COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

Electronic Application Of Kentucky Power Company For 1) A Certificate Of Public Convenience And Necessity To Construct A Natural Gas-Fired Combined Cycle Generating Facility In Lawrence County, Kentucky; 2) A Site Compatibility Certificate; 3) A Certificate Of Public Convenience And Necessity To Construct A New Transmission Substation In Boyd County, Kentucky; 4) Approval Of A Short-Term Capacity Purchase Agreement; And 5) For All Other Required Approvals And Relief	)))))))))	Case No. 2026-00324

DIRECT TESTIMONY OF

MICHAEL J. DILLEY

ON BEHALF OF KENTUCKY POWER COMPANY

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EXHIBITS

EXHIBIT	DESCRIPTION
EXHIBIT MJD-1	Combined-Cycle Generation Project Facility Location Maps
EXHIBIT MJD-2	Combined-Cycle Generation Project Site Assessment Report

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.

A. My name is Michael J. Dilley. I am employed by American Electric Power Service Corporation ("AEPSC"), a wholly owned subsidiary of American Electric Power Company, Inc. ("AEP"), as Vice President – Projects. AEP is the parent company of Kentucky Power Company ("Kentucky Power" or the "Company"). AEPSC supplies engineering, financing, accounting, regulatory, and similar planning and advisory services to AEP's regulated electric operating companies, including Kentucky Power. My business address is 1 Riverside Plaza, Columbus, Ohio 43215.

II. BACKGROUND

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. I earned a Bachelor's of Science Degree in Construction Systems Management from The Ohio State University in 2009. I hold a Project Management Professional certification from the Project Management Institute. My professional experience includes over 18 years working for AEPSC on new build and retrofit projects for coal, natural gas, solar, and wind generating facilities. I have held various positions of increasing responsibility including Construction Coordinator, Project Manager, Manager – Projects, Director – Projects, and

currently serve as Vice President – Projects. I assumed my current position as Vice President – Projects in September 2026.

Q. WHAT ARE YOUR PRINCIPAL AREAS OF RESPONSIBILITY?

A. As Vice President – Projects, my primary responsibilities include using AEP's project management principles and processes in the planning and execution of a wide range of projects, which includes approximately 10 GW of new gas-fired generation, varying in size, technology, complexity, and capital investment. I also lead a team of project managers (the "Projects Team") that manage capital projects to serve the customers of the AEP operating companies.

Q. HAVE YOU PREVIOUSLY TESTIFIED IN ANY REGULATORY PROCEEDINGS?

A. Yes. I have submitted testimony on behalf of Southwestern Electric Power Company before the Arkansas Public Service Commission, the Louisiana Public Service Commission, and the Public Utility Commission of Texas, and on behalf of Indiana Michigan Power Company before the Indiana Utility Regulatory Commission. I have submitted testimony and testified at hearing on behalf of Public Service Company of Oklahoma before the Oklahoma Corporation Commission.

III. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS PROCEEDING?

A. The purpose of my Direct Testimony is to:

- Provide an overview of the Combined-Cycle Generation Project;
- Discuss market dynamics and the development of new power generation;

- Describe the competitive procurement of major equipment and Engineering, Procurement, and Construction ("EPC") Services;

- Describe AEPSC's experience in developing generation projects for the AEP operating companies and its role in project management, engineering, procurement, and construction of the Combined-Cycle Generation Project for Kentucky Power;

- Identify the key milestones for construction activities including the estimated commercial operation date ("COD") for the Combined-Cycle Generation Project; and,

- Present the estimated total project capital cost for the Combined-Cycle Generation Project.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I sponsor the following Exhibits:

Exhibit	Description
EXHIBIT MJD-1	Combined-Cycle Generation Project Facility Location Maps
EXHIBIT MJD-2	Combined-Cycle Generation Project Site Assessment Report

Q. WERE THESE EXHIBITS PREPARED BY YOU OR UNDER YOUR DIRECTION?

A. Yes.

IV. THE COMBINED-CYCLE GENERATION PROJECT

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE COMBINED-CYCLE GENERATION PROJECT.

A. The Combined-Cycle Generation Project consists of a natural gas combined-cycle power plant with a nameplate capacity of 760 megawatts ("MW") on the site of Kentucky Power's Big Sandy plant in Lawrence County, Kentucky. With duct-firing, the net capacity of the Combined-Cycle Generation Project is expected to be 769 MW. The winter capacity is expected to be higher due to operational parameters from lower ambient temperatures

resulting in 789 MW winter capacity. The Combined-Cycle Generation Project is expected to reach commercial operation in the second quarter of 2031. Maps of the Combined-Cycle Generation Project location are provided as Exhibit MJD-1.

Q. PLEASE PROVIDE MORE DETAILS REGARDING THE COMBINED-CYCLE GENERATION PROJECT.

A. The Combined-Cycle Generation Project will consist of two natural gas-fired combustion turbine generators, associated heat recovery steam generators, one steam turbine generator, environmental control equipment, and the balance-of-plant facilities necessary for the safe, reliable, and environmentally compliant operation of the generating facility, including electrical interconnection, natural gas, water, cooling, and related support systems.

The major components of the Combined-Cycle Generation Project will include two advanced class General Electric Vernova ("GEV") 7F.05 combustion gas turbine generators, one GEV D-600 steam turbine generator, and two GEV heat recovery steam generators ("HRSG") with integrated selective catalytic reduction ("SCR"). All of these components will be located on Kentucky Power-owned property.

Q. WHAT IS THE USEFUL LIFE OF THE COMBINED-CYCLE GENERATION PROJECT?

A. The Combined-Cycle Generation Project will have a 40-year useful life. For an asset to achieve its useful life, recommended operation and maintenance practices must be followed, including ongoing investment over the life of the resource.

Q. ARE THERE ADVANTAGES TO LOCATING THE COMBINED-CYCLE GENERATION PROJECT AT THE SITE OF THE BIG SANDY PLANT?

A. Yes. As an initial matter, the Company already owns the land on which the Combined-Cycle Generation Project will be located. The Company plans, to the extent practicable, to optimize reuse of existing infrastructure and equipment. The Combined-Cycle Generation Project will utilize the existing river water intake structure and distribution systems, sanitary and potable water systems, stormwater infrastructure, transmission switchyard and point of interconnection to the 345kV network, perimeter fencing, security systems, and other essential site utilities. Utilizing the existing infrastructure where possible allows Kentucky Power to avoid the cost of constructing completely new systems for the Combined-Cycle Generation Project. Additionally, as described in Company Witness Stutler's Direct Testimony, the Combined-Cycle Generation Project will be located in a geographic region with an abundant supply of natural gas from multiple operators, allowing the Company to secure fuel in a cost-effective manner.

Also, the experience and expertise that the current Big Sandy staff has in operating a gas-fired generation power plant will be a significant asset as the Company builds out the new natural gas plant infrastructure. At a time of significant growth in the electric generation industry, an experienced and qualified workforce will become increasingly more difficult to attract and obtain. Developing the Combined-Cycle Generation Project at a site with a workforce that has managed natural gas generation operations, understands critical safety practices, has detailed knowledge of the Big Sandy site, and can integrate effectively with the EPC contractor during project development and construction is a significant benefit to Kentucky Power and its customers.

Q. PLEASE DESCRIBE THE INTERCONNECTION PLAN FOR THE COMBINED-CYCLE GENERATION PROJECT.

A. The Combined-Cycle Generation Project will interconnect to the existing transmission point of interconnection located adjacent to the Big Sandy site at the Baker Substation. The Combined-Cycle Generation Project will include a generation tie-line from the new collector switchyard to a dead-end structure just outside the existing footprint of the Baker Substation. Interconnection of the Combined-Cycle Generation Project to the transmission system will be completed in accordance with PJM requirements.

Q. PLEASE DESCRIBE THE NATURAL GAS PIPELINE ARRANGEMENT FOR THE COMBINED-CYCLE GENERATION PROJECT.

A. A new lateral will be built from the Tennessee Gas Pipeline to supply the Combined-Cycle Generation Project. The Tennessee Gas Pipeline lateral will terminate at the Big Sandy site property line. From this point, Kentucky Power will construct the necessary equipment and piping to bring gas to the Combined-Cycle Generation Project. Company Witness Stutler provides additional information regarding the existing natural gas infrastructure, natural gas supply and transportation arrangements for the Combined-Cycle Generation Project.

V. DEVELOPMENT AND CONSTRUCTION OF THE COMBINED-CYCLE GENERATION PROJECT

Q. WHAT RESPONSIBILITIES WILL AEPSC HAVE IN THE DEVELOPMENT AND CONSTRUCTION OF THE COMBINED-CYCLE GENERATION PROJECT?

A. On behalf of Kentucky Power, AEPSC will be responsible for the development, environmental studies, permitting, engineering, interconnection, procurement of all

necessary equipment and materials, construction, and commissioning of the Combined-Cycle Generation Project.

Q. PLEASE DESCRIBE AEPSC'S PROJECT MANAGEMENT AND CONSTRUCTION EXPERIENCE.

A. AEPSC has a long history of safe project management and construction of large-scale complex utility projects, including the construction of power plants, environmental retrofits and upgrades, and the execution of renewable projects. This currently comprises approximately 25,000 MW of generating capacity and includes coal fired, gas fired, simple-cycle combustion turbine, combined-cycle, nuclear, and renewable resource facilities. AEPSC also has approximately 13 GW of new gas fired generation actively in development. Some examples of power plant construction include the building of the Turk, Mattison, and Stall power-generating facilities for Southwestern Electric Power Company and Riverside Units 3 and 4 and Southwestern Units 4 and 5 for Public Service Company of Oklahoma. AEPSC has also successfully converted two coal-fired generation resources (Big Sandy Unit 1 and Clinch River Plant) to gas fired generation resources. Finally, AEPSC has retrofitted assets in excess of 15,000 MW with SCR technology and has retrofitted approximately 9,000 MW with flue gas desulfurization technology systems.

Q. PLEASE DESCRIBE THE EXECUTION STRATEGY FOR THE COMBINED-CYCLE GENERATION PROJECT.

A. The execution strategy for the Combined-Cycle Generation Project is aligned with AEPSC's proven project management processes and procedures for executing a complex project and will incorporate best practices for effective project management in power plant construction to deliver the project on time and within budget. AEPSC will use a stage gate

process to manage the entire lifecycle of the Combined-Cycle Generation Project and an EPC execution model to deliver the project for Kentucky Power and its customers. The stage gate process for AEPSC Project Management comprises eight stages (initiation, business planning and screening, scope selection, preliminary engineering, detailed engineering, construction, commissioning and startup, and closeout) with key deliverables and funding approval gates which require authorization by key stakeholders, including Kentucky Power management, to proceed to the next stage.

Overall, along with Kentucky Power, which has an obligation to provide safe and reliable energy to its customers, AEPSC has a commitment to deliver the Combined-Cycle Generation Project efficiently, within budget, and in alignment with corporate goals and industry best practices.

Q. HOW DOES AEPSC PLAN TO MONITOR THE PROGRESS OF CONSTRUCTION OF THE COMBINED-CYCLE GENERATION PROJECT?

A. AEPSC and the Company will have experienced personnel on-site providing oversight of the EPC Contractor to hold the selected contractors accountable to perform the work safely while adhering to the contract specifications and requirements, scopes of work, and integrated project schedule. In addition, AEPSC has stringent project cost and schedule control requirements that require project vendors and contractors to develop and maintain integrated construction schedules utilizing Primavera P6 schedule software so that the schedule can be monitored and controlled. Project expenditures and planned commitments are reviewed and forecasted regularly by the Projects Team in accordance with AEPSC and Company policies and procedures to control the budget.

Q. WHAT IS THE SCHEDULE FOR THE CONSTRUCTION OF THE COMBINED-CYCLE GENERATION PROJECT?

A. Please see Table MJD-1 below for construction milestones for the Combined-Cycle Generation Project.

Table MJD-1 – Construction Milestones

Project Milestone	Anticipated Date
PJM Interconnection Application	4/10/2026*
EPC Agreement Executed	October 2026
General Electric Vernova Equipment Agreement Executed	November 2026
Air Permit Application Submitted	November 2026
EPC Limited Notice to Proceed	November 2026
Regulatory Approval	Filing + 8 Months
EPC Full Notice to Proceed	March 2028
Air Permit Approval	March 2028
Construction Start	April 2028
Generation Interconnection Agreement (GIA)	May 2028**
Combustion Turbine 3A Delivery	April 2029
Combustion Turbine 3B Delivery	May 2029
Steam Turbine 3S Delivery	June 2029
HRSG Delivery Start	June 2029
Natural Gas Available	May 2030
Backfeed	April 2030
Commercial Operation Date	April 2031

*Application Filed on this Date
**Date subject to delays in PJM study schedule

VI. EPC AND EQUIPMENT MARKET AND PROCUREMENT

Q. PLEASE DESCRIBE YOUR OBSERVATIONS OF THE CURRENT STATE OF THE MARKET FOR MAJOR EQUIPMENT COMPONENTS OF THE COMBINED-CYCLE GENERATION PROJECT.

A. Due to the recent significant increase in demand for new power generation, the market for new generation equipment is constrained. AEP is actively involved in the market and has received feedback from a broad number of manufacturers and major equipment suppliers

that lead times for major equipment such as combustion turbines, steam turbines, main power transformers, and high voltage breakers continue to increase. Current lead times in the combustion turbine market would result in total project development times of five to seven years. Manufacturers and suppliers are currently proposing lead times of two to four years from contract to delivery for other major equipment components such as main power transformers and high voltage breakers.

Q. HOW HAS KENTUCKY POWER APPROACHED PROCUREMENT EFFORTS FOR THE COMBINED-CYCLE GENERATION PROJECT IN THE AREAS OF EQUIPMENT, SERVICES, AND LABOR CONSIDERING THE MARKET CHALLENGES DISCUSSED ABOVE?

A. In 2023, in response to the tightening market, AEPSC, on behalf of Kentucky Power, took steps to secure the combustion turbines and other long-lead-time equipment necessary to support the scheduled in-service date of the Combined-Cycle Generation Project. These proactive steps, taken approximately three years ago, benefited Kentucky Power customers by establishing the framework to quickly lock in manufacturing slots to preserve delivery dates as market availability today continues to decrease and costs and lead times continue to increase. In addition, to verify the cost and schedule for the Combined-Cycle Generation Project is reasonable and consistent with the market, AEPSC performed competitive solicitations on behalf of Kentucky Power to secure the major equipment and EPC contractor, leveraging the buying power of AEP to secure manufacturing slots and competitive pricing for the long-lead-time equipment.

Q. PLEASE EXPLAIN THE GAS TURBINE SELECTION PROCESS AND GIVE MORE DETAILS ON THE GE 7F.05 TURBINE THAT WAS SELECTED FOR THE COMBINED-CYCLE GENERATION PROJECT.

A. An evaluation of combustion turbine original equipment manufacturers and models was performed to select a suitable gas turbine for the Combined-Cycle Generation Project. Proposals were solicited from GEV and Siemens, which were the turbine manufacturers approved by AEPSC Engineering at the time. The Company reviewed the proposals it received with a particular focus on securing cost-effective generation. The Company determined that the GE 7F.05 was the most suitable turbine model.

The GE 7F.05 gas turbine is the latest evolution of the F-Frame model that has been in operation since the 1990s. It has a nameplate capacity of approximately 230 MW, and it consists of a 14-stage compressor, a 3-stage hot gas path, and a low-NOx combustion system, which provides efficient power generation.

Q. HOW DID THE COMPANY MAKE DECISIONS REGARDING THE STEAM TURBINE AND HRSG COMPONENTS OF THE COMBINED-CYCLE GENERATION PROJECT?

A. AEPSC went to the market in early 2025 to solicit budgetary proposals for combined-cycle equipment packages. Through discussions with manufacturers, it became clear that the market was not providing robust responses for standalone equipment due to demand and limited manufacturing capacity for power generation equipment. In discussions with GEV, the Projects Team reached an agreement to secure the combustion turbines as a part of a power island equipment package where GEV would also provide the steam turbine, steam turbine generator, and HRSGs, as well as an SCR system for environmental controls, and

associated equipment. By moving forward with GEV for the full power island equipment package instead of sourcing components individually, Kentucky Power receives the benefits of a performance-based equipment package. These benefits include an integrated engineered solution with contract guarantees for power output and equipment delivery, as well as the ability to secure the equipment and meet the delivery timelines necessary to bring the generation online.

Q. WHAT IS THE ROLE OF THE EPC CONTRACTOR FOR A PROJECT LIKE THE COMBINED-CYCLE GENERATION PROJECT?

A. The EPC contractor serves as the single entity responsible for the detailed design, procurement, construction, commissioning, and performance testing of the Combined-Cycle Generation Project. This contracting structure establishes clear responsibility for project execution and facilitates effective management of cost, schedule, safety, quality, and performance risks.

Q. WHAT IS THE COMPANY'S ASSESSMENT OF THE MARKET FOR EPC CONTRACTORS AND CONSTRUCTION LABOR AVAILABILITY?

A. Based on AEPSC's active monitoring of the market and general industry conversations, the market for qualified EPC contractors that have experience and the ability to meet expected safety, quality, cost, and schedule expectations is constrained due to the sudden increase in demand across the industry for generation capacity. EPC contractors have communicated they are working to ramp up their capacity and experience base in the power generation market but are taking a measured approach when it comes to the number of projects that they are willing to manage and the risks they are willing to accept.

A common constraint that is currently recognized throughout the industry is the limited availability of qualified construction craft personnel, given the amount of development for traditional power generation, data centers, nuclear generation, and advanced manufacturing that is taking place at the same time.

As a result of the tight market for qualified EPC contractors, the pace of growth those contractors are experiencing, and the identified risks around labor productivity, parties have begun to implement EPC contracting methods that allow the project to be more advanced before reaching a firm pricing structure. The Company has worked with the EPC contractor on the Combined-Cycle Generation Project to use an "open-book" EPC contracting structure that takes these factors into consideration.

Q. PLEASE PROVIDE AN OVERVIEW OF THE COMPETITIVE PROCUREMENT PROCESS FOR EPC SERVICES ON THE COMBINED-CYCLE GENERATION PROJECT.

A. The Company is able to take advantage of a programmatic approach developed through competitive solicitations performed in the fall of 2025 by AEPSC first to secure qualified EPC contractors to build new generation for Indiana Michigan Power's Rockport natural gas combined-cycle project. Through this approach, AEPSC has identified an EPC contractor to provide programmatic support for the development of GEVF-Class projects across the AEP Eastern Operating Companies.

The process started with a Request for Proposals ("RFP"). The RFP set forth the detailed necessary information, including the project scope, technical specifications, submission requirements, evaluation criteria, and applicable terms and conditions, so that prospective bidders could prepare and submit a responsive proposal. The RFP described

the Combined-Cycle Generation Project and identified the GEV turbine reservation and other owner supplied equipment. The RFP also identified the proposal form requirements, submittal requirements and schedule, and information on the evaluation criteria. This is consistent with information typically included in RFPs issued in the power generation development industry.

Q. HOW WERE ELIGIBLE EPC CONTRACTORS SELECTED TO PARTICIPATE?

A. AEPSC initially screened major EPC contractors through an informal interview process to assess those EPC contractors' understanding of market conditions, familiarity with the technology configurations, the commercial structure being sought in the market for new gas-fired generation projects, and their historical and recent project experience constructing new gas fired generation facilities. AEPSC also directly engaged with EPC contractors regarding their interest in participating in the Combined-Cycle Generation Project RFP and the availability of key personnel to perform the work. This process was important to ensure interested and able EPC contractors were provided with the RFP. I participated in those informal interviews.

Q. WHY DID KENTUCKY POWER CHOOSE TO UTILIZE THE SAME CONTRACTOR AS THE ROCKPORT COMBINED-CYCLE PROJECT?

A. Kentucky Power selected the same EPC contractor as the Rockport combined-cycle project because AEPSC is pursuing a programmatic execution strategy for new gas-fired combined-cycle resources. Aligning qualified EPC contractors by technology class allows the operating companies to leverage repeatable engineering, standardized design approaches, common plant layouts, and consistent execution practices across the generating fleet. This approach reduces duplicative engineering and design costs, supports

more efficient procurement and construction planning, improves schedule certainty, and enables the operating companies to share lessons learned and critical spare parts across projects to the greatest extent practical. Overall, the strategy is intended to lower total delivered cost, reduce execution risk, and provide customers with the benefits of scale, standardization, and fleetwide consistency.

VII. SITE COMPATIBILITY CERTIFICATE

Q. IS KENTUCKY POWER REQUESTING A SITE COMPATIBILITY CERTIFICATE FOR THE COMBINED-CYCLE GENERATION PROJECT?

A. Yes.

Q. HAS THE COMPANY PROVIDED A SITE ASSESSMENT REPORT FOR THE COMBINED-CYCLE GENERATION PROJECT AS REQUIRED BY KRS 278.216?

A. Yes. Kentucky Power engaged Worley Consulting to complete the Site Assessment Report. The Combined-Cycle Generation Project is located on existing Kentucky Power property that has previously been used for generation, has no historical or aesthetic significance, does not have any park areas, and is not used for recreational activities. Further, the Combined-Cycle Generation Project will positively impact local economies by generating local property and sales tax revenues, which will contribute to the overall financial health of the community. In addition, the Combined-Cycle Generation Project will also help with local job creation, starting with hundreds of temporary positions in construction, ranging from skilled labor to engineering and support services. Finally, the Combined-Cycle Generation Project will stimulate local businesses by increasing demand for goods and services. This demand can lead to growth opportunities for small- and medium-sized

enterprises in the region, further bolstering the local economy. The Site Assessment Report is provided as Exhibit MJD-2.

VIII. PERMITTING

Q. WHAT IS THE STATUS OF ENVIRONMENTAL IMPACT AND WILDLIFE STUDIES ASSOCIATED WITH THE COMBINED-CYCLE GENERATION PROJECT?

A. Relevant to the Combined-Cycle Generation Project, AEPSC performed a desktop review for Critical Issues Analysis ("CIA") as it relates to environmental impact and wildlife studies. The CIA identified minimal impacts. All identified items will be further investigated, as necessary, during the engineering and design stage to ensure compliance. Additional information concerning the environmental regulations are discussed by Company Witness Blake.

Q. WILL THERE BE REQUIRED PERMITTING FOR THE COMBINED-CYCLE GENERATION PROJECT?

A. Yes. My team will coordinate with Company Witness Blake's team to obtain the necessary permits for the Combined-Cycle Generation Project. Based on the current design, the following permits are expected to be required:

Permits and Processes	Agency/Regulation
Prevention of Significant Deterioration (PSD) Permit	Kentucky Division for Air Quality (KDAQ)
Title V and Acid Rain Program	KDAQ
Construction Stormwater Permit	Kentucky Division of Water (KDOW)
Industrial Discharge Permit (KPDES)	KDOW
Groundwater Protection Plan	KDOW
Spill Prevention Control and Countermeasure (SPCC) Plans	Clean Water Act Section 311 and 40 CFR Part 112

Permits and Processes	Agency/Regulation
Floodplain Construction Permit	KDOW
New Construction / Expansion	Department of Housing, Buildings and Construction (DHBC)
Electrical Permit	(DHBC)
Plumbing Permit	(DHBC)
Land Use Zoning	(DHBC)
Fire Prevention Certification	(DHBC)

Permitting will be further investigated and sought as necessary during the engineering and design stages of the Combined-Cycle Generation Project to ensure compliance.

IX. COMBINED-CYCLE GENERATION PROJECT PROJECTED COSTS

Q. WHAT IS THE ESTIMATED COST OF THE COMBINED-CYCLE GENERATION PROJECT?

A. The estimated total project capital cost for the Combined-Cycle Generation Project is approximately $2.81 billion, which includes direct costs, indirect costs, and Owner's costs, and is inclusive of cost contingencies for the Combined-Cycle Generation Project.

Q. WHY IS THE INCLUSION OF A CONTINGENCY NECESSARY AND APPROPRIATE?

A. The inclusion of contingency is necessary and appropriate because the Combined-Cycle Generation Project remains subject to cost and schedule risks that are typical for complex large-scale generation facilities. As discussed earlier in my Direct Testimony, the current market for major generation projects continues to face constraints with equipment availability, commodity pricing, transportation, and the ability to attract and retain qualified construction labor and contractors to perform the work. These conditions can

affect final project cost even with diligent planning, competitive procurement, and active project controls.

The contingency included in the estimate addresses identified and reasonably foreseeable project risks, including estimating uncertainty, supply chain delays, commodity and material cost variability, construction schedule impacts, scope refinement, weather impacts, and similar execution risks. It does not assume or provide coverage for extreme market disruptions, extraordinary escalation, or force majeure-type events beyond what the Company reasonably evaluated at this stage. Including a reasonable contingency is standard industry practice and supports a more complete and transparent estimate at completion. The Company will continue to actively manage these risks to minimize cost impacts for customers.

Q. WAS AN ESTIMATE DEVELOPED OF APPLICABLE DECOMMISSIONING AND SALVAGE VALUE COSTS FOR THE COMBINED-CYCLE GENERATION PROJECT?

A. Yes. On Kentucky Power's behalf, AEPSC developed a decommissioning cost estimate based on major power plant structures. The estimate (in 2025 dollars) is based on a turnkey demolition contracting approach where structures, equipment and concrete pads will be removed to surface grade, but foundation, pilings, piping, conduits, and other underground utilities will be abandoned in place. The estimated decommissioning cost, net of salvage value for the Combined-Cycle Generation Project, is approximately $22.10 million. This decommissioning cost estimate was provided to Company Witness Vaughan for inclusion in the cost-of-service calculation for the Combined-Cycle Generation Project.

Q. WILL THE OPERATION AND MAINTENANCE ("O&M") OF THE COMBINED-CYCLE GENERATION PROJECT BE PERFORMED BY EMPLOYEES OF THE COMPANY?

A. Yes. Kentucky Power employees will operate and maintain the Combined-Cycle Generation Project with support from AEPSC employees, similar to support provided at other Kentucky Power generating plants. For a discussion of O&M costs, please refer to Company Witness Lewis's Direct Testimony.

Q. BASED ON YOUR EXPERIENCE WITH MAJOR GENERATION PROJECTS, ARE THE COMBINED-CYCLE GENERATION PROJECT'S PROJECTED CAPITAL AND O&M COSTS REASONABLE?

A. Yes.

X. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

EXHIBIT MJD-1

Combined-Cycle Generation

Project Facility Location Maps

CROSS REFS:

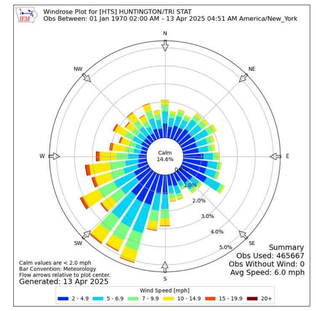
DRAWING NUMBER: 3 - BSP-CC-03-ME-DPP-00001

PLANT NORTH
NAD83 KY NORTH
13°30'17"



GENERAL NOTES

1. POTENTIAL FUTURE EQUIPMENT SHOWN IN GREEN.
2. TOP OF MAJOR EQUIPMENT FOUNDATIONS SHALL BE EL 569'. FLOOD PLANE ELEVATION IS 567'. PLANT BASE ELEVATION IS 568'.



REFERENCE DRAWINGS

BSP-CC-03-ME-DPP-00002 - ENLARGED PLAN

PRELIMINARY - NOT FOR CONSTRUCTION

200 0 200 400 600
SCALE: 1"=200'

PROFESSIONAL ENGINEER'S SEAL

STATE OF KENTUCKY
JOHN NICOLAS
35288
LICENSED PROFESSIONAL ENGINEER

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: JOHN NICOLAS STATE: KY
LIC. NO.: 35288 DATE: 08-06-26

worley
DELIVERING SUSTAINABLE CHANGE

WORLEY PROJECT No.
418008-00703

"this drawing is prepared solely for the use of the contractual customer of Worley and Worley assumes no liability to any other party for any representations contained in this drawing."

REV	DATE	REVISION DESCRIPTION	DRAWN	DRFT CHK	DESIGNED	ENG CHK	APPROVED	PRJ MGR
C	08-06-26	ISSUED FOR CPCN FILING	MP	MSC	MP	AH	AH	JL
B	07-21-26	ISSUED FOR REVIEW	MP	MSC	MP	SD	SD	JL
A	07-17-26	ISSUED FOR REVIEW	MP	MP	MP	AH	AH	JL

DATE	NO.	DESCRIPTION	APPD.
-		SEE WORLEY REVISION BLOCK	

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KENTUCKY POWER COMPANY
BIG SANDY PLANT
BIG SANDY KENTUCKY
GENERAL ARRANGEMENT
BS34 BIG SANDY U3A/U3B CCGT U3S STG 2 X1 (GE 7FA.05) PLOT PLAN

UNIT:	DRAWING NUMBER:	REV:
3	BSP-CC-03-ME-DPP-00001	C

SCALE: 1" = 200' — MECHANICAL ENGINEERING

DR: CH: SUP: ENG: DATE: — APPROVED BY

DOCUMENT PREPARED BY WORLEY

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DOCUMENT PATH: C:\Users\mjdavidson\Desktop\BSP-CC-03-ME-DPP-00001_C.dgn
PLOT TIME: 8/7/2026 3:17:57 PM
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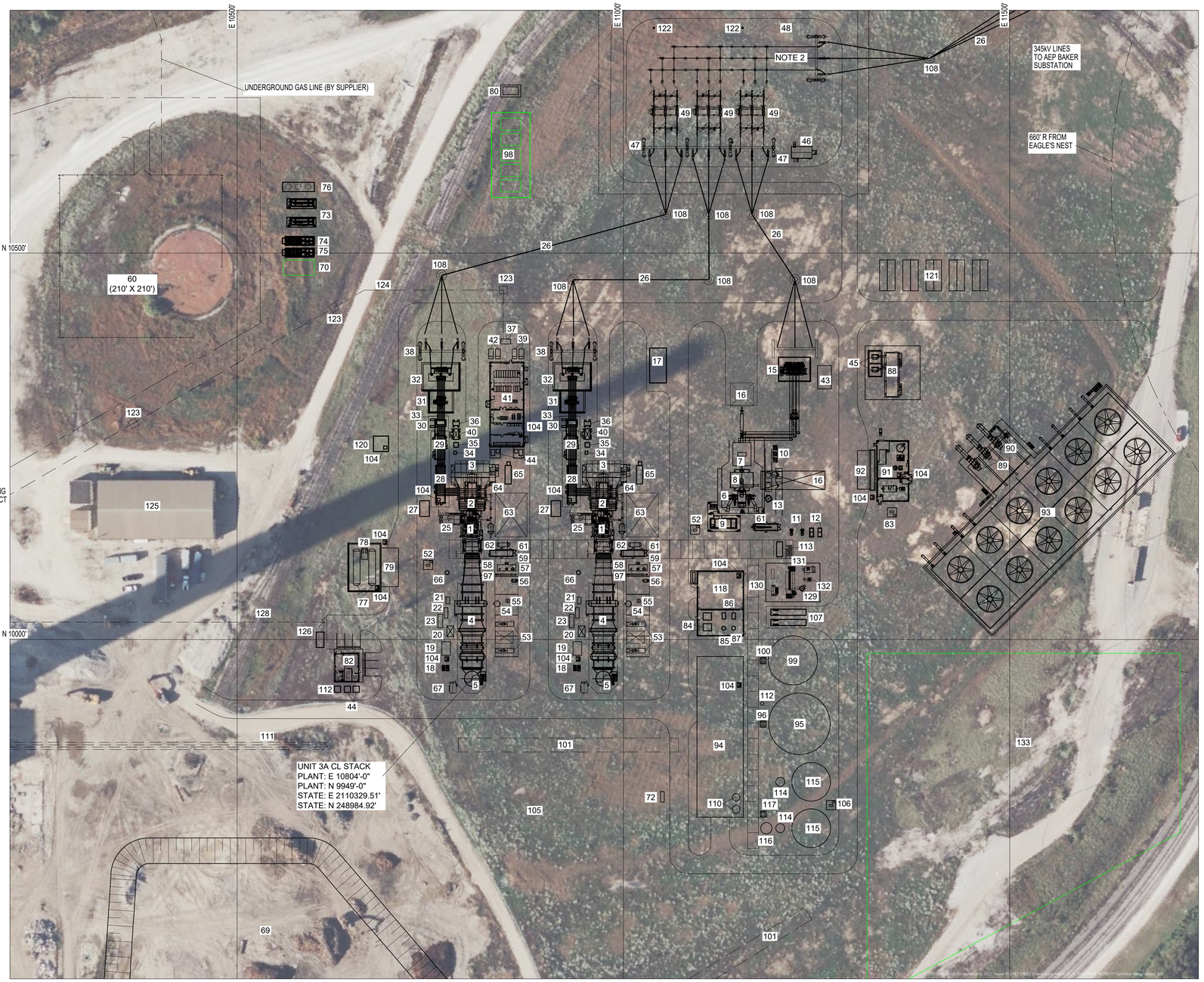
DRAWING NUMBER: 03 - BSP-CC-03-ME-DPP-00002

PLANT NORTH



GENERAL NOTES

1. POTENTIAL FUTURE EQUIPMENT SHOWN IN GREEN.
2. COLLECTOR SWITCHYARD DETAILS:
   - 2.a. BUS BAR TUBE DIAMETER IS 6".
   - 2.b. NORTH/SOUTH BUS BARS SHALL RUN ABOVE EAST/WEST BUS BARS.
   - 2.c. MINIMUM SEPARATION BETWEEN BUS BAR IS 15'.
   - 2.d. MINIMUM SPACING BETWEEN ANY STEEL STRUCTURE AND ANY BUS IS 10'.
   - 2.e. MINIMUM HEIGHT BETWEEN ANY FINISHED GRADE SURFACE AND BUS BARS IS 25'.

EQUIPMENT IDENTIFICATION

No.	DESCRIPTION
1	COMBUSTION TURBINE (CT)
2	COMBUSTION TURBINE GENERATOR (CTG)
3	COMBUSTION TURBINE AIR INLET
4	HEAT RECOVERY SYSTEM GENERATOR (HRSG)
5	HRSG EXHAUST STACK
6	STEAM TURBINE (ST)
7	STEAM TURBINE GENERATOR (STG)
8	STEAM TURBINE CONDENSER
9	STEAM TURBINE LUBE OIL SKID
10	STEAM TURBINE CONDENSATE PUMPS
11	COOLING WATER PUMPS
12	COOLING WATER HEAT EXCHANGER
13	STEAM TURBINE DRAIN TANK
14	NOT USED
15	ST GENERATOR STEP-UP TRANSFORMER
16	MAINTENANCE SPACE
17	BULK HYDROGEN STORAGE
18	HRSG RECIRCULATION PUMPS
19	HRSG AMMONIA INJECTION SKID
20	HRSG SCR DROP ZONE
21	HRSG AIR FAN SKID
22	HRSG DUCT BURNER SKID
23	DUCT BURNER FUEL GAS PRESSURE REDUCING
24	NOT USED
25	COMBUSTION TURBINE ACCESSORY MODULE
26	345kV TLINE
27	CT FIRE PROTECTION SKID
28	PEEC UNIT
29	LCI / EXCITER COMPARTMENT
30	GENERATOR CIRCUIT BREAKER
31	AUXILIARY TRANSFORMER
32	GENERATOR STEP-UP TRANSFORMER (GSU)
33	ISOPHASE BUS
34	DC LINK REACTOR
35	AC REACTOR
36	CTG EXCITER TRANSFORMER
37	RESERVED ESSENTIAL TRANSFORMER
38	345kV DEAD END
39	ESSENTIAL SERVICES TRANSFORMERS
40	CTG LCI TRANSFORMER
41	ELECTRICAL PDC BUILDING
42	STATION SERVICE TRANSFORMERS
43	STEAM TURBINE ELECTRICAL BUILDING
44	AIR HANDLING UNITS (AHU)
45	COOLING TOWER TRANSFORMERS
46	SWITCHYARD CONTROL HOUSE
47	345kV SUB DEADEND STRUCTURE
48	345kV SWITCHYARD
49	HIGH VOLTAGE BREAKER
50	NOT USED
51	NOT USED
52	OIL/WATER WASTE SUMP
53	BOILER FEEDWATER PUMPS
54	HRSG BLOWDOWN TANK
55	HRSG BLOWDOWN SUMP W/ PUMPS
56	FUEL GAS DRAIN TANK
57	FUEL GAS MAIN FILTER/ SEPARATOR
58	FUEL GAS PILOT FILTER/ SEPARATOR
59	FUEL GAS MAIN KNOCKOUT DRUM
60	FUEL GAS YARD (BY GAS SUPPLIER)
61	SAMPLE PANEL ENCLOSURE
62	CT WASH WATER DRAINS TANK
63	MOBILE EQUIPMENT CONCRETE PAD
64	H2 AND CO2 MANIFOLDS (BELOW INLET FILTER)
65	WATER WASH SKID
66	FINAL FILTER SEPARATOR
67	CEMS
68	NOT USED
69	STORMWATER/ WASTEWATER POND
70	HYDROGEN BLENDING SKID (FUTURE)
71	NOT USED
72	OIL / WATER SEPARATOR
73	INDIRECT WATER BATH HEATERS
74	FUEL GAS REGULATING SKID
75	FUEL GAS SEPARATOR SKID
76	FUEL GAS AFTERCOOLR CONDITIONING SKID
77	AMMONIA STORAGE TANK
78	AMMONIA FORWARDING PUMPS
79	AMMONIA UNLOADING AREA
80	1500kW EMERGENCY DIESEL GENERATOR
81	NOT USED
82	CONTROL BUILDING
83	WASTE WATER SUMP (CHEMICAL WASTE)
84	AIR COMPRESSORS
85	WET AIR RECEIVER
86	AIR DRYERS
87	DRY AIR RECEIVER
88	COOLING TOWER PDC
89	CIRCULATING WATER PUMPS
90	COOLING WATER AUXILIARY PUMP
91	COOLING TOWER CHEMICAL BUILDING
92	TRUCK SPILL CONTAINMENT PAD
93	COOLING TOWER
94	WATER TREATMENT BUILDING
95	SERVICE WATER STORAGE TANK
96	SERVICE WATER PUMPS
97	FUEL GAS HEATER
98	BLACK START DIESEL GENERATORS (FUTURE)
99	DEMIN WATER STORAGE TANK
100	DEMIN WATER FORWARDING PUMPS
101	EXISTING COAL TUNNELS (UNDERGROUND)
102	NOT USED
103	NOT USED
104	EMERGENCY EYEWASH AND SHOWER
105	PLANT LAYDOWN AREA
106	CLARIFIER BLOWDOWN SUMP
107	DEMIN TRAILER PARKING
108	345kV MONOPOLE STRUCTURE
109	NOT USED
110	POTABLE WATER PRESSURE TANKS
111	SANITARY, SERVICE WATER , FIRE WATER AND RAW WATER PIPES
112	SANITARY LIFT STATION
113	COOLING WATER HEAD TANK (ON THE PIPERACK)
114	RAW WATER MIX TANK
115	RAW WATER CLARIFIERS
116	CLARIFIED WATER TANK
117	CLARIFIED WATER PUMPS
118	CYCLE CHEMICAL FEED BUILDING
119	NOT USED
120	LUBE OIL AND WASTE OIL STORAGE BUILDING
121	CONSTRUCTION TRAILERS
122	LIGHTNING MAST
123	13.8KV MANHOLE
124	13.8KV UNDERGROUND
125	EXISTING WAREHOUSE TO BE USED FOR UNIT 3
126	DUMPSTER STORAGE AREA
127	NOT USED
128	FIRE WATER PIPE
129	AUXILIARY BOILER AND STACK
130	AUXILIARY BOILER DEAERATOR AND FEED PUMP
131	AUXILIARY BOILER BLOWDOWN TANK
132	AUXILIARY BOILER BLOWDOWN SUMP
133	CARBON CAPTURE (FUTURE)

REFERENCE DRAWINGS

BSP-CC-03-ME-DPP-00001 - PLOT PLAN

PRELIMINARY - NOT FOR CONSTRUCTION

60 0 60 120 180

SCALE: 1"=60'

PROFESSIONAL ENGINEER'S SEAL

STATE OF KENTUCKY
JOHN NICOLAS
35288
LICENSED PROFESSIONAL ENGINEER

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: JOHN NICOLAS STATE: KY
LIC. NO.: 35288 DATE: 08-06-26

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WORLEY PROJECT No. 418008-00703

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B	07-20-26	ISSUED FOR REVIEW	MP	MSC	MP	SD	SD	JL
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KENTUCKY POWER COMPANY
BIG SANDY PLANT
BIG SANDY KENTUCKY
GENERAL ARRANGEMENT
BS34 BIG SANDY U3A/U3B CCGT U3S STG 2 X1 (GE 7FA.05) ENLARGED PLAN

UNIT: 3
DRAWING NUMBER: BSP-CC-03-ME-DPP-00002
REV: C
SCALE: 1" = 60'
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DR:
CH:
SUP:
ENG:
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DATE:
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AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

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pl (307x427)

EXHIBIT MJD-2

Combined-Cycle Generation Project Site

Assessment Report

Part 1 of 4

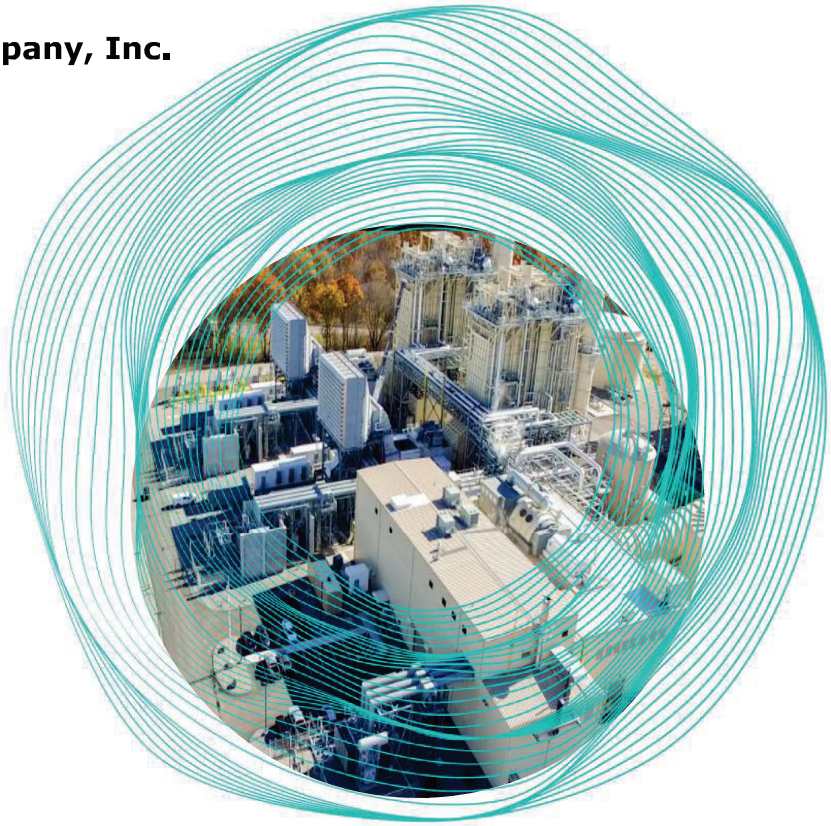
SITE ASSESSMENT REPORT AND CUMULATIVE ENVIRONMENTAL ASSESSMENT

Big Sandy Electric Generating Plant Expansion Project (BS3 Big Sandy U3 CCGT Project)

Doc no.: BSP-CC-03-EN-REP-00001 Rev 1

American Electric Power Company, Inc.

1 Riverside Plaza
Columbus, Ohio 43215-2352



04 Nov 2026

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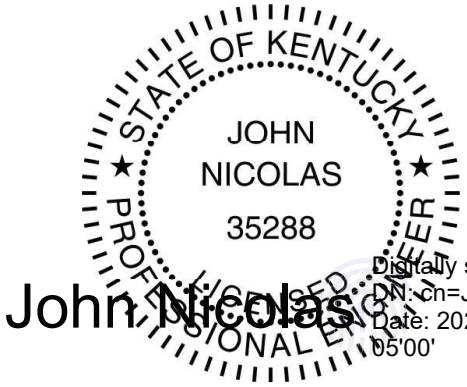

John Nicolas

Digitally signed by John Nicolas
DN: cn=John Nicolas, ou=AMER
Date: 2026.11.05 07:21:47 -05'00'

This PE seal does NOT apply to the Terracon Noise Assessment in Appendix C

BSP-CC-03-EN-REP-00001: Site Assessment Report and Cumulative Environmental Assessment - Big Sandy Electric Generating Plant Expansion Project

Rev	Description	Originator	Reviewer	Worley Approver	Revision Date
A	Issued for Client Review	Prim Savio / Elise Ray	James Frolich	Jay Loughney	07 August 2026
0	Issued for Use	Prim Savio / Elise Ray	Dennis Lu	Jay Loughney	19 August 2026
1	Issued for Use	Signed by: P. Savio E Ray 94A008BF079C4F9... Prim Savio / Elise Ray	Dennis Lu	Signed by: Gerald Loughney E5CC07F5F0C54AD... Jay Loughney	04 November 2026

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LIST OF ABBREVIATIONS AND ACRONYMS

TERM	DEFINITION
AADT	Average Annual Daily Traffic
AEP	American Electric Power
BACT	Best Available Control Technology
BART	Best Available Retrofit Technology
BLM	Bureau of Land Management
CCGT	Combined Cycle Gas Turbine
CCR	Coal Combustion Residual
CEA	Cumulative Environmental Assessment
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CPCN	Certificate of Public Convenience and Necessity
DIF	Design Intake Flow
FAA	Federal Aviation Administration
gpm	Gallons Per Minute
GHG	Green House Gas
HAP	Hazardous Air Pollutant
HCM	Highway Capacity Manual
KAR	Kentucky Administrative Regulations
KDAQ	Kentucky Division for Air Quality
KPDES	Kentucky Pollutant Discharge Elimination System
KOP	Key Observation Point
KRS	Kentucky Revised Statutes
MACT	Maximum Achievable Control Technology
MGD	Million Gallons Per Day
MMBTU/hr	Million British Thermal Units per Hour
mph	Miles Per Hour
MW	Megawatts
NESHAP	National Emission Standards for Hazardous Air Pollutants

TERM	DEFINITION
NO_x	Nitrogen oxides
NSPS	New Source Performance Standards
PHPD	Peak Hour Peak Direction
PPM	Parts Per Million
PPMV	Parts Per Million by Volume
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RCRA	Resource Conservation and Recovery Act
SAR	Site Assessment Report
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
USEPA	U.S. Environmental Protection Agency
VIA	Visual Impact Assessment
VRM	Visual Resources Management

1. INTRODUCTION

This Site Assessment Report (SAR) was prepared for American Electric Power (AEP) on behalf of Kentucky Power Company who is submitting the SAR and Cumulative Environmental Assessment (CEA) for the Big Sandy Electric Generating Plant Expansion Project in support of its application before the Kentucky Public Service Commission and in compliance with Kentucky Revised Statutes (KRS) 278.216, KRS 278.708, and KRS 224.10-280. The current project design includes a 2x1 combined-cycle gas turbine (CCGT) configuration, consisting of two combustion gas turbines, two heat recovery steam generators (HRSGs), and one steam turbine. The Big Sandy Power Plant is approximately 4 miles north of downtown Louisa along the Big Sandy River in Lawrence County.

The Plant is owned by Kentucky Power which is a subsidiary of AEP. The larger AEP owned land (the site) spans a 1,560-acre parcel, of which approximately 250 acres are occupied by existing power plant facilities.

For purposes of this report:

- The entire 1,560-acre parcel owned by AEP is referred to as "*the site*"
- The approximately 250 acre that is occupied by existing power plant facilities is referred to as "*the plant*"
- The location and installation of the two new natural gas fired combined cycle gas turbines, steam turbine and associated infrastructure is referred to as "*the project*".

These boundaries are shown in Figure 1-1.

1.1 Existing Plant

Big Sandy Power Plant is an existing natural gas-fired power generation facility with a steam generator. The steam generator has a rated design capacity of 2,653 MMBtu/hr with the capability to reach 2,700 MMBtu/hr during high demand. The plant also includes a natural gas line heater with a rated design capacity of 1.6 MMBtu/hr as well as various storage tanks used in support of plant operations.

From 1963 to 2015, the plant operated as a coal-fired steam electric generating facility, consisting of two units: Unit 1 (260 megawatts [MW]) and Unit 2 (800 MW). Unit 2 was operational on coal from 1969 to 2015. Unit 1 operated on coal from 1963 to 2015. In 2015, work began to convert Unit 1 to natural gas combustion. This transition was completed in May 2016, and the unit now operates as a 280 MW natural gas-fired steam generator. Cooling is provided by a closed-cycle system using a natural draft, hyperbolic cooling tower.

Decommissioning of Unit 2 and associated coal infrastructure began in 2015. The coal yard was fully decommissioned by 2016, including removal of residual coal and impacted soil, grading for drainage, and site revegetation. Decommissioning involved demolition of various structures and buildings on the east end of the plant.

1.2 Proposed Plant

AEP is planning to develop, construct, and operate two new natural gas-fired, combined cycle gas turbines (Unit 3A and Unit 3B), with associated Heat Recovery Steam Generators (HRSG) and a steam turbine (Unit 3S). The Project would be a new source of energy generation, to supplement existing gas fired generation onsite. The new plant will have a total net output of approximately 750 MW nominal. This project will be installed on the East side of the plant in the old coal yard.

The gas turbines are planned to be model GE7F.05. They are a flexible, efficient, and reliable solution for producing power on demand. The first 7F gas turbine started commercial operation in 1990 and is still operational and producing electricity today. With more than 950 installed units producing power in 11 countries, the 7F is the workhorse of the F-Class fleet. The 7F has been relevant for 30 years and continuous technological innovations and investments have ensured it is still an industry leading solution. When producing power, this project will be able to support approximately 800,000 households.

The power from the new Unit 3A/3B/3S plant will exit the plant collector switchyard at 345kV, and the 345kV transmission lines will travel across Highway 23 and connect into the existing AEP-owned Baker Substation at 345kV. The Point of Interconnection (POI) will be the first dead-end transmission structure outside of Baker Substation. The connection between the dead-end structure outside of Baker Substation to Baker Substation is to be coordinated and completed by Transmission Owner. While portions of the transmission line corridor are located on AEP-owned land zoned for industrial use, the transmission line will cross Highway 23. Part of the project includes installation of a railroad switch and rehabilitation of rail line from switch to plant as shown on site plan drawing.

The current gas pressure for Unit 1 is 99 psig at the metering station. This pressure is insufficient to support the new turbines. As such, it was determined that the existing gas pipeline is not sufficient for this project. AEP has obtained bids from gas providers for new service. The natural gas pipeline will be installed within third-party property and/or utility rights-of-way as required to connect to the gas supply system.

As shown below in Figure 1-2 and Figure 1-3 the proposed project will be located within the existing Big Sandy Power Plant boundaries for the power generating equipment and within AEP owned land for the additional interconnection and natural gas line. All permanent project components will be located on AEP owned land and no new land will need to be acquired as a part of this project.

1.3 Scope

AEP contracted Worley Consulting to develop this SAR and CEA pursuant to Kentucky Revised Statutes (KRS) 278 and 224 as detailed below.

Pursuant to KRS 278.216, a proposed generating facility over 10MW must complete a SAR as follows:

(1) Except for a utility as defined under KRS 278.010(9) that has been granted a certificate of public convenience and necessity prior to April 15, 2002, no utility shall begin the construction of a facility for the generation of electricity capable of generating in aggregate more than ten megawatts (10MW) without having first obtained a site compatibility certificate from the commission.

(2) An application for a site compatibility certificate shall include the submission of a site assessment report as prescribed in KRS 278.708(3) and (4), except that a utility which proposes to construct a facility on a site that already contains facilities capable of generating ten megawatts (10MW) or more of electricity shall not be required to comply with setback requirements established pursuant to KRS 278.704(3). A utility may submit and the commission may accept documentation of compliance with the National Environmental Policy Act (NEPA) rather than a site assessment report.

The required contents of the SAR are outlined in KRS 278.708(3)-(4) and detailed below:

(3) A completed site assessment report shall include:
(a) A description of the proposed facility that shall include a proposed site development plan that describes:
1. Surrounding land uses for residential, commercial, agricultural, and recreational purposes;
2. The legal boundaries of the proposed site;
3. Proposed access control to the site;
4. The location of facility buildings, transmission lines, and other structures;
5. Location and use of access ways, internal roads, and railways;
6. Existing or proposed utilities to service the facility;
7. Compliance with applicable setback requirements as provided under KRS 278.704(2), (3), (4), or (5); and 8. Evaluation of the noise levels expected to be produced by the facility;
(b) An evaluation of the compatibility of the facility with scenic surroundings;
(c) The potential changes in property values and land use resulting from the siting, construction, and operation of the proposed facility for property owners adjacent to the facility;
(d) Evaluation of anticipated peak and average noise levels associated with the facility's construction and operation at the property boundary; and
(e) The impact of the facility's operation on road and rail traffic to and within the facility, including anticipated levels of fugitive dust created by the traffic and any anticipated degradation of roads and lands in the vicinity of the facility.
(4) The site assessment report shall also suggest any mitigating measures to be implemented by the applicant to minimize or avoid adverse effects identified in the site assessment report.

Additionally, pursuant to KRS 224.10-280 prior to construction of a facility for generating electricity, a CEA must be completed. The requirements of the CEA as detailed in KRS 224.10-280 are as follows:

(3) The cumulative environmental assessment shall contain a description, with appropriate analytical support, of:
(a) For air pollutants:
1. Types and quantities of air pollutants that will be emitted from the facility; and
2. A description of the methods to be used to control those emissions;
(b) For water pollutants:
1. Types and quantities of water pollutants that will be discharged from the facility into the waters of the Commonwealth; and
2. A description of the methods to be used to control those discharges;
(c) For wastes:
1. Types and quantities of wastes that will be generated by the facility; and
2. A description of the methods to be used to manage and dispose of such wastes; and
(d) For water withdrawal:
1. Identification of the source and volume of anticipated water withdrawal needed to support facility construction and operations; and
2. A description of the methods to be used for managing water usage and withdrawal.



LEGEND

- New Project Location
- Parcel Boundary
- Big Sandy Power Plant Boundary
- AEP Owned Land
- 1 mile Buffer Boundary
- County Boundary

N

0 375 750 1,500 2,250 3,000 Feet

Scale: 1:30,000

Spatial Reference:
Name: NAD 1983 StatePlane Kentucky North FIPS 1601 Feet
PCS: NAD 1983 StatePlane Kentucky North FIPS 1601 Feet
GCS: GCS North American 1983
Datum: North American 1983

AEP BIG SANDY EXPANSION PROJECT

PROJECT BOUNDARIES MAP

Date:	Drawn by:	Edited by:	App'd by:
27-OCT-25	EB	EB	AN

Project No: 418160-62169

Figure No: 1-1 REV: A

KENTUCKY POWER An AEP Company

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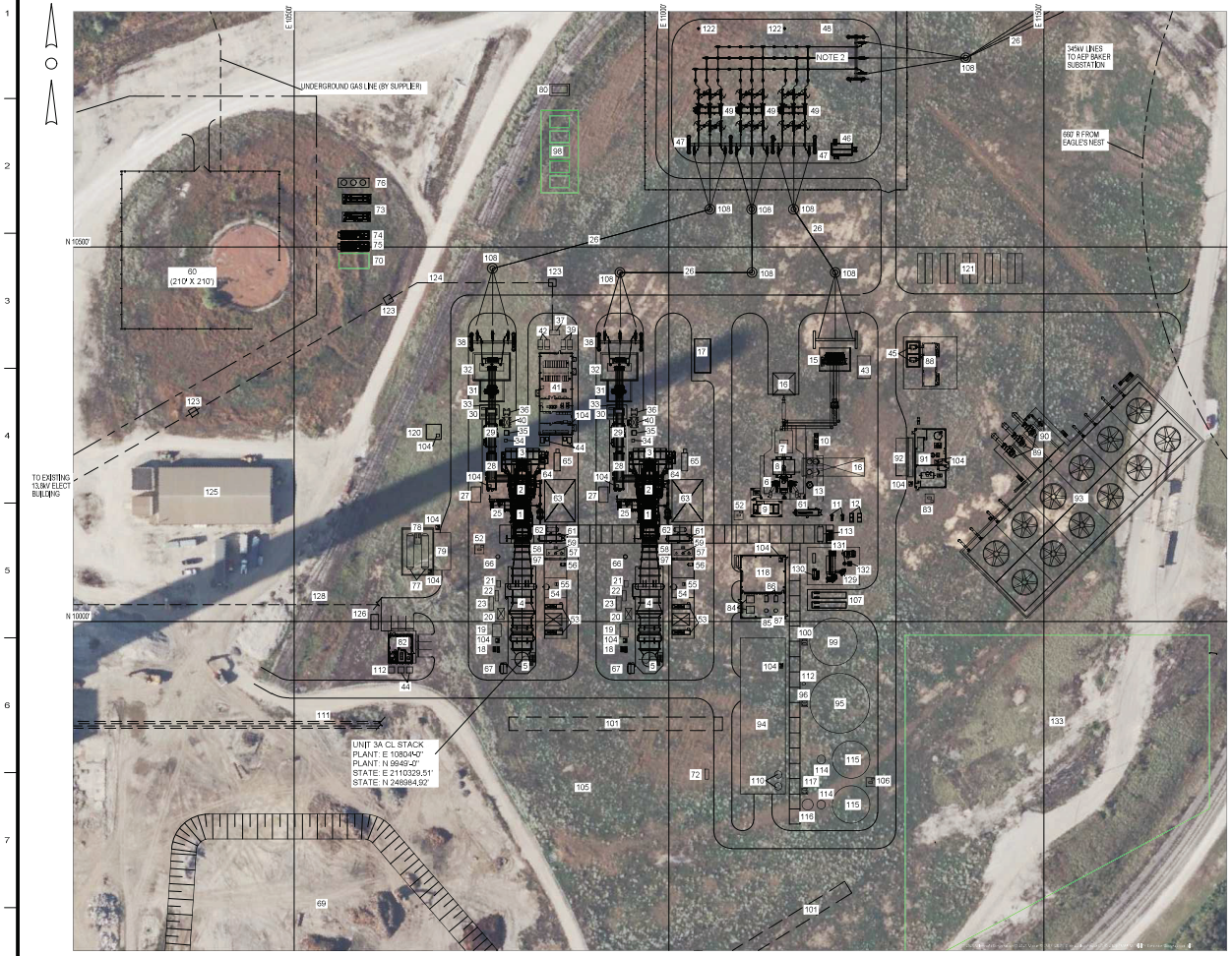
ISSUING OFFICE: VAONCUVER\GIS
PLOT DATE AND TIME:
SAVE DATE & TIME: 10/27/2025 3:38 PM

FILE LOCATION: E:\AEP_Big_Sandy_Power_Plant\


FIGURE 1-2: PROPOSED PROJECT LAYOUT - PLOT PLAN
GENERAL NOTES
1. POTENTIAL FUTURE EQUIPMENT SHOWN IN GREEN.
2. TOP OF MAJOR EQUIPMENT FOUNDATIONS SHALL BE A MINIMUM OF 1 FOOT ABOVE THE PLANT FINISH GRADE ELEVATION IS 590'.
REFERENCE DRAWINGS
BSP-CO-DAME-OPP-00002 - BALANCED PLAN
PRELIMINARY - NOT FOR CONSTRUCTION
SCALE: 1"=200'
EXISTING BAKER SUBSTATION
POINT OF INTERCONNECTION (POI)
138kV LINES TO LOOKER SUBSTATION
EAGLE NEST
RAIL ROAD SAFETY SHALL BE REESTABLISHED AS NEEDED AS THE PLANT SHALL BE REINSULATED AS SHOWN
BSP-CO-DAME-OPP-00002 FOR ADDITIONAL DETAILS
GATE 3, ONLY AVAILABLE ENTRANCE FOR HEAVY EQUIPMENT
CONSTRUCTION TRAILERS
GANTRY CRANE
COOLING TOWER
FUTURE CARBON CAPTURE AND LAY DOWN AREA
COLLECTOR BUS PORTABLE
345kV BUS
STEAM TURBINE GENERATOR UNIT 3
UNIT 3
SAT 345
HRSG
HRSG
EXISTING COAL TUNNEL
345kV TUNNEL
DIESEL GENERATORS
US ROUTE 23
ACTIVE RAILROAD
COAL WATER PARK WATER PUMP HOUSE BUILDING
SERVICE WATER TANK
EXISTING COAL TUNNEL
ELECTRICAL BUILDING
WASTE OIL STORAGE
GAS YARD (BY GAS SUPPLIER)
GAS YARD CONSTRUCTION AREA
EXISTING WAREHOUSE UNDERGROUND 1
CONTROL BUILDING
WASTEWATER/ STORMWATER POND
EXISTING OUTFALL 001
UNDERGROUND GAS LINE (BY SUPPLIER)
CONSTRUCTION PARKING AREA
GATE 2, LIGHT VEHICLE ENTRANCE
EXIST. GATEHOUSE & TURNSTILES
EXISTING 138kV SWITCHYARD
138kV UNDERGROUND ELECTRIC LINES
UNIT #2 DEMOLISHED
UNIT #1
SECURITY GATE #1
FIRE WATER PIPE
SAFETY, FIRE WATER, PRE WATER AND RAW WATER PIPES
EXISTING WATER INTAKE
EXISTING SEWER SYSTEM
GATE 1, MAIN ENTRANCE, LIGHT VEHICLE ENTRANCE ONLY, ALL HEAVY EQUIPMENT MUST PASS GATE 3
EXISTING WASTE PONDS
EXISTING GAS MAIN UNIT #1
PLANT NORTH
MODIS KY NORTH
17°30'17"
AEP CONFIDENTIAL
KENTUCKY POWER COMPANY
BIG SANDY PLANT
MF: SANDY
KENTUCKY
BSU1 BIG SANDY U3A/U3B CCGT
USS STG 2 X1 (GE 7FA.05)
PLOT PLAN
BSP-CC-03-ME-DPP-00001
C
MECHANICAL ENGINEERING
DOCUMENT PREPARED BY WORLEY
AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OHIO 43215
worley
ISSUED FOR CPCN FILING
ISSUED FOR REVIEW
ISSUED FOR REVIEW
PRELIMINARY
CROSS REFS:

FIGURE 1-3: PROPOSED PROJECT LAYOUT - ENLARGED PLAN



GENERAL NOTES

1. POTENTIAL FUTURE EQUIPMENT SHOWN IN GREEN.
2. COLLECTOR SWITCHYARD DETAILS:
   - 2.a. BUS BAR TUBE DIAMETER IS 6";
   - 2.b. NORTH/SOUTH BUS BARS SHALL RUN ABOVE EAST/WEST BUS BARS;
   - 2.c. MINIMUM SEPARATION BETWEEN BUS BAR IS 15';
   - 2.d. MINIMUM SPACING BETWEEN ANY STEEL STRUCTURE AND ANY BUS IS 10';
   - 2.e. MINIMUM HEIGHT BETWEEN ANY FINISHED GRADE SURFACE AND BUS BARS IS 25'.

EQUIPMENT IDENTIFICATION

No.	DESCRIPTION
1	COMBUSTION TURBINE (CT)
2	COMBUSTION TURBINE GENERATOR (CTG)
3	COMBUSTION TURBINE AIR INLET
4	HEAT RECOVERY SYSTEM GENERATOR (HRSG)
5	HRSG EXHAUST STACK
6	STEAM TURBINE (ST)
7	STEAM TURBINE GENERATOR (STG)
8	STEAM TURBINE CONDENSER
9	STEAM TURBINE LUBE OIL SKID
10	STEAM TURBINE CONDENSATE PUMPS
11	COOLING WATER PUMPS
12	COOLING WATER HEAT EXCHANGER
13	STEAM TURBINE DRAIN TANK
14	NOT USED
15	ST GENERATOR STEP-UP TRANSFORMER
16	MAINTENANCE SPACE
17	BULK HYDROGEN STORAGE
18	HRSG RECIRCULATION PUMPS
19	HRSG AMMONIA INJECTION SKID
20	HRSG SCR DROP ZONE
21	HRSG AIR FAN SKID
22	HRSG DUCT BURNER SKID
23	DUCT BURNER FUEL GAS PRESSURE REDUCING
24	NOT USED
25	COMBUSTION TURBINE ACCESSORY MODULE
26	345KV TLINE
27	CT FIRE PROTECTION SKID
28	PEEC UNIT
29	LCI / EXCITER COMPARTMENT
30	GENERATOR CIRCUIT BREAKER
31	AUXILIARY TRANSFORMER
32	GENERATOR STEP-UP TRANSFORMER (GSU)
33	ISOPHASE BUS
34	DC LINK REACTOR
35	AC REACTOR
36	CTG EXCITER TRANSFORMER
37	RESERVED ESSENTIAL TRANSFORMER
38	345KV DEAD END
39	ESSENTIAL SERVICES TRANSFORMERS
40	CTG LCI TRANSFORMER
41	ELECTRICAL PDC BUILDING
42	STATION SERVICE TRANSFORMERS
43	STEAM TURBINE ELECTRICAL BUILDING
44	AIR HANDLING UNITS (AHU)
45	COOLING TOWER TRANSFORMERS
46	SWITCHYARD CONTROL HOUSE
47	345KV SUB DEADEND STRUCTURE
48	345KV SWITCHYARD
49	HIGH VOLTAGE BREAKER
50	NOT USED
51	NOT USED
52	OIL/WATER WASTE SUMP
53	BOILER FEEDWATER PUMPS
54	HRSG BLOWDOWN TANK
55	HRSG BLOWDOWN SUMP W/ PUMPS
56	FUEL GAS DRAIN TANK
57	FUEL GAS MAIN FILTER/ SEPARATOR
58	FUEL GAS PILOT FILTER/ SEPARATOR
59	FUEL GAS MAIN KNOCKOUT DRUM
60	FUEL GAS YARD (BY GAS SUPPLIER)
61	SAMPLE PANEL ENCLOSURE
62	CT WASH WATER DRAINS TANK
63	MOBILE EQUIPMENT CONCRETE PAD
64	H2 AND CO2 MANIFOLDS (BELOW INLET FILTER)
65	WATER WASH SKID
66	FINAL FILTER SEPARATOR
67	CEMS
68	NOT USED
69	STORMWATER/ WASTEWATER POND
70	HYDROGEN BLENDING SKID (FUTURE)
71	NOT USED
72	OIL / WATER SEPARATOR
73	INDIRECT WATER BATH HEATERS
74	FUEL GAS REGULATING SKID
75	FUEL GAS SEPARATOR SKID
76	FUEL GAS AFTERCOOLR CONDITIONING SKID
77	AMMONIA STORAGE TANK
78	AMMONIA FORWARDING PUMPS
79	AMMONIA UNLOADING AREA
80	1500kW EMERGENCY DIESEL GENERATOR
81	NOT USED
82	CONTROL BUILDING
83	WASTE WATER SUMP (CHEMICAL WASTE)
84	AIR COMPRESSORS
85	WET AIR RECEIVER
86	AIR DRYERS
87	DRY AIR RECEIVER
88	COOLING TOWER PDC
89	CIRCULATING WATER PUMPS
90	COOLING WATER AUXILIARY PUMP
91	COOLING TOWER CHEMICAL BUILDING
92	TRUCK SPILL CONTAINMENT PAD
93	COOLING TOWER
94	WATER TREATMENT BUILDING
95	SERVICE WATER STORAGE TANK
96	SERVICE WATER PUMPS
97	FUEL GAS HEATER
98	BLACK START DIESEL GENERATORS (FUTURE)
99	DEMIN WATER STORAGE TANK
100	DEMIN WATER FORWARDING PUMPS
101	EXISTING COAL TUNNELS (UNDERGROUND)
102	NOT USED
103	NOT USED
104	EMERGENCY EYEWASH AND SHOWER
105	PLANT LAYDOWN AREA
106	CLARIFIER BLOWDOWN SUMP
107	DEMIN TRAILER PARKING
108	345KV MONOPOLE STRUCTURE
109	NOT USED
110	POTABLE WATER PRESSURE TANKS
111	SANITARY, SERVICE WATER , FIRE WATER AND RAW WATER PIPES
112	SANITARY LIFT STATION
113	COOLING WATER HEAD TANK (ON THE PIPERACK)
114	RAW WATER MIX TANK
115	RAW WATER CLARIFIERS
116	CLARIFIED WATER TANK
117	CLARIFIED WATER PUMPS
118	CYCLE CHEMICAL FEED BUILDING
119	NOT USED
120	LUBE OIL AND WASTE OIL STORAGE BUILDING
121	CONSTRUCTION TRAILERS
122	LIGHTNING MAST
123	13.8KV MANHOLE
124	13.8KV UNDERGROUND
125	EXISTING WAREHOUSE TO BE USED FOR UNIT 3
126	DUMPSTER STORAGE AREA
127	NOT USED
128	FIRE WATER PIPE
129	AUXILIARY BOILER AND STACK
130	AUXILIARY BOILER DEAERATOR AND FEED PUMP
131	AUXILIARY BOILER BLOWDOWN TANK
132	AUXILIARY BOILER BLOWDOWN SUMP
133	CARBON CAPTURE (FUTURE)

REFERENCE DRAWINGS

BSP-CC-03-ME-DPP-00001 - PLOT PLAN

PRELIMINARY - NOT FOR CONSTRUCTION

60 0 60 120 180

SCALE: 1"=60'

PROFESSIONAL ENGINEER'S SEAL

REV	DATE	REVISION DESCRIPTION	DRAWN	DRFT CHK	DESIGNED	DSG CHK	APPROVED	PRJ MGR
C	08-06-26	ISSUED FOR CPCN FILING	MP	MSC	MP	AH	AH	JL
B	07-30-26	ISSUED FOR REVIEW	MP	MSC	MP	SD	SD	JL
A	07-17-26	ISSUED FOR REVIEW	MP	MP	MP	AH	AH	JL

WORLEY PROJECT# 418008-00703

SEE WORLEY REVISION BLOCK

DATE	NO.	DESCRIPTION	APPD
		REVISIONS	

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KENTUCKY POWER COMPANY

BIG SANDY PLANT

BIG SANDY KENTUCKY

GENERAL ARRANGEMENT

BS34 BIG SANDY U3A/U3B CCGT U3S STG 2 X1 (GE 7FA.05) ENLARGED PLAN

UNIT	DRAWING NUMBER	REV
3	BSP-CC-03-ME-DPP-00002	C

ISSUE 4"=60' MECHANICAL ENGINEERING

DES.	
DR.	
CH.	
E.P.	
PM	
APPROVED BY	
DATE	

DOCUMENT PREPARED BY WORLEY

AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215

CROSS REFS:

2. PROJECT DESCRIPTION

2.1 Project Components

AEP is planning to develop, construct, and operate two new natural gas-fired, combined cycle gas turbines (Unit 3A and Unit 3B), with associated Heat Recovery Steam Generators (HRSG), and a steam turbine (Unit 3S) at the old coal yard location. The project will serve as a new source of energy generation, supplementing the existing gas-fired capacity at the plant. The two new GE F class gas turbines will have a net output of approximately 750 MW nominal. The plant will interconnect to the regional transmission system via a 345kV line at the existing Baker Substation, located approximately one mile northeast along Highway 23. This project will also include an additional natural gas pipeline as the current pipeline is not sufficient.

This project is expected to power approximately 800,000 homes and will provide flexibility to the Big Sandy Power Plant to help meet the growing energy demand. By locating the new units on the existing plant, AEP will be able to leverage substantial existing infrastructure which will help to minimize any potential impacts that this project may have.

Figure 1-2 provides a layout of the proposed equipment and includes the major project components. The following project components and supporting infrastructure will be utilized or developed:

Major Plant Components

- Combustion Gas Turbines and associated generators
- Heat Recovery Steam Generators (HRSG) and associated HRSG Exhaust Stacks
- Steam turbine and associated generator
- Steam turbine condenser
- Condenser and cooling water system
- Cooling tower

Supporting Infrastructure Includes:

- Access roads (the existing access road network will be utilized to access the proposed site)
- Existing plant employee parking
- New electric power transmission lines
- Electric interconnection facilities, including transformers and switchyard equipment
- Potable water supply lines (potable water will be provided from the existing plant system)
- New stormwater collection / retention system
- Ammonia storage and delivery infrastructure
- New natural gas supply line

2.2 Surrounding Land Uses

The Big Sandy Power Plant is located in a rural area near the Kentucky-West Virginia border. Much of the land within one mile of the plant is owned by AEP (Figure 1-1) and consists of undeveloped forested areas with no residential or commercial development (Figure 2-1). Within Lawrence County, Kentucky, the plant is situated in an Industrial Zone that extends more than two miles from the plant (Figure 2-2).

The nearest town zoned as Residential within Lawrence County is Fallsburg, an unincorporated community three miles east of plant. The city of Louisa, which serves as the county seat, lies four miles south, along US-23.

On the opposite side of the river lies Wayne County, West Virginia. The land within one mile of the plant is rural, with zoning including Residential (72%), Farming (17%), Vacant/Utility (6%), and Cemetery (5%) (Appendix B). West Virgina did not have a zoning map that was available for use like Kentucky did, as such there is no zoning map present for the West Virginia area of analysis and instead the analytical approach with the data from Appendix B is used. Most of the parcels zoned as Residential have no homes present, and 66% of all land within the analysis area is vacant.

2.3 Legal Boundaries

As shown in Figure 1-1, the site is approximately 1,560-acres of land that is owned by AEP. The proposed project will be constructed on a single parcel within the larger site. The legal description of the parcel designated for development is provided in Appendix A. Additional parcels owned by AEP may be used temporarily during the construction phase for staging, equipment storage, or access, however, no permanent project components are anticipated to be located outside the primary development parcel.

2.4 Access and Transportation

The plant sits immediately adjacent to U.S. Route 23 (US-23), which is the direct access route for personnel and equipment. US-23 is a 4-lane highway that serves the northeastern border of Kentucky, on the east side of the Big Sandy River. Traffic is fed to US-23 in part by Interstate 64 to the north, and Kentucky Route 3 to the south. Personal vehicles are expected to be used, as no local transit services the plant.

A railroad borders the site opposite US-23 and may be used where appropriate for large shipments during construction. As there are no passenger trains on this line, no personnel access is possible via railway.

2.5 Proposed Access to Site

Access to the Big Sandy Power Plant is currently managed through a combination of physical and electronic security measures. The plant is enclosed by perimeter security fencing, and site access

is controlled via a staffed guard shack, electronic key card systems, video surveillance, and routine security patrols.

These existing access control systems will be modified and enhanced as necessary to ensure that the entire plant remains secure throughout the construction and operational phases of the proposed project.

2.6 Location of Associated Infrastructure

Figure 1-2 and Figure 1-3 show the proposed project components and their associated locations within the plant boundaries.

2.7 Utilities

As discussed above there will be two new utilities that will be installed as a part of this project: a 345 kV interconnection transmission line and a new natural gas pipeline. The 345kV line will travel across Highway 23 and connect into the existing AEP-owned Baker Substation. The Point of Interconnection (POI) will be the first dead-end transmission structure outside of Baker Substation. This route to Baker Substation is the same as was used for Unit 2. The lines were removed when the plant was decommissioned and demolished. AEP has obtained bids from gas companies for project new service.

Both the transmission line and the pipeline will be located primarily offsite. While portions of the transmission line corridor are located on AEP-owned land zoned for industrial use, the transmission line will cross Highway 23 and the natural gas pipeline will be installed within third-party property and/or utility rights-of-way as required to connect to the gas supply system. Any impacts from the installation of these utilities are expected to be minimal and temporary.

2.8 Setback Requirements

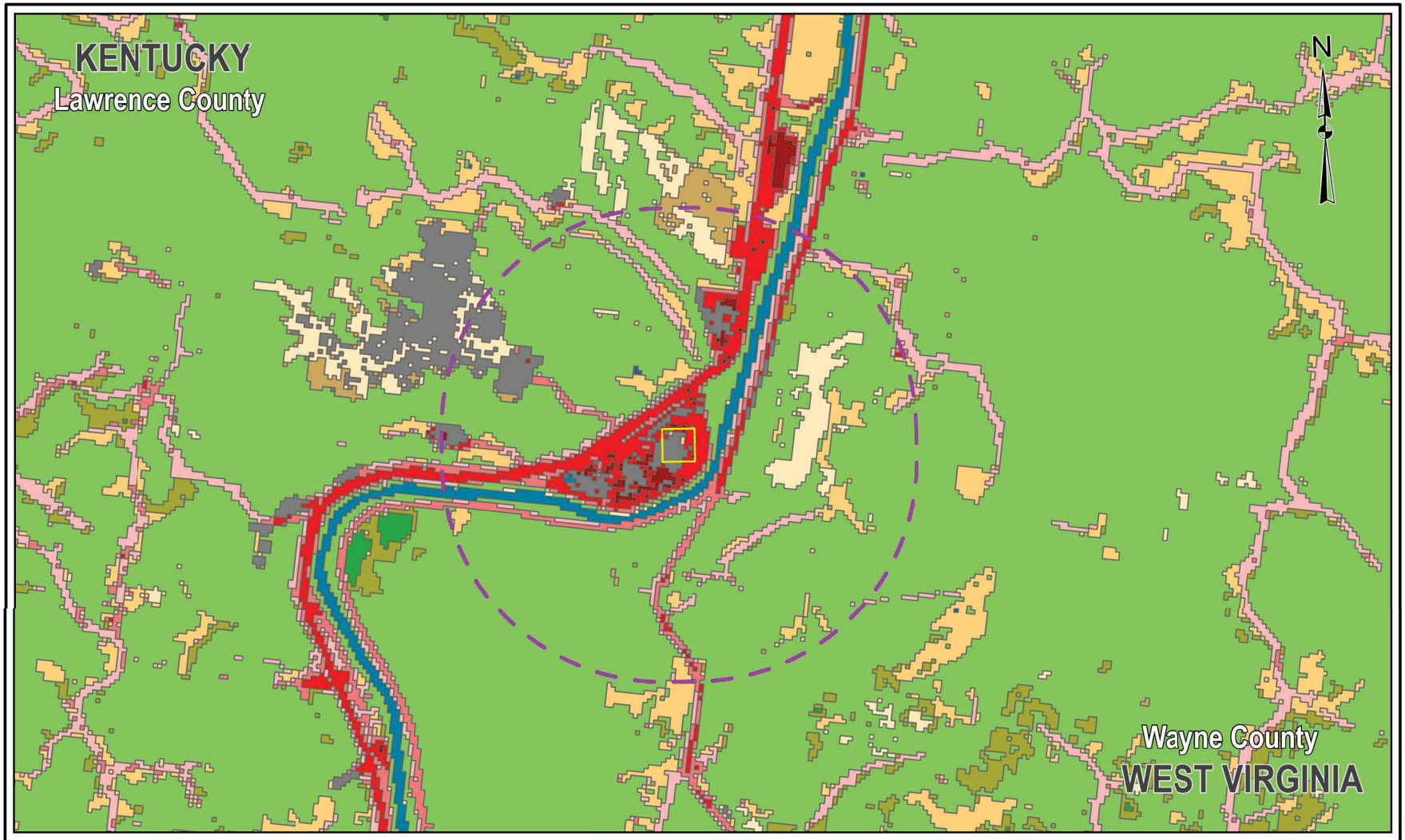
KRS 278.704(2)-(5) establishes setback requirements applicable to electric generating facilities as follows:

Except as provided in subsections (3), (4), and (5) of this section, no construction certificate shall be issued to construct a merchant electric generating facility unless the exhaust stack of the proposed facility and any wind turbine is at least one thousand (1,000) feet from the property boundary of any adjoining property owner and all proposed structures or facilities used for generation of electricity are two thousand (2,000) feet from any residential neighborhood, school, hospital, or nursing home facility. For purposes of applications for site compatibility certificates pursuant to KRS 278.216, only the exhaust stack of the proposed facility to be actually used for coal or gas-fired generation or, beginning with applications for site compatibility certificates filed on or after January 1, 2015, the proposed structure or facility to be actually used for solar or wind generation shall be required to be at least one thousand (1,000) feet from the property boundary of any adjoining property owner and two thousand (2,000) feet from any residential neighborhood, school, hospital, or nursing home facility.

However, pursuant to KRS 278.216(2), a utility proposing to construct a generating facility on a site that already contains facilities capable of generating 10 MW or more is not required to comply with the setback requirements established pursuant to KRS 278.704(3). The proposed Project will be constructed at the existing Big Sandy Power Plant, which contains existing electric generating facilities exceeding 10 MW. Accordingly, the exception provided under KRS 278.216(2) applies to the Project.

A review of nearby schools, hospitals, and nursing homes was also completed. All identified facilities are located more than 2,000 feet from the site, with the closest being an elementary school approximately 4.7 miles away.

Lawrence County does not have specific setback requirements but instead incorporates the requirements of the Commonwealth of Kentucky. The Project's applicable setback provisions and exception are addressed above.



LEGEND

- Simple Cycle Gas Turbines Site
- Boundary 1 Mile

Land Use Classes

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Emergen: Herbaceous Wetlands

Land Use Data Source: Multi-Resolution Land Characteristics (MRLC) Consortium

FILE LOCATION: E:\AEP_Big_Sandy_Power_Plant\

N

0 500 1,000 2,000 3,000 4,000 Feet

Scale: 1:40,000

Spatial Reference:
Name: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
PCS: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
GCS: GCS North American 1983
Datum: North American 1983

AEP BIG SANDY EXPANSION PROJECT

LAND USE AND ZONING MAP

KENTUCKY POWER
An AEP Company

worley consulting

Date:	Drawn by:	Edited by:	App'd by:
15-OCT-25	EB	EB	AN

Project No: 418160-62169

Figure No: 2-1 REV: A

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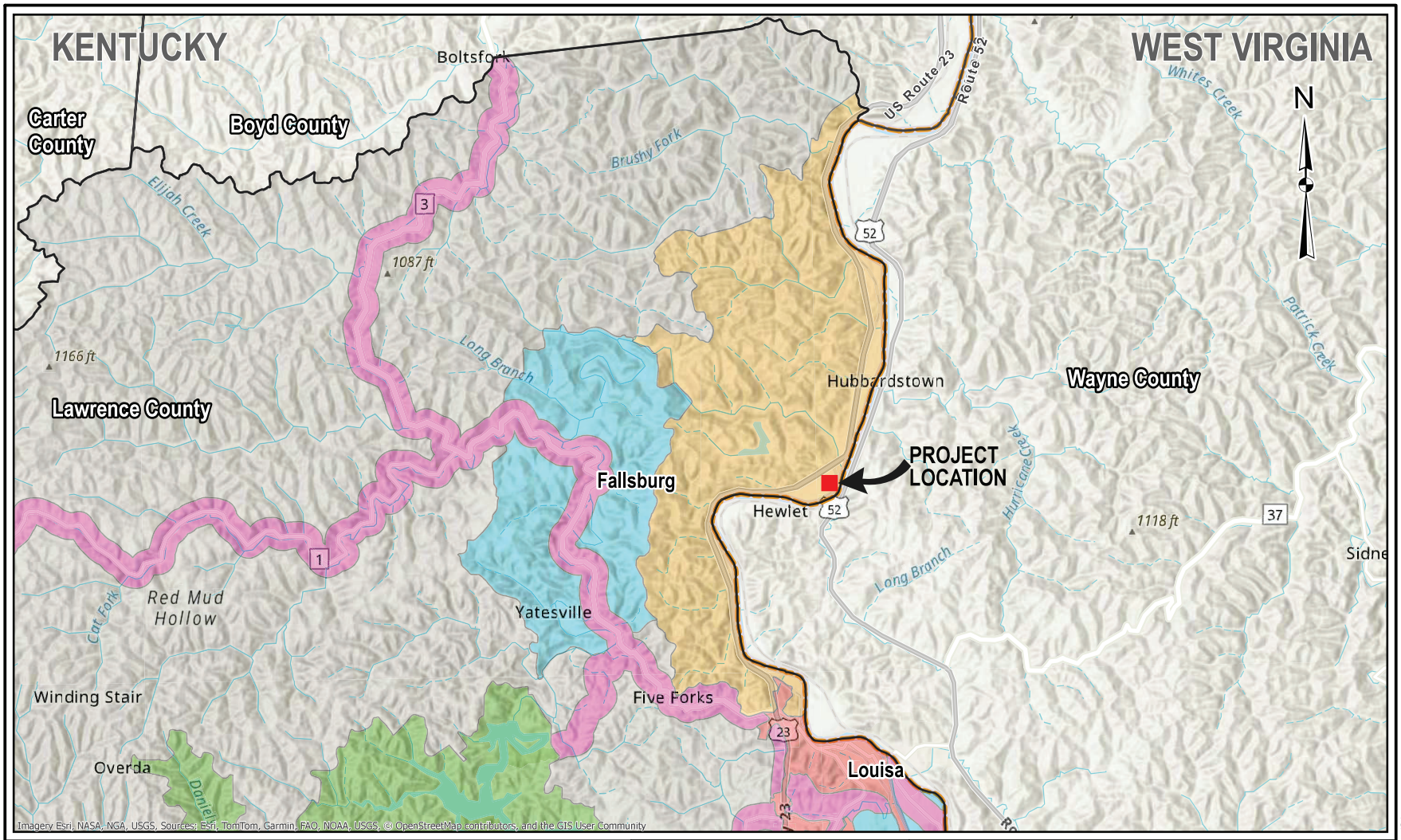
SAVE DATE & TIME: 10/16/2025 2:30 PM



LEGEND

- Waterline
- Highway
- Big Sandy Power Plant
- County Boundary
- State Boundary

ZONE LEGEND

- Commercial Zone
- Corporate Zone
- Industrial Zone
- Residential Zone
- Yatesville Zone
- Agriculture / Residential Zone

N

0 1,500 3,000 6,000 9,000 12,000 Feet

Scale: 1:125,000

Spatial Reference:
Name: NAD 1983 StatePlane Kentucky North FIPS 1601 Feet
PCS: NAD 1983 StatePlane Kentucky North FIPS 1601 Feet
GCS: GCS North American 1983
Datum: North American 1983

AEP BIG SANDY EXPANSION PROJECT

LAWRENCE COUNTY ZONING MAP

Date:	Drawn by:	Edited by:	App'd by:
21-OCT-25	EB	EB	AS

Project No: 418160-62169

Figure No: 2-2 REV: A

KENTUCKY POWER
An AEP Company

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FILE LOCATION: E:\AEP_Big_Sandy_Power_Plant\

3. ENVIRONMENTAL IMPACT ASSESSMENT

The following subsections present the technical components required within the Site Assessment Report (SAR), as specified under KRS 278.708(3)-(4). Each section outlines the methodologies used to evaluate potential environmental impacts associated with the Project, including the sources of data, analytical approaches, and findings. Where applicable, proposed mitigation strategies are also detailed to address identified risks or concerns. This assessment allows relevant environmental factors to be systematically considered in accordance with regulatory requirements and best practices.

For the purposes of this SAR, the area of interest encompasses geographic zones that may be directly or indirectly affected by the construction, operation, and maintenance of the proposed project. This includes the proposed plant (Units 3A, 3B and 3S and associated facilities), the existing Big Sandy Power Plant (Unit 1 and supporting infrastructure), all AEP-owned land associated with the project including the electrical interconnection and natural gas pipeline, and surrounding areas within a reasonable radius where environmental receptors—such as air quality, water resources, soil conditions, wildlife habitats, and human populations may be affected. Specific study areas are detailed in each section as appropriate. Since the proposed plant and the existing Big Sandy Power Plant are entirely within the Commonwealth of Kentucky for any regulatory requirements, Kentucky regulations have been followed. When potential issues extend into West Virginia that area is included in the study, but West Virginia regulations are not explored in this document since they will not be applicable to the project.

The area of interest includes the Big Sandy Power Plant, as well as the transmission line and natural gas pipeline that will be installed as discussed above. Both short-term construction impacts and long-term operational effects are considered. The boundaries of this area are guided by NEPA, KRS, and Kentucky Energy and Environment Cabinet standards, ensuring environmental factors are assessed in relation to local land use, zoning, and ecological sensitivity. As the extent of potential impact varies by environmental parameter, the assessment area is defined within each relevant subsection.

3.1 Ambient Noise Impact Assessment

This section assesses the potential noise impacts from the construction and operation of the proposed project. Specifically, this section will assess the following:

- Evaluation of the noise levels expected to be produced by the Big Sandy Power Plant operations;
- Evaluation of anticipated peak and average noise levels associated with the proposed Project construction at the property boundary; and

- Evaluation of anticipated peak and average noise levels associated with the Project operation at the property boundary.

The proposed Project will contribute sounds to the existing environment through equipment operations during the construction phase, and subsequently during operations of the project. Worley contracted Terracon to perform the assessment of the potential impacts from both the construction phase and operational phase of the proposed Project at nearby sensitive points of receptions (i.e., residential homes, community gathering places, schools, etc.).

The following sections cover the major findings of the report, and the mitigations associated with those findings. The full report prepared in compliance with KRS Chapter 278.706(2)(1) is provided in Appendix C.

3.1.1 Current Facility Conditions

Based on the dominance of transportation noise noted in the ambient measurement data associated with US-23 and the rail activity on either side of the Big Sandy River, an existing conditions sound model was developed using current US-23 traffic data and estimated existing rail activity (Figure 3-1).

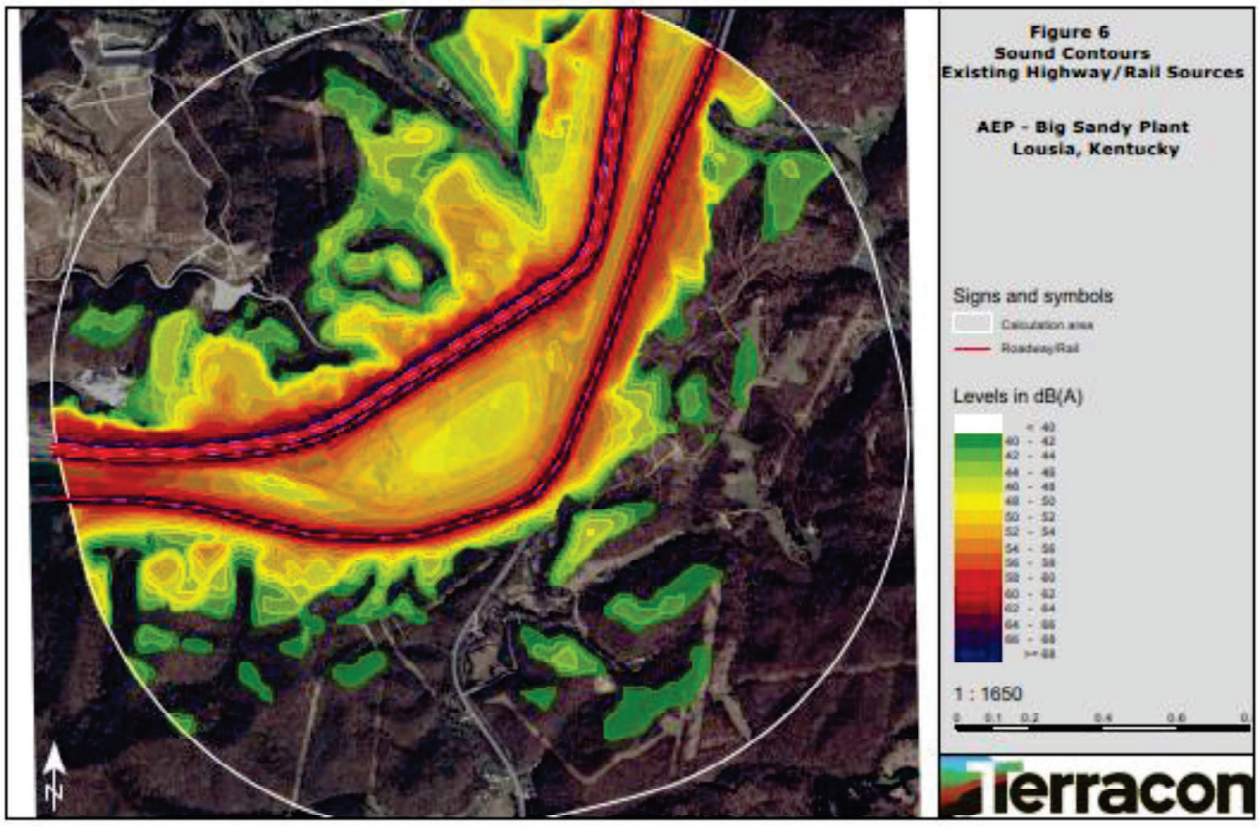


Figure 3-1 Sounds Contours Existing Highway/Rail Sources

The sound dispersion outlined on this figure represents existing conditions based only on the transportation sources in the study area and illustrates the dominance of rail and highway traffic in the study area.

The closest sensitive receptor modeling locations are outlined on Figure 3-2. The operational sound level projections for each of the sensitive receptors outlined on Figure 3-2 are found in Table 3-1. The worst-case 55 dB(A) and 45 dB(A) contour is included on this figure to illustrate where the USEPA recommended sound levels would be exceeded.

Sound level contributions associated with the operation components of the facility ranged from 27-42 dB(A) at the closest residential receptor locations. All the receptors analyzed are 42 dB(A) or below and the facility will not be audible at these discrete locations based on reductions associated with sound propagation and ambient background conditions.

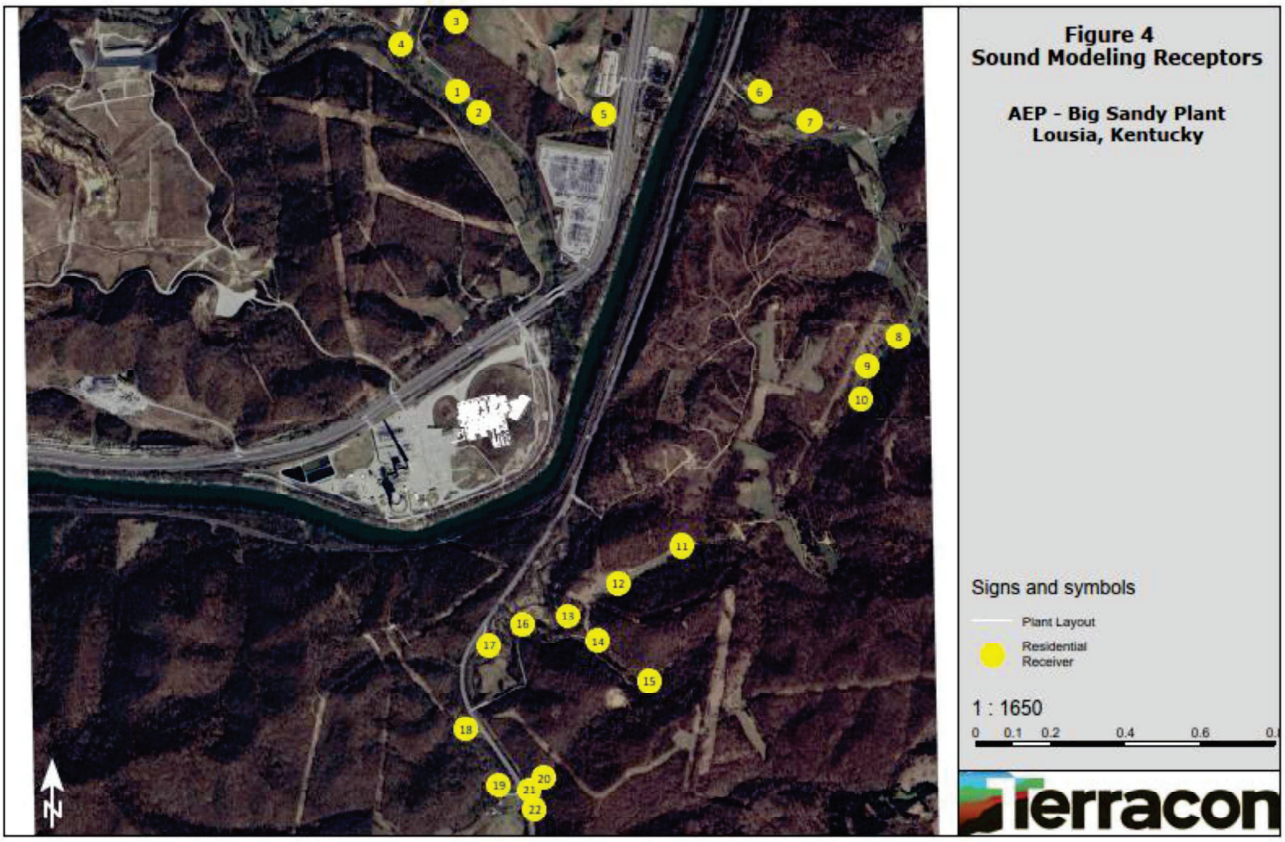


Figure 3-2 Sound Modeling Receptors

Table 3-1 Operational Sound Level Projections at Closest Residences

Receiver Number	Ambient Background	Limit Day dB(A)	Limit Night dB(A)	Sound Level dB(A)
1	45-55	55	45	40
2	45-55	55	45	42
3	45-55	55	45	40
4	45-55	55	45	35
5	45-55	55	45	36
6	45-55	55	45	40
7	45-55	55	45	35
8	45-55	55	45	29
9	45-55	55	45	27
10	45-55	55	45	27
11	45-55	55	45	28
12	45-55	55	45	32
13	45-55	55	45	37
14	45-55	55	45	41
15	45-55	55	45	42
16	45-55	55	45	40
17	45-55	55	45	33
18	45-55	55	45	41
19	45-55	55	45	37
20	45-55	55	45	28
21	45-55	55	45	35
22	45-55	55	45	35

3.1.2 Noise Summary and Mitigation

Sound contours have been included to illustrate the sound dispersion for the facilities maximum worst-case operating condition (Figure 3-3). This figure only represents "Facility Only" conditions and only includes the noise sources for each combustion unit as outlined in *Table 3-2*.

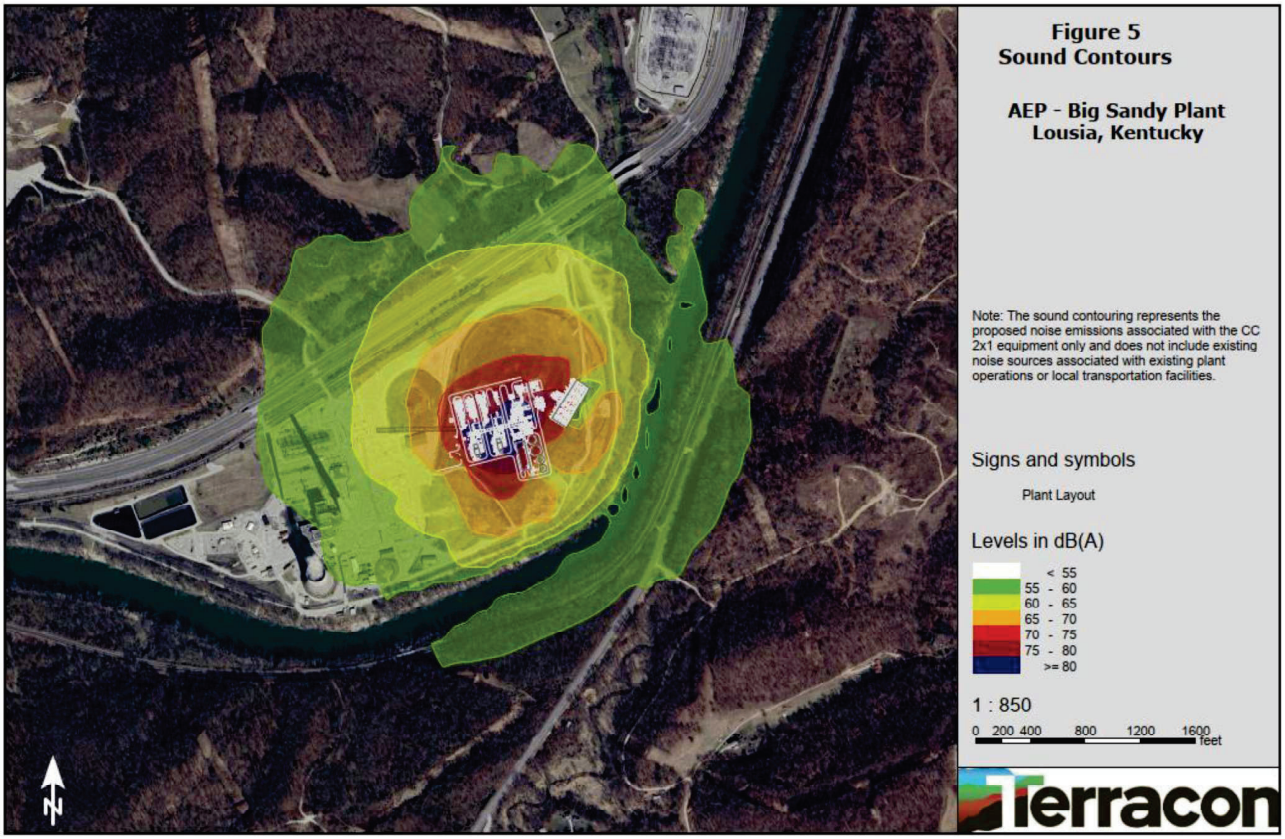


Figure 3-3 Worst Case Operating Condition Sound Contours

Table 3-2 Equipment Sound Emissions

Equipment Description	Sound Power Level (A-weighted)
INLET SYSTEM WITH 8 ft SILENCER	
Inlet Ducting (including Filter House)	99
Inlet Filter Face (no acoustic hood)	102
GAS TURBINE PACKAGE	
Accessory Module	103
Inlet Plenum	104
Turbine Compartment	107
Exhaust Diffuser	94
Load Compartment	103
Generator (H35)	105
Turbine Compartment Vent Fans 1	104
Exhaust Stack Top	122
Cooling Water Module	107
Wet Compression Skid	93
HRSG/ MISC EQUIPMENT	
HRSG Inlet Transition Duct Radiated	106
HRSG Wall Radiated	98
HRSG Exhaust Stack Wall Radiated	84
HRSG Exhaust Stack Exit – w/o Directivity	114
HRSG Duct Burner Gas Piping	105
SCR Ammonia Skid	101
GT Fuel Gas Systems	96
Unenclosed Lube Oil Package	104
Steam Turbine – Total – partly weather enclosed / insulated	111
Condenser during Base Load	113
Generator for Steam Turbine	118
Enclosed Lube Oil Package – Steam Turbine	98
Steam Turbine Control Oil Supply Skid	109
Boiler Feed Water Pumps	116
Main GSU Transformer	108
Auxiliary Transformer	93
Circulating Water Pump	104
Service Water Pump Skid	98
Cooling Tower Fans	110
Demin Water Forwarding Pump	101
Raw Water Forwarding Pump	95
Cooling Water Heat Exchangers and Pump Skid	109

Based on the rural nature of the study area, dominance of transportation noise and sound attenuation due to distance to nearest noise sensitive receptors, the Big Sandy project is not anticipated to have an impact on surrounding ambient sound levels or sensitive receptors and will be within recommended USEPA guidelines. Therefore, no additional mitigation measures are anticipated for this project. The full noise report is provided in Appendix C.

3.2 Visual Impact Assessment

3.2.1 Purpose and Methodology

This Visual Impact Assessment (VIA) has been prepared in accordance with KRS 278.708(3)(b), which requires an evaluation of the compatibility of the proposed facility with scenic surroundings.

To evaluate the potential scenic impacts of the proposed combined cycle gas turbine (CCGT) expansion at the Big Sandy Power Plant, the Bureau of Land Management's (BLM) Visual Resources Management (VRM) System was used. This system provides a structured framework for assessing changes in scenic quality resulting from modifications to land use. The methodology is based on procedures outlined in BLM Manual Section 8400 (BLM, 1984) and is widely recognized for its ability to quantify visual impacts in both objective and comparative terms.

The VRM process includes the following steps:

1. Defining the project setting and viewshed
2. Identifying sensitive view receptors (Key Observation Points, or KOPs)
3. Analyzing the baseline scenic quality and character of each view
4. Depicting the visual appearance of the proposed project from each KOP
5. Assessing the degree of contrast introduced by the project relative to existing conditions
6. Recommending mitigation measures, if necessary

Although Kentucky Revised Statutes (KRS 278.708(3)(b)) does not prescribe a specific methodology for evaluating scenic resources, the BLM VRM system is considered appropriate for this assessment. It allows visual impacts to be systematically evaluated and ranked, even in the absence of state-adopted thresholds.

Visual quality is assessed using the BLM's "Scenic Quality Rating Criteria," which evaluates seven key components of the landscape:

- Landform

- Vegetation
- Water
- Color
- Adjacent Scenery
- Scarcity
- Cultural Modifications

Each component is scored on a scale of 1, 3, or 5, based on its contribution to the overall scenic quality. These scores are then totaled to assign a scenic quality rating of A (high), B (moderate), or C (low). This rating provides a baseline against which the visual effects of the proposed project can be compared.

In the case of the Big Sandy Power Plant, the VRM methodology was used to assess the visual compatibility of the proposed CCGT units with the existing landscape and infrastructure.

Table 3-3 BLM Scenic Quality Inventory and Evaluation Chart

Key Factor	Score 1	Score 3	Score 5
Landform	Low rolling hills, foothills, or flat valley bottoms; few or no interesting features	Steep canyons, mesas, buttes, cinder cones, drumlins; interesting erosional patterns	High vertical relief (cliffs, spires, massive outcrops); severe variation or striking features
Vegetation	Little or no variety or contrast	Some variety, but only one or two major types	A variety of types with interesting forms, textures, and patterns
Water	Absent or not noticeable	Flowing or still, but not dominant	Clear, clean, still or cascading white water; dominant in landscape
Color	Subtle variations, generally mute tones	Some intensity or variety, not dominant	Rich combinations, vivid color, pleasing contrasts
Adjacent Scenery	Little or no influence on visual quality	Moderately enhances visual quality	Greatly enhances visual quality

Key Factor	Score 1	Score 3	Score 5
Scarcity	Fairly common within the region	Distinctive, though somewhat similar to others	One of a kind, rare, or unusually memorable; exceptional wildlife or wildflower viewing
Cultural Modifications	Very discordant, promotes strong disharmony	Adds little or no variety, no discordant elements	Adds favorably to variety and promotes harmony

Source: BLM Manual H-8410-1 – Visual Resource Inventory (BLM, 1984).

3.2.2 Existing Visual Environment

The Big Sandy Power Plant is located in a rural area of Lawrence County, Kentucky, approximately four miles north of Louisa. The site spans 1,560 acres, with approximately 250 acres developed for power generation. Historically, the facility operated as a coal-fired plant with two units. Unit 2 was decommissioned in 2015, and Unit 1 was converted to natural gas in 2016.

The surrounding landscape is characterized by:

- Forested hills and valleys typical of the Appalachian Plateau
- Sparse residential development, primarily across the Big Sandy River in Wayne County, West Virginia
- Industrial zoning within Lawrence County extending more than two miles from the site
- AEP-owned land comprising most parcels within one mile of the facility.

The site includes existing stacks, cooling towers, transmission infrastructure, and ancillary buildings. The visual sensitivity of the area is considered low due to the industrial character and limited public access.

3.2.3 Project Description and Visibility

The proposed expansion includes two GE 7F.05 combined cycle gas turbines (Unit 3A and Unit 3B), with associated Heat Recovery Steam Generators (HRSG) and a steam turbine (Unit 3S)., with a combined nominal net output of approximately 750 MW. Each gas turbine unit will include an HRSG exhaust stack with a final height of approximately 198 feet above finished grade.

The turbines will be installed within the footprint of the decommissioned Unit 2 and the original coal pile for Units 1 and 2, on the east side of the site. No architectural treatments or vegetative screening enhancements are planned. Color and surface treatment of the stacks are pending;

however, standard practice recommends neutral, non-reflective finishes. Lighting plans are not finalized but will comply with FAA and Kentucky safety requirements.

Visibility of the new stacks is expected to be similar to existing structures and will not introduce new visual elements inconsistent with the current facility profile.

3.2.4 Key Observation Points (KOPs)

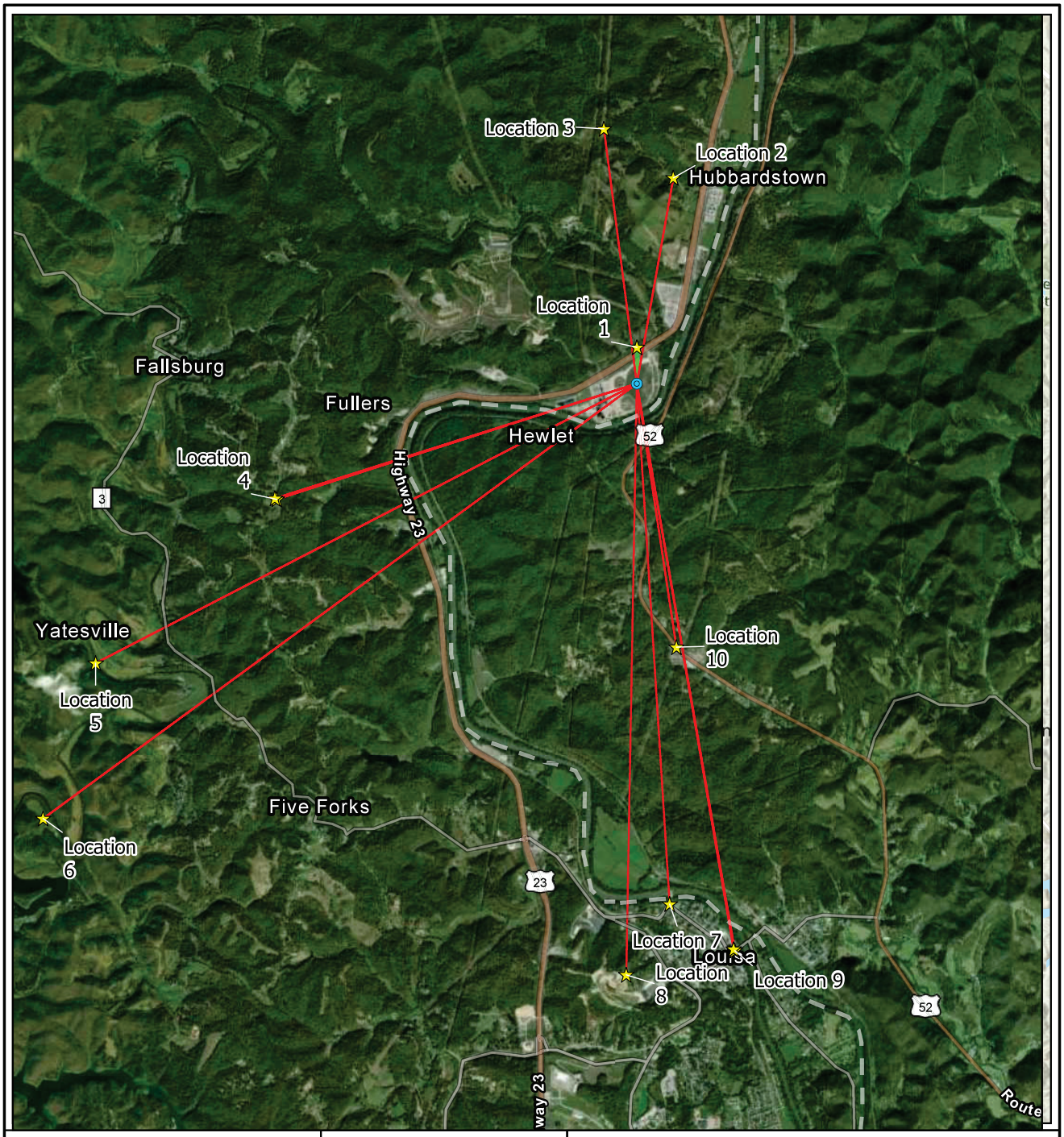
Ten KOPs were selected for evaluation based on proximity, public accessibility, and potential sensitivity. These locations include residential areas, parks, cemeteries, and historic sites. Line-of-sight and viewshed analyses confirm that the project is only visible from Location 1, which is directly in front of the plant. All other KOPs are fully screened by topography and vegetation.

Table 3-4 KOP Summary

KOP ID	Distance & Direction	Description	Visibility	Contrast Rating
1	0 miles, east	AEP Big Sandy Power Plant	Visible	Moderate
2	1.43 miles, southwest	Mill Branch Rd near entrance	Not visible	None
3	2.02 miles, south	Mill Branch Rd, transmission corridor	Not visible	None
4	3.4 miles, east	Fuller's Ridge Rd, Residential area	Not visible	None
5	4.25 miles, east	Old Fallsburg Rd, Residential area	Not visible	None
6	5.19 miles, northeast	Yatesville State Park	Not visible	None
7	4.74 miles, northwest	Lockview Park	Not visible	None
8	4.18 miles, north	Greenlawn Cemetery	Not visible	None

KOP ID	Distance & Direction	Description	Visibility	Contrast Rating
9	5.11 miles, north	Frederick M. Vinson House (NRHP Listed)	Not visible	None
10	2.36 miles, north	Route 52, West Virginia	Not visible	None

Photos for each KOP are included below; Line of Sight Map is included as Figure 3-4.



Legend

- AEP Big Sandy Site
- Key Observation Point

KOP Line of Sight
- Visible
- Not visible

N

0 3,0006,000 12,000 18,000 24,000 Feet

Scale: 1:200,000

Spatial Reference:
Name: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
PCS: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
GCS: GCS North American 1983
Datum: North American 1983

AEP BIG SANDY EXPANSION PROJECT

KOP LINE OF SIGHT MAP

Date:	Drawn by:	Edited by:	App'd by:
03-NOV-25	EB	EB	DLH

Project No: 418160-62169

Figure No: 3-4

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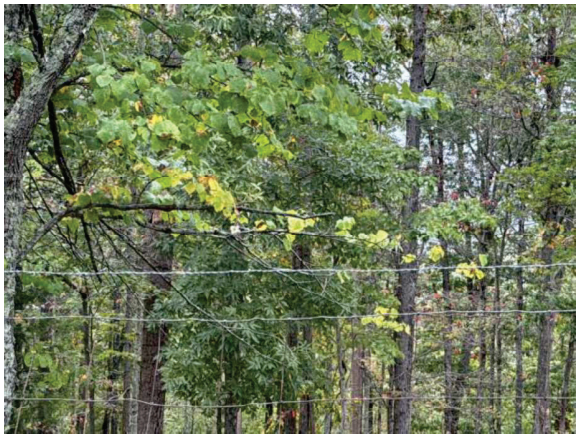
Location 1 – Existing AEP Big Sandy Power Plant



Location 2 – Mill Branch Rd near entrance



Location 3 – Mill Branch Rd showing existing transmission line corridor and mountainous topography



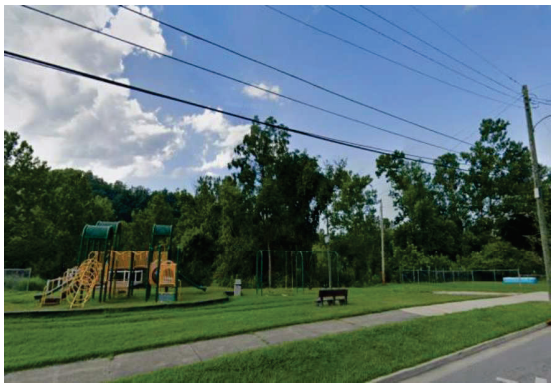
Location 4 – Fuller's Ridge Rd, Residential area



Location 5 – Old Fallsburg Rd, Residential area



Location 6 – Yatesville State Park



Location 7– Lockview Park



Location 8– Greenlawn Cemetery



Location 9 – Frederick M. Vinson House, NRHP Listed



Location 10 – Route 52, West Virginia

3.2.5 Scenic Quality Rating

Using BLM's Scenic Quality Rating Criteria, the landscape surrounding the Big Sandy site was evaluated across seven key factors:

Table 3-5 BLM Scenic Quality Ratings

Key Factor	Rating Criteria Summary	Score
Landform	Rolling hills and valleys typical of Appalachian Plateau	3
Vegetation	Mixed deciduous forest with moderate variety	3
Water	Big Sandy River visible from some areas, but not dominant	3
Color	Natural tones with moderate contrast in vegetation and soil	3
Adjacent Scenery	Industrial infrastructure dominates immediate surroundings	0
Scarcity	Common landscape features within region	1
Cultural Modifications	Industrial features present, but consistent with site history	0

Total Score: 13

Based on BLM scoring:

- A Rating: 19+
- B Rating: 12–18
- C Rating: ≤11

The Big Sandy site receives a B rating, indicating moderate scenic quality.

3.2.6 Visual Contrast Analysis

Using BLM's contrast rating system, the proposed CCGT units were evaluated for visual contrast against the existing landscape.

Table 3-6 BLM Contrast Rating System

Element	Assessment
Form	Vertical stacks consistent with existing structures
Line	Straight, industrial lines match existing facility
Color	Pending; assumed neutral and non-reflective
Texture	Industrial, consistent with current infrastructure

From Location 1, the contrast is moderate, as the new stacks are visible but do not dominate the landscape. From all other KOPs, the contrast is none, due to complete screening.

3.2.7 Mitigation Measures

No new mitigation measures are proposed. The project relies on existing topography and vegetation for screening. Recommendations include:

- Use of neutral, non-reflective finishes
- Downward-directed lighting to minimize glare
- Avoidance of unnecessary visual clutter in turbine layout

These measures are consistent with best practices and Kentucky CPCN precedent.

3.2.8 Conclusion

The proposed CCGT expansion at the Big Sandy Power Plant is visually compatible with the existing site and surrounding landscape. The facility has operated in this location since 1963, and the new units will be constructed within the existing industrial footprint. Visibility is limited to a single KOP, with all other viewpoints fully screened. No significant adverse visual impacts are anticipated. The project meets the requirements of KRS 278.708(3)(b) and aligns with BLM VRM methodology.

3.3 Land Use & Property Impact Assessment

As per KRS 278.708 (3)(c), an assessment of the potential changes to property values and land use for adjacent landowners as a result of the siting, construction, and operation of the proposed project must be completed. This section seeks to address the potential impact on land use and property values.

The new units are being constructed fully within the existing AEP owned land and all power generating units are being constructed on the already existing Power Plant footprint. Therefore, limited impacts on property values or land use are expected.

3.3.1 Land Use Compatibility

The proposed upgrades and new units fit entirely within the Big Sandy Power Plant or land that is owned by AEP and is zoned for industrial use, therefore, there is no land use zoning changes required. The surrounding area within one mile is largely owned by AEP (Figure 3-5) and is not inhabited. Within Lawrence County, Kentucky, the plant is located within an Industrial Zone, which extends over two miles away from the site (Figure 2-2) (Lawrence County Zoning Chairman 2025).

The nearest town zoned as Residential within Lawrence County is Fallsburg, an unincorporated community three miles west of site. The city of Louisa, which serves as the county seat, lies four miles south, along US-23.

On the opposite side of the river lies Wayne County, West Virginia. The land within one mile of the plant is rural, with zoning including Residential (72%), Farming (17%), Vacant/Utility (6%), and Cemetery (5%) (Appendix B). Of note is that most of the parcels zoned as Residential have no homes present, and 66% of all land within the analysis area is vacant.

Based on the surrounding land use and zoning within both Lawrence and Wayne Counties, the construction of new units within an operational power plant fits the surrounding land use and continues a long history of supporting power generation at this location.

3.3.2 Property Value Assessment

Property values were analyzed in Wayne County and were obtained from the *West Virginia Property Viewer* (West Virginia Property Tax Division 2025). Digital records for Lawrence County are not currently available; however, the lack of available data is not considered problematic because as seen in Figure 3-5, most of the area within one mile of the plant is owned by AEP and is thus excluded from this analysis. The lack of data in Lawrence County only excludes 12 properties to the west and northeast of the plant. All properties not owned by AEP were analyzed in West Virginia, which constitutes the majority of properties (61) within one mile.



LEGEND

- Big Sandy Power Plant
- Parcel Boundary
- AEP Owned Land
- 1 mile Buffer Boundary
- County Boundary

N

0 375 750 1,500 2,250 3,000 Feet

Scale: 1:30,000

Spatial Reference:
Name: NAD 1983 StatePlane Kentucky North FIPS 1601 Feet
PCS: NAD 1983 StatePlane Kentucky North FIPS 1601 Feet
GCS: GCS North American 1983
Datum: North American 1983

AEP BIG SANDY EXPANSION PROJECT

PROPERTY VALUE ASSESSMENT MAP

Date:	Drawn by:	Edited by:	App'd by:
21-OCT-25	EB	EB	AS

Project No: 418160-62169

Figure No: 3-5 REV: A

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USER NAME: EdwardBuitrago
ISSUING OFFICE: VANCOUVER, GIS

FILE LOCATION: E:\AEP_Big_Sandy_Power_Plant\

Figure 3-6, based on data obtained for Wayne County (West Virginia Property Tax Division 2025; Appendix B), shows the total assessed value of 61 properties within one mile of the plant boundary.

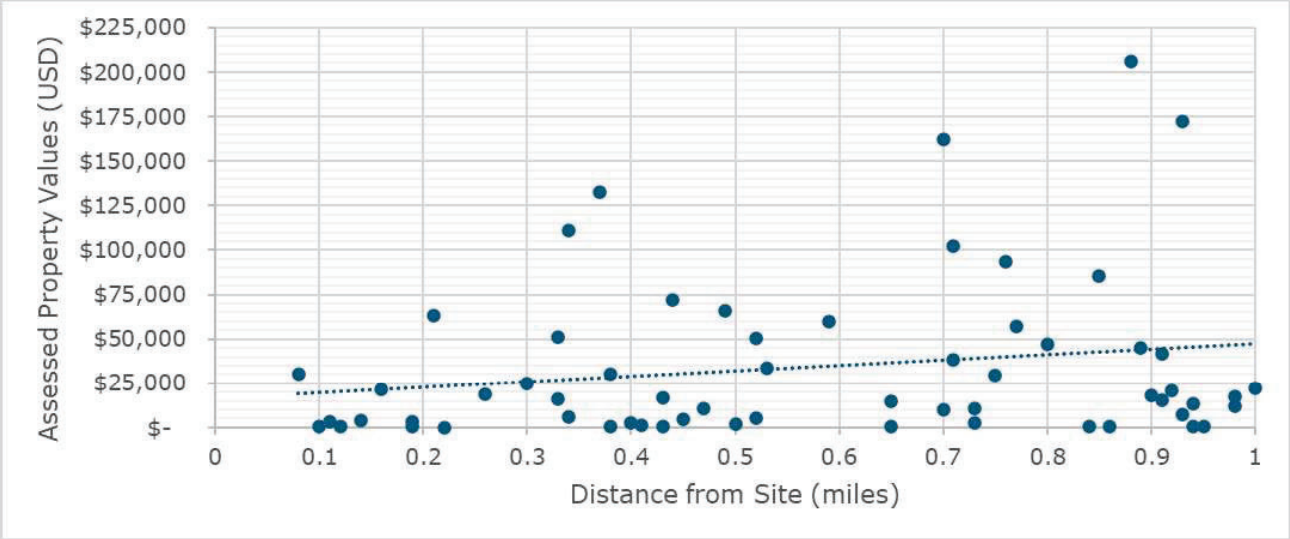

Figure 3-6 Wayne County Assessed Property Values

The property values analyzed show mostly low-value parcels, with high-value outliers at variable distances from the plant. By applying a linear regression, it can be determined whether a correlation exists at a statistically significant level between assessed property values and distance from the Big Sandy Power Plant. The trendline appears to indicate an increase in property values as distance from the plant site increases. However, the coefficient of determination (R^2) is 0.0367, so the relationship between assessed property values and distance from the plant is poorly correlated and not statistically significant. Based on the available data, the plant's proximity does not appear to exert a significant influence on surrounding property values.

Due to the rural nature of the surrounding area, most properties (40 properties; 66%) are vacant. An assessment was also conducted of the assessed value of land and buildings separately to account for the lack of consistent property types, and the relatively high increase in property value that having a home or building presents. Figure 3-7 shows the values of land only as a function of distance from the plant.

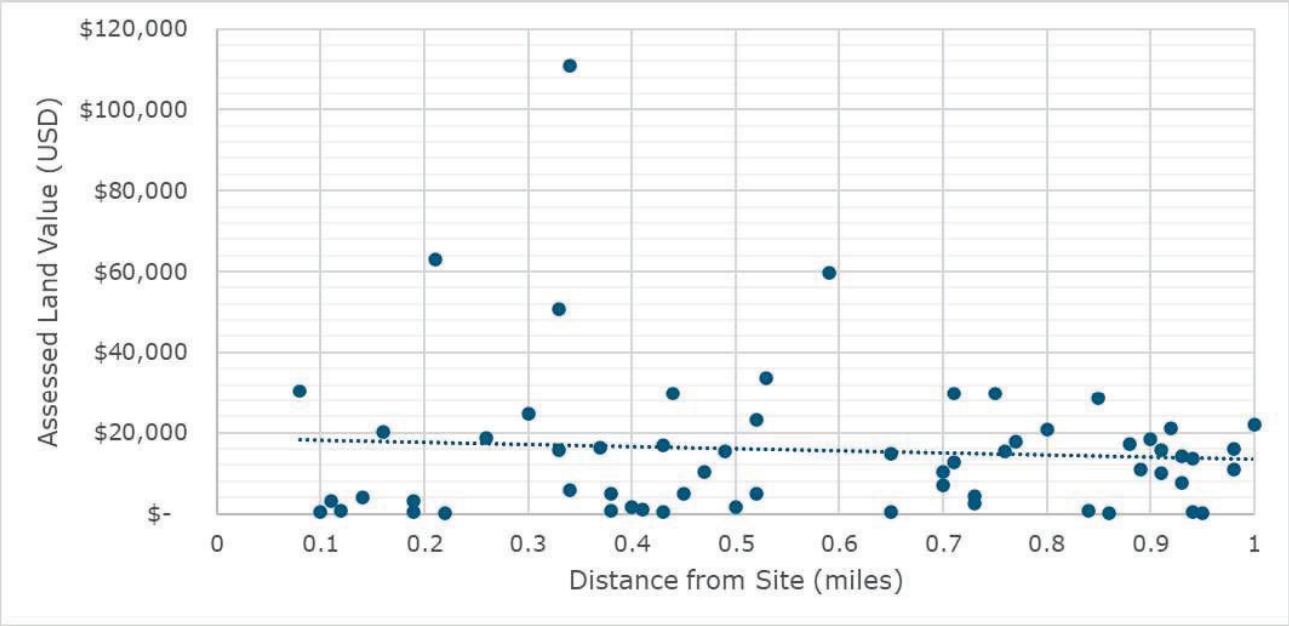

Figure 3-7 Wayne County Assessed Land Values

As contrasted to the overall property values, applying a linear regression seems to show the assessed land value decreasing as a function of distance from the plant. However, there is no statistical significance to this relationship due to an R^2 value of 0.0066. Therefore, the plant's proximity does not appear to exert a significant influence on surrounding land values

The value of homes and buildings specifically within one mile of the plant is portrayed in Figure 3-8. This accounts for nearly one third of all properties (21; 34%).

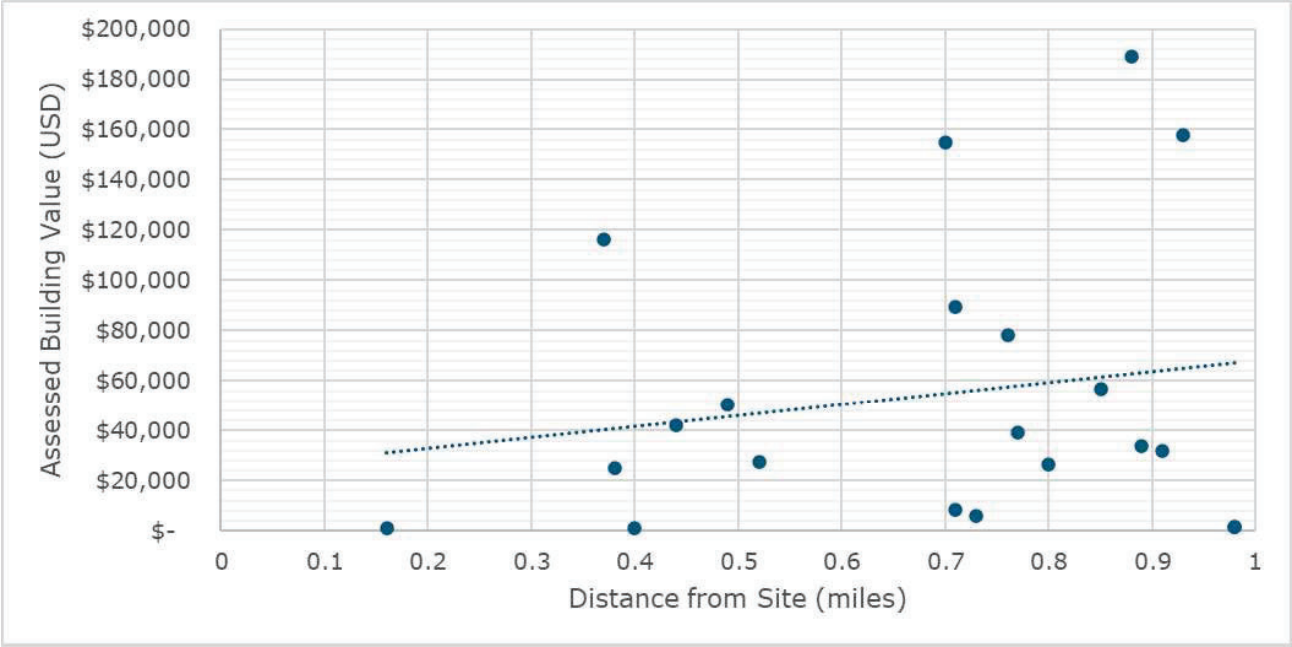

Figure 3-8: Wayne County Assessed Building Values

After applying a linear regression, it appears that building values increase at a higher rate than property values as distance from the plant site increases. As with the other analyses, there is no statistical significance to the relationship between distance from the plant and assessed building values (R^2 = 0.0338). Therefore, the distance from the plant also does not appear to exert a significant influence on surrounding building values.

3.3.3 Land Use & Property Impact Assessment Findings

The Big Sandy Power Plant has been operational at this location since 1963 and has established a longstanding presence in the area. Until 2015, when Unit 2 was demolished, there were two operating units present. As shown in these analyses, the proposed project to build two additional units near the location of the demolished Unit 2 is compatible with land use and zoning restrictions and is not expected to impact surrounding property values.

The Big Sandy Power Plant is located within an Industrial Zone of Lawrence County, which extends for at least two miles from the plant site. Much of the land in the surrounding one-mile radius is owned by AEP, and analysis of the land that isn't AEP-owned in Wayne County shows no relationship between property values and distance from the plant. Therefore, it is reasonable to conclude that construction of two additional units within the Big Sandy Power Plant will not negatively impact property values in the surrounding area.

3.4 Traffic Impact Assessment

Per KRS 278.708 (3)(e), an assessment of the impacts of a facility's operation on road and rail traffic to the facility must be conducted. This assessment must include production of fugitive dust and potential degradation of local roadways utilized.

3.4.1 Local Roadways

The plant is located along U.S. Route 23 (US-23), which runs largely north-south and parallels the Big Sandy River through the Appalachian Mountains (Figure 3-9). US-23 is a divided, four-lane highway which serves as the eastern border of Kentucky with West Virginia. Given that the plant is located just off this highway, it is expected to be the primary access route for shipments and workers. No local public transportation options are available, so it is expected for the purposes of this assessment that all workers will drive in personal vehicles.

To determine current roadway usage, Average Annual Daily Traffic (AADT) is referenced, which is a measure of the number of vehicles per 24-hour period averaged out over a year (vehicles/24-hour period). The AADT of US-23 to the north of the plant was measured as 9130 in 2022, the most recent data available. In 2020, the AADT was measured as 8167 to the south of the plant. To provide conservative analysis, and account for a possible increase in traffic since the last available date, the higher AADT value of 9130 will be used in this analysis. From the AADT, a measured percentage (K) of vehicles traveling at peak travel times (peak hour) is used. This value is typically nearly 10% of the AADT. For US-23, it was measured as 10%. Another proportion of vehicles travelling at peak hours in the peak direction (D) is measured, which is typically 0.55. For US-23, it was measured at 0.52. These values determine how many vehicles are travelling in the peak direction at peak travel hours and therefore represent the maximum number of vehicles travelling on a roadway at one time (peak-hour peak direction [PHPD] volume; Table 3-7).

Other roadways are included in this analysis as secondary access routes (those that serve the primary access route; US-23) and can be expected to be utilized by construction personnel and/or shipments. Their AADT and associated peak-hour peak direction values are calculated in the same manner as described above and are included in Table 3-7. These roadways include Interstate 64 (I-64), which runs east-west approximately 16.5 miles north of the plant and is the largest road that feeds US-23 near the plant. Kentucky Route 3 (KY-3) provides access to US-23 from the city of Louisa approximately 5 miles south of the plant site, as well as from the northwest of site via Kentucky Route 3398 (KY-3398). Additional routes that may provide vehicular access to US-23 for construction personnel include U.S. Route 52 (US-52), and KY Route 32 (KY-32), both south of the plant.



LEGEND

- Local Road
- Highway / Main Road
- Railroad
- Primary Access
- Secondary Access
- Big Sandy Power Plant
- County Boundary
- State Boundary

N

0 3,0006,000 12,000 18,000 24,000 Feet

Scale: 1:200,000

Spatial Reference:
Name: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
PCS: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
GCS: GCS North American 1983
Datum: North American 1983

AEP BIG SANDY EXPANSION PROJECT

SITE TRANSPORTATION SITE MAP

Date:	Drawn by:	Edited by:	App'd by:
21-OCT-25	EB	EB	AS

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Project No: 418160-62169

Figure No: 3-9 | REV: A

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The AADT values were obtained from the Kentucky Traffic Count Reporting System (Kentucky Transportation Cabinet 2025a) and the West Virginia Annual Average Daily Traffic Map (West Virginia Division of Transportation 2025).

3.4.2 Potential Road Traffic impacts

The construction of the three new units is expected to require an anticipated 300 personnel, and substantial transport of equipment and materials. Once operational, the units are planned to be operated from the existing control room for Unit 1, although a new control room will also be constructed for use as needed. The proposed upgrades are expected to add less than ten new permanent full-time jobs to the Big Sandy Plant with the remaining staff being utilized from the existing plant staff. Thus, the largest potential impacts to local road traffic can be expected during the construction phase, which will be temporary in nature, and the focus of this subsection.

Construction is expected to take place from 2028 – 2031, while personnel numbers are anticipated to be 300, they could peak temporarily to 1000 during construction. For a conservative estimate, it is assumed that all construction personnel will travel in their own personal vehicles, and the maximum anticipated number of 1000 will be used. The construction schedule is 10-hour days, from Monday to Friday, with occasional Saturday work being anticipated. As it is likely that personnel will be arriving or departing the plant site (or both) during rush-hour periods, the total number of construction personnel will be added to current peak-hour peak direction (PHPD) usage. US-23 will provide access for all 1000 personnel. For the purposes of this analysis, it is assumed that half of all personnel will access US-23 from the north of the plant site, and half will access from the south. Of those accessing from the north, 95% will be expected to use I-64, and 5% will be expected to use KY-3398. Of those accessing from the south, 45% are expected to use US-52, with 40% expected to use KY-3, and 15% expected to use KY-32. This is based on the current proportional usage of these roadways.

Heavy trucks trips to bring raw materials and shipments to the project site are expected to be no more than 75 loads per day. These loads are expected to be spread out evenly throughout the 10-hour working day, and therefore an additional five trucks can be expected to be added during daily peak travel times (PHPD volumes). Any large shipments will require their own Overweight/Over-Dimensional Permit, for which the application requires an approved route to be submitted. Both US-23 and I-64 are federally approved routes for oversized loads as listed by the National Truck Network (Kentucky Transportation Cabinet 2025b), therefore those are the two expected roadways to be used. The number of oversized loads required have not been determined as of writing this analysis. These have been added to the Added Construction Volume (Table 3-7) and integrated into this analysis.

The Highway Capacity Manual (HCM; Transportation Research Board 2000) is the standard for research on capacity and analysis of highways in the US. The manual lists maximum capacity values of multilane highways at 2250 vehicles per lane per hour at free-flowing speeds of 55 miles

per hour (mph) (US-23), or 2400 vehicles per lane per hour at speeds of 70 mph (I-64). Single-lane highways have a maximum capacity of 3200 vehicles per hour, or 1700 vehicles per hour in the busiest single direction (all other secondary access routes) (Myer Kutz 2011). See Table 3-7 for capacity details of each local roadway and the anticipated impacts on capacity due to construction traffic.

Table 3-7 Maximum capacity analysis of local roadways providing access to Big Sandy *(all volume measures in vehicles/hour unless otherwise specified)*

Local Roadway	Speed Limit (mph)	Road Type[1]	One-way Roadway Capacity	Current Volume				Construction Volume	Total Volume During Construction	
				AADT (vehicles/ 24 h)	Peak-hour Total Volume	PHPD[2] Volume	Total Percent Roadway Capacity Utilized (PHPD)	PHPD Added Volume[2]	Total PHPD Volume	Total Percent Roadway Capacity Utilized (PHPD)
US-23	55	D4L	**4500**	9130	913	475	11%	1,000	**1,475**	**33%**
I-64	70	D4L	**4800**	23164	2374	1353	28%	465	**1,818**	**38%**
US-52	55	U2L	**1700**	7773	1011	576	34%	225	**801**	**47%**
KY-3	45	U2L	**1700**	7194	737	428	25%	200	**628**	**37%**
KY-32	55	U2L	**1700**	3118	343	189	11%	75	**264**	**16%**
KY-3398	55	U2L	**1700**	1356	132	77	5%	25	**102**	**6%**

[1] D4L: Divided four-lane roadway; U2L: Undivided two-lane roadway

[2] Peak-hour Peak Direction (maximum expected volume at any one time)

Based on HCM analysis of maximum roadway capacity presented in Table 3-7, the addition of construction traffic associated with the Project is not expected to result in roadway congestion or unexpected operating conditions. Under peak construction conditions, all evaluated roadway segments are expected to operate well below their estimated roadway capacities. The highest projected roadway utilization is anticipated for US-23, which will accommodate up to 1,000 construction-related vehicle trips during peak periods, and operate at approximately 47 percent of available peak-hour capacity. Traffic increases on connecting roadways are estimated to be approximately 475 vehicles on I-64, 225 vehicles on US-52, 200 vehicles on KY-3, 75 vehicles on KY-32, and 25 vehicles on KY-3398 during peak travel periods and are expected to operate at less than 40 percent of capacity.

Given substantial roadway capacity remains available on all evaluated routes during the peak construction period, no measurable reductions in roadway level of service, traffic flow, or travel speeds are anticipated. Oversized loads that are scheduled to use local roadways are expected to cause delays that are fleeting in nature and would be accounted for by the specific oversize load plan. They would be expected to utilize the largest local roadways; I-64 and US-23. Thus, it is expected that construction traffic will cause at most temporary delays for the shipment of oversized loads, but personnel vehicles will be integrated without causing delays or reduction in free-flowing speeds for motorists over the course of the proposed project.

3.4.3 Roadway Degradation

As outlined in Section 3.4.2, it is anticipated that construction traffic will result in only a minor increase in local traffic volumes. Local roadways are currently operating well below their capacity, and with the addition of construction traffic, they are anticipated to continue operating at less than 40 percent of capacity. Oversized load shipments would be restricted to routes approved by the National Truck Network, and therefore already engineered to accommodate overweight vehicles. Based on these limited increases, it is not expected that local roadways will undergo measurable degradation due to construction traffic.

3.4.4 Fugitive Dust

The access to and from the project site is on paved public roadways, however on-site roadways are a combination of paved and unpaved. The plant has a Fugitive Dust Control Plan (AEP rev. 2021) which outlines dust mitigation measures currently in place. In addition, a project-specific Stormwater Pollution Prevention Plan (SWPPP) will be developed and implemented for construction activities. The SWPPP will include measures to prevent and control fugitive dust generated during site preparation, construction, and vehicle travel on unpaved surfaces. These measures are expected to be sufficient to cover any additional dust created by increased construction traffic, and include:

- watering unpaved roadways, with chemical suppressants, if necessary, based on periodic inspections or observations of excessive dust;
- vacuuming or street sweeping paved roadways;
- maintaining an on-site speed limit of 15 mph; and
- prompt removal of earth or other materials on paved roadways that have potential to break down and create fugitive emissions.

This plan also specifies recording and responding to public complaints should any emerge.

3.4.5 Railroad Traffic

The plant site borders a Class I railroad, the CSX Transportation line. This railway network includes over 36,000 track miles across North America, with 1,509 track miles within Kentucky (Kentucky Transportation Cabinet 2025c). Class I railroads are defined as those that have an annual carrier operating revenue of $1.074 billion or more (U.S. Surface Transportation Board 2024). This railroad primarily parallels US-23, between the plant and US-23. It contains an inactive spur and railroad station in between the plant and the Big Sandy River (to the southeast).

After reactivation of the spur and switch installation, this would allow for deliveries, which are anticipated for the largest equipment (though as of the publication of this report, of an unknown quantity). A clearance study will be conducted to ensure any over dimensional rail cars will be able to safely travel along the railroad. Coordination with CSX Transportation will occur as the project progresses and the number of shipments anticipated via rail is more defined. It is possible that shipments to the site could impact existing railroad traffic, or that deliveries would have to be scheduled around existing traffic, however details of this will become more defined as coordination with CSX Transportation occurs. Due to the spur and switchyard being within the plant footprint, it is not anticipated that deliveries will significantly impact ongoing rail usage.

3.4.6 Traffic Mitigation

Few mitigation measures are expected to be necessary with respect to local traffic in the area. The Fugitive Dust Control plan as outlined in Section 3.4.4 is anticipated to provide sufficient mitigations for any fugitive emissions during the construction process as well as during operation. Railroad shipments are possible, but due to the spur already present that leads into the plant site, these are not expected to cause significant delays to railroad traffic. Communications with CSX Transportation will be established before moving forwards with a rail shipment plan. Overall, traffic on the local roadways is well below capacity, and the addition of construction traffic is not expected to surge roadway usage to more than 50% of capacity. US-23, the main roadway feeding the plant site, is only expected to sit at 33% capacity with the additional personnel. Any oversized loads will be managed and mitigated according to their permits over the short-term that they are on the road. Neither construction nor operation of this plant are expected to cause local traffic delays or roadway degradation.

4. CUMULATIVE ENVIRONMENTAL ASSESSMENT

The following subsections present the technical components required within the Cumulative Environmental Assessment as specified under KRS 224.10-280. The CEA covers four different areas of potential environmental impact: air pollutants, water pollutants, water withdrawal, and waste. Each of the three sections detail the current regulatory framework with respect to the resource, potential pollutants associated with the project, and how the project might mitigate these impacts.

For the purposes of this CEA, the area of interest encompasses geographic zones that may be directly or indirectly affected by the construction, operation, and maintenance of the proposed project. This includes the immediate project site, adjacent parcels, and surrounding land within a reasonable radius where environmental receptors may be impacted.

The area of interest includes the proposed plant (Units 3A, 3B, 3S, and associated facilities), the existing larger Big Sandy Power Plant (Unit 1 and supporting infrastructure), the all AEP- owned land associated with the project including the electrical interconnection and natural gas pipeline, and surrounding land areas, water intake and discharge systems, transmission lines, and access roads. Both short-term construction impacts, and long-term operational effects are considered. The boundaries of this area are guided by NEPA, KRS, and Kentucky Energy and Environment Cabinet standards, ensuring environmental factors are assessed in relation to local land use, zoning, and ecological sensitivity. As the extent of potential impact varies by environmental parameter, the assessment area is defined within each relevant subsection.

Detailed estimates of emissions, wastewater discharges, and waste generation will be refined through subsequent design and permitting phases if required. At this stage, the assessment provides a preliminary evaluation of anticipated pollutants, regulatory requirements, and potential mitigation measures consistent with the intent of KRS 224.10-280.

4.1 Air Resource Assessment

In Kentucky, air permitting for construction and operation of stationary sources is governed by the Kentucky Division for Air Quality (KDAQ) under 401 KAR Chapters 50 to 65. The permitting process is structured around a facility's Potential to Emit (PTE), which determines the type of permit required.

The plant currently operates a boiler and a heater under the existing Title V operating permit (Permit No. V-20-018). The Indirect Heat Exchanger (Unit 1) is a natural gas-fired, wall-fired, dry bottom boiler with a rated capacity of 2,653 MMBTU/hr which was constructed in 1963 and modified in 2015. It incorporates overfire air and low-NOx burners to reduce nitrogen oxide

emissions. To ensure compliance, the boiler is equipped with a Continuous Emissions Monitoring System (CEMS) for tracking NOx emissions.

Among the key regulations governing this unit is 401 KAR 51:160, which outlines NOx emission requirements for large utility and industrial boilers in Kentucky. This regulation is part of the state's implementation of the federal NOx SIP, mandating emission reductions to meet national ambient air quality standards (NAAQS). Additionally, 401 KAR 52:060 pertains to acid rain permits, aligning with the federal Acid Rain Program under 40 CFR Parts 72 to 78. These provisions aim to reduce sulfur dioxide and nitrogen oxides through a cap-and-trade system and rigorous monitoring requirements. The boiler also falls under 401 KAR 61:015, which governs existing indirect heat exchangers, ensuring legacy units meet updated environmental performance standards.

40 CFR Part 52, Subpart S provides Kentucky's State Implementation Plan (SIP) and Best Available Retrofit Technology (BART) requirements. These federal measures ensure that older sources of pollution, like Unit 1, implement modern controls to limit visibility-impairing emissions.

On-site is a gas-fired heater installed in 2015, designed to heat natural gas supplied to combustion units within the plant. With a rated heat input capacity of 1.6 MMBtu/hr, this unit is subject to 401 KAR 59:015 which provides standards for pollutants such as particulate matter, sulfur dioxide, and nitrogen oxides, and outlines startup and shutdown procedures to minimize emissions during transitional operating periods.

401 KAR 63:002 incorporates federal standards from 40 CFR Part 63, specifically Subpart DDDDD, which applies to major sources of hazardous air pollutants (HAPs) from industrial, commercial, and institutional boilers and process heaters. These standards require facilities to reduce HAP emissions, conduct regular performance testing, and maintain detailed records to demonstrate compliance.

Based on the turbine design and expected emissions, the new turbines are expected to be subject to federal air regulations such as the New Source Performance Standards (NSPS) under 40 CFR Part 60 and the National Emission Standards for Hazardous Air Pollutants (NESHAP) under 40 CFR Part 63. NSPS KKKKa regulate emissions from stationary combustion turbines, focusing on NO_x and SO_2 limits, and NESHAP Subpart YYYY applies to turbines located at major sources of HAPs and requires compliance with Maximum Achievable Control Technology (MACT) standards.

Subpart KKKKa establishes more stringent emission standards for stationary combustion turbines than the previous NSPS turbine regulations and applies to both simple-cycle and combined-cycle power generation facilities. The rule regulates emissions of NOx and SO2 and includes enhanced monitoring, recordkeeping, and reporting requirements.

Based on the NSPS requirements, large natural gas-fired combustion turbines with a heat input greater than 850 MMBtu/hr and operating at high utilization rates are subject to a NOx emission

limit of 5 ppmvd corrected to 15 percent O2. This standard reflects EPA's determination that advanced combustion controls in combination with post-combustion controls, such as Selective Catalytic Reduction (SCR), represent the Best System of Emission Reduction (BSER) for these units. The revised standards are significantly more stringent than the historical 15 ppm NOx limit under Subpart KKKK and are intended to achieve substantial reductions in NOx emissions from new combustion turbines.

To demonstrate continuous compliance with these stringent emission limits, facilities utilizing SCR or other post-combustion emission controls are required to install and operate Continuous Emissions Monitoring Systems (CEMS). As a result, the project will incorporate CEMS requirements into the project design, permitting strategy, and long-term compliance program.

NESHAP Subpart YYYY establishes stringent emission standards for stationary combustion turbines and requires affected major HAP sources to comply with a formaldehyde emission limit of 91 ppbvd corrected to 15% O2. Compliance with this standard typically necessitates the installation and continuous operation of oxidation catalyst systems to reduce formaldehyde and other hazardous organic air pollutants generated during turbine operation.

Under PSD regulations, whether the proposed modification is considered major depends on whether the projected emissions from the new turbines exceed the significance thresholds established in 40 CFR 52.21. These thresholds vary by the pollutant. If the increases remain below these thresholds, the project may qualify as a minor modification; however, if they are exceeded, the modification would be deemed major and subject to PSD review and BACT requirements.

Based on preliminary information from the vendor, the proposed CCGTs are expected to emit NOx at a concentration of 9 ppm without any Selective Catalytic Reduction (SCRs). This value represents the uncontrolled turbine exhaust concentration and does not reflect any control technologies that may be required through a PSD permitting review and BACT determination. If PSD review is triggered, a BACT analysis will be required under the *Clean Air Act* and will evaluate technically feasible emission control technologies for NOx, CO, and other regulated pollutants. Recent BACT determinations for natural gas-fired combined-cycle facilities, NOx emission limits in the range of approximately 2 to 2.5 ppmvd have been achieved using SCR systems, while oxidation catalysts are commonly used to control CO emissions.

Therefore, the proposed addition of two new combined cycle combustion turbines and a steam turbine has the potential to increase the plant's overall emission profile. As a result, this expansion will likely require a modification to the existing Title V permit and may trigger a PSD review, however, a full emissions quantification and analysis will be performed to determine permitting applicability. The PSD analysis will evaluate whether the projected emissions exceed applicable thresholds and determine the necessary control technologies to minimize the environmental impacts. Final emission limits for NOx, CO, and other regulated pollutants will be

established through the permitting process. If a PSD permit is needed AEP will follow and obtain applicable permitting and regulatory requirements.

As part of the PSD permitting process, a BACT analysis is required for each regulated pollutant emitted by a proposed major source or major modification. BACT is defined as an emissions limitation based on the maximum degree of reduction achievable, considering energy, environmental, and economic impacts. The U.S. Environmental Protection Agency (EPA) recommends using a "top-down" approach for BACT determinations, which involves five key steps: (1) identifying all available control technologies, (2) eliminating technically infeasible options, (3) ranking the remaining technologies by effectiveness, (4) evaluating economic, environmental, and energy impacts, and (5) selecting the most appropriate option. BACT may include add-on control equipment, process modifications, fuel treatment, or innovative combustion techniques. The final determination is made on a case-by-case basis by the permitting authority and must be supported by thorough technical and economic justification.

A detailed emission quantification, regulatory review, and a BACT analysis will provide further insight into the most appropriate control technologies for the turbines. The project will also be subject to dispersion modeling and public notice periods, which may impact on the overall project timeline and require additional time for agency review and approval.

4.2 Water Resource Assessment

Hydrography data was obtained from the Kentucky Open Data Portal (KYGovMaps, n.d), and USGS terrain data with a resolution of approximately 2.5 m, to evaluate the topography and surface water characteristics around the site.

The site is adjacent to Big Sandy River and within the Big Sandy River Basin. While the Big Sandy River is located entirely in the commonwealth of Kentucky, its basin drains portions of Kentucky, West Virginia, and Virginia, with a total area of 4,235 square miles (Carey, D. I., 2009). Big Sandy River is formed by the junction of Tug and Levisa Forks at Louisa, Kentucky, and flows north to its junction with the Ohio River. Also adjacent to the site on the northeast is the confluence of Blaine Creek with Big Sandy River. Blaine Creek's drainage area is approximately 265 square miles (KYGovMaps, n.d), and includes discharge from the Horseford Creek Dam and Reservoir, located northwest of the site. Between Horseford Creek Dam and the site, the topography is characterized by steep-sided hills and valleys. Stormwater runoff flows southwest through those valleys, across Highway 23 and across the site, before discharging into the Big Sandy River (KYGovMaps, n.d).

The existing plant discharges water into Blaine Creek via Outfalls 001, 018, and 021 and to Big Sandy River vis Outfalls 006, 007, 008, 009, 010, 011, 013, 014, 015, 016, 017, 019, and 020 pursuant to its Kentucky Pollution Discharge Elimination System (KPDES) Permit No. KY0000221. In addition to the water discharge the plant withdraws water for cooling water for its steam turbine condenser cooling from Big Sandy River as identified in its permit. The proposed Project is

expected to discharge far fewer pollutants than the historical coal-fired operations that occurred onsite. Additionally, all changes in pollutant loads at outfalls will be evaluated in collaboration with Kentucky Department for Environmental Protection (KDEP) Division of Water (DOW) as part of the updated KPDES permit process.

Based on a review of Kentucky Groundwater Data Repository – Water Well and Spring Location Map, there are multiple active water wells within a one-mile radius of the project site. Eight (8) of the active wells are groundwater monitoring compliance wells that are located on the AEP owned site. Other active wells in the vicinity of the site include other groundwater monitoring compliance wells, and one well that is used for industrial water withdrawal. There are no wells used for municipal, agricultural, public, or mining use that are located within approximately one mile of the project site[1].

The KDEP Division of Water (DOW) administers the federal Clean Water Act and commonwealth water protection program. Water quality is maintained by the establishment of water quality standards and regulation of all discharges of pollutants to the Commonwealth. Discharge standards are established for particular sources and activities, and wastewater and stormwater discharges from industrial activities must obtain a KPDES permit.

As part of this project, AEP will perform a full review of KPDES Permit No. KY0000221 and engage with KDEP Division of Water regarding any notifications, or other regulatory actions that may be required to support the proposed combined-cycle expansion. In addition to evaluating potential changes to wastewater discharges, the review will consider modifications to the existing cooling water intake configuration associated with the reuse of former Unit 2 intake infrastructure. Based on AEP's report (HDR Engineering, Inc., 2018), the existing plant currently withdraws 7.39 MGD (peak monthly average). Based on the current engineering concept, the proposed facility is expected to require approximately 6.3 MGD of cooling water withdrawal (peak monthly average). Together, the total estimated water withdrawal would be approximately 13.7 MGD, which remains below the existing design intake flow of 10,000 gpm (14.4 MGD) DIF basis described in the permit and documented in supporting Section 316(b) evaluation (HDR Engineering, Inc., 2018). The projected cooling water withdrawal rate for the new plant will be further refined and confirmed during subsequent phases of project development.

As discussed above, the proposed project will be constructed within the existing site boundaries, and the interconnection line and natural gas pipeline will occur on land that is outside of the plant boundaries but still within AEP owned land. The project development area is zoned industrial land since it is on the already existing power plant site or within AEP owned land.

To maintain compliance with KDEP DOW requirements, AEP will continue to operate in accordance with the existing KPDES permit and will coordinate with the Division of Water regarding the

[1] https://kgs.uky.edu/kgsmap/KGSWater/viewer.asp

appropriate regulatory mechanism to address any proposed changes associated with wastewater discharges, water withdrawals, and cooling water intake infrastructure resulting from the project.

Additionally, the site will obtain all necessary stormwater discharge construction permits from Kentucky prior to the start of construction. AEP will also ensure that all plans and procedures relating to water are updated to include any changes that will occur as a part of the project.

Under Section 404 of the *Clean Water Act*, The U.S. Army Corps of Engineers (USACE) has regulatory jurisdiction over navigable waters and "Waters of the United States," including "adjacent wetlands with a continuous surface connection to those waters." (33 Code of Federal Regulations (CFR) § 328.3(a)). As defined, no federally regulated wetlands are present within the plant footprint, which is where most of the construction is to occur. The location where the interconnection line is to be constructed does not have any wetlands located on it either. While the final location of the natural gas pipeline is not yet fully determined it is not expected to occur over or under any wetlands. However, if the design is updated and wetlands impacts are to occur then AEP will follow all regulatory requirements for permitting and construction.

4.2.1 Cooling Water Intake and KPDES Permit Modification Considerations

The following discussion is provided as a preliminary planning-level assessment based on current design information and is subject to refinement as engineering, water-balance calculations, and agency coordination progress.

Existing Permit Basis

The current KPDES permit authorizes operation of two cooling water intake systems associated with Big Sandy Plant: a primary (normal) intake system and a backup intake system. The permit describes the intake configuration, including three primary intake pumps rated at 10,000 gpm each and a backup intake system with two 6,750 gpm pumps.

The permit does not establish a numeric withdrawal limit. Section 4.8.1 of the permit identifies the design basis for the cooling water intake structure and states the design intake flow (DIF) for Unit 1 is 10,000 gpm (14.4 MGD) based on the operation of a single pump, with the remaining pumps considered redundant back-up capacity.

The 2018 Section 316(b) compliance report provided by AEP similarly states that only one 10,000 gpm pump is required to meet Unit 1 make-up water demands and therefore establishes the DIF as 10,000 gpm (14.4 MGD) based on operation of a single pump, with the remaining pumps considered redundant backup capacity. The report further notes that redundant pumps are not included in the DIF calculation (HDR Engineering, Inc., 2018).

Applicability to the Proposed Combined Cycle Project

Based on the current engineering concept, the proposed combined cycle facility would reuse and modify the existing intake infrastructure associated with the former Unit 2, including the addition of pumping equipment if confirmed needed based on actual equipment performance, while utilizing the existing intake location and intake structures.

Current design indicates the proposed facility would require approximately 6.3MGD of cooling water withdrawal on a peak monthly average basis. The existing Unit 1 cooling water system was reported to have a peak monthly average withdrawal of 7.39 MGD based on supporting Section 316(b) documentation. Together, these withdrawals would result in an estimated combined peak monthly average withdrawal of approximately 13.7 MGD, which remains below the existing DIF basis of 10,000 gpm (14.4 MGD), identified in the current permit.

Provided final cooling water demands, pumping configuration, and operating philosophy demonstrate that total withdrawals remain within the currently described design intake flow basis of 10,000 gpm (14.4 MGD), the project is anticipated to remain consistent with the existing cooling water intake design basis and the facility's current Section 316(b) framework.

However, the permit contains a separate requirement addressing changes to intake structures. Section 4.8.1 of the permit ("Authority to Operate") states that: *"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 current project concept includes modifications to the existing intake system configuration associated with reuse of former Unit 2 infrastructure. Although current design information indicates the project would remain within the existing DIF basis, modifications to the intake system configuration and operation may still trigger the permit's advance notification provisions.

AEP anticipates coordinating with the Kentucky Division of Water to determine whether the proposed intake system modifications are subject to the advance notification provisions of Section 4.8.1 of the permit and to confirm the appropriate regulatory process.

Once the intake design, pumping requirements, and withdrawal rates have been finalized, AEP should present the proposed configuration to the Kentucky Division of Water and confirm the appropriate regulatory path forward. Based on current design information available, no changes to the existing DIF basis appear necessary. However, AEP should coordinate with the Division regarding any applicable notification or documentation requirements associated with the proposed intake system modifications and Section 4.8.1 of the permit.

4.2.2 Water Pollutant Impacts

The construction of the project will represent an increased potential for erosion and sediment discharge from the construction site. The greatest potential for impacts to surface water is from potential sediment loading from erosion during construction activities. In addition to the potential soil erosion from construction activities there is also the potential for contamination from the materials that are brought onsite for construction, these could include but are not limited to: chemicals, fuels, and lubricants.

The installation of industrial equipment, concrete foundations, and access pathways will reduce the ability of the ground surface to absorb water in the project area. As a result, stormwater runoff during heavy rainfall events is expected to increase slightly. Based on conservative estimates using standard runoff data, this increase is consistent with the change from light industrial to heavy industrial land use. At this stage, it is expected that there will need to be new drainage features included with the design of the plant and a new stormwater pond to be constructed to appropriately handle any new stormwater flow. Stormwater flow capacity will be further assessed during the detailed design stage and incorporated in the Best Management Practices (BMP) plan. AEP will also implement appropriate erosion and sediment control measures to further reduce potential environmental impacts associated with the project.

Construction and operation of the project will also include the storage and usage of oils and chemicals within the equipment located in the construction area. The project will be constructed so that stormwater will not contact these potential pollutant sources, nor will there be planned releases of wastewater containing pollutants from oils or chemicals onsite. AEP will ensure that necessary secondary containment is constructed for all areas of the project that will store these potentially contaminating materials. Additionally, AEP will make sure their Spill Prevention, Control, and Countermeasure (SPCC) Plan is updated to account for all the new changes that will be onsite as a part of the project. Other mitigations are discussed in more detail in Section 5.

Current discharges allow for pollutants such as mercury, copper, zinc, or chromium, to be present in the process wastewater discharges associated with the existing site. It is expected that the project will have a similar pollutant profile to the existing plant since the new turbines will also be natural gas fired. The plant is required to test these pollutants as part of the KPDES permit. The additional wastewater associated with the proposed project from the plant may increase the amount of these compounds that are discharged; however, the plant will continue to comply with all KPDES permit requirements.

4.2.3 Water Withdrawal Impacts

Construction of the project will require minimal water withdrawal and any water withdrawal during the construction phase of the project will only be temporary. This temporary water use may

include things like dust suppression during construction, dewatering of excavated area, etc. Any water withdrawal will be done in accordance with KDEP DOW requirements.

AEP estimates that an additional 6.3 MGD peak usage and average of 4.5 MGD of raw water will be required to support the ongoing water needs of the new units.

Unit 1 currently has a water intake flow design of 10,000 GPM based on the latest permit;.

AEP estimates that there will be an additional 1,000 gpm (1.44 MGD) of wastewater discharge under maximum water use conditions associated to the project. This estimate will be further refined and confirmed during subsequent phases of project development as the plant water balance, treatment systems, and operating philosophy are finalized. The cooling water at the plant is currently supplied via surface water intake from the Big Sandy River. The additional wastewater is expected to remain within the operational framework of the existing facility; however, AEP will coordinate with KDEP Division of Water to determine whether any notifications or other regulatory updates are required to support the combined-cycle expansion and associated cooling water intake modifications.

4.3 Solid and Hazardous Waste Assessment

Kentucky EEC through its Division of Waste Management oversees the regulation of solid and hazardous waste generation, storage, and disposal. Regulatory requirements vary by facility type and waste classification and are provided under the Kentucky Revised Statutes (KRS) Chapter 224 and 401 KAR Chapters 45-48. Hazardous waste regulations are addressed under 401 KAR Chapter 39, which aligns with federal standards under the Resource Conservation and Recovery Act (RCRA).

During the construction of the CCGTs, a variety of construction wastes will be generated. These include concrete, asphalt, wood, metals, plastics, packaging materials, insulation, and office waste. Additional waste streams will include hazardous materials such as paints, solvents, adhesives, and cleaning compounds. Effective waste management during this phase is critical to prevent environmental contamination and ensure compliance with stormwater and waste disposal regulations. Best practices to manage these wastes include establishing designated waste collection areas, using covered containers, scheduling regular waste removal, and implementing spill prevention and cleanup protocols. Hazardous waste will be handled according to 401 KAR Chapter 39, with proper labeling, containment, and disposal. Significant oil storage at the site will be reported and monitored according to the SPCC (Spill Prevention, Control, and Countermeasure) requirements under 40 CFR Part 112.

The construction area designated for the new turbines was previously used for coal firing and may contain coal combustion residuals (CCR) in the soil. Construction activities in this area are likely to disturb these residuals, requiring excavation and proper disposal to ensure site cleanup. In

Kentucky, CCR must be disposed of in permitted landfills, surface impoundments, or returned to coal mines for reclamation purposes. Temporary storage and disposal of CCR is regulated under the Kentucky Special Waste Permit-by-Rule, specifically 401 KAR 45:060, which requires a permit for such activities. Also, any coal ash ponds utilized during construction will comply with the KPDES permit requirements administered by the Division of Water.

Normal operation of the proposed CCGTs is expected to generate limited quantities of solid and potentially hazardous wastes, primarily associated with routine maintenance, water treatment systems, and periodic replacement of emissions-control materials. Routine maintenance activities may result in small amounts of used oil, dirt, spent filters, and sludge. These materials are typically classified as either non-hazardous or conditionally exempt small quantities of hazardous waste, depending on their composition and volume. Over time, hazardous waste may be generated from spent materials associated with the oxidation catalyst and SCR systems. These materials will be periodically removed and either sent offsite for recovery by the catalyst manufacturer or disposed of in accordance with applicable hazardous waste regulations.

5. CUMULATIVE ASSESSMENT MITIGATION SUMMARY

The following subsections outline the strategies employed to manage potential pollutants, wastes, and discharges associated with the project described above. These control measures are included in the Cumulative Environmental Assessment in accordance with the requirements of KRS 224.10-280.

It is important to note that the methods outlined herein do not represent the full scope of mitigation measures that will be implemented throughout the project. AEP is committed to ensuring that all aspects of the project are properly permitted and remain in full compliance with applicable environmental regulations.

Should there be any significant changes to the project's design or operational parameters, AEP will reevaluate the control methods to confirm their continued relevance and effectiveness in protecting environmental quality and regulatory compliance.

5.1 Air Resource Mitigation

During the construction phase of the project, air pollution mitigation efforts will focus on controlling emissions from fugitive dust, diesel exhaust, and volatile organic compounds (VOCs) generated by construction activities and equipment. These emissions will be effectively minimized through the implementation of Best Management Practices (BMPs).

To control dust, regular watering of unpaved roads, soil stockpiles, and active work zones will be conducted. Additional measures include the use of wind barriers, application of soil stabilizers, limiting vehicle speeds, and covering loose materials during on-site transport. These practices will significantly reduce airborne particulate matter minimizing off-site transport of dust.

Emissions from construction vehicles and equipment will be addressed by requiring all machinery to meet EPA Tier 4 emission standards, which substantially reduce nitrogen oxides (NO_x) and particulate matter (PM). Limiting equipment idling, assessing delivery schedules, and establishing designated routes for heavy equipment will further reduce traffic-related emissions. Routine inspections and maintenance of vehicles, generators, and fuel storage systems will ensure efficient operation and minimize leaks or excess emissions. Collectively, these measures will reduce the overall air quality impact of construction activities and help maintain compliance with applicable standards.

Once operational, the CCGT units will primarily emit NO_x, carbon monoxide (CO), PM, and greenhouse gases (GHGs) from natural gas combustion. To mitigate these emissions, the plant will implement a comprehensive air pollution control strategy in accordance with federal and state environmental regulations, including the *Clean Air Act* (CAA), New Source Performance Standards

(NSPS) under 40 CFR Part 60, and National Emission Standards for Hazardous Air Pollutants (NESHAP) under 40 CFR Part 63.

Key mitigation technologies will be determined following completion of the BACT analysis but are likely to include low-NO_x burners, combustors and Selective Catalytic Reduction (SCR) systems, which are designed to significantly reduce nitrogen oxide emissions. Depending on the outcome of the BACT evaluation, oxidation catalyst systems may also be incorporated to reduce carbon monoxide (CO) and volatile organic compound (VOC) emissions. Continuous Emissions Monitoring Systems (CEMS) will be installed to provide real-time tracking of pollutant levels and ensure ongoing compliance with any permit limits. These combined measures are designed to minimize operational emissions and maintain compliance with all applicable air quality regulations.

5.2 Water Resource Mitigation

To prevent adverse discharges to waters of the Commonwealth during the construction phase of the project, all contractors will be required to develop and implement site-specific practices and procedures aimed at controlling, preventing, and responding to any spills or releases of materials that could impact water quality. Specifically, construction contractors will be required to:

- Develop and implement a soil erosion and sediment control plan consistent with AEP's best management practices (BMPs).
- Ensure that all onsite chemical and fuel storage includes adequate secondary containment to prevent releases.
- In the event of a spill or release of oil or chemicals, ensure that contaminated soil is promptly removed and managed by a licensed contractor in accordance with applicable regulations.

These requirements will ensure that contractors are fully aligned with AEP's environmental protection standards and will help minimize the risk of pollutant discharges to surface and groundwater resources.

All construction activities will be confined within the designated project site boundary to further limit potential impacts. BMPs such as silt fences, hay bales, and erosion control blankets will be deployed and maintained throughout land-disturbing activities. Priority will be given to erosion prevention measures, which are more effective at reducing sediment transport than sediment capture alone. These controls will help with maintaining compliance with water quality standards.

Adequate portable sanitary facilities will be provided onsite, and contractors will be strictly prohibited from disposing of solid waste or wastewater into any waterway. These measures will help prevent bacterial contamination of surface waters.

For the management of oil and other potentially hazardous materials, the project will incorporate engineered secondary containment systems to ensure that any accidental releases do not pose a

threat to surface or subsurface water quality. These systems will be designed to meet or exceed regulatory requirements.

Mitigation measures for both construction and operational phases will include full compliance with Kentucky Pollutant Discharge Elimination System (KPDES) permitting requirements. This includes:

- Updating the existing KPDES permit to reflect the new wastewater discharge sources.
- Obtaining a construction stormwater permit.
- Updating the water withdrawal permit, if necessary.
- Revising all relevant plans and procedures to accurately reflect the new pollutant sources and operational conditions post-project completion.

Stormwater management infrastructure for the proposed project will include the design and construction of a new stormwater management pond. The pond will be designed to maintain post-development peak stormwater discharge rates at or below existing site discharge rates, thereby minimizing the potential for adverse hydraulic impacts to downstream receiving waters. Additional stormwater controls such as stormwater routing, retention structures, and velocity dissipation devices will be incorporated as needed to support compliance with applicable KPDES requirements. These measures will be evaluated during future project phases and incorporated into the updated KPDES permit as appropriate.

Water withdrawal volumes will be minimized through the efficient design of cooling systems. Advanced cooling water treatment methods will be employed to maximize heat transfer efficiency and reduce cooling water losses. These design features will help conserve water resources and reduce the potential water use and withdrawal impacts.

5.3 Solid and Hazardous Waste Mitigation

To effectively manage solid waste during the construction of the project, the plant will strategically place appropriately sized containers (i.e., barrels, trailers, and/or bins) throughout the plant to facilitate the accumulation and temporary storage of construction-related waste. Containers and designated storage areas will be clearly labeled with appropriate signage to support proper identification, segregation, and handling of waste materials. Suppliers who utilize the available storage must label each container with their name, date of the waste storage, and the amount of waste that they have stored. This will ensure that in the case of improperly stored waste the appropriate contractor can be identified to correct the mistakes. The Big Sandy Power Plant will employ the use of a third-party contractor to collect the waste that is generated and dispose of it at a properly licensed waste disposal facility.

Incompatible waste will be separated and stored in accordance with applicable regulatory requirements to prevent chemical reactions, contamination, or improper disposal. Construction debris and office-generated waste will be transported to a licensed local landfill in compliance with

Kentucky Division of Waste Management regulations. These practices will reduce the risk of uncontrolled waste accumulation, prevent offsite migration of debris, and ensure environmentally responsible disposal.

Solid waste generated during the operational phase of the project is expected to be minimal and primarily associated with routine maintenance activities. This may include small quantities of used oil, which will be either recycled or properly disposed of offsite by licensed waste management contractors. Additional waste such as dirt and sludge from equipment cleaning will be collected and transported to a permitted landfill.

Hazardous waste including used oil, solvents, paints, and spent catalysts from emissions control systems will be managed in accordance with the Resource Conservation and Recovery Act (RCRA) and applicable state regulations. These materials will be properly labeled, segregated, and stored in secure onsite containment areas prior to offsite disposal or recovery by authorized contractors. These procedures will ensure that hazardous waste is handled safely and in a manner that protects human health and the environment.

By implementing these solid waste management practices, the project will minimize the potential for soil and water contamination and ensure compliance with all applicable waste handling and disposal regulations.

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APPENDIX A LEGAL SITE DESCRIPTION

$20.90

LW14116

DOCUMENT No. KY-42

WARRANTY DEED









THIS DEED OF CONVEYANCE made this 6th day of July 1960 by and between Mary H. Fugett, widow, of Cabell County, West Virginia, Flora Raburn, widow, of Boyd County, Kentucky, and Ethel Brown and W. B. Brown, her husband, of Scioto County, Ohio, Grantors, parties of the first part, and The Franklin Real Estate Company, a Pennsylvania Corporation, Grantee, party of the second part:

W I T N E S S E T H :

That for and in consideration of the sum of Ten Dollars ($10.00) cash in hand paid, and other good and valuable consideration, the receipt of which is hereby acknowledged, the parties of the first part have bargained and sold and do hereby grant, bargain, sell and convey unto the party of the second part the following described real estate, to-wit:

Those certain tracts of land situate in Lawrence County, Kentucky, as follows:

First Tract

All that certain tract of land on the Big Sandy River near the mouth of Blaine Creek in Lawrence County, Kentucky, and bounded as follows:

On the North by lands now or formerly owned by The Chesapeake and Ohio Railway Company.

On the East by lands now or formerly owned by Maxine Taylor.

On the South by the center line of the Big Sandy River.

On the West by lands now or formerly owned by Flora Raburn.

There is included as a part or all of the tract of land above described that parcel of land more particularly described by

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recent survey as follows:

Beginning at a point in the south right-of-way line of The Chesapeake and Ohio Railroad said stake being the Northeast corner of lands of Flora Raburn, thence with the south right-of-way line of the Chesapeake and Ohio Railroad along the arc of a curve having a radius of 5779.7 feet 169.0 feet in a northeasterly direction, to a point; thence N. 58°-21' E. 298.0 feet to a stake the northwest corner of lands of Maxine Taylor; thence leaving the right-of-way and with the line of lands of Maxine Taylor S. 39°-03' E. 347.5 feet to a stake in the fence; thence S. 34° -02' E. 415.7 feet to a stake in the fence; thence S. 31° -28' E. 298.0 feet to a wild cherry in the fence, thence S. 29°-55' E. approximately 830 feet to a point in the center of Big Sandy River, thence with the center of the stream approximately 610 feet in a southwesterly direction to a point the southeast corner of lands of Flora Raburn, thence leaving the River and with the line of lands of Flora Raburn N. 28°-32' W. approximately 1800 feet to the point of beginning containing 24.00 acres, by survey.

Second Tract

All that certain tract of land on the North side of Kentucky State Route Number 3 near the mouth of Blaine Creek in Lawrence County, Kentucky, and bounded as follows:

On the North by the old County Road.

On the East by the Old County Road.

On the South by Kentucky State Highway Number 3.

On the West by lands now or formerly owned by Flora Raburn.

There is included as a part or all of the tract of land above described that parcel of land more particularly described by recent survey as follows:

Beginning at a stake in the north right-of-way line of Kentucky State Route No. 3 and in the West line of the County Road leading from Horse Ford Branch to Kentucky State Highway No. 3; thence with the north right-of-way line of Ky. State Highway No. 3 S. 58°-21' W. 435.5 feet to a stake; thence in part with an offset of said right-of-way line and in part with the line of lands of Flora Raburn N. 33°-25' W. 457.60 feet to a point; thence N. 73°-53' W. 135.0 feet to a point; thence N. 27°-32' W. 345.9 feet to a large white oak on the south side of the County Road leading from Horse

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Ford Branch to Kentucky State Route No. 3; thence leaving the line of lands of Flora Raburn and with the southerly and westerly line of said County Road N. 89°-32' E. 232.3 feet to a point; thence S. 84°-29' E. 99.7 feet to a point; thence S. 62°-34' E. 134.0 feet to a point; thence S. 52°-52' E. 143.5 feet to a point; thence S. 47°-40' E. 160.0 feet to a point; thence S. 51°-25' E. 200.2 feet to a point; thence S. 34°-33' E. 128.5 feet to the point of beginning, containing 6.95 acres by survey.

Together with all the right, title and interest of the parties of the first part in and to the bank, shore, bed, waters and creeks of the Big Sandy River where the same flow by or abut the above described tracts of land and any and all right, title and interest of every character and description whatsoever, including all reversionary rights in and to any and all roads, roadways, streets, alleys, rights of way, graveyards and easements on, adjacent to or abutting the above described tracts of land.

The tracts of land hereby conveyed are inclusive of the parcels heretofore described, but it is intended that said tracts of land shall not necessarily be limited by the specific descriptions of said parcels and it is intended to convey by the above descriptions all those certain tracts or parcels of land acquired by Mary H. Fugett by the following:

General Warranty Deed from Peter V. Alley and Martha V. Alley, his wife, to Mary H. Fugett (therein identified as Mary Alley Fugatt), Ethel G. Alley Brown and Flora Alley Raburn, dated March 7, 1935, and recorded in Deed Book 88, page 184 Lawrence County Court Clerk's Records.

General Warranty Deed from Ethel Brown and W. B. Brown her husband, and Flora Raburn and O. S. Raburn, her husband, to Mary H. Fugett (therein identified as Mary H. Fugate) undated, but recorded September 1, 1938, in Deed Book 92, page 295, aforesaid records.

TO HAVE AND TO HOLD unto the party of the second part, its successors and assigns forever with all appurtenances thereunto belonging, with covenant of General Warranty, subject, however, to the following:

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1. Rights of way and public utility easements, if any, as are this day of legal record on said premises.

Flora Raburn, widow, and Ethel Brown and W. B. Brown, her husband, parties of the first part join herein for the purpose of granting and they do hereby grant their consent to this conveyance as required by that certain deed from Peter V. Alley, et ux to Mary H. Fugett (therein identified as Mary Alley Fugatt), Ethel G. Alley Brown and Flora Alley Raburn, dated March 7, 1935, and recorded in Deed Book 88, page 184 aforesaid records, and that certain deed from Ethel Brown and W. B. Brown, her husband and Flora Raburn and O. S. Raburn, her husband, to Mary H. Fugett (therein identified as Mary H. Fugate) undated, but recorded September 1, 1938 in Deed Book 92, page 295 aforesaid records.

Witness the signatures of the parties of the first part herein the day and date first above written.

Mary H. Fugett

Flora Raburn

Ethel Brown

W. B. Brown

STATE OF KENTUCKY
COUNTY OF Boyd

I, the undersigned, a Notary Public in and for the County and State aforesaid, hereby certify that the foregoing deed of conveyance from Mary H. Fugett, widow, Flora Raburn, widow, and Ethel Brown and W. B. Brown, her husband, to The Franklin Real Estate Company, a corporation, was on this day produced to me in my said County, and acknowledged by Mary H.

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Fugett, widow, Flora Raburn, widow, and Ethel Brown and W. B. Brown, her husband, to be their free act and deed.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my Notarial seal this 6th day of July, 1960.

My Commission expires May 31, 1964

Margaret M. Hodge
Notary Public

(S E A L)

STATE OF KENTUCKY
COUNTY OF LAWRENCE

I, W. H. Moore, Clerk of the county court in and for the coun and State aforesaid, do hereby certify that the foregoing Dee was on the 5th day of July, 1960, lodged in my sai office for record, and that it the foregoing and this certifi cate has been duly recorded therein.

Witness my hand this the 18th day of July, 1960.

W. H. Moore, Clerk
Lawrence County Court
By: Betty Kennedy

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