 5:065, Section 2(4).

3.1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to KRS 224.1-010(35) and who have operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.1-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

3.2. Plan

The permittee shall develop and implement a BMPP consistent with 401 KAR 5:065, Section 2(4) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage.

3.3. Implementation

The permittee shall implement the BMPP upon of the commencement of regulated activity. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be implemented as soon as possible.

3.4. General Requirements

The BMPP shall:

(1) Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.

(2) Establish specific objectives for the control of toxic and hazardous pollutants.

   a. Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

   b. Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants", the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.

(3) Establish specific BMPs to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants".

(4) Include any special conditions established in part b of this section.

(5) Be reviewed by engineering staff and the site manager.

3.5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document", and shall include the following baseline BMPs as a minimum:

(1) BMP Committee

(2) Reporting of BMP Incidents
(3) Risk Identification and Assessment
(4) Employee Training
(5) Inspections and Records
(6) Preventive Maintenance
(7) Good Housekeeping
(8) Materials Compatibility
(9) Security
(10) Materials Inventory

3.6. SPCC Plans

The BMPP may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMPP by reference.

3.7. Hazardous Waste Management

The permittee shall assure the proper management of solids and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

3.8. Documentation

The permittee shall maintain a copy of the BMPP at the facility and shall make the plan available upon request to EEC personnel.

3.9. BMP Plan Modification

The permittee shall modify the BMPP whenever there is a change in the facility or change in the operation of the facility that materially increases the potential for the release of "BMP pollutants".

3.10. Modification for Ineffectiveness

The BMPs and the BMPP shall be reviewed and appropriate modifications implemented to utilize other practicable measures if any of the following events occur:

(1) As a result of either a fixed or episodic event-driven evaluation, the permittee determines the selected BMPs are not achieving the established performance benchmarks;

(2) As a result of a notice of deficiency from an evaluation or inspection by Cabinet personnel; or

(3) A release to the environment/beyond secondary containment of any petroleum-based product, toxic or hazardous substance.

3.11. Periodically Discharged Wastewater Not Specifically Covered By Effluent Conditions

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.

3.12. Additional BMP Conditions during Dewatering

3.12.1. BMP Evaluation Triggers

Water Quality Trigger: The monthly average and daily maximum discharge concentrations for the listed metals in table 3 are triggers that once exceeded for two (2) consecutive months requires the permittee to initiate an evaluation of the currently employed BMP's related to dewatering.

WET Trigger: The permittee shall review the BMPs currently employed, related to dewatering, when the findings of a Toxicity Reduction Evaluation (TRE) indicates that one or more of the pollutants monitored was the toxicant.

3.12.2. Evaluation of BMPs

The permittee shall notify DOW within five (5) days that a BMP evaluation trigger has occurred and within forty five (45) days shall complete a BMP evaluation.

At a minimum, the findings of this evaluation shall include:

1) A list of known, practicable control measures;
2) The order of implementing identified control measures;
3) Monitoring plans and schedules to support evaluating the effectiveness of each control measure;
4) A description of decision-making criteria and timelines for evaluating whether a particular measure has been effective and whether additional or different measures are required;
5) Identification of a process for revising the BMP Plan (BMPP) should data obtained from monitoring the effectiveness of particular control measures warrant such revisions; and
6) Any proposed changes to the BMPP shall be implemented within 90 days of the finalization of evaluation.

SECTION 4

WHOLE EFFLUENT TOXICITY (WET) TESTING REQUIREMENTS

4. WHOLE EFFLUENT TOXICITY (WET) TESTING REQUIREMENTS

The permittee shall initiate, within thirty (30) days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfall 001.

4.1. Sampling Requirements

Tests shall be conducted on each of two grab samples collected over the period of discharge,(i.e., discrete sample #1 taken at commencement of discharge, sample #2 taken approximately 12 hours later, sooner if discharge is expected to cease). The elapsed time between the collection of each grab sample and the initiation of each test shall not exceed 36 hours.

4.2. Test Requirements

The Acute WET test requirements consists of two 48-hour static non-renewal toxicity tests with water flea (Ceriodaphnia dubia, Daphnia magna, or Daphnia pulex) and two 48-hour static non-renewal toxicity tests with fathead minnow (Pimephales promelas) performed on discrete grab samples of 100% effluent (1.00 TU_A) at the frequency specified. Testing of each sample shall begin within 36 hours of the collection of that sample.

4.3. Serial Dilutions

Effluent concentrations for the tests must include the percent effluent required by the permit and at least four additional effluent concentrations.

For a required percent effluent of 100%, test concentrations shall be 20%, 40%, 60%, 80% and 100%.

For a required percent effluent less than 100% but greater than or equal to 75%, the test concentrations shall include the required percent effluent, two (2) concentrations below that are based on a 0.5 dilution factor, and two (2) concentrations above: one (1) at mid-point between 100% and the required percent effluent, and one (1) at 100% effluent.

For a required percent effluent less than 75%, test concentrations shall include the required percent effluent, two (2) concentrations below on a 0.5 dilution factor, and two (2) concentrations above the required percent effluent based on a 0.5 dilution factor, if possible; otherwise, one (1) at mid-point between 100% and the required percent effluent, and one (1) at 100% effluent.

Selection of different effluent concentrations must be approved by DOW prior to testing. Controls shall be conducted concurrently with effluent testing using synthetic water.

4.4. Controls

Control tests shall be conducted concurrent with effluent testing using synthetic water. The analysis will be deemed reasonable and good only if the minimum control requirements are met.

Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period.

Within 30 days prior to initiating an effluent toxicity test, a reference toxicant test must be completed for the method used; alternatively, the reference toxicant test may be run concurrent with the effluent toxicity test.

Control survival is 90% or greater in test organisms held in synthetic water.

4.5. Test Methods

All test organisms, procedures, and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-

821-R-02-012 (5th edition), the most recently published edition of this publication, or as approved in advance by DOW.

4.6. Reduction to Single Species Testing

After at least six (6) consecutive passing toxicity tests using both, the water flea and the fathead minnow, a request for testing with only the most sensitive species may be submitted to DOW. Upon approval, the most sensitive species may be considered as representative and all subsequent compliance tests may be conducted using only that species unless directed at any time by DOW to change or revert to both.

4.7. Reporting Requirements

Results of all toxicity tests conducted with any species shall be reported according to the most recent format provided by DOW (See the Section for Submission of DMRs of this permit). Notification of failed test shall be made to DOW within five days of test completion. Test reports shall be submitted to DOW within thirty (30) days of completion. A control chart including the most recent reference toxicant test endpoints for the effluent test method (minimum of 5, up to 20 if available) shall be part of the report.

4.8. Test Results

If noncompliance occurs in an initial test, the permittee shall repeat the test using new samples. Results of this second round of testing will be used to evaluate the persistence of the toxic event and the possible need for a Toxicity Reduction Evaluation (TRE).

Noncompliance is demonstrated if the LC_{50} is less than 100% effluent. If noncompliance occurs in an initial test, the permittee shall repeat the test using new grab samples collected approximately twelve (12) hours apart. Sampling must be initiated within ten (10) days of completing the failed test. The second round of testing shall include both species unless approved for only the most sensitive species by DOW.

4.9. Accelerated Testing

If the second round of testing also demonstrates noncompliance, the permittee will be required to perform accelerated testing as specified in the following paragraphs.

Complete four (4) additional rounds of testing to evaluate the frequency and degree of toxicity within sixty (60) days of completing the second failed round of testing. Results of the initial and second rounds of testing specified above plus the four (4) additional rounds of testing will be used in deciding if a TRE shall be required.

If results from any two (2) of six (6) rounds of testing show a significant noncompliance with the Toxicity limit, i.e., ≥1.2 times the TU, or results from any four of the six tests show toxicity as defined above, a TRE will be required.

The permittee shall provide written notification to DOW within five (5) days of completing the accelerated testing, stating that: (1) toxicity persisted and that a TRE will be initiated; or (2) that toxicity did not persist and normal testing will resume.

Should toxicity prove not to be persistent during the accelerated testing period, but reoccur within twelve (12) months of the initial failure at a level ≥ 1.2 times the TU, then a TRE shall be required.

4.10. WET TRE

Having determined that a TRE is required, the permittee shall initiate and/or continue at least monthly testing with both species until such time as a specific TRE plan is approved by DOW. A TRE plan shall be developed by the permittee and submitted to DOW within thirty (30) days of determining a TRE is required.

The plan shall be developed in accordance with the most recent Environmental Protection Agency (EPA) and DOW guidance. Questions regarding this process may be submitted to DOW.

The TRE plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE plan will establish an implementation schedule to begin immediately upon approval by DOW, to have duration of at least six (6) months, and not to exceed twenty-four (24) months. The implementation schedule shall include quarterly progress reports being submitted to DOW, due the last day of the month following each calendar quarter.

Upon completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and actions taken or to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions including an implementation schedule not to exceed one-hundred-eighty (180) days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the planned conclusion of the TRE, the permittee will notify DOW within five (5) days of making that determination and take appropriate actions to implement the solution within one-hundred-eighty (180) days of that notification.

SECTION 5

OTHER CONDITIONS

5. OTHER CONDITIONS

5.1. Schedule of Compliance

The permittee shall attain compliance with all requirements of this permit on the effective date of this permit unless otherwise stated.

5.2. Other Permits

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

5.3. Continuation of Expiring Permit

This permit shall be continued in effect and enforceable after the expiration date of the permit provided the permittee submits a timely and complete application in accordance with 401 KAR 5:060, Section 2(4).

5.4. Antidegradation

For those discharges subject to the provisions of 401 KAR 10:030 Section, 1(3)(b)5, the permittee shall install, operate, and maintain wastewater treatment facilities consistent with those identified in the SDAA submitted with the KPDES permit application.

5.5. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved in accordance with 401 KAR 5:050 through 5:080, if the effluent standard or limitation so issued or approved:

(1) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

(2) Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

5.6. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals to the Division of Water for review and establishment of appropriate control parameters.

5.7. Outfall Signage

Ohio River

The permittee shall comply with the permanent marker requirements of ORSANCO's Pollution Control Standards.

Other Waterbodies

This KPDES permit establishes monitoring points, effluent limitations, and other conditions to address discharges from the permitted facility. In an effort to better document and clarify these locations the permittee should place and maintain a permanent marker at each of the monitoring locations.

5.8 Cooling Water Intake Requirements

5.8.1 Authority to Operate

The permittee shall at all times properly operate and maintain all water intake facilities. The permittee shall give advance notice to the Division of any planned changes in the location, design, operation, or capacity of the intake structure. The permittee is authorized to use the cooling water intake system which consists of the following:

Spurlock Station Cooling Water Intake Structure is located at N 38°42'09" W 83°48'23" on the south bank of the Ohio River, which has a $7Q_{10}$ flow of 10,600 cfs. The cooling water intake structure is a single wet well that houses five pumps, three for the Spurlock Station and two for the adjacent International Paper facility. The wet well has two independent cylindrical wedge wire screen assemblies mounted to a bulkhead on the northern face of the structure. The screens are each located at the end of separate 15-foot intake pipelines. The screen elevation is approximately 473 feet and the normal pool depth of the Ohio River is that area is approximately 485 feet, indicating that screens remain submerged at all times. Water withdrawn from the cooling water intake structure by Spurlock Station is used for makeup to the stations four cooling towers. Spurlock Station has three raw water pumps in the intake structure that provide the makeup water. Each pump has a design capacity of 5,000 gpm, resulting in a 15,000gpm maximum design capacity for makeup. International Paper has two 2,000-gpm constant –speed pumps. Under normal operations, one of the raw water makeup pumps will run continuously. Spurlock Station has four mechanical draft cooling towers with drift eliminators. Units 1, 3, and 4 are currently operated at 7 cycles of concentration on average, and Unit 2 is operated at 7.5 cycles of concentration on average. Well water from the facility groundwater wells can also be used for makeup on cooling tower unit 1. Approximately 50 percent of the cooling tower unit 1 makeup comes from the intake structure and the remaining 50 percent is well water. The maximum design intake flow (for both facilities combined) is 27.4 MGD (42.41 cfs), which is equivalent to 0.4% of the $7Q_{10}$. This is based upon all five of the intake pumps capacity. The through-screen design intake velocity at the point of withdrawal is 0.41 ft/s (with one screen out of service). The actual intake flow (for both facilities combined) is 8.83 MGD (13.67 cfs), which is equivalent to 0.13% of the $7Q_{10}$. The actual intake velocity is 0.13 ft/s (with one screen out of service). These figures are based on the annual average withdrawal rate during January 2015 – June 2017. Approximately 70 percent of all water withdrawn from the Ohio River is used for non-contact cooling, which is being used for makeup at the Spurlock Station cooling towers. There is no emergency intake at the facility.

5.8.2. Best Technology Available (BTA) Determination

The cooling water intake is approved as BTA for minimizing adverse environmental impact in accordance with the requirements in 40 CFR 125 Subpart J and section 316(b) of the Clean Water Act. The chosen impingement method of compliance is the closed-cycle recirculating system of 40 CFR 125.94(c)(1).

5.8.3. Intake Structure Standard Requirements

5.8.3.1. Future BTA Determinations for Cooling Water Intake Structure(s)

BTA determinations for entrainment mortality and impingement mortality at cooling water intake structures will be re-confirmed in each permit reissuance, in accordance with 40 CFR 125.90-98. In subsequent permit reissuance applications, the permittee shall provide all the information required in 40 CFR 122.21(r).

Also include an alternatives analysis report for compliance with the entrainment BTA requirements with the permit application. This alternatives analysis report for entrainment BTA shall examine the options for compliance with the entrainment BTA requirement and propose a candidate entrainment BTA to the Division for consideration during its next BTA determination. The analysis must, at least, narratively, address and consider the factors listed in 40 CFR 125.98(f)(2) and may consider the factors listed in 40 CFR 125.98(f)(3). The analysis must evaluate, at a minimum, closed cycle recirculation systems, fine mesh screens with a mesh size of 2mm or smaller, variable speed pumps, water reuse or alternate sources of cooling water, and any additional technology identified by the Division at a later date.

Exemptions from some permit application requirements are possible in accordance with 40 CFR 125.95(c) and 125.98(g), where information already submitted is sufficient. If an exemption is desired, a request for reduced application material requirements must be submitted at least 2 years and 6 months prior to permit expiration. Past submittals and previously conducted studies may satisfy some or all of the application material requirements.

5.8.3.2. Visual or Remote Inspection

The permittee shall conduct a weekly visual inspection or employ a remote monitoring device during periods when the cooling water intake is in operation. The inspection frequency shall be weekly to ensure the intakes are maintained and operated to function as designed.

5.8.3.3. Reporting Requirements for Cooling Water Intake

The permittee shall adhere to the reporting requirements listed below:

Discharge Monitoring Reports (DMRs)

The monitoring requirements for units at existing facilities under 40 CFR 125.96 for cooling water withdrawals, blowdown volume, and visual or remote inspections have been established at the appropriate outfalls and shall be reported on the DMR for those outfalls.

Annual certification Statement and Report

Submit an annual certification statement signed by the authorized representative with information on the following, no later than January 31st for the previous year:

- Certification that water intake structure technologies are being maintained and operated as set forth in this permit, or a justification to allow a modification of the practices.
- If there are substantial modifications to the operation of any unit that impacts the cooling water withdrawals or operation of the water intake structure, provide a summary of those changes.
- If the information contained in the previous year's annual certification is still applicable, the certification may simply state as such.

Reporting Records Retention

In accordance with 40 CFR 125.97 (d) records of all submissions that are part of the permit application and reporting requirements must be retained until the subsequent permit is issued to document compliance. Additionally, all records supporting the determination of BTA for entrainment under 40 CFR 125.98(f) or (g) must be retained until such time the determination of BTA for entrainment in the permit is revised.

5.8.3.4. Endangered Species Act

Nothing in this permit authorizes take for the purpose of a facility's compliance with the Endangered Species Act. Refer to 40 CFR 125.98(b)(1) and (2).

5.9. Polychlorinated Biphenyls

Pursuant to the requirements of 40 CFR Part 423.12(b) (2), there shall be no discharge, from any point source, of Polychlorinated Biphenyl compounds such as those commonly used in transformer fluids. The permittee shall implement this requirement as a specific section of the BMP plan developed for this section.

5.10. Outfall 001 Additional Requirements for Total Recoverable Selenium

The monthly average discharge concentration for total recoverable selenium of 0.307 mg/l is a trigger that once exceeded, requires the permittee to collect and analyze fish tissue for selenium residue, and is not a permit violation if the fish tissue confirms compliance.

5.10.2. Tissue Collection and Analysis

The following requirements apply:

(1) Collection and analysis shall be performed within the calendar month following the calendar month the 0.307 mg/l monthly average trigger was exceeded;
(2) Fish tissue collection and analysis shall be performed in accordance with the DOW protocols specified in "Methods for the Collection of Selenium Residue in Fish Tissue Used to Determine KPDES Permit Compliance" **http://water.ky.gov/Pages/SurfaceWaterSOP.aspx**;
(3) Results of the analysis shall be reported as Total Recoverable Selenium (Fish Tissue) on the Discharge Monitoring Report (DMR) for the month during which the analysis were performed.

5.10.3. Results of Analysis

The results of the fish tissue shall be interpreted as follows:

(1) less than or equal to 8.6 mg/Kg dry weight selenium residue there is no permit violation;
(2) greater than 8.6 mg/Kg dry weight selenium residue there is a permit violation; and
(3) unable to obtain fish tissue, the 0.307 mg/l trigger becomes the effluent limitation and there is a permit violation

5.11. Outfall 008 Additional Requirements for Total Recoverable Selenium

5.11.1. Tissue Collection and Analysis

The following requirements apply:

(1) Collection and analysis shall be performed on an annual basis.
(2) Fish tissue collection and analysis shall be performed in accordance with the DOW protocols specified in "Methods for the Collection of Selenium Residue in Fish Tissue Used to Determine KPDES Permit Compliance" **http://water.ky.gov/Pages/SurfaceWaterSOP.aspx**. Due to the nature of the receiving steam the facility is permitted to begin the fish sampling at the first suitable permanent fish habitat in the Outfall 008 receiving stream. This would be the pool located below the manmade wetland diversion structure, approximately 725 m downstream from the outfall.

5.12. ORSANCO's Mercury Variance

The permittee requested a variance from ORSANCO's mercury standard of 0.000012 mg/l for effluent from this site which discharges to the Ohio River. The permittee is currently meeting Kentucky's water quality criteria for mercury. Mercury is a pollutant believed to be present in FGD wastewaters. The permittee is installing a new treatment system for FGD wastewaters in order to achieve compliance with new federal effluent limitation guidelines. Effluent from Outfall 001 will be partially comprised of treated FGD wastewaters, and the DOW believes the effluent will be able to continue meeting Kentucky's water quality criteria for mercury once the new treatment system is operational. The permittee is concerned the effluent will consistently meet ORSANCO's mercury standard. Given these circumstances, the DOW granted the variance ORSANCO's mercury standard and will apply Kentucky's water quality criteria for mercury for discharges to the Ohio River.

5.13. Combustion Residual Leachate

Pursuant to 40 CFR 423.11(r), the term combustion residual leachate ("leachate") means "leachate from landfills or surface impoundments containing combustion residuals. Leachate is composed of liquid, including any suspended or dissolved constituents in the liquid, that has percolated through waste or other materials emplaced in a landfill, or that passes through the surface impoundment's containment structure (*e.g.,* bottom, dikes, berms). Combustion residual leachate includes seepage and/or leakage from a combustion residual landfill or impoundment unit. Combustion residual leachate includes wastewater from landfills and surface impoundments located on non-adjoining property when under the operational control of the permitted facility."

This permit authorizes the discharge of leachate from outfall 008 and outfall 011. For newly discovered leachate seeps from a CCR surface impoundment or a CCR landfill, as defined at 40 CFR 257.53, to the surface that discharge or have a potential to discharge to a water of the commonwealth other than through outfall 008 or outfall 011, the permittee shall develop and implement a plan to address such surface seeps. The plan shall be included as part of the on-site BMP Plan and shall address, at a minimum, (1) scheduled inspections for identifying surface leachate seeps, (2) maintenance of CCR landfills and/or impoundments to minimize the potential for surface leachate seeps, and (3) corrective measures that will be implemented upon the discovery of a surface leachate seep that is not being controlled by a permitted outfall authorized for discharge of leachate. The permittee shall notify the DOW Surface Water Permits Branch and the appropriate DOW Field Office of planned corrective measures for any identified surface seeps of leachate as soon as feasible after discovery of such a leachate seep, but no later than ten (10) days after the discovery. Such corrective measures may include: (1) plans to reduce or eliminate the leachate seep to the surface; (2) actions to route the surface leachate seep (via a conveyance designed to contain the flow or eliminate the possibility of infiltration) to an outfall permitted to discharge leachate; and (3) combinations of actions to eliminate or, if elimination is not feasible, reduce and control a surface leachate seep and ensure any discharge to a receiving stream is authorized by the permit. Please note that this does not exempt the permittee from 24-hour reporting Section 2.12 of the permit.

SECTION 6

MONITORING AND REPORTING REQUIREMENTS

6.1 MONITORING AND REPORTING REQUIREMENTS

6.1.1 KPDES Outfalls

Discharge samples and measurements shall be collected at the compliance point for each KPDES Outfall identified in this permit. Each sample shall be representative of the volume and nature of the monitored discharge.

6.1.2 Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit, i.e. the Method Minimum Level shall be at or below the effluent limit. In the instance where an EPA-approved method does not exist that has a Method Minimum Level at or below the established effluent limitation, the permittee shall:

(1) Use the method specified in the permit; or

(2) The EPA-approved method with an ML that is nearest to the established effluent limit.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

6.1.3 Certified Laboratory Requirements

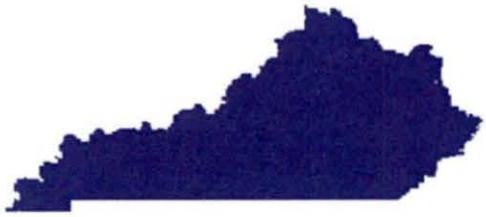
All laboratory analyses and tests required to demonstrate compliance with the conditions of this permit shall be performed by a laboratory holding the appropriate general or field-only certification issued by the Cabinet pursuant to 401 KAR 5:320.

6.1.4 Submission of DMRs

The completed DMR for each monitoring period must be entered into the DOW approved electronic system no later than midnight on the 28th day of the month following the monitoring period for which monitoring results were obtained.

For more information regarding electronic submittal of DMRs, please visit the Division's website at: http://water.ky.gov/permitting/Pages/netDMRInformation.aspx or contact the DMR Coordinator at (502) 564-3410.

KPDES



KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

FACT SHEET

KPDES No.: KY0022250
AI No.: 3004
EKPC H.L. Spurlock Power Station
1301 West Second Street
Maysville, Mason County, Kentucky

Date: September 6, 2018

Public Notice Information

Public Notice Start Date: September 10, 2018

Comment Due Date: October 10, 2018

General information concerning the public notice process may be obtained on the Division of Water's Public Notice Webpage at the following address: http://water.ky.gov/Pages/PublicNotices.aspx.

Public Notice Comments

Comments must be received by the Division of Water no later than 4:30 PM on the closing date of the comment period. Comments may be submitted by e-mail at: DOWPublicNotice@ky.gov or written comments may be submitted to the Division of Water at 300 Sower Blvd, Frankfort, Kentucky 40601.

Reference Documents

A copy of this proposed fact sheet, proposed permit, the application, other supporting material and the current status of the application may be obtained from the Department for Environmental Protection's Pending Approvals Search Webpage:
http://dep.gateway.ky.gov/eSearch/Search_Pending_Approvals.aspx?Program=Wastewater&NumDaysDoc=30.

Open Records

Copies of publicly-available documents supporting this fact sheet and proposed permit may also be obtained from the Department for Environmental Protection Central Office. Information regarding these materials may be obtained from the Open Records Coordinator at (502) 782-6849 or by e-mail at EEC.KORA@ky.gov.

THIS KPDES FACT SHEET CONSISTS OF THE FOLLOWING SECTIONS:

SECTION 1

FACILITY SYNOPSIS

1. FACILITY SYNOPSIS

1.1. Name and Address of Applicant

East Kentucky Power Cooperative, Inc.
4775 Lexington Road
Winchester, Kentucky 40391

1.2. Facility Location

EKPC H.L. Spurlock Power Station
1301 West Second Street
Maysville, Mason County, Kentucky

1.3. Description of Applicant's Operation

The H.L. Spurlock Generating Station is a four-unit coal-fired electric generating facility located on approximately 2,791 acres adjacent to the Ohio River in Maysville, Kentucky. The unit with individual generating capacities in megawatts (MW) and dates of service appear below in Table1:

TABLE 1.

Unit No.	Net Capacity (MW)	Date of Service
Spurlock 1	300	1977
Spurlock 2	510	1981
Gilbert 3	268	2005
Spurlock 4	268	2009

1.4. Wastewaters Collected and Treatment

The following table lists the flow, wastewater types collected, and treatment type for each outfall:

TABLE 2.

Outfall No.	Average Flow	Wastewater Types Collected	Treatment Type
001	3.88	Non-Domestic Process Water Non-Process Stormwater	Sedimentation Discharge to Surface Water
002	0.50	Noncontact Cooling Water	Disinfection (Chlorine) Dechlorination
003	0.67	Noncontact Cooling Water	Disinfection (Chlorine) Dechlorination
004	0.0	Non-Domestic Process Water	Chemical Precipitation
005	0.0	Stormwater	Sedimentation Discharge to Surface Water
006	Varies	Stormwater	Discharge to Surface Water
007	0.25	Non-Domestic Process Water	Discharge to Surface Water
008	0.30	Non-Domestic Process Water Stormwater	Sedimentation Discharge to Surface Water
009	8.43	Plant Intake	None
010	0.46	Noncontact Cooling Water	Disinfection (Chlorine) Dechlorination
011	0.009	Landfill Stormwater Non-Domestic Process Water	Sedimentation Discharge to Surface Water
012	0.55	Noncontact Cooling Water	Disinfection (Chlorine) Dechlorination

TABLE 2.			
Outfall No.	**Average Flow**	**Wastewater Types Collected**	**Treatment Type**
013	Not yet constructed	Non-Domestic Process Water	Chemical Precipitation Mixing Neutralization
00A	Varies	Stormwater	Discharge to Surface Water
00B	Varies	Stormwater	Discharge to Surface Water
00C	Varies	Stormwater	Discharge to Surface Water
00D	Varies	Stormwater	Discharge to Surface Water
00E	Varies	Stormwater	Discharge to Surface Water
00F	Varies	Stormwater	Discharge to Surface Water
00G	Varies	Stormwater	Discharge to Surface Water
00H	Varies	Stormwater	Discharge to Surface Water
00I	Varies	Stormwater	Discharge to Surface Water
00J	Varies	Stormwater	Discharge to Surface Water
00K	Varies	Stormwater	Discharge to Surface Water
00L	Varies	Stormwater	Discharge to Surface Water

The design flow of the facility is 47.17 MGD. The average annual flow is 15.05 MGD.

1.5. Permitting Action

This is a reissuance of a major KPDES permit for an existing coal-fired electric generating facility [SIC Code 4911].

SECTION 2

RECEIVING/INTAKE WATERS

2. RECEIVING / INTAKE WATERS

2.1. Receiving Waters

All surface waters of the Commonwealth have been assigned stream use designations consisting of one or more of the following designations: Warmwater Aquatic Habitat (WAH), Primary Contact Recreation (PCR), Secondary Contact Recreation (SCR), Domestic Water Supply (DWS), Coldwater Aquatic Habitat (CAH) or Outstanding State Resource Water (OSRW)[401 KAR 10:026].

All surface waters of the Commonwealth are assigned one of the following antidegradation categories: Outstanding National Resource Water (ONRW), Exceptional Water (EW), Impaired Water (IW) or High Quality Water (HQ)[401 KAR 10:030].

Surface waters categorized as an IW are listed in Kentucky's most recently approved Integrated Report to Congress on the Condition of Water Resources in Kentucky - Volume II. 303(d) List of Surface Waters.

The following table lists the stream use classifications associated with this permit.

TABLE 3.

Receiving Water Name	Use Designation	Antidegradation Category	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
Ohio River[1]	WAH PCR SCR DWS	IW	10,600	42,100
UT to Lawrence Creek	WAH PCR SCR DWS	HQ	0.0	0.0
UT to Lawrence Creek	WAH PCR SCR DWS	HQ	0.0	0.0

[1]This segment of Ohio River (mile point 388.0 to 437.2) is listed as impaired in the 2014 303(d) List of Waters for Kentucky. Impaired uses are Fish Consumption (Partial Support). The pollutants of concern are Dioxin and Polychlorinated biphenyls (PCBs). The suspected sources are unknown. Facility in compliance with KPDES permit will not contribute to this impairment.

2.2. Intake Waters – Nearest Downstream Intake

TABLE 4.

Intake Water Name	Public Water Supply Name	Latitude (N)	Longitude (W)	Miles Downstream	7Q10 Low Flow (cfs)	Harmonic Mean Flow (cfs)
Ohio River	Greater Cincinnati Water Works	39°04'2.2"	84°26'10"	49	10,600	45,300

SECTION 3

OUTFALL 001

3. OUTFALL 001

3.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 5.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'9.1"	83°48'52.8"	Ohio River	Current- Discharge from the Secondary Lagoon which contains flows from the following: Cooling tower blowdown, coal pile runoff, FGD wastewater, low volume waste, ash sluice water, chemical and nonchemical metal cleaning wastewater, and stormwater
				Ash Pond Dewatering-The Secondary Lagoon discharge will contain all the flows mentioned above and the decanted and pumped water from the ash pond.
				Future- Discharge from the Secondary Lagoon which contains flows from the following: Cooling tower blowdown, coal pile runoff, treated FGD wastewater, low volume waste, chemical and nonchemical metal cleaning wastewater, stormwater and new water mass balance pond

3.2. Reported Values

The following table summarizes the reported values for Outfall 001:

TABLE 6.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	3.74	7.41	N/A	N/A	N/A	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	12.76	13.06	N/A
Oil & Grease	mg/l	N/A	N/A	N/A	BDL	BDL	N/A
Temperature	°F	N/A	N/A	N/A	78.88	80.87	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	1437	1455	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.066	0.068	N/A
pH	SU	N/A	N/A	7.11	N/A	N/A	8.2

TABLE 6.							
Reported Parameters	Units	EFFLUENT					
		Loadings (lbs./day)		Concentrations			
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	<1.00
[1]WET – Whole Effluent Toxicity							
The abbreviation BDL means Below Detection Level							

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

3.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001 unless Tables 8 or 9 are in effect:

TABLE 7.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	78.9	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	8.9	11.9	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([3])	([3])
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Year	([2])
[1]WET – Whole Effluent Toxicity									
[2]Two (2) discrete grab samples shall be collected 12 hours apart									
[3]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001 once Ash Pond dewatering commences. Permittee shall notify the Division of Water (DOW), Surface Water Permits Branch at least 30 days prior to commencement of dewatering operations. These requirements will remain in effect until Ash Pond dewatering operations cease discharge through Outfall 001:

TABLE 8.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	78.9	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	8.9	11.9	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Month	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([4])	([4])
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Month	Grab
Total Recoverable Antimony[1]	mg/l	N/A	N/A	N/A	9.27	Report	N/A	1/Month	Grab
Total Recoverable Arsenic[1]	mg/l	N/A	N/A	N/A	0.31	0.31	N/A	1/Month	Grab
Total Recoverable Beryllium[1]	mg/l	N/A	N/A	N/A	6.60	Report	N/A	1/Month	Grab
Total Recoverable Cadmium[1]	mg/l	N/A	N/A	N/A	0.0081	0.0081	N/A	1/Month	Grab
Total Recoverable Chromium[1]	mg/l	N/A	N/A	N/A	164.4	Report	N/A	1/Month	Grab
Total Recoverable Copper[1]	mg/l	N/A	N/A	N/A	0.047	0.047	N/A	1/Month	Grab
Total Recoverable Lead[1]	mg/l	N/A	N/A	N/A	0.020	0.020	N/A	1/Month	Grab
Total Recoverable Mercury[1]	mg/l	N/A	N/A	N/A	0.000046	0.0013	N/A	1/Month	Grab
Total Recoverable Nickel[1]	mg/l	N/A	N/A	N/A	1.37	1.37	N/A	1/Month	Grab
Total Recoverable Silver[1]	mg/l	N/A	N/A	N/A	Report	0.037	N/A	1/Month	Grab
Total Recoverable Thallium[1]	mg/l	N/A	N/A	N/A	0.40	0.40	N/A	1/Month	Grab
Total Recoverable Zinc[1]	mg/l	N/A	N/A	N/A	0.35	0.35	N/A	1/Month	Grab
Acute WET[2]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Month	([3])

TABLE 8.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
[1]The Monthly Average and Daily Maximum concentrations for these pollutants are not effluent limitations, but water quality triggers that, if exceeded for two (2) consecutive months, require permittee action. See the Best Management Practices Plan Section - Additional BMP Conditions Subsection for additional requirements related to these triggers.									
[2]WET – Whole Effluent Toxicity									
[3]Two (2) discrete grab samples shall be collected 12 hours apart									
[4]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

The following table summarizes the effluent limitations and monitoring requirements for Outfall 001 which will take effect once Ash Pond dewatering operations cease and water mass balance pond is operational:

TABLE 9.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Temperature	°F	N/A	N/A	N/A	Report	110	N/A	2/Month	Grab
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	66.7	N/A	2/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	6.0	8.0	N/A	2/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	2/Month	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	0.307	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	8.6	([3])	([3])
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Acute WET[1]	TU_A	N/A	N/A	N/A	N/A	N/A	1.00	1/Year	([2])
[1]WET – Whole Effluent Toxicity									
[2]Two (2) discrete grab samples shall be collected 12 hours apart									
[3]Should the monthly average concentration of Total Recoverable Selenium exceed 0.307 mg/l, see permit Section 5.10 for additional requirements.									
There shall be no discharge of pollutants in bottom or fly ash transport water generated on and after December 31, 2023.									

3.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

3.4.1. Facility Changes

This facility will continue to operate as a coal fired steam electric power generation and transmission facility. The facility will undergo major changes in response to the recently updated federal regulations concerning Coal Combustion Residuals (CCR) and Steam Electric Power Generating Effluent Limitation Guidelines (ELG). New treatment equipment, redirection of flows, cessation of ash sluicing flows, and impoundment construction will significantly change this site. A comprehensive discussion of all the facility changes can be found in the Cover Letters, and in the EKPC Spurlock KPDES application. A major change effecting this outfall includes plans to close their ash pond that discharges to the secondary lagoon and through outfall 001. A lined water mass balance pond will replace the ash pond in the overall water mass balance for Spurlock Station.

3.4.2. Legacy Wastewater

Once the facility converts to sending some of the waste streams that were contributing to the bottom ash pond to the new lined water mass balance pond, these sources will no longer be contributing to the ash pond surface impoundment. The wastewater that these operations were contributing to will still be in the impoundment until it has been closed. The overall volumes of legacy wastewater will continue to decrease dramatically over time as the facility closes out the pond, and the water redirected to water mass balance pond and legacy wastewater from the ash pond will be combined and discharged through the secondary lagoon, outfall 001. Therefore, the Division will continue to apply the same limitations for TSS and Oil & Grease that applied before to outfall 001, since there is no change to the contributing operations to this outfall.

3.4.3. Dewatering of Ash Pond

In order for the ash pond to be closed, it must be decanted and dewatered. During dewatering, mechanical equipment may be required to remove interstitial water from the ash in the Ash Pond. While dewatering occurs, the facility will be required to monitor for the metals listed in Table 8 at a frequency of once per month and toxicity testing at a frequency of once per month. All discharges from the ash pond are sent to secondary lagoon and mixed with cooling water from the primary lagoon cooling water flow prior to discharge to the Ohio River. Also, the Ohio River can provide further dilution of effluent if necessary. For these reasons, monthly toxicity testing and monitoring of metals, with baseline water quality triggers during dewatering, will be required in place of metals limitations.

3.4.4. No Discharge of Ash Transport Water Compliance

This facility currently sluices bottom ash from two of their coal-fired operations to the Ash Pond, which discharges through Outfall 001. The Ash Pond currently settles and neutralizes bottom ash sluice flows, plants low volume wastes, FGD wastewater, coal storage yard drainage, direct rainfall, and stormwater runoff. If needed fly ash from Units 1 and 2 can be sluiced to the ash pond if ash transfer station is not operational.

40 CFR 423.13(h)(1) and 423.13(k)(1) require that there be no discharge of pollutants in fly ash and bottom ash transport waters, unless the ash transport waters are used in the FGD scrubbers. The permittee must

meet this requirement by a date determined by the permitting authority. For fly ash transport water, the date has to be as soon as possible beginning November 1, 2018 but no later than December 31, 2023. For bottom ash transport water, the date has to be as soon as possible beginning November 1, 2020 but no later than December 31, 2023.

The definition for the phrase "as soon as possible" can be found in 40 CFR 423.11(t). The permittee provided the Division of Water information to determine as soon as possible ELG compliance applicability dates. EKPC requested a compliance date of December 31, 2023 for compliance with the no-discharge requirements for bottom ash transport waters. EKPC needs until that date to: request Public Service Commission CPCN Approval, and design, procure and install equipment for conversion of bottom ash system on Units 1 & 2 from 'wet' system to a 'dry' system.

The DOW grants EKPC's requested compliance date. There shall be no discharge of pollutants in bottom and fly ash transport waters generated on and after December 31, 2023.

3.4.5. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

Certain technology-based effluent limitations and compliance deadlines included in this permit are based upon effluent limitation Guidelines ("ELGs") that are under reconsideration by the United States Environmental Protection Agency ("EPA"). 82 Fed. Reg. 43494 (September 18, 2017).

3.4.5.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.12(b) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.12(b) (3)

The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 10.		
BPT Effluent Requirements – Low Volume Waste		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (4)

The quantity of pollutants discharged in fly ash and bottom ash transport water shall not exceed the quantity determined by multiplying the flow of fly ash and bottom ash transport water times the concentration listed in the following table:

TABLE 11.		
BPT Effluent Requirements – Fly and Bottom Ash Transport Water		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (9)

Subject to the provisions of paragraph (b)(10) of this section, the following effluent limitations shall apply to the point source discharges of coal pile runoff:

TABLE 12.		
BPT Effluent Requirements – Coal Pile Runoff		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	50 mg/l	-

40 CFR 423.12(b) (10)

Any untreated overflow from facilities designed, constructed, and operated to treat the volume of coal pile runoff which is associated with a 10 year, 24 hour rainfall event shall not be subject to the limitations in paragraph (b)(9) of this section

40 CFR 423.12(b) (11)

The quantity of pollutants discharged in FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, or gasification wastewater shall not exceed the quantity determined by multiplying the flow of the applicable wastewater times the concentration listed in the following table:

TABLE 13.		
BPT Effluent Requirements – combustion residual leachate		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.12(b)(13)

In the event that waste streams from various sources are combined for treatment to be discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (b)(1) through (b)(12) of this section attributable to each controlled waste source shall not exceed the specified limitations for that waste source.

40 CFR 423.13(a)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.13(g)(ii)

For FGD wastewater generated before the date determined by the permitting authority, as specified in paragraph (g)(1)(i), the quantity of pollutants discharged in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concertation listed for TSS in 423.12(b)(11).

40 CFR 423.13(k)(1)(i)

Except for those discharges to which paragraph (k)(2) of this section applies, or when the bottom ash transport water is used in the FGD scrubber, there shall be no discharge of pollutants in bottom ash transport water. Dischargers must meet the discharge limitation in this paragraph by a date determined by the permitting authority that is as soon as possible beginning November 1, 2020, but no later than December 31, 2023. This limitation applies to the discharge of bottom ash transport water generated on and after the date determined by the permitting authority for meeting the discharge limitation, specified in this paragraph. Whenever bottom ash transport water is used in any other plant process or is sent to a treatment system at the plant (except when it is used in the FGD scrubber), the resulting effluent must comply with the discharge limitation in this paragraph. When the bottom ash transport water is used in the FGD scrubber, the quantity of pollutants in bottom ash transport water shall not exceed the quantity determined by multiplying the flow of bottom ash transport water times the concentration listed in the table in paragraph (g)(1)(i) of this section.

40 CFR 423.13(k)(1)(ii)

For discharges of bottom ash transport water generated before the date determined by the permitting authority, as specified in paragraph (k)(1)(i) of this section, the quantity of pollutants discharged in bottom ash transport water shall not exceed the quantity determined by multiplying the flow of bottom ash transport water times the concentration listed for TSS in 423.12(b)(4).

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.13(n)

In the event that wastestreams from various sources are combined for treatment or discharged, the quantity of each pollutant or pollutant property controlled in paragraphs (a) through (m) of this section attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.15(a) (3)

The quantity of pollutants discharged in low volume waste sources, FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, and gasification wastewater shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 14.		
BPT Effluent Requirements – Low volume wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.15(a)(11)

Subject to the provisions of paragraph (a)(12) of this section, the quantity or quality of pollutants or pollutant parameters discharged in coal pile runoff shall not exceed the standards specified below:

TABLE 15.	
NSPS Effluent Requirements – Coal Pile Runoff	
Effluent Characteristic	**NSPS for any time**
TSS	Not to exceed 50 mg/l

40 CFR 423.15(a)(12)

Any untreated overflow from facilities designed, constructed, and operated to treat the coal pile runoff which results from a 10 year, 24 hour rainfall event shall not be subject to the standards in paragraph (a)(11) of this section.

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a)(14)

In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (a)(1) through (13) of this section attributable to each wastes source shall not exceed the specified limitation for that waste source.

3.4.5.2. Best Professional Judgment (BPJ)

Coal Pile Runoff

In accordance with 401 KAR 5:080, Section 2(3) – 40 CFR 125.3 in the absence of promulgated technology based standards, the cabinet may develop appropriate technology based standards utilizing its 'Best Professional Judgment" (BPJ). The previous permit established the following BPJ limits for coal pile runoff.

TABLE 16.		
BPJ Effluent Requirements – Coal Pile Runoff		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	N/A	30.0 mg/l
Oil and Grease	5.0 mg/l	5.0 mg/l

These limits have not been changed for this permit renewal in accordance with anti-backsliding [40 CFR 122.44(l)].

Cooling Tower Blowdown

In accordance with 401 KAR 5:080, Section 2(3) – 40 CFR 125.3 in the absence of promulgated technology based standards, the cabinet may develop appropriate technology based standards utilizing its 'Best Professional Judgment" (BPJ). The previous permit established the following BPJ limits for Cooling Tower Blow.

TABLE 17.		
BPJ Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	50.0 mg/l	30.0 mg/l
Oil and Grease	0.0 mg/l	0.0 mg/l

These limits have not been changed for this permit renewal in accordance with anti-backsliding [40 CFR 122.44(l)].

Stormwater - Total Suspended Solids

The facility treats its storm water for this parameter before discharge in a holding pond. Sedimentation is a commonly used treatment technology for the removal of total suspended solids that is both efficient and cost effective. Although several factors may influence the final concentration of total suspended solids in the discharge, it has been the experience of the Division that ponds that retain wastewater for 6 hours or more can achieve a total suspended solids concentration of 30 mg/l as a monthly average and 60 mg/l as a daily maximum.

Stormwater -Oil & Grease

The facility does not treat its stormwater for this parameter before discharge. If treatment were to be necessary, an adequately sized oil /water separator with ample retention time would provide appropriate treatment. Flotation or gravity separation of lighter petroleum based products from water is a common and cost effective method for the removal of oil & grease. It has been the experience of the Division that this treatment method can achieve an oil & grease concentration of 10 mg/l as a monthly average and 15 mg/l as a daily maximum.

3.4.6. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 18.	
Pollutant or Pollutant Characteristic	**Basis**
Whole Effluent Toxicity	The facility is rated as a "major discharger".

	The facility's discharge is a complex wastewater.
Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc	While the facility did not show reasonable potential to violate the State Water Quality Standards for these pollutants at this outfall, the facility is undergoing major changes during this permit cycle. The facility will be dewatering the ash pond through this outfall. Therefore, it is the Division of Waters Best Professional Judgement to continue monitoring for these parameters during dewatering.
Chloride and Total Recoverable: Selenium and Thallium	A Mixing Zone has granted for these parameters. Because a Mixing Zone has been granted there is no reasonable potential for this parameter to violate the State Water Quality Standard. However, since the facility would show reasonable potential if not for the Mixing Zone it's the Division of Waters Best Professional Judgement to continue monitoring for these parameters.
Temperature	Thermal pollution or heat loads are typically associated with industrial facilities where large volumes of cooling water are utilized. Therefore, DOW has determined that reasonable potential for this pollutant does exist.

3.4.7. Mixing Zone (MZ)

The Kentucky Water Quality Standards (KYWQS) allow the assignment of a MZ for chronic aquatic life (Chronic) and human health fish consumption (Fish) WQBELs and thermal discharges [401 KAR 10:029, Section 4]. The pollutants and/or the pollutant characteristics for which DOW has granted a MZ are listed as follows: Whole Effluent Toxicity, Chloride, Selenium, and Thallium

3.5. Limitation Calculations

3.5.1. Calculations for Technology-Based Effluent Limitations

The DOW has developed flow-weighted limitations for Outfall 001 effluent to insure compliance with the federal effluent limitation guidelines for the various types of waters comingled in the Ash Pond.

Current Operations

The following calculations produce the TSS, and oil and grease limitations which will remain in effect until dewatering of the ash pond ceases.

Source	Flow		TSS			Oil & Grease			
Ash Pond	Flow GPM	AVG ELG	MAX ELG	Cal Avg	Max ELG	AVG ELG	MAX ELG	Cal Avg	Max ELG
Unit 2 FGD Scrubber	184	30	100	5520	18400	15	20	2760	3680
Unit 1 FGD Scrubber	113	30	100	3390	11300	15	20	1695	2260
Dewatering Sump	28	30	100	840	2800	15	20	420	560
Coal pile runoff	147	30	50	4410	7350	5	5	735	735
Ash Sluice Water	1177	30	100	35310	117700	15	20	17655	23540
Solids Contact Unit 3	24	30	100	720	2400	15	20	360	480
Water Treatment Building	0	30	100	0	0	15	20	0	0
Solids Constact Unit 4	24	30	100	720	2400	15	20	360	480
Pre-Treatment Building	26	30	100	780	2600	15	20	390	520
Solids Contact Unit 2	24	30	100	720	2400	15	20	360	480
RO Neut Basin	5	30	100	150	500	15	20	75	100
rainfall	48	30	60	1440	2880	10	15	480	720
Total	1800			54000	170730			25290	33555
		Limit		30	94.85			14.05	18.64167
Primary lagoon									
U1 Cooling Tower Blowdown	346	30	50	10380	17300	0	0	0	0
U2 Cooling Tower Blowdown	462	30	50	13860	23100	0	0	0	0
U3 Cooling Tower Blowdown	316	30	50	9480	15800	0	0	0	0
U4 Cooling Tower Blowdown	383	30	50	11490	19150	0	0	0	0
Boiler Blowdowns	454	30	100	13620	45400	15	20	6810	9080
Water Service Building	100	30	100	3000	10000	15	20	1500	2000
Fly Ash Transfer Bldg	100	30	100	3000	10000	15	20	1500	2000
Reboilers	57	30	100	1710	5700	15	20	855	1140
Total	2218			66540	146450			10665	14220
		Limit		30	66.02795			4.808386	6.411181
Primary lagoon Effluent	2218	30	66	66540	146388	4.8	6.4	10646.4	14195.2
Ash Pond Effluent	1800	30	94.8	54000	170640	14	18.6	25200	33480
Total	2009			60270	158514			17923.2	23837.6
		Limit:		30	78.90194			8.921453	11.86541

3.5.2. Dewatering Operations

No new flows will enter the Ash Pond during dewatering operations. The Ash Pond discharge will be similar in composition to the effluent resulting from current conditions. The TSS and oil and grease limitations applied at Outfall 001 during current operations will remain in effect until dewatering of the Ash Pond ceases.

3.5.3. Future Operations

The Ash Pond will slowly decrease in size until it is closed. The Ash Pond will decrease and eventually be replaced with the water mass balance pond. The following calculations produce the TSS, and oil and grease limitations which will take effect once Ash Pond dewatering activities cease.

Source	Flow			TSS		Oil & Grease			
Ash Pond	Flow GPM	AVG ELG	MAX ELG	Cal Avg	Max ELG	AVG ELG	MAX ELG	Cal Avg	Max ELG
Unit 2 FGD Scrubber	0	30	100	0	0	15	20	0	0
Unit 1 FGD Scrubber	0	30	100	0	0	15	20	0	0
Dewatering Sump	28	30	100	840	2800	15	20	420	560
Coal pile runoff	147	30	50	4410	7350	5	5	735	735
No Ash Sluice Water	0	30	100	0	0	15	20	0	0
Solids Contact Unit 3	24	30	100	720	2400	15	20	360	480
Water Treatment Building	0	30	100	0	0	15	20	0	0
Solids Constact Unit 4	24	30	100	720	2400	15	20	360	480
Pre-Treatment Building	26	30	100	780	2600	15	20	390	520
Solids Contact Unit 2	24	30	100	720	2400	15	20	360	480
RO Neut Basin	5	30	100	150	500	15	20	75	100
rainfall	48	30	60	1440	2880	10	15	480	720
Total	326			9780	23330			3180	4075
		Limit		30	71.56442			9.754601	12.5
Primary lagoon									
U1 Cooling Tower Blowdown	346	30	50	10380	17300	0	0	0	0
U2 Cooling Tower Blowdown	462	30	50	13860	23100	0	0	0	0
U3 Cooling Tower Blowdown	316	30	50	9480	15800	0	0	0	0
U4 Cooling Tower Blowdown	383	30	50	11490	19150	0	0	0	0
Boiler Blowdowns	454	30	100	13620	45400	15	20	6810	9080
Water Service Building	100	30	100	3000	10000	15	20	1500	2000
Fly Ash Transfer Bldg	100	30	100	3000	10000	15	20	1500	2000
Reboilers	57	30	100	1710	5700	15	20	855	1140
Total	2218			66540	146450			10665	14220
		Limit		30	66.02795			4.808386	6.411181
Primary lagoon Effluent	2218	30	66	66540	146388	4.8	6.4	10646.4	14195.2
Ash Pond Effluent	326	30	71.56442	9780	23330	14	18.6	4564	6063.6
Total	1272			38160	84859			7605.2	10129.4
		Limit:		30	66.71305			5.978931	7.963365

3.5.4. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	121	YES	121.4568582	NO	N/A	N/A

Effluent Characteristic	Units	Reported Avg	Reported Max	Average Limitation	Maximum Limitation	Average Discharge %	Maximum Discharge %	Data Source
Antimony	µg/L	1.075	1.075	10258.69091	N/A	0.01	N/A	DMR
Arsenic	µg/L	10.63	10.63	340	340	3.13	3.13	DMR
Beryllium	µg/L	0.17	0.17	7327.636364	N/A	0.00	N/A	DMR
Cadmium	µg/L	0.608	0.608	8.731374985	8.731374985	6.96	6.96	DMR
Chloride	µg/L	686000	686000	1200000	1200000	57.17	57.17	APP
Chromium	µg/L	3.43	3.43	183190.9091	N/A	0.00	N/A	DMR
Chromium (III)	µg/L	3.43	3.43	5611.7027	5611.7027	0.06	0.06	DMR
Chromium (VI)	µg/L	3.43	3.43	16	16	21.44	21.44	DMR
Copper	µg/L	5.87	5.87	51.68449826	51.68449826	11.36	11.36	DMR
Cyanide, Free	µg/L	0.5	0.5	22	22	2.27	2.27	DMR
Iron	µg/L	379	379	4000	4000	9.48	9.48	APP
Lead	µg/L	0.36	0.36	476.8177624	476.8177624	0.08	0.08	DMR
Mercury	µg/L	0.013	0.013	0.051	1.4	25.49	0.93	DMR
Nickel	µg/L	14.9	14.9	1515.921838	1515.921838	0.98	0.98	DMR
Nitrate (as N)	µg/L	3	3	18319090.91	N/A	0.00	N/A	APP
Selenium	µg/L	19.1	19.1	307	N/A	0.63	N/A	DMR
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	DMR
Sulfate	µg/L	1359000	1359000	457977272.7	N/A	0.30	N/A	APP
Thallium	µg/L	1.98	1.98	439.6581818	N/A	0.45	N/A	DMR
Zinc	µg/L	11.96	11.96	387.8303147	387.8303147	3.08	3.08	DMR
Ammonia (as N)	mg/l	0.267	1	4906.285314	N/A	0.01	N/A	APP
Nitrite-nitrogen Ohio River	mg/l	3	3	610.6927273	N/A	0.49	N/A	APP
Temperature	°F	78.89	80.86	0	110	71.72	73.51	DMR

3.5.5. WET Limit Calculation

In addition to chemical-specific criteria, 401 KAR 10:031 contains whole effluent toxicity (WET) criteria that necessitate the evaluation of complete effluents. The WET criterion is divided into two categories – acute and chronic. WET criteria are not measured in pollutant concentrations, but rather in toxicity units (TUs). The units TU represent the percentage of effluent that represents a toxic effect.

Pursuant to 401 KAR 10:029, Section 4(2) and 401 KAR 10:031, Section 4(j), the allowable instream concentration of toxic substances or whole effluent containing toxic substances shall not exceed a TU_C of 1.00, utilizing the IC25, at the edge of the assigned regulatory Mixing Zone and shall not exceed a TU_A 0f 1.00, utilizing the LC50, within the assigned mixing unless a Zone of Initial Dilution has been assigned. To determine the maximum TU_C that can be discharged to ensure a 1.00 TU_C is meet at the edge of the assigned mixing zone, the following equation is used:

$$C_T = \frac{\left[C_D\left(Q_T + (MZF)(Q_U)\right) - C_U(MZF)(Q_U)\right]}{Q_T} = \frac{\left[1.00\left(5.79 + (0.333)(10600)\right) - 0(.333)(10600)\right]}{5.79}$$

$$= 611$$

Where:

- C_T = the end of pipe effluent limit
- C_D = the pollutant water quality standard meet at edge of mixing zone (1.00 TU)
- C_U = the pollutant background concentration, assumed to be 0 if no data available
- Q_T = the discharge flow (in cfs)
- Q_U = the receiving stream critical flow (7Q10 in cfs)
- MZF = mixing zone factor, not to exceed 0.333 for streams and rivers or not to exceed 0.1 for lakes

In order to translate between TU_A and TU_C, a relationship between TU_A and TU_C must be defined. This relationship is known as the acute to chronic ratio and is defined as the ratio of acute toxicity, expressed as an LC50, of an effluent to its chronic toxicity. It is used as a factor to estimate chronic toxicity from acute toxicity data. DOW has defined two ratios, one for bioaccumulative or persistent, and one for non-accumulative or non-persistent effluents.

For discharges containing:

- Bioaccumulative or persistent constituents, 1.00 TU_C = 0.01 TU_A (401 KAR 10:031, Section 4(1)(j)(2))
- Non-bioaccumulative or non-persistent constituents, 1.00 TU_C = 0.1TU_A (401 KAR 10:031, Section 4(1)(j)(1))

Since mercury, a bioaccumulative in accordance with 401 KAR 10:029, 4(1)(h)(2)(b), is in the discharge from this outfall the acute to chronic ratio is 0.01

Using the above calculated TU_C limit of 611 and the acute to chronic ratio of 0.01, results in a TU_A limit of 6.10. This result represents that 16% of the facilities effluent can't not produce an acute toxic effect. Therefore, there is enough mixing within the assigned mixing zone and TU_A can be used in place of TU_C, and 1.00 TU_A limit is placed on the permit.

3.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

3.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

3.6.2. Temperature

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031 Section 6 and 401 KAR 10:029 Section 4]. A mixing zone has been granted, in accordance with 401 KAR 10:029 Section 4, for this parameter.

3.6.3. Total Suspended Solids

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT and NSPS requirements for low volume waste [40 CFR 423.12(b)(3)] and [40 CFR 423.15(a)(3)], representative of BPT, BAT, and NSPS requirements for bottom ash transport water [40 CFR 423.12(b)(4)], [40 CFR 423.13(k)], and [40 CFR 423.15(a)(6)], representative of BPT and NSPS requirements for coal pile runoff [40 CFR 423.12(b)(9)] and[40 CFR

423.15(a)(11)], representative of BPT, BAT, and NSPS requirements for FGD wastewater {40 CFR 423.12(b)(11)], [40 CFR 423.13(g)], and [40 CFR 423.15(a)(3)], representative of BPT and NSPS requirements for metal cleaning waste [40 CFR 423.12(b)(5)], [40 CFR 423.15(a)(4)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

3.6.4. Oil and Grease

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT and NSPS requirements for low volume waste [40 CFR 423.12(b)(3)] and [40 CFR 423.15(a)(3)], representative of BPT, BAT, and NSPS requirements for bottom ash transport water [40 CFR 423.12(b)(4)], [40 CFR 423.13(k)], and [40 CFR 423.15(a)(6)], representative of BPT, BAT, and NSPS requirements for FGD wastewater {40 CFR 423.12(b)(11)], [40 CFR 423.13(g)], and [40 CFR 423.15(a)(3)], representative of BPT and NSPS requirements for metal cleaning waste [40 CFR 423.12(b)(5)], [40 CFR 423.15(a)(4)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

3.6.5. pH

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT and NSPS requirements for pH [40 CFR 423.12 (b)(1)] and [40 CFR 423.15(a)(1)], and state water quality standards [401 KAR 10:031, Sections 4(1)(b) and 7].

3.6.6. Hardness and Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc

The monitoring requirements for these pollutants are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

3.6.7. Chloride and Total Recoverable Thallium

The monitoring requirements for these pollutants are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. A mixing zone has been granted, in accordance with 401 KAR 10:029 Section 4, for this parameter.

3.6.8. Total Recoverable Selenium

A mixing zone has been granted for this pollutant that allows the chronic aquatic life criterion to be met at the edge of the mixing zone. The monthly average effluent limitation for this parameter is consistent with the requirements of 401 KAR 5:065, Section 2(4) [40 CFR 122.44(d)] and 401 KAR 10:031, Section 4. The monthly average concentration of 3053 µg/l serves both as a trigger for the collection of adequate number of fish to conduct selenium residue in fish tissue testing and as a limitation in the event the permittee is unable to collect the required number of fish. These limitations are consistent with Kentucky's water quality standards for total recoverable selenium. The incorporation of Appendix A on the collection and handling requirements established in "Methods for Collection of Selenium Residue in Fish Tissue Used

to Determine KPDES Permit Compliance" is consistent with the requirements of 401 KAR 5:070, Section 3[40 CFR 122.48(a)].

3.6.9. BMP Triggers

Permits shall include BMPs to control or abate the discharge of pollutants when numeric effluent limitations are infeasible and/or when the practices are reasonably necessary to achieve effluent limitations and standards to carry out the purposes and intent of the Clean Water Act (CWA). To determine the effectiveness of the BMPs during dewatering triggers have been established that if exceeded require the permittee to evaluate the currently employed BMPs and make necessary modifications.

3.6.10. Whole Effluent Toxicity

The limitations for this parameter are consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Sections 4(1)(j)].A mixing zone has been granted, in accordance with 401 KAR 10:029 Section 4, for this parameter.

SECTION 4

OUTFALL 002

4. OUTFALL 002

4.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 19.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°41'59.4"	83°48'46.3"	Outfall 001	Unit #1 Cooling Tower Blowdown

4.2. Reported Values

The following table summarizes the reported values for Outfall 002:

TABLE 20.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.383	0.701	N/A	N/A	N/A	N/A
Free Available Chlorine	mg/l	N/A	N/A	N/A	0.04	0.06	N/A
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.11	0.14	N/A
Time of Chlorine Addition	Minutes/Day/Unit	N/A	N/A	N/A	0	0	N/A
Priority Pollutants	mg/l	N/A	N/A	N/A	0.033	0.033	N/A
Total Chromium	mg/l	N/A	N/A	N/A	0.001	0.001	N/A
Total Zinc	mg/l	N/A	N/A	N/A	0.009	0.009	N/A

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

4.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 002:

TABLE 21.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]

[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.

[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.

[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.

[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.

[6]Complicance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.

4.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

4.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

4.4.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (7)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown sources times the concentration listed in the following table:

TABLE 22.		
BPT Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Free Available Chlorine	0.5 mg/l	0.2 mg/l

40 CFR 423.12(b) (8)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(d) (1)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown time the concentration listed below:

TABLE 23.		
BAT Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**

Free Available Chlorine	0.5 mg/l	0.2 mg/l
The 126 priority pollutants (appendix A) contained in chemicals added for cooling tower maintenance, except:	([1])	([1])
Chromium, Total	0.2 mg/l	0.2 mg/l
Zinc, Total	1.0 mg/l	1.0 mg/l
[1]No detectable amount		

40 CFR 423.13(d) (2)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.13(d) (3)

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations demonstrating that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

4.4.2. Best Professional Judgment "BPJ"

Time of Oxidants Discharge

The Division of Water will impose a limit of 120 minutes/day/unit of chlorination / oxidation discharge time. The limit is representative of the BAT requirements for the discharge of chlorine in cooling tower blowdown as specified in 40 CFR 423.13(d)(2) as incorporated in 401 KAR 5:065, Section 2(6). It is the "Best Professional Judgement" (BPJ) of the Division of Water that this requirement is also applicable to the addition of other oxidants as well as chlorine.

Total Residual Oxidants

The Division of Water will impose a daily maximum limit of 0.20 mg/l for this parameter. The limit is representative of the BAT requirements for total residual chlorine in once through cooling water as specified in 40 CFR 423.13(b)(1) as incorporated in 401 KAR 5:065, Section 2(6). It is the Division of Water's Best Professional Judgment (BPJ) determination to limit oxidants discharged in cooling tower blowdown, when the permittee chooses to use an oxidant other than chlorine.

4.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

4.5.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

4.5.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for blowdown volume [40 CFR 125.94(c)(1)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

4.5.3. Free Available Chlorine

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BPT and BAT, requirements for cooling tower blowdown [40 CFR 423.12(b)(7)] and [40 CFR 423.13(d)(1)].

4.5.4. Total Chromium, Total Zinc, and Priority Pollutants

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT requirements for cooling tower blowdown [40 CFR 423.13(d)(1)].

4.5.5. Time of Oxidants Discharge

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT requirements for chlorine addition in [40 CFR 423.13 (d)(1)(2)] and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

4.5.6. Total Residual Oxidants

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1)

and 122.44(i)(1)], the criteria and standards for imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

SECTION 5

OUTFALL 003

5. OUTFALL 003

5.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 24.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°41'59.6"	83°48'46.3"	Outfall 001	Unit #2 Cooling Tower Blowdown

5.2. Reported Values

The following table summarizes the reported values for Outfall 003:

TABLE 25.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.66	1.17	N/A	N/A	N/A	N/A
Free Available Chlorine	mg/l	N/A	N/A	N/A	0.036	0.052	N/A
Total Residual Chlorine	mg/l	N/A	N/A	N/A	0.103	0.135	N/A
Time of Chlorine Addition	Minutes/Day/Unit	N/A	N/A	N/A	0	0	N/A
Priority Pollutants	mg/l	N/A	N/A	N/A	0.045	0.045	N/A
Total Chromium	mg/l	N/A	N/A	N/A	0.005	0.005	N/A
Total Zinc	mg/l	N/A	N/A	N/A	0.009	0.009	N/A

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

5.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 003:

TABLE 26.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]

[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.

[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.

[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.

[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.

[6]Complicance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.

5.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

5.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

5.4.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (7)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown sources times the concentration listed in the following table:

TABLE 27.		
BPT Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Free Available Chlorine	0.5 mg/l	0.2 mg/l

40 CFR 423.12(b) (8)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(d) (1)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown time the concentration listed below:

TABLE 28.		
BAT Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**

Free Available Chlorine	0.5 mg/l	0.2 mg/l
The 126 priority pollutants (appendix A) contained in chemicals added for cooling tower maintenance, except:	([1])	([1])
Chromium, Total	0.2 mg/l	0.2 mg/l
Zinc, Total	1.0 mg/l	1.0 mg/l
[1]No detectable amount		

40 CFR 423.13(d) (2)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.13(d) (3)

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations demonstrating that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

5.4.2. Best Professional Judgment "BPJ"

Time of Oxidants Discharge

The Division of Water will impose a limit of 120 minutes/day/unit of chlorination / oxidation discharge time. The limit is representative of the BAT requirements for the discharge of chlorine in cooling tower blowdown as specified in 40 CFR 423.13(d)(2) as incorporated in 401 KAR 5:065, Section 2(6). It is the "Best Professional Judgement" (BPJ) of the Division of Water that this requirement is also applicable to the addition of other oxidants as well as chlorine.

Total Residual Oxidants

The Division of Water will impose a daily maximum limit of 0.20 mg/l for this parameter. The limit is representative of the BAT requirements for total residual chlorine in once through cooling water as specified in 40 CFR 423.13(b)(1) as incorporated in 401 KAR 5:065, Section 2(6). It is the Division of Water's Best Professional Judgment (BPJ) determination to limit oxidants discharged in cooling tower blowdown, when the permittee chooses to use an oxidant other than chlorine.

5.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

5.5.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

5.5.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for blowdown volume [40 CFR 125.94(c)(1)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

5.5.3. Free Available Chlorine

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BPT and BAT, requirements for cooling tower blowdown [40 CFR 423.12(b)(7)] and [40 CFR 423.13(d)(1)].

5.5.4. Total Chromium, Total Zinc, and Priority Pollutants

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT requirements for cooling tower blowdown [40 CFR 423.13(d)(1)].

5.5.5. Time of Oxidants Discharge

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT requirements for chlorine addition in [40 CFR 423.13 (d)(1)(2)] and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

5.5.6. Total Residual Oxidants

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1)

and 122.44(i)(1)], the criteria and standards for imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

SECTION 6

OUTFALL 004

6. OUTFALL 004

6.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 29.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	Varies	Varies	Outfall 001	Chemical Metal Cleaning Wastewater

6.2. Reported Values

The following table summarizes the reported values for Outfall 004:

TABLE 30.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	ND	ND	N/A	N/A	N/A	N/A
Total Recoverable Copper	mg/l	N/A	N/A	N/A	ND	ND	N/A
Total Recoverable Iron	mg/l	N/A	N/A	N/A	ND	ND	N/A
pH	SU	N/A	N/A	ND	N/A	N/A	ND
The abbreviation ND means "No Discharge" during the last five years.							

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 12/31/2012 to 12/31/2016.

6.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 004:

TABLE 31.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Batch[1]	Instantaneous
Total Recoverable Copper	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch[1]	Grab

TABLE 31.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Total Recoverable Iron	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Batch[1]	Grab
[1]Monitoring shall be conducted once per metal cleaning operation.									

6.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

6.4.1. Jordan Memorandum

According to 40 CFR 423.11(c) the term chemical metal cleaning waste means any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning. According to 40 CFR 423.11(d) the term metal cleaning waste means any wastewater resulting from cleaning [with or without chemical compounds] any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

There are air heater wash waters, boiler fireside wash waters, boiler tube cleaning, draft fan cleaning, and precipitator wash water discharged to the ash pond. These waters are not a result of cleaning with chemical compounds and they do not flow through Outfall 004. In the past these wastewaters were permitted to discharge directly to the ash pond without limitations or monitoring requirements. That permitting action was done pursuant to the Jordan Memorandum. The memorandum is from J. William Jordan, US EPA Permit Assistance and Evaluation Division, to Bruce P. Smith, US EPA Enforcement Division Region III, concerning interpretation of the metal cleaning wastes guidelines in the federal effluent limitation guidelines for steam electric power generating point sources. In the memorandum, Mr. Jordan explains that "All water washing operations are 'low volume' while any discharge from an operation involving chemical cleaning should be included in the metal cleaning category." With that in mind, it makes sense that the limitations for chemical metal cleaning wastes do not apply to the air heater wash waters and boiler fireside wash waters at this facility.

It is the BPJ of the DOW to place low volume waste requirements on these wastewaters. The DOW has developed flow-weighted limitations at Outfall 001 to insure compliance with the federal effluent limitation guidelines for low volume wastes, chemical metal cleaning wastes, and other process wastewaters.

6.4.2. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

6.4.2.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b)(5)

The quantity of pollutants discharged in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration listed in the following table:

TABLE 32.		
BPT Effluent Requirements – Metal Cleaning Wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

Copper, Total	1.0 mg/l	1.0 mg/l
Iron, Total	1.0 mg/l	1.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(e)

The quantity of pollutants discharged in chemical metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration listed in the following table:

TABLE 33.		
BAT Effluent Requirements – Chemical Metal Cleaning Wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Copper, Total	1.0 mg/l	1.0 mg/l
Iron, Total	1.0 mg/l	1.0 mg/l

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a) (4)

The quantity of pollutants discharged in chemical metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration listed in the following table:

TABLE 34.		
NSPS Effluent Requirements – Chemical Metal Cleaning Wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l
Copper, Total	1.0 mg/l	1.0 mg/l
Iron, Total	1.0 mg/l	1.0 mg/l

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

6.4.3. Total Suspended Solids, and Oil and Grease

Since Outfall 004 effluent is directed to the ash pond, and will be discharged through the future secondary lagoon, the limitations for these pollutants has been applied at Outfall 001 after commingling with other waters. The DOW has developed flow-weighted limitations to insure compliance with the federal effluent limitation guidelines.

6.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

6.5.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

6.5.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

6.5.3. Total Copper and Total Iron

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT, BAT and NSPS requirements for metal cleaning wastes [40 CFR 423.12(b)(5)] ,[40 CFR 423.13(e)], and[40 CFR 423.15(a)(10)].

SECTION 7

OUTFALL 005

7. OUTFALL 005

7.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 35.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'9.8"	83°48'59.3"	Ohio River	Emergency Coal Pile Runoff

7.2. Reported Values

The following table summarizes the reported values for Outfall 005:

TABLE 36.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.125	0.173	N/A	N/A	N/A	N/A
Precipitation	inches	N/A	N/A	N/A	2.76	3.30	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	25.8	27.2	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	592.2	604.8	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.301	0.313	N/A
pH	SU	N/A	N/A	3.08	N/A	N/A	9.73

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

7.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 005:

TABLE 37.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Discharge	Instantaneous

TABLE 37.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	50	N/A	1/Discharge	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Discharge	Grab
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Lead,	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Mercury	ng/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Discharge	Grab
The monitoring frequency for this outfall is once per discharge, but no more frequent than once per quarter. Should more than one discharge occur during a given quarter the permittee will be responsible for collection at least one of those discharges.									

7.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

7.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

7.4.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.12(b) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.12(b) (9)

Subject to the provisions of paragraph (b)(10) of this section, the following effluent limitations shall apply to the point source discharges of coal pile runoff:

TABLE 38.		
BPT Effluent Requirements – Coal Pile Runoff		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	50 mg/l	-

40 CFR 423.12(b) (10)

Any untreated overflow from facilities designed, constructed, and operated to treat the volume of coal pile runoff which is associated with a 10 year, 24 hour rainfall event shall not be subject to the limitations in paragraph (b)(9) of this section

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

7.4.2. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 39.

Pollutant or Pollutant Characteristic	Basis
Total Recoverable Metals	Total Recoverable Metals represents the summation of the analytical values of the following individual pollutants: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc. An analysis of the DMR data indicates the concentrations of these pollutants did not demonstrate a reasonable potential as determined by DOW's chemical specific RPA procedures. However, the facility is going through major changes in response to the new steam electric ELG's. Therefore, it is the best professional judgement of the Division to continue monitoring for the metals that have an acute water quality criteria.

7.5. Limitation Calculations

7.5.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	121	NO	N/A	NO	N/A	N/A
Effluent Characteristic	Units	Reported Avg	Reported Max	Average Limitation	Maximum Limitation	Average Discharge %	Maximum Discharge %	Data Source
Antimony	µg/L	0	0	640	N/A	0.00	N/A	DMR
Arsenic	µg/L	3.2	3.2	150	340	2.13	0.94	DMR
Barium	µg/L	30.4	30.4	54781800	N/A	0.00	N/A	APP
Beryllium	µg/L	2.1	2.1	219127.2	N/A	0.00	N/A	DMR
bis(2-ethylhexyl)phthalate	µg/L	5	5	2.2	N/A	227.27	N/A	APP
Cadmium	µg/L	0.23	0.23	0.755841246	8.731374985	30.43	2.63	DMR
Chloride	µg/L	30900	30900	600000	1200000	5.15	2.58	APP
Chromium	µg/L	0	0	5478180	N/A	0.00	N/A	DMR
Chromium (III)	µg/L	0	0	268.2205163	5611.7027	0.00	0.00	DMR
Chromium (VI)	µg/L	0	0	11	16	0.00	0.00	DMR
Copper	µg/L	2.43	2.43	30.49938305	51.68449826	7.97	4.70	DMR
Cyanide, Free	µg/L	0	0	5.2	22	0.00	0.00	APP
Iron	µg/L	890	890	3500	4000	25.43	22.25	APP
Lead	µg/L	0	0	18.58090366	476.8177624	0.00	0.00	DMR
Mercury	µg/L	0.00867	0.00867	0.051	1.4	17.00	0.62	DMR
Nickel	µg/L	24.43	24.43	168.5409938	1515.921838	14.49	1.61	DMR
Nitrate (as N)	µg/L	300	300	547818000	N/A	0.00	N/A	APP
Selenium	µg/L	6.9	6.9	5	N/A	138.00	N/A	DMR
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	DMR
Sulfate	µg/L	266000	266000	13695450000	N/A	0.00	N/A	APP
Thallium	µg/L	0.47	0.47	0.47	N/A	100.00	N/A	DMR
Zinc	µg/L	51	51	387.8303147	387.8303147	13.15	13.15	DMR
Ammonia (as N)	mg/l	0.6	0.6	146718.602	N/A	0.00	N/A	APP
Nitrite-nitrogen Ohio River	mg/l	0.3	0.3	1	N/A	30.00	N/A	APP

7.5.2. Non-continuous discharge

The discharge from this outfall is not a continuous discharge, and only discharges as result of stormwater. Therefore, only the acute water quality standards apply to the discharge.

7.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

7.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

7.6.2. Total Suspended Solids

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6)

– 40 CFR 122 Appendix A], representative of BPT and NSPS requirements for coal pile runoff [40 CFR 423.12(b)(9)] and [40 CFR 423.15(a)(11)].

7.6.3. pH

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BPT and NSPS requirements for pH [40 CFR 423.12 (b)(1)] and [40 CFR 423.15(a)(1)].

7.6.4. Hardness and Total Recoverable: Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

7.6.5. Total Recoverable: Antimony, Beryllium, Selenium, and Thallium

Based on the last five years of DMR data, the facility does not show reasonable potential for these parameters at this outfall. Therefore, the decision to remove these parameters from the permit is based on the Division of Water's EPA-Approved "Permitting Procedures For Determining Reasonable Potential" and 40 CFR 122.44(d).

7.6.6. Precipitation

The removal of this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. DOW has determined that precipitation data for this facility does not provide any additional insight into determining compliance with the effluent limitations.

SECTION 8

OUTFALL 006

8. OUTFALL 006

8.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 40.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'7.9"	83°48'50.4"	Ohio River	Stormwater Runoff

8.2. Reported Values

The following table summarizes the reported values for Outfall 006:

TABLE 41.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	1.22	1.33	N/A	N/A	N/A	N/A
Precipitation	Inches	N/A	N/A	N/A	0.84	1.41	N/A
Settleable Solids	mg/l	N/A	N/A	N/A	0.14	0.14	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	184.4	236.5	N/A
pH	SU	N/A	N/A	7.45	N/A	N/A	8.18

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 12/31/2012 to 09/30/2017.

8.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 006:

TABLE 42.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Settleable Solids	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

TABLE 42.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Oil & Grease	mg/l	N/A	N/A	N/A	10	15	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab

8.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

8.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

8.4.1.1. Best Professional Judgement

Oil & Grease

The facility does not treat its stormwater for this parameter before discharge. If treatment were to be necessary, an adequately sized oil /water separator with ample retention time would provide appropriate treatment. Flotation or gravity separation of lighter petroleum based products from water is a common and cost effective method for the removal of oil & grease. It has been the experience of the Division that this treatment method can achieve an oil & grease concentration of 10 mg/l as a monthly average and 15 mg/l as a daily maximum.

8.5. Limitation Calculations

8.5.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	184.4	121	NO	N/A	NO	N/A	N/A

Effluent Characteristic	Units	Reported Avg	Reported Max	Average Limitation	Maximum Limitation	Average Discharge %	Maximum Discharge %	Data Source
Antimony	µg/L	0	0	640	N/A	0.00	N/A	APP
Arsenic	µg/L	2.9	2.9	150	340	1.93	0.85	APP
Beryllium	µg/L	0.1	0.1	22455.14754	N/A	0.00	N/A	APP
Cadmium	µg/L	0.8	0.8	0.425859758	3.973754209	187.86	20.13	APP
Chromium	µg/L	3.2	3.2	561378.6885	N/A	0.00	N/A	APP
Chromium (III)	µg/L	3.2	3.2	142.2535299	2976.224672	2.25	0.11	APP
Chromium (VI)	µg/L	3.2	3.2	11	16	29.09	20.00	APP
Copper	µg/L	3.8	3.8	15.73705618	24.9172045	24.15	15.25	APP
Iron	µg/L	170	170	3500	4000	4.86	4.25	APP
Lead	µg/L	0	0	6.933589241	177.9277568	0.00	0.00	APP
Nickel	µg/L	9.8	9.8	87.53798253	787.3499282	11.20	1.24	APP
Selenium	µg/L	8	8	5	N/A	160.00	N/A	APP
Silver	µg/L	0	0	N/A	10.8419685	N/A	0.00	APP
Thallium	µg/L	0.7	0.7	0.47	N/A	148.94	N/A	APP
Zinc	µg/L	50.4	50.4	201.2313064	201.2313064	25.05	25.05	APP

8.5.2. Non-continuous discharge

The discharge from this outfall is not a continuous discharge, and only discharges as result of stormwater. Therefore, only the acute water quality standards apply to the discharge.

8.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

8.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

8.6.2. Settleable Solids

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

8.6.3. Oil & Grease

The limitations for this parameter are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

8.6.4. pH

The limitations for this parameter are consistent Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

8.6.5. Precipitation and Hardness

The removal of these parameters is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. DOW has determined that precipitation data for this facility does not provide any additional insight into determining compliance with the effluent limitations. Since none of the remaining parameters are hardness dependent the monitoring requirements for hardness has also been removed.

SECTION 9

OUTFALL 007

9. OUTFALL 007

9.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 43.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'0.2"	83°48'46.9"	Ohio River	Reverse Osmosis Reject

9.2. Reported Values

The following table summarizes the reported values for Outfall 007:

TABLE 44.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.16	0.17	N/A	N/A	N/A	N/A
Dissolved Solids	mg/l	N/A	N/A	N/A	1140	1143	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	737.2	752.3	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.007	0.008	N/A
pH	SU	N/A	N/A	7.67	N/A	N/A	8.07

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 12/31/2012 to 09/30/2017.

9.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 007:

TABLE 45.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Dissolved Solids	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

TABLE 45.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab
Total Recoverable Thallium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

9.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

9.4.1. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 46.

Pollutant or Pollutant Characteristic	Basis
Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc	Total Recoverable Metals represents the summation of the analytical values of the following individual pollutants: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc. An analysis of the DMR data indicates the concentrations of these pollutants did not demonstrate a reasonable potential as determined by DOW's chemical specific RPA procedures. Therefore, DOW is removing the monitoring requirement for these parameters.
Total Recoverable Thallium	A Mixing Zone has granted for these parameters. Because a Mixing Zone has been granted there is no reasonable potential for this parameter to violate the State Water Quality Standard. However, since the facility would show reasonable potential if not for the Mixing Zone it's the Division of Waters Best Professional Judgement to continue monitoring for these parameters.

9.4.2. Mixing Zone (MZ)

The Kentucky Water Quality Standards (KYWQS) allow the assignment of a MZ for chronic aquatic life (Chronic) and human health fish consumption (Fish) WQBELs and thermal discharges [401 KAR 10:029, Section 4]. The pollutants and/or the pollutant characteristics for which DOW has granted a MZ are listed as follows: Total Recoverable Thallium

9.5. Limitation Calculations

9.5.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	121	YES	121.0195754	NO	N/A	N/A
Effluent Characteristic	Units	Reported Avg	Reported Max	Average Limitation	Maximum Limitation	Average Discharge %	Maximum Discharge %	Data Source
Antimony	µg/L	0.09	0.09	239671.6	N/A	0.00	N/A	DMR
Arsenic	µg/L	1.98	1.98	340	340	0.58	0.58	DMR
Beryllium	µg/L	0	0	171194	N/A	0.00	N/A	DMR
Cadmium	µg/L	0	0	8.731374985	8.731374985	0.00	0.00	DMR
Chloride	µg/L	109000	109000	1200000	1200000	9.08	9.08	APP
Chromium	µg/L	0	0	4279850	N/A	0.00	N/A	DMR
Chromium (III)	µg/L	0	0	5611.7027	5611.7027	0.00	0.00	DMR
Chromium (VI)	µg/L	0	0	16	16	0.00	0.00	DMR
Copper	µg/L	0	0	51.68449826	51.68449826	0.00	0.00	DMR
Iron	µg/L	0	0	4000	4000	0.00	0.00	APP
Lead	µg/L	0.09	0.09	476.8177624	476.8177624	0.02	0.02	DMR
Mercury	µg/L	0	0	0.051	1.4	0.00	0.00	DMR
Nickel	µg/L	0.8	0.8	1515.921838	1515.921838	0.05	0.05	DMR
Nitrate (as N)	µg/L	1100	1100	427985000	N/A	0.00	N/A	APP
Selenium	µg/L	0.92	0.92	71262.8375	N/A	0.00	N/A	DMR
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	DMR
Sulfate	µg/L	243000	243000	10699625000	N/A	0.00	N/A	APP
Thallium	µg/L	0.28	0.28	10271.64	N/A	0.00	N/A	DMR
Zinc	µg/L	1.88	1.88	387.8303147	387.8303147	0.48	0.48	DMR
Ammonia (as N)	mg/l	0	0	114624.4937	N/A	0.00	N/A	APP
Nitrite-nitrogen Ohio River	mg/l	1.1	1.1	14252.5675	N/A	0.01	N/A	APP

9.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

9.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

9.6.2. Total Dissolved Solids

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

9.6.3. pH

The limitations for this parameter are consistent Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

9.6.4. Total Recoverable Thallium

The monitoring requirements for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. A mixing zone has been granted, in accordance with 401 KAR 10:029 Section 4, for this parameter.

9.6.5. Hardness and Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc

Based on the last five years of DMR data the facility does not show reasonable potential for these parameters at this outfall. Therefore the decision to remove this parameter from the permit is based on the Division of Water's EPA approved "Permitting Procedures For Determining Reasonable Potential" and 40 CFR 122.44 (d). Since none of the remaining parameters are hardness dependent the monitoring requirements for hardness has also been removed.

SECTION 10

OUTFALL 008

10. OUTFALL 008

10.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 47.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°41'9.01"	83°49'46.76"	UT to Lawrence Creek	Coal Combustion Residual Landfill Leachate and Stormwater Runoff

10.2. Reported Values

The following table summarizes the reported values for Outfall 008:

TABLE 48.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	0.155	0.199	N/A	N/A	N/A	N/A
Precipitation	Inches	N/A	N/A	N/A	0.73	0.73	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	14.23	16.76	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.024	0.025	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	853.95	864.80	N/A
pH	SU	N/A	N/A	7.39	N/A	N/A	11.68

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 12/31/2012 to 09/30/2017.

10.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 008:

TABLE 49.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous

TABLE 49.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab
Total Recoverable Thallium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium	µg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium (Fish Tissue)	mg/kg dry weight	N/A	N/A	N/A	N/A	N/A	Report	1/Year	[1]
[1]See Section 5.11 of the permit for additional requirements.									

10.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

10.4.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

10.4.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.12(b) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.12(b) (11)

The quantity of pollutants discharged in FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, or gasification wastewater shall not exceed the quantity determined by multiplying the flow of the applicable wastewater times the concentration listed in the following table:

TABLE 50.		
BPT Effluent Requirements – combustion residual leachate		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(a)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.13(l)

The quantity of pollutants discharged in combustion residual leachate shall not exceed the quantity determined by multiplying the flow of combustion residual leachate times the concertation for TSS listed in 423.12(b)(4).

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.15(a) (3)

The quantity of pollutants discharged in low volume waste sources, FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, and gasification wastewater shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 51.		
BPT Effluent Requirements – Low volume wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

10.4.1.2. Best Professional Judgment (BPJ)

Landfill – Stormwater Runoff

This facility utilizes a sedimentation basin it its operation which provides for the settling of suspended solids. Sedimentation is a commonly used treatment technology for the removal of total suspended solids from non-contaminated stormwater runoff associated with landfill operations. Sedimentation is both efficient and cost effective. Although several factors may influence the final concentration of total suspended solids in the discharge, it has been the experience of the Division that ponds that retain landfill-related stormwater for six hours or more can achieve a total suspended solids concentration of 100 mg/l as a daily maximum.

10.4.2. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 52.

Pollutant or Pollutant Characteristic	Basis
Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc.	Total Recoverable Metals represents the summation of the analytical values of the following individual pollutants: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc. An analysis of the DMR data indicates the concentrations of these pollutants, except Selenium and Thallium, did not demonstrate a reasonable potential as determined by DOW's chemical specific RPA procedures. Therefore, DOW is removing the monitoring requirement for these parameters.
Total Recoverable Selenium	The discharge concentration of this pollutant exceeds 90% of the calculated chronic water quality-based effluent limitations (WQBELs) for this pollutant. However, in accordance with 401 KAR 10:031 Section 6 footnote 9 "If fish tissue data are available, fish tissue data shall take precedence over water column data. Based on fish tissue data provided there is not reasonable potential to violate the Selenium fish tissue Water Quality Criteria. Due to limited results at this time it is Division's Best Professional Judgment to monitor selenium and fish tissue selenium at this outfall.
Total Recoverable Thallium	The discharge concentration of this pollutant exceeds 90% of the calculated chronic water quality-based effluent limitations (WQBELs) for this pollutant. However, EKPC has provided data to show that this was due to an anomaly that occurred in April 2015. Therefore, only monitoring will be required at this time.

10.5. Limitation Calculations

10.5.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	100	NO	N/A	NO	N/A	N/A

Effluent Characteristic	Units	Reported Avg	Reported Max	Average Limitation	Maximum Limitation	Average Discharge %	Maximum Discharge %	Data Source
Antimony	µg/L	0.35	0.35	640	N/A	0.05	N/A	DMR
Arsenic	µg/L	11.6	11.6	150	340	7.73	3.41	DMR
Beryllium	µg/L	0	0	163379.4839	N/A	0.00	N/A	DMR
Cadmium	µg/L	0.45	0.45	0.755841246	8.731374985	59.54	5.15	DMR
Chloride	µg/L	14900	14900	600000	1200000	2.48	1.24	APP
Chromium	µg/L	0.92	0.92	4084487.097	N/A	0.00	N/A	DMR
Chromium (III)	µg/L	0.92	0.92	268.2205163	5611.7027	0.34	0.02	DMR
Copper	µg/L	0.22	0.22	30.49938305	51.68449826	0.72	0.43	DMR
Iron	µg/L	137	137	3500	4000	3.91	3.43	APP
Lead	µg/L	0.085	0.085	18.58090366	476.8177624	0.46	0.02	DMR
Mercury	µg/L	0.0029	0.0029	0.051	1.4	5.69	0.21	DMR
Nickel	µg/L	0.085	0.085	168.5409938	1515.921838	0.05	0.01	DMR
Nitrate (as N)	µg/L	1.6	1.6	408448709.7	N/A	0.00	N/A	APP
Selenium	µg/L	5.12	5.12	5	N/A	102.40	N/A	DMR
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	DMR
Sulfate	µg/L	206000	206000	10211217742	N/A	0.00	N/A	APP
Thallium	µg/L	0.515	0.515	0.47	N/A	109.57	N/A	DMR
Zinc	µg/L	1.59	1.59	387.8303147	387.8303147	0.41	0.41	DMR
Ammonia (as N)	mg/l	0.06	0.06	4.220347834	N/A	1.42	N/A	APP

10.6. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

10.6.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

10.6.2. Total Suspended Solids and Oil and Grease

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT, BAT, and NSPS requirements for combustion residual leachate [40 CFR 423.12(b)(11)], [40 CFR 423.13(l)], and [40 CFR 423.15(a)(3)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3]..

10.6.3. pH

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122

Appendix A], representative of the BPT and NSPS requirements for pH [40 CFR 423.12 (b)(1)] and [40 CFR 423.15(a)(1)], and state water quality standards [401 KAR 10:031, Sections 4(1)(b) and 7].

10.6.4. Total Recoverable Selenium and Selenium Fish Tissue

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

10.6.5. Total Recoverable Thallium

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

10.6.6. Hardness and Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc

Based on the last five years of DMR data the facility does not show reasonable potential for these parameters at this outfall. Therefore the decision to remove this parameter from the permit is based on the Division of Water's EPA approved "Permitting Procedures For Determining Reasonable Potential" and 40 CFR 122.44 (d). Since none of the remaining parameters are hardness dependent the monitoring requirements for hardness has also been removed.

SECTION 11

OUTFALL 009

11. OUTFALL 009

11.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 53.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°42'9.6"	83°48'23.5"	Plant Intake from Ohio River	Raw Water Intake

11.2. Reported Values

The following table summarizes the reported values for Outfall 009:

TABLE 54.							
Reported Parameters	**Units**	**EFFLUENT**					
		Loadings (lbs./day)		**Concentrations**			
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**
Flow	MGD	6.43	9.41	N/A	N/A	N/A	N/A
Temperature	°F	N/A	N/A	N/A	61.9	67.4	N/A
Total Suspended Solids	mg/l	N/A	N/A	N/A	59.77	60.84	N/A
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	130.1	132.1	N/A
Total Recoverable Metals	mg/l	N/A	N/A	N/A	0.019	0.019	N/A
pH	SU	N/A	N/A	7.5	N/A	N/A	8.1

The above values are based on 5-year Discharge Monitoring Report (DMR) averages from 10/31/2012 to 09/30/2017.

11.3. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 009:

TABLE 55.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Daily	Grab
Temperature	°F	N/A	N/A	N/A	Report	Report	N/A	Daily	Grab
[1]Cooling Water Intake Inspection	Fail=1 Pass=0	N/A	N/A	N/A	N/A	N/A	Report[2]	1/Week	Inspection[3]

[1]Weekly monitoring of the cooling water intake system shall be performed, during the period the cooling water intake structure is in operation, to ensure that the design and construction technology required by §125.94 (i.e., intake flow commensurate with closed cycle cooling) is functioning as designed and is being appropriately maintained and operated.

[2]If the intake flow through the screen is not commensurate with closed cycle cooling a "1" is to be reported. If intake flow is commensurate with closed cycle cooling "0" is to be reported.

[3]This inspection may take the form of either visual inspections or the use of remote monitoring devices.

11.4. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

11.4.1. Cooling Water Intake

11.4.1.1. Colling Water Intake Description

Spurlock Station Cooling Water Intake Structure is located at N 38°42'09" W 83°48'23" on the south bank of the Ohio River, which has a $7Q_{10}$ flow of 10,600 cfs. The cooling water intake structure is a single wet well that houses five pumps, three for the Spurlock Station and two for the adjacent International Paper facility. The wet well has two independent cylindrical wedge wire screen assemblies mounted to a bulkhead on the northern face of the structure. The screens are each located at the end of separate 15-foot intake pipelines. The screen elevation is approximately 473 feet and the normal pool depth of the Ohio River is that area is approximately 485 feet, indicating that screens remain submerged at all times. Water withdrawn from the cooling water intake structure by Spurlock Station is used for makeup to the station's four cooling towers. Spurlock Station has three raw water pumps in the intake structure that provide the makeup water. Each pump has a design capacity of 5,000 gpm, resulting in a 15,000 gpm maximum design capacity for makeup. International Paper has two 2,000 gpm constant–speed pumps. Under normal operations, one of the raw water makeup pumps will run continuously. Spurlock Station has four mechanical draft cooling towers with drift eliminators. Units 1, 3, and 4 are currently operated at 7 cycles of concentration on average, and Unit 2 is operated at 7.5 cycles of concentration on average. Well water from the facility groundwater wells can also be used for makeup on cooling tower unit 1. Approximately 50 percent of the cooling tower unit 1 makeup comes from the intake structure and the remaining 50 percent is well water. The maximum design intake flow (for both facilities combined) is 27.4 MGD (42.41 cfs), which is equivalent to 0.4% of the $7Q_{10}$. This is based upon all five of the intake pumps capacity. The through-screen design intake velocity at the point of withdrawal is 0.41 ft/s (with one screen out of service). The actual intake flow (for both facilities combined) is 8.83 MGD (13.67 cfs), which is equivalent to 0.13% of the $7Q_{10}$. The actual intake velocity is 0.13 ft/s (with one screen out of service). These figures are based on the annual average withdrawal rate during January 2015 – June 2017. Approximately 70 percent of all water withdrawn from the Ohio River is used for non-contact cooling, which is being used for makeup at the Spurlock Station cooling towers. There is no emergency intake at the facility.

11.4.1.2. Current Technologies

Closed-Cycle Cooling System

The closed-cycle cooling system, already in place at Spurlock Station, significantly reduces cooling water demand compared to an equivalent once-through cooling system. The resulting reduction to impingement is assumed to be directly proportional to this reduction in flow. As documented in the 2014 Phase II rule, USEPA estimates that facilities using freshwater cooling towers achieve flow reduction, and therefore associated entrainment and impingement mortality reductions, of 98 percent.

Cylindrical Wedge Wire Screens

The two screens are designed to minimize the impingement and entrainment of debris and aquatic organisms continually. The wedge wire tee-screens installed have a slot size of 0.125 inch (3.175 millimeter). Wedge wire screens have been demonstrated to minimize entrainment with excessive

handling that may occur with more traditional traveling water screens, and have been shown to reduce entrainment even in organisms smaller than the slot size by inducing an avoidance response in the organism. The design through-screen velocity for both screen assemblies is lower than 0.5 ft/s, even when one screen is out of service. Both screens use an airburst system to remove debris and organisms, and maintain maximum open surface area, thereby minimizing through screen velocities. The airburst system is operated automatically every 5 minutes to maintain clear screens and low differential pressure. Additionally, alarms on the pumps in the intake structure alert operators to any operational issues

Cooling Water Intake Pumps

Under normal operating conditions, only one of the three Spurlock Station pumps runs continuously, and one of the two International Paper pumps runs continuously. Two 5,000-gpm, constant-speed makeup pumps for Spurlock Station were installed initially along with two 2,000-gpm constant-speed pumps for International Paper. A third 5,000-gpm constant-speed pump for Spurlock Station was added in 2002, for a total of five pumps in the Cooling Water Intake Structure.

Alternative Cooling Water Source

Spurlock Station uses well water for process water and to supplement cooling tower makeup and decrease the total demand for withdrawal required from the Ohio River. This well water supply of approximately 400 gpm effectively reduces withdrawal at the Ohio River Cooling Water Intake Structure by that same amount. Approximately 50 percent of the cooling tower Unit 1 makeup comes from the intake structure and the remaining 50 percent is well water. Well water represents approximately 8 percent of the total cooling tower makeup demand.

11.4.1.3. Impingement Mortality BTA Determination

The permittee has selected to comply with the impingement mortality standard in 40 CFR 125.94(c)(1) by implementing a closed cycle recirculating system. This intake structure feeds into a cooling system that meets the definition of a closed-cycle recirculating system in 40 CFR 125.92(c), as demonstrated by the following: Spurlock Station has four mechanical draft cooling towers with drift eliminators. Units 1, 3 and 4, are currently operated at 7 cycles of concentration on average, and Unit 2 is operated at 7.5 cycles of concentration on average. The cycles of concentrations are reasonable set points that minimize water withdrawal while being able to control cooling tower water chemistry.

11.4.1.4. Entrainment BTA Determination

The current technology and operations for the cooling water intake structure have been identified by the Division as the best technology available for minimizing entrainment at this intake structure. Since the facility already operates with closed-cycle recirculating system and wedge wire screens the following additional technologies were evaluated: (1) fine mesh screens with a mesh size of 2mm or smaller with a safe return mechanism, (2) variable speed pumps, and (3) water reuse or alternate sources of cooling water. Each technology was evaluated using the criteria listed in 40 CFR 125.98(f)(2) and, where relevant, the criteria listed in 40 CFR 125.98(f)(3). See the tables below for analyses:

Fine Mesh Screens with a Mesh Size of 2 mm or smaller	
Numbers and Types of organisms entrained	The facility does not have historical, relevant entrainment data that can be compared with data for this technology. In order for any entrainment reductions to be seen a screen with a mesh size of <2.0 mm should be used, as nearly 100% of eggs are still pass through a 2.0 mm mesh screen. Through EPA's review of control technologies, the Agency found that the survival of "converts" on fine mesh screen

	was very poor, and in some extreme cases comparable to the extremely low survival of entrained organisms that are allowed to pass entirely through the facility.
Particulate emissions or other pollutants	None expected other than increase in solids clogging the mesh slot size.
Land availability	The size of the screen face may need to be increased to maintain current flow rates. As EPA noted in the 316(b) existing facilities rule technical development document, in order to equip fine mesh screen and maintain a through-screen velocity of 0.5 fps, as many as 68% of facilities would need to expand their intake screen area by more than five times.
Remaining useful plant life	There are currently no plans to decommission or replace Units 1 through 4 at Spurlock Station. This was not considered a critical factor.
Quantified and qualitative social benefits	The permittee is not required to provide Cost Evaluation Study (40 CFR 122.21(r)(10)) or Benefits Evaluation (40 CFR 122.21(r)(11)) because AIF is less than 125 MGD. The permittee provided no estimate of cost. The data that is available for this factor is not of sufficient rigor to allow the Division to preclude this technology.
Conclusion	The use of a fine mesh screen is not required, in part, because the main entrainment reduction expected from the use of fine mesh screens with a mesh size of 2 mm or smaller as opposed to the 3 mm screens already in installed is early life stage organisms (i.e. nursery areas). Since the facilities intake screens are already 150 feet from the banks of the Ohio River the Division does not expect this technology to provide a significant reduction to entrainment. Additionally, the use of fine mesh screens would have the potential to clog more frequently thereby increasing the through screen velocity.

Variable Speed Pumps	
Numbers and Types of organisms entrained	Proper use of variable frequency drives can reduce entrainment mortality by decreasing the volume of water withdrawn. However, using less cooling water increases in-plant and discharge temperatures, lowering the survival rate of entrained. This technology is estimated to provide only minor reductions to entrainment. This is because the facility already cycles pumps to meet water demands. Also, opportunities for flow reduction are expected to be greater during cooler months because of ambient water temperatures. To the extent that this is true and entrainment impacts are less probable during conditions with cooler water temperatures, the reductions achieved will be low.
Particulate emissions or other pollutants	There would probably be both trivial increases and trivial decreases in pollution as part of slight energy penalties caused by increased temperature of condensers and slightly decreased pump energy use, respectively. Lower flow rates in cooling tubes may require use of more chemicals or energy to control scaling.
Land availability	Not typically an issue.

Remaining useful plant life	There are currently no plans to decommission or replace Units 1 through 4 at Spurlock Station The pumps can pay for themselves within a few years. This was not considered a critical factor.
Quantified and qualitative social benefits	The permittee is not required to provide Cost Evaluation Study (40 CFR 122.21(r)(10)) or Benefits Evaluation (40 CFR 122.21(r)(11)) because AIF is less than 125 MGD. The permittee provided no estimate of cost. The data that is available for this factor is not of sufficient rigor to allow the Division to preclude this technology.
Thermal Discharge Impacts	The use of variable speed pumps would not reduce thermal loads but would probably increase temperature and decrease flow so temperature impacts would be variable and probably slight. But the current thermal impact from the facility is not a concern. This was not considered a significant factor.
Conclusion	Use of variable speed pumps is not required, in part, because the intake already uses 5 pumps. Under normal operating conditions, one of the three Spurlock Station pumps runs continuously, and one of the two International Paper pumps runs continuously. This technology is estimated to provide only minor reductions to entrainment. This is because the facility already cycles pumps to meet water demands.

Water Reuse or Alternate Sources of Cooling Water
This is typically not an option for steam electric power plants due to the high volume of cooling water that is required. The facility already uses approximately 400 gpm of well water as cooling water makeup which only represents approximately 8 percent of the total cooling tower makeup water demand. Recent cooling water withdraw flows average around 6.5 MGD.

11.4.2. Intake Structure Standard Requirements

11.4.2.1. Future BTA Determination

This is a Final BTA determination made in accordance with the requirements of the federal regulations in 40 CFR 125.90-98, based upon the materials submitted by the permittee through 40 CFR 122.21(r). Future BTA determinations will be re-confirmed under the same regulations, but the permittee may request that some application materials be waived under 40 CFR 125.95(c) and 40 CFR 125.98(g).

In addition, the Division is requiring the submittal of an Alternatives Analysis Report for compliance with the entrainment BTA requirements. This additional submittal is required because, in making an entrainment BTA determination in future permit issuances, the Division must consider the factors listed in 40 CFR 125.98(f)(2) and may consider the criteria considered in 40 CFR 125.98(f)(3). Even after receiving the application materials required in 40 CFR 122.21(r), the Division does not expect to have sufficient information necessary to make an entrainment determination. Therefore, the Division requires the permittee an Alternatives Analysis Report, in which the permittee:

1) Addresses narratively, at least, the criteria in 40 CFR 125.98(f)(2),
2) May address the criteria in 40 CFR 125.98(f)(3), and
3) Propose a technology, management practice, operational measure, or some combination thereof as a candidate for the Division's entrainment BTA Determination.

The analysis must evaluate, at a minimum, closed-cycle recirculation systems, fine mesh screens with a mesh size of 2mm or smaller, variable speed pumps, water reuse or alternate sources of cooling water, and any additional technology identifies by the Division at a later date.

11.4.2.2. Visual or Remote Inspections

The permittee is required to conduct visual or remote inspections of the intake structure at least weekly during periods of operation, pursuant to 40 CFR 125.96(e).

11.4.2.3. Reporting Requirements

The permittee is required to submit an annual certification statement and report, pursuant to 40 CFR 125.97(c).

11.4.2.4. Endangered Species Act

40 CFR 125.98(b)(1) requires the inclusion of this provision in all permits subject to 316(b) requirements. Contact the state Natural Heritage Inventory (NHI) staff with inquiries regarding incidental take of state-listed threatened and endangered species and the US Fish and Wildlife Service with inquiries regarding incidental take of federally-listed threatened and endangered species.

11.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

11.5.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for monitoring cooling water withdraws [40 CFR 1125.94(c)(1)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

11.5.2. Temperature

The monitoring requirements for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

11.5.3. Total Suspended Solids, Hardness, pH, and Total Recoverable Metals

The removal of this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48]. DOW has determined that effluent results for this parameter does not provide any additional insight into determining compliance with the effluent limitations at the final dischargers.

11.5.4. Cooling Water Intake Inspection

The monitoring requirements for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for visual or remote inspections [40 CFR 125.96 (e)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

SECTION 12

OUTFALL 010

12. OUTFALL 010

12.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 56.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°41'59.5"	83°48'47.9"	Outfall 001	Unit #3 Cooling Tower Blowdown

12.2. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 010:

TABLE 57.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]
[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.									
[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.									
[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.									
[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.									
[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic									

TABLE 57.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									
[6]Complicance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

12.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

12.3.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

12.3.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.15(a) (1)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

In the case of Cooling Tower Blowdown BAT limits in 423.13 are the same as the NSPS limits.

40 CFR 423.15(a) (10)(i)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown time the concentration listed below:

TABLE 58. NSPS Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Free Available Chlorine	0.5 mg/l	0.2 mg/l
The 126 priority pollutants (appendix A) contained in chemicals added for cooling tower maintenance, except:	([1])	([1])
Chromium, Total	0.2 mg/l	0.2 mg/l
Zinc, Total	1.0 mg/l	1.0 mg/l
[1]No detectable amount		

40 CFR 423.15(a)(10)(ii)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.15(a)(10)(iii)

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (a)(10)(i) of this section may be determined by

engineering calculations demonstrating that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

12.3.2. Best Professional Judgment "BPJ"

Time of Oxidants Discharge

The Division of Water will impose a limit of 120 minutes/day/unit of chlorination / oxidation discharge time. The limit is representative of the BAT requirements for the discharge of chlorine in cooling tower blowdown as specified in 40 CFR 423.15(a)(10)(ii) as incorporated in 401 KAR 5:065, Section 2(6). It is the "Best Professional Judgement" (BPJ) of the Division of Water that this requirement is also applicable to the addition of other oxidants as well as chlorine.

Total Residual Oxidants

The Division of Water will impose a daily maximum limit of 0.20 mg/l for this parameter. The limit is representative of the BAT requirements for total residual chlorine in once through cooling water as specified in 40 CFR 423.15(a)(9)(i) as incorporated in 401 KAR 5:065, Section 2(6). It is the Division of Water's Best Professional Judgment (BPJ) determination to limit oxidants discharged in cooling tower blowdown, when the permittee chooses to use an oxidant other than chlorine.

12.4. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

12.4.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

12.4.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065,

Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

12.4.3. Free Available Chlorine

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT, and NSPS requirements for cooling tower blowdown [40 CFR 423.13(d)(1)] and [40 CFR 423.15(a)(10)(i)].

12.4.4. Total Chromium, Total Zinc, and Priority Pollutants

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BAT and NSPS requirements for cooling tower blowdown [40 CFR 423.13(d)(1)] and [40 CFR 423.15(a)(10)], and consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 6].

12.4.5. Time of Oxidants Discharge

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BAT and NSPS requirements for chlorine addition in [40 CFR 423.13 (d)(1)(2)] and [40 CFR 423.15(a)(10)(ii)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

12.4.6. Total Residual Oxidants

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

SECTION 13

OUTFALL 011

13. OUTFALL 011

13.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 59.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
External	38°41'43.15"	83°50'16.77"	UT to Lawrence Creek	Tier 1 - Coal Combustion Residual Landfill Stormwater Runoff
				Tier 2- Coal Combustion Residual Landfill Leachate and Stormwater Runoff

13.2. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 011 unless Table 61 is in effect:

TABLE 60.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Quarter	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	Report	100.0	N/A	1/Quarter	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Quarter	Grab

The following table summarizes the effluent limitations and monitoring requirements for Outfall 011 once landfill leachate and stormwater are being discharged through this outfall:

TABLE 61.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	mg/l	N/A	N/A	N/A	30.0	100.0	N/A	1/Month	Grab
Oil & Grease	mg/l	N/A	N/A	N/A	15.0	20.0	N/A	1/Month	Grab
pH	SU	N/A	N/A	6.0	N/A	N/A	9.0	1/Month	Grab

TABLE 61.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Hardness (as mg/l $CaCO_3$)	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Antimony	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Arsenic	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Beryllium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Cadmium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Chromium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Copper	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Lead	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Mercury	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Nickel	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Selenium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Silver	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Thallium	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab
Total Recoverable Zinc	mg/l	N/A	N/A	N/A	Report	Report	N/A	1/Quarter	Grab

13.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

13.3.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

13.3.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.12(b) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.12(b) (11)

The quantity of pollutants discharged in FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, or gasification wastewater shall not exceed the quantity determined by multiplying the flow of the applicable wastewater times the concentration listed in the following table:

TABLE 62.		
BPT Effluent Requirements – combustion residual leachate		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(a)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.13(l)

The quantity of pollutants discharged in combustion residual leachate shall not exceed the quantity determined by multiplying the flow of combustion residual leachate times the concertation for TSS listed in 423.12(b)(4).

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (1)

The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

40 CFR 423.15(a) (2)

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

40 CFR 423.15(a) (3)

The quantity of pollutants discharged in low volume waste sources, FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, and gasification wastewater shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 63.		
BPT Effluent Requirements – Low volume wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

13.3.1.2. Best Professional Judgment (BPJ)

Landfill – Stormwater Runoff

This facility utilizes a sedimentation basin it its operation which provides for the settling of suspended solids. Sedimentation is a commonly used treatment technology for the removal of total suspended solids from non-contaminated stormwater runoff associated with landfill operations. Sedimentation is both efficient and cost effective. Although several factors may influence the final concentration of total suspended solids in the discharge, it has been the experience of the Division that ponds that retain landfill-related stormwater for six hours or more can achieve a total suspended solids concentration of 100 mg/l as a daily maximum.

13.3.2. Water Quality-Based Effluent Limitations

The following table lists those pollutants and/or pollutant characteristics of concern that DOW has determined exhibit reasonable potential to cause or contribute to an excursion of a water quality-based criterion, and the basis of DOW's determination. These determinations are consistent with the DOW's reasonable potential analysis (RPA) procedures outlined in *Permitting Procedures For Determining "Reasonable Potential"* Kentucky Division of Water May 1, 2000.

TABLE 64.	
Pollutant or Pollutant Characteristic	**Basis**
Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc.	Total Recoverable Metals represents the summation of the analytical values of the following individual pollutants: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium and Zinc. An analysis of the current data indicates the concentrations of these pollutants, did not demonstrate a reasonable potential as determined by DOW's chemical specific RPA procedures. However, the facility is going through major changes in response to the new steam electric ELG's. Therefore, it is the best professional judgement of the Division to monitor for the metals once the landfill leachate being discharged through this outfall.

13.4. Limitation Calculations

13.4.1. Calculations for Water Quality-Based Effluent Limitations

These calculations were performed using a Microsoft EXCEL based workbook developed by DOW. The workbook is designed to compare effluent data to the applicable water quality standards while also incorporating the characteristics of the receiving water and any regulatory ZID and/or MZ. The following table summarizes the results of these calculations for this outfall:

Effluent Characteristic	Units	Effluent Hardness	Stream Hardness	Mixing Zone Granted	Mixing Zone Mixed Hardness	ZID Granted	ZID Dilutions	ZID Mixed Hardness
Hardness	mg/l	400	100	NO	N/A	NO	N/A	N/A
Effluent Characteristic	**Units**	**Reported Avg**	**Reported Max**	**Average Limitation**	**Maximum Limitation**	**Average Discharge %**	**Maximum Discharge %**	**Data Source**
Antimony	µg/L	0.398	0.398	640	N/A	0.06	N/A	APP
Arsenic	µg/L	1.67	1.67	150	340	1.11	0.49	APP
Beryllium	µg/L	0	0	28140.88889	N/A	0.00	N/A	APP
Cadmium	µg/L	0	0	0.755841246	8.731374985	0.00	0.00	APP
Chloride	µg/L	27500	27500	600000	1200000	4.58	2.29	APP
Chromium	µg/L	2.47	2.47	703522.2222	N/A	0.00	N/A	APP
Chromium (III)	µg/L	2.47	2.47	268.2205163	5611.7027	0.92	0.04	APP
Chromium (VI)	µg/L	2.47	2.47	11	16	22.45	15.44	APP
Copper	µg/L	0.463	0.463	30.49938305	51.68449826	1.52	0.90	APP
Iron	µg/L	201	201	3500	4000	5.74	5.03	APP
Lead	µg/L	0	0	18.58090366	476.8177624	0.00	0.00	APP
Mercury	µg/L	0	0	0.051	1.4	0.00	0.00	APP
Nickel	µg/L	0.325	0.325	168.5409938	1515.921838	0.19	0.02	APP
Nitrate (as N)	µg/L	330	330	70352222.22	N/A	0.00	N/A	APP
Selenium	µg/L	5.9	5.9	5	N/A	118.00	N/A	APP
Silver	µg/L	0	0	N/A	41.07168773	N/A	0.00	APP
Sulfate	µg/L	358000	358000	1758805556	N/A	0.02	N/A	APP
Thallium	µg/L	0.34	0.34	0.47	N/A	72.34	N/A	APP
Zinc	µg/L	1.16	1.16	387.8303147	387.8303147	0.30	0.30	APP
Ammonia (as N)	mg/l	0	0	4.220347834	N/A	0.00	N/A	APP

13.5. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

13.5.1. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

13.5.2. Tier 1 - Total Suspended Solids

The limitations for this parameter are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

13.5.3. Tier 1 - pH

The limitations for this parameter are consistent Kentucky's Water Quality Standards [401 KAR 10:031, Section 4(1)(b) and Section 7].

13.5.4. Tier 2 - Total Suspended Solids and Oil and Grease

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT, BAT, and NSPS requirements for combustion residual leachate [40 CFR 423.12(b)(11)], [40 CFR 423.13(l)], and [40 CFR 423.15(a)(3)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3]..

13.5.5. Tier 2 - pH

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BPT and NSPS requirements for pH [40 CFR 423.12 (b)(1)] and [40 CFR 423.15(a)(1)], and state water quality standards [401 KAR 10:031, Sections 4(1)(b) and 7].

13.5.6. Tier 2 - Total Recoverable: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Thallium, Silver, and Zinc

The monitoring requirements for these pollutants are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(i)] and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

SECTION 14

OUTFALL 012

14. OUTFALL 012

14.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 65.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°41'51.5"	83°48'39.56"	Outfall 001	Unit #4 Cooling Tower Blowdown

14.2. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfall 012:

TABLE 66.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	Continuous	Recorder
Free Available Chlorine[1]	mg/l	N/A	N/A	N/A	0.2	0.5	N/A	1/Occurrence[2]	Multiple Grab[3]
Total Residual Oxidants[1,4]	mg/l	N/A	N/A	N/A	Report	0.2	N/A	1/Occurrence[2]	Multiple Grab[3]
Oxidant Discharge Time[1]	Min/unit/day	N/A	N/A	N/A	N/A	120	N/A	1/Occurrence[2]	Log
Total Chromium[1]	mg/l	N/A	N/A	N/A	0.2	0.2	N/A	1/Year	Grab
Total Zinc[1]	mg/l	N/A	N/A	N/A	1.0	1.0	N/A	1/Year	Grab
Priority Pollutants[1,5]	No Detectable Amount							1/Year	Calculated[6]

[1]Sampling of cooling tower blowdown must be taken at the nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

[2]The measurement frequency "Occurrence" means during periods of chlorination or oxidation addition to cooling water, but no more frequent than once per week.

[3]The sample type 'Multiple Grab' means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of the oxidant discharge.

[4]The term Total Residual Oxidants (TRO) means the value obtained by using the amperometric titration or DPD methods for Total Residual Chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than Chlorine, the permittee shall receive prior approval from the DOW permitting staff before the initial use. TRO monitoring and limits only apply if the applicant chooses to utilize an oxidant other than Chlorine.

[5]Priority Pollutants are those contained in chemicals added for cooling tower maintenance and shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering or electronic

TABLE 66.									
EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
equivalent calculations showing the results for each pollutant shall be attached to the DMR. The term priority pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A except total chromium and total zinc.									
[6]Complicance with the limitations, for the 126 priority pollutants, in paragraph (b)(10) of 40 CFR 423.15 may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.									
Neither free available chlorine nor total residual chlorine or oxidants may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine or oxidants at any one time unless the utility can demonstrate to the DOW that the units in a particular location cannot operate at or below this level of chlorination or oxidant addition.									

14.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

14.3.1. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

14.3.1.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.15(a) (1)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

In the case of Cooling Tower Blowdown BAT limits in 423.13 are the same as the NSPS limits.

40 CFR 423.15(a) (10)(i)

The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown time the concentration listed below:

TABLE 67.		
NSPS Effluent Requirements – Cooling Tower Blowdown		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Free Available Chlorine	0.5 mg/l	0.2 mg/l
The 126 priority pollutants (appendix A) contained in chemicals added for cooling tower maintenance, except:	([1])	([1])
Chromium, Total	0.2 mg/l	0.2 mg/l
Zinc, Total	1.0 mg/l	1.0 mg/l
[1]No detectable amount		

40 CFR 423.15(a)(10)(ii)

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or sate, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

40 CFR 423.15(a)(10)(iii)

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (a)(10)(i) of this section may be determined by

engineering calculations demonstrating that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

14.3.2. Best Professional Judgment "BPJ"

Time of Oxidants Discharge

The Division of Water will impose a limit of 120 minutes/day/unit of chlorination / oxidation discharge time. The limit is representative of the BAT requirements for the discharge of chlorine in cooling tower blowdown as specified in 40 CFR 423.15(a)(10)(ii) as incorporated in 401 KAR 5:065, Section 2(6). It is the "Best Professional Judgement" (BPJ) of the Division of Water that this requirement is also applicable to the addition of other oxidants as well as chlorine.

Total Residual Oxidants

The Division of Water will impose a daily maximum limit of 0.20 mg/l for this parameter. The limit is representative of the BAT requirements for total residual chlorine in once through cooling water as specified in 40 CFR 423.15(a)(9)(i) as incorporated in 401 KAR 5:065, Section 2(6). It is the Division of Water's Best Professional Judgment (BPJ) determination to limit oxidants discharged in cooling tower blowdown, when the permittee chooses to use an oxidant other than chlorine.

14.4. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

14.4.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

14.4.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for blowdown volume [40 CFR 125.94(c)(1)], and

requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

14.4.3. Free Available Chlorine

The limits for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT, and NSPS requirements for cooling tower blowdown [40 CFR 423.13(d)(1)] and [40 CFR 423.15(a)(10)(i)].

14.4.4. Total Chromium, Total Zinc, and Priority Pollutants

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BAT and NSPS requirements for cooling tower blowdown [40 CFR 423.13(d)(1)] and [40 CFR 423.15(a)(10)], and consistent with Kentucky's Water Quality Standards [401 KAR 10:031, Section 6].

14.4.5. Time of Oxidants Discharge

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], representative of the BAT and NSPS requirements for chlorine addition in [40 CFR 423.13 (d)(1)(2)] and [40 CFR 423.15(a)(10)(ii)], and imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

14.4.6. Total Residual Oxidants

The limit for this parameter is consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing Best Professional Judgement [401 KAR 5:080, Section 2(3) – 40 CFR 125.3].

SECTION 15

OUTFALL 013

15. OUTFALL 013

15.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 68.				
Outfall Type	**Latitude (N)**	**Longitude (W)**	**Receiving Water**	**Description of Outfall**
Internal	38°42'06.7"	83°49'22.3"	Outfall 001	FGD Wastewater

15.2. Effluent Limitations and Monitoring Requirements

This outfall shall not become effective till December 1, 2023. The following table summarizes the effluent limitations and monitoring requirements for Outfall 013:

TABLE 69.									
EFFLUENT LIMITATIONS								**MONITORING REQUIREMENTS**	
Effluent Characteristic	**Units**	**Loadings (lbs./day)**		**Concentrations**				**Frequency**	**Sample Type**
		Monthly Average	**Daily Maximum**	**Minimum**	**Monthly Average**	**Daily Maximum**	**Maximum**		
Flow	MGD	Report	Report	N/A	N/A	N/A	N/A	1/Month	Instantaneous
Total Recoverable Arsenic	µg/l	N/A	N/A	N/A	8	11	N/A	1/Month	Grab
Total Recoverable Mercury	ng/l	N/A	N/A	N/A	356	788	N/A	1/Month	Grab
Total Recoverable Selenium	µg/l	N/A	N/A	N/A	12	23	N/A	1/Month	Grab
Nitrate/nitrite as N	mg/l	N/A	N/A	N/A	4.4	17.0	N/A	1/Month	Grab

15.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

15.3.1. FGD ELG Compliance Date

This facility currently sends FGD wastewater from their coal-fired operations to the ash pond, which discharges through Outfall 001 and in the future will any treated FGD wastewater to the new water mass balance pond.

40 CFR 423.13(g)(1)(i) require that the quantity of pollutants in FGD wastewater shall not exceed the quantity determined by 40 CFR 423.13(g)(1)(i). The permittee must meet this requirement by a date determined by the permitting authority. For FGD wastewater, the date has to be as soon as possible beginning November 1, 2020 but no later than December 31, 2023.

The definition for the phrase "as soon as possible" can be found in 40 CFR 423.11(t). The permittee provided the Division of Water information to determine as soon as possible ELG compliance applicability dates. EKPC requested a compliance date of December 31, 2023 for compliance with the FGD discharge limits. EKPC needs until that date to: receive Public Service Commission CPCN approval, Design, procure and install equipment for FGD physical/chemical wastewater treatment, and initial commissioning of FGD treatment system to optimize performance- once FGD WWT equipment is installed and shakedown, EKPC will need to evaluate its performance to ensure the design and installation of the equipment are performing as anticipated and is in compliance.

The DOW grants EKPC's requested compliance date. The discharge requirements for FGD waste water shall become effective on December 31, 2023.

15.3.2. Technology-Based Effluent Limitations

Technology-based effluent limitations and standards, based on federally promulgated standards, a case-by-case basis, or a combination of the two, shall be included in all KPDES permits, where applicable.

Certain technology-based effluent limitations and compliance deadlines included in this permit are based upon effluent limitation Guidelines ("ELGs") that are under reconsideration by the United States Environmental Protection Agency ("EPA"). 82 Fed. Reg. 43494 (September 18, 2017).

15.3.2.1. Federal Effluent Limitations Guidelines

EPA has established a minimum level of technology that must be applied to certain industries. Due to the operations at this facility, all applicable sections of 40 CFR 423 shall be applied to this outfall. The following is a list of those requirements:

40 CFR 423.12(b) (11)

The quantity of pollutants discharged in FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, or gasification wastewater shall not exceed the quantity determined by multiplying the flow of the applicable wastewater times the concentration listed in the following table:

TABLE 70.		
BPT Effluent Requirements – FGD wastewater		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l

Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.12(b) (12)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b)(3) through (b)(7), and (b)(11), of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.12 (b) (12) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner.

40 CFR 423.13(g) (1)(i)

Except for those discharges to which paragraph (g)(2) or (g)(3) of this section applies, the quantity of pollutants in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed in the table following this paragraph (g)(1)(i). Discharges must meet the effluent limitations for FGD wastewater in this paragraph by a date determined by the permitting authority that is as soon as possible beginning November 1, 2020, but no later than December 31, 2023. These effluent limitations apply to the charge of FGD wastewater generated on and after the date determined by the permitting authority for meeting the effluent limitations, as specified in this paragraph.

TABLE 71.		
BAT Effluent Requirements – FGD wastewater		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
Arsenic, total	11 µg/l	8 µg/l
Mercury, total	788 ng/l	356 ng/l
Selenium, total	23 µg/l	12 µg/l
Nitrate/nitrite as N	17.0 mg/l	4.4 mg/l

40 CFR 423.13(g) (1)(ii)

For FGD wastewater generated before the date determined by the permitting authority, as specified in paragraph (g)(1)(i), the quantity of pollutants discharged in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed for TSS in 423.12(b)(11).

40 CFR 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (b) through (l) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.13 (m) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

40 CFR 423.15(a)

Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in 423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply.

40 CFR 423.15(a) (2)

The quantity of pollutants discharged in low volume waste sources, FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, and gasification wastewater shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

TABLE 72.		
BPT Effluent Requirements – Low volume wastes		
Effluent Characteristic	**Maximum for any one day**	**Maximum for monthly average**
TSS	100.0 mg/l	30.0 mg/l
Oil and Grease	20.0 mg/l	15.0 mg/l

40 CFR 423.15(a)(13)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration limitations instead of the mass-based limitations specified in paragraphs (a)(1) through (a)(13) of this section concentration limitations shall be those concentrations specified in this section.

In accordance with Sections 423.15 (a)(13) the permitting authority may allow the quantity of pollutant discharge to be expressed as a concentration limitation instead of a mass based limitation. The DOW has determined to apply the requirements of 40 CFR Part 423 in this manner

15.3.3. Total Suspended Solids, and Oil and Grease

The Ash Pond, and the future water mass balance pond, treats many waste streams. Since Outfall 013 effluent will be directed to the future water mass balance pond, the limitations for these pollutants will be applied at Outfall 001 after commingling with other waters. The Division of Water will develop flow-weighted limitations to insure compliance with the federal effluent limitation guidelines.

15.4. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

15.4.1. Internal Monitoring Point

The monitoring requirements for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(iii)], and the requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

15.4.2. Flow

The monitoring requirements for this parameter are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)(1)(ii)], requirements for blowdown volume [40 CFR 125.94(c)(1)], and requirements for recording and reporting of monitoring results [401 KAR 5:070, Section 3 – 40 CFR 122.48].

15.4.3. Total Arsenic, Total Mercury, Total Selenium, and Nitrate/nitrite

The limits for these parameters are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)(1) and 122.44(i)(1)], the criteria and standards for imposing TBELs [401 KAR 5:065, Section 2(6) – 40 CFR 122 Appendix A], and representative of the BAT and NSPS requirements for FGD wastewater [40 CFR 423.13(g)(1)(i)] and [40 CFR 423.15(a)].

SECTION 16

OUTFALLS 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, and 00L

16. OUTFALLS 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, AND 00L

16.1. Outfall Description

The following table lists the outfall type, location, and description:

TABLE 73.

Outfall Number[1]	Outfall Type	Receiving Water	Description of Outfall
00A	External	Ohio River	Stormwater from Road west of Coal Storage Area
00B	External	Ohio River	Stormwater from area around Fuel Oil Tanks
00C	External	Ohio River	Stormwater from area around Waste Water Treatment
00D	External	Ohio River	Stormwater from Unit 1 and 2 Cooling Towers
00E	External	Ohio River	Stormwater from Unit 3 and 4 Cooling Towers and Acid storage tanks
00F	External	Ohio River	Stormwater from area between Ash Pond and Railroad tracks and road west of Ash Pond
00G	External	Lawrence Creek	Stormwater from main Entrance Road
00H	External	Lawrence Creek	Stormwater from Road south Coal Storage Area
00I	External	UT to Lawrence Creek	Stormwater from north Haul Road drainage
00J	External	Lawrence Creek	Stormwater from east Haul Road drainage
00K	External	UT to Lawrence Creek	Stormwater from landfill access road
00L	External	UT to Lawrence Creek	Stormwater from landfill access road

[1]These outfall represent drainage areas for stormwater that are to be covered under BMP's. Plant Drainage Area Map can be found in the KPDES application

16.2. Effluent Limitations and Monitoring Requirements

The following table summarizes the effluent limitations and monitoring requirements for Outfalls 00A, 00B, 00C, 00D, 00E, 00F, 00G, 00H, 00I, 00J, 00K, and 00L:

TABLE 74.

EFFLUENT LIMITATIONS								MONITORING REQUIREMENTS	
Effluent Characteristic	Units	Loadings (lbs./day)		Concentrations				Frequency	Sample Type
		Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Maximum		
Due to the absence of any industrial processes, equipment or storage areas being located within the areas served by theses outfalls, the DOW has determined that implementation of BMPs would be the most effective approach for controlling pollutants from these areas. The BMP Plan shall specifically mention controls and practices used to control or abate the discharge of pollutants in stormwater discharges from these outfalls.									

16.3. Pertinent Factors

The effluent limitations for this outfall were developed in accordance with DOW's General Procedures for Limitations Development located on DOW's webpage at:

http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf

16.4. Justification of Requirements

Chapters 5 and 10 of Title 401 of the Kentucky Administrative Regulations (KARs), cited in the following, have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

At a minimum, all permits shall contain technology-based effluent limitations (TBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(a)]. When necessary to achieve water quality standards, all permits shall contain water quality-based effluent limitations (WQBELs) [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(d)]. Any WQBELs included in this permit are based upon the Kentucky Water Quality Standards (KYWQS) [401 KAR 10:031].

16.4.1. Best Management Practices (BMPs)

The use of BMPs for the control of drainage from the non-industrial portions of the facility are consistent with the KPDES permit program requirements for establishing effluent limitations, standards, and permit conditions [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(k)].

SECTION 17

OTHER CONDITIONS

17. OTHER CONDITIONS

17.1. Schedule of Compliance

The permittee is required to comply with all effluent limitations by the effective date of the permit unless a compliance schedule is included with the permit.

17.2. Antidegradation

The conditions of Kentucky's Antidegradation Policy have been satisfied [401 KAR 10:029, Section 1]. The facility dischargers to waters categorized as "Impaired Waters" pursuant to 33 U.S.C. 1315(b). Therefore pursuant to 401 KAR 10:030, Section 1(4), further review is not required.

The conditions of Kentucky's Antidegradation Policy have been satisfied [401 KAR 10:029, Section 1]. This permitting action is a reissuance of a KPDES permit that does not authorize an expanded discharge.

17.3. Standard Conditions

The conditions listed in the Standard Conditions Section of the permit are consistent with the conditions applicable to all permits [401 KAR 5:065, Section 2(1) – 40 CFR 122.41].

17.4. Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(i)].

17.5. Certified Laboratory

All environmental analysis to be performed by a certified laboratory is consistent with the certified wastewater laboratory requirements [401 KAR 5:320, Section 3].

17.6. BMP Plan

Permits are to include BMPs to control or abate the discharge of pollutants when: 1) authorized under section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) authorized under Section 402(p) of the CWA for the control of stormwater discharges; 3) numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA [401 KAR 5:065, Section 2(4) – 40 CFR 122.44(k)]

17.7. Ohio River Outfall Signage

Kentucky is a member of the Ohio River Valley Water Sanitation Compact (ORSANCO) [KRS 224.18-760]. Article I of the Compact pledges faithful cooperation between the signatory states. Article IV authorizes the Commission to adopt, prescribe and promulgate rules, regulations and standards for administering and enforcing the Compact. The ORSANCO pollution control standards for discharges to the Ohio River require that holders of an individual NPDES permit post and maintain a permanent marker having specific dimensions at each Ohio River outfall. The permittee shall comply with the permanent marker requirements of ORSANCO's Pollution Control Standards.

17.8. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to

the commencement of use of said biocides or chemicals to the Division of Water for review and establishment of appropriate control parameters.

17.9. Polychlorinated Biphenyls

Pursuant to the requirements of 40 CFR Part 423.12(b) (2), there shall be no discharge, from any point source, of Polychlorinated Biphenyl compounds such as those commonly used in transformer fluids. The permittee shall implement this requirement as a specific section of the BMP plan developed for this section.

16.11 ORSANCO's Mercury Variance

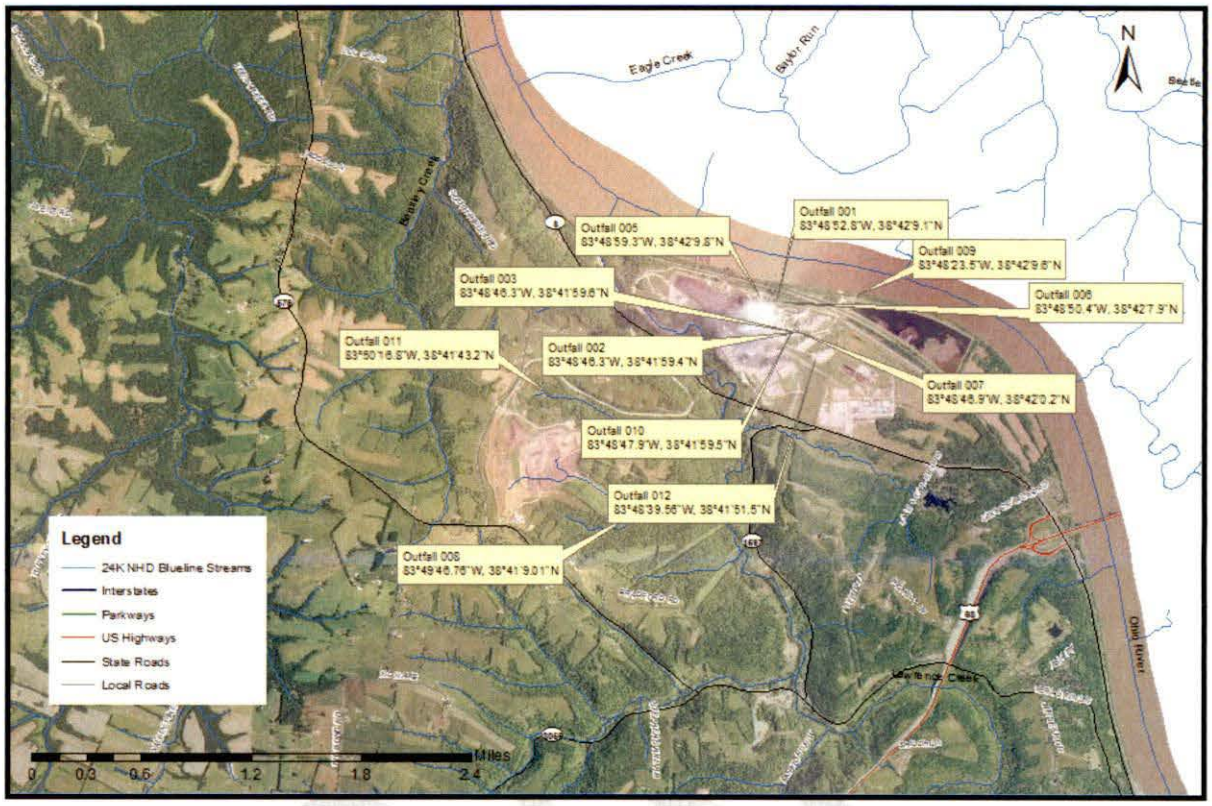
The permittee requested a variance from ORSANCO's mercury standard of 0.000012 mg/l for effluent from this site which discharges to the Ohio River. The permittee is currently meeting Kentucky's water quality criteria for mercury. Mercury is a pollutant believed to be present in FGD wastewaters. The permittee is installing a new treatment system for FGD wastewaters in order to achieve compliance with new federal effluent limitation guidelines. Effluent from Outfall 001 will be partially comprised of treated FGD wastewaters, and the permittee believes the effluent will be able to continue meeting Kentucky's water quality criteria for mercury once the new treatment system is operational. The permittee is doubtful the effluent will consistently meet ORSANCO's mercury standard. Given these circumstances, the DOW granted the variance ORSANCO's mercury standard and will apply Kentucky's water quality criteria for mercury for discharges to the Ohio River.

6.12 Combustion Residual Leachate

Pursuant to 40 CFR 423.11(r), the term combustion residual leachate ("leachate") means "leachate from landfills or surface impoundments containing combustion residuals. Leachate is composed of liquid, including any suspended or dissolved constituents in the liquid, that has percolated through waste or other materials emplaced in a landfill, or that passes through the surface impoundment's containment structure (*e.g.,* bottom, dikes, berms). Combustion residual leachate includes seepage and/or leakage from a combustion residual landfill or impoundment unit. Combustion residual leachate includes wastewater from landfills and surface impoundments located on non-adjoining property when under the operational control of the permitted facility."

This permit authorizes the discharge of leachate from outfall 008 and outfall 011. For newly discovered leachate seeps from a CCR surface impoundment or a CCR landfill, as defined at 40 CFR 257.53, to the surface that discharge or have a potential to discharge to a water of the commonwealth other than through outfall 008 or outfall 011, the permittee shall develop and implement a plan to address such surface seeps. The plan shall be included as part of the on-site BMP Plan and shall address, at a minimum, (1) scheduled inspections for identifying surface leachate seeps, (2) maintenance of CCR landfills and/or impoundments to minimize the potential for surface leachate seeps, and (3) corrective measures that will be implemented upon the discovery of a surface leachate seep that is not being controlled by a permitted outfall authorized for discharge of leachate. The permittee shall notify the DOW Surface Water Permits Branch and the appropriate DOW Field Office of planned corrective measures for any identified surface seeps of leachate as soon as feasible after discovery of such a leachate seep, but no later than ten (10) days after the discovery. Such corrective measures may include: (1) plans to reduce or eliminate the leachate seep to the surface; (2) actions to route the surface leachate seep (via a conveyance designed to contain the flow or eliminate the possibility of infiltration) to an outfall permitted to discharge leachate; and (3) combinations of actions to eliminate or, if elimination is not feasible, reduce and control a surface leachate seep and ensure any discharge to a receiving stream is authorized by the permit. Please note that this does not exempt the permittee from 24-hour reporting Section 2.12 of the permit.

16.13 Location Map



EXHIBIT

I

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	CASE NO. 2018-00270

DIRECT TESTIMONY OF CRAIG JOHNSON
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: October 3, 2018

I. INTRODUCTION

Q. Please state your name, business address and occupation.

A. My name is Craig A. Johnson and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4775 Lexington Road, Winchester, Kentucky 40391. I am the Senior Vice President of Power Production of EKPC.

Q. Please state your education and professional experience.

A. I received a Bachelor's degree in Engineering from West Virginia Institute of Technology and a Master's of Science degree in Engineering from the University of Kentucky. I am a licensed professional engineer in the Commonwealth of Kentucky. I have been employed by EKPC since September 1989 and have held my current position within the EKPC organization since January 2010.

Q. Please provide a brief description of your duties at EKPC.

A. I am responsible for all operational and maintenance functions at EKPC's two (2) coal fired power plants, two (2) combustion turbine plants, six (6) landfill gas plants and one (1) community solar facility. I am responsible for Production Engineering and Construction. I report directly to EKPC's Executive Vice President and Chief Operating Officer, Mr. Don Mosier.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is first to describe EKPC's existing coal-fired generation assets, specifically the Hugh L. Spurlock Station ("Spurlock Station") and John S. Cooper Station ("Cooper Station"). I will discuss the projects EKPC has undertaken at these facilities in order to comply with state and federal environmental rules and

regulations, and I will describe in detail EKPC's proposal to modify and expand the Coal Pile Runoff Pond ("CPR Pond") at its Spurlock Station (as further described herein, the "CPR Project"). My testimony is provided in support of EKPC's request for a Certificate of Public Convenience and Necessity ("CPCN") for the CPR Project, as well as EKPC's request to amended its Environmental Compliance Plan to include the CPR Project and ten (10) other projects further described herein.

Q. Are you sponsoring any exhibits?

A. Yes. Included with my testimony as Attachment CJ-1 is a compilation of summary fact sheets relevant to the projects EKPC proposes for inclusion in its Environmental Compliance Plan (except for the CPR Project, which is extensively detailed elsewhere).

Q. Please describe EKPC's Spurlock Station.

A. The Spurlock Station is EKPC's largest coal-fired electric generation facility. It is located near the City of Maysville, Kentucky, a few miles west of the center of town, and situated along the Ohio River. The Spurlock Station consists of four (4) electric generation units. Spurlock Station Unit #1 ("Spurlock 1") began commercial operation on September 1, 1977, and has a net capacity of 300 MW. Spurlock Station Unit #2 ("Spurlock 2") became operational on March 2, 1981; at 510 MW of net capacity, it is the largest electric generation unit at the Spurlock Station. Spurlock 1 and Spurlock 2 are both conventional, pulverized coal units. Spurlock Station Unit #3 is known as the E. A. Gilbert Unit ("Gilbert Unit") and began commercial operations on March 1, 2005. The Gilbert Unit utilizes a Circulating Fluidized Bed ("CFB") technology and boasts a net generating capacity of 268 MW. Spurlock Station Unit #4 ("Spurlock 4") is a sister

unit to the Gilbert Unit and also has 268 MW of generating capacity. Spurlock 4 became operational on April 1, 2009. The combined coal storage capacity of the Spurlock Station is 490,000 tons and the Spurlock Station primarily burns a range of eastern bituminous coals delivered by barge.

Q. Please describe EKPC's Cooper Station.

A. The Cooper Station is EKPC's other coal-fired electric generation facility and is located in the Burnside community of Pulaski County, Kentucky. The Cooper Station is situated adjacent to Lake Cumberland and consists of two (2) electric generation units. Cooper Station Unit #1 ("Cooper 1") is rated at 116 MW and began commercial operation on February 9, 1965. Cooper Station Unit #2 ("Cooper 2") is larger with 225 MW of electric generation capacity and entered service for EKPC on October 28, 1969. The combined coal storage capacity of the Cooper Station is 250,000 tons. The Cooper Station units burn eastern bituminous coal, delivered exclusively by truck.

Q. As coal-fired generation facilities, are the Spurlock and Cooper Stations heavily regulated?

A. Yes. Authorities at the federal and state levels oversee nearly every aspect of EKPC's operations, with particular emphasis on the monitoring and abatement of the wastes and by-products that accompany coal-fired electric generation. EKPC continually evaluates existing and anticipated environmental requirements to ensure its facilities are best-positioned for compliance.

The testimony submitted herewith of Mr. Jerry Purvis, EKPC's Vice President of Environmental Affairs, provides extensive detail concerning the purpose, scope and

requirements of various state and federal environmental regulations that have necessitated the projects EKPC proposes to add to its Compliance Plan. These include the Effluent Limitation Guidelines and Standards for the Steam Electric Power Generating Point Source Category ("ELG Rule"), the Disposal of Coal Combustion Residuals from Electric Utilities Rule ("CCR Rule"), and other applicable environmental regulations and requirements (including those associated with the Kentucky Pollutant Discharge Elimination System ("KPDES")), all of which apply to coal combustion wastes and by-products from EKPC facilities utilized for production of energy from coal.

Q. Has EKPC made investments in environmental controls for the Spurlock Station and Cooper Station?

A. Yes. With respect to the generation assets themselves, Spurlock Station Unit #1 is equipped with low NOx burners, selective catalytic reduction ("SCR") technology, a cold-side (or, in the case of Spurlock Station Unit #2, hot-side) electrostatic precipitator ("ESP"), a wet flue gas desulfurization ("FGD") scrubber, and a wet ESP. The Spurlock Station's other two (2) units employ Circulating Fluidized Bed combustion technology and are further equipped with selective non-catalytic reduction technology, dry FGD scrubbers and baghouses. EKPC's Cooper Station has a dry ash handling system. The Cooper Station's two (2) units share a common FGD system including a pulse jet fabric filter, and one of its units is serviced by a SCR system.

Q. What other projects has EKPC undertaken in order to comply with state and federal regulations imposed upon coal-fired generation facilities?

A. EKPC has invested significant resources in its Spurlock and Cooper Stations to ensure continued compliance with environmental requirements. These investments, both in the generation assets and the plant infrastructure necessary to support those assets, are specifically targeted to comply with regulations and rules imposed by various governmental authorities.

Although EKPC's environmental compliance strategies are too numerous and varied to fully discuss here, EKPC's primary efforts in this regard are reflected in the projects contained in (and proposed to be added to) its Environmental Compliance Plan. The most-recent amendment of EKPC's Environmental Compliance Plan occurred earlier this year when the Commission approved various proposed modifications of existing Spurlock Station facilities to comply with state and federal environmental requirements (primarily related to the CCR and ELG Rules).[1] These improvements include conversion of the plant's bottom ash handling system, construction of a new wastewater treatment plant and fly ash storage silo, the closure and repurposing of the on-site coal ash pond, and the expansion of the existing landfill. These projects help ensure the ongoing safety and stability of EKPC's generation fleet.

1 *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs pursuant to its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief*, Order, Case No. 2017-00376 (Ky. P.S.C., May 18, 2018).

Q. How many projects does EKPC seek to add to its Environmental Compliance Plan as part of this proceeding?

A. EKPC seeks to amend its Environmental Compliance Plan to reflect eleven (11) additional projects, including the CPR Project. One of these projects amends an existing Environmental Compliance Plan project, Project No. 12 – Spurlock Landfill Area C Expansion. Project No. 12 was originally approved and included in EKPC's Environmental Compliance Plan in Case No. 2010-00083.

Q. Besides the CPR Project, please describe the projects EKPC seeks to add to its Environmental Compliance Plan.

A. Besides the CPR Project, there are ten (10) projects that EKPC desires to add to its Environmental Compliance Plan. These projects are associated with the Cooper Landfill, Cooper ash mixers, Spurlock Landfill, Spurlock compliance with Mercury Air Toxic Standards, Spurlock site drainage, secondary containment around Spurlock's anhydrous ammonia tank farm, Spurlock dry sorbent injection to mitigate sulfur trioxide, and a new vacuum truck ash transfer station at Spurlock. Each of these projects is described in detail as part of Attachment CJ-1.

All of the projects EKPC seeks to add to its Environmental Compliance Plan were (or will be) undertaken in order to maintain compliant operations at EKPC's coal-fired generation facilities. The majority of the projects have been completed in the usual course of EKPC's business.

Q. Were/are each of the projects EKPC seeks to add to its Compliance Plan reasonable and cost-effective for compliance with applicable environmental requirements?

A. Yes.

Q. Does that include the CPR Project?

A. Yes.

Q. Please describe the Spurlock Station's existing CPR Pond and related facilities.

A. As aforementioned, the Spurlock Station is EKPC's largest coal-fired electric generation facility with a combined coal storage capacity of approximately 490,000 tons. In order to capture and retain coal pile runoff (essentially, stormwater that falls atop and through the coal pile and plant contributing areas), the Spurlock Station currently utilizes a 3.3-acre lined CPR Pond. The CPR Pond includes a geosynthetic clay liner ("GCL") on the bottom and side slopes, with concrete above the GCL on the bottom of the pond, and rip rap liner above the GCL on the side slopes. The principal spillway consists of two (2) pumps that convey the CPR Pond water to the Spurlock Station's ash pond through a 10" polyethylene force main. The emergency spillway consists of three 24" pipes that are designed to discharge to a receiving stream of the Ohio River, specifically through a designated KPDES Outfall (Outfall 005). EKPC's ability to collect, contain, and transport CPR is an essential element of its operations at the Spurlock Station.

Q. Are the Spurlock Station's existing CPR Pond and related facilities inadequate?

A. Yes. The existing CPR Pond and pump system at EKPC's Spurlock Station can contain

the volume of water from a 2-year, 24-hour storm event. The limited capacity of the CPR Pond results in occasional overflows of the pond through the emergency spillway, which in turn results in discharges through Outfall 005. These conditions increase EKPC's risk of non-compliance with Spurlock Station's new KPDES permit, particularly as that new permit becomes more restrictive with respect to Total Suspended Solids and pH consistent with the ELG Rule. While Mr. Jerry Purvis, EKPC's Vice President of Environmental Affairs, discusses the relevant environmental regulations in more detail in his testimony submitted herewith, in sum, recurrent outfalls from Outfall 005 present an unacceptable risk of noncompliance that requires mitigation.

Notably, the coal pile runoff pond as originally constructed at the Spurlock Station was designed to handle only drainage from Spurlock 1 and Spurlock 2's coal pile storage area. The pond was modified in the late 1990's as a result of more drainage area being added to the pond's watershed. The Gilbert Unit and Spurlock 4 became operational in 2005 and 2010, respectively, which further increased the amount of stormwater flow entering the pond. After the Spurlock Station Drainage Improvement project was completed in November of 2016, the amount of stormwater increased again. These developments have necessitated a solution to collect the stormwater in accordance with EKPC's new KPDES discharge permit.

Q. Has EKPC determined how best to address the inadequacies of the Spurlock Station's CPR Pond and related infrastructure?

A. Yes. Based on the Steam Electric Effluent Limitation Guidelines (40 CFR

423.12(b)(10)) and good engineering practices for sedimentation pond design, EKPC has determined that its CPR facilities must now be designed and built to contain a 10-year, 24-hour storm event with adequate freeboard. Improvements to the pond are required to ensure the safe, compliant, and effective operation of the CPR Pond and related facilities. EKPC engaged the engineering firm Burns and McDonnell Engineering Company, Inc. ("Burns and McDonnell") to prepare a Scoping Report that would be useful to further develop the CPR Project. The Scoping Report, a copy of which is provided as an attachment to the testimony of Mr. Sam Yoder submitted herewith, reflects four (4) major project components: CPR Pond Pumps; Coal Pile North Ditch Development; CPR Pond Supplemental Wall; and Balance of Plant Systems.

Q. Please discuss the alternatives considered by EKPC to address the inadequacies of the Spurlock Station's CPR Pond and related infrastructure.

A. EKPC evaluated a host of alternatives to address the stormwater capacity and conveyance deficiencies at the existing Spurlock Station CPR Pond. In addition to the selected option to modify the existing CPR Pond, EKPC considered the construction of a second CPR Pond, reducing the size of the existing CPR Pond watershed, and constructing above-ground or underground storage to augment the existing CPR Pond. The alternative to modify the existing CPR Pond with increased pumping and storage capacity and balancing plant systems was determined to be the most reasonable, least-cost alternative. This option builds upon the work done to the pond in Project 21, Spurlock Drainage Improvement Project, described in Attachment CJ-1.

Q. Please further explain the portion of the CPR Project that concerns modifications to the CPR Pond and pumps.

A. EKPC will install new submersible pumps in a 4x33% line-up (three (3) operating and one (1) spare) to convey excessive rainfall through new and existing pipes to the planned Water Mass Balance ("WMB") Pond. Presently, the pumps and related facilities of the CPR Pond convey stormwater from coal pile runoff and the back-end of the plant through existing piping to the existing coal ash pond; however, as the Commission is aware, the ash pond is scheduled for closure and partial replacement by a WMB Pond in late 2021. The proposed CPR Project recognizes this fact and is designed with facilities for the conveyance of CPR to the new WMB Pond upon the pond's completion.

Q. Please further explain the portion of the CPR Project that concerns modifications to the North Coal Pile Ditch.

A. EKPC will modify the northern coal pile ditch with a new geosynthetic clay liner ("GCL") and concrete bottom and side slopes, as well as deepen the ditch adjacent to the existing pond to allow the retention of more stormwater.

Q. Please further explain the portion of the CPR Project that concerns the CPR Pond Supplemental Wall.

A. EKPC will erect a 3-foot high concrete wall to provide additional storage/freeboard and operational flexibility in the CPR Pond. The supplemental storage wall and associated emergency spillway modifications provide additional retention time to improve sedimentation in the CPR Pond and additional freeboard during larger storm

events. The 100-year, 24-hour storm was used as the design basis for the emergency spillway and also used to check for overtopping of the supplemental CPR Pond storage wall. This design requirement assumes the pumps are operating at maximum capacity and that stormwater will be flowing out the emergency overflow to 005 but the dam will not be overtopped by the stormwater. The distance between the elevation of the top of the new concrete wall and the maximum pond level elevation during this large rainfall event is defined as freeboard. Like the modifications to the North Coal Pile Ditch, the retaining wall will allow EKPC's CPR systems to accept greater capacity and keep stormwater from overflowing the dike during large rainfall events.

Q. Does the CPR Project involve substantial modification of the Spurlock Station's existing systems?

A. EKPC will install new controls, instrumentation and electrical equipment, as well as a new Power Control Module to operate the new systems. These modifications will not substantially impact existing infrastructure. EKPC will also repurpose the ash sluice lines going to the new water mass balance pond; the ash sluice lines will be tied into the new pumping system and will be used to convey the CPR discharge water to the new water mass balance pond. The relevant project schedules will be coordinated to allow this modification.

Q. When does EKPC anticipate completing the CPR Project, if it is approved by the Commission as proposed?

A. The schedule for implementing the CPR Project is designed to complement the other construction activities taking place at Spurlock Station and will be carried out in a

manner that is cognizant and consistent with all the other normal operations taking place on the Spurlock Station campus. Based upon the current schedule, construction should be completed in February 2021.

Q. In addition to securing a CPCN from the Commission, what other administrative approvals are necessary for the CPR Project?

A. In addition to approval from the Commission, the CPR Project requires EKPC to seek a revised KPDES permit for the Spurlock Station from the Kentucky Division of Water. EKPC has begun the process of obtaining this revised permit, which is discussed in greater detail in the testimony of Mr. Purvis submitted herewith. EKPC will need to obtain authorization for the CPR Project from the United States Department of Agriculture's Rural Utilities Service.

Q. Can you describe the approach that EKPC is taking with regard to developing the CPR Project?

A. Yes. EKPC has retained Burns & McDonnell to develop a Scoping Report that defines the scope of the CPR Project, including preliminary design, schedule, contracting approach, and cost estimate. EKPC will competitively bid engineering design services for the CPR Project. These engineering services will include full design of the project, specification development, procurement recommendation, and supplemental staffing for construction management. In addition, EKPC intends to use a multiple contract approach with adjustment unit pricing to develop and construct the CPR Project. This approach allows EKPC to work with its design engineer to create and procure the necessary construction and major equipment contracts, then to contract directly with

providers for those goods and services. The approach involves the use of multiple equipment and material contracts and multiple construction contracts and will allow EKPC to minimize costs by providing for competitive bidding to reduce contractor markups.

Q. Can you provide an example of how this will work in practice?

A. The Scoping Report is the playbook for the entire project. Section 4.0 "Contracting Approach", describes in detail how the CPR Project will be broken down into contracts. Each contract represents the procurement of major equipment or services required for the successful completion of this project. EKPC and its design engineer will work together to develop the bid specification, develop the bidders list, and conduct the procurement activities. The design engineer will evaluate bids and recommend the best proposal for EKPC's consideration. EKPC will execute the contract. The contract management will be performed by EKPC with recommendations and participation from its design engineer.

Q. What are the benefits to this type of approach to developing a project?

A. EKPC has found that this type of contract approach yields the lowest cost project, mitigates schedule risk, and results in an end product that is of higher quality.

Q. How will EKPC be able to assure that it is receiving the lowest reasonable cost for the equipment and contracting services that it procures?

A. EKPC will predominately use competitive bidding for the procurement of goods and services. There could be specialized equipment or services that will require sole-source procurement.

Q. Has EKPC calculated what the incremental operations and maintenance expense will be on an annual basis for the CPR Project once it is completed?

A. Yes. EKPC estimates that the incremental annual operations and maintenance expense associated with the CPR Project following its completion will be approximately $74,000.

Q. Based upon your professional background and experience, do you believe that the CPR Project is the reasonable, least-cost option for allowing EKPC to timely comply with the relevant environmental requirements?

A. Yes. Mr. Mosier elaborates on the many benefits of the CPR Project in his testimony, but clearly this option is less expensive than any other option that EKPC considered. Although it requires significant capital investments, it is the best option for EKPC and its Owner-Members to satisfy regulatory requirements.

Q. Does this conclude your testimony?

A. Yes.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

VERIFICATION OF CRAIG JOHNSON, P.E.

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Craig Johnson, P.E., Senior Vice President of Power Production at East Kentucky Power Cooperative, Inc., being duly sworn, states that he has read the foregoing prepared direct testimony and that he would respond in the same manner to the questions if so asked upon taking the stand, and that the matters and things set forth therein are true and correct to the best of his knowledge, information and belief.

Craig Johnson, P.E.

The foregoing Verification was signed, acknowledged and sworn to before me this 3rd day of October, 2018 by Craig Johnson.

NOTARY PUBLIC

Commission No. 590567

My Commission Expires: 11/30/2021

ATTACHMENT CJ-1

Specifications of Environmental Projects not requiring CPCN

Project 12-1

Environmental Surcharge Fact Sheet: Spurlock Station Landfill Area C - Phase 2

Prepared By: Matt Clark, PE

Description: Spurlock Landfill Area C Phase 2 was constructed after Area C Phase 1 Work Area 1 and Phase 1 Work Area 2. It is a special waste landfill cell constructed as permitted with the Kentucky Division of Waste Management. It is 15.47 acres in size and ties into the existing liner system of the previous cells. The cell provides Spurlock Power Station 4,554,704 Cubic Yards of capacity.

Justification: Ash Landfills are essential for coal fired power generation. On-site silos usually have around 24 hours of storage before reaching capacity and forcing the power station to shut down. Therefore, at all times the ash from the silos are being emptied and disposed of at the landfill. Spurlock Power Station generates approximately 1,800,000 Cubic Yards of Coal Combustion Residuals annually. Per EKPC's landfill management plan, new construction is sequenced so that one year of capacity is remaining in the existing constructed landfill when the new cell is completed. Doing this provides a one year buffer at all times to ensure that capacity will be available for Spurlock Power Station.

Alternatives Considered: The alternative to constructing additional capacity is to haul the ash to a privately owned municipal solid waste landfill. Our best quote for this work is $12 per ton to haul and $16 per ton tipping fee. Our current cost is $2.57 per ton haul and operations (contracted out) and approximately $1.43 per ton to permit and construct (design cost, mitigation fees, bottom liner construction, cap construction). This would be a yearly increase of $43,200,000.

Installed Date: Contractor reached substantial completion on November 21, 2014.

Capital Cost: $3,382,670.46

Operations & Maintenance Cost: Our yearly operations and maintenance cost are included in the $2.57 per ton cost that is paid to the operations contractor. No further maintenance cost is needed for this cell due to the fact this cell did not add any haul road or sedimentation ponds.

Pollutant Waste By-Product Controlled: Special Waste

Environmental Regulation: 401 KAR Chap 45; CWA Section 404

Project 12-2

Environmental Surcharge Fact Sheet: Spurlock Station Landfill Area C – Phase 3

Prepared By: Patrick Bischoff, PE

Description: Per EKPC's landfill management program, new construction at ash landfills is sequenced such that one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Spurlock Station.

Justification: Ash Landfills are essential for coal fired power generation. On-site silos usually have around 24 hours of storage before reaching capacity and forcing the power station to shut down. Therefore, at all times the ash from the silos are being emptied and disposed of at the landfill. Spurlock Power Station generates approximately 1,800,000 Cubic Yards of Coal Combustion Residuals annually (has the ability to produce up to 2,200,000 CY). Per EKPC's landfill management plan new construction is sequenced so one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Spurlock Station.

Alternatives Considered: The alternative to constructing additional capacity is to haul the ash to a privately owned municipal solid waste landfill. Our quoted cost for tipping fees and haul was $28 per ton. Our current cost is $4.00 to use our landfill (including permitting, construction, maintenance, and operations). This would be a yearly increase of $43,200,000.

Installed Date: Fall 2018.

Capital Cost: Projected - $4,737,105 Budgeted - $4,317,024

Operations & Maintenance Cost: $80,000 – maintenance (annual general maintenance budget for landfill); $55,000 – environmental (includes general environmental Engineering consulting, groundwater sampling, operational/environmental inspections).

Pollutant Waste By-Product Controlled: CCR/Special Waste

Environmental Regulation: 40 CFR 257; 401 KAR Chap 45; CWA Section 404

Project 12-3

Environmental Surcharge Fact Sheet: Spurlock Station Landfill Area C – Phase 4

Prepared By: Patrick Bischoff, PE

Description: Per EKPC's landfill management program, new construction at ash landfills is sequenced such that one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Spurlock Station.

Justification: Ash Landfills are essential for coal fired power generation. On-site silos usually have around 24 hours of storage before reaching capacity and forcing the power station to shut down. Therefore, at all times the ash from the silos are being emptied and disposed of at the landfill. Spurlock Power Station generates approximately 1,800,000 Cubic Yards of Coal Combustion Residuals annually (has the ability to produce up to 2,200,000 CY). Per EKPC's landfill management plan new construction is sequenced so one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Spurlock Station.

Alternatives Considered: The alternative to constructing additional capacity is to haul the ash to a privately owned municipal solid waste landfill. Our quoted cost for tipping fees and haul was $28 per ton. Our current cost is $4.00 to use our landfill (including permitting, construction, maintenance, and operations). This would be a yearly increase of $43,200,000.

Installed Date: Fall 2018.

Capital Cost: $6,000,000.

Operations & Maintenance Cost: $80,000 – maintenance (annual general maintenance budget for landfill); $55,000 – environmental (includes general env. engineering consulting, groundwater sampling, operational/environmental inspections).

Pollutant Waste By-Product Controlled: CCR

Environmental Regulation: 40 CFR 257; 401 KAR Chap 46; CWA Section 404

Project 12-4

Environmental Surcharge Fact Sheet: Spurlock Station Landfill Haul Road Extension

Prepared By: Patrick Bischoff, PE

Description: Per EKPC's landfill management program, new construction at ash landfills is sequenced such that one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one-year buffer at all times to ensure that capacity will be available for Spurlock Station. The haul road extension is required to gain operational access into the final three landfill cells (Area C Phases 3, 4, and 5) in the current permitted area.

Justification: Ash Landfills are essential for coal fired power generation. On-site silos usually have around 24 hours of storage before reaching capacity and forcing the power station to shut down. Therefore, at all times the ash from the silos are being emptied and disposed of at the landfill. Spurlock Power Station generates approximately 1,800,000 Cubic Yards of Coal Combustion Residuals annually (has the ability to produce up to 2,200,000 CY). Per EKPC's landfill management plan new construction is sequenced so one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Spurlock Station.

Alternatives Considered: There were no safe alternatives to constructing the haul road extension into the remaining permitted area.

Installed Date: Fall 2017.

Capital Cost: $3,272,456.82.

Operations & Maintenance Cost: $7,500 – Prorated maintenance cost for stone replacement associated with the haul road extension length only.

This does not require any replacement/early retirement of existing in-service.

Pollutant Waste By-Product Controlled: CCR

Environmental Regulation: 401 KAR Chap 46; CWA Section 404

Project 12-5

Environmental Surcharge Fact Sheet: Spurlock Landfill Final Cap and West Side Re-grade

Prepared By: Laura LeMaster, PE, and Matt Clark, PE

Description: Spurlock Landfill has reached final elevation on 38.2 acres and must be re-graded and capped per the Kentucky Division of Waste Management Spurlock Landfill Special Waste Permit.

Justification: The final cap is part of the Kentucky Division of Waste Management Spurlock Landfill Special Waste Permit. The final cap must be performed as the landfill reaches final slope. The permit holder is responsible for providing financial assurance when a new landfill cell is open to ensure that the landfill gets capped properly.

Alternatives Considered: There are no alternatives to the final cap. The final cap is part of the Kentucky Division of Waste Management permit and details the requirements of the cap.

Installed Date: Construction completed 2017, awaiting State approvals.

Capital Cost: $1,964,649.52.

Operations & Maintenance Cost: $55,000 the first year after construction (vegetation is not fully established), $35,000 second year after construction, and $30,000 every year after for general maintenance.

This cap was associated with Area A and Area B Expansion

Pollutant Waste By-Product Controlled: Special Waste

Environmental Regulation: 401 KAR Chap 45; CWA Section 404

Project 17-1

Environmental Surcharge Fact Sheet: Cooper Station Landfill Phase 1A

Prepared By: Matt Clark, PE

Description: As part of EKPC's consent decree with the Environmental Protection Agency Cooper Unit 2 dry scrubber was constructed and became operational in 2012. Based on the additional ash production due to the scrubber EKPC permitted a horizontal and vertical landfill expansion that was received in 2012. Per EKPC's landfill management plan new construction is sequenced so one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Cooper Station. Phase 1A was the first cell constructed on the new Horizontal & Vertical Expansion. Phase 1 was split into two construction projects to allow the landfill to continue operations during construction.

Justification: Ash Landfills are essential for coal fired power generation. On-site silos usually have around 24 hours of storage before reaching capacity and forcing the power station to shut down. Therefore, at all times the ash from the silos are being emptied and disposed of at the landfill. Cooper Power Station generates approximately 100,000 Cubic Yards of Coal Combustion Residuals annually (has the ability to produce up to 300,000 CY). Per EKPC's landfill management plan new construction is sequenced so one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Cooper Station.

Alternatives Considered: The alternative to constructing additional capacity is to haul the ash to a privately owned municipal solid waste landfill. Our best quote for this work is $12 per ton to haul and $16 per ton tipping fee. Our current cost is $4.00 per ton haul and operations (contracted out) and approximately $4.02 per ton to permit and construct (design cost, mitigation fees, bottom liner construction, and cap construction). This would be a yearly increase of $1,998,000.

Installed Date: Completion of Cooper Landfill Phase 1A = May 2014.

Capital Cost: $2,732,569.41

Operations & Maintenance Cost: Cap Maintenance = $10,000 per year

Pollutant Waste By-Product Controlled: Special Waste

Environmental Regulation: 401 KAR Chap 45; KRS Chap 224

Project 17-2

Environmental Surcharge Fact Sheet: Cooper Station Landfill Phase 1B

Prepared By: Matt Clark, PE

Description: As part of EKPC's consent decree with the Environmental Protection Agency Cooper Unit 2 dry scrubber was constructed and became operational in 2012. Based on the additional ash production due to the scrubber EKPC permitted a horizontal and vertical landfill expansion that was received in 2012. Per EKPC's landfill management plan new construction is sequenced so one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Cooper Station. Phase 1B was the second cell constructed on the new Horizontal & Vertical Expansion. Phase 1B completed construction of Phase 1.

Justification: Ash Landfills are essential for coal fired power generation. On-site silos usually have around 24 hours of storage before reaching capacity and forcing the power station to shut down. Therefore, at all times the ash from the silos are being emptied and disposed of at the landfill. Cooper Power Station generates approximately 100,000 Cubic Yards of Coal Combustion Residuals annually (has the ability to produce up to 300,000 CY). Per EKPC's landfill management plan new construction is sequenced so one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Cooper Station.

Alternatives Considered: The alternative to constructing additional capacity is to haul the ash to a privately owned municipal solid waste landfill. Our best quote for this work is $12 per ton to haul and $16 per ton tipping fee. Our current cost is $4.00 per ton haul and operations (contracted out) and approximately $4.02 per ton to permit and construct (design cost, mitigation fees, bottom liner construction, cap construction). This would be a yearly increase of $1,998,000.

Installed Date: Construction completed December 2014.

Capital Cost: $2,891,886.96

Operations & Maintenance Cost: $10,000 per year for Cap Maintenance, all other maintenance is included in the operations contract.

Pollutant Waste By-Product Controlled: Special Waste

Environmental Regulation: 401 KAR Chap 45; KRS Chap 224

Project 17-3

Environmental Surcharge Fact Sheet: Cooper Station Landfill Transmission, Distribution, and Communication Lines Relocation

Prepared By: Matt Clark, PE

Description: As part of EKPC's consent decree with the Environmental Protection Agency Cooper Unit 2 dry scrubber was constructed and became operational in 2012. Based on the additional ash production due to the scrubber, EKPC permitted a horizontal and vertical landfill expansion that was received in 2012. Currently Phase 1A and Phase 1B have been constructed with Phase II set to be constructed as the next expansion to the landfill. Phase II of Cooper Landfill will require a Transmission Line Relocation, Distribution Line Relocation, and a Communication Line Relocation. All three of these lines are within the footprint of Cooper Landfill Phase II construction. These lines will be relocated to allow for future construction of landfill cells at Cooper Landfill.

Justification: Ash Landfills are essential for coal fired power generation. On site silos usually have around 24 hours of storage before reaching capacity and forcing the power station to shut down. Therefore, at all times the ash from the silos are being emptied and disposed of at the landfill. Cooper Power Station generates approximately 100,000 Cubic Yards of Coal Combustion Residuals annually (has the ability to produce up to 300,000 CY). Per EKPC's landfill management plan new construction is sequenced so one year of capacity is remaining in the existing constructed landfill when the new cell is completed. This provides a one year buffer at all times to ensure that capacity will be available for Cooper Station.

Alternatives Considered: The alternative to constructing additional capacity is to haul the ash to a privately owned municipal solid waste landfill. Our best quote for this work is $12 per ton to haul and $16 per ton tipping fee. Our current cost is $4.00 per ton haul and operations (contracted out) and approximately $4.02 per ton to permit and construct (design cost, mitigation fees, bottom liner construction, cap construction). This would be a yearly increase of $1,998,000.

Installed Date: Completed in 2016.

Capital Cost: $618,944.78

Operations & Maintenance Cost: There will not be any operations or maintenance cost above or beyond the O&M for these lines in their current location.

Pollutant Waste By-Product Controlled: Special Waste

Environmental Regulation: 401 KAR Chap 45; KRS Chap 224

Project 18

Environmental Surcharge Fact Sheet: Cooper Station Landfill Sediment Pond

Prepared By: Matt Clark, PE

Description: As part of EKPC's consent decree with the Environmental Protection Agency Cooper Unit 2 dry scrubber was constructed and became operational in 2012. Based on the additional ash production due to the scrubber, EKPC permitted a horizontal and vertical landfill expansion that was received in 2012. With the landfill expanding the existing sediment pond would no longer function properly and was redesigned and modified to meet engineering standards. The pond was reshaped, lined, and protective cover over the new synthetic liner that was installed.

Justification: The Landfill Sediment Pond is necessary to meet the existing Kentucky Pollution Discharge Elimination System Permit. Also, the sediment pond is a requirement of the Kentucky Division of Waste Management Cooper Special Waste Permit.

Alternatives Considered: "Doing nothing" was not considered due to environmental compliance. There are not any areas of suitable size downstream of the landfill to construct a sediment pond other than modifying the existing pond.

Installed Date: Construction completed May 2013.

Capital Cost: $2,163,009.08

Operations & Maintenance Cost: $5,000 per year for Cap Maintenance. Pond Cleanout every 15 years is approximately $1,250,000.

Pollutant Waste By-Product Controlled: Special Waste

Environmental Regulation: 401 KAR Chap 45; KRS Chap 224

Project 19

Environmental Surcharge Fact Sheet: Cooper Station Ash Mixer Unloaders

Prepared By: Eddie Hudson

Description: In 1993, EKPC converted the Cooper Station Units 1 & 2 from a wet ash system to a dry handling system. Since this conversion, both units have shared two fly ash mixer unloaders. The mixer unloaders add water to the dry ash to suppress dust in order to ease transport to the landfill via trucks.

Justification: In 2012, EKPC installed a dry scrubber on Cooper Unit 2. This project has introduced lime into the fly ash system resulting in high calcium ash. The original ash mixer unloaders were not capable of handling ash of this nature without the risk of cement-like buildup in the unloader. In addition, the mixer unloaders were at the end of life and due to be replaced. The mixers were deteriorating and work orders were steadily increasing. When considering these conditions it was determined to proceed with a mixer unloader capable of handling the high calcium ash that also worked similar to our current mixer unloader design.

Alternatives Considered: An innovative pin-paddle mixer unloader designed specifically for conditioning high calcium ash. Paddles push and propel material forward while fast counter-rotating shafts and pins lift the material and create turbulent mixing for optimal wetting. Additional features of pin-paddle mixers include: the shafts and pins use covers made of ultra-high molecular weight polyethylene material to resist buildup. Even distribution of power between shafts minimizes shaft stress and deflection. This style mixer unloader was installed on Cooper Unit 2 in 2012 and has given EKPC the results needed to properly handle the high calcium ash. As a result of the success on Unit 2, EKPC moved forward in 2013 by installing this same mixer unloader design on Unit 1.

Installed Date: Construction completed November 2013.

Capital Cost: $260,441.29

Operations & Maintenance Cost: $30,000 every 6-8 years for Maintenance.

Pollutant Waste By-Product Controlled: Special Waste

Environmental Regulation: 401 KAR Chap 45; KRS Chap 224; 401 KAR 63:010

Project 20

Environmental Surcharge Fact Sheet: Cooper Station Ditch and Sediment Trap Design/Construction

Prepared By: Laura LeMaster, PE

Description: Stormwater runoff from the active disposal area on the Cooper Landfill drains to the north side of the landfill and flows to the existing Sediment Pond, currently there is ponding of water at the toe of the landfill due to poor drainage in this area. This project includes the installation of a concrete ditch and placement of fill to promote positive drainage of all stormwater runoff to the sediment trap and the installation of a sediment trap to minimize sediment that enters the pond.

Justification: This project will promote the positive flow of surface water runoff that contacts the ash landfill into the existing sediment pond. Existing conditions are flat and currently pool water at the toe of the landfill. Existing conditions also allow water to pool outside of the existing channels in unlined areas. The sediment trap will allow for routine maintenance and cleaning operations as a first line of defense of the sediment pond. Minimizing sediment into the sediment pond will increase the time between costly clean out of the sediment pond.

Alternatives Considered: No action was considered, however, due to environmental compliance implications, the project was executed.

Installed Date: Construction completed December 2017.

Capital Cost: Estimated: $1,242,055.47

Operations & Maintenance Cost: The only operational and maintenance cost will be to clean the ditch using EKPC personnel - $12,000 per year.

This project will not require the retirement of any assets.

Pollutant Waste By-Product Controlled: Special Waste

Environmental Regulation: 401 KAR Chap 45; KRS Chap 224

Project 21

Environmental Surcharge Fact Sheet: Spurlock Station Drainage Improvement

Prepared By: Laura LeMaster, PE

Description: This project consists of modifications for the redirection of FGD blowdown and numerous surface drainage and collection areas. Specifically, cleaning out and increasing capacity in the Coal Pile Runoff Pond, increasing the height of the existing Gypsum Stackout Wall, elimination of several drainage and collection pits, and regrading/paving areas on the back side of the plant.

Justification: The project is necessary to assure that EKPC complies with the CCR Final Rule by assuring that the Coal Pile Runoff Pond and various pits and collection points on the site were not susceptible to interpretation as "CCR Impoundments" by the relative deadline date in the Rule, and by developing surfaces and control systems to facilitate operational compliance with the CCR Final Rule in routine operations for handling and transporting ash.

Alternatives Considered: The scope of this project was developed to address immediate issues for compliance with the CCR Final Rule per specified requirement deadlines. Elective non-compliance or changing operations at Spurlock to cease ash production were not considered. The critical timeline and physical restrictions also did not allow for significant changes in process design or other alternatives that might possibly exist. The implemented projects were the simplest, most achievable and cost effective options to meet the near term requirements for the CCR Final Rule. For impervious pavement areas, concrete versus asphalt was evaluated and the least cost alternative was selected.

Installed Date: Substantial Completion November 2016.

Capital Cost: Estimated Final Cost - $13,134,888

Operations & Maintenance Cost: Estimated Annual Cost - $153,000

1) Auxiliary pumps that transport FGD from tank to ash pond
2) Actuated valves
3) Pavement replacement

Pollutant Waste By-Product Controlled: CCR, Stormwater

Environmental Regulation: 40 CFR 257; 401 KAR 63:010; CWA Sec. 402; KRS Ch. 224

Project 22

Environmental Surcharge Fact Sheet: Spurlock Station HG Compliance – Units 1 & 2

Prepared By: Mary Jane Warner, PE

Description: Compliance was achieved by installing a Fuel Additive System to oxidize the Mercury and a Flue Gas Desulfurization (FGD) Additive System to assure that captured Mercury is not re-emitted. The Fuel Additive System feeds a calcium bromide solution onto the coal belt for each unit, and required a storage tank, pump skid, and ancillary piping. The FGD Additive System delivers a NALCO product (MerControl 8034+) to the return line of the pH sampling loop for each scrubber. Similarly, a storage tank, pump skid, and ancillary piping were installed to administer this additive.

Justification: In order to meet U.S. Environmental Protection Agency (EPA) Mercury and Air Toxic Standard requirements, East Kentucky Power Cooperative (EKPC) must install mercury control systems for Units 1 & 2 at the Hugh L. Spurlock Generating Station (Spurlock), and those systems had to be fully operational by April 15, 2015.

1) ***Alternatives Considered:*** In order to comply with the Mercury and Air Toxic Standards (MATS), coal fired facilities have a number of compliance technology alternatives to consider. The technology alternatives considered generally included activated carbon injection, fuel additives, and wet flue gas desulfurization additives. The appropriate technology or combination of technologies is highly dependent on the existing coal fired facilities air pollution control equipment being balanced with the installed costs and operating and maintenance (O&M) costs. Since Spurlock Units 1 & 2 arrangements include selective catalytic reduction (SCR) systems and wet flue gas desulfurization (FGD) systems, EKPC determined that the lowest capital and O&M cost systems to install for compliance with MATS was a combination of a fuel additive and wet FGD additive system.

Installed Date: Construction completed March 2015.

Capital Cost: $2,755,438

Operations & Maintenance Cost: Based on generation patterns and typical fuel composition, the annual additive cost is estimated to be $1,955,400, and the normal Operations and Maintenance costs are expected to be approximately $30,000 per year.

Pollutant Waste By-Product Controlled: Mercury

Environmental Regulation: 40 CFR 60; 40 CFR 63; 401 KAR 63:020

Project 23

Environmental Surcharge Fact Sheet: Spurlock Station Anhydrous Ammonia Secondary Containment Prepared By: David Meade, PE

Description: Reduce the health and environmental impact of an accidental release of Anhydrous Ammonia. Build berms around ammonia tank farm. Route bermed area to new containment pond and upgrade fogger.

Justification: A worst-case accidental release of Anhydrous Ammonia with current safety controls has an effective possible radius of 6.9 miles. Modeling shows that upgrades to the tank farm will improve safety for the community and plant and will limit the affected area of a spill to 0.65 miles or less.

Alternatives Considered: Building around tank farm considered.

Installed Date: Construction completed on December 29, 2017.

Capital Cost: $1,050,779.86

Operations & Maintenance Cost: Annual Maintenance is expected to be $5,000 per year for fogger and containment system.

This will not require any replacement/early retirement of existing plan in-service.

Pollutant Waste By-Product Controlled: NH3

Environmental Regulation: 40 CFR 112; CAA Sec 112(r)

Project 24

Environmental Surcharge Fact Sheet: Spurlock Station Vacuum Truck Ash Transfer Station

Prepared By: Laura LeMaster, PE

Description: An in-ground concrete transfer station where ash trucks can dump wet and dry ash trucks. The in-ground concrete structure will include a wind fence, foggers, lighting, an unloading location, a loading ramp, and a wheel wash. The in ground pit will be used for storage of the ash until it achieves optimum moisture content and taken to the landfill.

Justification: Spurlock Station routinely uses vacuum trucks to clean around the boilers and to remove ash from inside the boilers. The new CCR regulations do not allow for wash down of facilities such as around our ash silos. This material is now collected dry, by vacuum truck and sweepers. This project will reduce environmental and safety risks. Currently, the dry ash trucks are driving to the landfill. EKPC is incurring cost for additional vac trucks to make the haul up to the landfill as well the requirements for night time operations at the landfill and temporary lighting. Disposal of dry ash on the landfill can also causes dust concerns. Wet ash trucks are currently dumping their content into the ash pond, within the next two years the ash pond will begin clean closure, a location to dump wet ash will still be required, which will be provided by the this facility.

Alternatives Considered: The alternative for the dry ash is to continue to haul it up to the landfill, however, there are operational and maintenance cost associated with this annually. Due to ash pond closure, there will be no location in the future to dump wet trucks. The annual operation and maintenance cost for taking dry trucks to the landfill is $45,200 per year, plus the cost for additional vac trucks per outage costing an additional $215,000 per year. Multiple iterations of facility layout were considered during design.

Installed Date: Fall 2018.

Capital Cost: Projected - $2,664,200 (not based on actual bids, projected cost based off)

Operations & Maintenance Cost: Operation of the station – approximately - $75,000/ year (outside contract expected). Utility cost including water, power, and air. Typical maintenance for cleaning foggers, site clean-up, and maintaining truck wash will remain less than $10,000 per year.

This will not require the retirement of any existing plant assets.

Pollutant Waste By-Product Controlled: CCR and Particulate Matter

Environmental Regulation: 40 CFR 257; 401 KAR Chap 46; 401 KAR 59:010

Project 25

Environmental Surcharge Fact Sheet: Spurlock Station Dry Sorbent Injection System for Units 1 & 2 Prepared By: Brandon Bettinger

Description: Purchase and install a Dry Sorbent Injection (DSI) system that can remove Sulfur Trioxide (SO3) upstream of the Wet Electrostatic Precipitator (WESP) to protect the Air Heaters, duct work and fans from corrosion. It will also help with opacity compliance for the units. To be able to install the system in one year, we must purchase a trailer (blowers and feeders) and silo to feed the units. We must then design, purchase, and install conveying piping, splitters, and injection lances. Lastly all utilities will need to be upgraded and installed to make the system permanent.

Justification: Environmental compliance - Purchase and install a DSI system that can remove SO3 upstream of the WESP to protect the Air Heaters, ductwork and fans from corrosion. It will also help with opacity compliance for the units. A side benefit by this installation is the reduction of Magnesium Hydroxide usage.

Alternatives Considered: Options considered included increasing WESP size, installing a trona feed system, continuously renting a Hydrate lime feed system, or purchasing and installing a permanent DSI Hydrated Lime Feed System.

The first option we looked at was increasing the WESP size. It was not chosen because of the high cost and long installation time frame. We then performed tests with trona and hydrated lime feed systems. The hydrated lime system provided the best results and was the chosen product to feed. We then compared a permanent feed system against a temporary feed system. The permanent hydrated lime feed system has a higher up front capital cost as compared to the temporary system, but it provides the most economical longer term benefit. The permanent system provides the most reliable hydrated lime feed.

Installed Date: August 2017

Capital Cost: $3,876,376.31

Operations & Maintenance Cost: Yearly hydrated lime cost will be approximately $600,000. There will be $50,000 per year in maintenance to maintain the system.

Pollutant Waste By-Product Controlled: SO3, NH3

Environmental Regulation: 40 CFR 63

EXHIBIT

J

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)))))))	CASE NO. 2018-00270

DIRECT TESTIMONY OF SAM YODER
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: October 3, 2018

Q. Please state your name, business address, and occupation.

A. My name is Sam Yoder and my business address is 9400 Ward Parkway, Kansas City, MO 64114. I am a Project Manager for Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell").

Q. Please briefly describe the business conducted by Burns & McDonnell.

A. Burns & McDonnell is a full-service engineering, architecture, construction, environmental and consulting solutions firm, based in Kansas City, Missouri. Our staff of 5,700 includes engineers, architects, construction professionals, planners, estimators, economists, technicians and scientists, representing virtually all design disciplines. We plan, design, permit, construct and manage facilities all over the world.

Q. Please state your education and professional experience.

A. I have a B.S. in Chemical Engineering and B.S. in Mathematics from the University of Missouri, Columbia, 2007. I have worked for Burns & McDonnell for 10 years and I am a Professional Engineer in the Commonwealth of Kentucky.

Q. Please provide a brief description of your duties at Burns & McDonnell.

A. I am a Project Manager with Burns & McDonnell's Energy Division. I am responsible for supervising and coordinating engineering staff, design, project schedule and cost, project planning, multi-contract coordination and management, and serve as the primary liaison with the Client.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to describe the role of Burns & McDonnell in helping East Kentucky Power Cooperative, Inc. ("EKPC") develop its proposal to

modify and expand the Coal Pile Runoff Pond ("CPR Pond") at its Hugh L. Spurlock Station in Mason County, Kentucky ("Spurlock Station") (as further described herein, the "CPR Project"). I will also describe and authenticate the Project Scoping Report ("Scoping Report") that Burns & McDonnell prepared on behalf of EKPC.

Q. Are you sponsoring any exhibits as part of your testimony?

A. Yes. My *curriculum vitae* is attached hereto as Attachment SY-1, and a copy of the Scoping Report is attached hereto as Attachment SY-2. These documents were prepared by me or by individuals working directly under my supervision.

Q. Please briefly describe EKPC's Spurlock Station.

A. EKPC's Spurlock Station is situated along the Ohio River outside Maysville, Kentucky. The Station includes four (4) generating units with a total combined capacity of 1,346 MW, all of which primarily burn a range of eastern bituminous coals delivered by barge. The combined coal storage capacity of the Spurlock Station is 490,000 tons.

Q. How has Burns & McDonnell been involved in the development of the CPR Project?

A. EKPC approached Burns & McDonnell to help develop a plan to address existing inadequacies with the CPR Pond and related facilities at the Spurlock Station. Specifically, due to the limited size and design of the Spurlock Station's present CPR facilities, EKPC identified a need to ensure fewer emergency outflows in order to remain compliant with applicable environmental regulation. Since engaged, Burns & McDonnell has worked with EKPC to define the CPR Project to include

four (4) major project components—CPR Pond Pumps; Coal Pile North Ditch Development; CPR Pond Supplemental Wall; and Balance of Plant Systems—each of which is more fully described in the Scoping Report attached hereto as Attachment SY-2.

Q. Please describe the Scoping Report prepared for EKPC.

A. The Scoping Report is intended to provide EKPC and other interested parties, such as this Commission, an understanding of the CPR Project scope, assumptions, conceptual design, schedule and associated cost estimate. The Executive Summary and Introduction provide the highest-level summary and put some necessary caveats on what Burns & McDonnell was asked to accomplish as part of its review. Section 3.0, the Project Definition section of the Scoping Report, includes extensive detail about the Project.

The Project Definition section describes the existing layout and configuration of the Spurlock Station and provides a reasonably high-level overview of the mechanical, electrical and control systems that will be required on the CPR Project. The Project Definition also includes a discussion on permitting requirements that are likely to be applicable to the Project's development.

The next major component of the Scoping Report is the Contracting Approach Section. In that portion of the Scoping Report, the multiple contract approach selected for the Project is described. An important feature of this portion of the Scoping Report is the inclusion of a list of major contracts as well as a matrix showing how each contract interfaces with other contracts. This matrix helps EKPC plan and track the sequencing of the contracts accordingly. The last part of

the Contracting Approach section of the Scoping Report provides a general description of the scope of each contract and further breaks the CPR Project down into construction contracts and equipment contracts.

The next section of the Scoping Report covers the Schedule for the CPR Project. It describes the major milestones that must be met in order to timely complete the work involved and also describes how the project will fit into the planned outages for the Spurlock Station.

The last major section of the Scoping Report is the Cost Estimate discussion. In this part of the Scoping Report, Burns & McDonnell provides estimates for both the capital investment and the operations and maintenance investment associated with the Project. Additionally, a discussion is included of the assumptions used in preparing the cost estimates and how contingency amounts were calculated. Finally, a cash flow estimate is provided based on the Project schedule, contracting approach, and cost estimate.

Q. Do you believe that the $11.21 million cost estimate associated with the CPR Project is a reasonable estimate?

A. Yes. While assumptions were made in the process of preparing the Scoping Report and certain limitations exist when any engineer develops a project before beginning the project, the estimate developed in preparing the Scoping Report is of budgetary planning quality for similar projects of this complexity and size.

Q. Do you authenticate and adopt as part of your testimony the conclusions contained within the Scoping Report attached hereto as Attachment SY-2?

A. Yes.

Q. Does this conclude your testimony?

A. Yes.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

VERIFICATION OF SAM YODER, P.E.

STATE OF Missouri)
)
COUNTY OF Jackson)

Sam Yoder, P.E., Energy Division Project Manager with Burns and McDonnell, being duly sworn, states that he has read the foregoing prepared direct testimony and that he would respond in the same manner to the questions if so asked upon taking the stand, and that the matters and things set forth therein are true and correct to the best of his knowledge, information and belief.

Sam Yoder, P.E.

The foregoing Verification was signed, acknowledged and sworn to before me this 18th day of September, 2018 by Sam Yoder.

NOTARY PUBLIC

Commission No. 15634903

My Commission Expires: 20 April 2019

SARA BETH ACTON
Notary Public - Notary Seal
STATE OF MISSOURI
Jackson County
My Commission Expires April 20, 2019
Commission # 15634903

ATTACHMENT SY-1

Curriculum Vitae

SAMUEL YODER, P.E.

Project Manager

Mr. Yoder is a Project Manager with Burns & McDonnell's Energy Division. Mr. Yoder has been involved in more than $1.5 Billion in coal-fired power plant pollution control retrofit projects. Mr. Yoder's experience includes all major phases of large capital projects, including project planning studies and evaluations, detailed engineering design, multi-contract coordination and management, construction and commissioning at coal-fired power plants.

EDUCATION

- BS, Chemical Engineering
- BS, Mathematics

REGISTRATIONS

- Professional Engineer (MO, KY)

10 YEARS WITH BURNS & MCDONNELL

10 YEARS OF EXPERIENCE

Spurlock Station Coal Combustion Residuals and Effluent Limitations Guidelines Scoping Study | East Kentucky Power Cooperative

2016-2017

Project manager for the Spurlock Station coal combustion residuals (CCR) and effluent limitations guidelines (ELG) project scoping study. The study involves preliminary engineering design to determine the project costs and schedule to comply with CCR and ELG regulations on Spurlock Units 1 and 2.

Coal Combustion Residuals and Effluent Limitations Guidelines Scoping Study | Confidential Client

2016-2017

Project manager for a coal combustion residuals (CCR) and effluent limitations guidelines (ELG) project scoping study. The study involves preliminary engineering design to determine the project costs and schedule to comply with CCR and ELG regulations at a coal-fired power plant.

Coal Combustion Residual Documents Implementation Program | East Kentucky Power Cooperative

2015-2016

Project manager for the EKPC CCR Implementation Program that included the documents required to meet the new EPA CCR Rule. Documents included inspection lists, groundwater monitoring studies, quality assurance program, fugitive dust program, and website/data management development. Roles included reviewing and developing documentation for EKPC CCR implementation, client coordination and internal engineering coordination.

Spurlock Station Site Drainage Improvement Project | East Kentucky Power Cooperative

2015-2016

Project manager for a diverse and fast paced project at Spurlock Station. The project consists of design and specification development, as well as construction management for rerouting the wet FGD blowdown from the coal pile runoff pond to the ash pond almost 8,000 feet away in less than 6 months. Once the reroute was completed, design and specifications were developed for deepening and lining the existing coal pile runoff pond. Lastly, site pavement design drawings and specifications were developed to pave nearly 15 acres at Spurlock Station.

SAMUEL YODER, P.E.
(continued)

Wilson Station Dry Sorbent Injection Project | Big Rivers Electric Corporation
2014-2016

Project manager for the Wilson Station Dry Sorbent Injection project. The project consists of dry sorbent injection silo, pipe rack and injection grid on Wilson Unit 1. The project consisted of developing design and specifications for the equipment supply contract as well as the installation contract.

Dale Station Ash Pond Closure and Site Restoration | East Kentucky Power Cooperative
2013-Present

Project manager for closure by removal of ash ponds at East Kentucky Power Cooperative's Dale Station near Ford, Kentucky. The project consists of removal of approximately 500,000 cubic yards of coal combustion residuals (CCR) from multiple ponds along the Kentucky River and hauling the CCR material to a landfill being developed at East Kentucky Power Cooperative's J.K. Smith Station.

Cooper Station Unit 1 – Duct Reroute Project | East Kentucky Power Cooperative
2013-2016

Project manager for the Cooper Unit 1 duct reroute project. The project consists of re-routing the Cooper Unit 1 flue gas into the previously constructed Cooper Unit 2 circulating dry scrubber system for MATS compliance. This unique project consisted of several equipment and material supply contracts as well as two installation contracts.

Green Station Units 1 & 2 MATS Compliance Project | Big Rivers Electric Corporation
2013-2015

Project manager for the Green Station Unit 1 & 2 MATS compliance project. The project consists of dry sorbent injection and powdered activated carbon injection on Green Units 1 & 2 for MATS compliance. The project consisted of detailed design and specification development for equipment supply, pilings, foundations, and mechanical construction. In addition, the project had multiple installation contracts that required coordination.

Spurlock Station Mercury Control Project | East Kentucky Power Cooperative
2013-2015

Project manager for the Spurlock Station mercury control project. The project involves the addition of a wet flue gas desulfurization (FGD) mercury reemission additive and a fuel additive to Spurlock Units 1 and 2.

MATS Compliance Study | Indianapolis Power and Light
2014

Project manager for the Indianapolis Power and Light MATS compliance study that evaluated the potential application of calcium bromide fuel additive for Harding Street Unit 7. The purpose of the study was to determine whether the application of fuel additive alone could bring Harding Street Unit 7 into MATS compliance. In addition to the feasibility evaluation, Mr. Yoder helped develop a testing plan that could be utilized by IP&L for testing the fuel additive application.

Cooper Station Unit 2, East Kentucky Power Cooperative
2009-2013

Mr. Yoder was the process engineer for the Cooper Unit 2 environmental project. The project involved the addition of a circulating dry flue gas desulfurization (FGD) system, baghouse, and selective catalytic reduction (SCR) systems to Cooper Station Unit 2, which is 225 MW.

SAMUEL YODER, P.E.
(continued)

Mr. Yoder was the field mechanical engineer for the Cooper Unit 2 environmental project. In this role, Mr. Yoder answered both technical and contractual questions from the installing contractors, assisted in coordinating the onsite work activities between multiple installation contractors, and coordinated and managed the equipment manufacturer's field representative services.

Mr. Yoder was the process commissioning engineer for the Cooper Unit 2 environmental project. In this role, Mr. Yoder assisted in commissioning the SCR, the circulating dry scrubbing FGD, primary air fan, forced draft fan, induced draft fan, and air heater. In addition, Mr. Yoder assisted in commissioning the balance of plant equipment for the Cooper Unit 2 environmental project.

Cholla Power Station Unit 3, Arizona Public Service
2007-2010

Mr. Yoder was the process engineer for the Cholla Unit 3 and Unit 4 scrubber and baghouse retrofit project for Arizona Public Service. The project involved the addition of wet FGD systems on each Unit, a new baghouse on Unit 4, and the replacement of the existing hot side electrostatic precipitators (ESP) with a baghouse on Unit 3. The Unit 4 ESP, which was abandoned on the Unit 4 retrofit, was converted into the Unit 3 baghouse.

Seminole Generating Stations Units 1 & 2, Seminole Electric
2007-2009

Detailed engineering and design for modifications to existing air pollution control equipment and installation of new air pollution control equipment for the existing Units 1 and 2. Work included new SCRs, urea injection, sorbent injection testing, sorbent injection equipment for SO_3 control, and FGD modifications including new mist eliminator wash, installation of perforated trays, and new gypsum dewatering equipment.

Merom Station, Hoosier Energy Rural Electric Cooperative, Inc.
2007

Development of specifications and drawings for procurement of sulfuric acid mist (SAM) control system. System was designed for reagent injection upstream of the existing particulate collection device.

ATTACHMENT SY-2

Burns & McDonnell Scoping Report
September 2017

BURNS McDONNELL

Spurlock Station – Coal Pile Runoff Pond Supplemental Storage – Project Scoping Report

EAST KENTUCKY POWER COOPERATIVE

East Kentucky Power Cooperative

Project No. 100580
Rev. 0
September 2017

Spurlock Station – Coal Pile Runoff Pond Supplemental Storage – Project Scoping Report

Prepared for

East Kentucky Power Cooperative
Winchester, Kentucky

Project No. 100580

Rev. 0
September 2017

Prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

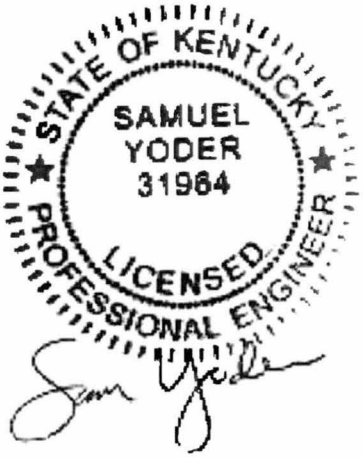
INDEX AND CERTIFICATION

East Kentucky Power Cooperative
Spurlock Station –
Coal Pile Runoff Pond Supplemental Storage – Project Scoping Report
Project No. 100580

Report Index

Certification

I hereby certify, as a Professional Engineer in the Commonwealth of Kentucky, that the information in this document was assembled under my direct supervisory control. This report is not intended or represented to be suitable for reuse by East Kentucky Power Cooperative or others without specific verification or adaptation by the Engineer.



Samuel Yoder (Kentucky License No. 31964)

Date: September 14, 2017

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
ABB	ASEA Brown Boveri
AC	Alternating Current
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
BMcD	Burns & McDonnell
BMP	Best Management Practices
BOP	Balance of Plant
CCR	Coal Combustion Residuals
CHDPE	Corrugated High-Density Polyethylene
CFB	Circulating Fluidized Bed
CPCN	Certificate of Public Convenience and Necessity
CPR Pond	Coal Pile Runoff Pond
DCS	Distributed Control System
EKPC	East Kentucky Power Cooperative
ELG	National Effluent Limitations Guidelines and Standards
FGD	Flue Gas Desulfurization
GA	General Arrangement
GCL	Geosynthetic Clay Liner
gpm	Gallons per Minute
IO	Input Output
k	Thousand

Abbreviation	Term/Phrase/Name
KBC	Kentucky Building Code
KDOW	Kentucky Division of Water
KPDES	Kentucky Pollutant Discharge Elimination System
LED	Light Emitting Diode
MCC	Motor Control Center
MM	Million
MW	Megawatt
NCMC	Non-Chemical Metal Cleaning
NOAA	National Oceanic and Atmospheric Administration
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
P&ID	Process and Instrumentation Diagram
PCM	Power Control Module
PLC	Programmable Logic Controller
PSC	Public Service Commission
PSR	Project Scope Report
Spurlock	Spurlock Generating Station
TCP/IP	Transmission Control Protocol/Internet Protocol
UPS	Uninterruptable Power Supply
WMB	Water Mass Balance

1.0 EXECUTIVE SUMMARY

East Kentucky Power Cooperative (EKPC; Owner) owns and operates the Hugh L. Spurlock Generating Station (Spurlock) in Maysville, KY. Spurlock consists of four operating coal-fired units: Unit 1 is a 300-net megawatt (MW) pulverized coal fired unit built in 1977, Unit 2 is a 510 net MW pulverized coal fired unit built in 1981, Unit 3 is a 268 net MW circulating fluidized bed (CFB) unit built in 2005, and Unit 4 is a 268 net MW CFB unit built in 2009. Spurlock burns a range of eastern bituminous coals.

EKPC has retained Burns & McDonnell (BMcD) to assist in developing the scope, preliminary design, schedule, and budgetary cost estimate for providing supplemental stormwater runoff storage for the coal pile and plant contributing areas. The design storm chosen for analysis was the 10-year, 24-hour event. As part of the evaluation, the existing stormwater model developed by BMcD, was to be utilized to determine the sizing requirements for pumps, piping, and supplemental storage, as required. The evaluation and preliminary design was requested by EKPC as the current Coal Pile Runoff Pond (CPR Pond) has capacity to contain approximately a 2-year, 24-hour storm event. The Project scope includes the items summarized in Table 1-1 and discussed in detail in Section 3.0.

Table 1-1: Project Scope

Major Scope Items	**Description**
CPR Pond Pumps and Piping	The scope includes new submersible pumps in a 4x33% line-up (3 operating and one spare) to convey the 10-year, 24-hour design storm event through existing bottom ash, fly ash, flue gas desulfurization (FGD) and CPR Pond lines to the future Water Mass Balance (WMB) Pond. New piping will be required to complete tie-ins to the existing piping lines.
Coal Pile North Ditch Development	The scope includes modifications to the northern coal pile ditch with a new geosynthetic clay liner (GCL), concrete bottom, and side slopes.
CPR Pond Supplemental Wall	The scope includes an optional 3-foot high concrete wall to provide an additional 3-feet of storage/freeboard in the CPR Pond and ditch during a 100-year, 24-hour event.
Balance of Plant (BOP)	The scope includes new controls, instrumentation and electrical equipment, along with a new Power Control Module (PCM) enclosure to operate these new systems.

The scope does not include capital costs for any modifications to the planned and future Water Mass Balance (WMB) Pond that may be required to handle additional flows from the CPR Pond and/or berm modifications for the additional piping. Modifications to the WMB Pond were not included because sampling of the coal pile runoff and other plant process flows, should occur prior to detailed design of the WMB Pond.

Additionally, the scope does not include chemical treatment of the coal pile runoff or other Non-Chemical Metal Cleaning (NCMC) wastes which may come from air heater washes, boiler washes, precipitator washes, or similar.

1.1 Purpose

The purpose of this report is to present the study results for use in EKPC's evaluation of Project feasibility and budgeting as part of the Project development phase. The report provides overall scope, schedule, and cost estimate of the Project based on the documents contained herein.

Prior to the development of this Project Scoping Report (PSR), a stormwater model was developed by BMcD and utilized to provide a screening level Stormwater Management Report for Spurlock. This building block report as well as the previously developed stormwater model were utilized in developing this PSR.

1.2 Project Execution Approach

The selected contracting strategy for the Project is a multiple contract approach with adjustment unit pricing. The multiple contract approach provides EKPC with more control over the design of the Project, the quality and type of the equipment and materials, and it provides more ability to make changes as the Project progresses.

In the multiple contract approach, EKPC and an Owner's Engineer will work together to create and procure the construction and major equipment contracts for the Project. The procurement of the long lead time equipment, such as the PCM, may be necessary early in the Project to support the construction schedule. The contracting approach includes equipment/material contracts and one general construction contract, as referenced in Section 4.2. The equipment contracts allow EKPC to reduce the cost of the general construction contractor markup via competitive bidding.

1.3 Schedule

The Project schedule is driven by the planned modifications to the existing bottom ash, fly ash, and FGD handling at Spurlock. These systems on Units 1 and 2 currently sluice to the existing Ash Pond through existing pipes. These existing pipes are anticipated to be re-used, but conversion of these systems to "dry" handling and wastewater treatment will need to occur prior to Project completion. Additionally, a Certificate of Public Convenience and Necessity (CPCN) may be required for this Project which can take up to six months to obtain. Table 1-2 reflects the major milestones for the Project. The complete Level 1 schedule is provided in Appendix D.

Table 1-2: Project Milestones

Activity	Date
Commence CPCN Application	October 2017
CPCN Approval	April 2018
FNTP Engineering	November 2018
Award of Long Lead Equipment	July 2019
Commence Construction	July 2020
Unit 2 Outage Commence	September 2020
Unit 2 Outage Complete	December 2020
CPR Pond Project Startup	January 2021
CPR Pond Supplemental Storage Project Complete	February 2021

1.4 Cost Estimate

Safety will be a primary focus for the Project. Each contractor will be required to provide full time safety professionals to properly manage safety during Project execution.

The estimated capital cost for the Spurlock Coal Pile Runoff Pond Supplemental Storage Project is $10.7 MM including escalation for Project completion in 2021. This estimate is based on the capital cost basis and assumptions in Section 6.0 and Appendix C. A Project estimate contingency is included to cover the accuracy of pricing and commodity estimates for the scope defined in this report. In addition, an Owner's cost estimate of $480k is included based on input from EKPC. Owner's contingency for discretionary costs were not included per EKPC's request.

1.5 Project Assumptions

Multiple items were assumed as part of the Project development which include:

- WMB Pond: The future WMB Pond which is preliminarily sized at 17-acres is assumed to be adequate to handle additional flows during CPR Pond storm events. During detailed design, the WMB Pond may require sizing modifications and/or chemical feed equipment to handle these additional process flows from the CPR Pond, specifically during storm events; however, these potential modifications are assumed to be covered in the CCR/ELG Compliance Project.

- Existing Piping Re-use: Multiple existing pipes are proposed to be re-used as part of the Project. The condition of these pipes is unknown and an allowance of approximately 5% of each pipe has been included for replacement.

- Fuel Oil Line Utility Rack: On the north side of the coal pile and CPR Pond, there is a fuel oil line supported by a utility rack above grade. The supplemental wall included in this estimate is assumed to be supported at the top of the berm and will not be impacted by the fuel oil line utility rack.

- Underground Interferences: Unknown underground interferences will be mitigated prior to detailed design by pilot trenching, however at the time of this estimate the underground information is unknown.

* * * * *

2.0 INTRODUCTION

2.1 Background

EKPC is developing a CPR Pond Supplemental Storage Project for Spurlock Station near Maysville, Kentucky. As part of the Project development, EKPC retained BMcD to evaluate and develop the scope, preliminary design, schedule, and budgetary cost estimate for modifications at Spurlock's CPR Pond to provide supplemental storage or other means to contain and convey a 10-year, 24-hour design storm event to the future WMB Pond without overflowing through the emergency spillway. The CPR Pond Supplemental Storage Project will consist of new pumps, modifications to existing pipe lines, modifications to the northern coal pile ditch, and the construction of a supplemental storage wall. This report summarizes the Project scope and presents the study results for use in EKPC's evaluation of Project feasibility and budgeting.

2.2 Scope of Study

The PSR includes preparation of the following major items:

1. Key Conceptual Design Documents
2. Project Design Basis/Scope Matrix
3. Project Execution Level 1 Schedule
4. Class 3 AACE Capital Cost Estimate
5. Owner's Cost Estimate
6. Operations and Maintenance (O&M) Cost Estimate
7. Project Annual Cash Flow
8. Permitting Matrix

The PSR defines preliminary design parameters for major components of the Project and provides adequate information to support the following activities:

1. Evaluation of the economics of the Project
2. Preparation of a Project schedule
3. CPCN Application and Public Service Commission (PSC) Approval process

2.3 Limitations and Qualifications

Estimates and projections prepared by Burns & McDonnell relating to schedules, performance, construction costs, and operating and maintenance costs are based on our experience, qualifications and judgment as a professional consultant. Since Burns & McDonnell has no control over weather, cost and

availability of labor, material and equipment, labor productivity, construction contractor's procedures and methods, unavoidable delays, construction contractor's method of determining prices, economic conditions, government regulations and laws (including interpretation thereof), competitive bidding and market conditions or other factors affecting such estimates or projections, Burns & McDonnell does not guarantee that actual rates, costs, performance, schedules, etc., will not vary from the estimates and projections prepared herein.

* * * * *

3.0 PROJECT DEFINITION

3.1 Project Overview

The CPR Pond Supplemental Storage Project for Spurlock includes new pumps to convey a 10-year, 24-hour design storm event (4.22 inches of rainfall), modifications to existing piping and the north coal pile ditch, a new supplemental storage concrete wall, and a new electrical PCM to power the new equipment. Table 1-1 provides an overview of those major systems associated with the Project. Design rainfall events were taken from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 weather data for the area of Maysville, KY. The NOAA values are slightly more conservative for each return event (with the exception of the 1-year return event) than those provided by the Kentucky Division of Water (KDOW) Memorandum No. 2.

3.1.1 Preliminary Design

The existing CPR Pond and pump system at Spurlock can contain approximately a 2-year, 24-hour storm event. The existing pond bottom is at elevation 513, the existing emergency spillway consisting of three 24 inch Corrugated High-Density Polyethylene (CHDPE) riser pipes has an overflow of elevation 528, and the existing top of pond berm is at elevation 530. The design assumptions used for this scoping report are based on stormwater modeling that was developed by BMcD. SKC003 in Appendix A shows the assumed pond limits and a stage-storage relationship table.

During the scope development, it was determined that by increasing the CPR Pond pump capacity and lowering the stoplog structure elevation, the runoff was contained in the existing CPR Pond without a discharge through the emergency spillway. Four 33% pumps (three operating and one spare) were selected with a design discharge of 2,340 gallons per minute (gpm) for each pump. The scope was further refined to utilize three 10-inch existing bottom ash and fly ash sluice pipes along with one 6-inch FGD blowdown pipe that are planned to be removed from service with the completion of the proposed Spurlock CCR/ELG Compliance Project. These four pipes are currently routed to the existing Ash Pond.

To provide EKPC with additional storage and operational flexibility, a supplemental CPR Pond storage wall and modifications to the emergency spillway were added to the project scope. This supplemental storage wall and emergency spillway modifications provides EKPC with additional retention time to achieve sedimentation in the CPR Pond and freeboard during larger storm events. The 100-year, 24-hour storm event was used as the design basis for the emergency spillway and used to check for overtopping of the supplemental CPR Pond storage wall.

Operation of the pumps was considered during the development of this scope report. Since the CPR Pond pumps will likely only run during a storm event there is potential for portions of the conveying lines to the WMB Pond to be charged with water. The volume of water in the pipes conveying the CPR Pond runoff to the WMB Pond is significant enough that if allowed to drain back to the CPR Pond, it would raise the stage elevation approximately five feet which would eliminate available storage for any subsequent rain events. For this scope report, it was assumed the secondary lagoon pumps would tie into these conveying lines and flush the coal pile runoff water to the WMB Pond. The lines then could be allowed to drain back to the secondary lagoons if freezing temperatures were anticipated. This additional tie will minimize heat trace and insulation requirements on the conveying pipes, providing a more economical approach to freeze protection than heat trace. Per the Process and Instrumentation Diagram (P&ID) in Appendix A, individual pipes may not be flushed while the CPR Pond pumps are in operation, nor can an individual line be drained while lagoon flushing is operating.

3.2 Plant Location and Layout

Spurlock is an existing power plant located just west of Maysville, Kentucky on the Ohio River. The CPR Pond Supplemental Storage Project is a modification to the existing CPR Pond operation to the 10-year, 24-hour design storm event without any discharge at the emergency spillway. The layout is influenced by existing structures, access, constructability, capital costs, and consideration of existing O&M processes at Spurlock. A preliminary set of general arrangement and site layout drawings for the Project are included in Appendix A. Plant north is approximately a 30-degree clockwise rotation from true north. The general arrangements and site layout drawings reflect a plant northing on the drawings, not a true northing.

3.3 Mechanical Systems

3.3.1 Coal Pile Stormwater Runoff

The existing CPR Pond consists of a pump structure and 2x100% pumps to convey stormwater from coal pile runoff and the back-end of the plant through an existing 10" line to the existing Ash Pond. To convey the 10-year, 24-hour design storm event, new 4x33% pumps will be provided as well as new valves and piping to control the operation between varying storm events. The pumps are proposed to be located in the existing stoplog structure, downstream of the stoplogs. The pumps will be operated with level controls, based on the water level in the CPR Pond and the conveying pipes will be valved in/out based on flow requirements. The proposed pipe routing will include discharge from the submersible pumps to an above grade valve station located near the stoplog structure. The routing will then turn below grade and run along the south side of the existing lagoons, below frost depth, towards the existing utility rack. The pipes will come above grade and will tie-in to a total of five existing abandoned lines, four of which

currently sluice bottom ash, fly ash, and FGD blowdown to the existing Ash Pond. Each of these lines and the existing CPR Pond conveying line will have a flush and drain line tied back to the lagoons so they can be flushed to the future WMB Pond (planned within the CCR/ELG Compliance Project) and then drained if freezing temperatures are expected. Heat trace is anticipated to be required on the above grade portions of the pipe route routing that are upstream of the drain location (including the piping at the above grade valve station located near the CPR Pond and the grade transition near the existing utility rack.). Valves will be motor operated where necessary for operation.

The piping, pumps, and instrumentation of the new system are shown on P&ID OWW-001 included in Appendix A. Refer to Appendix C for scope assumptions used for sizing the system and equipment described above.

3.3.2 Balance of Plant Systems

3.3.2.1 Compressed Air

Compressed and/or instrument air is not included nor required as part of the Project.

3.3.2.2 Service Water

Service water is not included nor required as part of the Project.

3.3.2.3 Potable Water

Potable water is not included nor required as part of the Project.

3.3.2.4 Fire Protection Water

Fire protection water is not included as part of the Project.

3.4 Permitting Modifications

The new mechanical system described in Section 3.3 will not require EKPC to modify their existing Kentucky Pollutant Discharge Elimination System (KPDES) permit as no new outfalls or changes to the outfalls are required or proposed with this Project. Additionally, no new emissions sources are required or proposed as part of the Project so the existing air permit remains unchanged. A permitting matrix has been included in Appendix G for reference.

3.5 Electrical Systems

3.5.1 Auxiliary Electrical Power Supply

The auxiliary power supply required to power the new CPR Pond pumps and associated valves and instrumentation will be provided from the proposed CCR/ELG Compliance Project's Ash Handling PCM located on the north end of Unit 1's abandoned stack. Cabling and tray will be routed on the existing ash handling utility rack toward the existing Ash Pond (where the existing bottom ash and fly ash pipes are assumed to be removed as part of the CCR/ELG Compliance Project). Cabling is then routed underground in an electrical duct bank next to the proposed underground pipe routing on the south side of the lagoons. The electrical duct bank will terminate at the new dry service station transformers and CPR Pond PCM located next to the existing CPR Pond.

An overall electrical one-line diagram for the electrical distribution system for the CPR Pond pumps and associated valves and instrumentation has been included on EE0001 in Appendix A. Additionally, the General Arrangement (GA) included in Appendix A provides the location of the major equipment.

3.5.2 Uninterruptable Power Supply (UPS)

Uninterruptable Power Supply (UPS) power for the new Distributed Control System Input Output (DCS IO) cabinet will be supplied from a new packaged UPS system located in the CPR Pond PCM. The UPS will include a sealed battery; sizing is based upon 120-minute capacity after the loss of alternating current (AC) power. The battery charger is sized for a 24-hour re-charge time for the batteries while serving the continuous load.

3.5.3 Communications

The CPR Pond PCM will not contain a plant communication system.

3.5.4 Cathodic Protection

Cathodic protection is not included in the Project scope as underground piping utilized will be HDPE.

3.5.5 Grounding and Lightning Protection

An extension of the existing plant grounding system will be required. The Project includes a system of buried bare copper ground conductor and copper-alloy sectional type ground rods. Grounding is included around the perimeter of the new CPR Pond PCM. The Project includes lightning protection for the PCM building.

3.5.6 Area Lighting

Area Light Emitting Diode (LED) lighting in the new CPR Pond PCM is included to adequately light the building for normal O&M. Existing plant lighting is assumed to be adequate for outdoor areas.

3.6 Control Systems

3.6.1 General

The existing plant DCS, by ASEA Brown Boveri (ABB), will be expanded and/or modified to incorporate the new controls to be installed. A DCS IO cabinet will be installed in the new CPR Pond PCM to control the local equipment.

Control logic implemented within the DCS will be based on information and logic submittals from the equipment manufacturers. The graphics developed for the DCS will be P&ID style graphics. Existing DCS templates and standards for both logic and graphics will be incorporated into the new equipment design. The DCS will be integrated with the existing plant control system, the flexibility will exist for operating from other locations.

The system will have a Modbus Transmission Control Protocol/Internet Protocol (TCP/IP) communication interface to communicate with ancillary equipment for supervisory control and monitoring. Critical signals will be hardwired to the DCS.

3.6.2 DCS System Architecture

New DCS equipment will be provided to control and monitor the new Project equipment. The DCS will be complete with redundant controllers, IO, power supplies, and ancillary hardware, and be fully wired and tested. The system will also include necessary network switches, media converters, and associated hardware for each communication link. Connection to the existing plant DCS will allow for the interface of existing plant DCS IO with the new equipment.

IO for each system will be partitioned such that no single module, rack, or controller failure will prevent the entire system from operation. DCS communication cabling will be fiber for communication external to the PCM.

Switchgear relays for each system will be monitored and controlled through a combination of Modbus TCP/IP communications and hardwire control. Critical control points will be done through hardwired control. It is expected that at a minimum the Trip/Open command and Closed or Start and Stop

functionality will be hardwired. Alarm acknowledge resets will be performed at the equipment controller or relay.

3.6.3 Programmable Logic Controller (PLC) Integration

The Project equipment is to be DCS controlled. No local PLCs are included.

3.6.4 Instrumentation

The Project instrumentation will be supplied by the installation contract.

3.6.5 Startup and Commissioning

Startup management by Owner's Engineer is included in the scope and estimate with craft support by the general contractor. No support is anticipated or included from the equipment suppliers for the Project. Startup is anticipated to include pump motor checks, pipe flushing, communications tests and IO checkout. Each piece of equipment will be operated from the DCS to confirm control and status. Sequence operations will be tested and verified.

3.7 Civil / Structural / Architectural

3.7.1 Geotechnical

Current geotechnical information includes existing reports from construction of Units 1 through 4. Based on these existing geotechnical reports provided by EKPC, the equipment foundations within the scope of this project were preliminarily sized as shallow or mat foundations.

3.7.2 Civil

3.7.2.1 Coordinate System

The civil design coordinate system is based on the existing Plant Grid for Spurlock provided by EKPC. A survey of the existing coal pile and CPR Pond will confirm coordinates and elevations.

3.7.2.2 Clearing, Grading, and Landscaping

The areas to be cleared will be determined based on the approximate construction limits and to minimize disturbance to the existing vegetation. Removal and disposal will be subject to the guidelines of federal, state and local regulations in effect at the time of construction. Disposal of contaminated and hazardous materials will be off-site at Owner's expense. Other construction trash and debris will be placed in trash containers and disposed of off-site by construction contractors.

Grades will be established to minimize the amount of earthwork required to construct the facilities. Waste material will have coal removed and placed back into the coal pile. Waste material containing minimal coal fines and non-hazardous materials will be disposed of at Spurlock's existing on-site landfill. Existing roads, driveways, and access ways will be maintained.

Prior to construction, topsoil will be stripped from areas to be disturbed and stored separately on-site for use in site finishing construction. The topsoil will be spread over areas which are disturbed during construction and do not receive other types of surface treatment such as riprap, crushed rock, or paving. Prior to completion of the work, these areas will be fine graded, seeded, and mulched.

Native grass seeding will be provided for areas disturbed by construction which are not covered with other surfacing. Sloped areas which are particularly subject to erosion will be protected by seeding or other methods of erosion control.

3.7.2.3 Storm Drainage

Structures, piping, and grading will be provided to allow for positive storm drainage away from new equipment work areas. The existing ditch north of the coal pile will be developed with GCL and a concrete bottom and sides to provide access for maintenance. The new GCL will be tied into the existing pond liner and new supplemental storage wall.

3.7.2.4 Roads, Drives, and Surfaced Areas

Existing roads will be maintained throughout the construction period via various construction contracts. This maintenance will include removal of mud and snow, necessary grading and placing of additional crushed stone on temporary roads, and watering of roads during dry periods to mitigate dust problems. Existing road structural maintenance will be maintained by EKPC during the construction period unless damaged by the construction contractor.

3.7.2.5 Dewatering

Dewatering will need to occur at the existing CPR Pond during modifications to the ditch and installation/commissioning of the new pumps. As part of the Project scope, a temporary pump system with similar capacity to the existing CPR Pond pump has been included to maintain the CPR Pond level at an acceptable level throughout the duration of construction.

3.7.2.6 Foundations

The foundation system used may be spread footing or mat-type, but may change based on the geotechnical investigation. Concrete will be designed in accordance with the American Concrete Institute

Building Code (ACI 318) and the Kentucky Building Code (KBC). Shallow foundations will bear at or below the frost depth as defined in ACI 318 and the KBC. Uplift forces will be offset by the weight of the footing and soil overburden.

3.7.3 Structural

3.7.3.1 Access

The Project will be arranged to facilitate access to equipment and systems for operations and maintenance. Valve stations will either be located at grade or in concrete vaults that are accessible by ladders. On the north side of the coal pile, an existing access platform spanning the coal pile ditch will be demolished and replaced as part of the coal pile ditch development with the Project. The electrical PCM enclosure is intended to be placed at grade and will not need access platforms.

3.7.3.2 Basic Design Criteria

Basic design criteria for the Project will be in accordance with the KBC including appendices, amendments, and reference standards. The soil properties will be verified during detailed design by a geotechnical investigation. Work performed on-site will comply with Occupational Safety and Health Administration (OSHA) Regulations and Standards 29CFR1926. Additionally, work and materials will be in compliance with local, county, state, federal regulations, codes, standards, laws, and ordinances.

3.7.3.3 Steel Structures

Structural steel will be designed in accordance with American Institute of Steel Construction (AISC) 341 and 360. No steel structures are included with the Project. However, modifications to the existing utility racks may be required for the new electrical cable tray that is routed to the new PCM. A small allowance of steel tonnage (25 tons) has been included to retrofit the existing utility rack as well as the existing pump structure and provide steel for the new coal pile ditch platform crossing. The existing utility rack will require a structural review to determine the extent of modifications, if any, are required.

3.7.4 Lead and Asbestos Abatement

It is recognized the existing equipment may contain asbestos material and lead based paint. Costs associated with removal and abatement of these materials are difficult to capture with a preliminary cost estimate. Removal of asbestos materials and lead based paints are not specifically included in the current Project cost estimate; however, from discussions with EKPC, lead and asbestos are not anticipated to be significant. The contracts will allow for a mutually agreed upon amount of time within the construction

schedule to accommodate asbestos and lead abatement activities without impacting the overall completion date. Asbestos materials and lead based paints in newly supplied equipment will be strictly prohibited.

3.7.5 Pre-Engineered Buildings

No pre-engineered buildings are included in the Project.

3.8 Demolition

Demolition is included for the existing CPR Pond pump structure, and existing piping tie-in from the existing pump structure to the existing wet well. Demolition also includes removing the stoplogs from the existing stoplog structure.

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4.0 CONTRACTING APPROACH

4.1 General Approach

After discussion with EKPC, the selected contracting strategy for the Project is a multiple contract approach with adjustment unit pricing. The multiple contract approach provides EKPC with more control over the design of the Project, the quality of the equipment and materials, and more ability to make changes as the Project progresses.

In the multiple contract approach, EKPC and an Owner's Engineer will work together to create and procure the construction and major equipment contracts for the Project. The procurement of the long lead time equipment such as the PCM may be necessary early in the Project to support the construction schedule. The contracting approach includes equipment/material contracts and a general construction contract. The equipment contracts allow EKPC to reduce the cost of the general construction contractor markup via competitive bidding.

This section contains detailed descriptions of each contract with an itemized list of the respective scope. To assist in understanding the coordination of work between the contracts, this section also provides detailed information on the coordination of responsibilities for design, fabrication, delivery, receipt & protection, foundations, piping, wiring, erection, commissioning and startup interfaces. The contract terms and required milestones will be coordinated to establish and manage the critical path for the Project.

4.2 Contract List

The following is the list of contracts that were used as a basis for this Project:

Table 4-1: List of Contracts

Contract Number	Contract Name
Construction Contracts	
C8110	General Construction
Equipment Contracts	
C2190	Miscellaneous Pumps
C5300	Major Electrical Equipment
C6110	DCS

4.3 Interface Schedule

The following table identifies the interfaces between contracts to identify the responsibilities for each equipment foundation, receipt, installation, piping and wiring.

Table 4-2: Contracts Interfaces

Contract		Contract Interfaces					
No.	Description	SUPPLIED BY	RCVD BY	INST BY	FDNS BY	PIPE BY	WIRE BY
	Construction Contracts						
C8110	General Construction	NA	C8110	C8110	C8110	C8110	C8110
	Equipment Contracts						
C2190	Miscellaneous Pumps	C2190	C8110	C8110	C8110	C8110	C8110
C5300	Major Electrical Equipment	C5300	C8110	C8110	C8110	NA	C8110
C6110	DCS	C6110	C5300	C5300	NA	NA	C8110

4.4 Contract Scopes

4.4.1 General

The following scope descriptions itemize the general content of the contracts that are currently contemplated. Table 4-2 identifies responsibilities for foundations, receipt of equipment and materials, construction / erection, and special interfaces to assist the reader in understanding the coordination of work. Assumptions have been made in preparing the scope description listing of items.

4.4.2 Construction Contracts

CONTRACT C8110 – GENERAL CONSTRUCTION

A. General Description: This is a construction contract including the following:

1. Perform clearing, grubbing, and grading of required area on plant site.
2. Perform sampling, testing and analysis of the site soil compaction.
3. Performing rough and finish grading for the following:
   a. New equipment areas.
   b. Construction lay-down including crushed rock surfacing.
4. Construction service roads.
5. Underground utilities relocation, if required.
6. Underground utilities installation.
7. Temporary yard lighting, if required.
8. Temporary fencing and gates, if required.
9. Storm drainage system.
10. Perform trash and construction debris removal and disposal from required areas on plant site.
11. Lead and asbestos abatement, if required.

12. Maintain temporary construction facilities (runoff ponds, lay-down area, parking areas, access roads, temporary fencing, temporary utilities, etc.).
13. Install and construct mats, foundations, grade beams and anchor bolts as required for valve vaults, miscellaneous foundations, valve station foundations, PCM, transformers, and CPR Pond supplemental storage wall.
14. Furnish and install below grade electrical grounding grid and complete final grounding connection to existing plant grounding grid.
15. Excavation, subgrade preparation, dewatering and backfill for foundations.
16. Dewatering of CPR Pond.
17. Furnish and install electrical manholes, duct banks, and below grade conduit embedded in or under concrete.
18. Furnish and install permanent drains to existing system as required.
19. Manufacture and/or test and deliver to site the concrete and rebar.
20. Furnish and install storm drainage system modifications including excavation, placement of GCL, rip-rap, and concrete lining.
21. Furnish and install structural steel and platforms.
22. Unload, receive, store (if required), and install equipment furnished by contracts for pumps from C2190 and electrical equipment from C5300.
23. Procure, fabricate, deliver, receive, protect, store, haul, assemble, erect, install, and place into service equipment and material including, but is not limited to, the following:
    a. Balance of plant piping, valves, pipe supports (including supplemental structural steel and miscellaneous concrete pads), piping specials (expansion joints, strainers, filters, etc.) insulation and lagging.
    b. Line mounted instruments for monitoring and analog control of the supporting systems and associated equipment.
    c. Miscellaneous instruments and transmitters not included in another equipment package, including installation materials, such as brackets, adapters, tubing, etc.
    d. Plant heat tracing system for areas, including design. Work will be completed to specified terminal points and include monitoring system.
24. Complete checkout, testing and assisting EKPC in placing into service of mechanical systems and equipment installed under this contract.
25. Applying final paint systems and touch-up painting (as required) to equipment and materials installed by Contract C8110 including equipment, steel, and piping.

26. Remove and dispose completely the existing CPR Pond pump structure and existing piping tie-in from the existing pump structure to the existing wet well, and remove stoplogs from existing stoplog structure.
27. Provide the following electrical equipment:
    a. Lighting transformers.
    b. 480V power panels.
    c. 120/208V power panels.
    d. Lighting contactors.
28. Furnish and install above grade conduit raceway systems.
29. Furnish and install cable tray.
30. Furnish and install power cabling to heat trace equipment
31. Perform electrical testing.
32. Label cable tray and cable.
33. Perform structure-related wiring including:
    a. Furnish, install and wire lighting/convenience outlets.
    b. Wire HVAC systems.
    c. Furnish and install lightning protection.
    d. Design, furnish, and install fire detection system.
34. Provide electrical testing services including:
    a. Test equipment.
    b. Personnel to perform wire checking and testing of wiring systems, equipment and controls.
35. Perform electrical system testing of the following systems:
    a. Small power transformers.
    b. Protective relays.
    c. Motor control centers.
    d. Heat trace monitoring panels.
    e. Power wiring.
    f. Control wiring.
    g. Control systems.
36. Perform final calibration of instruments.
37. Furnish and place crushed rock and asphalt or concrete paving/surfacing as required.
38. Comply with requirements of Project's Best Management Practices (BMP).
39. Providing final cleanup of areas worked including restoration of parking and laydown areas.

4.4.3 Equipment Contracts

CONTRACT C2190 – MISCELLANEOUS PUMPS

A. General Description: Design, manufacture and deliver equipment and materials including the following:

1. Miscellaneous pumps as indicated on the equipment list for C2190.
2. Submittals and operating and maintenance manuals.

CONTRACT C5300 – MAJOR ELECTRICAL EQUIPMENT

A. General Description: Design, manufacture and deliver Equipment and Materials including the following:

1. One PCM for the CPR Pond equipment.
2. 4160V switchgear and power centers.
3. 480V switchgear and Motor Control Centers (MCC's).
4. 4160V – 480V transformers.
5. Station Service transformers.
6. Non-segregated phase bus.
7. Protective relays.
8. Variable frequency drives.

CONTRACT C6110 – DISTRIBUTED CONTROL SYSTEM (DCS)

A. General Description: Design, manufacture and deliver Equipment and Materials including the following:

1. System servers.
2. DCS controllers and IO.
3. DCS communications hardware and software to communicate with new equipment to be installed.
4. DCS network equipment and requisite media converters.

B. Provide services to integrate logic diagrams and graphic sketches to control and monitor the CPR Pond pumps.

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5.0 SCHEDULE

5.1 Critical Milestones

The current schedule is based on construction completion in January 2021 following Spurlock's Unit 2 Outage for bottom ash and fly ash conversion. The new equipment associated with this Project will be in service and operational in February 2021. Several key Project milestones will need to be accomplished to meet the overall schedule for the Project. A list of suggested milestones as indicated on the Level 1 Project schedule included with this report are listed in Table 1-2.

The schedule is dependent on Project approvals and a variety of other influences, in particular the procurement of long lead equipment such as the PCM. Additionally, equipment may not be procured and construction may not commence until the CPCN issued.

5.2 Project Schedule

A Level 1 Project schedule prepared by BMcD for this Project is included in Appendix D. The proposed schedule provides EKPC the opportunity to complete the Project in early 2021 following piping and electrical tie-ins near the end of the Unit 2 Outage.

The scope split for the equipment and construction contracts is described in Section 4.0 – Contracting Approach. The performance of the general construction contract is anticipated to be continuous without intermediate demobilization and remobilization.

The schedule is based on early procurement of the long lead major plant equipment which includes but is not limited to the electrical equipment. Vendor submittals are required from each equipment contractor which will support the detailed design of infrastructure (foundations, piping, wiring, instrumentation, etc.) required for installation of this equipment. Sufficient time has been built into the schedule for the Owner's Engineer to perform the detailed design to obtain competitive, lump sum bids for the construction.

* * * * *

6.0 COST ESTIMATE

6.1 General

An initial capital cost estimate for the proposed Spurlock CPR Pond Supplemental Storage Project is included in Appendix E. The estimated cost for the Coal Pile Runoff Pond Supplemental Storage Project, inclusive of contingency and escalation is $10.7 MM. No financing fees for interest during construction were included in the Project costs.

6.2 Basis and Assumptions

The following describes the methodology used in the development of the Spurlock CPR Pond Supplemental Storage Project cost estimate.

- The estimate is based on the assumptions and scope of supply indicated in this document and the Project assumptions in Section 3.0 and Appendix C. Design parameters and scope typically defined by these studies are estimated based on information provided by EKPC, preliminary calculations and BMcD experience.
- BMcD solicited and received budget level vendor quotations for the following:
  - Miscellaneous pumps
  - Major electrical equipment
- Balance of Plant equipment: BMcD utilized in-house information from similar projects for developing the estimate.
- Construction Estimates: BMcD used recent pricing information from an internal database and industry standard pricing for construction commodities and indirect costs.
- Labor rates: Labor rates and productivity factors were developed based on BMcD in-house information which included a labor study in nearby regions.

6.2.1 Capital Cost Estimate Scope

A Project scope description for the cost estimate is included in Section 3.0. This description along with the drawings and lists included in Appendices A, B, C and D define the scope included in the cost estimate.

6.2.2 Major Capital Cost Estimate Assumptions

Several major assumptions were used in developing the capital cost estimate. These assumptions include the following:

- Commercial operation of the equipment is assumed to be February 2021.
- Labor is assumed to be open shop and available without excessive hourly incentives or incentive packages.
- Escalation is assumed to average 2% per year for equipment and materials and 3% per year for labor.
- Contingency is included at 10% for Project estimate contingency. Owner's contingency for discretionary expenditures has not been included and will be evaluated on a case-by-case basis during Project execution.
- Cost for Builder's Risk Insurance was based on 0.45% of the direct costs.
- Costs for Performance Bonds were included in the major contract pricing buildups.
- Sales tax at 6% is included on the equipment and material costs associated with the Project, since this Project will likely not meet a sales tax exemption in Kentucky. No financing fees or interest during construction were included.

6.2.3 Major Commercial Terms

The following lists the major commercial terms assumed in developing the cost estimates.

- Project is assumed to be performed with a general construction contract for the construction work as defined in Section 4.0 – Contracting Approach. Installation of pumps and major electrical equipment and furnish and installation minor equipment items (piping specialties, small-bore piping, wiring and other construction commodities) are expected to be included in the General Construction contract.
- Project will include equipment procurement contracts including contracts for miscellaneous pumps and major electrical equipment as defined in Section 4.0 – Contracting Approach.
- Project will be executed with durations similar to those shown on the Project schedule with the objective of achieving the Project milestone dates. It is assumed the Project will be executed with a schedule sufficient to minimize overtime. A 50-hour workweek was assumed as a means of providing an incentive to attract labor. This includes 40 hours of straight time and 10 hours of overtime for normal construction periods. A 50-hour workweek was also assumed during commissioning and start-up. No additional overtime is included to accommodate a compressed work schedule.

6.3 Operations & Maintenance Estimates

The differential (new vs. existing) O&M costs for Spurlock in 2017 dollars have been estimated to be an additional $74k per year. Refer to Appendix E for a summary of the O&M costs.

6.4 Economic Conditions Considerations

An estimate for escalation of Project costs has been included in the capital cost estimate. Escalation of construction labor, materials, and indirects (including warranty, bond, and insurance) was based on the average increase in craft labor and material costs projected for the United States at the time of this evaluation.

6.5 Contingency

A Project estimate contingency is included to cover accuracy of pricing and commodity estimates for the defined Project scope. This contingency is not intended to cover changes in the general Project scope (i.e. addition of buildings, addition of redundant equipment, addition of systems, etc.) nor major shifts in market conditions that could result in significant increases in contractor margins, major shortages of qualified labor, significant increases in escalation, or major changes in the cost of money (interest rate on loans).

Owner's contingency has been excluded per EKPC direction and discretionary costs will be evaluated during Project execution on a case-by-case basis.

6.6 Summary Cost Estimate

The capital cost estimate developed for the Spurlock CPR Pond Supplemental Storage Project is contained in Appendix E.

6.7 Summary Cost Item Description

The capital cost estimate is based on the multiple contracting approach defined in Section 4.0 – Contracting Approach. Additional mark up costs have been included for equipment, labor and material assumed to be subcontracted. The contracting approach was developed concurrently with the cost estimate.

6.8 Cash Flow

A cash flow based on the Project schedule, contracting approach, and the cost estimate was developed and is included in Appendix F.

* * * * *

APPENDIX A - DRAWINGS

APPENDIX A - DRAWINGS

Subject to Motion for Confidential Treatment

APPENDIX B - EQUIPMENT LIST

Equipment List - Spurlock Coal Pile Runoff Pond Supplemental Storage Project

East Kentucky Power Cooperative
Spurlock Station
Project Number: 100580
Rev. A
PRELIMINARY - NOT FOR CONSTRUCTION

BURNS McDONNELL

	System	Equipment Name	Equipment Tag	P&ID Number	Equipment Type	Capacity	Dimensions	Material	Motor Rating / Rated Load	Rating Units	Redundancy	Operating (Y / N)	Fabrication	Indoor/ Outdoor	Immersed (Y / N)	Corrosive (Y / N)	Insulated	Agitated (Y / N)	Designed By	Supplied By	Installed By
	OWW	COAL PILE RUNOFF FORWARDING PUMP A		OWW-001	PUMP AND MOTOR	2,340 GPM	TBD		250	HP	NA	Y	SHOP	OUTDOOR	Y	Y	N		5.2190	5.2190	5.8110
	OWW	COAL PILE RUNOFF FORWARDING PUMP B		OWW-001	PUMP AND MOTOR	2,340 GPM	TBD		250	HP	NA	Y	SHOP	OUTDOOR	Y	Y	N		5.2190	5.2190	5.8110
	OWW	COAL PILE RUNOFF FORWARDING PUMP C		OWW-001	PUMP AND MOTOR	2,340 GPM	TBD		250	HP	NA	Y	SHOP	OUTDOOR	Y	Y	N		5.2190	5.2190	5.8110
	OWW	COAL PILE RUNOFF FORWARDING PUMP D		OWW-001	PUMP AND MOTOR	2,340 GPM	TBD		250	HP	NA	N	SHOP	OUTDOOR	Y	Y	N		5.2190	5.2190	5.8110
	OWW	COAL PILE RUNOFF VARIABLE FREQUENCY DRIVE A		NA	VFD	NA	TBD		250	HP	NA	Y	SHOP	INDOOR	N	N	N		5.5300	5.5300	5.5300
	OWW	COAL PILE RUNOFF VARIABLE FREQUENCY DRIVE B		NA	VFD	NA	TBD		250	HP	NA	Y	SHOP	INDOOR	N	N	N		5.5300	5.5300	5.5300
	OWW	COAL PILE RUNOFF VARIABLE FREQUENCY DRIVE C		NA	VFD	NA	TBD		250	HP	NA	Y	SHOP	INDOOR	N	N	N		5.5300	5.5300	5.5300
	OWW	COAL PILE RUNOFF VARIABLE FREQUENCY DRIVE D		NA	VFD	NA	TBD		250	HP	NA	N	SHOP	INDOOR	N	N	N		5.5300	5.5300	5.5300
	OWW	COAL PILE RUNOFF POND PCM		NA	ENCLOSURE	NA	10'X35'		NA	NA	NA	NA	SHOP	OUTDOOR	NA	NA	NA		5.5300	5.5300	5.8110
	OWW	COAL PILE RUNOFF POND XFMR A		NA	TRANSFORMER	NA	5'X8'		NA	NA	NA	NA	SHOP	OUTDOOR	NA	NA	NA		5.5300	5.5300	5.8110
	OWW	COAL PILE RUNOFF POND XFMR B		NA	TRANSFORMER	NA	5'X8'		NA	NA	NA	NA	SHOP	OUTDOOR	NA	NA	NA		5.5300	5.5300	5.8110
	OWW	COAL PILE RUNOFF POND DCS		NA	IO CABINET	NA	TBD		NA	NA	NA	NA	SHOP	INDOOR	NA	NA	NA		5.6110	5.6110	5.5300

	System	Miscellaneous (Valves and Instruments)	Quantity	P&ID Number	Equipment Type	Capacity	Dimensions	Material	Motor Rating / Rated Load	Rating Units	Redundancy	Operating (Y / N)	Fabrication	Indoor/ Outdoor	Immersed (Y / N)	Corrosive (Y / N)	Insulated	Agitated (Y / N)	Designed By	Supplied By	Installed By
	OWW	10" MOV	8	OWW-001	MOTORIZED VALVE	NA	NA		NA	NA	NA	Y	SHOP	OUTDOOR	N	Y	Y		5.8110	5.8110	5.8110
	OWW	6" MOV	3	OWW-001	MOTORIZED VALVE	NA	NA		NA	NA	NA	Y	SHOP	OUTDOOR	N	Y	Y		5.8110	5.8110	5.8110
	OWW	10" CHECK VALVE	5	OWW-001	CHECK VALVE	NA	NA		NA	NA	NA	Y	SHOP	OUTDOOR	N	Y	Y		5.8110	5.8110	5.8110
	OWW	10" BUTTERFLY VALVE	4	OWW-001	BUTTERFLY VALVE	NA	NA		NA	NA	NA	Y	SHOP	OUTDOOR	N	Y	Y		5.8110	5.8110	5.8110
	OWW	LEVEL TRANSMITTER	1	OWW-001	LEVEL TRANSMITTER	NA	NA		NA	NA	NA	Y	SHOP	OUTDOOR	Y	N	N		5.8110	5.8110	5.8110
	OWW	PRESSURE TRANSMITTER	1	OWW-001	PRESSURE TRANSMITTER	NA	NA		NA	NA	NA	Y	SHOP	OUTDOOR	N	N	Y		5.8110	5.8110	5.8110

APPENDIX C - SCOPE ASSUMPTIONS MATRIX

East Kentucky Power Cooperative
Spurlock Coal Pile Runoff Pond Supplemental Storage Project
Scope Assumptions Matrix
Burns McDonnell Project Number: 100580
Rev. B

BURNS McDONNELL

General Project Information:	
Project Description:	Supplemental storage or modifications to the existing Coal Pile Runoff (CPR) Pond system to handle the 10-year, 24-hour stormwater runoff from the coal pile and north area of the plant that currently goes to the Coal Pile Runoff Pond.
Plant Description:	Spurlock Unit 1 is a 300 net MW, opposed wall fired, pulverized coal boiler and Spurlock Unit 2 is a 510 net MW, tangentially fired, pulverized coal boiler. Unit 3 is a 268 net MW coal-fired circulating fluidized bed (CFB) boiler. Unit 4 is a 268 net MW coal-fired CFB boiler.
Performance Fuel	Bituminous coal; not defined as part of project scoping report.
Design Fuel	Bituminous coal, 16% ash content, 79% Fly Ash, 21% Bottom Ash.
Operation	Base Load with outages for maintenance.
Capacity Factor	Unit 1 & 2: 90%. Unit 3 & 4: 90%
Minimum Load Capability:	Unit 1: 300 MW, Unit 2: 510 MW, Unit 3: 268 MW, Unit 4: 268 MW. All net MW values.
Project Location:	Existing Spurlock Station near Maysville, Kentucky.
Site Description:	Brownfield existing coal fired.
Project COD date:	February 2021.
Labor Type:	Open shop.
Labor Incentives:	Not Included: Per diem / job completion; Safety included.
Project LD's:	Schedule and performance for each contract.
Contracting Methodology:	Multiple Contract.
Scope Basis / Assumptions:	
General:	
Water Supply:	
Service Water:	Not required for the Project.
Potable Water:	Not required for the Project.
Fire Protection Water:	Not required for the Project.
Other Water Sources:	Coal Pile Runoff, conveyed to new WMB Pond, via new pumps.
Compressed Air:	Compressed air is not required for the Project.
Wastewater Disposal:	
Contaminated Wastewater:	Not applicable.
Sanitary Wastewater:	Not applicable.
Start-up Fuel:	Fuel Oil - No.2 Ultra Low Sulfur.
Fuel:	
Type:	Bituminous.
Delivery:	Rail and Barge.
Alterative Fuel:	Not considered.
Fuel Additives:	Kiln dust, GE FuelSolv, and Calcium Bromide.
Civil:	
Site Conditions:	The existing Coal Pile Runoff Pond can handle between a 1-year and 5-year, 24-hour storm event from the Coal Pile and north end of the plant before the emergency overflow is utilized to discharge which creates a reporting event for EKPC. The existing CPR Pond has a geosynthetic clay liner (GCL) underlying the protective cover, concrete pavement, and riprap slope protection.
Layout Considerations:	The existing CPR Pond cannot be increased in size vertically via grading modifications due to slope considerations. A vertical wall on the top of the berm is a potential solution to increase storage/freeboard. The pond is constrained in plan view due to the coal pile vicinity and existing plant roads. New pumps will be provided in the existing stoplog structure which will require modifications to the existing grating/beams. Cable tray routing on the existing utility rack from the Ash Handling PCM will require existing bottom ash and/or fly ash piping removed from the rack to provide space. It is understood these lines are being removed as part of EKPC's CCR/ELG Compliance Project.
Disposal of Spoils:	Spoils will be disposed of on-site at the landfill. No hazardous materials are anticipated in the soils.
Soil Conditions / Stability:	Existing soils are assumed to be stable in and around the area and suitable for use as laydown without any further preparation.
Subsurface Rock:	Not encountered until an approximate elevation of 425' to 400'.
Groundwater:	An existing groundwater monitoring system is in place around the perimeter of the existing Ash Pond. The existing Coal Pile Runoff Pond has piezometers located around its perimeter.
Cut & Fill:	Site cut and fill will be required on the north end of the existing Coal Pile to modify the existing stormwater ditch. A portion of the existing Coal Pile Runoff Pond berm will be modified to support a new supplemental storage wall.
Borrow Material:	Clay and protective soil material will be from the EKPC approved borrow site that is approximately 3 miles (one-way) from Spurlock (at Spurlock's Landfill), if required. Suitable backfill material, if not available at EKPC's on-site borrow area, will be gathered from off-site sources.
Dewatering:	Dewatering of the Coal Pile Runoff Pond will be required during construction to minimize surcharge loading on the north berm of the pond. A temporary pump has been included in the Project budget for 6 months to provide a means for dewatering.
Construction Stormwater Control:	EKPC's Best Management Practices (BMP) will be followed as part of the stormwater management controls.
Permanent Project Stormwater Control:	The new Coal Pile Runoff 4x33% pumps and piping lines that tie-in to existing fly ash (2 @ 10"), bottom ash (1 @ 10"), FGD (1 @ 6"), and coal pile runoff line (1 @ 10") will be designed to meet the 10-year, 24-hour storm event. These lines will convey approximately 7,000 gpm at 9 fps to the new WMB pond.
Roads:	No modifications to existing paved roads are anticipated. The location of the new PCM and transformers will shorten the gravel/dirt road to the existing CPR Pond stoplog structure. EKPC will widen portions of the road on top of the existing ash pond berm for adequate access and pipe routing.
Parking:	No modifications to existing facilities are included.
Truck Scale:	Not applicable.
Coal Pile Run-off:	For the CPR Pond, it is assumed that there will be an additional 1' of sediment storage in the bottom of the pond. For the 100-year, 24-hour storm event, it is preliminarily estimated that there will be 2' of freeboard in the CPR Pond after modifications to the coal pile ditch and installation of the supplemental storage wall are complete.
Ash Landfill:	No further costs for on-site landfill have been included. Haul route traffic is not anticipated to be disrupted.

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Ash Pond:	Existing pipes to the existing Ash Pond will be modified to convey additional stormwater during the 10-year, 24-hour event to the Ash Pond. The Ash Pond is being closed through removal of CCR material and re-purposed as a Water Mass Balance (WMB) Pond as part of a separate project. The re-purposing of these ash conveying lines will not occur until the bottom ash conversion project is nearly complete. The existing conveying lines to the Ash Pond do not extend to the proposed corner of the new WMB Pond, so this Project has included additional piping and supports to convey the CPR Pond stormwater runoff to the proposed corner of the WMB Pond for entry of process flows. No modifications to the WMB Pond have been included as part of this Project.
Site Security:	Included in Owner's costs.
Future Expansion:	No future expansion is included in this Project.
Landscaping:	Minimal landscaping is included. Disturbed areas will be seeded for erosion control.
Rail Access:	No rail modifications are included. Materials can be delivered on rail, if necessary.
Truck Access:	Existing roads will be used for construction access. No upgrades are included.
Construction Parking & Laydown	Existing construction parking area will be utilized based on updates to EKPC's site security and parking at Spurlock. Laydown will be local to new equipment locations. EKPC to provide the information necessary to note the parking and laydown locations in detailed design, however for purposes of the Project budget, a drawing has been prepared and included in the scope.
Structural:	
Soil Bearing Capacity:	Existing geotechnical data in the plant area was utilized for general information for the scoping report. Foundations for the PCM, transformers, supplemental storage wall, and miscellaneous valve/piping supports are assumed to be mat or shallow foundations with a bearing capacity of 3,000 psf. No subsurface investigation and report is included in the Project and existing subsurface reports will be utilized for the proposed scope.
Soil Improvement:	No soil improvements are assumed as part of this scoping report.
Piling:	No H-piles or other deep foundations are included.
Groundwater:	Groundwater is not anticipated to be an issue when installing foundations.
Enclosures:	One new PCM enclosure is included for electrical equipment supporting the new CPR Pond pumps.
Control Facilities:	Existing control facilities will be utilized. Localized control with a remote IO cabinet located in the new PCM will have a fiber signal back to DCS for pumps running and high-high level indication.
Warehouse Facilities:	Not Included.
Maintenance Shops:	Not Included.
Utility Rack:	Existing utility racks will be utilized, which may require modifications to support cable tray in lieu of existing ash handling pipe. The existing fly ash and bottom ash lines from the Ash Handling PCM to the new tie-in points will be required to be removed to provide space for new tray carrying MV feed and I&C feeds to the new PCM. These lines are included to be demo'd as part of the CCR/ELG Compliance Project.
PCM:	One new PCM enclosure is included for electrical equipment supporting the new CPR Pond pumps.
Transformers:	Two new 4160V-480V dry transformers are included.
Mechanical:	
Noise:	85dbA nearfield where practical.
Coal Pile Pond Pumps	4x33% pumps included.
Equipment Redundancy	See above.
Compressed Air Supply:	No new compressed air required.
Fire Protection:	No upgrades to existing fire pumps. No tie-ins to existing fire loop anticipated but the Authority having Jurisdiction (AHJ) may require new fire protection measurements, although this is not anticipated.
Fire Detection:	New fire detection will be required in the PCM enclosure that will have an alarm interface to the DCS only.
Pipe	
Bottom Ash / Fly Ash	Modification of the existing bottom ash / fly ash to stormwater service. The (3) 10" existing lines (2 are HDPE and 1 is carbon steel) that run from the FGD area to the existing Ash Pond will be modified to convey stormwater from the existing Coal Pile Runoff Pond to the new WMB Pond.
FGD	Modification of the existing FGD line to stormwater service. The (1) 6" existing plastic lined pipe that runs from the FGD area to the existing Ash Pond will be modified to convey stormwater from the existing Coal Pile Runoff Pond to the new WMB Pond.
Instrument Air	Not required.
Fire Protection	Not required.
Freeze Protection	Included on above ground piping that cannot be drained.
Existing Pumps:	
Coal Pile Runoff Pond Pump	Removed with scope of Project.
Secondary Lagoon Pump	Tied into coal pile runoff pipes for flush water. It is assumed the pump can operate through the pipes to the WMB Pond with no modifications necessary.
Electrical:	
Electrical Distribution Equipment	New electrical PCM enclosure and 4160V to 480V transformers located near new CPR Pond.
Wire Routing	Cable routing through existing utility rack from the Ash Handling PCM provided in the CCR/ELG Project, which then transitions to an underground duct bank to the new PCM and transformers.
Switchgear	
Existing Switchgear	Existing switchgear in Ash Handling PCM will have new 4160V breakers (2) added to supply power to new equipment.
MV Switchgear / Power Centers	Not applicable.
480V Switchgear	Not applicable.
480V MCCs:	New 480V MCC included in new PCM enclosure.
Emergency Power:	Not applicable.
Start-Up Power Supply:	Not applicable.
Auxiliary Power Supply:	4160V.
Plant Communications:	No plant communications equipment.
Lightning Protection	PCM only.
Transformers	Dry type, (2) 4160-480V and (1) 480-208/120V.

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Controls:	
Plant Control System	Controlled by DCS. New DCS controller tied into existing network over fiber.
Vibration Monitoring	Not included.
Electrical Relay data link	Electrical Relay Ethernet data link connected to DCS for indication only inputs.
Closed Circuit Television(CCTV)	Not included.
Instrumentation	Instruments included as required.
Transmission / Interconnection:	
Transmission:	No modifications are included.
Switchyard:	No modifications are included.
Commercial:	
General Liability Insurance	Included.
Builder's Risk Insurance	Included.
Performance Bonds	Included in individual contract buildups within the Project costs.
Project L/D's	Schedule and Performance for each contract.
Retention:	A 10% retention will be required on all contracts.
Warranty:	Warranty on equipment will be required for 1 year +1 year from commercial operation.
Construction Indirects:	
Construction Indirects:	
Commissioning / Start-up:	Allowance included.
Operator Training:	Allowance included.
Performance Testing:	Allowance included for all major components regardless of contracting approach.
Permits:	Construction permits are included.
Quality Control:	Hydrotesting of the new pipes installed is included. The existing pipes utilized for this project is excluded as well as the joints to tie new pipe into existing pipe.
Construction Utilities:	
Water Supply:	None anticipated to construction trailers.
Construction Sanitary Facilities	Portable facilities provided by construction contractors.
Construction Power and Construction Lighting:	Power provided by Contractors. Internet and phones by Contractors.
Equipment Delivery:	Equipment primarily to be delivered by truck. All unloading / handling by Contractor.
Construction Schedule:	It is assumed that the construction schedule will be adequate to allow the project to be completed with minimal overtime. Construction schedule will be estimated as a 5 x 10 schedule to provide an incentive to attract labor.
Construction Facilities:	Rental buildings with temporary Engineering & Construction Management building. Included in Owner's cost for Engineering & Construction Management. Construction Contractors to provide facility as part of their scope and is included in project estimate.
Project Indirects:	
Project Development:	Allowance Included in Owner's Costs.
Owner's Operation Personnel:	Allowance Included in Owner's Costs.
Owner's Project Management:	Allowance Included in Owner's Costs.
Owner's Engineering:	Allowance Included in Owner's Costs.
Owner's Legal Counsel:	Allowance Included in Owner's Costs.
Operator Training:	Allowance Included in Project Estimate.
Permitting & License Fees:	Allowance Included in Owner's Costs.
Landfill:	Not Included.
Site Security:	Not Included.
Warehouse Shelves:	Not Included.
Mobile Equipment, Vehicles:	Allowance Included in Project Estimate.
Laboratory Equipment:	Not Included.
Commissioning Fuel & Consumables	Not Included.
Commissioning Test Power Sales	Not Included.
Operating Spare Parts	Included in Project costs, if applicable. Critical spares will be identified and included in the Project Estimate.
Commissioning Spares and First Fills	Included in Project costs and Owner's Costs, if applicable.
Plant Maintenance Tools	Not Included.
Sales Tax:	Sales tax at 6% is included on the equipment and material costs associated with the Project, since this Project will likely not meet a sales tax exemption in Kentucky.
Escalation:	Escalation is included at a rate of 2% per year for equipment/materials and 3% per year for labor.
Contingency:	Project estimate contingency of 10%.Owner's contingency not included and will be treated on a case-by-case basis.
All Owner's Costs	Allowance Included in Owner's Costs.
General Assumptions:	
Reuse of existing equipment	Existing pipe and equipment to be reused is assumed to be in adequate working order including bottom ash pipe, fly ash pipe, and FGD pipe. An allowance of 5% of the existing lines pipe length has been included to be replaced in 5 foot spools (5% per line).

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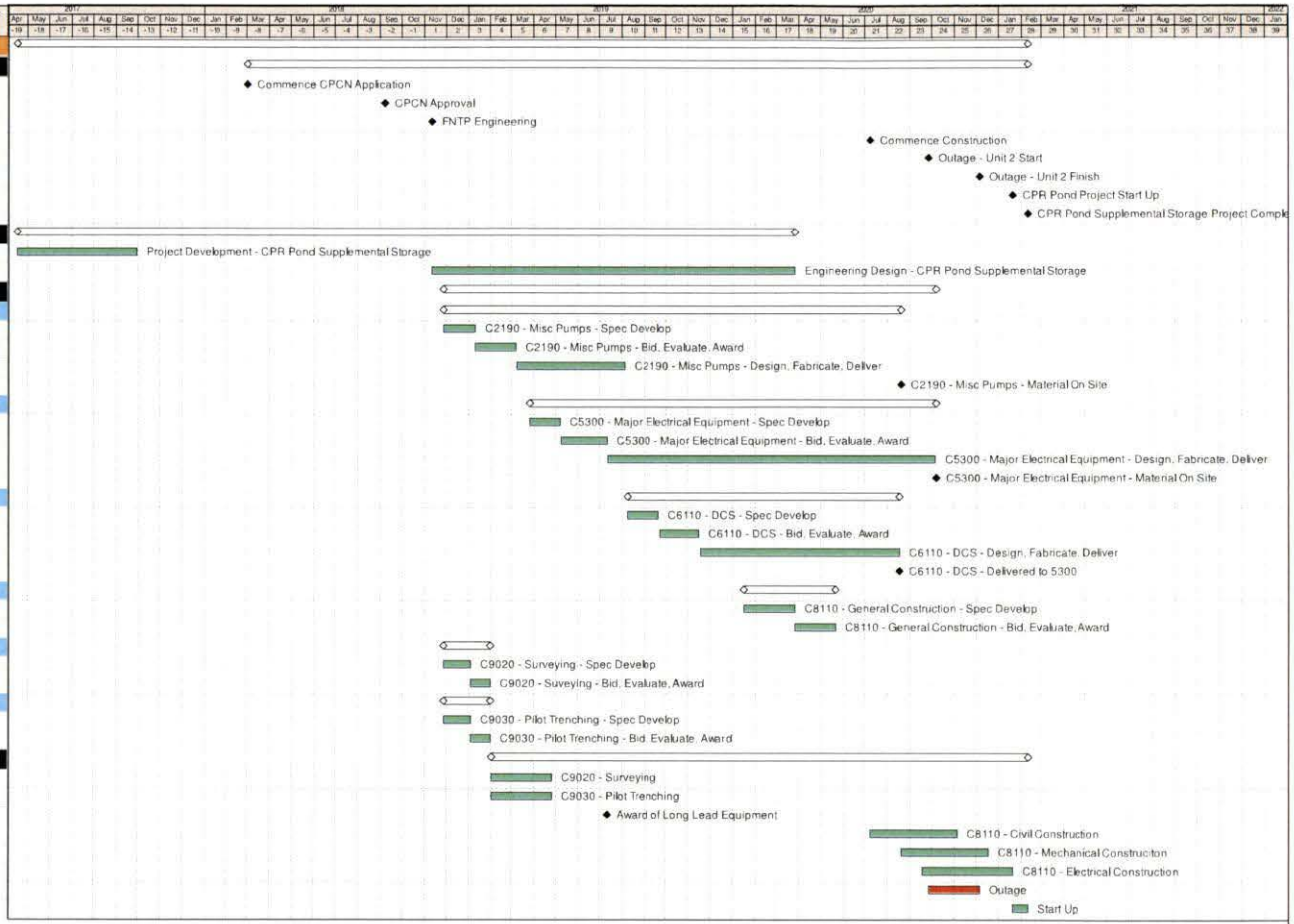
Items Excluded from the Scope:
1. Taxes including sales, use, gross receipts, property and any other types.
2. All insurance other than General Liability being carried as a project cost.
3. Sound abatement above normal supply.
4. Aesthetic landscaping other than erosion control.
5. High escalation associated with extreme market conditions.
6. Financing fees.
7. Interest during construction.

APPENDIX D - SCHEDULE

Activity ID	Activity Name	OD	Start	Finish	TOTAL FLOAT
EKPC - SPURLOCK - COAL PILE RUNOFF POND SUPPLEMENTAL STORAGE PROJECT					
Milestones					
MS-CP02	Commence CPCN Application	0	02-Mar-18*		0
MS-CP03	CPCN Approval	0		07-Sep-18	5
MS-CP04	FNTP Engineering	0	12-Nov-18		5
MS-CP06	Commence Construction	0	09-Jul-20		5
MS-OUT20F-U2S	Outage - Unit 2 Start	0	27-Sep-20*		0
MS-OUT20F-U2F	Outage - Unit 2 Finish	0		06-Dec-20*	0
MS-CP7	CPR Pond Project Start Up	0	21-Jan-21		5
MS-CP99	CPR Pond Supplemental Storage Project Complete	0		10-Feb-21*	5
Engineering Services					
EN-CPD	Project Development - CPR Pond Supplemental Storage	117	17-Apr-17*	29-Sep-17	288
EN-CP01	Engineering Design - CPR Pond Supplemental Storage	348	12-Nov-18	26-Mar-20	5
Procurement Services					
2190 - Misc Pumps					
PR2190-10	C2190 - Misc Pumps - Spec Develop	30	27-Nov-18	10-Jan-19	100
PR2190-20	C2190 - Misc Pumps - Bid, Evaluate, Award	40	11-Jan-19	07-Mar-19	100
PR2190-30	C2190 - Misc Pumps - Design, Fabricate, Deliver	105	08-Mar-19	05-Aug-19	270
PR2190-40	C2190 - Misc Pumps - Material On Site	0	20-Aug-20		5
5300 - Major Electrical Equipment					
PR5300-10	C5300 - Major Electrical Equipment - Spec Develop	30	27-Mar-19	07-May-19	17
PR5300-20	C5300 - Major Electrical Equipment - Bid, Evaluate, Award	45	08-May-19	11-Jul-19	17
PR5300-30	C5300 - Major Electrical Equipment - Design, Fabricate, Deliver	315	12-Jul-19	06-Oct-20	17
PR5300-40	C5300 - Major Electrical Equipment - Material On Site	0	07-Oct-20		17
6110 - DCS					
PR6110-10	C6110 - DCS - Spec Develop	30	09-Aug-19	20-Sep-19	17
PR6110-20	C6110 - DCS - Bid, Evaluate, Award	40	23-Sep-19	15-Nov-19	17
PR6110-30	C6110 - DCS - Design, Fabricate, Deliver	190	18-Nov-19	17-Aug-20	17
PR6110-40	C6110 - DCS - Delivered to 5300	0	18-Aug-20		17
8110 - General Construction					
PR8110-10	C8110 - General Construction - Spec Develop	50	17-Jan-20	26-Mar-20	5
PR8110-20	C8110 - General Construction - Bid, Evaluate, Award	40	27-Mar-20	21-May-20	5
9020 - Survey					
PR9020-10	C9020 - Surveying - Spec Develop	25	27-Nov-18	03-Jan-19	138
PR9020-20	C9020 - Suveying - Bid, Evaluate, Award	20	04-Jan-19	31-Jan-19	138
9030 - Pilot Trenching					
PR9030-10	C9030 - Pilot Trenching - Spec Develop	25	27-Nov-18	03-Jan-19	138
PR9030-20	C9030 - Pilot Trenching - Bid, Evaluate, Award	20	04-Jan-19	31-Jan-19	138
Construction and Start Up					
CN9020	C9020 - Surveying	60	01-Feb-19	25-Apr-19	138
CN9030	C9030 - Pilot Trenching	60	01-Feb-19	25-Apr-19	138
MS-CP05	Award of Long Lead Equipment	0		11-Jul-19	17
CN8110-1	C8110 - Civil Construction	85	09-Jul-20	05-Nov-20	5
CN8110-2	C8110 - Mechanical Construciton	85	20-Aug-20	18-Dec-20	5
CN8110-3	C8110 - Electrical Construction	85	18-Sep-20	20-Jan-21	5
MS-OUT2	Outage	70	27-Sep-20	06-Dec-20	0
SU1000-2	Start Up	15	21-Jan-21	10-Feb-21	5



Start Date	17-Apr-17
Finish Date	10-Feb-21
Data Date	01-Apr-17
Run Date	08-Sep-17

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EKPC SPURLOCK - COAL PILE RUNOFF POND SUPPLEMENTAL STORAGE PROJECT
PSR SCHEDULE
WBS Layout
Page 1 of 1

Date	Revision	Checked	Approved
24-Jul-17	A - IFOR	SY	TR
11-Aug-17	B - IFOR	SY	TR
08-Sep-17	C - IFOR	SY	TR

APPENDIX E - COST ESTIMATE

CAPITAL COST ESTIMATE
EKPC
SPURLOCK
COAL PILE RUNOFF POND
100580
MAYSVILLE, KY

Acct	Area / Discipline	Labor Cost	Material Cost	Engr Equip/ Subcontract Cost	Const. Equipment Cost	Total Cost
01	Engineered Equipment	$20,000	$30,000	$1,640,000		$1,690,000
02	Civil	$340,000	$780,000	$50,000	$120,000	$1,290,000
03	Deep Foundations					
04	Concrete	$340,000	$290,000	$50,000	$60,000	$740,000
05	Structural Steel	$80,000	$130,000		$10,000	$220,000
06	Architectural					
07	Piping	$510,000	$620,000		$50,000	$1,180,000
08	Electrical	$780,000	$390,000	$20,000	$70,000	$1,260,000
09	Instrument & Control		$10,000	$100,000		$110,000
10	Insulation			$10,000		$10,000
11	Coatings			$20,000		$20,000
12	Electrical Redundancy	$110,000	$70,000	$260,000	$10,000	$450,000
13	Demolition					
14	Misc Directs	$40,000		$230,000		$270,000
	Total Direct Cost	**$2,220,000**	**$2,320,000**	**$2,380,000**	**$320,000**	**$7,240,000**

Rev.	Revision Date
A	07/24/17
B	08/08/17

Construction Mgmt, Field Staff & Start Up	10%	$750,000
Engineering	14%	$1,000,000
Commercial - Builders Risk Insurance	0.45%	$50,000
Escalation	6%	$450,000
Total Indirect Cost		**$2,250,000**
Total Direct and Indirect Costs		**$9,490,000**
	Cost	
Project Estimate Contingency	10.0%	$950,000
Total Project Cost	10.0%	**$10,440,000**
Owner Cost - General	5%	$480,000
Owner Cost - Sales Taxes		$290,000
Owner Cost - Owner Contingency		
Total Project Cost Incl. Owner Cost		**$11,210,000**

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EKPC Spurlock CPR Pond Supplemental Storage Project O&M Costs			
Expense	**Year**	**Cost**	
Labor Costs[1]	2017	$ 68.75	$/hr
Electrical Costs	2017	$ 28.00	$/MWh
Inputs			
Capacity Factor (Units 1 and 2)	90%		
Additional Electrical Use[2]	2,170,000	kWh/year	
Additional Full Time Equivalents to Operate CPR Pond OWW System	0	FTE	
Calculated Values			
Operation Labor Costs[3]	$ 14,000	$/year	
Additional Electrical Costs	$ 60,000	$/year	
Incremental Costs			
Labor O&M Differential Costs	$ 14,000	$/year	
Electrical Differential Costs	$ 60,000	$/year	
Total O&M Cost Differential	**$ 74,000**	**$/year**	

1. Values obtained from EKPC based on historical data
2. Electrical usage differential was calculated by adding the energy use of the new CPR Pond equipment together and multiplying by the $/MWh. Since the CPR Pond equipment will operate primarily during rain events, the above was factored by 35% for rain days in Maysville, KY plus 20% for other process flows the CPR Pond handles.
3. Additional labor is based upon 2% of the fixed capital equipment cost.

APPENDIX F - CASH FLOW

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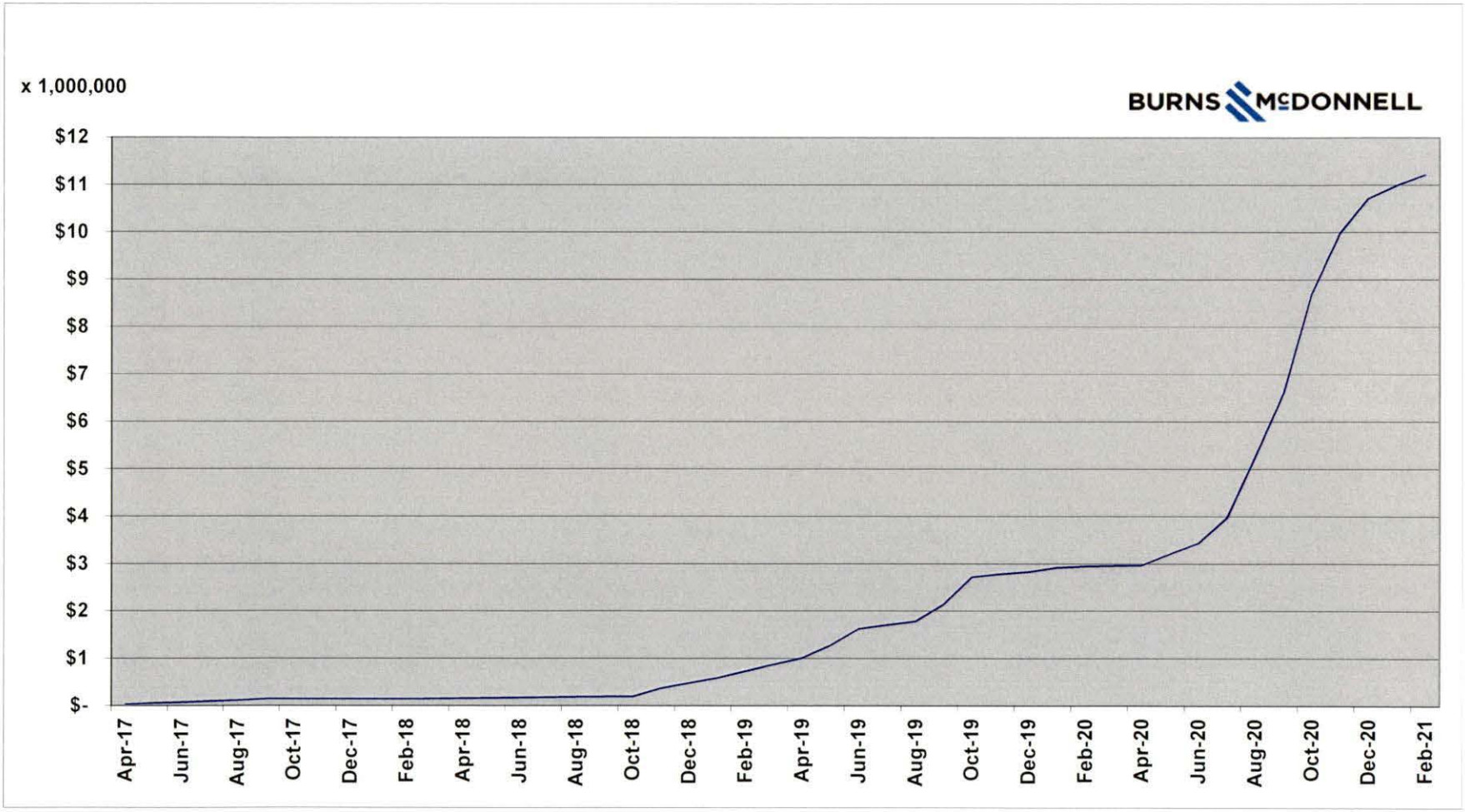
Appendix F

EKPC Spurlock Station CPR Pond Supplemental Storage Project

Cash Flow

Date	Incremental	Cumulative	Incremental %	Cumulative %	Millions
Apr-17	21,667	21,667	0.2%	0.2%	0.02
May-17	21,667	43,333	0.2%	0.4%	0.04
Jun-17	21,667	65,000	0.2%	0.6%	0.07
Jul-17	21,667	86,667	0.2%	0.8%	0.09
Aug-17	21,667	108,333	0.2%	1.0%	0.11
Sep-17	21,667	130,000	0.2%	1.2%	0.13
Oct-17	-	130,000	0.0%	1.2%	0.13
Nov-17	-	130,000	0.0%	1.2%	0.13
Dec-17	-	130,000	0.0%	1.2%	0.13
Jan-18	-	130,000	0.0%	1.2%	0.13
Feb-18	-	130,000	0.0%	1.2%	0.13
Mar-18	10,000	140,000	0.1%	1.2%	0.14
Apr-18	8,333	148,333	0.1%	1.3%	0.15
May-18	8,333	156,667	0.1%	1.4%	0.16
Jun-18	8,333	165,000	0.1%	1.5%	0.17
Jul-18	8,333	173,333	0.1%	1.5%	0.17
Aug-18	8,333	181,667	0.1%	1.6%	0.18
Sep-18	8,333	190,000	0.1%	1.7%	0.19
Oct-18	-	190,000	0.0%	1.7%	0.19
Nov-18	172,775	362,775	1.5%	3.2%	0.36
Dec-18	111,901	474,676	1.0%	4.2%	0.47
Jan-19	110,161	584,837	1.0%	5.2%	0.58
Feb-19	144,236	729,073	1.3%	6.5%	0.73
Mar-19	140,815	869,889	1.3%	7.8%	0.87
Apr-19	136,594	1,006,483	1.2%	9.0%	1.01
May-19	266,942	1,273,424	2.4%	11.4%	1.27
Jun-19	347,235	1,620,659	3.1%	14.5%	1.62
Jul-19	82,855	1,703,514	0.7%	15.2%	1.70
Aug-19	75,856	1,779,371	0.7%	15.9%	1.78
Sep-19	360,299	2,139,670	3.2%	19.1%	2.14
Oct-19	571,247	2,710,917	5.1%	24.2%	2.71
Nov-19	66,770	2,777,687	0.6%	24.8%	2.78
Dec-19	42,939	2,820,626	0.4%	25.2%	2.82
Jan-20	93,831	2,914,457	0.8%	26.0%	2.91
Feb-20	24,522	2,938,979	0.2%	26.2%	2.94
Mar-20	15,092	2,954,071	0.1%	26.4%	2.95
Apr-20	10,357	2,964,429	0.1%	26.4%	2.96
May-20	239,037	3,203,466	2.1%	28.6%	3.20
Jun-20	229,771	3,433,237	2.0%	30.6%	3.43
Jul-20	529,678	3,962,915	4.7%	35.4%	3.96
Aug-20	1,277,364	5,240,278	11.4%	46.7%	5.24
Sep-20	1,346,496	6,586,774	12.0%	58.8%	6.59
Oct-20	2,101,169	8,687,943	18.7%	77.5%	8.69
Nov-20	1,291,854	9,979,797	11.5%	89.0%	9.98
Dec-20	726,593	10,706,390	6.5%	95.5%	10.71
Jan-21	280,167	10,986,557	2.5%	98.0%	10.99
Feb-21	223,443	11,210,000	2.0%	100.0%	11.21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APPENDIX G - PERMITTING MATRIX

EKPC Spurlock Station
Coal Pile Runoff Pond Supplemental Storage Project Permitting Matrix

Item No.	Permit/Clearance	Regulatory Agency	Details	When Required	Anticipated Agency Review Time	Associated Fees	Comments
Federal							
1	Clean Water Act - Section 404 Permit	U.S. Army Corps of Engineers, Louisville District	Required to dredge or place fill in a jurisdictional water, including wetlands Nationwide Permit (NWP): Less an or equal to 0.5 acre of wetland or stream impacts Individual Permit: Greater than 0.5 acre of wetland or stream impacts An ash pond and a coal pile runoff pond are classified as non-jurisdictional water features. Waste treatment systems are excluded from Section 404 review.	Prior to construction	Up to 120 days for a NWP, if a pre-construction notification is required; 12 to 24 months for an Individual Permit	No application or mitigation fees	A wetland and stream delineation will be required to determine the extent of wetland and stream impacts associated with site construction. Jurisdictional waters or wetlands are not anticipated based on the Project's proposed equipment and work locations. If the project qualifies for a NWP 39 (Commercial and Institutional Developments), NWP 12 (Utility Activities), NWP 14 (Roads), or a NWP 18 (Minor Discharges), a pre-construction notification may be required depending on the extent of wetland/stream impacts.
2	Section 7 Threatened and Endangered Species Consultation and Clearance	U.S. Fish & Wildlife Service (FWS), Ecological Services	If the project will potentially impact protected species or their respective habitat, or if a Section 404 and/or NPDES permit is required, then the FWS must be contacted. The FWS will determine the level of effort needed for the project to proceed (e.g., habitat assessment, species surveys, avian impact studies, etc.).	Prior to construction	30 days for initial response, additional 30 days for determination of field survey results (if required)	No fees unless tree clearing is required that could affect bat habitat.	Formal consultation likely not required if construction will take place in an already developed area and no Section 404 Permit is required. Due to the nature of this site, impacts to endangered species are not likely, provided no trees are impacted, and there are no direct effects to the Ohio River (mussels).
3	Migratory Bird Treaty Act / Bald and Golden Eagle Protection Act Compliance	U.S. Fish & Wildlife Service (FWS), Ecological Services	Required when construction or operation of a proposed facility could impact migratory birds, their nests, and especially threatened or endangered species	Prior to construction	30 days for data request, 30 days for report review	No fees	Formal consultation likely not required if construction will take place in an already developed area and no Section 404 Permit is required. Due to the nature of this site, impacts to migratory birds is not likely.
4	Notice of Proposed Construction	Federal Aviation Administration (FAA)	Required for the construction of structures 200 feet tall or within the distance to height ratio from the nearest point of a FAA airport runway. Also required for construction equipment reaching heights over 200 feet.	Prior to construction	45+ days	No fees	Notifying the FAA includes completing Form 7460-1 for all required structures and providing a site layout map depicting structure locations. No temporary construction equipment or permanent structures will be over 200 feet tall.
5	Spill Prevention, Control, and Countermeasure Plan Amendment	U.S. Environmental Protection Agency (EPA)	An amendment to the facility's SPCC Plan will be required to address operational changes.	Prior to operation	Not required to submit the SPCC Plan to the EPA for review, unless requested.	No fees	Required to be updated based on new operational changes. This will not be required to be submitted to EPA, unless they request it.
State - Kentucky							
6	Certificate of Public Convenience and Necessity (CPCN)	Kentucky Public Service Commission	Required for the construction of electric generating facilities	Prior to construction	120 to 180 days after the submission of a complete application	Project specific	A CPCN may be required for the Coal Pile Runoff Pond modifications.
7	National Environmental Policy Act (NEPA) Review	USDA Rural Utilities Service	Facility modifications to meet CPR Pond requirements may require NEPA review due to EKPC request for financing from the USDA Rural Utilities Service (RUS). Project could quality for a RUS categorical exclusion because it will take place on a disturbed site. If archaeology, T&E species, water, or floodplains will be impacted during construction, an RUS Environmental Report or Environmental Assessment could be needed. If a Section 404 permit is required, the Corps would require its own NEPA documents.	Prior to construction	Categorical Exclusion - up to 6 months Environmental Report - 6 to 9 months Environmental Assessment - up to 2 years for approval	No fees	The level of NEPA review is dependent on the extent of impacts.
8	Air Quality Construction/Operating Permit (PSD)/Title V	Kentucky Department of Environmental Protection Division for Air Quality	Required for new major stationary sources of air emissions or increased air emissions, including the silo(s)/baghouses and any increased truck traffic.	Prior to construction	1 year from application submittal	No fees	No new air emissions sources are anticipated.

Item No.	Permit/Clearance	Regulatory Agency	Details	When Required	Anticipated Agency Review Time	Associated Fees	Comments
9	Permit to Construct Across or Along a Stream	Kentucky Department of Environmental Protection Division of Water	In addition to authorizing stream crossings, this permit also provides floodplain construction approval. Project should not impact any streams.	Prior to construction	20 business days for floodplain impact approval	No fees	None of the new equipment is proposed to be located in a floodplain.
10	Section 401 Water Quality Certification (WQC)	Kentucky Department of Environmental Protection Division of Water	The purpose of the WQC is to confirm that the discharge of fill materials (Section 404 Permit) will be in compliance with the State's applicable water quality standards.	Prior to construction	If wetland/stream impacts are authorized under a Section 404 Nationwide Permit, then WQC approval is issued concurrently in 45 to 90 days. If a Section 404 Individual Permit is required, then separate WQC approval from the State could take 12 months.	Stream impact greater than 500 linear feet and less than 1,000 feet -- $1,000 Stream impact 1,000 to 5,000 linear feet -- $2,500 Stream impact greater than 5,000 linear feet -- $5,000 Wetland impacts -- $500 per acre, not to exceed $5,000	Assumes automatic Water Quality Certification authorization through the Corps' Nationwide Program. If the project will require a Section 404 Individual Permit from the Corps, then the Kentucky Department of Environmental Protection must issue an Individual Section 401 WQC.
11	One-Time/Temporary Discharge Request for Off-Permit Authorization	Kentucky Department of Environmental Protection Division of Water	Required for temporary discharges of wastewater outside of permitted discharges. Can be used for hydrostatic testing of pipelines and/or tanks.	Prior to testing	30 days	No fees	This can also be used for one time discharges from the Coal Pile Runoff Pond to the Ohio River while it is being modified.
12	Best Management Practices (BMP) Plan	Kentucky Department of Environmental Protection Division of Water	Because the facility has an existing KPDES Operational Discharge Permit (see Item 13), the facility is not required to obtain a General Permit for Stormwater Discharges Associated with Construction Activities for construction activities which will disturb 1 or more total acres of land. However, the facility must develop a project-specific BMP Plan prior to the start of construction.	Prior to construction	No State approval required.	No fees	
13	KPDES Operational Discharge Permit Modification	Kentucky Department of Environmental Protection Division of Water	The facility will be required to modify its existing KPDES Operational Discharge Permit (KY0022250) to address operational changes related to the discharge of wastewaters.	Prior to operation	180 days prior to operational changes	$7,000	If the existing permit requires an operational Stormwater Pollution Prevention Plan (SWPPP), this plan must be updated to address operational changes/modified stormwater flows.
14	Special Waste Landfill Permit	Kentucky Department of Environmental Protection Division of Waste Management	Required prior to construction of a landfill for the disposal of utility waste.	Prior to construction	Not seeking a modification to the existing landfill	No fees	No landfill modifications required as part of Project. Some excavated waste material may be disposed of in the existing landfill.
15	National Historic Preservation Act – Section 106 Clearance	Kentucky Heritage Council - State Historic Preservation Office (SHPO)	Under Section 106 of the National Historic Preservation Act, Federal agencies must work with the State Historic Preservation Office to address historic preservation issues when planning projects or issuing funds or permits that may affect historic properties and archaeological resources listed in or determined eligible for the National Register of Historic Places.	Prior to construction	45 Days	$40 for Preliminary Site Check through SHPO database	Section 106 requirements would be addressed through the RUS NEPA review process and Section 404 permitting, if required.
County							
16	Building Permit Application for Non-Residential Structures	Mason County Joint Planning Commission	Required for projects with new buildings that are non-residential, including utility structures. Buildings must meet Kentucky Building Codes.	Prior to construction		Rate is $0.04/square foot.	A new electrical building is included as part of the Project, however it will be pre-manufactured and delivered to site in one piece. It is anticipated to be 400 square feet or less.

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EXHIBIT

K

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)))))))	CASE NO. 2018-00270

DIRECT TESTIMONY OF ISAAC S. SCOTT
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: October 3, 2018

Q. Please state your name, business address, and occupation.

A. My name is Isaac S. Scott and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4775 Lexington Road, Winchester, Kentucky 40391. I am the Manager of Pricing for EKPC.

Q. Please state your education and professional experience.

A. I received a B.S. degree in Accounting, with distinction, from the University of Kentucky in 1979. After graduation I was employed by the Kentucky Auditor of Public Accounts, where I performed audits of numerous state agencies. In December 1985, I transferred to the Kentucky Public Service Commission ("Commission") as a public utilities financial analyst, concentrating on the electric and natural gas industries. In August 2001, I became manager of the Electric and Gas Revenue Requirements Branch in the Division of Financial Analysis at the Commission. In this position, I supervised the preparation of revenue requirement determinations for electric and natural gas utilities as well as determined the revenue requirements for the major electric and natural gas utilities in Kentucky. I retired from the Commission effective August 1, 2008. In November 2008, I became the Manager of Pricing at EKPC.

Q. Please provide a brief description of your duties at EKPC.

A. As Manager of Pricing, I am responsible for rate-making activities which include designing and developing wholesale and retail electric rates and developing pricing concepts and methodologies. I report directly to the Director of Regulatory and Compliance Services, Mr. Patrick Woods.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to describe the cost of constructing a series of improvements to the Hugh L. Spurlock Generation Station ("Spurlock Station") and the John S. Cooper Station ("Cooper Station") (collectively the "2018 plan projects") that will enable EKPC to comply with applicable environmental statutes and regulations. In addition, I will describe how some of the 2018 plan projects relating to landfill capping activities at the Spurlock and Cooper Stations will be used to partially settle existing Asset Retirement Obligations ("ARO"). I will also discuss how EKPC's Environmental Compliance Plan will be implemented on a monthly basis and the rate impact at the wholesale and retail levels. Finally, I will describe the proposed revisions to EKPC's monthly environmental surcharge reporting forms.

Q. Are you sponsoring any exhibits?

A. Yes. I am sponsoring the following exhibits, which I ask be incorporated into my testimony by reference:

- Attachment ISS-1: A schedule showing the current Environmental Compliance Plan and the addition of the 2018 plan projects proposed in this Application.
- Attachment ISS-2: A sample copy of the monthly environmental surcharge reporting formats which reflect the inclusion of the 2018 plan projects.
- Attachment ISS-3: An estimate of revenue increases resulting from the inclusion of the 2018 plan projects and the estimated bill impact on retail customers.

Q. Please describe the estimated cost of the 2018 plan projects.

A. EKPC estimates the total cost of the eleven projects making up the 2018 plan projects at $64.0 million. Of this total, $11.2 million is associated with the Coal Pile Runoff ("CPR") Project at the Spurlock Station. The remaining $52.8 million is associated with ten additional projects located at the Spurlock and Cooper Stations.[1]

Q. How does EKPC plan to finance the total cost of the 2018 plan projects?

A. Mr. Stachnik addresses this question more fully in his testimony and so I will defer to him on the details, but, generally speaking, EKPC has or will use credit available through its short term Credit Facility to finance the construction of the 2018 plan projects before transitioning that debt to long-term debt issuance, which will be funded in accordance with EKPC's Trust Indenture.

Q. What does EKPC anticipate will be the incremental operations and maintenance costs associated with the 2018 plan projects upon completion?

A. EKPC anticipates that the incremental operations and maintenance ("O&M") expense associated with the eleven proposed projects to be $3.3 million in 2017 dollars. The table on the following page shows the anticipated annual O&M expenses associated with each project.[2]

[1] Please see Paragraph 34 of the Application for a summary of the ten projects, as well as the testimony of Mr. Craig Johnson for additional detail.

[2] Please note that the O&M expenses anticipated for Amended Project #12 and Project #17 are associated with the maintenance of the respective landfill caps and are not part of the settlement of the ARO.

Project No.	Location	Project Description	O&M Expense
Amended #12	Spurlock	Spurlock Landfill – Area C, Phases Two through Four	$332,500
#17	Cooper	Cooper Landfill – Phases 1A & 1B	$20,000
#18	Cooper	Cooper Landfill – Sediment Pond	$5,000
#19	Cooper	Ash Mix Unloaders	$0
#20	Cooper	Ditch and Sediment Trap	$12,000
#21	Spurlock	Station Drainage Improvement	$153,000
#22	Spurlock	HG Compliance	$1,985,400
#23	Spurlock	Anhydrous Ammonia Containment	$5,000
#24	Spurlock	Vacuum Truck Ash Transfer Station	$85,000
#25	Spurlock	Units 1 & 2 Dry Sorbent Injection	$650,000
#26	Spurlock	Coal Pile Runoff Pond Supplemental Storage	$74,000
		Total	$3,321,900

In addition, two of the projects are anticipated to incur additional O&M expenses periodically. For Project 18, it is expected that pond clean out expenses of $1,250,000 would be incurred every 15 years. For Project 19, it is expected that O&M expenses of $30,000 would be incurred every six to eight years.

Q. Please provide a brief description of EKPC's current environmental compliance plan.

A. EKPC currently has 16 projects in its Environmental Compliance Plan.[3] Attachment ISS-1 lists each of the projects, the pollutant or waste/by-product to be controlled, the control facility, the generating station, the applicable environmental

[3] In conjunction with the establishment of a regulatory asset for the undepreciated balance of the William C. Dale Generating Station assets that were being retired early, EKPC was required to remove the costs associated with Project 5, Dale Low Nitrogen Oxide Burners, and the Dale portion of Project 10, Continuous Monitoring Equipment, from the environmental surcharge mechanism. However, EKPC has not amended its environmental compliance plan to remove these two projects. *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for an Order Approving the Establishment of a Regulatory Asset for the Undepreciated Balance of the William C. Dale Generating Station*, Order, Case No. 2015-00302, (Ky. P.S.C., Feb. 11, 2016).

regulation addressed by the project, the applicable environmental permit, the completion date of the project, and the project cost. Projects 1 through 4 were approved by the Commission in Case No. 2004-00321.[4] Projects 5 through 10 were approved by the Commission in Case No. 2008-00115.[5] Projects 7 through 9 were amended by and Projects 11 through 13 were approved by the Commission in Case No. 2010-00083.[6] Project 14 was approved by the Commission in Case No. 2013-00259.[7] Project 15 was approved by the Commission in Case No. 2014-00252.[8] Project 16 was approved by the Commission in Case No. 2017-00376.[9]

Q. Do the 2018 plan projects meet the requirements of KRS 278.183, and thus qualify for environmental surcharge recovery?

A. Yes. I am not an attorney, of course, and cannot make any statements that would be construed to be legal conclusions, but based upon the facts as I know them and

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[4] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval of an Environmental Compliance Plan and Authority to Implement an Environmental Surcharge*, Order, Case No. 2004-00321, (Ky. P.S.C., Mar. 17, 2005).

[5] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2008-00115, (Ky. P.S.C., Sep. 29, 2008).

[6] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval of an Amendment to Its Environmental Compliance Plan and Environmental Surcharge*, Order, Case No. 2010-00083, (Ky. P.S.C., Sep. 24, 2010).

[7] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for Alteration of Certain Equipment at the Cooper Station and Approval of a Compliance Plan Amendment for Environmental Surcharge Cost Recovery*, Order, Case No. 2013-00259, (Ky. P.S.C., Feb. 20, 2014).

[8] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for Construction of an Ash Landfill at J.K. Smith Station, the Removal of Impounded Ash from William C. Dale Station for Transport to J.K. Smith and Approval of a Compliance Plan Amendment for Environmental Surcharge Recovery*, Order, Case No. 2014-00252, (Ky. P.S.C., Mar. 6, 2015).

[9] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for Approval to Amend Its Environmental Compliance Plan and Recover Costs Pursuant to Its Environmental Surcharge, Settlement of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief*, Order, Case No. 2017-00376, (Ky. P.S.C., May 18, 2018).

my own plain readings of KRS 278.183, the proposed projects satisfy the statutory requirements and therefore qualify for environmental surcharge recovery. The environmental surcharge statute, KRS 278.183, was enacted "to promote the use of high sulfur Kentucky coal by permitting utilities to surcharge their customers for the cost of a scrubber which is part of a power plant that cleans high sulfur coal in order to meet the acid rain provisions of the Federal Clean Air Act amendments of 1990."[10] Section 1 of the statute contains the guarantee of cost recovery for such environmental compliance costs:

> Notwithstanding any other provision of this chapter, effective January 1, 1993, a utility shall be entitled to the current recovery of its costs of complying with the Federal Clean Air Act as amended and those federal, state, or local environmental requirements which apply to coal combustion wastes and by-products from facilities utilized for production of energy from coal in accordance with the utility's compliance plan as designated in subsection (2) of this section. These costs shall include a reasonable return on construction and other capital expenditures and reasonable operating expenses for any plant, equipment, property, facility, or other action to be used to comply with applicable environmental requirements set forth in this section. Operating expenses include all costs of operating and maintaining environmental facilities, income taxes, property taxes, other applicable taxes, and depreciation expenses as these expenses relate to compliance with the environmental requirements set forth in this section.[11]

As noted in Attachment ISS-1, the 2018 plan projects are designed to comply with numerous federal and state environmental requirements, including but not limited to the Clean Air Act, the Mercury Air Toxics Standards, the Disposal of Coal Combustion Residuals from Electric Utilities Rule, the Effluent Limitation

[10] *Kentucky Indus. Utility Customers, Inc. v. Kentucky Utilities Co.*, 983 S.W.2d 493, 496 (Ky. 1998).

[11] KRS 278.183(1).

Guidelines and Standards for the Steam Electric Power Generating Point Source Category, the federal Clean Water Act, and state permits associated with the Kentucky Pollutant Discharge Elimination System requirements. All of these rules and regulations would qualify as federal or state environmental requirements which apply to coal combustion wastes and by products from facilities utilized for production of energy from coal. Thus, KRS 278.183 is applicable to the 2018 plan projects. Both Mr. Jerry Purvis and Mr. Craig Johnson elaborate on the environmental obligations driving the 2018 plan projects in their testimonies.

Of course, the statute goes on to describe the process by which a utility may recover its environmental compliance costs through the environmental surcharge. For instance, a utility must "submit to the commission a plan, including any application required by KRS 278.020(1), for complying with the applicable environmental requirements set forth in [KRS 278.183(1)]." Following that:

> ...[T]he commission shall conduct a hearing to: (a) Consider and approve the plan and rate surcharge if the commission finds the plan and rate surcharge reasonable and cost-effective for compliance with the applicable environmental requirements set forth in subsection (1) of this section; (b) Establish a reasonable return on compliance-related capital expenditures; and (c) Approve the application of the surcharge.[12]

The Kentucky Supreme Court characterized KRS 278.183 as "a new right" that "did not exist before the enactment of the surcharge."[13] Thus, the Kentucky General Assembly has chosen to encourage the use of coal by enacting a surcharge mechanism that guarantees a utility the ability to recover costs associated with

[12] KRS 278.183(2).

[13] *Kentucky Indus. Utility Customers, Inc.*, at 500.

compliance with environmental mandates. The Commission has itself commented upon the prescriptive nature of KRS 278.183 by observing that it "must consider the plan and the proposed rate surcharge, and approve them if [the Commission] finds the plan and rate surcharge to be reasonable and cost effective."[14] The environmental surcharge statute, therefore, relates to and is an important adjunct to the traditional CPCN analysis required by KRS 278.020(1). Again, from this perspective, the 2018 plan projects would clearly appear to qualify for cost recovery under the environmental surcharge statute as set forth in KRS 278.183.

Q. Please discuss the return EKPC would propose for the 2018 plan projects.

A. As described by Mr. Stachnik in his testimony, EKPC is proposing an overall rate of return of 6.023%, which is the product of applying a 4.015% average cost of debt to a 1.50 TIER.[15]

Q. Please discuss how the 2018 plan projects would be reflected in EKPC's environmental surcharge mechanism.

A. The expenditures under the 2018 plan projects fall into three specific categories: facilities already constructed and in service at the Spurlock and Cooper Stations, the construction of additional facilities at Spurlock, and the capping activities of landfills at the Spurlock and Cooper Stations which relate to the settlement of existing AROs.[16] I will discuss the ARO-related projects later in my testimony.

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[14] *See In the Matter of the Application of Big Rivers Electric Corporation for Approval of its 2012 Environmental Compliance Plan*, Order, Case No. 2012-00063, p. 16, (Ky. P.S.C., Oct. 1, 2012).

[15] *See In the Matter of An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of East Kentucky Power Cooperative, Inc. for the Two-Year Billing Period Ending December 31, 2017, and the Pass-Through Mechanism for Its Sixteen Member Distribution Cooperatives*, Order, Case No. 2018-00075, (Ky. P.S.C., Jul. 23, 2018).

[16] Please see Paragraphs 26 and 34 of the Application and the table on the following page for a breakdown of completed projects, to-be-constructed projects, and ARO-related costs.

For the facilities already constructed and in service, EKPC is proposing to include the original cost and the applicable accumulated depreciation for these projects in the environmental compliance rate base. The balance for the accumulated depreciation will be as of the end of the month in which the Commission's Order approving the inclusion of these projects in EKPC's amended environmental compliance plan is issued. EKPC is also proposing that it be permitted to begin recovery of the depreciation, return, insurance expense, taxes, and operation and maintenance expenses associated with the completed projects included in the 2018 plan projects. These costs will reflect the going forward levels of cost associated with these projects and will not include the recovery of costs incurred prior to the Commission's approval of the inclusion of the projects in the amended environmental compliance plan.

For the construction of the additional facilities, EKPC is proposing that it be permitted to earn a return on the monthly Construction Work In Progress

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Category of Project	Project Reference	Cost	Total Category Cost
Facilities Already Constructed and In Service	Amended Project 12	$6,655,127	
	Project 17	$5,325,572	
	Projects 18 – 23	$20,606,611	
	Project 25	$3,876,376	$36,463,686
ARO-related Projects	Amended Project 12	$1,964,650	
	Project 17	$917,829	$2,882,479
Facilities under Construction or to be Constructed	Amended Project 12	$10,737,105	
	Project 24	$2,664,200	
	Project 26	$11,210,000	$24,611,305
Total 2018 Plan Projects		$63,957,470	$63,957,470
Total All Projects, Paragraph 34			$52,747,470
Total CPR Project, Paragraph 26			$11,210,000
Total 2018 Plan Projects			$63,957,470

("CWIP") balance. This request is consistent with the treatment approved in Case No. 2008-00115. Upon completion, EKPC is proposing that it be permitted to begin recovery of depreciation, return, insurance expense, taxes, and operation and maintenance expenses associated with the 2018 plan projects.

Q. Please discuss how the ARO-related landfill closure costs that are part of the 2018 plan projects would be reflected in EKPC's environmental surcharge mechanism.

A. The ARO-related landfill capping costs included in the 2018 plan projects total $2,882,479.[17] These landfill capping costs were incurred in 2015 and 2017, and did not extend the lives of the respective landfills or add value to those sites. EKPC is proposing these costs be amortized and recovered through the environmental surcharge over a period of 24 months. EKPC is recommending a 24-month amortization period after taking into consideration the total dollars involved and the nature of the landfill capping costs. EKPC believes this approach will enable the corresponding regulatory asset to be amortized as these ARO settlement costs are recovered, which would result in the reduction of the regulatory asset balances in proportion to the ARO liability settled. EKPC is only proposing the amortization of the costs actually incurred and not proposing to treat the unamortized balance as a deferred cost that it would seek to earn a return on as well.

EKPC believes this approach is consistent with the rate-making treatment afforded costs associated with the settlement of AROs and the amortization of

[17] The $2,882,479 total reflects Spurlock Landfill Final Cap and West Side Regrade costs of $1,964,650 (Amended Project 12), Cooper Landfill Cap – Phase 1A costs of $511,790 (Project 17), and Cooper Landfill Cap – Phase 1B costs of $406,039 (Project 17).

corresponding regulatory assets in the two previous environmental compliance plan amendment cases. The only difference in this proceeding is the fact the costs have already been incurred. In those previous cases, costs associated with the settlement of AROs and the amortization of the corresponding regulatory assets were expensed and recovered through the environmental surcharge as those costs were incurred.[18] The cost recovery approach authorized in those cases enabled the corresponding regulatory assets to be amortized as the ARO settlement activities took place, which resulted in the ARO and the regulatory asset balances clearing within the same timeframe.

It should be noted that landfill capping activities are ongoing throughout the life of the landfill and, therefore, the associated ARO will not completely settle until an area is completely capped. EKPC proposes that the costs associated with the ongoing capping activities at the Spurlock and Cooper landfills, which attribute to the settlement of their associated AROs, be recovered through the environmental surcharge as those costs are incurred. Accordingly, the associated regulatory asset would be amortized in proportion to the amount recovered. This action will enable the ARO to settle and the regulatory asset to clear over the same timeframe.

[18] In Case No. 2014-00252, the Commission found that costs associated with hauling ash from the Dale Station ash ponds to a new Smith Station landfill should be expensed as incurred. In Case No. 2017-00376, EKPC proposed and the Commission approved the expensing of the ash pond closure costs at the Spurlock Station as incurred. In both cases, it was noted that these costs neither extended the life nor added value to the ash ponds or landfills.

Q. Will the 2018 plan projects have any impact upon the ARO that EKPC established for the Spurlock and Cooper Stations' landfills or the regulatory asset that covers the accretion and depreciation expense associated with the ARO?

A. Yes. The ARO-related costs included in the 2018 plan projects will partially settle the ARO associated with the specific Spurlock and Cooper landfills. Under the accounting rules applicable to EKPC, the precise amount of the ARO will be determined as EKPC expends dollars towards the capping activities. These expenditures will reduce the value of the ARO on a dollar for dollar basis until such time as the closure is complete and the ARO is eliminated entirely, with any gain or loss transferred to the regulatory asset. Since the regulatory asset for accretion and depreciation expense approved in Case No. 2014-00432[19] is associated with the ARO, the completion of the 2018 plan projects will also afford EKPC the opportunity to amortize the regulatory asset and begin to eliminate it from its balance sheet as recovery occurs. EKPC is proposing to allow the revenues from the amended Environmental Compliance Plan to offset the amortization of the regulatory asset associated with the 2018 plan projects.

Q. Will any revisions to the monthly environmental surcharge reporting forms be necessary?

A. Yes. The proposed revisions to the monthly reporting formats are shown in Attachment ISS-2. EKPC believes that some revisions will be needed to the

[19] *See In the Matter of An Application of East Kentucky Power Cooperative, Inc. for an Order Approving the Establishment of Regulatory Assets for the Depreciation and Accretion Expenses Associated with Asset Retirement Obligations*, Orders, Case No. 2014-00432, (Ky. P.S.C., Mar. 6, 2015 and Jul. 21, 2015).

monthly environmental surcharge reporting formats. EKPC is proposing the following revisions:

- ES Form 2.0 – Under the Determination of Pollution Control Operating Expenses section, EKPC is proposing to add one line item, which will be titled "Monthly Project 12/17 Related Landfill Closure – ARO". This will present the monthly amortization of costs associated with the Spurlock and Cooper landfill closures as reported on ES Form 2.12.
- ES Form 2.1 – EKPC is proposing to expand this format to two pages, given that the 2018 plan projects will result in the addition of 10 new projects. At the bottom of the first page, "Total" has been replaced with "Subtotals, Page 1 of 2". A second page with the same title and column headings follows. The second page starts with a carry-over of the subtotals from page 1 of 2 and then lists Projects 17 through 26. At the bottom of the second page are the combined totals for both pages.
- ES Form 2.12 – EKPC is proposing to add another section to this format to report the amortization of the costs incurred in conjunction with the Spurlock and Cooper landfill closures. This section will track the amortization of these costs and document when the 24-month amortization has been completed.

Q. Will inclusion of the 2018 plan projects in EKPC's approved environmental surcharge compliance plan require any revisions to EKPCs Rate ES-Environmental Surcharge?

A. EKPC does not believe a tariff revision will be required.

Q. Will the 2018 plan projects result in the retirement or abandonment of any existing utility plant assets prior to the expected retirement date of the assets?

A. EKPC does not believe the 2018 plan projects will result in an early retirement or abandonment of existing utility plant assets prior to the expected retirement date of the assets.

Q. Will the 2018 plan projects result in an amount to be recognized in the BESF component of the surcharge mechanism?

A. While there are no early retirements or abandonments associated with the 2018 plan projects, Project 19 involves the replacement of older Cooper ash mixer unloaders that could currently be recovered through existing EKPC base rates, so the possibility exists that a BESF component could be necessary. EKPC has reviewed its accounting records and determined that these ash mixer unloaders were fully depreciated as of the end of the forecasted test year in EKPC's last base rate case.[20] Consequently, there would not be any corresponding depreciation expense or property taxes associated with these assets. EKPC was not able to identify any O&M expense associated with the ash mixer unloaders. The only remaining expense would be property insurance, which is determined based on the net book value of the asset. Since the older ash mixer unloaders were fully depreciated, the net book value would be zero and consequently there would be no property insurance associated with this asset. Based on these facts, EKPC believes there is no amount to be recognized in the BESF component of the surcharge mechanism associated with these assets.

[20] *See In the Matter of Application of East Kentucky Power Cooperative, Inc. for General Adjustment of Electric Rates*, Order, Case No. 2010-00167, (Ky. P.S.C., Jan. 14, 2011). The forecasted test year ended December 31, 2011.

Q. Please describe how the inclusion of the 2018 plan projects in EKPC's environmental surcharge will impact the bills of EKPC's wholesale and retail customers.

A. The majority of the 2018 plan projects are already completed and in service as of the filing date of this application. Portions of Amended Project 12 and all of Project 24 are expected to be completed by the end of 2018. Project 26, the CPR Project, is expected to be completed by February 2021. Because of these timing differences, the annual revenue requirement impact will fluctuate year to year. In addition, EKPC is proposing to amortize the landfill capping costs over 24 months, which will also cause the annual revenue requirement to fluctuate. EKPC has estimated the annual revenue requirements as of the end of the first quarter of 2020, 2021, and 2022. EKPC chose these dates to reflect the impact of the 2018 plan projects on the surcharge approximately one, two, and three years after the approval date. The table below shows the estimated annual revenue requirement, the approximate increase in the environmental surcharge for all customer classes at wholesale, the approximate increase passed through to retail customers, and the estimated increase in an average residential customer's monthly bill. The calculation of these estimates is provided on Attachment ISS-3.

Quarter Ending March 31	Estimated Annual Revenue Requirement	Percentage Increase Wholesale	Percentage Increase Retail	Estimated Increase in Average Residential Monthly Bill
2020	$9,010,852	1.12%	0.81%	$0.64
2021	$9,347,421	1.16%	0.84%	$0.66
2022	$8,035,673	1.00%	0.72%	$0.57

Q. Did EKPC provide advanced notice of its intent to file an Application to amend its Environmental Compliance Plan and environmental surcharge?

A. Yes. Pursuant to KRS 278.183(2), EKPC has given at least thirty (30) days' advanced notice of its intent to file its Application to Amend its Environmental Compliance Plan and Environmental Surcharge. On August 14, 2018, EKPC provided such notice to the Commission, a copy of which is attached as Exhibit D to the Application submitted by EKPC in this matter. EKPC also provided notice to its member distribution cooperatives, and a copy of that notice is attached as Exhibit E to the Application submitted by EKPC in this matter.

Q. Please summarize your testimony.

A. Based on its understanding of KRS 278.183, EKPC believes the costs of the 2018 plan projects are eligible for, and should be recovered through, the environmental surcharge. EKPC is requesting that during construction it be allowed to earn a return on the appropriate balance of CWIP and that the rate of return utilized to determine that return be the rate of return established for its other environmental compliance plan projects. EKPC is also requesting that it be permitted to recover the previously-incurred Spurlock and Cooper landfill capping costs over a 24-month period and amortize the corresponding ARO regulatory assets for accretion and depreciation, accordingly. Further, EKPC seeks approval to recover the costs of the ongoing capping activities at these landfills as they are incurred. I have described the impact the 2018 plan projects would have on retail residential customers' bills. I recommend that the Commission approve EKPC's request to

amend its Environmental Compliance Plan to include the 2018 plan projects and include the 2018 plan projects for recovery through the surcharge mechanism.

Q. Does this conclude your testimony?

A. Yes.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR APPROVAL TO AMEND ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVER COSTS PURSUANT TO ITS ENVIRONMENTAL SURCHARGE, AND FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)	**CASE NO. 2018-00270**

VERIFICATION OF ISAAC S. SCOTT

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Isaac S. Scott, Manager of Pricing at East Kentucky Power Cooperative, Inc., being duly sworn, states that he has read the foregoing prepared direct testimony and that he would respond in the same manner to the questions if so asked upon taking the stand, and that the matters and things set forth therein are true and correct to the best of his knowledge, information and belief.

Isaac S. Scott

Isaac S. Scott

The foregoing Verification was signed, acknowledged and sworn to before me this 3rd day of October, 2018 by Isaac S. Scott.

Guy M. Williams

NOTARY PUBLIC

Commission No. 590567

My Commission Expires: 11/30/2021

ATTACHMENT ISS-1

Schedule of Current Environmental Compliance Plan and the Project Amendments/Additions

EAST KENTUCKY POWER COOPERATIVE, INC
ENVIRONMENTAL COMPLIANCE PLAN
PURSUANT TO ENVIRONMENTAL SURCHARGE LAW

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Project	Pollutant or Waste/By-Product To be Controlled	Control Facility	Generating Station	Environmental Regulation	Environmental Permit	Actual or Scheduled Completion	Actual (A) or Estimated (E) Project Cost
1.	Fly Ash/Particulate NOx & SO2	Boiler SNCR Baghouse Flash Dry Absorber	Gilbert	401 KAR Chap 45 CAA Sec.404 40 CFR Part 72 401 KAR 50:035 CAA Sec.407 40 CFR Part 76	081-0005 V-97-050 (Rev. 1)	2005	$69.6 M (A)
2.	Particulate	Precipitator	Spurlock 1	401 KAR 61:015	V-95-050 (Rev. 1)	2003	$24.3 (A)
3.	NOx	SCR	Spurlock 1	CAA Sec. 407 40 CFR Part 76	V-97-050	2003	$84.4 M (A)
4.	NOx	SCR	Spurlock 2	CAA Sec. 407 40 CFR Part 76	V-97-050	2002 Fall 2007 & Spring 2008	$47.2 (A)
5.	NOx	Low NOx Burner	Dale	CAN:06-cv-00211 40 CFR Part 76.7 Title IV-A, 42 USC 7651-7651o, Sect 502, 401 KAR 51:160	V-04-038	Fall 2007	$2.0 M (A)
6.	NOx	NOx Reduction Equipment	Spurlock 1	40 CFR Part 76.7 CAN 04-34-KSF	V-06-007	Spring 2009	$3.09 M (A)
7.	SO2	Scrubber	Spurlock 2	CAN 04-34-KSF CAA Sec 405	V-97-050 Rev. 1	Oct. 2008	$194.1 M (A)
		Switchyard Improvements				In Svce	$8.396 M (A)
		Isolation Valve	Spurlock 2 Scrubber	40 CFR Part 76.7 CAN 04-34-KSF CAA Sec 405 CAA Sec 404	V-06-007, Rev 2	Fall 2010	$787,793 (A)
8.	SO2	Scrubber	Spurlock 1	CAN 04-34-KSF CAA Sec 404	V-97-050 Rev. 1	Spring 2009	$145.8 M (A)
		Switchyard Improvements				In Svce	$1.26 M (A)
		Isolation Valve	Spurlock 1 Scrubber	40 CFR Part 76.7 CAN 04-34-KSF CAA Sec 405 CAA Sec 404	V-06-007, Rev 2	Spring 2011	$677,992 (A)
9.	Fly Ash/Particulate NOx & SO2	Boiler SNCR Baghouse Flash Dry Absorber	Spurlock 4	401 KAR Chap 45 CAA Sec.404 40 CFR Part 72 401 KAR 50:035 CAA Sec.407 40 CFR Part 76	V-06-007	April 2009	$84.8 M (A)
		Ash Silos	Spurlock 4	401 KAR 63:010	V-06-007	Summer 2010	$11.7 M (A)

EAST KENTUCKY POWER COOPERATIVE, INC
ENVIRONMENTAL COMPLIANCE PLAN
PURSUANT TO ENVIRONMENTAL SURCHARGE LAW

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Project	Pollutant or Waste/By-Product To be Controlled	Control Facility	Generating Station	Environmental Regulation	Environmental Permit	Actual or Scheduled Completion	Actual (A) or Estimated (E) Project Cost
10	PM & Mercury CEMS	Stack Emissions Monitoring	Spurlock Dale Cooper	40 CFR Part 60 App. B, PS 11, & App. F Proced. 2. CD para 97-102. 40 CFR 75	CAN 04-34-KSF	Spring 2010	$2.9 M (A)
11	NOx and SO2, Particulate Matter	Air Quality Control System	Cooper 2	Consent Decree CAN 04-34-KSF KY BART SIP	V-05-082 R1	Summer 2012	$222 M (A)
12 Amend-ment [B]	Coal Combustion by-products (CCB) Coal Combustion Residuals (CCR) and Special Waste	Landfill Area C Expansion and Sediment Pond Construction Area C - Phases Two through Four	Spurlock 1, 2, 4, Gilbert; Spur 1, 2 Scrubbers Spurlock 1, 2, 4, Gilbert	Clean Water Act (CWA) Section 404 40 CFR 257 401 KAR Chap 45 401 KAR Chap 46 CWA Section 404	KPDES No KY0022250 SW08100005	Fall 2010 In Svce Fall 2018	$6.5 M (E) $8.6 M (A) $10.7 M (E)
13	SOx, H2SO4, Mercury	Replacement of Retired Ductwork	Spurlock Unit #2	CFR Title 40, Part 51 CFR Title 40, Part 52 (New Source Review)	V-06-007	Spring 2010	$2.8 M (A)
14	Nox and SO2, Particulate Matter	Ductwork to Connect to Existing Air Quality Control System	Cooper 1	Mercury Air Toxics Rule, 40 CFR Parts 60 & 63 EPA BART & KY BART SIP; 40 CFR Parts 51 & 52	V-05-082R1	Summer 2016	$15 M (E)
15	Coal Combustion by-products (CCB)	Ash Special Waste Landfill Construction	Smith	Regulations proposed at 75 Fed. Reg. 35128 (June 21, 2010) that are anticipated to be finalized in 40 CFR Parts 257, 261, 264, 265, 268, 271, and 302; 401 KAR Sec. 45; 401 KAR 5:055; 401 KAR 63:010	USACE Individual 404 Permit # LRL-2012-455-mdh; KY Division of Water (KDOW) KPDES Permit # KY0055972; KDOW 401 Water Quality Certification # 2012-049-7R; KY Division of Waste Permit # 025-00022	Nov. 2017	$27 M (E)
16	Non-hazardous Waste and Steam Effluent Water Quality Standards	CCR Rule units and Industrial Water Discharges	Spurlock	40 CFR 257; 40 CFR 261; 40 CFR 423; 401 KAR Sec. 46; KRS Chap. 224	Permit Revision forthcoming for KPDES Permit No. KY0022250; KDWM Waste Permit #SW08100005; #SW08100019	Nov. 2024	$262.4 M (E)
17 [B]	Special Waste	Waste Landfill	Cooper	401 KAR Chap 45 KRS Chap 224	SW10000015	In Svce	$6.2 M (A)
18	Special Waste	Landfill - Sediment Pond	Cooper	401 KAR Chap 45 KRS Chap 224	SW10000015	In Svce	$2.2 M (A)

EAST KENTUCKY POWER COOPERATIVE, INC
ENVIRONMENTAL COMPLIANCE PLAN
PURSUANT TO ENVIRONMENTAL SURCHARGE LAW

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Project	Pollutant or Waste/By-Product To be Controlled	Control Facility	Generating Station	Environmental Regulation	Environmental Permit	Actual or Scheduled Completion	Actual (A) or Estimated (E) Project Cost
19	Special Waste	KY Waste Facility	Cooper	401 KAR Chap 45 KRS Chap 224 401 KAR 63:010	SW10000015 V-12-019R1	In Svce	$0.3 M (A)
20	Special Waste	KY Waste Facility	Cooper	401 KAR Chap 45 KRS Chap 224	SW10000015	In Svce	$1.2 M (A)
21 [B]	CCR and Stormwater	Station Drainage Improvement Facilities	Spurlock	CWA Section 402 KRS Chap 224 40 CFR 257 401 KAR 63:010	V-15-063 KY0022250	In Svce	$13.1 M (A)
22	Mercury	Hg Removal Equipment	Spurlock	40 CFR 60 40 CFR 63 401 KAR 63:020	Title V in renewal to incorporate 40 CFR 63	In Svce	$2.8 M (A)
23	NH3	Anhydrous Ammonia Containment	Spurlock	40 CFR 112 CAA Sec 112(r)	Spurlock Spill Prevention Control & Counter-measure plan; Risk Management plan	In Svce	$1.1 M (A)
24	CCR and Particulate Matter	Spurlock Facilities	Spurlock	40 CFR 257 401 KAR Chap 46 401 KAR 59:010	V-15-063	Fall 2018	$2.7 M (E)
25	SO3, NH3	Dry Sorbent Injection System	Spurlock	40 CFR 63	V-15-063	In Svce	$3.9 M (A)
26	Special Waste	KY Waste Facility	Spurlock	401 KAR Chap 45 CWA Section 404	SW08100005	Feb. 2021	$11.2 M (E)

[B] The Amendment to Project 12, Project 17, and Project 21 include multiple specific projects; see Application for a detailed listing of the specific projects.

Please note that the Dale Station has been retired. The Commission's February 11, 2016 Order in Case No. 2015-00302 authorized the creation of regulatory assets for the undepreciated balance of the Dale Station assets. Consequently, costs associated with Project 5 and the Dale portion of Project 10 are no longer included in the environmental surcharge.

ATTACHMENT ISS-2

Sample Copy of the Monthly Environmental Surcharge Reporting Formats which Reflect Inclusion of the Amended/Additional Projects

East Kentucky Power Cooperative, Inc. **Form 2.0**
Environmental Surcharge Report

Revenue Requirements of Environmental Compliance Costs
For the Expense Month Ending {Date}

Determination of Environmental Compliance Rate Base

Eligible Pollution Control Plant (Gross Plant)	$0
Eligible Pollution CWIP net of AFUDC	$0
Subtotal	$0
Additions:	
Inventory - Spare Parts	$0
Inventory - Limestone	$0
Inventory - Emission Allowances	$0
Project 15 Related Capital Expenditures, Net	$0
Cash Working Capital Allowance	$0
Subtotal	$0
Deductions	
Accumulated Depreciation on Eligible Pollution Control Plant	$0
Subtotal	$0
Environmental Compliance Rate Base	$0

Determination of Pollution Control Operating Expenses

Monthly O&M Expense	$0
Monthly Depreciation and Amortization Expense	$0
Monthly Project 15 Related Amortization Expense	$0
Monthly Project 16 Related Spurlock Ash Pond Closure - ARO	$0
Monthly Project 12/17 Related Landfill Closure - ARO	*$0*
Monthly Taxes Other Than Income Taxes	$0
Monthly Insurance Expense	$0
Monthly Emission Allowance Expense	$0
Monthly Surcharge Consultant Fee	$0
Total Pollution Control Operating Expense	$0

Gross Proceeds from By-Product and Emission Allowance Sales

Total Proceeds from By-Product and Allowance Sales	$0

One-month True-up Adjustment

1	Authorized Recovery Amount: Current Month MESF x Avg. Monthly Wholesale Revenue for the 12-months ending with the Current Expense Month (Form 3.0)	$0
2	Revenues Subject to Surcharge: Form 3.0, Col 6 (Current Month)	$0
3	Environmental Surcharge Revenues Billed: Previous Month's MESF x Line 2	$0
4	Previous Month's Authorized Recovery Amount Form 2.0, Line 1 from the Previous Month {Date}	$0
5	Monthly (Over)/Under = Line 4 minus Line 3 To be included in Form 1.1, Line 13 in the Subsequent Month {Date}	$0

East Kentucky Power Cooperative, Inc.
Environmental Surcharge Report
Plant, CWIP, Depreciation, & Taxes and Insurance Expenses
For the Expense Month Ending {Date}

Form 2.1
Page 1 of 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Project No.	Description	Eligible Gross Plant in Service	Eligible Accumulated Depreciation	CWIP Amount Net of AFUDC	Eligible Net Plant in Service	Monthly Depreciation Expense	Monthly Tax Expense	Monthly Insurance Expense
					(2)-(3)=(5)			
1	Gilbert	$0	$0		$0	$0	$0	$0
2	Spurlock 1 Precipitator	$0	$0		$0	$0	$0	$0
3	Spurlock 1 SCR	$0	$0		$0	$0	$0	$0
4	Spurlock 2 - SCR	$0	$0		$0	$0	$0	$0
6	Spurlock 1 - Low NOx Burners	$0	$0		$0	$0	$0	$0
7	Spurlock 2 - Scrubber	$0	$0		$0	$0	$0	$0
8	Spurlock 1 - Scrubber	$0	$0		$0	$0	$0	$0
9	Spurlock 4	$0	$0		$0	$0	$0	$0
10	Spurlock and Cooper: Continuous Monitoring Eqpt.	$0	$0		$0	$0	$0	$0
11	Cooper 2 - Air Quality Control System	$0	$0		$0	$0	$0	$0
12	Spurlock - Landfill Area C Expansion (Land Cost Only)	$0			$0		$0	$0
13	Spurlock 2 - Replace Ductwork	$0	$0		$0	$0	$0	$0
14	Cooper 1 - Ductwork	$0	$0		$0	$0	$0	$0
15	Smith Special Waste Landfill	$0	$0		$0	$0	$0	$0
16	Spurlock CCR/ELG	$0	$0		$0	$0	$0	$0
	Subtotals, Page 1 of 2	$0	$0	$0	$0	$0	$0	$0

East Kentucky Power Cooperative, Inc.
Environmental Surcharge Report
Plant, CWIP, Depreciation, & Taxes and Insurance Expenses
For the Expense Month Ending {Date}

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Project No.	*Description*	*Eligible Gross Plant in Service*	*Eligible Accumulated Depreciation*	*CWIP Amount Net of AFUDC*	*Eligible Net Plant in Service*	*Monthly Depreciation Expense*	*Monthly Tax Expense*	*Monthly Insurance Expense*
					(2)-(3)=(5)			
	Subtotals, Page 1 of 2	$0	$0		$0	$0	$0	$0
17	Cooper Landfills - Phases 1A & 1B	$0	$0		$0	$0	$0	$0
18	Cooper Sediment Pond	$0	$0		$0	$0	$0	$0
19	Cooper Ash Mixer Unloaders	$0	$0		$0	$0	$0	$0
20	Cooper Ditch and Sediment Trap	$0	$0		$0	$0	$0	$0
21	Spurlock Station Drainage Improvements	$0	$0		$0	$0	$0	$0
22	Spurlock Station HG Compliance	$0	$0		$0	$0	$0	$0
23	Spurlock Anhydrous Ammonia Secondary Containment	$0	$0		$0	$0	$0	$0
24	Spurlock Vacuum Truck Ash Transfer Station	$0	$0		$0	$0	$0	$0
25	Spurlock Units 1 & 2 - Dry Sorbent Injection System	$0	$0		$0	$0	$0	$0
26	Spurlock Coal Pile Runoff Pond	$0	$0		$0	$0	$0	$0
	Totals, All Pages	$0	$0	$0	$0	$0	$0	$0

East Kentucky Power Cooperative, Inc.
Environmental Surcharge Report
Project 16 - Spurlock Ash Pond Closure - ARO
For the Expense Month Ending {Date}

(1)	(2)	(3)	(4)
Description	Prior Cumulative Costs Incurred	Costs Incurred this Expense Month	Current Cumulative Costs Incurred
			(2) + (3) = (4)
Spurlock Ash Pond Closure	$0	$0	$0

Amended Project 12 - Spurlock Landfill Final Cap - ARO
Project 17 - Cooper Landfill Cap - Phases 1A & 1B - ARO
For the Expense Month Ending {Date}

(1)	*(2)*	*(3)*	*(4)*	*(5)*
Description	*Total Costs Incurred*	*Monthly Amortization Expense*	*Cumulative Amortization*	*Balance To Be Amortized*
				(2) - (4) = (5)
Amended Project 12 - Spurlock Landfill Final Cap	*$0*	*$0*	*$0*	*$0*
Project 17 - Cooper Landfill - Phase 1A	*$0*	*$0*	*$0*	*$0*
Project 17 - Cooper Landfill - Phase 1B	*$0*	*$0*	*$0*	*$0*
Totals	*$0*	*$0*	*$0*	*$0*

East Kentucky Power Cooperative, Inc. **Form 2.0**
Environmental Surcharge Report

Revenue Requirements of Environmental Compliance Costs
For the Expense Month Ending {Date}

Determination of Environmental Compliance Rate Base

Eligible Pollution Control Plant (Gross Plant)	$0
Eligible Pollution CWIP net of AFUDC	$0
Subtotal	$0
Additions:	
Inventory - Spare Parts	$0
Inventory - Limestone	$0
Inventory - Emission Allowances	$0
Project 15 Related Capital Expenditures, Net	$0
Cash Working Capital Allowance	$0
Subtotal	$0
Deductions	
Accumulated Depreciation on Eligible Pollution Control Plant	$0
Subtotal	$0
Environmental Compliance Rate Base	$0

Determination of Pollution Control Operating Expenses

Monthly O&M Expense	$0
Monthly Depreciation and Amortization Expense	$0
Monthly Project 15 Related Amortization Expense	$0
Monthly Project 16 Related Spurlock Ash Pond Closure - ARO	$0
Monthly Project 12/17 Related Landfill Closure - ARO	$0
Monthly Taxes Other Than Income Taxes	$0
Monthly Insurance Expense	$0
Monthly Emission Allowance Expense	$0
Monthly Surcharge Consultant Fee	$0
Total Pollution Control Operating Expense	$0

Gross Proceeds from By-Product and Emission Allowance Sales

Total Proceeds from By-Product and Allowance Sales	$0

One-month True-up Adjustment

1	Authorized Recovery Amount: Current Month MESF x Avg. Monthly Wholesale Revenue for the 12-months ending with the Current Expense Month (Form 3.0)	$0
2	Revenues Subject to Surcharge: Form 3.0, Col 6 (Current Month)	$0
3	Environmental Surcharge Revenues Billed: Previous Month's MESF x Line 2	$0
4	Previous Month's Authorized Recovery Amount Form 2.0, Line 1 from the Previous Month {Date}	$0
5	Monthly (Over)/Under = Line 4 minus Line 3 To be included in Form 1.1, Line 13 in the Subsequent Month {Date}	$0

East Kentucky Power Cooperative, Inc.
Environmental Surcharge Report
Plant, CWIP, Depreciation, & Taxes and Insurance Expenses
For the Expense Month Ending {Date}

Form 2.1
Page 1 of 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Project No.	Description	Eligible Gross Plant in Service	Eligible Accumulated Depreciation	CWIP Amount Net of AFUDC	Eligible Net Plant in Service	Monthly Depreciation Expense	Monthly Tax Expense	Monthly Insurance Expense
					(2)-(3)=(5)			
1	Gilbert	$0	$0		$0	$0	$0	$0
2	Spurlock 1 Precipitator	$0	$0		$0	$0	$0	$0
3	Spurlock 1 SCR	$0	$0		$0	$0	$0	$0
4	Spurlock 2 - SCR	$0	$0		$0	$0	$0	$0
6	Spurlock 1 - Low NOx Burners	$0	$0		$0	$0	$0	$0
7	Spurlock 2 - Scrubber	$0	$0		$0	$0	$0	$0
8	Spurlock 1 - Scrubber	$0	$0		$0	$0	$0	$0
9	Spurlock 4	$0	$0		$0	$0	$0	$0
10	Spurlock and Cooper: Continuous Monitoring Eqpt.	$0	$0		$0	$0	$0	$0
11	Cooper 2 - Air Quality Control System	$0	$0		$0	$0	$0	$0
12	Spurlock - Landfill Area C Expansion (Land Cost Only)	$0			$0		$0	$0
13	Spurlock 2 - Replace Ductwork	$0	$0		$0	$0	$0	$0
14	Cooper 1 - Ductwork	$0	$0		$0	$0	$0	$0
15	Smith Special Waste Landfill	$0	$0		$0	$0	$0	$0
16	Spurlock CCR/ELG	$0	$0		$0	$0	$0	$0
	Subtotals, Page 1 of 2	$0	$0	$0	$0	$0	$0	$0

East Kentucky Power Cooperative, Inc.
Environmental Surcharge Report
Plant, CWIP, Depreciation, & Taxes and Insurance Expenses
For the Expense Month Ending {Date}

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Project No.	Description	Eligible Gross Plant in Service	Eligible Accumulated Depreciation	CWIP Amount Net of AFUDC	Eligible Net Plant in Service	Monthly Depreciation Expense	Monthly Tax Expense	Monthly Insurance Expense
					(2)-(3)=(5)			
	Subtotals, Page 1 of 2	$0	$0		$0	$0	$0	$0
17	Cooper Landfills - Phases 1A & 1B	$0	$0		$0	$0	$0	$0
18	Cooper Sediment Pond	$0	$0		$0	$0	$0	$0
19	Cooper Ash Mixer Unloaders	$0	$0		$0	$0	$0	$0
20	Cooper Ditch and Sediment Trap	$0	$0		$0	$0	$0	$0
21	Spurlock Station Drainage Improvements	$0	$0		$0	$0	$0	$0
22	Spurlock Station HG Compliance	$0	$0		$0	$0	$0	$0
23	Spurlock Anhydrous Ammonia Secondary Containment	$0	$0		$0	$0	$0	$0
24	Spurlock Vacuum Truck Ash Transfer Station	$0	$0		$0	$0	$0	$0
25	Spurlock Units 1 & 2 - Dry Sorbent Injection System	$0	$0		$0	$0	$0	$0
26	Spurlock Coal Pile Runoff Pond	$0	$0		$0	$0	$0	$0
	Totals, All Pages	$0	$0	$0	$0	$0	$0	$0

East Kentucky Power Cooperative, Inc.
Environmental Surcharge Report
Project 16 - Spurlock Ash Pond Closure - ARO
For the Expense Month Ending {Date}

(1)	(2)	(3)	(4)
Description	Prior Cumulative Costs Incurred	Costs Incurred this Expense Month	Current Cumulative Costs Incurred
			(2) + (3) = (4)
Spurlock Ash Pond Closure	$0	$0	$0

Amended Project 12 - Spurlock Landfill Final Cap - ARO
Project 17 - Cooper Landfill Cap - Phases 1A & 1B - ARO
For the Expense Month Ending {Date}

(1)	(2)	(3)	(4)	(5)
Description	Total Costs Incurred	Monthly Amortization Expense	Cumulative Amortization	Balance To Be Amortized
				(2) - (4) = (5)
Amended Project 12 - Spurlock Landfill Final Cap	$0	$0	$0	$0
Project 17 - Cooper Landfill - Phase 1A	$0	$0	$0	$0
Project 17 - Cooper Landfill - Phase 1B	$0	$0	$0	$0
Totals	$0	$0	$0	$0

ATTACHMENT ISS-3

Estimate of Revenue Increase and Estimated Bill Impact

East Kentucky Power Cooperative, Inc.
Estimated Increase in Revenues and Estimated Bill Impact on Residential Customers

Revenue Information as of December 31, 2017 Billings

Rate Schedule	Total Revenues	Base Rate & FAC Revenues	Environmental Surcharge	Allocation Percentage
Rate E	$635,035,407	$544,105,856	$90,929,551	78.824%
Rate B	$62,163,527	$53,322,833	$8,840,694	7.725%
Rate C	$20,615,144	$17,676,904	$2,938,240	2.561%
Rate G	$24,846,253	$21,309,806	$3,536,447	3.087%
Int. Paper Steam	$11,447,907	$9,786,156	$1,661,751	1.418%
Nucor Gallatin	$41,362,506	$35,363,730	$5,998,776	5.123%
Tenn Gas Pipeline	$9,485,366	$8,710,602	$774,764	1.262%
Totals	$804,956,110	$690,275,887	$114,680,223	100.000%

Note: Allocation Percentage is calculated off of Base Rate and FAC Revenues.

Rate Impacts

	1st - 03/2020	2nd - 03/2021	3rd - 03/2022
Percentage Increase at Wholesale			
Est. Annual Revenue Requirement	$9,047,040	$9,384,961	$8,067,945
Member System Allocation Ratio	99.60%	99.60%	99.60%
Net Est. Annual Revenue Requirement	$9,010,852	$9,347,421	$8,035,673
Total Revenues as of Dec. 31, 2017	$804,956,110	$804,956,110	$804,956,110
Percentage Increase at Wholesale	1.12%	1.16%	1.00%
Percentage Increase at Retail			
Percentage Increase at Wholesale	1.12%	1.16%	1.00%
Historic relationship between Retail and Wholesale	72.00%	72.00%	72.00%
Percentage Increase at Retail	0.81%	0.84%	0.72%

Based on historical billing information, the retail Environmental Surcharge has been approximately 72% of the wholesale Environmental Surcharge.

Impact on Average Residential Bill at Retail

Net Est. Annual Revenue Requirement	$9,010,852	$9,347,421	$8,035,673
Allocation Percentage - Rate E	78.824%	78.824%	78.824%
Allocated Net Est. Annual Revenue Requirement - Rate E	$7,102,714	$7,368,011	$6,334,039
2017 Billed kWh Sales - Rate E (kWh)	9,194,181,414	9,194,181,414	9,194,181,414
Wholesale Rate E Revenue Requirement per kWh	$0.00077	$0.00080	$0.00069
Average Residential Bill in kWh	1,150	1,150	1,150
Impact on Average Residential Bill at Wholesale	$0.886	$0.920	$0.794
Historic relationship between Retail and Wholesale	72.00%	72.00%	72.00%
Impact on Aver. Residential Bill at Retail	$0.64	$0.66	$0.57

Note: Member System Allocation Ratio from the May 31, 2018 monthly surcharge filing.

East Kentucky Power Cooperative, Inc.
Estimated Annual Surcharge Revenue Requirement - Ending March 2020 Expense Month

Compliance Rate Base and Return on Rate Base

Eligible Pollution Control Plant (Gross)	$49,864,962	
Eligible Pollution CWIP	$2,837,126	
Subtotal	$52,702,088	
Less: Accumulated Depreciation	$3,789,923	
Net Eligible Pollution Control Plant		$48,912,165
ARO-Related Cost Recovery	$2,882,479	
Less: Accumulated Amortization	$1,321,133	
Net ARO-Related Cost Recovery		$1,561,346
Cash Working Capital Allowance (1/8 O&M Expenses)		$405,988
Total Compliance Rate Base		$50,879,499
Rate of Return on Rate Base		6.023%
Monthly Return on Rate Base		$3,064,472

Operating Expenses

Annual Depreciation Expense	$1,047,966	
Annual ARO Amortization Expense	$1,441,236	
Annual O&M Expense	$3,247,900	
Annual Property Taxes	$211,651	
Annual Insurance Expense	$33,815	
Total Monthly Operating Expenses		$5,982,568

Monthly Revenue Requirement

Monthly Return on Rate Base	$3,064,472
Monthly Operating Expenses	$5,982,568
Total Revenue Requirement	$9,047,040
Member System Allocation Ratio (May 2018 Expense Month)	99.60%
Total Revenue Requirement - Members' Share	$9,010,852

East Kentucky Power Cooperative, Inc.
Detailed Calculations for the Expense Month Ending March 2020

ARO-Related Costs

Location	Compliance Plan Project Number	Description	Capital Project Number	In-Service Date	Original Cost	Acc. Amortization as of 3/31/2020	Unamortized Balance	Monthly Amortization Exp.	Annual Amortization Exp.	
Spurlock	Amend Project #12	Landfill Final Cap - ARO	0S422	8/20/2017	$1,964,650	$900,460	$1,064,190	$81,860	$982,320	Amortization - 24 months - beginning April 2019
Cooper	Project #17	Landfill Cap - Phase 1A - ARO	0B392	12/15/2015	$511,790	$234,575	$277,215	$21,325	$255,900	Amortization - 24 months - beginning April 2019
	Project #17	Landfill Cap - Phase 1B - ARO	0B392	12/15/2015	$406,039	$186,098	$219,941	$16,918	$203,016	Amortization - 24 months - beginning April 2019
	Total Project #17				$917,830	$420,673	$497,157	$38,243	$458,916	
Totals - ARO-Related Costs					$2,882,479	$1,321,133	$1,561,346	$120,103	$1,441,236	

Capital Costs

Location	Compliance Plan Project Number	Description	Capital Project Number	In-Service Date	Original Cost	Acc. Depreciation as of 3/31/2020	Net Book Balance	Monthly Depreciation Exp.	Annual Depreciation Exp.	Annual Property Taxes	Annual Insurance Exp.	Annual O&M Expense
Spurlock	Amend Project #12	Landfill - Area C - Phase Two	0S389	12/12/2014	$3,362,670	$0	$3,362,670	$0	$0	$35,856	$0	$0
	Amend Project #12	Landfill - Area C - Phase Three	0S435	12/31/2017	$4,737,105	$0	$4,737,105	$0	$0	$25,107	$0	$135,000
	Amend Project #12	Landfill - Area C - Phase Four	0S476	Est. 2018	$6,000,000	$0	$6,000,000	$0	$0	$31,800	$0	$135,000
	Amend Project #12	Landfill - Area C - Phases 3-5 - Haul Road	0S446	2/9/2017	$3,272,457	$0	$3,272,457	$0	$0	$34,688	$0	$7,500
	Amend Project #12	Landfill - Area C - Final Cap - Non-ARO	0S422	8/20/2017	$0	$0	$0	$0	$0	$0	$0	$55,000
	Total Amend Project #12				$17,392,232	$0	$17,392,232	$0	$0	$127,451	$0	$332,500
Cooper	Project #17	Landfill - Phase 1A	0B392	12/15/2015	$2,220,779	$0	$2,220,779	$0	$0	$15,612	$0	$10,000
	Project #17	Landfill - Phase 1B	0B392	12/15/2015	$2,485,848	$0	$2,485,848	$0	$0	$17,476	$0	$10,000
	Project #17	Landfill - Trans., Distrib. & Commun. Line Relocate	0B392	12/15/2015	$618,945	$0	$618,945	$0	$0	$4,351	$0	$0
	Total Project #17				$5,325,572	$0	$5,325,572	$0	$0	$37,439	$0	$20,000
Cooper	Project #18	Landfill - Sediment Pond - Geomembrane	0B396	4/15/2013	$2,163,009	$888,192	$1,274,817	$10,449	$125,392	$2,351	$2,188	$5,000
Cooper	Project #19	Ash Mix Unloaders	0B399	11/22/2013	$260,411	$101,573	$158,838	$1,302	$15,627	$293	$273	$0
Cooper	Project #20	Ditch and Sediment Trap	0B413	12/31/2017	$1,242,055	$238,540	$1,003,515	$8,226	$98,706	$1,669	$1,553	$12,000
Spurlock	Project #21	Station Drainage Improvement	0S419	12/31/2016	$13,134,888	$1,570,060	$11,564,828	$38,294	$459,530	$18,918	$17,605	$153,000
Spurlock	Project #22	HG Compliance - Units 1 & 2	0S361	5/1/2015	$2,755,438	$456,702	$2,298,736	$7,612	$91,340	$3,768	$3,506	$1,985,400
Spurlock	Project #23	Anhydrous Ammonia Secondary Containment	0S458	12/31/2017	$1,050,780	$0	$1,050,780	$0	$0	$11,138	$0	$5,000
Spurlock	Project #24	Vacuum Truck Ash Transfer Station	0S454	Est. 12/31/2018	$2,664,200	$141,980	$2,522,220	$8,352	$100,221	$1,967	$3,661	$85,000
Spurlock	Project #25	Dry Sorbent Injection System - Units 1 & 2	0S411	11/1/2017	$3,876,376	$392,876	$3,483,500	$13,096	$157,150	$5,404	$5,029	$650,000
Spurlock	Project #26	Coal Pile Runoff Pond Supplemental Storage	0S463	2021	$2,837,126	$0	$2,837,126	$0	$0	$1,253	$0	$0
Totals - Capital Costs					$52,702,088	$3,789,923	$48,912,165	$87,330	$1,047,966	$211,651	$33,815	$3,247,900

Note: Property taxes for costs in CWIP are calculated using half of the CWIP balance rather than the total amount.
Amend Project #12, Project #17, and Project #23 are classified as land, not depreciated.
Project #26 in CWIP at April 2019.

East Kentucky Power Cooperative, Inc.
Estimated Annual Surcharge Revenue Requirement - March 2021 Expense Month

Compliance Rate Base and Return on Rate Base

Eligible Pollution Control Plant (Gross)	$49,864,962	
Eligible Pollution CWIP	$11,210,000	
Subtotal	$61,074,962	
Less: Accumulated Depreciation	$4,837,889	
Net Eligible Pollution Control Plant		$56,237,073
ARO-Related Cost Recovery	$2,882,479	
Less: Accumulated Amortization	$2,762,369	
Net ARO-Related Cost Recovery		$120,110
Cash Working Capital Allowance (1/8 O&M Expenses)		$403,488
Total Compliance Rate Base		$56,760,671
Rate of Return on Rate Base		6.023%
Monthly Return on Rate Base		$3,418,695

Operating Expenses

Annual Depreciation Expense	$1,047,966
Annual ARO Amortization Expense	$1,441,236
Annual O&M Expense	$3,227,900
Annual Property Taxes	$215,349
Annual Insurance Expense	$33,815
Total Monthly Operating Expenses	$5,966,266

Monthly Revenue Requirement

Monthly Return on Rate Base	$3,418,695
Monthly Operating Expenses	$5,966,266
Total Revenue Requirement	$9,384,961
Member System Allocation Ratio (May 2018 Expense Month)	99.60%
Total Revenue Requirement - Members' Share	$9,347,421

East Kentucky Power Cooperative, Inc.
Detailed Calculations for the Expense Month Ending March 2021

ARO-Related Costs

Location	Compliance Plan Project Number	Description	Capital Project Number	In-Service Date	Original Cost	Acc. Amortization as of 3/31/2021	Unamortized Balance	Monthly Amortization Exp.	Annual Amortization Exp.	
Spurlock	Amend Project #12	Landfill Final Cap - ARO	0S422	8/20/2017	$1,964,650	$1,882,780	$81,870	$81,860	$982,320	Amortization - 24 months - beginning April 2019
Cooper	Project #17	Landfill Cap - Phase 1A - ARO	0B392	12/15/2015	$511,790	$490,475	$21,315	$21,325	$255,900	Amortization - 24 months - beginning April 2019
	Project #17	Landfill Cap - Phase 1B - ARO	0B392	12/15/2015	$406,039	$389,114	$16,925	$16,918	$203,016	Amortization - 24 months - beginning April 2019
	Total Project #17				$917,830	$879,589	$38,241	$38,243	$458,916	
Totals - ARO-Related Costs					$2,882,479	$2,762,369	$120,110	$120,103	$1,441,236	

Capital Costs

Location	Compliance Plan Project Number	Description	Capital Project Number	In-Service Date	Original Cost	Acc. Depreciation as of 3/31/2021	Net Book Balance	Monthly Depreciation Exp.	Annual Depreciation Exp.	Annual Property Taxes	Annual Insurance Exp.	Annual O&M Expense
Spurlock	Amend Project #12	Landfill - Area C - Phase Two	0S389	12/12/2014	$3,382,670	$0	$3,382,670	$0	$0	$35,856	$0	$0
	Amend Project #12	Landfill - Area C - Phase Three	0S435	12/31/2017	$4,737,105	$0	$4,737,105	$0	$0	$25,107	$0	$135,000
	Amend Project #12	Landfill - Area C - Phase Four	0S476	Est. 2018	$6,000,000	$0	$6,000,000	$0	$0	$31,800	$0	$135,000
	Amend Project #12	Landfill - Area C - Phases 3-5 - Haul Road	0S446	2/9/2017	$3,272,457	$0	$3,272,457	$0	$0	$34,688	$0	$7,500
	Amend Project #12	Landfill - Area C - Final Cap - Non-ARO	0S422	8/20/2017	$0	$0	$0	$0	$0	$0	$0	$35,000
	Total Amend Project #12				$17,392,232	$0	$17,392,232	$0	$0	$127,451	$0	$312,500
Cooper	Project #17	Landfill - Phase 1A	0B392	12/15/2015	$2,220,779	$0	$2,220,779	$0	$0	$15,612	$0	$10,000
	Project #17	Landfill - Phase 1B	0B392	12/15/2015	$2,485,848	$0	$2,485,848	$0	$0	$17,476	$0	$10,000
	Project #17	Landfill - Trans., Distrib, & Commun. Line Relocate	0B392	12/15/2015	$618,945	$0	$618,945	$0	$0	$4,351	$0	$0
	Total Project #17				$5,325,572	$0	$5,325,572	$0	$0	$37,439	$0	$20,000
Cooper	Project #18	Landfill - Sediment Pond - Geomembrane	0B396	4/15/2013	$2,163,009	$1,013,584	$1,149,425	$10,449	$125,392	$2,351	$2,188	$5,000
Cooper	Project #19	Ash Mix Unloaders	0B399	11/22/2013	$260,411	$117,200	$143,211	$1,302	$15,627	$293	$273	$0
Cooper	Project #20	Ditch and Sediment Trap	0B413	12/31/2017	$1,242,055	$337,246	$904,809	$8,226	$98,706	$1,669	$1,553	$12,000
Spurlock	Project #21	Station Drainage Improvement	0S419	12/31/2016	$13,134,888	$2,029,590	$11,105,298	$38,294	$459,530	$18,918	$17,605	$153,000
Spurlock	Project #22	HG Compliance - Units 1 & 2	0S381	5/1/2015	$2,755,438	$548,042	$2,207,396	$7,612	$91,340	$3,768	$3,506	$1,985,400
Spurlock	Project #23	Anhydrous Ammonia Secondary Containment	0S458	12/31/2017	$1,050,780	$0	$1,050,780	$0	$0	$11,138	$0	$5,000
Spurlock	Project #24	Vacuum Truck Ash Transfer Station	0S454	Est. 12/31/2018	$2,664,200	$242,201	$2,421,999	$8,352	$100,221	$1,967	$3,661	$85,000
Spurlock	Project #25	Dry Sorbent Injection System - Units 1 & 2	0S411	11/1/2017	$3,876,376	$550,026	$3,326,350	$13,096	$157,150	$5,404	$5,029	$650,000
Spurlock	Project #26	Coal Pile Runoff Pond Supplemental Storage	0S463	2021	$11,210,000	$0	$11,210,000	$0	$0	$4,951	$0	$0
Totals - Capital Costs					$61,074,962	$4,837,889	$56,237,073	$87,330	$1,047,966	$215,349	$33,815	$3,227,900

Note: Amend Project #12, Project #17, Project #23, and Project #26 are classified as land, not depreciated.

East Kentucky Power Cooperative, Inc.
Estimated Annual Surcharge Revenue Requirement - Ending March 2022 Expense Month

Compliance Rate Base and Return on Rate Base

Eligible Pollution Control Plant (Gross)	$61,074,962	
Eligible Pollution CWIP	$0	
Subtotal	$61,074,962	
Less: Accumulated Depreciation	$5,885,855	
Net Eligible Pollution Control Plant		$55,189,107
ARO-Related Cost Recovery	$2,882,479	
Less: Accumulated Amortization	$2,882,479	
Net ARO-Related Cost Recovery		$0
Cash Working Capital Allowance (1/8 O&M Expenses)		$412,113
Total Compliance Rate Base		$55,601,220
Rate of Return on Rate Base		6.023%
Monthly Return on Rate Base		$3,348,861

Operating Expenses

Annual Depreciation Expense	$1,047,966
Annual ARO Amortization Expense	$120,103
Annual O&M Expense	$3,296,900
Annual Property Taxes	$220,300
Annual Insurance Expense	$33,815
Total Monthly Operating Expenses	$4,719,084

Monthly Revenue Requirement

Monthly Return on Rate Base	$3,348,861
Monthly Operating Expenses	$4,719,084
Total Revenue Requirement	$8,067,945
Member System Allocation Ratio (May 2018 Expense Month)	99.60%
Total Revenue Requirement - Members' Share	$8,035,673

East Kentucky Power Cooperative, Inc.
Detailed Calculations for the Expense Month Ending March 2022

ARO-Related Costs

Location	Compliance Plan Project Number	Description	Capital Project Number	In-Service Date	Original Cost	Acc. Amortization as of 3/31/2022	Unamortized Balance	Monthly Amortization Exp	Annual Amortization Exp	
Spurlock	Amend Project #12	Landfill Final Cap - ARO	0S422	8/20/2017	$1,964,650	$1,964,650	$0	$81,860	$982,320	Amortization completed in April 2021
Cooper	Project #17	Landfill Cap - Phase 1A - ARO	0B392	12/15/2015	$511,790	$511,790	$0	$21,325	$255,900	Amortization completed in April 2021
	Project #17	Landfill Cap - Phase 1B - ARO	0B392	12/15/2015	$406,039	$406,039	$0	$16,918	$203,016	Amortization completed in April 2021
	Total Project #17				$917,829	$917,829	$0	$38,243	$458,916	
Totals - ARO-Related Costs					$2,882,479	$2,882,479	$0	$120,103	$1,441,236	

Capital Costs

Location	Compliance Plan Project Number	Description	Capital Project Number	In-Service Date	Original Cost	Acc. Depreciation as of 3/31/2022	Net Book Balance	Monthly Depreciation Exp	Annual Depreciation Exp	Annual Property Taxes	Annual Insurance Exp	Annual O&M Expense
Spurlock	Amend Project #12	Landfill - Area C - Phase Two	0S389	12/12/2014	$3,382,670	$0	$3,382,670	$0	$0	$35,856	$0	$0
	Amend Project #12	Landfill - Area C - Phase Three	0S435	12/31/2017	$4,737,105	$0	$4,737,105	$0	$0	$25,107	$0	$135,000
	Amend Project #12	Landfill - Area C - Phase Four	0S476	Est. 2018	$6,000,000	$0	$6,000,000	$0	$0	$31,800	$0	$135,000
	Amend Project #12	Landfill - Area C - Phases 3-5 - Haul Road	0S446	2/9/2017	$3,272,457	$0	$3,272,457	$0	$0	$34,688	$0	$7,500
	Amend Project #12	Landfill - Area C - Final Cap - Non-ARO	0S422	8/20/2017	$0	$0	$0	$0	$0	$0	$0	$30,000
	Total Amend Project #12				$17,392,232	$0	$17,392,232	$0	$0	$127,451	$0	$307,500
Cooper	Project #17	Landfill - Phase 1A	0B392	12/15/2015	$2,220,779	$0	$2,220,779	$0	$0	$15,612	$0	$10,000
	Project #17	Landfill - Phase 1B	0B392	12/15/2015	$2,485,848	$0	$2,485,848	$0	$0	$17,476	$0	$10,000
	Project #17	Landfill - Trans., Distrib, & Commun. Line Relocate	0B392	12/15/2015	$618,945	$0	$618,945	$0	$0	$4,351	$0	$0
	Total Project #17				$5,325,572	$0	$5,325,572	$0	$0	$37,439	$0	$20,000
Cooper	Project #18	Landfill - Sediment Pond - Geomembrane	0B396	4/15/2013	$2,163,009	$1,138,976	$1,024,033	$10,449	$125,392	$2,351	$2,188	$5,000
Cooper	Project #19	Ash Mix Unloaders	0B399	11/22/2013	$260,411	$132,827	$127,584	$1,302	$15,627	$293	$273	$0
Cooper	Project #20	Ditch and Sediment Trap	0B413	12/31/2017	$1,242,055	$435,952	$806,103	$8,226	$98,706	$1,669	$1,553	$12,000
Spurlock	Project #21	Station Drainage Improvement	0S419	12/31/2016	$13,134,888	$2,489,120	$10,645,768	$38,294	$459,530	$18,918	$17,605	$153,000
Spurlock	Project #22	HG Compliance - Units 1 & 2	0S381	5/1/2015	$2,755,438	$639,382	$2,116,056	$7,612	$91,340	$3,768	$3,506	$1,985,400
Spurlock	Project #23	Anhydrous Ammonia Secondary Containment	0S458	12/31/2017	$1,050,780	$0	$1,050,780	$0	$0	$11,138	$0	$5,000
Spurlock	Project #24	Vacuum Truck Ash Transfer Station	0S454	Est. 12/31/2018	$2,664,200	$342,422	$2,321,778	$8,352	$100,221	$1,967	$3,661	$85,000
Spurlock	Project #25	Dry Sorbent Injection System - Units 1 & 2	0S411	11/1/2017	$3,876,376	$707,176	$3,169,200	$13,096	$157,150	$5,404	$5,029	$650,000
Spurlock	Project #26	Coal Pile Runoff Pond Supplemental Storage	0S463	2021	$11,210,000	$0	$11,210,000	$0	$0	$9,902	$0	$74,000
Totals - Capital Costs					$61,074,962	$5,885,855	$55,189,107	$87,330	$1,047,966	$220,300	$33,815	$3,296,900

Note: Amend Project #12, Project #17, Project #23, and Project #26 are classified as land, not depreciated.