Environmental Assessment

Turney Energy Center
Clinton County, Missouri

U.S Department of Agriculture Rural Utilities Service

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List of Abbreviations

Abbreviation	Term/Phrase/Name
ACHP	Advisory Council on Historic Preservation
AECI	Associated Electric Cooperative, Inc.
AJD	Approved Jurisdictional Determination
APE	area of potential effect
BACT	Best Available Control Technology
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
CAA	Clean Air Act
CCAP	Comprehensive Climate Actions Plan
CEMS	continuous emission monitoring system
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CIA	Critical Issues Analysis
Clinton County PWSD #4	Consolidated Public Water Supply District No. 4 of Clinton, Caldwell, Ray, and Clay Counties, Missouri
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CWA	Clean Water Act
dBA	A weighted decibel
EA	environmental assessment
ELFS	Electric Load Forecast Study
EMF	electromagnetic field
EPA	U.S. Environmental Protection Agency
EPC	Emergency Planning Committee
ESA	Endangered Species Act
°F	degree Fahrenheit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps

FONSI	Finding of No Significant Impact
FR	Federal Register
gpm	gallons per minute
GSU	generator step-up
G&T	generation and transmission
HAP	hazardous air pollutant
HDPE	high-density polyethylene
HHV	higher heating value
Hz	hertz
IDP	Inadvertent Discoveries Plan
IPAC	Information for Planning and Consultation
IRP	Integrated Resource Plan
kV	kilovolt
LHV	lower heating value
m	meter
MACT	Maximum Achievable Control Technology
MDC	Missouri Department of Conservation
MDNR	Missouri Department of Natural Resources
MMBtu/hr	million British thermal units per hour
MoDOT	Missouri Department of Transportation
MONHP	Missouri Natural Heritage Program
MRLC	Multi-Resolution Land Characteristics
MW	megawatt
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAIP	National Agriculture Imagery Program
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHD	National Hydrography Dataset
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPV	net present value
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards

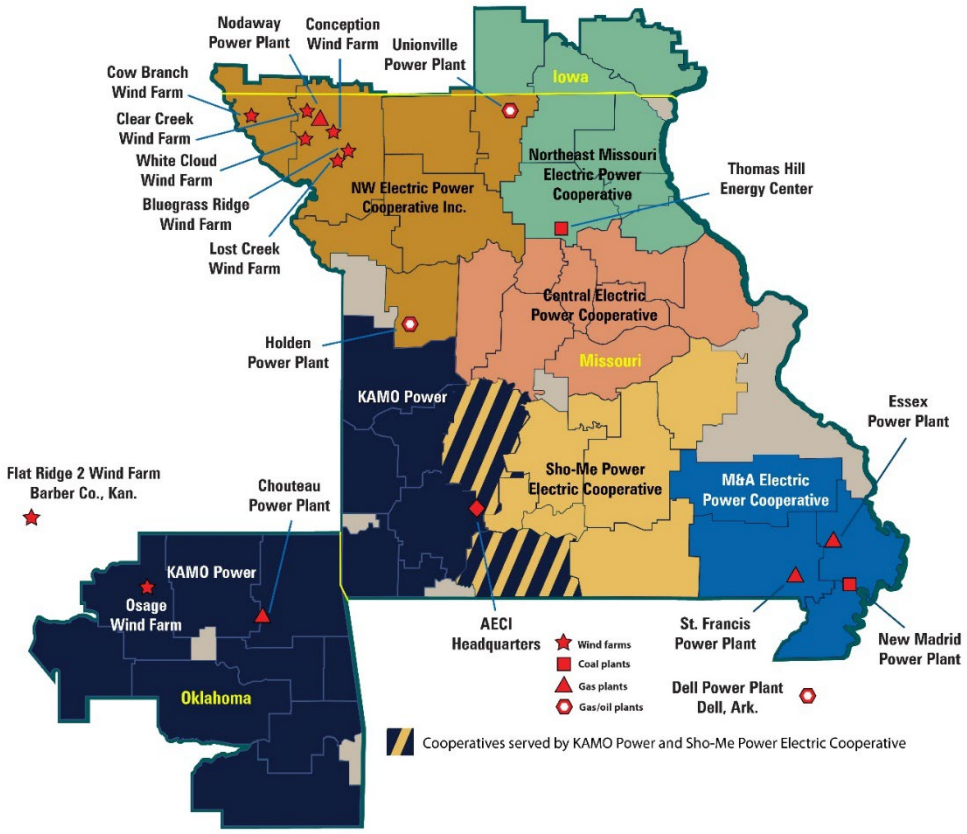
NSR	New Source Review
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OSHA	Occupational Safety and Health Administration
Pb	lead
PCAP	Priority Climate Action Plan
PEM	palustrine emergent
PFO	palustrine forested
PM	particulate matter
$PM_{2.5}$	particulate matter 2.5 microns or less in diameter
PM_{10}	particulate matter 10 microns or less in diameter
PPA	power purchase agreement
PSD	Prevention of Significant Deterioration
PUB	palustrine unconsolidated bottom
RFP	Request for Proposal
ROW	right-of-way
RUS	Rural Utilities Service
SCGT	simple-cycle gas turbine
SCR	selective catalytic reduction
SER	Significant Emission Rate
SHPO	State Historic Preservation Office
SIL	Significant Impact Level
SO_2	sulfur dioxide
STIP	Statewide Transportation Improvement Plan
SSURGO	Soil Survey Geographic
TEC	Turney Energy Center
THPO	Tribal Historic Preservation Officer
tpy	tons per year
$\mu g/m^3$	microgram per cubic meter
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

VOC	Volatile Organic Compound

1.0 Introduction

Associated Electric Cooperative, Inc. ("AECI") is a member-owned, member-led wholesale power generation and transmission cooperative created in 1961 by rural electric cooperatives to provide electricity reliably and affordably for rural areas of the Midwest. Today, AECI and its member cooperatives deliver electricity to 935,000 meters (member-consumers) representing 2.1 million people across rural Missouri, northeast Oklahoma, and southeast Iowa (Figure 1-1). AECI's member-consumers are primarily older, lower income electricity users who live in rural parts of the three-state system. More populous urban and suburban areas of these regions are generally served by municipal or investor-owned electric utilities.

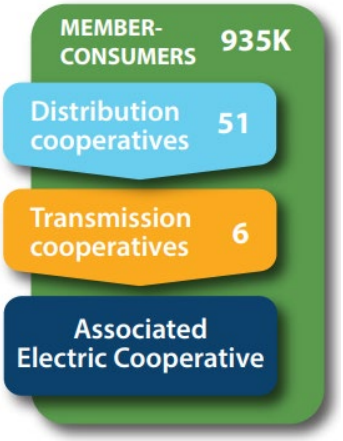
Figure 1-1: AECI Service Territory



AECI is a system comprised of three distinct tiers, each specializing in one critical area of the electric utility process and accountable for its performance through democratic control at every tier.

- Generation: In the first tier, AECI generates power for six regional transmission cooperatives who are member-owners of AECI.

- Transmission: In the second tier, the six regional transmission co-ops use an extensive network of substations and high-voltage power lines to deliver the power to 51 distribution co-ops who are their member-owners. AECI and its six transmission co-op owners own and operate 10,288 miles of transmission lines.
- Distribution: The third tier is made up of the 51 local power co-ops that deliver electricity to member-consumers at homes, farms and businesses in rural areas. 935,000 member-consumers (meters) served by this distribution tier own and are democratically represented at their local co-ops.



1.1 Project Description

1.1.1 Proposed Action

AECI is requesting a loan from the U.S. Department of Agriculture ("USDA"), Rural Utilities Service ("RUS") to procure and construct a 421-megawatt ("MW") simple-cycle gas turbine ("SCGT"), located approximately 2 miles southwest of Turney, in Clinton County, Missouri (the "Project Site"). The approximately 95.5 acres that AECI owns, of which, approximately 45 acres will be disturbed for construction of the generation site and approximately 37 acres will ultimately be fenced. The general location of the Project Site including the transmission line is shown in Figure 1-2 and the proposed site layout is shown in Figure 1-3.

To support operation of the new combustion turbine, a new natural gas lateral would be constructed to supply fuel to the Project Site. The new eight (8)-inch lateral would extend south from a tap point on the existing natural gas Rockies Express Pipeline, LLC within the Project Site boundary approximately 1,000 feet to supply the SCGT (see Figure 1-2). The lateral pipeline will not be owned or operated by AECI and is considered a connected action.

The project site will be interconnected to the transmission grid via construction of a two (2)-mile, single-circuit 161 kilovolt ("kV") transmission line between the generation site and the proposed Shoal Creek switch station. N.W. Electric Cooperative ("N.W."), a member-owner Generation and Transmission ("G&T") of AECI, will construct, own, operate, and maintain the transmission line and right-of-way ("ROW") to the three (3)-acre fenced Shoal Creek switch station (also owned and operated by N.W. Approximately 2.5 miles of existing distribution electrical line, owned by Platte Clay Electric Cooperative, will be reconstructed within existing ROW to supply power to the generation site.

A new 1.5-mile water pipeline would be constructed of six (6)-inch high-density polyethylene ("HDPE") pipe that would tap into an existing water tower nearby owned by the Consolidated Public Water Supply District No. 4 of Clinton, Caldwell, Ray, and Clay Counties, Missouri ("Clinton County PWSD #4"). The new water pipeline would be needed to supply water to the Project and the surrounding community, with a portion of the line being upgraded and a portion being constructed.

The Project would be constructed over a 24-month period. The footprint for construction of this Project is approximately 45 acres, located primarily in an open agricultural area within the Project Site boundary (Figure 1-2). Construction activities would also include equipment laydown, temporary offices, and parking.

The proposed action will require the following major new components:

- Advanced-class SCGT and auxiliary equipment
- Air cooled generator and auxiliary equipment
- Selective catalytic reduction

- Generator step-up ("GSU") and auxiliary transformers
- Fuel oil tanks, offload, and forwarding equipment
- Water tanks
- Electrical equipment for the station including the onsite switchyard
- Fire protection
- Natural gas metering, filtering and pressure regulating equipment
- Permanent offices and warehousing
- Permanent plant roads, lighting, fencing, and cameras

These proposed actions will be treated as connected actions:

- 2-mile transmission lead line owned by N.W. Electric Cooperative
- 2.5-mile distribution electric line owned by Platte Clay Electric Cooperative
- 3 acre fenced Shoal Creek Switch Station owned by N.W. Electric Cooperative
- 1.5-mile water pipeline extension and upgrades owned by Clinton County PWSD #4

1.1.2 Agency and Program Objectives

RUS's action is the decision to provide financing assistance for the Proposed Action through the Electric Infrastructure Loan & Loan Guarantee Program. Under the Rural Electrification Act of 1936, as amended, the Secretary of Agriculture is authorized and empowered to make loans to nonprofit cooperatives and others for rural electrification for the purpose of financing the construction and operation of generating plants, electric transmission and distribution lines, or systems for the furnishing and improving of electric service to persons in rural areas (7 U.S. Code [USC] § 904). A primary function or mission of RUS is to carry out the electric loan program (7 USC § 6942).

USDA, Rural Development is a mission area that includes three federal agencies – Rural Business-Cooperative Service, Rural Housing Service, and RUS. The agencies have more than 50 programs that provide financial assistance and a variety of technical and educational assistance to eligible rural and tribal populations, eligible communities, individuals, cooperatives, and other entities with a goal of improving the quality of life, sustainability, infrastructure, economic opportunity, development, and security in rural America. Financial assistance can include direct loans, guaranteed loans, and grants to accomplish program objectives.

This Environmental Assessment ("EA") was prepared in accordance with Title 7 of the Code of Federal Regulations ("CFR") Part 3100 (7 CFR 3100), which prescribes the policies and procedures of the USDA for implementing the National Environmental Policy Act ("NEPA") of 1969, as amended, Title 7 CFR 1970 which provides environmental policies and procedures for the RUS, the regulations of the Council on Environmental Quality ("CEQ"), 40 CFR parts 1500 through 1508 (in effect until April 11, 2025 according to 90 FR 10610-10616), and the USDA Rural Development guidance document 1970-C which serves as a guide for preparing EAs under NEPA.

Figure 1-2: Proposed Layout of New Equipment

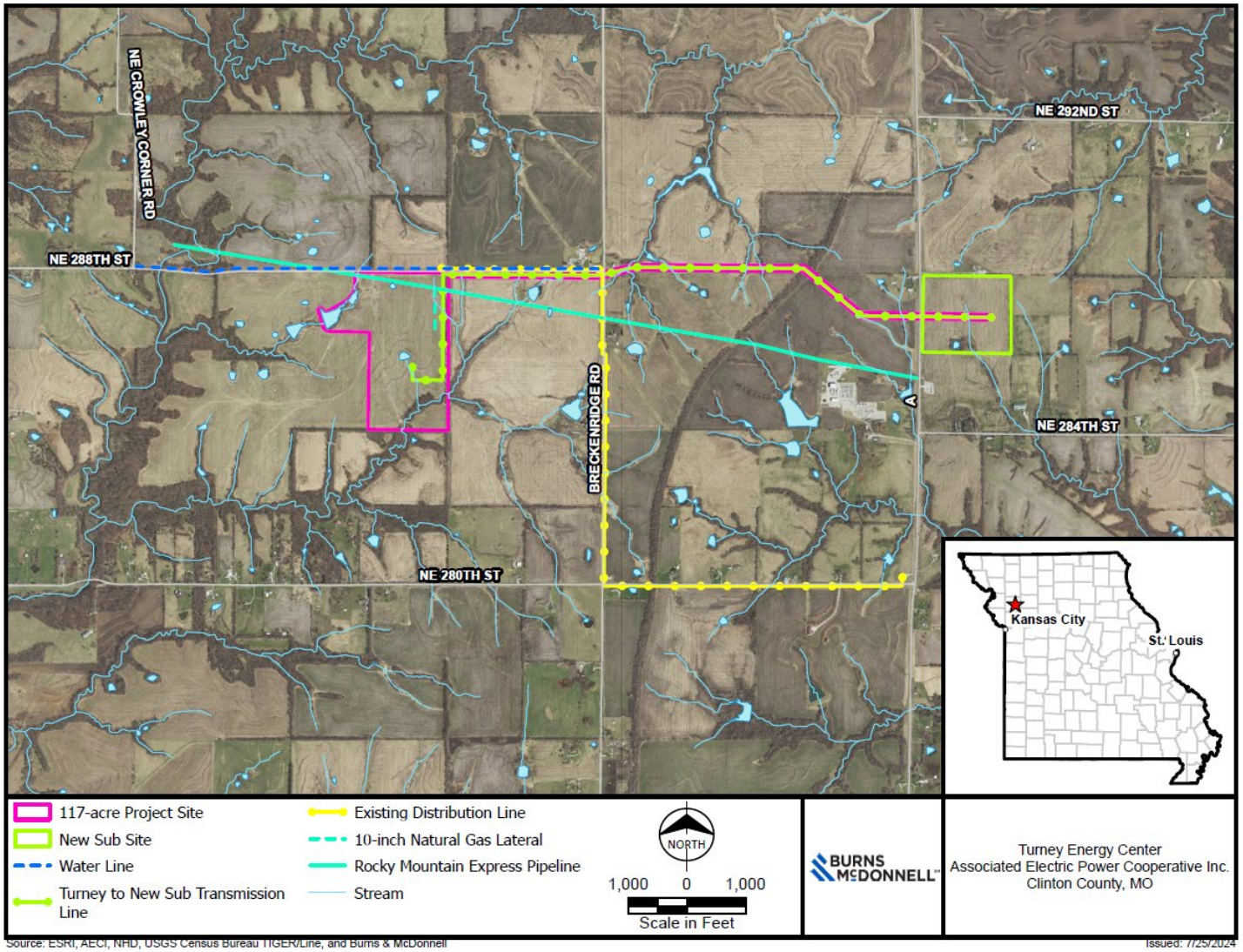


Figure 1-3: Turney Energy Center Location

Figure 1-4: Turney Energy Center Switch Station Location

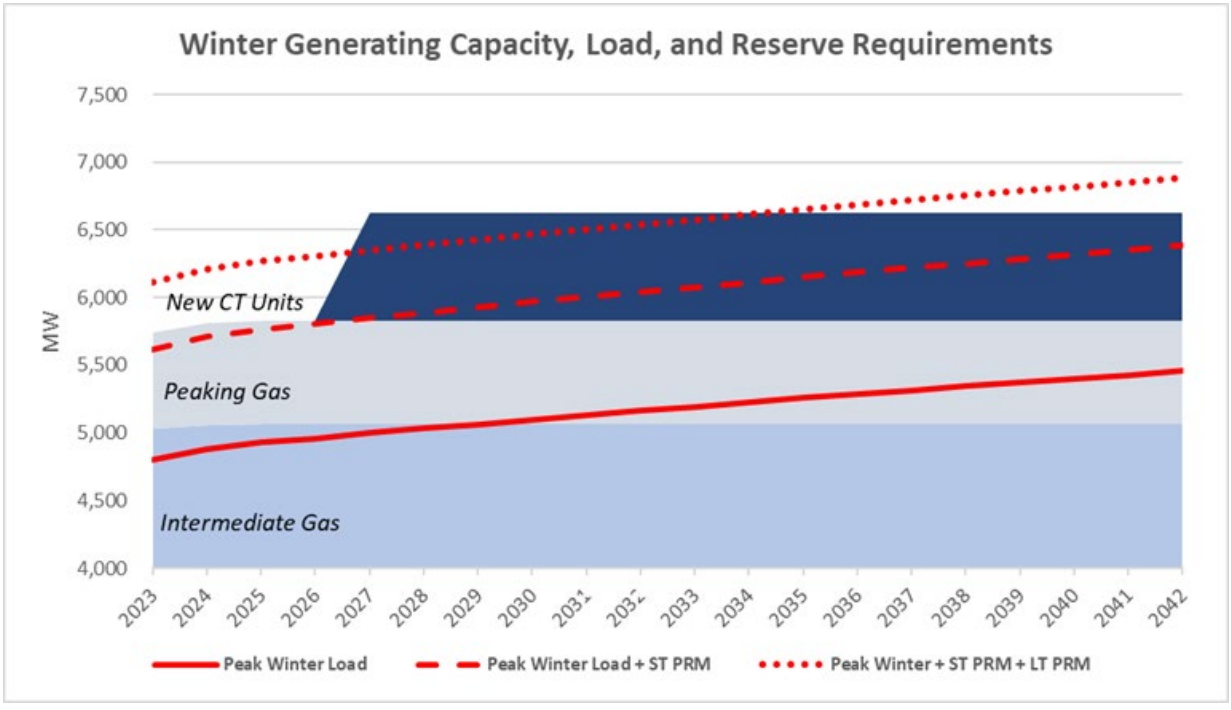
1.2 Purpose and Need

AECI is obligated to provide generating capacity needed to meet its member load requirements through 2075 per all-requirements of G&T coordination agreements. AECI consults with Clearspring Energy Advisors to perform an Electric Load Forecast Study ("ELFS") every other year (on even years). The ELFS study process takes into account AECI's energy efficiency rebate program and projects additional energy efficiency impacts driven by regulatory appliance standards. The 2022 ELFS was refreshed with 2022 load data, economic outlook, and demographic factors, and serves as the basis for these forecasts.

The load forecast study was used to prepare AECI's 2022 Integrated Resource Plan ("IRP"). The load forecast studies indicate that AECI will be in a capacity deficit position, without the addition of new resources, by winter season, 2027. As shown in Figure 1-5, the demand forecasts show a deficit between current assets and future demand, thus supporting the need for additional capacity. The detailed analysis identified a need of 844 MW of capacity, in total, and potential operational constraints of AECI's overall system by 2027. These operational constraints fall in three main areas:

1. the need to diversify fuel usage;
2. a necessary bridge to a larger renewables' portfolio in the future; and
3. a firm dispatchable generation asset.

Figure 1-5: Winter Generating Capacity, Load, and Reserve Requirements



2.0 Alternatives

To determine if RUS can fund the Proposed Action, Alternatives that meet the purpose and need should be considered. Several options were evaluated to meet the identified future capacity needs. The options that were evaluated but eliminated from consideration, the preferred alternative, and the no action alternative are discussed in more detail below.

2.1 Introduction

AECI conducted detailed analysis and held internal discussions through strategic planning sessions in the production of its preferred power supply plan to meet the identified need of up to 900 MW of capacity between both the Missouri and Oklahoma service areas, with at least 421 MW at a single site. AECI conducted a study of self-build options in tandem with a request for proposal ("RFP") for capacity and energy on a long-term basis in AECI's service territories from potential energy providers. Outside bids were solicited to determine if the open market could provide the capacity needed at a more competitive rate than AECI's self-build options. The RFP yielded alternatives including capacity from a fossil resource (natural gas), standalone batteries, and batteries paired with solar. As there is a need for dispatchable, fast-start capacity to backup renewables and provide peaking capacity, only the fossil fuel option meets the purpose. The most competitive RFP response held a net present value ("NPV") cost from 2027-2042 of almost $200 million higher than self-build alternatives. Therefore, AECI is pursuing RUS funding for a self-build option.

2.2 Alternatives Considered

The following is a bulleted list of alternatives evaluated but eliminated from consideration. The reason for elimination is briefly described for each.

- Load Management – Load management is voluntary on the power user side. Because of this, load management does not provide reliable reductions sufficient to offset the need for additional capacity.
- Distributed Generation – Distributed generation are systems of generating power, often renewable energy sources, near the point of use instead of centralized generation sources from power plants (e.g., solar panels on a house). These types of systems neither provide sufficient capacity, nor are they dispatchable in response to intermittent power generation from renewables.
- Renewable Energy Resources – Renewable energy resources such as wind, solar, hydro, or energy storage can provide varying amounts of renewable capacity. AECI contracts with eight wind farms totaling 1,240 MW of nameplate capacity. Because of wind generation's intermittent nature, wind energy is not included as capacity for planning purposes. AECI also receives nearly 478 MW of hydropower from the Southwestern Power Administration.
- Hydrogen Combustion – while there are turbines capable of burning hydrogen to create sufficient capacity, there are no viable supplies of hydrogen to an AECI electrical point of interconnection.
- Buying open market power purchase agreements ("PPA"). The option for new PPAs is very expensive, more expensive than AECI's self-build option, and limited because the region is expected to see a shortfall in capacity when several coal facilities are proposed for retirement coupled with an increase in demand.

Remaining alternatives to consider include various fossil fuel generation sources. Alternatives for the technology to meet the identified need are described in the next section.

2.2.1 Technology Selection

A technology assessment was completed to determine the self-build generation technology that best met the identified need. SCGTs and combined-cycle gas turbines are capable of generating the amount of capacity need identified and were selected for further analysis.

A SCGT will generate power by combusting natural gas and propelling the exhaust through a turbine. The spinning turbine is connected to a generator. An advanced-class SCGT has the lowest total cost when looking at 20 years of operation, less reliance on the energy market, and greater flexibility. An advanced-class SCGT benefits from faster ramp rates, greater efficiency, and economies of scale due to larger unit capacity.

Combined-cycle units are a combination of gas and steam turbines. The result is that the generation of electricity is increased almost by 50%. The waste heat from the gas turbine is routed to the nearby steam turbine, which generates extra power. However, combined-cycle units require significant amounts of water for process use and cooling. Higher temperatures within the units require additional maintenance. Additionally, the units aren't designed for fast response.

Based on the abilities of these technologies and the financial analyses discussed above, the alternative of a natural gas-fired, simple-cycle combustion turbine (i.e., the Proposed Action) was selected. The Proposed Action will balance AECI's traditional and more intermittent renewable generation assets on the system.

2.2.2 Alternative Project Locations

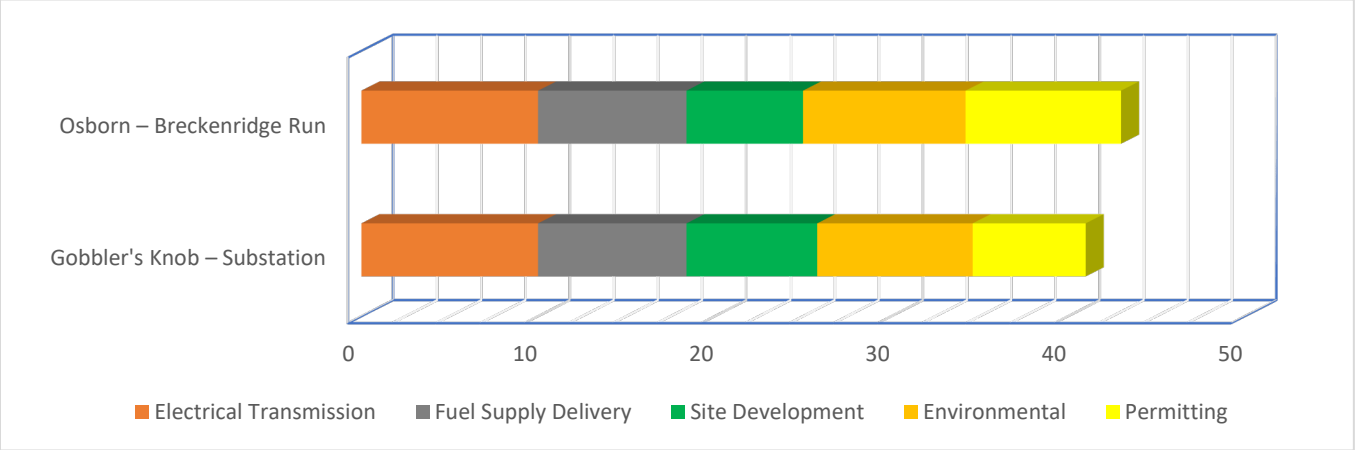
For the identified technology, AECI will need a site that can accommodate new generation. Both existing and greenfield sites were considered.

Existing power plant sites were considered in identifying a site that could accommodate the identified technology. AECI's existing power plant sites in the interconnection region cannot provide sufficient load-following gas supply, and there is no gas available in most locations. Additionally, most sites have existing point sources of air emissions nearby which could potentially lead to cumulative air quality issues. Other reasons an existing AECI site could not be used include transmission constraints (i.e., no reasonable interconnection opportunity) and/or national wildlife refuges nearby (i.e., potential federal land air quality impacts). Therefore, AECI's existing sites were considered, but are not carried forward as viable alternative locations. As such, greenfield sites that accommodate the technology identified and minimize environmental impacts were considered.

A siting study of greenfield locations was then conducted to determine suitable sites for the Project's development within AECI's service territory in Missouri. The proposed site needed to be capable of accommodating up to 421 MW of natural gas fueled simple-cycle generation and possess the necessary infrastructure critical to plant development. An initial 55 sites across both Oklahoma and Missouri, designated as Preliminary Site Areas, were identified that met the infrastructure requirements. Preliminary Site Areas were subjected to review for multiple criteria organized by five categories: Electrical Transmission, Fuel Supply Delivery, Site Development, Environmental, and Permitting. Preliminary Site Areas were ranked according to the composite evaluation score of the five categories.

From this analysis, two sites were selected as Candidate Site Areas: the "Osborn Breckenridge Run" site (i.e., the Turney Energy Center ["TEC"]): and the "Gobbler Knob - Substation" site. The scoring for both sites is shown in (Figure 2-1).

Figure 2-1: Preferred and Alternate Site Area Rankings



After scoring was complete, an analysis of availability of the sites for purchase was conducted. Additionally, a Critical Issues Analysis ("CIA") was performed for each of these sites to identify potential fatal flaws. The CIA used desktop analysis to determine preliminary, anticipated impacts for a generic power plant at each site.

Both of the sites appear to have the infrastructure necessary to support the Project. Based on the identified criteria, the Osborn-Breckenridge (i.e., TEC) site located in Clinton County, Missouri was selected.

2.3 Proposed Action Alternative

Based on a review of available and feasible alternatives, the construction of a new 420-445 MW, natural gas-fired simple cycle combustion turbine located at the TEC is the Proposed Action Alternative to effectively address all purpose and need criteria described in Subsection 1.2. Under the Proposed Action Alternative, RUS would approve AECI's financing request and AECI would construct and operate the new generating facility and associated facilities.

The Proposed Action is a natural gas fired SCGT capable of generating approximately 420-445 MW. It is anticipated that the air permitting process will limit operation of the unit to the standards of 40 CFR Part 60 Subpart TTTT. The project would burn natural gas, with the capability to use fuel oil as a backup, would employ selective catalytic reduction ("SCR") technology to control nitrogen oxide ("NO_x") emissions.

Potential impacts associated with the construction, rebuild, and operation of the distribution line, transmission line and water pipeline, are analyzed as connected actions in this EA. Potential impacts associated with the development of the natural gas pipeline for the Turney Energy Center are included in the evaluation of cumulative impacts in Chapter 4 of the EA.

As mentioned, the Project would be constructed over a 24-month period with the footprint for construction being approximately 45 acres (Figure 1-2).

2.4 No Action Alternative

Under the No Action Alternative, RUS would not provide financial assistance to AECI for the construction of the TEC. As a result, AECI would be required to secure alternative financing for the proposed Project or secure power to address the projected capacity shortfall from other third-party resources. The No Action Alternative would result in increased Project financing costs, which would have an adverse impact on the financial viability of the Project or require AECI to get power from another source, increasing power output

from existing generating resources in the AECI service territory (e.g., existing coal-fired power plants, etc.), or experience rolling blackouts of varying intensity, especially during winter polar vortex events and extreme summer heat.

3.0 Affected Environment/Environmental Consequences

Chapter 3 provides descriptions of the existing environmental conditions of the Project areas and the impacts that may be expected from constructing and/or operating the Project. This chapter provides an understanding of the affected environment and potential environmental consequences for the following resources: air quality; biological resources including vegetation, wildlife, and special status species; cultural resources; geology and soils; infrastructure, transportation, public health and safety; land use; noise; socioeconomics; visual resources; and water resources. Federal, state, and local regulations that apply to managing these resources are also discussed in context of the existing environment. AECI's proposed Project will be located on a greenfield site in northwestern Missouri (Figure 1-2). The Site is located in Clinton County, approximately 2 miles southwest of the City of Turney.

This chapter assesses the potential impacts of the Proposed Action Alternative and the No Action Alternative. The No Action Alternative provides a basis for comparison in which none of the Project components would be constructed. The U.S. Environmental Protection Agency's ("EPA") NEPAssist tool was used as a starting point to identify potential concerns for the various resources to be analyzed (Appendix A).

3.1 Land Use, Formally Classified Lands, Geology, Soils, and Farmland

3.1.1 Affected Environment

Land Use

Multi-Resolution Land Characteristics ("MRLC") Consortium's National Land Cover Database was utilized to determine land cover within the approximately 183-acre area project boundary. Land cover within the Project Boundary contains large portions of cultivated cropland. The vegetation type in the Project Boundary is common for this region. Locations surrounding the Project Boundary are similar in composition and are primarily composed of cultivated cropland, pasture/hay lands, deciduous forest with low intensity development. A full breakdown of land use types identified within the Project Boundary is shown in Table 3-1.

Table 3-1: Land Cover Identified within the Project Boundary

Land Use Type	Acres
Cultivated Crops	138.5
Hay/Pasture	20.4
Developed, Low Intensity	13.3
Deciduous Forest	5.4
Developed, Open Space	2.8
Open Water	1.3
Developed, Medium Intensity	0.5

Source: MRLC National Land Cover Database (MRLC, 2021)

Formally Classified Lands

There are no formally classified lands within the Project. The nearest Protected Area is Ronald and Maude Hartell Conservation Area, which is managed by the State Department of Conservation and is located approximately 1.6 miles to the west-southwest (U.S. Geological Survey ["USGS"], 2024b).

Geology

Missouri geologic map data from the USGS was used to determine the geology of the site (USGS, 2024a; MDNR, 2024a). According to the map, Clinton County is primarily made up of the Lansing Group containing cyclic deposits of limestone and shale, and the Kansas City Group covering the remaining 23% of Clinton County. The Kansas City Group consists of cyclic deposits of limestone and shale with minor sandstone and coal. The Site is contained within the Lansing Group.

Karst is a prominent feature of the Missouri landscape and can form sinkholes, caves, and springs. No sink holes were revealed within five miles of the Project. One cave is located nearby in the Lathrop quadrangle and has a cave density of zero. Two historical limestone surface mines are located within one mile of the study area.

Soils

The general soils maps of Clinton County, published by the USDA Natural Resources Conservation Service ("NRCS") (USDA, 2019), were referenced for the following descriptions of the general soil map units within the Project Boundary. The NRCS Soil Survey Geographic ("SSURGO") database was used to identify the specific soil map units associated with the Project Boundary as mapped by the USDA-NRCS. The SSURGO database is generally the most detailed level of soil geographic data available and utilizes information contained in published NRCS soil surveys. The Project Boundary consists of nine USDA-NRCS soil map units, as summarized in Table 3-2. There are no hydric soils within the Project Boundary.

Soils present in the proposed Project Site area are classified as low to moderate risk of corrosion to concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Eight of the nine soils present on the Site were classified as higher risk to corrosion of uncoated steel, the remaining soil (30062) is classified as a moderate risk of corrosion of uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil.

Table 3-2: Soil Map Units within the Project Boundary

Map Soil Unit Symbol	Description	Acres
30085	Grundy silt loam, 2 to 5 percent slopes*	76.9
30087	Grundy silt loam, 5 to 9 percent slopes	85.7
30092	Grundy silty clay loam, 5 to 9 percent slopes, moderately eroded	0.36
30142	Lamoni silty clay loam, 5 to 9 percent slopes, moderately eroded	4.1
34020	Colo silty clay loam, drainageway, 2 to 5 percent slopes, frequently flooded*	10.5
30036	Armstrong silt loam, 5 to 9 percent slopes	0.7
30062	Gara loam, 9 to 14 percent slopes***	1.2
36028	Nevin silt loam, 0 to 2 percent slopes, rarely flooded*	0.5
36020	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded**	0.5

Source: USDA, 2019

Gray shading indicates soil map unit is considered hydric.

* - Indicates soil map unit is considered prime farmland, if drained.

** - Indicates soil map unit is considered prime farmland

*** - Indicates soil map unit is considered farmland of statewide importance.

Farmland

The Site and surrounding areas consist of disturbed soils from agricultural production. The USDA's Web Soil Survey lists the present soils as prime farmland that could yield high crop production if drained, prime

farmland, and farmland of statewide importance. Of the nine soil units in the Project, five (5) are considered prime farmland (Table 3-2). There is approximately 87.9 acres of prime farmland, if drained; 0.5 acres of prime farmland; and 1.2 acres of farmland of statewide importance crossed by the Project. There are no agricultural areas using center pivot irrigation near the Project.

Prime farmland is defined by the USDA as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for those uses. A farmland of statewide importance does not meet the criteria for prime or unique farmland for the production of food, feed, fiber, forage, and oilseed crops. These tracts of land could also have been designated for agriculture by State law. Less than 1% of the project footprint is classified as a farmland of statewide importance and will be limited to ROW area for the water pipeline.

3.1.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to land use, formally classified lands, geology, soils, and farmland.

3.1.2.1 Proposed Action Alternative

Construction and operation of the Project would impact the existing agricultural land use. The Project has been tilled and is actively cultivated for the production of row crops. Soils within the Project boundary are designated as prime farmland or farmland of statewide importance by the NRCS. The NRCS was consulted, and the AD-1006 form was filled out by RUS/AECI and NRCS. The total screening score for the site was below their threshold of 160, indicating no significant impacts to prime farmland are anticipated and an alternative site does not need to be considered. The site is currently used for agriculture, and the remainder of the site is anticipated to continue crop production after the Project is built. Construction and operation of the proposed Project will therefore not have a significant impact on prime farmland or soils. The project is not anticipated to significantly impact geological resources or formally classified lands.

3.1.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to land use, formally classified lands, geology, soils, or farmland at or near the Project because no construction or operation would occur.

3.1.3 Mitigation

Construction and operation of the proposed Project will alter the current land use and remove prime farmlands from use for production. No specific mitigation measures are anticipated.

During construction, portions of the Project site will be cleared, grubbed, graded, excavated, and revegetated. In areas not impacted by these activities, such as areas that do not require clearing, existing vegetation will be preserved where practicable. The amount of soil exposed during construction will be minimized.

Temporary seeding will be applied to areas of exposed soil that have not been brought to final grade yet, where the establishment of vegetation is desired. Additionally, temporary seeding will occur in disturbed areas where further land-disturbing activities will not be performed for a period greater than 30 days, and vegetative cover is required for less than 1 year. Areas needing protection during periods when permanent seeding is not applied, must be seeded with annual species.

Final stabilization is achieved when all soil-disturbing activities at the site have been completed and a uniform (i.e., evenly distributed, without large bare areas) perennial vegetation cover with a density of 70 percent of the native background vegetative cover has been established on all unpaved areas or areas not covered by permanent structures or with alternative surfacing, such as riprap or crushed rock.

3.2 Floodplains

3.2.1 Affected Environment

The U.S. Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Maps ("FIRM") indicates that there are no 100- or 500-year floodplains within the Project Boundary (FEMA, 2024).

3.2.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to floodplains.

3.2.2.1 Proposed Action Alternatives

All construction that will take place will not result in any impacts to floodplains. No future impacts to floodplains are anticipated during operation of the Project. The Project will not result in any additional runoff or impedance of flood flows.

3.2.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to floodplains as no construction or operation would occur.

3.2.3 Mitigation

As construction and operation of the proposed Project will have no impacts on floodplains, no mitigation measures are required.

3.3 Wetlands and Water Bodies

3.3.1 Affected Environment

Burns & McDonnell completed a desktop assessment using the U.S. Fish and Wildlife Service ("USFWS") National Wetland Inventory ("NWI") Maps, USGS National Hydrography Dataset ("NHD"), 2018 USGS 7.5-minute topographic maps (Lathrop, Plattsburg), National Agriculture Imagery Program ("NAIP") aerial photography (2019), and USDA NRCS 2017 SSURGO digital data. The NWI data indicates the potential presence of palustrine forested ("PFO") wetland, palustrine unconsolidated bottom ("PUB") wetlands and riverine wetlands within the proposed Project Boundary. The Project Boundary includes the plant site, switch station site, transmission line corridor, water pipeline corridor, natural gas lateral, and the existing distribution line corridor. A total of 3.3 acres of NWI wetlands are mapped within the Project Boundary. The NHD data shows there are 20 streams present within the Project Boundary. The NRCS SURGO data shows one hydric soil in the Project Boundary. Based on the assessment it was determined a field visit would be necessary to identify any wetlands or other aquatic resources that may be present within the Project Boundary. The Project Boundary encompasses the TEC plant site, the new transmission line route, the new water pipeline route, the existing distribution line rebuild route, and the proposed switch station site.

Burns and McDonnell conducted onsite wetland delineations on April 22 and August 6, 2024. The delineation was completed following the 1987 *Corps of Engineers Wetlands Delineation Manual* (1987 Manual) and the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest – Version 2.0* (Regional Supplement).

Nine wetlands and 24 streams were identified during the wetland delineations study. A total of 4.55 acres of wetlands were delineated representing approximately 2% of the total 193-acre area evaluated within the

Project Boundary and the surrounding affected areas (the "Survey Area"). Each delineated wetland was assigned a type based on the Cowardin Classification System (Cowardin et al., 1979). Wetland types identified include palustrine emergent ("PEM"), PFO, and PUB. A total of 4,562 feet (0.86 miles) of ephemeral, intermittent, and perennial stream crossings were delineated within the Survey Area. Table 3-3 and Table 3-4 summarize the identified wetlands and streams, respectively, within the Survey Area. The wetlands report is attached as Appendix B, containing maps with callouts of surveyed wetlands and streams.

Table 3-3: Delineated Wetlands within the Survey Area by Type

Wetland Type[1]	Delineated Area (Acres)	Description[2,3]
PEM	1.81	Characterized by a 30 percent or greater areal cover of emergent, herbaceous vegetation. Additionally, the combined areal cover of shrubs, saplings, and trees in these wetlands was less than 30 percent. Dominant vegetation included tufted foxtail (*Alopecurus carolinianus*), reed canary grass (*Phalaris arundinacea*), stinging nettle (*Urtica dioica*), yellow ironweed (*Verbesina alternifolia*), Canada goldenrod (*Solidago canadensis*), narrow-leaf cattail (*Typha angustifolia*), black willow (*Salix nigra*), American sycamore (*Platanus occidentalis*), white mulberry (*Morus alba*), and American elm (*Ulmus americana*). Wetland hydrology was indicated by surface water, high water table, saturation, geomorphic position, and a positive FAC-neutral test.
PFO	0.21	Characterized by a 30 percent or greater areal cover in tree stratum. Dominant vegetation included Canadian wood nettle (*Laportea canadensis*), American sycamore, and hackberry (*Celtis occidentalis*). Wetland hydrology was indicated by geomorphic position and a positive FAC-neutral test.
PUB	2.22	Characterized by open water ponds with a combined areal cover of less than 30 percent of vegetation. Common surrounding vegetation included reed canary grass, stinging nettle, curly dock (*Rumex crispus*), tall goldenrod (*Solidago altissima* L.), black willow, and white mulberry.

[1]Symbols for wetland type: PEM = palustrine emergent, PFO = palustrine forested, PUB = palustrine unconsolidated bottom.
[2]Source: Cowardin et al 1979
[3]Source: Descriptions as observed by Burns & McDonnell onsite wetland delineations completed April 22 and August 6, 2024.

Table 3-4: Streams Identified within the Survey Area

Stream Type	Delineated Length (Feet)	Characterization[1]
Ephemeral	1,639	A defined bed and bank but had limited or no flow during the site visit, indicating that the stream largely carries water only during and after precipitation events. Common riparian vegetation included Kentucky bluegrass (*Poa pratensis*), black willow, honey locust (*Gleditsia triacanthos*), black walnut (Juglans nigra), American elm, and mulberry.
Intermittent	2,871	The presence of a limited volume of flow at the time of the site visit, indicating that the stream is partially fed by groundwater but that the streams may not flow during dry periods. Common riparian vegetation included Kentucky bluegrass, tall goldenrod, and American elm.

Stream Type	Delineated Length (Feet)	Characterization[1]
Perennial	52	The presence of a substantial volume of flow at the time of the site visit, indicating that water likely flows year-round. Common riparian vegetation included jewelweed (Impatiens pallida), coralberry (Symphoricarpos orbiculatus), honey locust, black walnut, and Osage orange (Maclura pomifera).

[1]Source: Characterizations as observed by Burns & McDonnell onsite wetland delineations completed April 22 and August 6, 2024.

No other wetlands, water bodies, or other aquatic resources have been identified within the Survey Area except for as noted above. Coordination with U.S. Army Corps of Engineers ("USACE") Kansas City District occurred and an Approved Jurisdictional Determination ("AJD") was received on February 3, 2025 (Appendix D). Seven features (channels, wetlands, or ponds) were determined to be jurisdictional and subject to Clean Water Act ("CWA") Section 404. AECI will obtain the applicable Nationwide Permit ("NWP") for the Project.

3.3.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to wetlands and water bodies.

3.3.2.1 Proposed Action Alternatives

AECI has selected suitable locations for laydown staging that will be necessary for construction of this Project to avoid any wetlands impacts. The Project Site has been selected to avoid and minimize wetland impacts as much as practical.

Seven waters in the Project footprint were determined to be jurisdictional through consultation with USACE. The existing jurisdictional surface water (pond) on the Project site will be avoided. A jurisdictional offsite stream along the new interconnect line may receive civil engineering design, for which AECI would obtain a NWP. Other jurisdictional ponds, wetlands, and streams will be avoided including the pond located on the switch station parcel.

Any wetlands or streams occurring near distribution line upgrades or construction are expected to be spanned and best management practices ("BMPs") will be used to prevent fill from entering the waterbody. Thus, construction and operation of the proposed Project will have no effects on non-jurisdictional wetlands. It is anticipated that the Project will not have a significant impact on unavoidable jurisdictional wetlands.

3.3.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to wetlands and water bodies at or in the vicinity of the Project because no construction or operation would occur.

3.3.3 Mitigation

As construction and operation of the proposed Project will avoid most jurisdictional wetlands. AECI will obtain the applicable NWP for the Project. BMPs will be used for any impacts to non-jurisdictional and unavoidable jurisdictional wetlands. It is anticipated there will be no significant impacts on wetlands and no specific mitigation measures are required (e.g. spanning streams, no permanent impacts).

3.4 Water Resources

3.4.1 Affected Environment

Surface Waters, Water Supply, and Discharge

As discussed in Section 3.3: Wetland and Water Bodies there are surface waters present within the Project Boundary. However, these are not sources that are viable for water supply and siting has been selected to avoid permanently impacting these sources.

A rural district supply of water is the most viable option for the TEC. The Clinton County PWSD #4 was determined to be an appropriate nearby public water source. An existing water tower owned by the Clinton County PWSD #4 is present between the TEC and the proposed switch station and appears to be the most viable option for the Site. A new 1.5-mile water pipeline would be constructed of six (6)-inch HDPE pipe that would tap into an existing water tower nearby. The new water pipeline would be needed to supply water to the Project and the surrounding community, with a portion of the line being upgraded and a portion being constructed.

A Limited Special Service Agreement between Clinton County PWSD #4 and AECI was signed on July 11, 2024, by the Board of Directors of Clinton County PWSD #4 and the District Clerk. According to the Agreement, the Project is approved for 88 gallons per minute ("gpm").

Groundwater

The Project Boundary does not directly overlie any major or minor alluvial or bedrock aquifers as the subsurface is composed primarily of clay and massive shale units and does not directly overly any sole source aquifers according to NEPAssist (see Appendix A) and therefore groundwater is not readily available.

Karst features can act as a direct conduit of surface waters and pollutants to groundwater. Precautions will be taken avoid the introduction of pollutants to sensitive groundwater resources. Wells can also act as conduits of pollutants to groundwater. One active domestic well is located within one mile of the Project site and 42 wells are located within five miles of the Project site. No active public wells were identified in the area. One abandoned public well is located near the project area. Abandoned wells should be plugged prior to land disturbance to avoid the introduction of pollutants to the unconfined aquifer.

Water Quality

The Site's water will be supplied by Clinton County PWSD #4 per the agreement signed on July 11, 2024. The rural water district purchases water from the City of Plattsburg, which sources their water from the Smithville Reservoir, which is located approximately 8 miles southwest of the Project Site in Clinton County. Raw water from Smithville Reservoir is transported to the City of Plattsburg's treatment facility. Water to be provided to the site is potable. There are no 303d waterbodies (i.e., waterbodies that do not meet water quality standards) within or adjacent to the property (EPA, 2024b). While Smithville Reservoir/Lake is a 303d listed waterbody, the City of Plattsburg manages the water quality supplied to Clinton County PWSD #4 end users.

3.4.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to water resources.

3.4.2.1 Proposed Action Alternatives

Construction

There are minimal surface water resources near the Site. The approximately 2.1-acre surface water located on the TEC site may receive civil design work to restore design and surface flow integrity. The approximately 0.12-acre surface water located on the switch station site is anticipated to be avoided. One stream is spanned by the existing distribution line and will be affected by the rebuild, but the impacts will be consistent with impacts of the existing distribution line. AECI will coordinate with MDNR to complete an Antidegradation Review that complies with the Missouri Antidegradation Rule and Missouri's Antidegradation Implementation Procedure ("AIP"). For industrial facilities, this requires an Antidegradation Report, the Geohydrologic Evaluation, and the Natural Heritage Review to be submitted for review. Seven of these waters were determined to be jurisdictional through consultation with USACE (Appendix D). The Project will not have a significant impact on unavoidable jurisdictional wetlands. AECI will obtain the applicable NWP for the Project.

AECI will also comply with National Pollutant Discharge Elimination System ("NPDES") and utilize BMPs during construction. BMPs may include silt fence, inlet protection, straw wattle barriers, riprap, erosion control blankets, and other erosion and sediment control measures as necessary. Appropriate sediment and erosion control BMP will be installed prior to initiating soil-disturbing activities, such as installation of new foundations and concrete pads. All BMP will be maintained as necessary throughout Project construction.

Construction activities from the Project will not impact the groundwater at the Site. Accordingly, no lowering of the groundwater level will be required during construction.

A new 6-inch HDPE water pipeline, approximately 1.5-miles in length, will be constructed to tap into an existing water tower owned by the Clinton County PWSD #4.

Operation

No groundwater would be used for the Project. There would be no impact to groundwater. The new water pipeline will provide approximately 88 gpm to the onsite water storage tanks, per the agreement with Clinton County PWSD #4. The Project is expected to use approximately 150 gpm of water, at maximum operation in the rare instance the facility is operating on fuel oil. The majority percentage of water use will be below 150 gpm of water for operations. Water will be used at the site for process water and sanitary purposes. Wastewater streams include process water, sanitary water, and stormwater. Engineering determinations regarding final wastewater pathways are still being decided. Wastewater pathways decisions will be made in accordance with NPDES and the facility will obtain a NPDES Permit.

Process water and stormwater from the proposed Project will result in discharged liquids to an onsite settling pond. Drains for areas around equipment that could be contaminated with oil would be gravity drained and directed through oil/water separators prior to discharge to the settling pond. The outfall from the settling pond is expected to be the point of compliance for the facilities water permit and will ultimately leave the site via the discharge to drainage onsite. Facility waste streams (i.e., toilets, sinks, etc.) are directed to an onsite septic system with lateral fields.

The proposed Action Alternative will have no effect on the water quality or the impairment status of the surrounding areas.

3.4.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to water resources at or in the vicinity of the Project because no construction or operation would occur.

3.4.3 Mitigation

Construction and operation of the proposed Project is not anticipated to have any adverse impacts on surface waters or groundwater. AECI will employ good water management practices during construction and operation and will comply with NPDES permit. No specific mitigation is required.

3.5 Coastal Resources

3.5.1 Affected Environment

The Facility is proposed to be located in an area where there are no coastal resources.

3.5.2 Environmental Consequences

As there are no coastal resources near the proposed Project, there is no potential for environmental consequences of the proposed Action Alternatives related to coastal resources.

3.6 Biological Resources

The biological resources of the area surrounding the Project along with the impacts on biological resources because of the Project are discussed in the following sections.

3.6.1 Affected Environment

The following sections discuss vegetation, wildlife, and special status species within the Study Area.

3.6.1.1 Vegetation

The Project Area is within the Loess Flats and Till Plains level IV ecoregion as mapped by the EPA (Chapman et al., 2002). The Survey Area is dominated by agricultural fields and vehicular ROWs. The agricultural fields are subject to regular disturbance through agricultural practices. Common vegetation in the Survey Area included eastern cottonwood (*Populus deltoides*), black willow (*Salix nigra*), American elm (*Ulmus americana*), Osage orange (*Maclura pomifera*), American sycamore (*Platanus occidentalis*), white mulberry (*Morus alba*), stinging nettle (*Urtica dioica*) tall goldenrod (*Solidago altissima*), short-awn meadow foxtail (*Alopecurus aequalis*), and sticky-willy (*Galium aparine*). There are no vegetation species listed as federally threatened or endangered in Clinton County.

3.6.1.2 Wildlife

A habitat assessment survey was completed to evaluate the potential for special-status species or their critical habitat to occur within or in the vicinity of the Project Area (Appendix C). Special-status species are defined as species designated by the USFWS as Endangered, Threatened ("T/E"), Proposed for Listing or Candidate for Listing under the Endangered Species Act ("ESA") and species protected under the Bald and Golden Eagle Protection Act ("BGEPA").

Based on special-status species lists generated from the sources shown below, a habitat assessment was completed to evaluate the potential for special-status species to occur within the Project Area and its vicinity and to determine the presence or absence of designated or proposed critical habitat. The habitat assessments were based on review of the following sources and field observations:

- The natural history and known geographical and elevation range of the special-status species.
- USFWS Information for Planning and Consultation ("IPAC") tool used to determine protected or likely to be protected under the ESA that are known or likely to occur in the Project Vicinity.

- Results of a Missouri Department of Conservation ("MDC") listed species and known critical habitat and the Missouri Natural Heritage Program ("MONHP") online review to identify known occurrences of protected species.

- Observations recorded by Burns & McDonnell during field reconnaissance on April 22 and August 6, 2024, of the habitats present in the Project Area (Appendix C).

In total, five ESA species and one BGEPA listed species were evaluated for their potential to occur in the Project Area. Table 3-5 shows ESA-listed, proposed, and candidate species and designated or proposed critical habitat considered for potential to occur in the Project Area. Final critical habitat for federally protected species has not been designated by the USFWS in the vicinity of the site.

Table 3-5: Clinton County Federally Threatened and Endangered Wildlife Species

Common Name (*Scientific Name*)	Federal Status (USFWS)	Known Suitable Habitat	Effect / Potential to Occur
Birds			
Bald Eagle[1] (*Haliaeetus Leucocephalus*)	Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c)	Breeding is concentrated in coastal areas, along rivers, lakes or reservoirs. Typically breeds in forested areas with edge habitat within 1.3 miles of aquatic habitats suitable for foraging. Prefers areas of shallow water and shorelines for fishing and hunting wide variety of waterfowl, and small aquatic and terrestrial mammals. Fish are preferred prey, but carrion is used extensively whenever encountered. Nests away from human disturbance in large trees and rarely on cliff ledges or on the ground when trees are absent. Winters primarily in coastal areas or along major river systems with adequate prey availability and large trees for perching (Buehler, 2020).	No adverse effect. The Project Area lacks appropriate aquatic habitats within 1.3 miles and no bald eagle nests were observed within the vicinity of the Project Area.
Insects			
Monarch butterfly (*Danaus plexippus*)	Federally Proposed for Listing as Threatened	Monarch caterpillars feed exclusively on plants in the subfamily Asclepiadoideae (milkweed) and adults forage for nectar on a wide variety of flowers. This species can be found wherever milkweed occurs. Overwintering populations use the leaves, branches, and trunks of large trees within forested groves. In California, both native tree species and eucalyptus trees are utilized (Jepsen et al., 2015).	No effect. The Project is located on primarily agricultural fields and roadsides. Any suitable habitat that is currently present is likely fragmented and highly disturbed. Permanent impacts by the Project are sited in agricultural fields.
Western Regal Fritillary (*Argynnis idalia occidentalis*)	Federally Proposed for Listing as Threatened	Regal Fritillary caterpillars feed on leaves of plants of the genus Viola (violets), preferring V. pedatifida. Adults forage for nectar on flowers, especially butterfly weed, milkweed, pale purple coneflower, thistles, mountain mints, blazing starts, ironweeds, and clovers. Regal fritillary	No effect. The Project is located on primarily agricultural fields and roadsides. Any suitable habitat that is currently present is likely fragmented

Common Name (*Scientific Name*)	Federal Status (USFWS)	Known Suitable Habitat	Effect / Potential to Occur
		butterflies are non-migratory; the eggs hatch in late summer or fall and the caterpillars overwinter amongst leaf litter. In Missouri, this species is now confirmed to high quality native tallgrass prairies in the northern portion of the state (MDC, 2024).	and highly disturbed. Permanent impacts by the Project are sited in agricultural fields.
Mammals			
Tricolor Bat (*Perimyotis subflavus)*	Federally Proposed for Listing as Endangered	The tricolored bat hibernates in caves or abandoned mines during the winter. During spring, summer, fall, the bats roost among live and dead leaf clusters in trees of hardwood forested habitats including pine trees, easter red cedar trees, and structures such as barns, sheds, under bridges, or in other buildings that have little human disturbance. Foraging habitats include forest edges and riparian corridors. (USFWS, 2024d)	May affect but is not likely to adversely affect. Mist-net surveys confirmed likely absence from Project area. The Project Area supports leaf clusters and trees suitable for tricolored bat roosts. However, critical habitat has not been designated by USFWS within Clinton County. Conducting tree clearing during bats' inactive season is generally recommended as a best management practice.
Gray bat *(Myotis grisescens)*	Federally Endangered	The gray bat hibernates in caves or abandoned mines during the winter. During spring, summer, fall, the bats continue to use caves or cave-like structures such as mines, dams, bridges, quarries, and culverts Foraging habitat includes lakes, rivers, and streams. Wooded areas may also be used for foraging. (USFWS, 2024a)	May affect but is not likely to adversely affect. Mist-net surveys confirmed likely absence from Project area. The Project Area lacks potential roosting sites. However, potential foraging habitats may be preset.
Indiana bat *(Myotis sodalist)*	Federally Endangered	The Indiana bat hibernates in caves or abandoned mines during the winter. During spring, summer, fall, the bats roost in bark or cavities within the trunks of trees. Foraging habitat includes forest edges and riparian corridors. (USFWS, 2024c)	May affect but is not likely to adversely affect. Mist-net surveys confirmed likely absence from Project area. The Project Area supports potential roost trees. The Project was sited to minimize the amount of tree clearing; however, some tree clearing may be required. Conducting tree clearing during bats' inactive season is generally recommended as a conservation measure.

Source: Buehler, 2020; Jepsen et al., 2015; MDC, 2024; MONHP, 2024; USFWS, 2024a; USFWS, 2024b; USFWS, 2024c; USFWS, 2024d

[1]BGEPA Listed Species.

According to the Missouri Heritage Review there is one state-listed endangered species in Clinton County, the Indiana bat, which is also identified as a federally endangered species.

A field-based habitat assessment was completed on April 22 and August 6, 2024, to evaluate the potential for special-status species or their critical habitat to occur within or in the vicinity of the Project Area (Appendix C). A bat mist-net survey was conducted during the nights of May 20 to May 23, 2024, for the main generation site, switch station site, transmission routes, and gas pipeline route. Nets were placed across streams, field edges, and forested wetlands. Weather conditions were within the acceptable limits based on USFWS Guidelines. No bats were captured during the surveys (Appendix C). An acoustic bat survey was conducted for the waterline addition during the nights of August 5 through August 9, 2024. Weather conditions were within the acceptable limits based on USFWS Guidelines. The Indiana bat, northern long-eared bat, and tricolored bat were determined to be likely absent based on identification results of the acoustic survey.

3.6.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to biological resources.

3.6.2.1 Proposed Action Alternative

3.6.2.1.1 Vegetation

Since the Project is located on a site that has been continuously agricultural and highly prone to disturbance it is not a suitable habitat for vegetation to grow and flourish. Approximately 37 acres of the site will be fully disturbed once construction of the Project is complete. It is anticipated that the remaining areas of the site will continue to be hayed. Therefore, the amount or type of vegetation onsite is not expected to significantly change due to the Project. It is expected that construction-related disturbances from the Project will not provide an opportunity for the establishment of invasive species as the area will not be conducive to the growth of vegetation.

3.6.2.1.2 Wildlife

In total, five ESA species and one BGEPA listed species were evaluated for their potential to occur in the Project Area. Two federally endangered and one federally proposed endangered ESA listed species were determined to have potential to occur in the Project Area. No BGEPA species had the potential to occur on the Project Area.

As indicated above in Table 3-5, there is no critical habitat for federally endangered or threatened species as identified in the IPaC report dated September 17, 2024, at the Project Site. Therefore, the proposed Project may affect but is unlikely to adversely affect protected species or their critical habitats; nor will the proposed Project result in short - or long-term impacts to protected species or critical habitats that may occur in Clinton County. While there is suitable habitat for some endangered, threatened, or candidate species in the Project area, no impacts are anticipated to federally listed species that may occur in Clinton County if avoidance techniques like tree clearing in the winter is performed.

For the BGEPA listed species evaluated, the bald eagle was determined to have a potential to occur of **Unlikely** as no bald eagle nests were observed within the vicinity of the Project Area during the habitat assessment. Golden eagles were determined to have potential to occur of **None** but may be observed as temporary visitors.

As referenced in Table 3-5, the proposed Project will have no short- or long-term impacts to migratory birds or eagles as there is no suitable habitat on the Project Site, and construction is not anticipated to result in any long-term impacts to wildlife at the Site. Noise and human activity that are associated with construction may result in short-term, temporary displacement impacts to wildlife species foraging in the area. Ongoing operations are not likely to have great impacts to surrounding species.

3.6.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to biological resources at or in the vicinity of the Project because no construction or operation would occur.

3.6.3 Mitigation

3.6.3.1 Vegetation

As construction and operation of the proposed Project will have minimal impacts to on-site vegetation and will not lead to the introduction of invasive species, no mitigation measures will be necessary.

3.6.3.2 Wildlife

Construction and operation of the proposed Project will have no impacts to listed threatened or endangered species, migratory birds, or eagles. Good conservation practices such as tree clearing during the each of the bats' inactive season will be implemented as needed. Should instances such as the observation of an active bald eagle nest occur during construction activities, AECI will work with the USFWS to minimize potential impacts. No impacts to listed threatened or endangered species, migratory birds, or eagles are expected to occur within the Project Site.

3.7 Historic and Cultural Resources

3.7.1 Affected Environment

In accordance with Section 106 of the National Historic Preservation Act and 36 CFR Section 800.1, federal agencies are required to consider the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation ("ACHP") a reasonable opportunity to comment on such undertakings. If there is more than one federal agency, a lead federal agency may be designated to act for all of the federal agencies. The federal agency or lead federal agency is responsible for coordination with consulting parties which may include the State Historic Preservation Office ("SHPO"), Tribal Historic Preservation Officers ("THPO") if tribal land is involved, Indian Tribes, the public, the ACHP, local governments, and applicants.

The following investigations have been completed to assist the federal agency in their compliance with Section 106. The area of potential effect ("APE") has been defined as the entirety of the TEC property comprising a natural gas-powered turbine electrical generation plant, a water pipeline to supply the plant, a natural gas lateral line to supply the plant, an electrical distribution line upgrade to supply power for construction activities of the plant, a new electrical interconnection line to supply the generated power to the grid, and a new proposed switch station connection located east of the Project site and south of Turney, Missouri was subject to a Phase I cultural resources investigation (the "Project Area"). The total area for this investigation is 182.5. acres.

The cultural resources investigation was conducted to professional standards and guidelines provided by the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716-44742) and the *Secretary's Standard for Identification* (48 FR 44720-44723) and was designed to conform with the Osage Nation Historic Preservation Office Archaeological Survey Standards. The first part of this investigation consists of a background review of previously recorded cultural resources and previously reported cultural resources surveys in a Study Area consisting of the Project Area and a 1-mile buffer around it. The second part of the investigation consists of the field survey of the Project Area to include systematic shovel testing at 30-meter ("m") intervals along each transect and each transect spaced no wider than 30 m apart.

RUS defined the APE for the Project as an area that includes all Project construction and excavation activity required to construct, modify, improve, or maintain any facilities; any ROW or easement areas necessary for the construction, operation, and maintenance of the Project; all areas used for excavation of borrow material and habitat creation; and all construction staging areas, access routes, utilities, spoils areas, and stockpiling areas. Impacts that come from the undertaking at the same time and place with no intervening causes, are considered "direct" regardless of its specific type (e.g., whether it is visual, physical, auditory, etc.). "Indirect" effects to historic properties are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable.

Based on this definition, the APE consists of the approximately 45.5-acre area of the proposed switch station, the approximately 2-mile new transmission line, the 2.5-mile distribution line upgrades, 1,000-foot natural gas pipeline, 1.5-mile water line, and the approximately 96-acre area of the proposed TEC plant, as shown in the enclosed maps. The APE does not include any tribal lands as defined pursuant to 36 CFR § 800.16(x). This definition was submitted to the SHPO and THPOs in the agency coordination letters sent September 5, 2024, with a follow-up letter sent to the Missouri SHPO on October 29, 2024.

The cultural resources inventory fieldwork was conducted over multiple mobilizations to the Project site between December 2023 and July 2024. A total of 941 shovel tests were excavated in the APE. Two historic-age archaeological sites were recorded within the Plant portion of the APE and a historic-age railroad berm was noted in the Interconnection Line portion of the APE.

Site 23CI2222 was identified with three positive shovel tests containing historic-age artifacts within the plow zone. Site 23CI1112 was identified in five positive shovel tests where artifacts were found distributed throughout the plow zone to a depth of 40 cm below surface. Both sites are severely disturbed by plowing which has compromised their contextual integrity. These sites do not meet eligibility criteria for listing in the National Register of Historic Places ("NRHP"). A finding of no historic properties affected within the APE and no further cultural resource work was recommended.

The survey area is located within the Dissected Till Plains Section of the Central Lowlands Province in the Interior Plains Division of North America. In the Dissected Till Plains, the primary source for most of the late Quaternary loess is glacial. In Missouri, glaciogenic loess is concentrated in areas along the Missouri and Mississippi rivers. This loess derives from glacial flour that was transported by the rivers, deposited in their floodplains, and subsequently blown into the uplands by the wind. Glacial flour is a very fine-grained silty byproduct of glaciers grinding along and eroding bedrock (Bettis et al. 2003). The Project APE is surrounded by agricultural fields with multiple primary streams and drainage ditches running throughout. Streams within the Little Platte River basin are typical prairie-type streams, turbid and possessing homogeneous substrates of silt and sand. An approximately 2-acre pasture pond located along the west edge of the Site represents the largest body of standing water in the APE.

3.7.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to historic and cultural resources.

3.7.2.1 Proposed Action Alternative

Based on the findings of no historic properties affected during background research and field surveys, the cultural report was submitted to the SHPO. SHPO stated a finding of no adverse effect to historic or cultural properties was appropriate.

The cultural report and findings of no adverse effect were presented to the following tribes for concurrence:

- Apache Tribe of Oklahoma
- Iowa Tribe of Kansas and Nebraska
- Iowa Tribe of Oklahoma
- Omaha Tribe of Nebraska
- Otoe-Missouria Tribe of Indians, Oklahoma
- Sac and Fox Nation of the Mississippi in Iowa
- Sac and Fox Nation of Missouri in Kansas and Nebraska
- Sac and Fox Nation of Oklahoma

No tribes responded to Section 106 consultation requests. Details of the consultations are provided in Chapter 6.3.

Therefore, construction and operation of the proposed Project is expected to have no adverse effects on any historic or cultural properties.

3.7.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to historic and cultural resources at or in the vicinity of the Project because no construction or operation would occur.

3.7.3 Mitigation

Avoidance of any identified historic or cultural resources is recommended for the proposed Project.

If avoidance is not possible, it is recommended that a testing and data recovery plan be developed and implemented to mitigate impacts to the sites. No further archaeological work is recommended for the site. All ground-disturbing activities have the potential to unearth human remains

As construction and operation of the proposed Project will have no impacts on historic or cultural properties, no mitigation measures are necessary. Should any material of historical significance be discovered during construction activities, appropriate steps will be taken following the reviewed Inadvertent Discovery Plan ("IDP") (Appendix E).

3.8 Aesthetics

3.8.1 Affected Environment

The Project Site is primarily cultivated cropland and pasture/hay lands, bordered by a county road on the northern boundary. To the east and southeast of the Site is an existing distribution line. There is an existing natural gas pipeline that runs through the Site. There is gently rolling topography with minimal trees. The properties surrounding the Site are similar in composition and are primarily composed of cultivated cropland and pasture/hay lands with low intensity development. There are two ponds onsite with some treed areas around the banks. The 2 miles of new transmission line traverses the same general topography and use.

The construction of a new 2-mile-long transmission line would be constructed within the new transmission line ROW near the Project Site. A new 1.5-mile water pipeline would be constructed extending from an existing water pipeline within existing waterline ROW. The distribution line upgrades will occur in an existing ROW that already contains a distribution line. The natural gas lateral would be constructed on the Project site extending from an existing natural gas pipeline and ROW.

3.8.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to aesthetics.

3.8.2.1 Proposed Action Alternative

The aesthetics of the surrounding area would be altered by the Project. Vegetation would need to be cleared and light emissions at the Project Site would increase compared to current levels of light emissions, as a result of facility lighting. The approximately 140-foot stack at the facility, other facility equipment, transmission line structures, and switching station would introduce new features to the landscape. The project is not anticipated to significantly impact any visual resources of the surrounding areas.

3.8.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to aesthetics at or in the vicinity of the Project because no construction would occur.

3.8.3 Mitigation

Construction will have temporary visual impacts. Once the Project is built, there will be long-term aesthetic changes associated with the new facilities. AECI intends to leave the majority of existing tree rows bordering the property in place to work as a visual buffer, no other mitigation measures are proposed.

3.9 Air Quality

The air quality of the area surrounding the Project and the impacts of the Project on air quality are discussed in the following sections.

3.9.1 Affected Environment

According to the Koppen climate classification, the Project Site is in the Northern Hemisphere's Hot-Summer Humid Continental zone. Features of this zone include extreme seasonal changes with very cold winters and hot summers. Annual average precipitation is variable across the state, with the northwest receiving less (low of 35 inches) precipitation than the southeast (high of 55 inches). Winter precipitation includes snow, with the northern portion of the state receiving more than the south. Summertime precipitation is irregular, with no lengthy periods of above or below average precipitation. (Frankson et. al, 2022) The annual average rainfall in Clinton County is 38.68 inches (USDA, 2010).

The federal government established the National Ambient Air Quality Standards ("NAAQS") under the Clean Air Act ("CAA") to protect public health (including the sensitive populations such as asthmatics and the elderly), safety, and welfare from known or anticipated effects of eight air pollutants: sulfur dioxide ("SO_2"), particulate matter 10 microns or less in diameter ("PM_{10}"), particulate matter 2.5 microns or less in diameter ("$PM_{2.5}$"), carbon monoxide ("CO"), nitrogen dioxide ("NO_2"), ozone, lead ("Pb"), and carbon dioxide ("CO_2"). The Significant Impact Level ("SIL") and NAAQS thresholds are listed in Table 3-6, below.

Table 3-6: NAAQS and SIL Thresholds

Pollutant[a]	Averaging Period	NAAQS[b] ($\mu g/m^3$)[e]	SIL[c,d] ($\mu g/m^3$)
SO_2	3-hour	1,300	25
	1-hour	196	7.8
PM_{10}	24-hour	150	5
$PM_{2.5}$	Annual	9	0.2
	24-hour	35	1.2
CO	8-hour	10,000	500
	1-hour	40,000	2,000
NO_2	Annual	100	1
	1-hour	188	7.5[f]
Pb	Rolling 3-month	0.15	--

(a) SO_2 = sulfur dioxide, PM_{10} = particulate matter 10 microns or less in diameter, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter, CO = carbon monoxide, NO_2 = nitrogen dioxide, Pb=Lead
(b) NAAQS = National Ambient Air Quality Standards
(c) SIL = Significant Impact Level
(d) SIL values listed are for Class II areas
(e) $\mu g/m^3$ = micrograms per cubic meter
(f) interim SIL value

Clinton County is in attainment, meaning that the area follows federal clean air standards. One of the closest air quality monitoring sites is approximately 38 miles to the southwest of the Site operated by the Kansas Department of Health and Environment located at the JFK Recreation Center in Kansas City, KS. This site monitors pollutants CO, NO_x, SO_2, $PM_{10}/PM_{2.5}$, and ozone.

3.9.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to air quality.

3.9.2.1 Proposed Action Alternative

Construction and operation of the proposed gas turbine at the Project Site would be subject to applicable state and Federal air quality regulations. These regulations would apply to the Project equipment (one SGT6-9000HL). Regulations applicable to the proposed Project are New Source Review ("NSR"), Missouri Air Conservation Law Chapter 643 Title V Operating Permits, New Source Performance Standards ("NSPS"), National Emission Standards for Hazardous Air Pollutants ("NESHAP"), and Maximum Achievable Control Technology ("MACT"). The following sections provide potential environmental consequences of construction and operation of the Proposed Action related to air quality.

Construction

Air emissions from the construction of the Project will occur due to 1) vehicular emissions from increased traffic from the construction work force and construction deliveries, 2) internal combustion engine emissions from construction equipment, and 3) fugitive dust (PM_{10} and $PM_{2.5}$) emissions from excavating, site preparation, and storage piles. These emissions from construction activities vary as they are dependent on the number and type of construction vehicles in operation at any given point during construction, the number of construction workers driving to and from the Site, and the number and type of construction activities

occurring. AECI submitted a Construction Permit Application in April 2024. Air emissions from construction are low and temporary in nature, fall off rapidly with distance from the construction site, and will not result in any long-term impacts.

Operation

AECI proposes installing a single 421-MW Siemens SGT6-9000HL (60 Hertz ["Hz"]) simple-cycle combustion turbine to be constructed on a greenfield site. This combustion turbine has a maximum heat input of 3,870 million British thermal units per hour ("MMBtu/hr"), higher heating value ("HHV") (3,488 MMBtu/hr lower heating value ["LHV"]) will be installed as part of the Project. The SCGT will be capable of firing both natural gas and fuel oil. Additionally, it is expected that the turbine will have as many as 730 total startup/shutdown events per year. The combustion turbine will install Continuous Emission Monitoring Systems ("CEMS") to monitor emissions of NO_x.

Operation will be restricted to complying with the NSPS Subpart TTTTa load categories. Subpart TTTTa regulates CO_2 emissions from electric generating units under the NSPS (CAA 111b regulations). The standard provides a limit for natural gas-fired combustion turbines based on their annual operation. AECI will not operate the unit such that it exceeds the intermediate-load threshold and becomes subject to base-load requirements. A newly constructed (commenced construction after May 23, 2023) natural gas-fired combustion turbine that operates between 20 and 40 percent annually (intermediate-load category) is limited to 1,170 pounds of CO_2 per megawatt-hour of gross energy output on a 12-operating month rolling average basis.

The combustion turbines will have an SCR system to control emissions of NO_x. To minimize the emissions of SO_2, CO, and $PM/PM_{10}/PM_{2.5}$, the SCGT emissions will be controlled through the use of pipeline quality natural gas and good combustion practices as specified by the manufacturer such as maintaining proper temperature and pressure, fuel to air ratios, excess oxygen, etc. to avoid incomplete combustion byproducts. CO_2 emissions will be minimized with the use of natural gas as the only fuel, with fuel oil only being used in emergencies.

The potential emissions from the SCGT were analyzed at 100%, 75% and 30% load on natural gas, and 100% and 70% on fuel oil. The overall emissions were compared to the Prevention of Significant Deterioration ("PSD") Significant Emission Rate Thresholds ("SER"). If a pollutant exceeds the SER, then that pollutant will trigger the need for PSD review for that pollutant, which includes air dispersion modeling, Best Available Control Technology ("BACT") analysis, and other permitting tasks.

The worst-case, future potential-to-emit calculations were performed for each pollutant for the Project and are listed Table 3-7. Because the potential emissions of criteria pollutants are below the PSD permitting threshold, the Project does not trigger the PSD permitting process. Accordingly, no BACT analysis was required. However, as the potential emissions for CO, NO_x, and $PM/PM_{10}/PM_{2.5}$ are above the de minimis threshold, the Project is required to submit a minor source construction permit application. The Project is expected to exceed the 100 tpy threshold for at least two criteria pollutants and therefore will be considered a Part 70 Major source. AECI will apply for a Part 70 operating permit within 12 months of the start of Project operation per MNDR requirements.

Table 3-7: Total Project Emission Summary

Pollutant[a]	Potential Project Emissions (Tons per Year [tpy])[b]	PSD SER Thresholds (tpy)	PSD Review Applicable? (Yes, No)	De Minimis[e] Levels (tpy)	Above De Minimis? (Yes, No)
NO_X	249[f]	250	No	40	Yes
CO	249 [f]	250	No	100	Yes
SO_2	24.99	250	No	40	No
VOC	29.89	250	No	40	No
$PM/PM_{10}{}^{c}/PM_{2.5}{}^{c}$	65.01	250	No	N/A/15/10	N/A/Yes/Yes

(a) NO_x = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; VOC = volatile organic compounds; PM= total particulate matter; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; CO_2e = carbon dioxide equivalent
(b) Numbers in bold indicate the Significant Emission Rate significance level is exceeded.
(c) Filterable plus condensable
(d) If the Project does not trigger PSD for any other pollutant, the CO_2e PSD threshold does not apply per Utility Air Regulatory Group vs EPA (Case#12-1146, June 23, 2014 before the Supreme Court of the United States Court).
(e) Missouri Department of Natural Resources ("MDNR") Air Pollution Control Program Permit Applicability
(f) The project is taking a limit of 249 tpy for CO and NO_x.

NESHAP are contained in 40 CFR Part 63. NESHAP are emissions standards set by the EPA for specific source categories. The NESHAP require the maximum degree of emission reduction of certain hazardous air pollutant ("HAP") emissions that the EPA determines to be achievable, which is known as the MACT standards.

The facility is expected to be a minor source of HAPs (less than 25 tpy of total HAPs and less than 10 tpy of any single HAP). Therefore, the facility is not subject to MACT standard Subpart YYYY: National Emission Standards for HAPS for Stationary Combustion Turbines.

The acid rain provisions of the CAA Amendments are specified in 40 CFR Part 72 through 78. The requirements are applicable to utilities and other facilities that combust fossil fuel (mainly coal) and generate electricity for wholesale or retail sale. Often referred to as the Acid Rain Program, the program establishes the reduction of emissions of acid rain forming pollutants, specifically, SO_2 and NO_x emissions. AECI will be subject to the Acid Rain Program for the natural gas-fired combustion turbine located at the facility.

The Project will be subject to the Acid Rain Program because the combustion turbines are considered a utility unit under the program definition and do not meet the exemptions listed in 40 CFR 72.6(b). The Acid Rain Program requires that the Project hold allowances for SO_2 per 40 CFR 72.9(c)(1) and conduct recordkeeping and reporting per 72.9(f). The continuous emission monitoring requirements of 40 CFR Part 75 establish requirements for the monitoring, recordkeeping, and reporting of SO_2, NO_x, and CO_2 per 40 CFR Part 75.1(a).

3.9.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to air quality at or in the vicinity of the Project because no construction or operation would occur. However, there will still be a need for power capacity that will be obtained elsewhere, likely from existing fossil-fueled sources or new PPAs with fossil-fueled sources.

3.9.3 Mitigation

Construction activities will have air emissions but are anticipated to be minimal outside of the construction areas, and are temporary in nature. The majority of the construction emissions will be from fugitive sources and construction equipment. AECI's EPC contractor has prepared a fugitive dust control plan as a component of their Environmental Operations Plan. Dust control methods must also be included in the SWPPP. Plan measures could include, but are not limited to, the following:

- Application of water or chemicals (palliatives) to control dust;
- Installation of gravel/stone on unpaved roads;
- Limiting access of unnecessary vehicles or equipment in the Project area,
- Confining vehicular and equipment traffic to maintained roads, where feasible;
- Establishment of non-driving areas and driving areas;
- Erosion controls outlined in the SWPPP;
- Maintenance of paved roads, as needed;
- Restricting vehicles to slow speeds on the Project site

For operations, the air emissions calculations have determined that the Project will not be a major PSD source but will require a Part 70 Major Source operating permit. All equipment will meet all applicable NSPS and NESHAP limits. The Project will include an SCR system to control NO_x emissions. Good combustion practices as specified by the manufacturer such as maintaining proper temperature and pressure, fuel to air ratios, excess oxygen, etc. to avoid incomplete combustion byproducts and the use of pipeline quality natural gas will mitigate emissions of CO, VOC, SO_2, PM_{10} and $PM_{2.5}$. AECI submitted an air permit application for the Project to the MDNR in April 2024 and will adhere to the conditions and requirements of the permit during operation of the Project.

3.10 Socio-Economic Impact Assessment

3.10.1 Affected Environment

To identify general socioeconomic patterns in the Project area, various socioeconomic characteristics have been reviewed, including population growth trends, racial and ethnic characteristics, employment data, and economic indicators.

Population Growth Trends

The Site is in Clinton County, Missouri, a predominantly rural county that has experienced a slight increase in population over the last 10 years. Table 3-8 presents the population trends near the Project.

Table 3-8: Population Trends

	Missouri	Clinton County
2010 Census (population)	5,988,927	20,743
2020 Census (population)	6,154,913	21,184
% Change 2020-2021	0.97%	0.98%
2023 Estimate (population)	6,169,156	21,548

Source: USCB, 2019 and USCB, 2024

Racial and Ethnic Characteristics

The U.S. Census Bureau ("USCB") has published demographic, housing, and employment estimates for 2020 for all counties and the state as a whole. These estimates, along with the 2020 Census Block data for the area

immediately around the Site, are presented in Table 3-9. The Census Tract and Block Group that the Site is located in are shown in Table 3-9. Figure 3-1 shows the Census Block divisions and Block Groups.

Table 3-9: 2020 Racial Characteristics

	Missouri	Clinton County	Census Tract 9603	Census Tract 9603 Block Group 1	Census Tract 9602.02	Census Tract 9602.02 Block Group 2
Total Population 2020	6,154,913	21,184	4,228	610	4,012	1,905
White	4,663,907	19,264	3,746	558	3,709	1,763
Hispanic or Latino	303,068	502	120	25	89	34
American Indian and Alaskan Native	30,518	78	13	1	19	11
Other	127,942	137	42	8	22	13
Black or African American	699,840	209	130	2	10	3
Pacific Islander	9,730	6	1	0	0	0
Asian	133,377	85	16	0	9	6

Source: USCB, 2020a and 2020b

Based on these estimates, the 2020 racial makeup of Clinton County is composed of 90.9 percent White, 2.3 percent Hispanic or Latino, 0.9 percent African American, 0.3 percent American Indian, 0.03 percent Pacific Islander, 0.4 percent Asian, and 0.6 percent of Clinton County's population considers itself other. For the area around the Site, the 2020 Census population estimates by census tract and block data were reviewed and are listed in Table 3-9 for comparison with Clinton County and state population estimates. According to the 2020 Census estimates, the total population of Missouri in 2020 was composed of 75.8 percent White, 4.9 percent Hispanic or Latino, 11.4 percent African American, 0.5 percent American Indian, 0.16 percent Pacific Islander, 2.2 percent Asian, and 2.1 percent as other.

Employment and Income

In 2020, Clinton County's resident labor force, defined as the population aged 16 and over, was 16,962 individuals, or 80 percent of the total population (21,184); 10,178 of these workers were employed, resulting in an annual unemployment rate of (for the civilian labor force) of 6.1 percent (USCB, 2022f). Major industries in Clinton County include educational service, health care, and social assistance. Table 3-10 provides the employment characteristics for the state, county, and local community.

Table 3-10: 2022 Employment Data

	Missouri	Clinton County	Census Tract 9603	Census Tract 9603 Block Group 1	Census Tract 9602.02	Census Tract 9602.02 Block Group 2
Population 16 years and over	4,940,395	16,962	3,480	N/A	3,076	N/A
In labor force	3,107,514	10,178	1,918	N/A	1,987	N/A
Employed (civilian labor force)	2,954,860	9,539	1,856	N/A	1,760	N/A
Unemployed (civilian labor force)	132,657	621	62	N/A	227	N/A
Armed forces	19,997	18	0	N/A	0	N/A
Not in labor force	1,832,881	6,784	1,562	N/A	1,089	N/A
Percent unemployed (civilian labor force)	4.3%	6.1%	3.2%	N/A	11.4%	N/A
Top occupation	Management, business, science, and arts occupations	Management, business, science, and arts occupations	Management, business, science, and arts occupations	N/A	Management, business, science, and arts occupations	N/A
Top industry	Educational services, and health care and social assistance	Educational services, and health care and social assistance	Educational services, and health care and social assistance	N/A	Educational services, and health care and social assistance	N/A

Source: USCB, 2022f

The unemployment rate and poverty rate in Clinton County is slightly higher than that of Missouri as a whole.

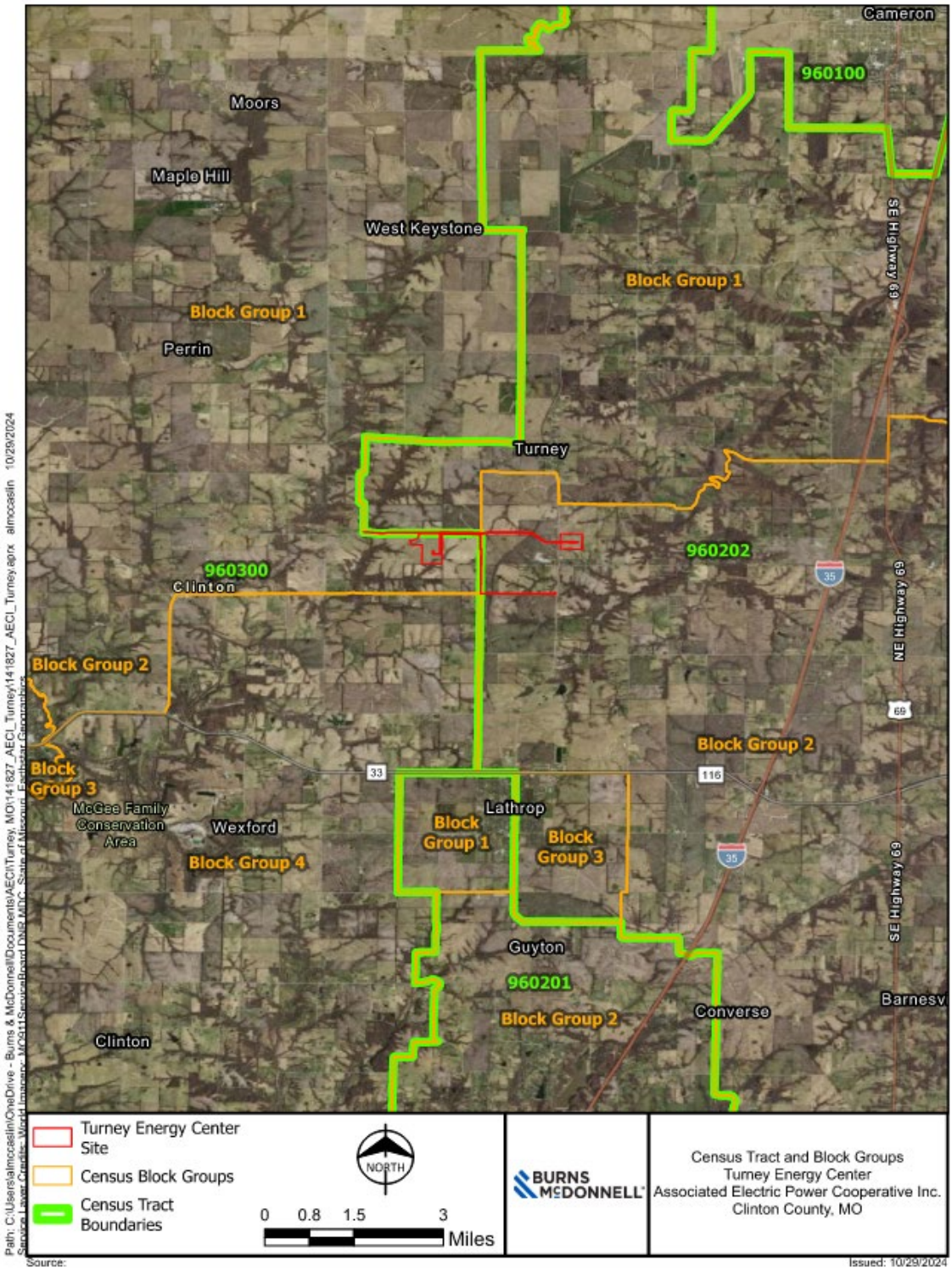
Census Tract 9603 has lower unemployment rates and poverty rates than the state or Clinton County. No income or employment data exists for Census Block 9603 Group 1. Census Tract 9602.02 has higher unemployment rates and lower poverty rates than the state or Clinton County. No income or employment data exists for Census Tract 9603 Block Group 1 or Census 906.02 Tract Block Group 2. Table 3-11 shows income and poverty data for the state, county, and local community.

Table 3-11: 2022 Income and Poverty

	Missouri	Clinton County	Census Tract 9603	Census Tract 9603 Block Group 1	Census Tract 9602.02	Census Tract 9602.02 Block Group 2
Median household income in 2022 dollars	$65,920	$66,494	$64,609	N/A	$78,472	N/A
Families and people whose income in the past 12 months is below the poverty level	8.5%	8.4%	6.4%	N/A	5.3%	N/A

Source: USCB, 2022c and USCB, 2022e

Figure 3-1: Census Tract and Block Groups



Housing

Clinton County has 8,955 housings units with 8,050 occupied housing units and 905 vacant housing units. Sixty-six percent of the occupied housing units are owner-occupied. The median value of owner-occupied housing in Clinton County was $187,200, versus the state-wide median value of owner-occupied housing of $199,400. (USCB, 2022a)

Area Public Service and Utilities

Educational Facilities

The closest school to the Site is Lathrop High School, approximately 3.3 miles south-southeast of the Site within Lathrop, Missouri. The next closest schools are Lathrop Middle School and Lathrop Elementary School, approximately 4.5 miles south-southeast of the Site.

Medical Facilities

The closest hospital to the Site is Cameron Regional Medical Center in Cameron, Missouri, about 10.43 miles northeast of the Site. Cameron Regional Medical Center has a 24-hour level three stroke emergency room in the State of Missouri's Time Critical Diagnosis Program. The medical center also has cardiovascular, gastrointestinal, surgeries, cancer, dialysis, radiology, laboratory, and rehabilitation services. The closest level two trauma emergency room is Liberty Hospital located in Liberty, Missouri, approximately 23.59 miles to the southwest of the Site.

During construction, the Emergency Planning Committee ("EPC") is responsible for the emergency response plan. The plan will have a site map showing areas for assembly, location of emergency stations, and site evacuation route.

The site will have on-site safety professionals during working hours for non-life-threatening injuries and first aid treatment. The local medical treatment facility will be used for medical services beyond that scope.

Fire Protection

The closest fire department to the Site is located in Lathrop, Missouri approximately 3.6 miles south-southeast of the Site.

Police Protection

Because the Site lies within a rural area, it is served by the Clinton County Sheriff's Office, located in Plattsburg, Missouri, approximately 5.8 miles southwest of the Site. The City of Turney, Missouri does have a full-time police department.

Potable Water, Sanitary Sewer, Electricity, Gas, and Solid Waste

The Site is in a rural area. It is served by the Clinton County PWSD #4 water supply located in Lathrop, Missouri. Electricity to the Site will be supplied by the electrical grid. Natural gas will be supplied to the site by the Rockies Express Pipeline, LLC operated by Tallgrass Energy Partners. Solid waste will be disposed of through a local service provider and sanitary waste will utilize on on-site septic system with lateral line fields.

Recreation and Open Space

Public recreational land does exist near the Site. Wallace State Park, which is located approximately 5 miles to the northeast, includes picnic areas, a playground, hiking trails, fishing, camping, boating, and wildlife viewing opportunities. Ronald and Maude Hartell Conservation Area, which is located approximately 1.6 miles to the west, includes picnic areas, hiking, fishing, boating, and wildlife viewing opportunities.

3.10.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to the local population.

3.10.2.1 Proposed Action Alternative

The current capital cost estimate for the improvements is approximately $500 million. Some of this cost could be distributed locally due to construction activities temporarily stimulating the local community. Additional jobs in the construction trades such as pipefitters, electricians, insulators, construction management personnel, laborers, and carpenters may be available. Peak construction labor force for the Project is expected to be approximately 468 employees. The length of peak employment will range from a few weeks to several months, depending on skill or specialty.

Gas stations, convenience stores, and restaurants in nearby communities including Turney, Lathrop, and Plattsburg could experience increases in business during the construction period in response to activity from construction workers.

The construction workforce required for the proposed Project may have an impact on the availability of temporary housing. Construction workers may seek temporary housing for varying time periods based on their individual roles in the proposed Project. Clinton County has a limited supply of temporary housing units available for use by construction workers relocating to the area on a temporary basis. Short-term housing is likely to experience the largest increase in demand due to the transient nature of construction workers and their limited duration in the proposed Project area. Generally, housing options for construction crews will consist of area hotels or RV camps.

The proposed Project will be located in a rural area with relatively few homes and businesses within close proximity to the proposed Project. Adverse human impacts as a result of the proposed Project will include additional noise and traffic impacts during construction, temporary visual impacts during construction, and changes in long-term visual impacts during operation.

3.10.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts on the local population at or in the vicinity of the Project because no construction or operation would occur.

3.10.3 Mitigation

Socioeconomic impacts are expected to be insignificant. Project will generally have a positive impact on the socioeconomics of the surrounding areas. Therefore, no mitigation measures are required for socioeconomic impacts.

3.11 Noise

3.11.1 Affected Environment

The Project is located in Clinton County, Missouri, approximately 2 miles southwest of Turney. Surrounding the immediate Project site is agricultural fields and some residential structures. There are five residences within 1.3 miles of the proposed construction activity and Project equipment. Primary existing noise sources in the area included insect noise, local agricultural activity, and plane flyovers at monitor location MP1 and local traffic and existing substation noises at monitor location MP2.

Noise Regulations

The area immediately surrounding the proposed Project is unincorporated residential and agricultural. There are residential properties to the east, south, and northwest of the Project property and agricultural fields on all sides of the Project.

Applicable Federal, state, county, and municipal noise ordinances were reviewed for the Project and surrounding area. The Project is outside of any municipalities, and the State of Missouri and Clinton County do not have noise ordinances with applicable numerical sound level limits for the Project.

3.11.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to noise.

3.11.2.1 Proposed Action Alternative

Construction

Project construction would result in temporary and minor noise impacts to the surrounding area. Construction-related sounds would vary in intensity and duration depending on specific stages and activities of construction but would not be permanent. Nearby residences (nearest residence is approximately 1/2 a mile away) may temporarily experience increased noise during construction.

Construction of the proposed Project is expected to last approximately 12-18 months and will involve Project site preparation, excavation, placement of concrete and other typical industrial construction practices. Construction schedules are anticipated to be able to construct on a 7-day per week 24-hours per day schedule in order to minimize the length of calendar time that temporary construction impacts affect the area. There are certain operations that, due to their nature or scope, must be accomplished in part outside typical working hours. Such work generally consists of activities that must occur continuously, once begun (such as pouring concrete foundations).

The impacts that various construction-related activities might have will vary considerably based on the proximity to the property line. Generic sound data ranges are available for various types of equipment at certain distances. Table 3-12 lists generic activities and their minimum and maximum instantaneous sound levels at 50 feet.

Table 3-12: Range of Typical Construction Equipment Noise Levels in dBA

Generic Construction Equipment	Minimum Noise at 50 feet	Maximum Noise at 50 feet
Backhoes	74	92
Compressors	73	86
Concrete Mixers	76	88
Cranes (movable)	70	94
Dozers	65	95
Front Loaders	77	96
Generators	71	83
Graders	72	91
Jack Hammers and Rock Drills	80	98
Pumps	69	71
Scrapers	76	95
Trucks	83	96

Source: Federal Highway Administration (FHWA) Highway Construction Noise, 2018

The types of equipment listed in the table above may be used at various times and for various amounts of time. Construction of the Project may involve driving piles. Equipment noise will be addressed during construction, and sound dampening material may be used if necessary. Most activities will not occur at the same time. There will be periods when concrete needs to dry and no construction occurs. Sound levels are expected to be quieter for areas where activities are occurring at distances greater than 50 feet from the property line.

Noise from construction is expected to be localized and temporary. The actual noise levels generated by construction will vary on a daily and hourly basis, depending on the activity that is occurring, and the types and number of pieces of equipment that are operating. Noise resulting from construction will vary with equipment type and age, type of work being done, distance from receptor, and meteorological conditions. It is expected that most construction will be done during the daytime when receptors are less sensitive to noise and that the noise will be intermittent. Any excessive construction noise should be of short duration and have minimal adverse long-term effects on land uses or activities associated with the Project area.

Operation

A noise study was completed for the Project operational sound levels based on the expected equipment. The noise study is provided in Appendix F and included background sound monitoring and acoustical modeling for the Project.

The Project could operate day or night. Base operational sound levels for the Project indicate that the Project will be audible during periods of low traffic and are expected to cause a significant increase to existing nighttime sound levels of approximately 44 a weighted decibel ("dBA") at the worst-case receptor. A summary of the existing ambient sound levels and the predicted Project-generated sound levels during operation are shown in Table 3-13 below for the nearest noise-sensitive receptors.

Table 3-13: Project Background and Operational Sound Levels

Receptor Location	Lowest Daytime/Nighttime Average Sound Levels (dBA)*	Predicted Project Sound Levels (dBA)
NSA1	46	44
NSA2	46	41
NSA3	46	42
NSA4	46	35
NSA5	46	36

*Based on L90[a] measurements at monitor location MP1.

(a) L90=level exceeded for 90% of the time

Even though there are no limits in the area to comply with, these predicted unmitigated impacts are likely to have moderate to high adverse effects on the nearby neighbors.

3.11.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to noise at or in the vicinity of the Project because no construction or operation would occur.

3.11.3 Mitigation

Sound mitigation measures are not required for the Project since there are no applicable noise limits for the Project. Occupational Safety and Health Administration ("OSHA") standards will be met onsite. The Project will utilize low noise emitting equipment and stack silencers to reduce impacts to the surrounding properties.

3.12 Transportation

3.12.1 Affected Environment

The Project Site is bordered by NE 288th Street (County Road 114), a gravel road at the northern boundary of the project site. NE Breckenridge Road is a gravel road present to the east but does not immediately adjoin with the project site. No data was available regarding the Average Annual Daily Traffic ("AADT") for either road. State Highway (Route) A is the closest roadway to the project site with available data per Missouri Department of Transportation's ("MoDOT") Traffic Volume Maps (MoDOT, 2023). Highway A is two lane, asphalt paved highway to the east of the project site and the 2023 AADT for Route A is approximately 1,972 vehicles per day. A traffic study was completed for the Project to verify road adequacy and flow parameters (Appendix G).

3.12.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to transportation.

3.12.2.1 Proposed Action Alternative

Existing highways and county roads will be used to provide Site access during construction. Within the Site property boundary, an access road will be constructed for use as the primary construction access road. Traffic will include equipment and material deliveries and the construction labor force. The frequency of onsite vehicular traffic will be proportionate to the onsite construction labor projections.

The peak construction labor force for the construction Project and operation workforce is anticipated to be approximately 468 employees. This labor, along with equipment and material deliveries in support of the Project, is expected to increase daily vehicle and truck traffic (above current operation) by approximately 468 round trips per day during peak construction periods. Construction material deliveries may occur during the day during off-peak travel times and will typically not interfere with worker shift changes and commuter traffic.

Although additional vehicular traffic will result from the construction of the proposed Project, the impacts will be temporary. Further traffic impacts to NE State Highway A (Route A), NE 280th Street, NE Breckenridge Road, and NE 288th Street were evaluated in a traffic study.

The construction entrance to the site will be on NE 288th Street (County Road 114). Operating permits will be issued by the state or county for oversized truck movements, as required. Because NE 288th Street is a low volume road, the addition of turn lanes is not warranted; however, because of its current less frequent use, the increased traffic may cause damage to the road during construction. A section of unpaved road to the Project site will be paved. Based on current projections, the roads, bridges, and crossings in the area are sufficient for the Project's delivery and transportation needs. The traffic study identified a sight distance issue at the intersection of State Highway A and NE 280th Street and for additional traffic control measures to be implemented at the intersections of NE Breckenridge Road & NE 280th Street and NE Breckenridge Road & NE 288th Street. No adverse impacts are anticipated.

3.12.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to transportation at or in the vicinity of the Project because no construction or operation would occur.

3.12.3 Mitigation

As construction and operation of the proposed Project will have only temporary impacts on transportation. Per MoDOT an existing condition survey will be completed. Any damage to roads during construction will be mitigated. A post-construction survey will be completed to verify condition. Existing roads damaged by construction traffic will be repaired once construction is complete.

The Traffic Study (Appendix G) identified a sight distance issue at the intersection of State Highway A and NE 280th Street. The sight distance issue could be mitigated with the use of administrative controls. Examples could include flashing beacons, road signage, etc. The need for additional traffic control measures was also identified at the intersections of NE Breckenridge Road & NE 280th Street and NE Breckenridge Road & NE 288th Street. Recommendations for traffic control measures could include the use of a flagger, yield or stop signs, or staged start/stop times during peak hours. AECI will also coordinate the proper construction signage near access points on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.

3.13 Human Health and Safety

3.13.1 Affected Environment

Two potential human health and safety concerns associated with the Project are to be considered: electromagnetic fields ("EMF") and risk management associated with hazardous materials.

EMF are associated with high-voltage electric transmission lines and substations/switch stations, generally those greater than 230kV. EMF drops off rapidly with distance from the transmission line (EPA, 2024a). The Project will require a new transmission line interconnection, a proposed new switch station, an upgrade of the existing distribution line from an existing substation in order to accommodate the Project and connect to the AECI's grid. The Facility's access will generally be restricted to AECI employees and contractors, and substations/switch stations are surrounded by security fencing to limit access to the area.

A core value of AECI is the safety of its employees and contractors. As such, AECI has identified certain hazards associated with power production. There are a number of risks to human health and safety possible in the course of constructing and operating a power plant, including hazards such as fire, slips, trips, falls, electrical hazards, confined space entry, and many others. Additionally, hazardous substances or wastes may be released, generated, or required for construction and operation of the Facility. Examples may include the use and storage of fuels, lubricating oils, chemicals, and other materials that may be considered hazardous.

3.13.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to transportation.

3.13.2.1 Proposed Action Alternative

EMF will be strongest directly under the transmission line and will decrease with increasing distance from the transmission line ROW. The proposed Project requires the construction of a new interconnection transmission line to a proposed switch station and an upgrade to an existing distribution line to an existing substation, all outside of the Site boundary, with a distribution line passing through several housing areas. The upgrades to the distribution line are not anticipated to increase risks due to EMF along the current ROW. The new interconnection transmission line will be constructed along a new route, primarily through agricultural fields. The new transmission line is anticipated to be less than 230 kV; therefore, increased EMF exposure is expected to be minimal.

During construction, the Project will be managed to prevent harm to the general public. The general public will not be allowed to enter any construction areas associated with the proposed Project. The major risk to the general public will be from an increase in traffic volume on the roadways near the proposed Project as a result of commuting construction workers and transportation of equipment and materials.

Construction and operation of the proposed Project will also involve the use and storage of regulated and hazardous materials. During construction, diesel fuel, gasoline, and lubricating oils from heavy equipment and vehicles may accidentally leak or spill. Hydraulic fluid, paints, and solvents will likely be used during the construction phase as well. Additionally, the presence of aboveground fuel storage tanks and oil-filled equipment present the potential to release into the environment.

3.13.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts on human health or safety at or in the vicinity of the Project because no construction or operation would occur.

3.13.3 Mitigation

A comprehensive safety program is in place at AECI. For instance, safety bulletins are distributed weekly, and procedures are frequently reviewed and updated. Also, a safety briefing is required annually for employees and upon entry for contractors. Adequate training for human health and safety concerns will be mandatory for all construction workers on the Project Site. Personal safety equipment such as hard hats, ear and eye protection, and safety boots will be required for all workers onsite. Accidents and injuries will be reported to the designated safety officer onsite.

During construction and operation, all used oil generated at the proposed Project Site and other potentially hazardous materials (automotive fluids, spray paint cans, etc.) will be collected and properly handled by a licensed/permitted recycler.

Construction-related hazards will be effectively mitigated by complying with all applicable federal and state occupational safety and health standards, applicable National Electrical Safety Code regulations, and utility design and safety standards.

Risk management associated with hazardous materials is an additional human health and safety concern. To reduce the potential for a release of regulated or hazardous materials during the construction phase of the proposed Project, work will be planned and performed in accordance with OSHA standards and protocols addressing the use of potentially hazardous materials and applicable federal and state environmental regulations. If a hazardous release were to occur, emergency response, cleanup, management, and disposal of contaminated soils will be conducted according to EPA and state standards. Conformance to these standards and procedures will reduce the potential for significant impacts resulting from the release of hazardous materials during the construction phase.

3.14 Summary of Impacts

The following table (Table 3-14) provides a summary of potential impacts by Alternative.

Table 3-14: Summary of Potential Impacts

Resource	Impacts from Proposed Action	No Action Alternative
Air Quality	The existing air quality in the Clinton County area is designated as attainment or unclassifiable in regard to the NAAQS for all criteria pollutants. Construction of the Project will generate air emissions that are low and temporary in nature and will not lead to long-term impacts. It is anticipated that the Project would not affect the attainment status for Clinton County. The Owners would comply with the issued MDNR construction air permit that would include emission limitations, monitoring requirements, and other terms and conditions.	The PPAs required to meet load requirements could lead to increased power production from coal-fired facilities, which would lead to worsened air quality.
Biological Resources	The Project will not result in short- or long-term impacts to protected species or their critical habitats for federally endangered or threatened species. Construction and operation of the Project would not result in a significant change to the amount or type of vegetation onsite as it has been continuously used for agricultural purposes and disturbed.	No impacts anticipated for this alternative
Cultural Resources	Based on the distance from NRHP properties and the concurrence from SHPO, the Project would have no adverse affects on historic properties or cultural resources. An IDP will be followed for any inadvertently discovered or affected during project construction.	No impacts anticipated for this alternative.
Geology and Soils	The Project site would need to be graded and grading design would change the topography to facilitate storm water drainage patterns. Storm water runoff on the Site would be collected and directed to an onsite storm water detention pond. The Site will require excavation for underground utilities and deep structures such as pump pits. For the transmission line, foundation construction would occur after vegetation clearing is complete. Excavated soils from foundation drilling would be used for foundation backfill if appropriate. Surplus soils would be spread within upland areas of the right of way and stabilized. After all line construction is complete, the ROW is restored. Soils at the Project site would be converted to plant site development with much of the area occupied by the facilities and covered by concrete and gravel areas. The transmission line corridor would be cleared but only soil areas at the structure locations would be permanently excavated. Other areas of hydric and statewide important soils would remain largely unaffected by construction and following any necessary stabilization would be available for agriculture and other activities.	No impacts anticipated for this alternative.
Infrastructure, Transportation, Public Health and Safety, and Hazardous Materials	*Utilities: No outages would be required to construct the new transmission line and proposed switch station.* Outages would be required to update the distribution line and to allow for connection with the TEC. The Project would require minor construction of a water pipeline to connect with the district system. *Transportation:* The daily automobile traffic to the site would increase from approximately 1,972 vehicles per day in the initial stages of construction to approximately 2,440 vehicles per day during peak. The traffic would begin to decrease until it reaches approximately 1,982 vehicles per day near	No impacts anticipated for this alternative

Resource	Impacts from Proposed Action	No Action Alternative
	construction completion. No permanent changes to existing road alignments are anticipated as part of this Project. No permanent damage to roads is anticipated with the implementation of mitigation measures. Paving of existing roads is generally beneficial for the community. *Public health and safety:* Access roads would be blocked from public access. Existing healthcare facilities are anticipated to be sufficient for the Project during construction and operation, and no necessary improvements are anticipated. The Project would have fire suppression measures of its own, as well as facilities for the storage of hazardous materials. No City fire department improvements are anticipated. Police protection would be provided by the Clinton County Sherriff's Department during both construction and operations, and no improvements are anticipated. *Waste management:* Local waste disposal and sanitation facilities are not anticipated to be adversely affected by the additional waste streams generated during construction and operation of the Project. No additional solid wastes would be generated by the Project as byproducts from the production of electricity.	
Land Use, Recreation, Farmland, and Coastal Facilities	*Land use:* Construction and operation of the Project would impact the existing cropland use; however, it will not have a significant impact on prime farmland or farmland of statewide importance. *Recreation:* No direct impacts to parks are anticipated. The transmission line interconnection route is new ROW through privately owned land. Construction traffic and any road closures would be temporary in nature and cease after construction is complete. *Farmland*: Farming activities currently occur at the Site; however, no significant impacts to prime farmland are anticipated and an alternative site does not need to be considered. Overhead transmission lines will continue to allow farming to occur within the ROW and any area not permanently converted for plant use will return to farmland if practical. In addition, the Project's electrical clearances and ROW width are designed to limit neutral-to-earth and induced voltages that can create concern with livestock operations. *Coastal:* No coastal facilities are located within the Project Study Area or macro- corridors. No impacts to coastal facilities are anticipated due to the Project	No impacts anticipated for this alternative
Noise	Project construction would result in temporary and minor noise impacts in the surrounding area. Construction-related sounds would vary in intensity and duration depending on specific stages and activities of construction but would not be permanent. Nearby residences may temporarily experience increased noise during construction. Minor temporary disturbances to wildlife could occur. A preliminary noise study was conducted. The results of this study showed expected noise level contributions of 44 dBA at the nearest NSA. AECI plans to install stack silencers to reduce impacts to the surrounding properties. As such, all residences are predicted to be below EPA noise guideline	No impacts anticipated for this alternative

Resource	Impacts from Proposed Action	No Action Alternative
	levels.	
Socioeconomics	During construction, the Project would create up to 468 jobs during peak activity. The number of workers onsite would begin at nominal levels at the beginning of construction and steadily increase over time, declining as major construction activities are completed. Local businesses near the Facility, such as gas stations, convenience stores, and restaurants, may experience increases in business during construction due to construction workers onsite. This increased demand would cease after construction is complete and would not add considerably to the demand on existing business, services, or community facilities. The Project would create up to 8 full-time permanent jobs. These new permanent employees may be from the local workforce or may relocate to the area for the position. Considering the population of the City of Turney, other nearby communities, and Clinton County, the addition of 8 jobs is not anticipated to considerably increase demand for housing, schools, or other local services. The Project would not directly impact any residences, public facilities, farming structures, cemeteries, religious facilities, or other structures. Temporary disruptions to normal traffic may occur during construction as equipment and employees commute to and from the Project. The frequency of the daily workforce automobile traffic would follow the Project workforce numbers onsite at a given time. The daily automobile traffic to the site would increase from approximately 1,972 vehicles in the initial stages of construction to approximately 2,440 vehicles for peak months. The traffic would decrease until it reaches approximately 1,982 vehicles near construction completion and during operation.	No impacts anticipated for this alternative
Visual Resources	The aesthetics of the surrounding area would be altered by the Project. Vegetation would need to be cleared permanently for the Project Site. The Project site would require lighting for safety and security. Light emissions at the Project Site would increase compared to current levels of light emissions as a result of facility lighting. The dominant visual features of the Project would be a stack (approximately 140 feet tall) and other facility equipment at the Project Site. The transmission line construction will occur within existing ROW.	No impacts anticipated for this alternative
Water Resources	*Surface Water*: The Site has been chosen to avoid permanently impacting surface water sources as much as practical. *Groundwater*: No groundwater is located on the Site and no groundwater will be used for the Project. Therefore, there would be no impacts to groundwater. *Floodplain*: The Site is not within 100- or 500-year floodplains. *Wetlands/Riparian:* The Project Site has been selected to avoid and minimize wetland impacts as much as practical. All laydown and staging areas necessary for construction have been selected to avoid any wetland impacts. All wetlands will be spanned by transmission structures and no fill will enter any waterways. One stream will be crossed by the distribution line upgrades and may receive civil design work. This stream is already spanned by the existing distribution line and the impacts from upgrading will be consistent with the impact from the existing distribution line. AECI will coordinate with MDNR	No impacts anticipated for this alternative.

Resource	Impacts from Proposed Action	No Action Alternative
	to complete an Antidegradation Review. Seven waters were determined to be jurisdictional through consultation with USACE. The Project will not have a significant impact on unavoidable jurisdictional wetlands. AECI will obtain the applicable NWP for the Project. No other mitigation measures are anticipated *Wastewater*: Facility waste streams from the Project will be directed to an onsite septic system. Process water from the Project and stormwater will be discharged to an onsite settling pond.	

4.0 Cumulative Impacts

The CEQ defines cumulative impacts (40 CFR 1508.7, in effect until April 11, 2025 according to 90 FR 10610-10616) as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

The following resources were determined to have no direct effects. Therefore, there are no cumulative effects, and will not be further evaluated in this section:

- Floodplains
- Water Resources
- Coastal Resources
- Biological Resources
- Historic and Cultural Resources
- Socioeconomics
- Human Health and Safety

4.1 Region of Influence

To determine cumulative effects, impacts on each resource are analyzed for a geographic scope that includes an area footprint appropriate for the resource. Various areas of Clinton County were analyzed for regional cumulative impacts. Local utility and Missouri Public Service Commission ("PSC") webpages were accessed. The MoDOT Statewide Transportation Improvement Plan ("STIP") interactive GIS website was accessed (MoDOT, 2024) to determine if any road projects are occurring in the area. News articles were researched, and discussions were held with local agencies. The identified actions are described in the following section.

4.2 Past, Present, and Reasonably Foreseeable Future Actions

Past actions that have affected the resources of the area include:

- Private agriculture on and near the Site is common, which resulted in the removal of native vegetation;
- Railroad development took place; railroad was removed from use prior to 1984;
- Construction of roadways removed land from use and created on-going air and noise sources;
- Construction of the existing distribution line east of the proposed TEC took land out of use and spanned several streams;
- Construction of the existing distribution substation at the intersection of NE State Hwy A and NE 280th Street took land out of use;
- Construction of the existing water pipeline and water tower near the proposed TEC took land out of use;
- Construction of the existing gas pipeline crossing the TEC site and the existing natural gas facility to the east took land out of use;
- Residential development within the surrounding area removed land from use.

Present actions that have affected the resources of the area may include:

- Kinder Morgan natural gas facility operations (Rockies Express Pipeline station) will impact its immediate footprint for various resources;

Reasonably foreseeable actions that may affect the resources of the area include the following:

- The State of Missouri has established a Priority Climate Action Plan ("PCAP") that was submitted to EPA on February 27, 2024 (MDNR, 2024b), as part of the Inflation Reduction Act grant process. The PAP presents the State's intention to reduce CO_2 emissions by following "Priority Measures" that support the development of solar farms and increase grid resiliency. Clinton County has a moratorium on solar and wind resource development in response to residents being generally opposed to these developments. As such, none are reasonably foreseeable.
- AECI will pave roads from the Project site to the nearest highway to provide better/more reliable access to the area but are doing so outside of RUS financing. There may be temporary impacts to local resources during construction, but no long-term cumulative effects are anticipated.
- Highway projects unrelated to the Proposed Action including pavement rehabilitation of north and southbound lanes on I-35 from Shoal Creek to north of Route 116 near Lathrop, Missouri is expected in 2025. Pavement resurfacing on Highway H east and westbound lands through Turney, Missouri and on Highway 69 north and southbound lanes from Route 116 near Lathrop to the Clay County boundary are expected to occur in 2026. These projects will have minimal effects during construction, but no additional long-term effects are anticipated.

The various entities involved in implementing each of these actions would have been and/or are required to obtain their own permits, clearances, and/or licenses prior to construction and operation of their respective actions. These entities would also be responsible for the on-going maintenance and compliance of their actions. The potential cumulative impacts on each resource are described in the following sections.

4.2.1 Land use, Formerly Classified Land, Geology, Soils, and Farmlands

Past and present actions have affected the land use, soils, and farmlands in the surrounding area, much of the native vegetation was historically converted to agricultural use. Existing development in the area has removed farmland from agricultural use. The Project Site would further remove land from agricultural use due to conversion of soils to plant site and switch station site development. Much of the area occupied by these facilities will be covered by concreate and gravel areas. Transmission and distribution line structures would require excavation for foundations to be installed. Trench excavation would be relatively shallow and would not be expected to have any impact on the area geology. Care would need to be taken during excavation and installation of the water pipeline, natural gas lateral, and transmission/distribution line structures to minimize overall soil disturbance, control runoff, and avoid mixing of soil profiles and compaction during storage and trench backfilling. Should trenchless techniques be used for installation of pipelines, potential disturbance to soils would be reduced compared to trench installation. The Project site would be graded and grading design would change the topography to facilitate site construction and stormwater drainage patterns. Impacts to prime farmlands and farmlands of statewide importance will be limited as the acres below overhead electric lines would remain farmable. After construction is completed, disturbed areas would be stabilized as appropriate, either revegetated or covered with gravel or solid pavement material. With the implementation, monitoring, and maintenance of appropriate BMPs, it is anticipated that the Project would have minimal impacts on geological resources. Therefore, minimal cumulative impacts to soils and geological resources are anticipated. Additionally, NRCS concluded that the Project's total screening score for the site was below their threshold of 160, indicating no significant impacts to prime farmland are anticipated and an alternative site does not need to be considered. It is not anticipated that the Project will contribute considerably to cumulative soil impacts due to these factors.

Clearing of the ROW for the construction of new transmission line and expansion of the existing water pipeline would contribute the cumulative loss of woodland habitat. The Project would require removal of approximately 9.1 acres of ROW. The Project would introduce land uses compatible with current land uses

that are already present in the surrounding area. Due to this, cumulative effects on land cover and land use are not considered substantial.

4.2.2 Wetlands and Water Bodies

As discussed in Section 3.3.1, several wetlands and water bodies were identified for the Project Area, and there are more adjacent to the site. Due to their abundance in the Study Area, it seems likely that agricultural use and past projects may have impacted and likely altered wetland and water bodies in the region. Present and future actions are subject to federal permitting requirements that may not have existed previously. While the identified present and future actions in the area may also have the potential to impact wetlands and water bodies, each of the entities undertaking those actions will be required to survey, permit, and/or mitigate impacts to wetlands, implementing what the USACE determines is appropriate. An AJD was received from USACE on February 3, 2025. The Project site could affect seven jurisdictional features including one pond, one wetland, and two channels on the TEC site; one channel on the transmission line corridor; one channel on the distribution line corridor; and one channel on the switch station site. NWP for wetland and water body impacts will be obtained as needed. The cumulative impact to wetlands and water bodies is therefore anticipated to be minimal.

4.2.3 Aesthetics

The landscape of Clinton County has been altered by agriculture, and residential and business development. Construction of identified past activities required vegetation clearing and, in some instances, built permanent visual features into the viewshed (e.g., existing transmission line, existing substations, and other community infrastructure). The aesthetics of the surrounding area would be minimally altered by the Project. Vegetation would need to be cleared from the TEC and switch station footprints and tree removal from the ROW would occur. Light emissions at the Project site would increase compared to current levels of light emissions as a result of facility lighting. The approximately 140-foot stack at the facility, other facility equipment, transmission line structures, and switch station would introduce new features to the landscape.

The aesthetics of the surrounding area could be altered by reasonably foreseeable future actions. Vegetation could need to be cleared and light emissions from construction could occur. However, none of the identified future actions are likely to cause long-term effects, having a limited footprint. Overall, the aesthetics of the area are not anticipated to significantly change and would not cumulatively adversely contribute to the aesthetics of Clinton County.

4.2.4 Air Quality

Past actions would have contributed to construction emissions and vehicle emissions in the area. Present actions have the potential to temporarily impact air quality during construction and operation. Construction activities are typically intermittent and temporary in nature, ceasing after construction is complete.

The identified future actions are reasonably foreseeable actions that are expected to have minimal and temporary air emissions during construction, but minimal additional emissions in the long term. The State of Missouri does not have any definitive CO_2 emissions reduction goals (C2ES, 2024). A Comprehensive Climate Actions Plan (“CCAP”) is being developed to set emission reduction targets (MDNR, 2024b), but as previously stated, it has submitted a PAP with actionable Priority Measures as part of the Inflation Reduction Act grant process. The TEC fosters these Priority Measures by providing reliable, fast-start capacity to cover solar shortfalls and improved transmission facilities.

There is no current state policy mandating CO_2 emissions reductions. Target CO_2 emission reduction levels are being developed in conjunction with the CCAP. The increases associated with the TEC will be minimal over current levels (~0.5% of State total CO_2). Cumulatively, emissions are not anticipated to substantially

impact the overall air quality in the region, as the MDNR and EPA regulate activities to maintain ambient air quality. Therefore, no adverse cumulative impacts to air quality are anticipated as a result of the identified actions.

4.2.5 Noise

Existing residential and agricultural activities, and associated traffic all currently contribute to noise in the Study Area. Identified past actions may have increased existing noise during construction, and the addition of large roadways has created a long-term source of noise in the area. The identified present and future actions will have temporary construction noise associated with them.

Operational impacts from most of the actions are anticipated to be negligible long-term. The existing substations will have localized noise impacts, and the roadways are a long-term source of noise in the community. There have been localized cumulative noise impacts near the Project Site from the various actions. However, none are currently considered adverse cumulative noise impacts because most of the actions are expected to have no long-term impact or are far enough away to not create cumulative impacts.

4.2.6 Transportation

Construction of the Project will increase traffic to the area; however, these impacts would be intermittent and temporary in nature and would utilize existing roadways. Project construction traffic accessing the Site would primarily consist of automobile traffic for craft labor, construction management staff, contractors, equipment, and vendors. Material and equipment deliveries may be made by large trucks as well as heavy haul vehicles. Traffic on the Project site is anticipated to primarily consist of heavy construction equipment and material transport equipment. The frequency and intensity of the daily workforce automobile traffic would follow the Project workforce numbers at a given time. When possible, bulk deliveries would be scheduled to avoid peak traffic on local roads.

A traffic study was conducted in conjunction with this EA. The study identified a sight distance issue at the intersection of State Highway A and NE 280th Street. The sight distance issue could be mitigated with the use of administrative controls. Examples could include flashing beacons, road signage, etc. The need for additional traffic control measures was also identified at the intersections of NE Breckenridge Road & NE 280th Street and NE Breckenridge Road & NE 288th Street. Recommendations for traffic control measures could include the use of a flagger, yield or stop signs, or staged start/stop times during peak hours.

No permanent changes to roads are anticipated as a part of this Proposed Action. Several roads leading to the TEC site may be paved; however, road paving would be conducted separately from the Proposed Action. No permanent damage to roads is anticipated. As mentioned, MODOT has requested a pre- and post-construction road assessment survey occur and that any necessary repairs be made.

5.0 Summary of Mitigation

The following Table 5-1 is a summary of mitigation proposed for the Project by resource.

Table 5-1: Summary of Mitigation

Resource	Potential Environmental Consequences	Mitigation Measures Required	Intensity of Residual Effects
Land Use, Formally Classified Lands, Geology, Soils, and Farmland	Construction and operation of the Project will occur on previously disturbed land within the Facility boundary. Land use within the area is expected to change from agricultural to industrial for a small portion of the site, and land not used for facilities will likely still be farmable. No impacts to geology or formally classified lands are anticipated.	No mitigation measures are anticipated.	Minimal
Floodplains	Construction will not occur in any floodplains.	No mitigation measures are anticipated.	None
Wetlands and Water Bodies	4.55 acres of wetlands and 24 streams are present within the construction zone and have the potential to be impacted by the Project and associated transmission line and water pipeline construction.	All wetlands will be spanned by transmission structures and no fill will enter any waterways. One stream will be crossed by the distribution line upgrades and may receive civil design work. This stream is already spanned by the existing distribution line and the impacts from upgrading will be consistent with the impact from the existing distribution line. One pond located on the TEC site may receive civil design work. AECI will coordinate with MDNR to complete an Antidegradation Review. Seven of these waters were determined to be jurisdictional through consultation with USACE. AECI will obtain the applicable NWP for the Project. The Project will not have a significant impact on unavoidable jurisdictional wetlands. No other mitigation measures are anticipated and BMP will be used as appropriate..	Low
Water Resources	A new 6-inch water pipeline will supply water to the facility from the existing water tower. A portion of the water pipeline will be upgraded, and a portion will be new construction to extend the existing water pipeline (See Figure 1-2).	Facility will have its own dedicated water supply per agreements with Clinton County PWSD #4. No mitigation is necessary.	Not Applicable
	Soil erosion and stormwater runoff into nearby streams and rivers may impact waterways during construction.	Before construction activities commence, AECI's EPC contractor will apply for the appropriate MDNR NPDES Construction Stormwater permit and will follow all requirements of the permit. AECI's EPC contractor will prepare a SWPPP that will describe the BMPs to be implemented during construction.	Minimal

Resource	Potential Environmental Consequences	Mitigation Measures Required	Intensity of Residual Effects
	Stormwater runoff into nearby streams and rivers may impact waterways during operation.	Once the EPC files the Notice of Termination ("NOT") and MDNR inspects the site and it passes, that will conclude the construction stormwater permit obligation. AECI's operational runoff for the plant will be covered in the facility's water permit.	Minimal
Threatened and Endangered Species	The Project may affect but is not likely to adversely affect the Indiana bat, northern long-eared bat, gray bat, tricolored bat, monarch butterfly, or western regal fritillary butterfly.	Tree clearing will occur outside of bat roosting season in Missouri (April 1-Novemver 15). Approximately 9.1 acres of tree clearing is proposed.	Minimal
	Potential bird strikes on transmission lines may occur.	There is no suitable habitat for migratory birds or eagles on the Project Site. Approximately 9.1 acres of tree clearing is proposed. The Project does not cross major waterways.	None
Vegetation	Construction will occur on previously disturbed soils on an active agricultural field.	No mitigation measures are anticipated.	Not Applicable
	It is not expected that construction related disturbances will provide an opportunity for the establishment of invasive species as the area will not be conducive to the growth of vegetation.	No mitigation measures are anticipated.	None
Wildlife	Facility will be built on an existing agricultural field. Habitat and foraging characteristics will be permanently removed before and after the Project. Areas not permanently converted by the facility will be reseeded with vegetation or returned to agricultural use if practical.	No mitigation measures are anticipated.	Minimal
	During construction, noise and activity may drive wildlife out of the area immediately surrounding the Project.	No mitigation is needed. After construction ends, wildlife will return.	Minimal
	Construction activities will not introduce or spread invasive species in the area.	No mitigation measures are anticipated.	None
Historical and Cultural Properties	Construction will occur on previously disturbed soils and no eligible resources were identified.	No mitigation measures are anticipated. An IDP (Appendix E) has been created.	Minimal
Aesthetics	There will likely be visual contrast from the new Facility.	General landscaping and maintaining existing tree line buffer where practical. No mitigation measures are anticipated.	None

Resource	Potential Environmental Consequences	Mitigation Measures Required	Intensity of Residual Effects
Air Quality	Air emissions from construction are low and temporary in nature, fall off rapidly with distance from the construction site, and will not result in any long-term impacts.	AECI's EPC contractor has prepared a fugitive dust control plan as a component of their Environmental Operations Plan. The Project will utilize BMPs and reasonable precautions such as: application of water or chemicals (palliatives) to control dust, installation of gravel/stone on unpaved roads, limiting access of unnecessary vehicles or equipment in the Project area, confining vehicular and equipment traffic to maintained roads, where feasible; establishment of non-driving areas and driving areas; erosion controls outlined in the SWPPP; maintenance of paved roads, as needed; restricting vehicles to slow speeds on the Project site. Dust control methods must also be included in the SWPPP.	Minimal
	Emissions from construction activities can be difficult to quantify, as they are dependent on the number and type of construction vehicles in operation at any given point during construction, the number of construction workers driving to and from the site, and the number and type of construction activities occurring, etc.	Air emissions from construction equipment are low and temporary in nature, fall off rapidly with distance from the construction site, and will not result in any long-term impacts. During construction, steps to reduce air emissions may include reducing the idling of construction vehicles. No mitigation is anticipated.	Minimal
	Emissions will occur from operation of the Project	Air emission calculations have determined that the Project will not be a major PSD source, but will require a Part 70 Major Source operating permit. All equipment will meet the applicable NSPS and NESHAP limits. The Project will include an SCR system to control NO_x emissions. Good combustion practices (such as maintaining proper temperature and pressure, fuel to air ratios, excess oxygen, etc. to avoid incomplete combustion byproducts) and the use of pipeline quality natural gas will mitigate emissions of SO_2, PM_{10} and $PM_{2.5}$. AECI will comply with the requirements in the air construction permit, once received. A Title V operating permit will be applied for within 12 months after the commercial operation date.	Low
Socioeconomic and Community Resources	Project will generally have a positive impact on the socioeconomics of the surrounding areas.	No mitigation measures are anticipated.	None

Resource	Potential Environmental Consequences	Mitigation Measures Required	Intensity of Residual Effects
Noise	Noise will be produced from the construction equipment and activities. Actual noise levels generated by construction will vary on a daily and hourly basis, depending on the activity that is occurring, and the types and number of pieces of equipment that are operating.	Any excessive construction noise should be of short duration and have minimal adverse long-term effects on land uses or activities associated with the Project area.	Minimal
	Noise will be produced from the operation of the Project.	Sound mitigation measures will be included in the base design of the Project including low noise emitting equipment. Stack silencers will be utilized to reduce impacts to the surrounding properties. Details of these measures will be determined as the Project proceeds.	Minimal
Transportation	Construction of the Project will cause increased traffic in the area surrounding the Project.	Construction and operation of the proposed Project will have only temporary impacts on transportation. The Traffic Study identified a sight distance issue at the intersection of State Highway A and NE 280th Street. The sight distance issue could be mitigated with the use of administrative control. Example could include flashing beacons, road signage, etc. The need for additional traffic control measures was also identified at the intersections of NE Breckenridge Road & NE 280th Street and NE Breckenridge Road & NE 288th Street. Recommendations for traffic control measures could include the use of a flagger, yield or stop signs, or staged start/stop times during peak hours. AECI will also coordinate the proper construction signage near access points on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.	Minimal
	Damage to existing roads during construction.	Roadways will not be purposefully damaged. In the event this does occur, repairs for damage caused by construction activities will be made when appropriate. Road may be paved in advance of the Proposed Action to prevent damage to the extent practical.	Minimal
Human Health and Safety	EMF will be strongest directly under the transmission line and decreases with increasing distance from the transmission line ROW. The proposed Project is not anticipated to significantly increase the existing EMF levels in the current transmission corridor.	No mitigation necessary.	None

Resource	Potential Environmental Consequences	Mitigation Measures Required	Intensity of Residual Effects
	During construction, the site will be managed to prevent harm to the general public. The general public will not be allowed to enter any construction areas associated with the proposed Project. The major risk to the general public will be from an increase in traffic volume on the roadways near the proposed Project as a result of commuting construction workers and transportation of equipment and materials.	Perimeter fences and controlled access will remain in place throughout the construction and future operation of the Project. Increases in traffic will be temporary in nature and following construction will decrease to acceptable, safe travel levels.	Minimal
	There are a number of risks to human health and safety possible in the course of constructing and operating a power plant including hazards such as fire, slips, trips, falls, electrical hazards, confined space entry, and many others. Additionally, hazardous substances or wastes may be released, generated, or required for construction and operation of the Facility.	A comprehensive safety program is in place at AECI. For instance, a safety briefing is required annually for employees and upon entry for contractors. Adequate training for human health and safety concerns will be mandatory for all construction workers on the Project site. Personal safety equipment such as hard hats, ear and eye protection, and safety boots will be required for all workers onsite. Accidents and injuries will be reported to the designated safety officer onsite.	Minimal
	Construction and operation of the proposed Project will also involve the use and storage of regulated and hazardous materials. During construction, diesel fuel, gasoline, and lubricating oils from heavy equipment and vehicles may accidentally leak or spill. Hydraulic fluid, paints, and solvents will likely be used during the construction phase as well. Additionally, the presence of aboveground fuel storage tanks and oil-filled equipment present the potential to release into the environment.	Risk management associated with hazardous materials is an additional human health and safety concern. To reduce the potential for a release of regulated or hazardous materials during the construction phase of the proposed Project, work will be planned and performed in accordance with OSHA standards and protocols addressing the use of potentially hazardous materials and applicable federal and state environmental regulations. If a hazardous release were to occur, emergency response, cleanup, management, and disposal of contaminated soils will be conducted according to EPA and State standards. Conformance to these standards and procedures will reduce the potential for significant impacts resulting from the release of hazardous materials during the construction phase.	Minimal

6.0 Coordination, Consultation, and Correspondence

The following sections detail the agency and tribal coordination efforts completed for the Project and public involvement plan.

6.1 Public Involvement

A public open house was held on September 18, 2024, at the Lathrop Community Center in Lathrop, Missouri. Several methods of outreach were used to inform the public of this meeting. Approximately 1,200 email invitations and 1,800 postcards were sent, and a social media campaign was conducted which reached 2,000 people. At the public open house, there were 80 in-person attendees. Two written comments were received at the meeting; one positively commenting on the information presented in the meeting and one comment regarding enhancing the roads between the TEC site and Route A. Additionally, three email inquiries were received, two regarding paving and integrity concerns for the roadways and one regarding transmission map/tie-ins.

A virtual meeting was held on May 30, 2023 with the Clinton County Commission to provide an introduction to the Project. On July 18, 2023 AECI met with the Commission at the Clinton County Courthouse in Plattsburg, Missouri to discuss zoning for the project. Public hearings regarding the zoning of the Project were held on September 14, 2023 and December 14, 2023. Additionally, AECI met with the Clinton County Commission to discuss tax abatement for the Project on April 2, 2024; June 27, 2024; and September 5, 2024.

Various meetings were held at the Clinton County Courthouse in Plattsburg, Missouri to discuss zoning for the Project. AECI met with the Clinton County Zoning Administrator on June 20, 2023. The Clinton County Zoning Commission held public hearings on September 7, 2023 and December 7, 2023. An additional meeting with the Zoning Commission was held on October 5, 2023.

On November 14, 2023, members of AECI met with Missouri legislators Mazzie Boyd-Christensen, Jeff Farnan, Peggy McGaugh, Josh Hurlbert, Dean Van Schoiack, Bill Falkner, Breanda Schields. An introduction to the Project was discussed. No concerns were expressed at the time.

Various meetings were held with Clinton County PWSD #4 throughout 2024 (April 4, May 9, June 6, and June 17). Water supply needs for the Project were discussed. Two Clinton County Commissioners and the Superintendent of Lathrop R-II School District attended the meeting on June 17, 2024. No concerns were expressed at the time.

On April 17, 2024, separate meetings were held with Missouri District 12 State Senators Rusty Black and Cindy O'Laughlin at the capital building in Jefferson City, Missouri. An introduction to the Project was discussed. No concerns were expressed at the time.

6.2 Agency Consultation

Letters were sent to agencies to inform agency contacts that AECI had engaged RUS and was requesting financing for the Project. The letter provided a Project description and explained that the action triggers an EA. The agencies were provided with this information on the Project as an opportunity to ask questions and provide initial feedback. Agency correspondence is provided in Appendix D. Table 6-1 provides a list of agencies who received letters.

Table 6-1: RUS Scoping Letter Distribution

Agency	Date(s)	Contact	Response
Federal Agencies			
USACE[1]	September 6, 2024	Kansas City District	An AJD request was submitted on July 19, 2024. The AJD was received February 3, 2025.
USEPA[2]	September 6, 2024	Meg McCollister	No response received.
USFWS[3]	September 6, 2024	John Weber/Kathryn Bulliner	USFWS response concurred with the determination that the Project is not likely to affect the Indiana bat, northern long-eared bat, gray bat, tricolored bat, monarch butterfly or western regal fritillary butterfly.
FAA[4]	September 6, 2024	Chris Smith/Brian Boehmer (MO DOT)	MoDOT's Aviation Department was forwarded the initiation letter by FAA. MoDOT response that the Project may require formal notice with FAA and the Notice Criteria Tool should be consulted to determine if formal notice was required.
US DOE – NEPA Policy and Compliance	September 6, 2024	Brian Costner	Response stated DOE had no interest in providing input to the Project.
State Agencies			
MO NRCS	September 6, 2024	Scott Edwards/Nathan Bilke	Project required Form AD-1006 Farmland Conversion Impact Rating be filled out. Follow up resulted in a score below the Farmland Protection Policy Act thresholds.
MO DNR, Director	September 6, 2024	Dru Buntin/Hannah Humphrey	Letter response was received summarizing environmental impact considerations that should be reviewed regarding the Project.
MO DNR, Division of Environmental Quality	September 6, 2024	Kyra Moore	A letter response was received from MDNR as stated above. Ongoing coordination with various MDNR Divisions is occurring for draft resource permits.
MO SHPO	September 6, 2024 October 29, 2024	Dawn Scott	Email response stated that project submission had been received. Follow-up letter sent with Cultural Resources Report resulted in a finding of no adverse affect to historic properties or cultural resources by the Project. An IDP will need to be included for any historic properties that may be inadvertently discovered or affected during project construction.
MoDOT	September 6, 2024	Patrick McKenna/Melissa Scheperle	Email response noted that MO DOT should be notified if improvements require alteration to or additional traffic control devices or auxiliary turn lanes. Response also stated that driveways accessing the site on Route A must be evaluated for sight distance and geometric design and requires a driveway permit. Route A require pre-construction documentation and evaluation during construction. Any damages must be remedied at contractor expense. Utility permits may be required for any work on the ROW and surety bond established.
MO Natural Heritage Inventory/MDC	September 6, 2024 December 6, 2024	Environmental Review Coordinator/Kelly Rezac	Response stated that the Project was identified as a Level 3 with records of federal-listed species or critical habitats near the project site. No records were identified within the project area. The Project was identified as a Level 2 with records of state-listed endangered or state-ranked species and communities of concern. Records indicate the likely presence of the American Badger and Eastern Tiger Salamander as state ranked species (vulnerable) near the Project area. The response did not identify

			state-listed T/E species as likely occurring in the Project. Recommendations include consultation with USFWS, minimize erosion and sedimentation/runoff to nearby streams and lakes and adhere to CWA permit conditions with MDNR and USACE, use of BMPs, revegetation, minimize tree-clearing and conduct during bat's inactive season, monitor for bald eagle nests, and to inspect and clean equipment thoroughly before moving between project sites to prevent spread of invasive species.

[1] United States Army Corps of Engineers
[2] United States Environmental Protection Agency
[3] United States Fish and Wildlife Service
[4] Federal Aviation Administration

Agencies that responded expressed no concern regarding the Project. In general, agencies responded that the Project should obtain permits if needed prior to any construction.

6.2.1 Federal Permitting

Appendix H provides the Federal permits and approvals required for the Project.

6.2.2 State Agency Coordination

The following sections provide details about specific State agency coordination and correspondence, as well as a list of state permits required for the Project.

6.2.2.1 Missouri Department of Transportation (MoDOT)

AECI met with MoDOT representatives Brenda Harris, State ROW Manager; Jennifer Becker, State Utilities Coordinator; and Jay Wunderlich, Director of Government Affairs at their offices in Jefferson City, Missouri on November 14,2023. An introduction of the Project was discussed. No concerns were expressed at the time.

6.2.2.2 Missouri Department of Conservation (MDC)

AECI met with MDC Deputy Director General Aaron Jeffries at MDC offices in Jefferson City, Missouri on November 14, 2023. An introduction of the Project was discussed. No concerns were expressed at the time.

6.2.2.3 Missouri Department of Natural Resources (MDNR)

AECI met with MDNR representatives in at MDNR offices in Jefferson City, Missouri on April 17, 2024. An introduction of the Project was discussed with a focus on the purpose and need of the Project and planned environmental efforts. A letter response to the project initiation letter was received on September 27, 2024. The letter response summarized the environmental considerations for evaluating the Project's environmental impacts under NEPA.

6.2.3 Missouri State Historic Preservation Office (SHPO)

A findings letter was sent to the Missouri SHPO on September 6, 2024, providing preliminary information about the Project and a follow-up letter was sent on October 29, 2024. The SHPO concurred with all findings in the cultural survey and subsequent correspondence with a finding of no adverse affect to historic or cultural properties.

6.2.4 State Permitting

Appendix H provides the State permits and approvals required for the Project. The table includes permits that are related to the overall AECI Project, including permits that are the responsibility of entities other than AECI.

6.3 Tribal Coordination

On September 6, 2024, Section 106 Consultation Letters that provided preliminary Project details were mailed by RUS to the tribes listed below.

- Apache Tribe of Oklahoma
- Iowa Tribe of Kansas and Nebraska
- Iowa Tribe of Oklahoma
- Omaha Tribe of Nebraska
- Osage Nation
- Otoe-Missouria Tribe of Indians, Oklahoma
- Sac & Fox Nation of Missouri in Kansas and Nebraska
- Sac & Fox Nation of Oklahoma
- Sac & Fox Tribe of the Mississippi in Iowa

Section 106 Consultation Letters containing further details about the Project were mailed to the tribes listed above on October 29, 2024. Receipt notifications verified all Tribes received the letters by October 31, 2024. The conclusion of the Section 106 30-day timeline for the finding of no adverse affect letters was December 6, 2024. No comments were received.

6.4 Locations for Public Review of EA

This EA was made available to the public for a 14-day public review and comment period beginning on March 20, 2025. Notice of Availability of the document for review and comment was published in the following newspapers:

- Clinton County Leader (March 20 and 27, 2025)

Copies of the EA were made available for public review at RUS, 1400 Independence Avenue, SW, Washington DC 20250-3201; on the RUS website at https://www.rd.usda.gov/resources/environmental-studies/assessment/turney-energy-center; and at the following libraries:

Cameron Public Library
312 North Chestnut Street
Cameron, Missouri 64429

Mid-Continent Public Library – Smithville Branch
120 Richardson Street
Smithville, Missouri 64089

All comments from reviewers were directed to be sent via email to RUSPublicComments@usda.gov or via mail addressed to:

Environmental and Historic Preservation Division
USDA, Rural Utilities Service
Environmental Protection Specialist
1400 Independence Avenue SW
Room 2230, Stop 1571
Washington, DC 20250-1571

RUS received no comments on the draft EA. Should RUS choose to issue a Finding of No Significant Impact (FONSI) for the Proposed Action, a newspaper notice will be published informing the public of the RUS finding and the availability of the EA and FONSI. The notice shall be prepared in accordance with RUS guidance.

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8.0 List of Preparers

The environmental review for the Project was prepared by RUS, AECI, and Burns & McDonnell Engineering Company, Inc. The following is a list of preparers of this document.

Rural Utilities Services

- Environmental and Historic Preservation Division

Associated Electric Cooperative Inc.

- Rob LeForce, Environmental Analyst Land & Water Resources
- Blake Pinkerton, Manager Air Quality

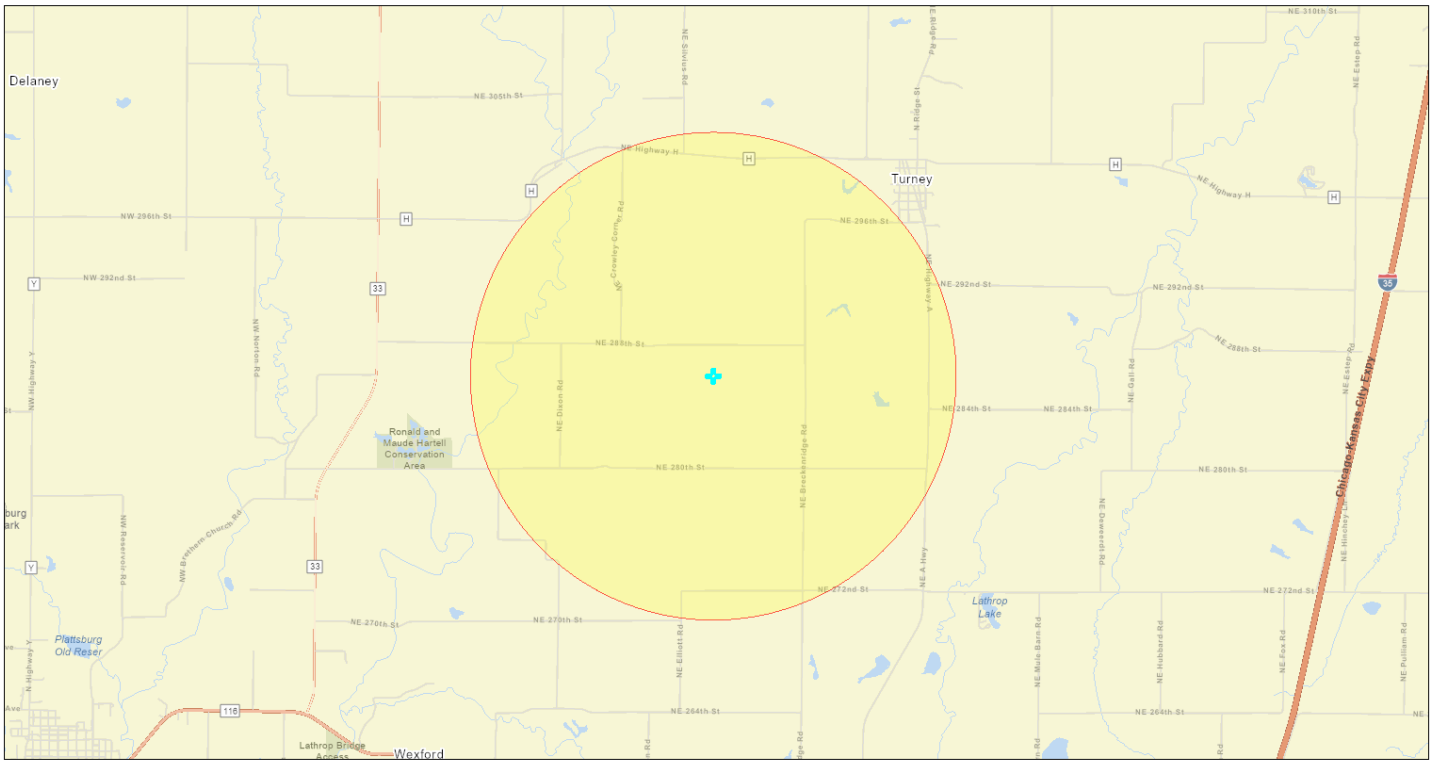
Burns & McDonnell Engineering Company, Inc.

- Chris Howell, Project Manager
- Audra McCaslin, Staff Environmental Scientist
- Taylor Volkers, Assistant Environmental Engineer
- Jessi Schoolcraft, Assistant Environmental Engineer
- Bruce Darnell, Staff Cultural Resources Specialist
- Christa Wisniewski, Section Manager Natural and Cultural Resources

APPENDIX A – NEPASSIST

NEPAssist Report

Turney



March 22, 2023

Turney

Project Buffer

1:61,150

0 0.5 1 2 mi

0 0.75 1.5 3 km

Missouri Dept. of Conservation, Missouri DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

Project Location	39.611706,-94.351444
Within 2 miles of an Ozone 8-hr (1997 standard) Non-Attainment/Maintenance Area?	no
Within 2 miles of an Ozone 8-hr (2008 standard) Non-Attainment/Maintenance Area?	no
Within 2 miles of a Lead (2008 standard) Non-Attainment/Maintenance Area?	no
Within 2 miles of a SO2 1-hr (2010 standard) Non-Attainment/Maintenance Area?	no
Within 2 miles of a PM2.5 24hr (2006 standard) Non-Attainment/Maintenance Area?	no
Within 2 miles of a PM2.5 Annual (1997 standard) Non-Attainment/Maintenance Area?	no
Within 2 miles of a PM2.5 Annual (2012 standard) Non-Attainment/Maintenance Area?	no
Within 2 miles of a PM10 (1987 standard) Non-Attainment/Maintenance Area?	no
Within 2 miles of a Federal Land?	no
Within 2 miles of an impaired stream?	no
Within 2 miles of an impaired waterbody?	no
Within 2 miles of a waterbody?	no
Within 2 miles of a stream?	yes
Within 2 miles of an NWI wetland?	Available Online
Within 2 miles of a Brownfields site?	no
Within 2 miles of a Superfund site?	no
Within 2 miles of a Toxic Release Inventory (TRI) site?	no
Within 2 miles of a water discharger (NPDES)?	no
Within 2 miles of a hazardous waste (RCRA) facility?	no
Within 2 miles of an air emission facility?	no

Within 2 miles of a school?	yes
Within 2 miles of an airport?	no
Within 2 miles of a hospital?	no
Within 2 miles of a designated sole source aquifer?	no
Within 2 miles of a historic property on the National Register of Historic Places?	no
Within 2 miles of a Toxic Substances Control Act (TSCA) site?	no
Within 2 miles of a Land Cession Boundary?	yes
Within 2 miles of a tribal area (lower 48 states)?	no
Within 2 miles of the service area of a mitigation or conservation bank?	yes
Within 2 miles of the service area of an In-Lieu-Fee Program?	yes
Within 2 miles of a Public Property Boundary of the Formerly Used Defense Sites?	no
Within 2 miles of a Munitions Response Site?	no
Within 2 miles of an Essential Fish Habitat (EFH)?	no
Within 2 miles of a Habitat Area of Particular Concern (HAPC)?	no
Within 2 miles of an EFH Area Protected from Fishing (EFHA)?	no
Within 2 miles of a Bureau of Land Management Area of Critical Environmental Concern?	no
Within 2 miles of an ESA-designated Critical Habitat Area per U.S. Fish & Wildlife Service?	no
Within 2 miles of an ESA-designated Critical Habitat river, stream or water feature per U.S. Fish & Wildlife Service?	no

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APPENDIX B – WETLANDS REPORT

August 26, 2024

Mr. Rob LeForce, B.W.
Environmental Analyst, Land and Water Resources
Associated Electric Cooperative, Inc.
2814 S. Golden Ave
Springfield, MO 65801

Re: Turney Energy Center Wetland Delineation Report

Dear Mr. LeForce:

Burns & McDonnell was retained by Associated Electric Cooperative, Inc. (AECI) to provide wetland delineation services for the proposed Turney Energy Center (Project) in Clinton County, Missouri (Figure A-1, Appendix A). The proposed Project and the results of the wetland delineation effort are described below.

Introduction

AECI plans to construct the Turney Energy Center (TEC) in Clinton County, Missouri. The Project consists of six parts. These are 1) the TEC, a natural gas-fired simple-cycle electrical generation plant; 2) a new water supply pipeline; 3) an onsite natural gas lateral line; 4) an electrical distribution line upgrade; 5) an electrical interconnection line build; and 6) a new substation south of the City of Turney, Missouri.

The Project has the potential to impact wetlands or other waterbodies that may be under the jurisdiction of the U.S. Army Corps of Engineers (USACE) as designated by Section 404 of the Clean Water Act. Burns & McDonnell conducted a wetland delineation for the Project to evaluate the presence of wetlands and other waterbodies, including streams, drainages, and ponds. The delineation was conducted based on the proposed Project layout (Survey Area). The Survey Area included in this report and displayed in the accompanying figures is based on the latest Project design and encompasses approximately 193 acres.

Methods

The following discussions summarize the methods used to review existing data and conduct the wetland delineation.

Existing Data Review

Burns & McDonnell reviewed available background information for the Survey Area before conducting a site visit. This available background information included 2018

U.S. Geological Survey (USGS) 7.5-minute topographic maps (Lathrop, Plattsburg), USGS National Hydrography Dataset (NHD), U.S. Fish & Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, National Agriculture Imagery Program (NAIP) aerial photography (2019), and U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) 2017 Soil Survey Geographic (SSURGO) digital data for Clinton County, Missouri. Figures A-2 and A-3 in Appendix A depict this data. The USACE Antecedent Precipitation Tool was used to evaluate climate conditions before the site visit.

Wetland presence based only on NWI maps cannot be assumed to be an accurate assessment of potentially occurring jurisdictional wetlands. Wetland identification criteria differ between the USFWS and the USACE. As a result, wetlands shown on an NWI map may not be under the jurisdiction of the USACE, and all USACE-jurisdictional wetlands are not always included on NWI maps. Therefore, a field visit was conducted to identify any wetlands or other aquatic resources that may be present within the proposed Project.

Wetland Delineation Field Survey

Burns & McDonnell wetland scientists completed an onsite wetland delineation on April 22 and August 6, 2024. The delineation was completed following the 1987 *Corps of Engineers Wetlands Delineation Manual* (1987 Manual) and the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest* — Version 2.0 (Regional Supplement).

Sample plots were established at multiple locations, and Wetland Determination Data Forms from the Regional Supplement were completed to characterize the Survey Area (Appendix B). Vegetation, soil conditions, and hydrologic indicators were recorded at each sample plot. Locations of sample plots and other identified features were recorded using a sub-meter accurate global positioning system (GPS) unit. Natural color photographs were taken onsite and are included in Appendix C.

Results

The following sections describe the results of the existing data review and the completed wetland delineation.

Existing Data Review

The USGS topographic maps were reviewed to familiarize Burns & McDonnell wetland personnel with the topography of the Survey Area and potential locations of wetlands and other aquatic resources (Figure A-2). The USGS topographic maps indicate that most of the Survey Area is relatively flat and generally sloping to the south.

The NWI data indicates one palustrine forested (PFO) wetland, five palustrine unconsolidated bottom (PUB) wetlands and nineteen riverine wetlands within the Survey Area. The NHD data indicates twenty stream crossings within the Survey Area. The 2018 aerial photography indicates that the Project Area consists primarily of farmed crop fields and a maintained transmission line right-of-way (Figure A-3 and Figure A-4). According to the FEMA Flood Hazard Rate map for Clinton County, one 100-year flood zone is within the Survey Area on the northwest side (Figure A-2).

The NRCS SSURGO digital data indicates that a portion of ten soil map units are located within the Survey Area (Figure A-3, Soils Index). One of these soils (34020; Colo silty clay loam) is on the national hydric soil list (Figure A-3).

The USACE Antecedent Precipitation Tool indicates that climate conditions near the Survey Area were normal the three months before the April 22 survey and drier than normal conditions for the August 6, 2024 survey (Appendix D).

Wetland Delineation Field Survey

On April 22, 2024, and August 6, 2024, a two-person team comprised of a wetland scientist and a GPS specialist, both with Burns & McDonnell, conducted a wetland delineation of the Survey Area. The land cover and delineated wetlands and other aquatic resources are discussed below.

Vegetation. The Survey Area was comprised mainly of farmed crop fields, maintained transmission line and road right-of-way, and forests. The dominant vegetation in the upland areas included Japanese bristle grass (*Setaria faberi*), Kentucky bluegrass (*Poa pratensis*), henbit deadnettle (*Lamium amplexicaule*), poison hemlock (*Conium maculatum*), field pennycress (*Thlaspi arvense*), tall goldenrod (*Solidago altissima*), multiflora rose (*Rosa multiflora*), black willow (*Salix nigra*), rough-leaf dogwood

(*Cornus drummondii),* white mulberry (*Morus alba*), American elm (*Ulmus americana*), honey locust (*Gleditsia triacanthos*), Osage orange (*Maclura pomifera*), and eastern cottonwood (*Populus deltoides*). Common vegetation observed within delineated wetland areas is described below, and species are indicated on the Data Forms in Appendix B.

Soils. Typical upland soils ranged from black (10YR 2/1) to very dark brown (10YR 2/2) in color and silty clay loam to clay in texture. Typical wetland soils ranged from black (10YR 2/1) to very dark gray (10YR 3/1) in color and silty clay loam to clay in texture. Redoximorphic features were typically present in wetland soils but were uncommon in upland soils.

Hydrology. The primary sources of hydrology for the wetlands were groundwater and precipitation. Hydrology indicators within the wetlands included surface water, high water table, saturation, drainage patterns, geomorphic position, and a positive FAC-neutral test.

Delineated Areas

Nine wetlands and 24 streams were identified during the wetland delineation. The wetlands and streams are described by type below, and their locations are shown on Figure A-4 in Appendix A. Sample plots were located in wetlands and adjacent uplands. Data forms for these sample plots are included in Appendix B, and photographs of sample plots, wetlands, and streams are included in Appendix C.

Wetlands

Delineated wetland types included palustrine emergent (PEM), PFO, and PUB; each type is described in more detail below (Table 1).

Five PEM wetlands, encompassing 1.81 acres, were delineated. Vegetation in the wetlands was dominated by tufted foxtail (*Alopecurus carolinianus*), reed canary grass (*Phalaris arundinacea*), stinging nettle (*Urtica dioica*), yellow ironweed (*Verbesina alternifolia*), Canada goldenrod (*Solidago canadensis*), narrow-leaf cattail (*Typha angustifolia*), black willow, American sycamore (*Platanus occidentalis*), white mulberry, and American elm. Observed indicators of wetland hydrology included surface water, high water table, saturation, geomorphic position, and a positive FAC-neutral test. Soils ranged from black (10YR 2/1) to very dark gray (10YR 3/1) in color,

and redoximorphic concentrations were present. Soils ranged from silty clay loam to clay in texture. Hydric soil was indicated by Redox Dark Surface (F6).

One PFO wetland, encompassing 0.21 acre was delineated. Vegetation in the wetland was dominated by Canadian wood nettle (*Laportea canadensis*), American sycamore, and hackberry (*Celtis occidentalis*). Observed indicators of wetland hydrology included geomorphic position and a positive FAC-neutral test. Soils were very dark gray (10YR 3/1) in color, and redoximorphic concentrations were present. Soils ranged from silty clay loam to clay in texture. Hydric soil was indicated by Depleted Matrix (F3).

Two PUB wetlands, encompassing 2.22 acres, were delineated. PUB wetlands were open water ponds characterized by a combined areal cover of less than 30 percent of vegetation. Vegetation surrounding the PUB wetlands included reed canary grass, stinging nettle, curly dock (*Rumex crispus*), tall goldenrod, black willow, and white mulberry.

Table 1: Delineated Wetlands

Wetland ID	Wetland Type [a]	Delineated Area (acres)	Associated Photos in Appendix C	Figure A-4 Page Number
W-01	PUB	2.10	C-15	3
W-02	PEM	1.39	C-1	3
W-03	PEM	0.26	C-3	11
W-04	PUB	0.31	C-16	12
W-05	PEM	0.07	C-6	16
W-06	PUB	0.12	C-17	19
W-07	PEM	0.02	C-9	2
W-08	PFO	0.21	C-10	1
W-09	PEM	0.07	C-12	1
	Total:	4.55		

[a] Symbols for wetland type: PEM = palustrine emergent, PUB = palustrine unconsolidated bottom, PFO = palustrine forested

Streams

Thirteen ephemeral stream crossings were identified, extending for a delineated length of 1,639 feet (Table 2). The ephemeral streams were characterized by a defined bed and bank with little or no flow during the site visit. These streams likely carry water only during and after precipitation events. The ephemeral streams ranged from approximately 0.5 to 2 feet wide and from 0.25 to 0.5 foot deep at the ordinary high water mark (OHWM). Bank heights ranged from 0.5 to 1.5 feet. These stream crossings flowed through a maintained transmission line right-of-way and forested riparian corridor within the Survey Area, where common riparian vegetation included Kentucky bluegrass, black willow, honey locust, black walnut (*Juglans nigra*), American elm, and mulberry.

Table 2: Delineated Streams

Stream ID	Stream Type	Delineated Length (feet)	Photograph in Appendix C	Figure A-4 Page Number
S-01	Intermittent	745	C-18	3
S-02	Intermittent	1154	C-19	5
S-03	Ephemeral	109	C-20	5
S-04	Intermittent	301	C-21	5
S-05	Intermittent	115	C-22	5
S-06	Ephemeral	136	C-23	4, 6
S-07	Intermittent	169	C-24	13
S-08	Intermittent	50	C-25	14
S-09	Intermittent	55	C-26	14
S-10	Ephemeral	48	C-27	12
S-11	Ephemeral	55	C-28	11
S-12	Ephemeral	267	C-29	8
S-13	Intermittent	128	C-30	15
S-14	Intermittent	103	C-31	16
S-15	Ephemeral	125	C-32	16
S-16	Ephemeral	104	C-33	17
S-17	Ephemeral	444	C-34	19
S-18	Ephemeral	67	C-35	2
S-19	Ephemeral	87	C-36	2
S-20	Intermittent	51	C-37	2
S-21	Ephemeral	58	C-38	1
S-22	Perennial	52	C-39	1

Stream ID	Stream Type	Delineated Length (feet)	Photograph in Appendix C	Figure A-4 Page Number
S-23	Ephemeral	60	C-40	1
S-24	Ephemeral	79	C-41	3
	Total:	4562		

Nine intermittent stream crossings, extending for a delineated length of 2,871 feet, were identified. The intermittent streams were characterized by the presence of a low volume of flow at the time of the site visit. These streams likely are partially fed by groundwater but may not flow during dry periods. The intermittent streams ranged from approximately 1 to 6 feet wide and from 0.25 to 1 foot deep at the OHWM. Bank height ranged from 1 to 5 feet. The intermittent streams flowed through a maintained transmission line right-of-way within the Survey Area, where common riparian vegetation included Kentucky bluegrass, tall goldenrod, and American elm.

One perennial stream crossing was identified, extending for a delineated length of 52 feet (Table 2). This stream had a substantial flow volume during the site visit and likely flows year-round. The perennial stream was approximately 30 feet wide and 3 feet deep at the OHWM. This stream crossing flowed through a forested riparian corridor within the Survey Area, where common riparian vegetation included jewelweed (*Impatiens pallida*), coralberry (*Symphoricarpos orbiculatus*), honey locust, black walnut, and Osage orange.

Summary

Burns & McDonnell conducted a wetland delineation of the Survey Area to identify the presence of wetlands and other aquatic resources. Seven wetlands and twenty-three streams were identified during the delineation efforts. To avoid the need for a Section 404 Permit from the USACE, the proposed Project should be designed to avoid all impacts to potentially jurisdictional waters. If impacts to jurisdictional features cannot be avoided entirely, they should be minimized, and a Section 404 Nationwide Permit from the USACE would be required.

If you have any questions or require additional information, please contact Jessica Ramirez by telephone at (210) 381-1867 or by email at jramirez2@burnsmcd.com.

Sincerely,

Jessica Ramirez
Assistant Wetland Scientist

Appendices:

Appendix A –	Figures
Appendix B –	Routine Wetland Determination Forms – Midwest Region
Appendix C –	Ground Photographs
Appendix D –	Antecedent Precipitation Tool Results

cc: Chris Howell, Burns & McDonnell

APPENDIX A – FIGURES

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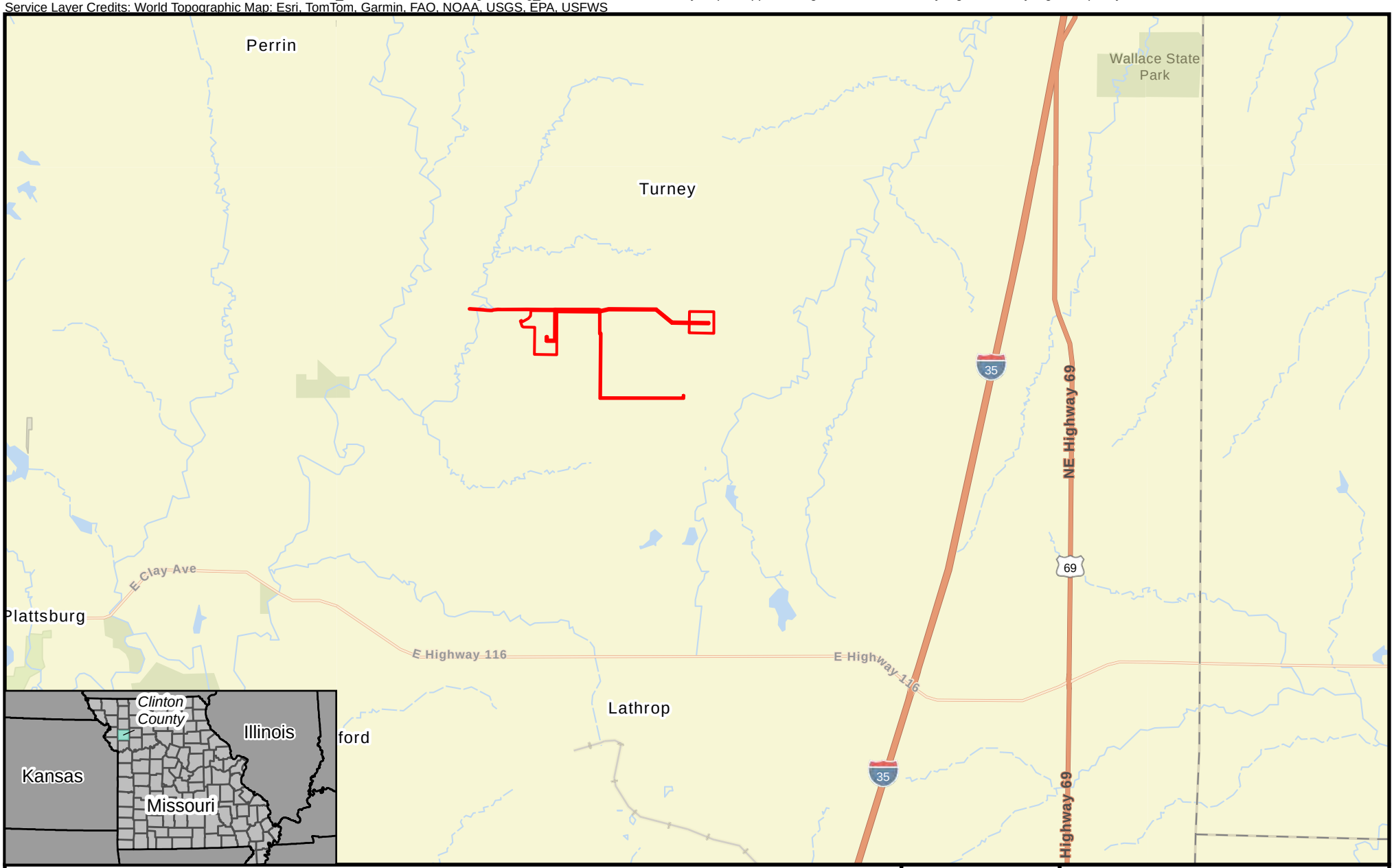

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Figure A-1
General Location Map
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Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell

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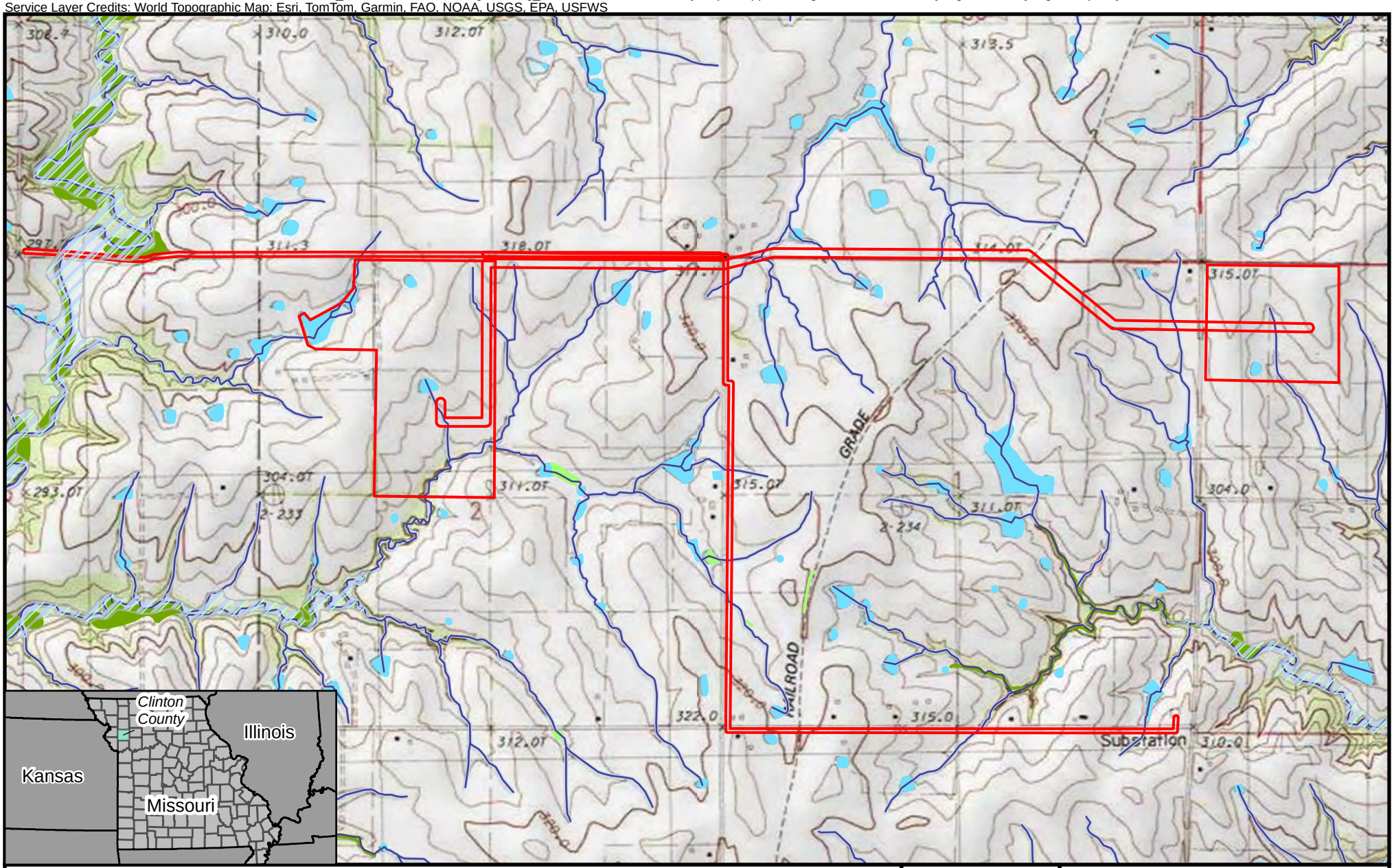

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Figure A-2
NHD, NWI, FEMA Floodplain, and USGS Topographic Map
Turney Energy Center
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Clinton County, Missouri

Source: ESRI, NHD, NWI, FEMA, USGS, Associated Electric Cooperative, Inc., and Burns &McDonnell

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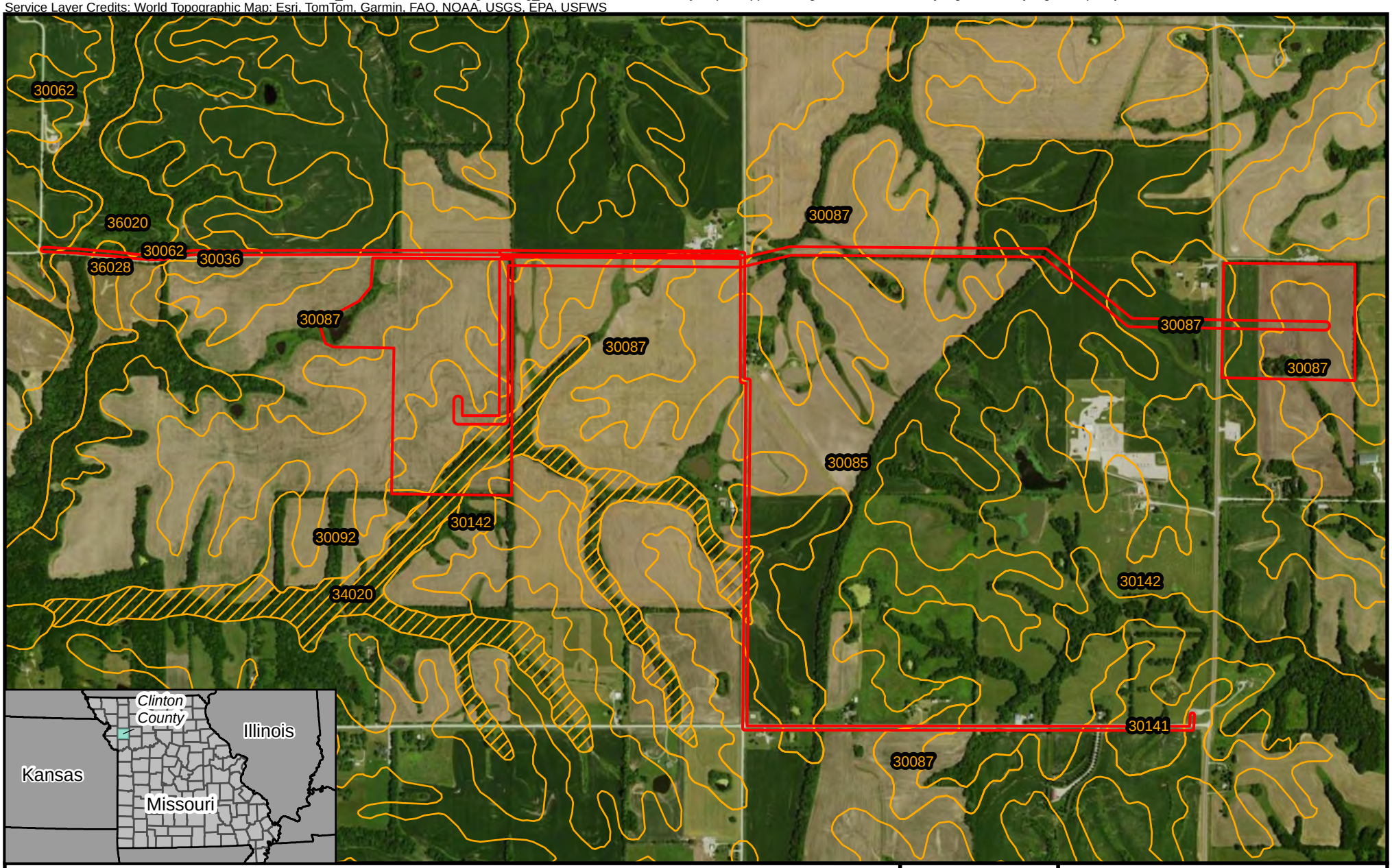

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Figure A-3
NRCS Soils and
Aerial Imagery Map
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AECI
Clinton County, Missouri

Source: ESRI, NRCS, SSURGO Database, Associated Electric Cooperative, Inc., Burns & McDonnell

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Figure A-3 Soils Index

Soil Map Symbol		Map Unit Name
30036	-	Armstrong loam, 5 to 9 percent slopes
30062	-	Gara loam, 9 to 14 percent slopes
30085	-	Grundy silt loam, 2 to 5 percent slopes
30087	-	Grundy silt loam, 5 to 9 percent slopes
30092	-	Grundy silty clay loam, 5 to 9 percent slopes, moderately eroded
30141	-	Lamoni silty clay loam, 5 to 9 percent slopes
30142	-	Lamoni silty clay loam, 5 to 9 percent slopes, moderately eroded
34020	-	Colo silty clay loam, drainageway, 2 to 5 percent slopes, frequently flooded
36020	-	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded
36028	-	Nevin silt loam, 0 to 2 percent slopes, rarely flooded

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Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
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NORTH
100 50 0 100
Scale in Feet

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Figure A-4
Wetlands and Water Resources
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Clinton County, Missouri
Page 1 of 19

Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell
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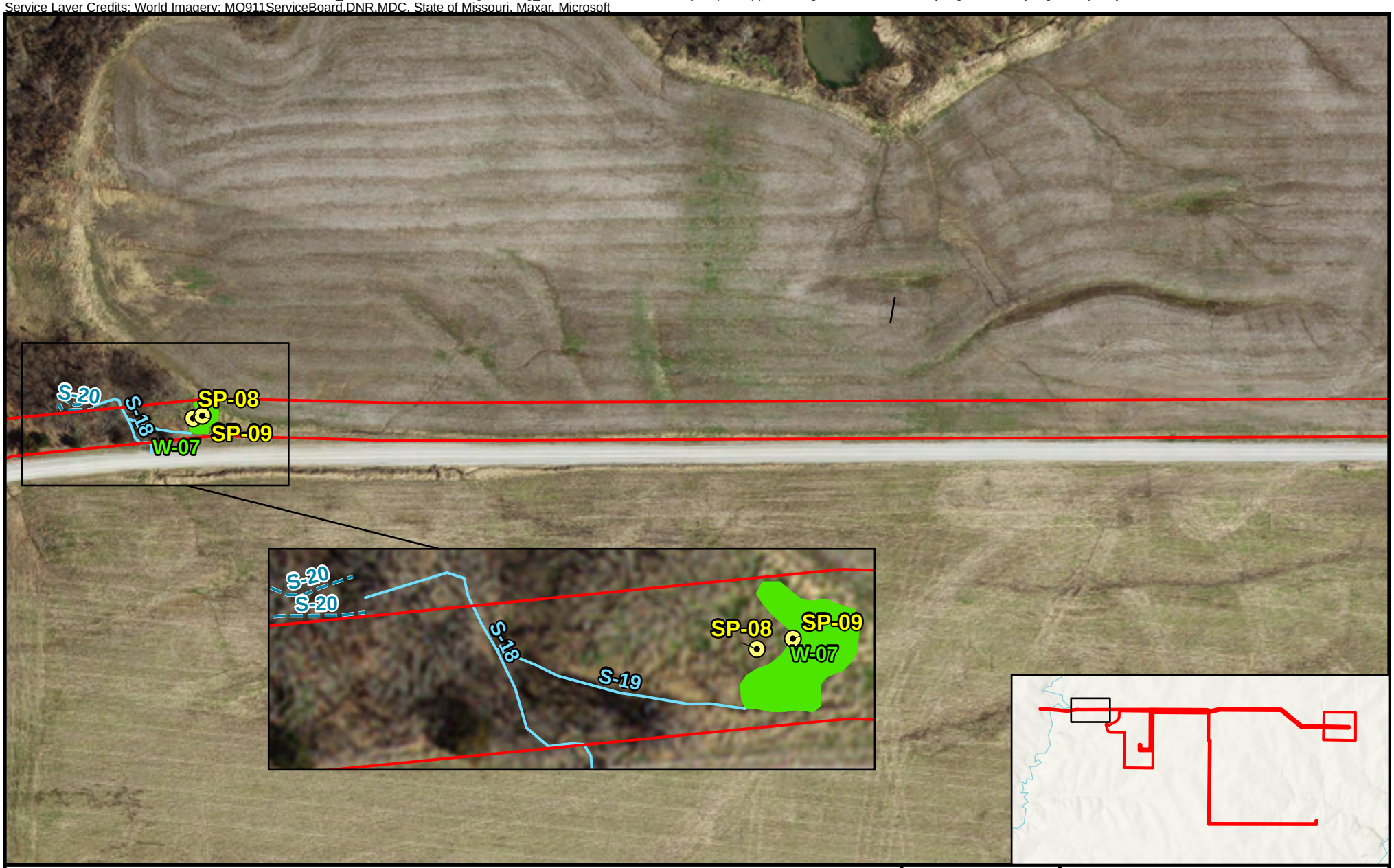

Survey Area
Sample Plot (SP)

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Intermittent
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Delineated Wetlands (W)
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Scale in Feet

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Figure A-4
Wetlands and Water Resources
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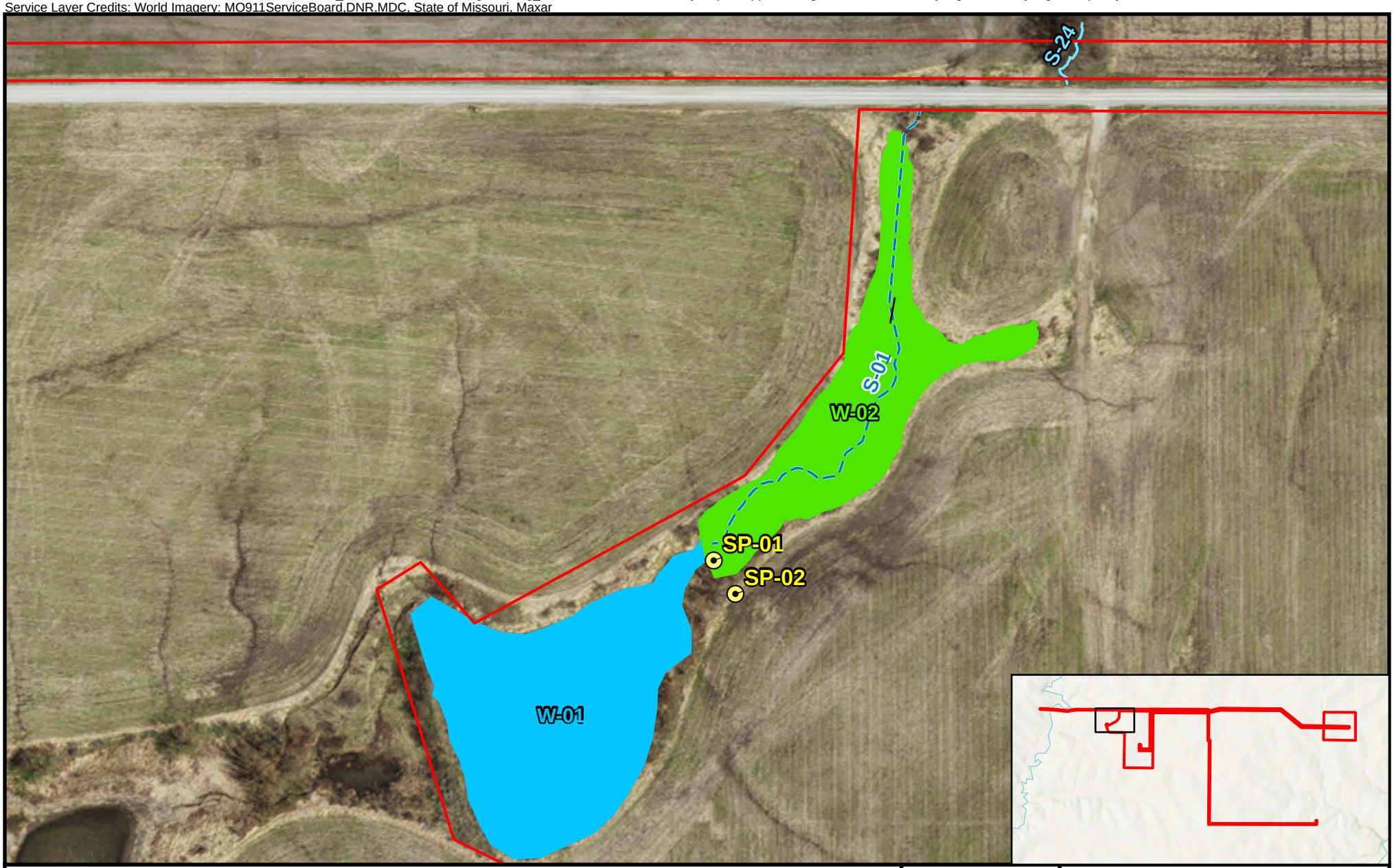

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Figure A-4
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Turney Energy Center
AECI
Clinton County, Missouri

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Scale in Feet

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Figure A-4
Wetlands and Water Resources
Turney Energy Center
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Clinton County, Missouri
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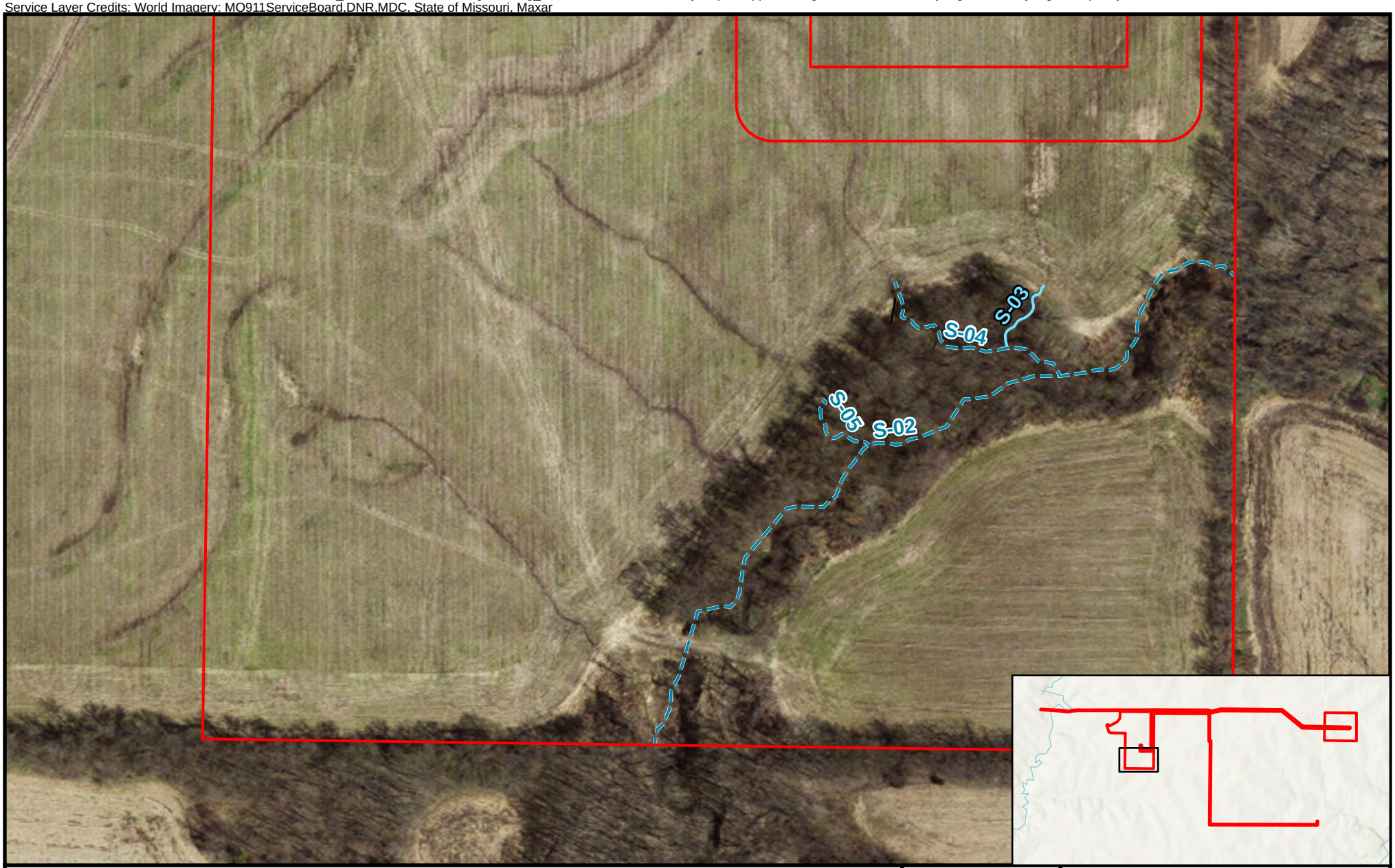

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Ephemeral
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Scale in Feet

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Figure A-4
Wetlands and Water Resources
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Figure A-4
Wetlands and Water Resources
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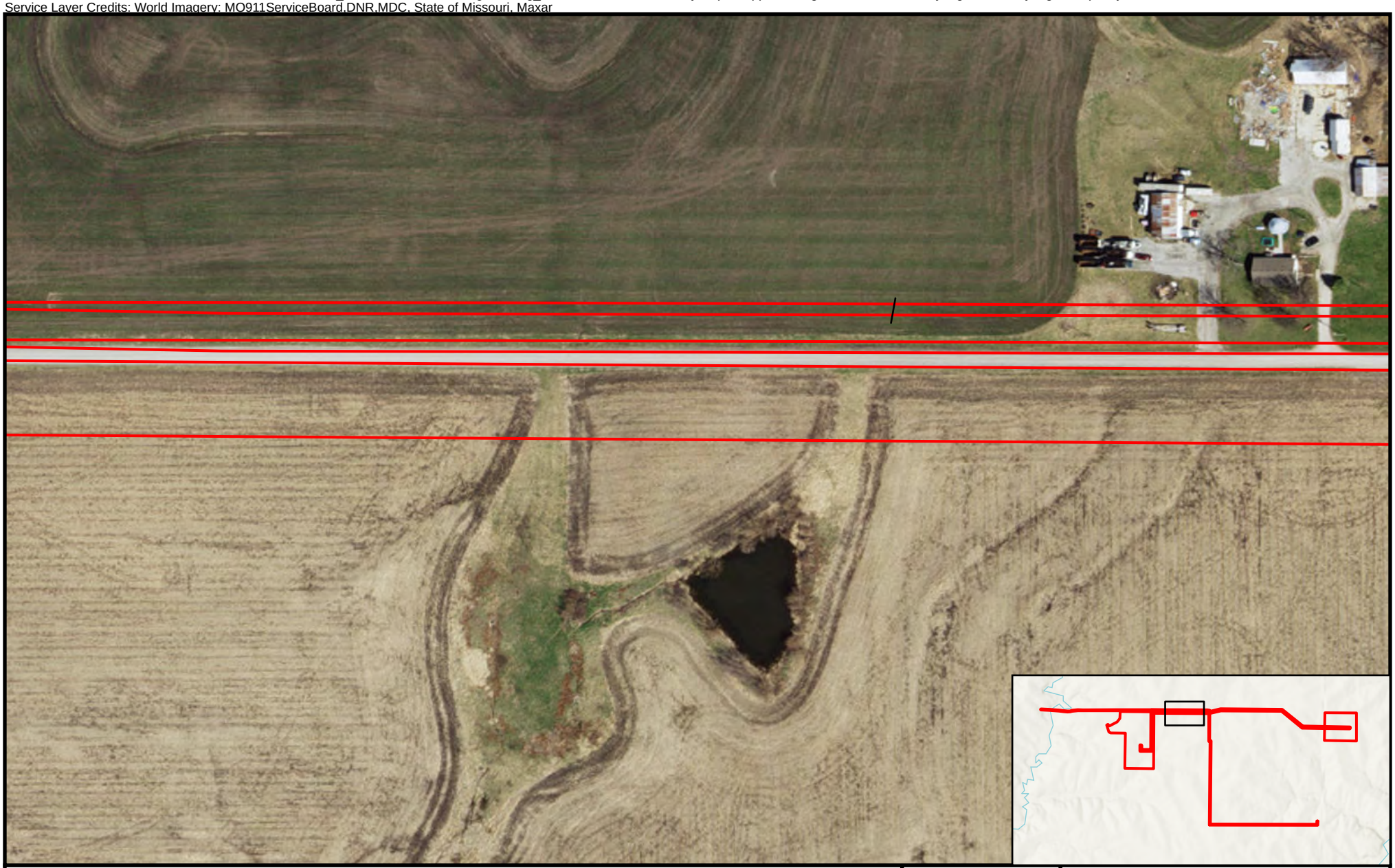

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Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
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Scale in Feet

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Figure A-4
Wetlands and Water Resources
Turney Energy Center
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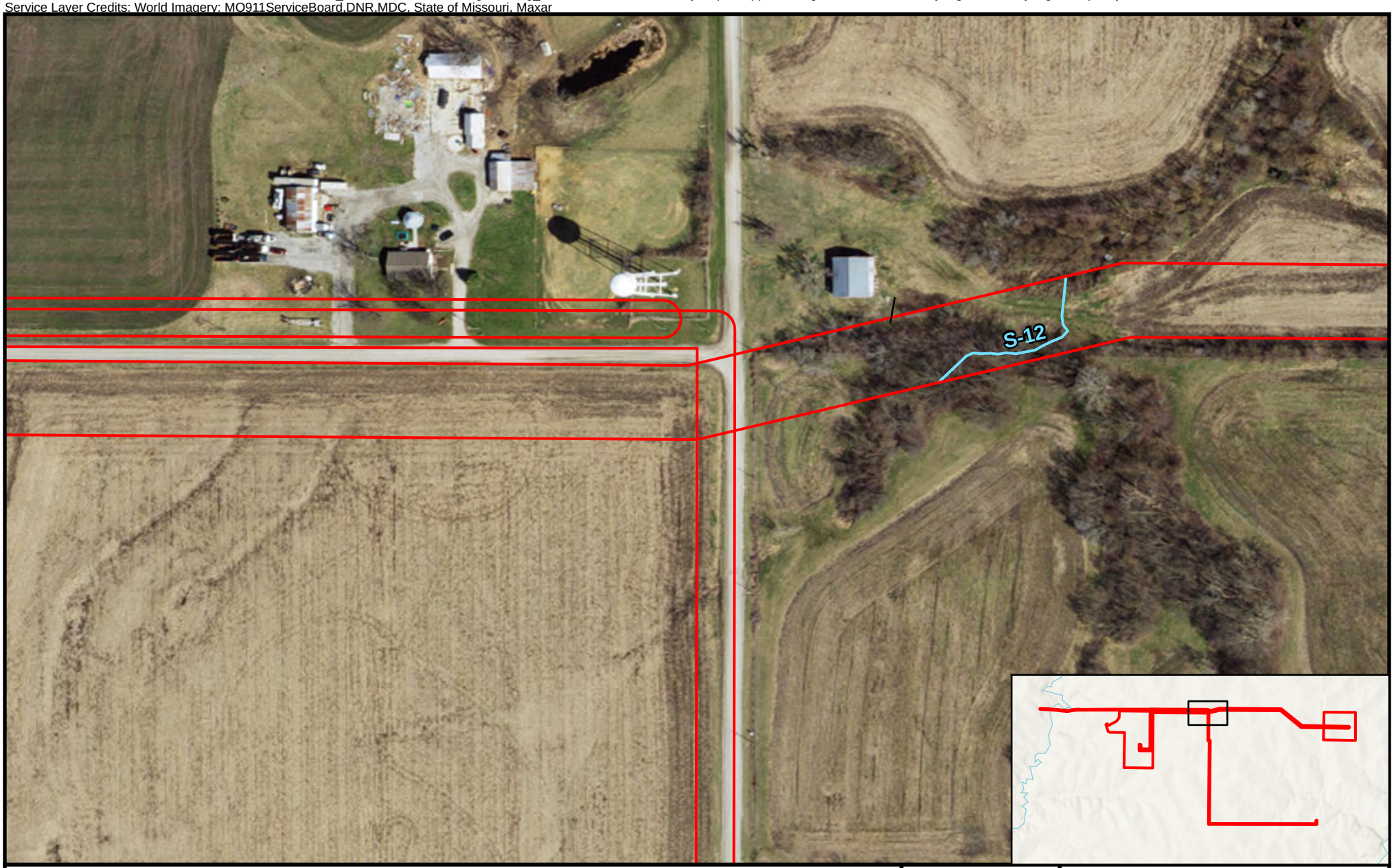

Survey Area
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Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
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Scale in Feet

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Figure A-4
Wetlands and Water Resources
Turney Energy Center
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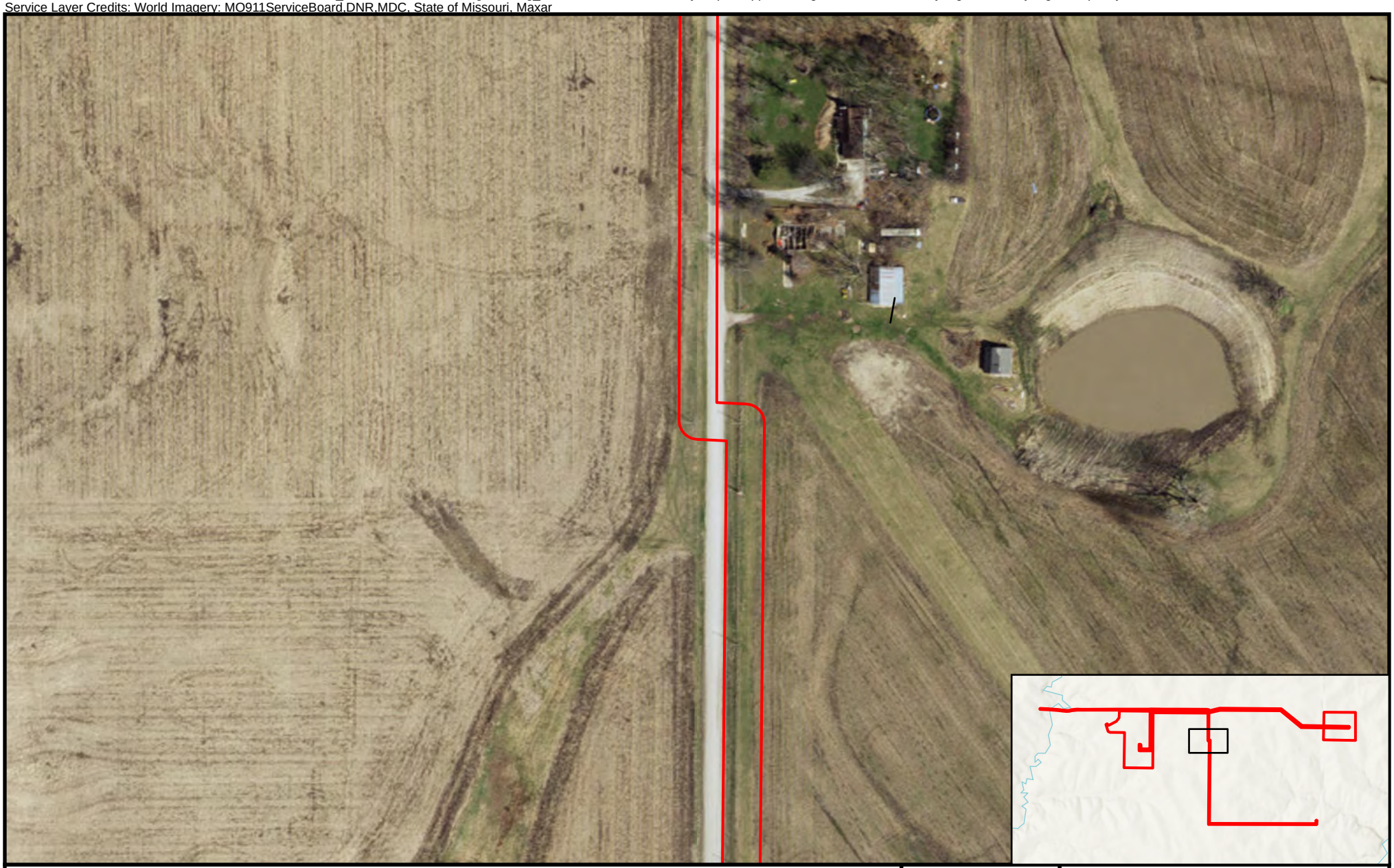

Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
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Scale in Feet

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Figure A-4
Wetlands and Water Resources
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Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell

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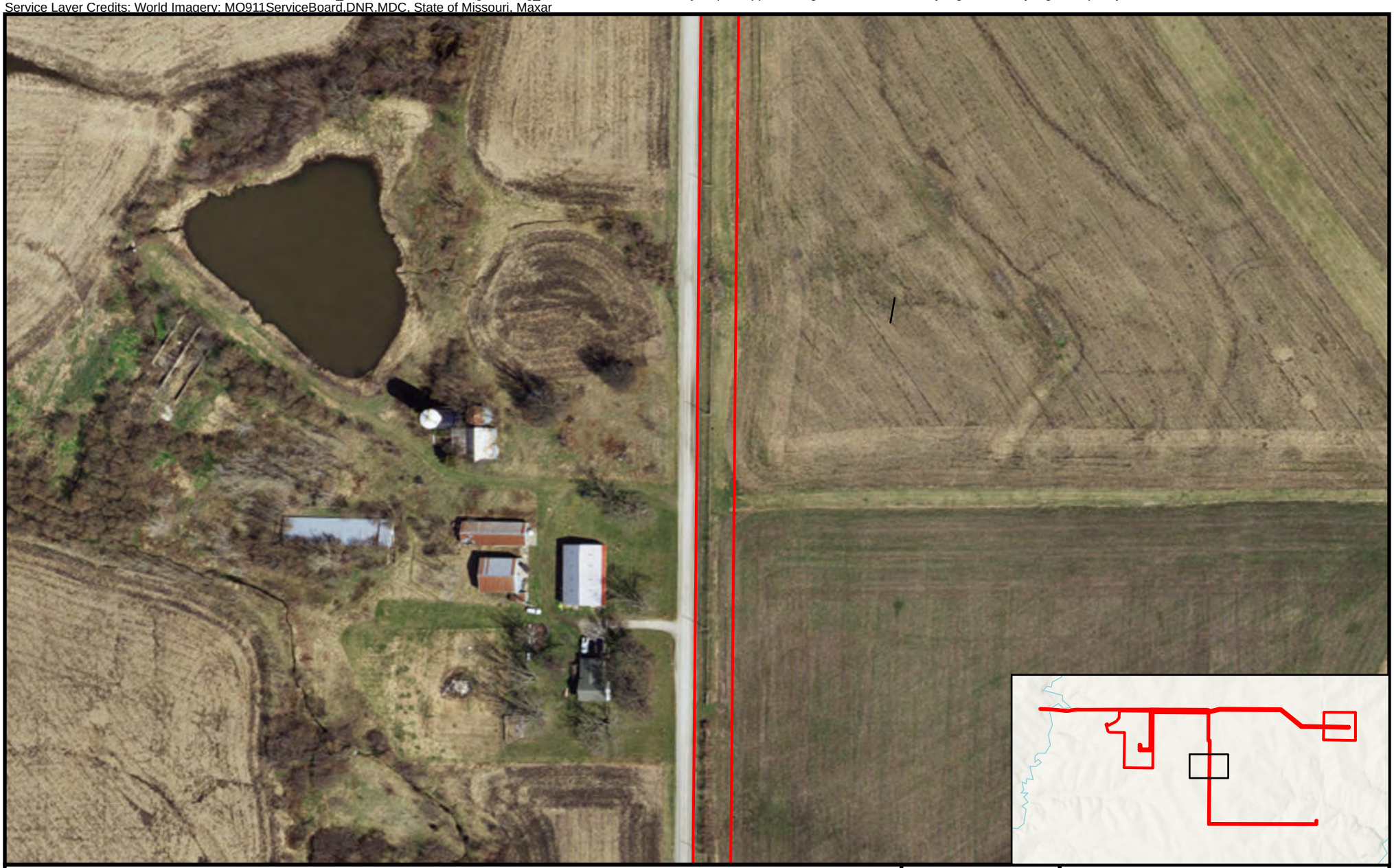

Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
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Figure A-4
Wetlands and Water Resources
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Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell

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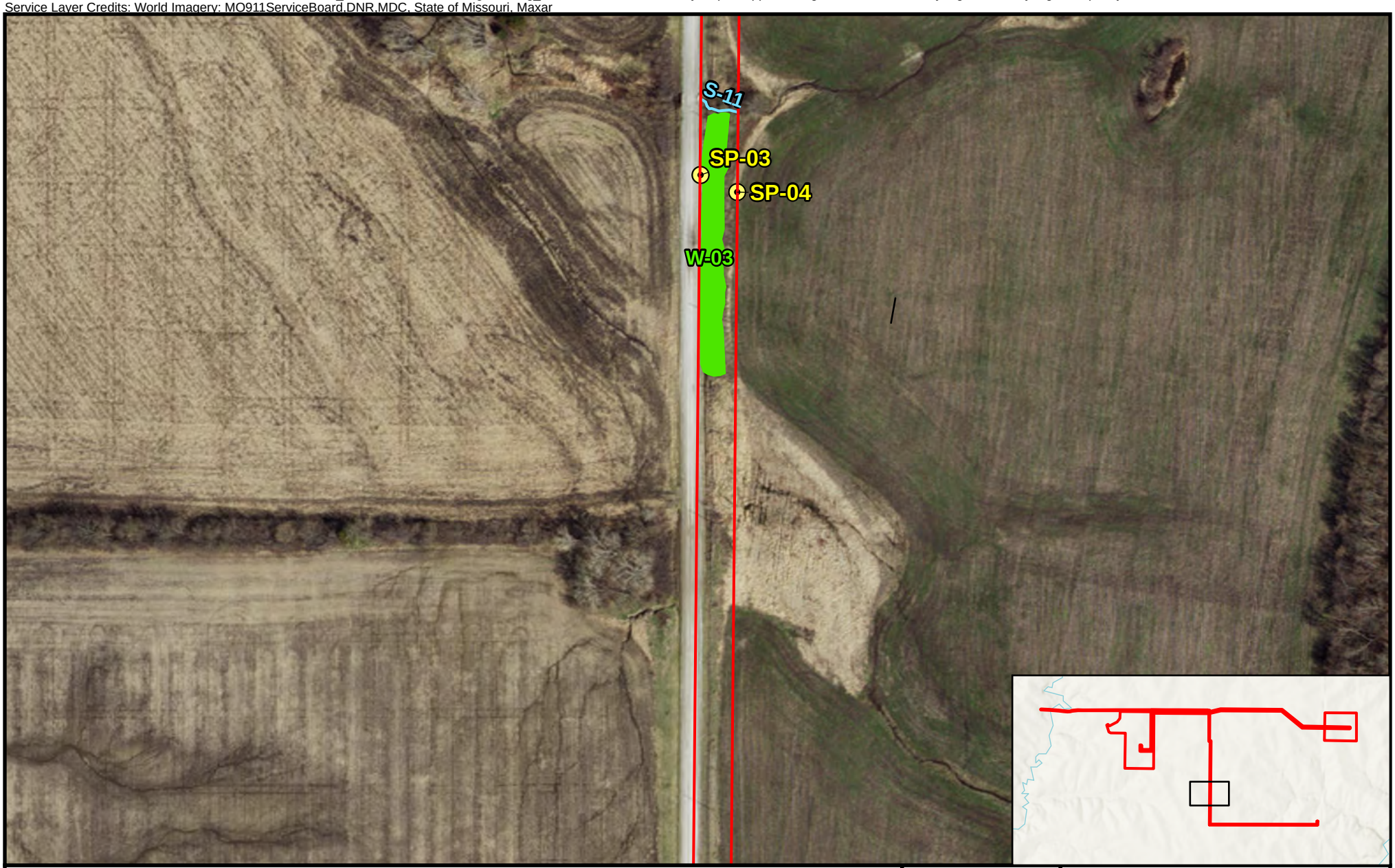

Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
PFO
PUB

NORTH

100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure A-4
Wetlands and Water Resources
Turney Energy Center
AECI
Clinton County, Missouri
Page 11 of 19

Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell

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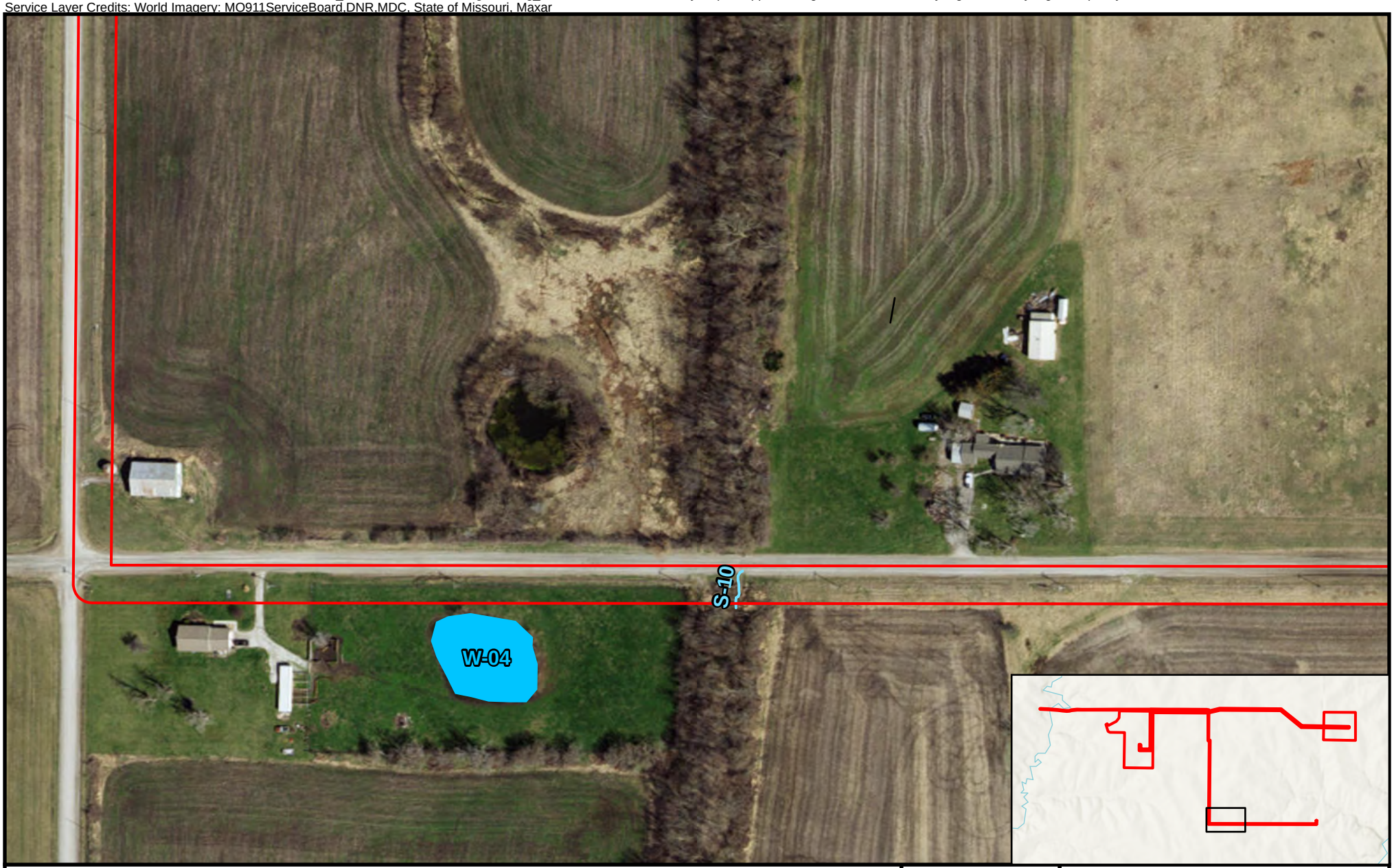

Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
PFO
PUB

NORTH
100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure A-4
Wetlands and Water Resources
Turney Energy Center
AECI
Clinton County, Missouri
Page 12 of 19

Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell
Issued: 8/15/2024

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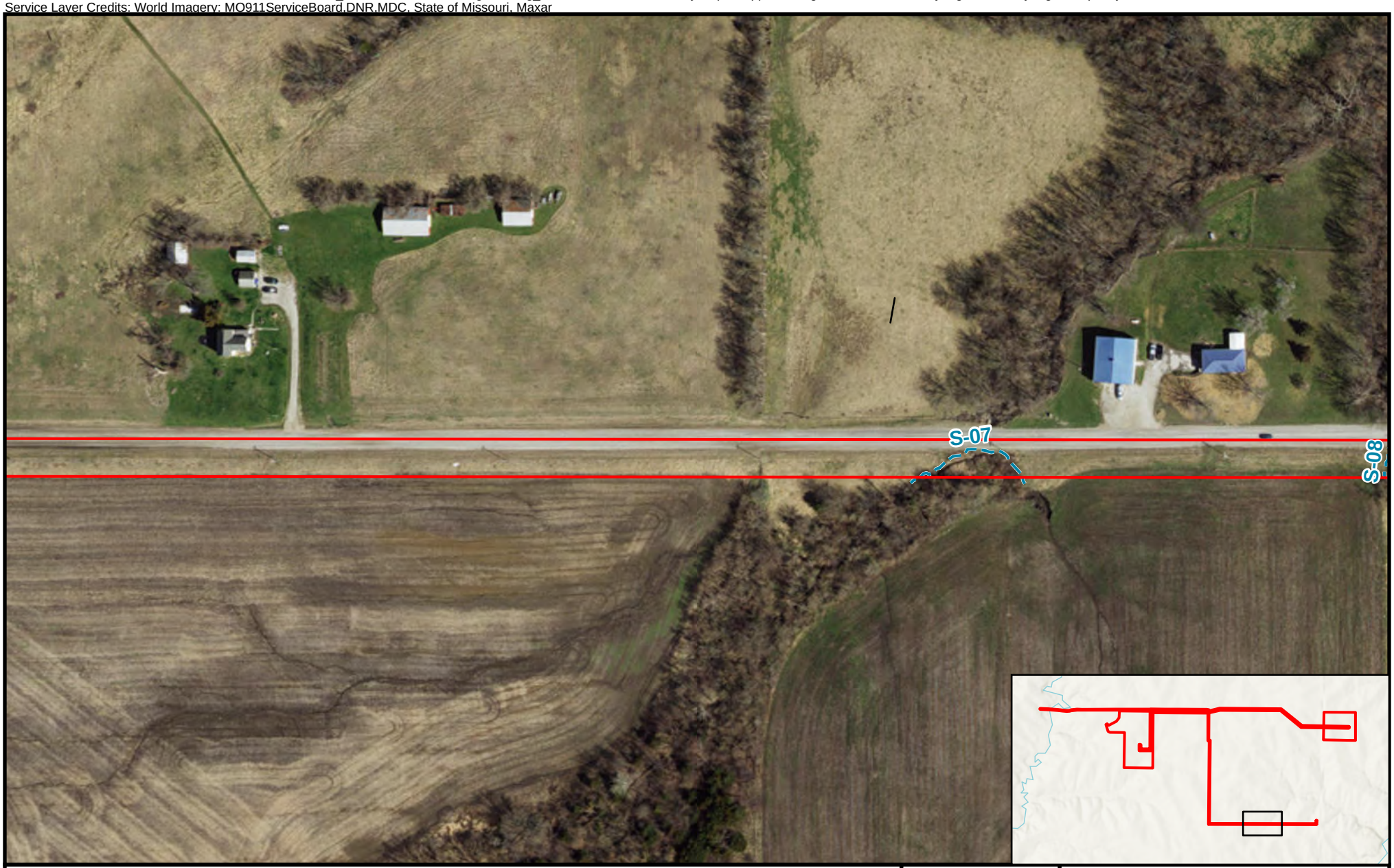

Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
PFO
PUB

NORTH

100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure A-4
Wetlands and Water Resources
Turney Energy Center
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Clinton County, Missouri
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Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
PFO
PUB

NORTH

100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure A-4
Wetlands and Water Resources
Turney Energy Center
AECI
Clinton County, Missouri
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Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell

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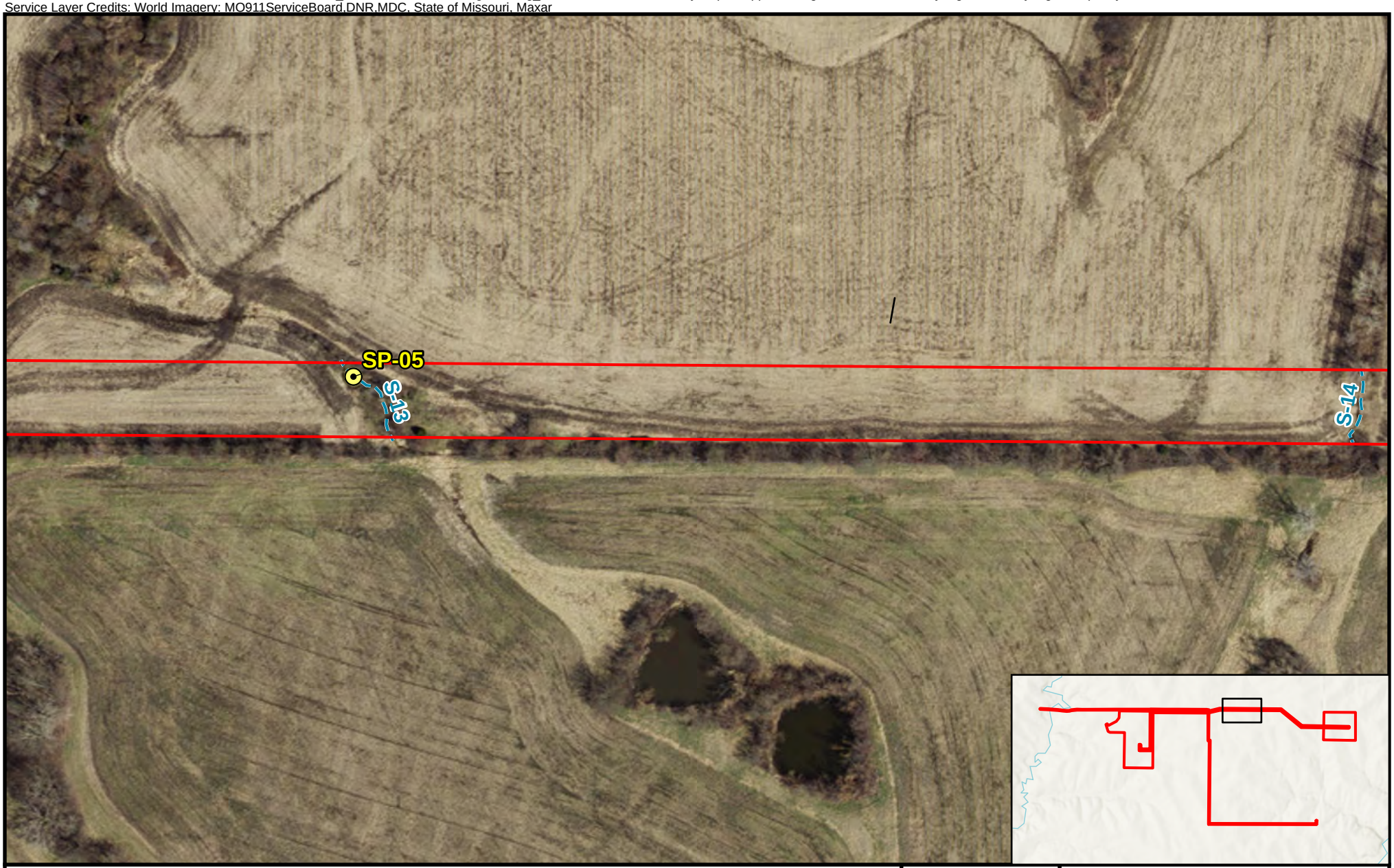

Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
PFO
PUB

NORTH
100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure A-4
Wetlands and Water Resources
Turney Energy Center
AECI
Clinton County, Missouri
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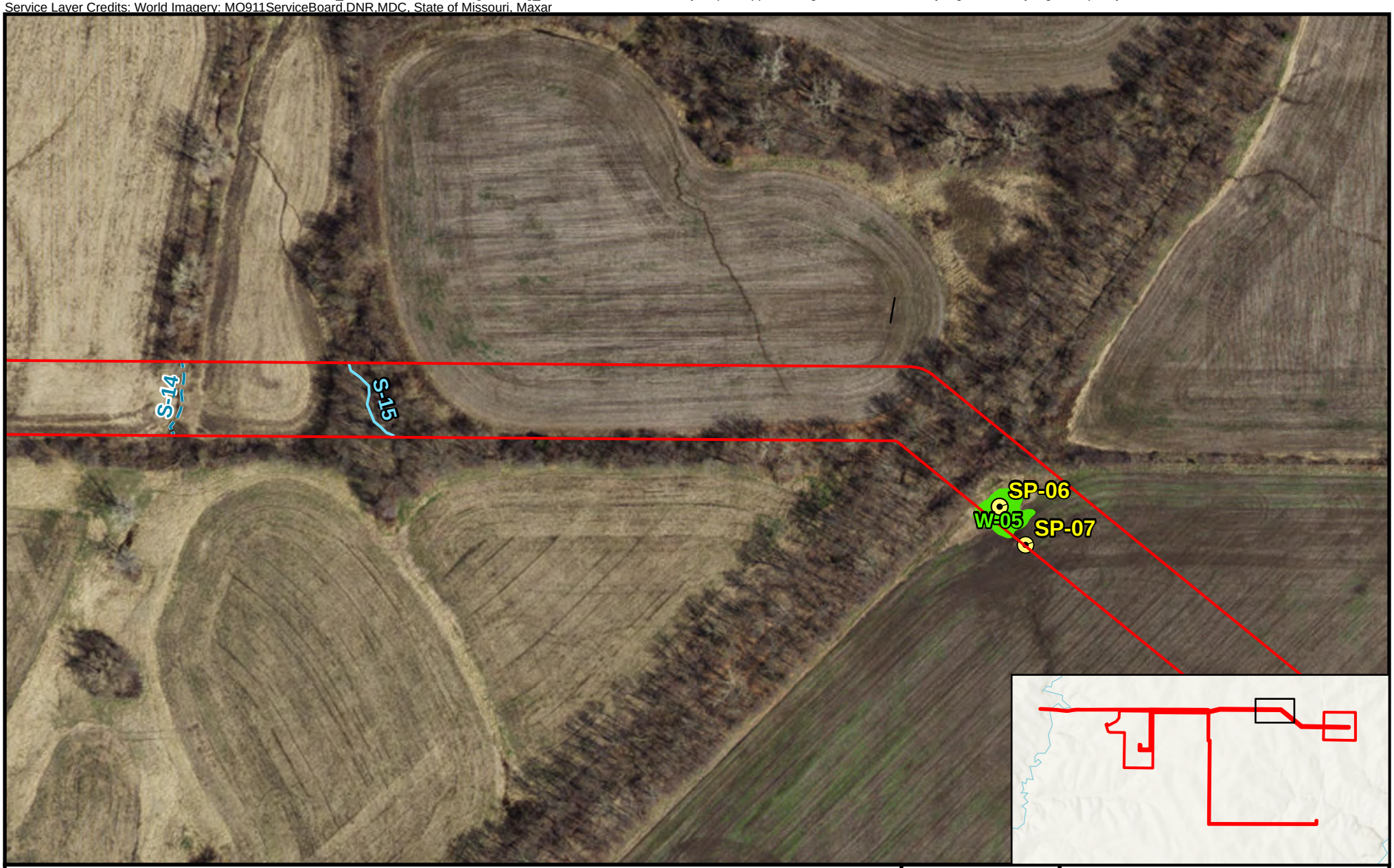

Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
PFO
PUB

NORTH
100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure A-4
Wetlands and Water Resources
Turney Energy Center
AECI
Clinton County, Missouri
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Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell
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Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
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100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure A-4
Wetlands and Water Resources
Turney Energy Center
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Page 17 of 19

Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell

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Service Layer Credits: World Imagery: MO911ServiceBoard,DNR,MDC, State of Missouri, Maxar

Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
PFO
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100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure A-4
Wetlands and Water Resources
Turney Energy Center
AECI
Clinton County, Missouri

Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell
Issued: 8/15/2024

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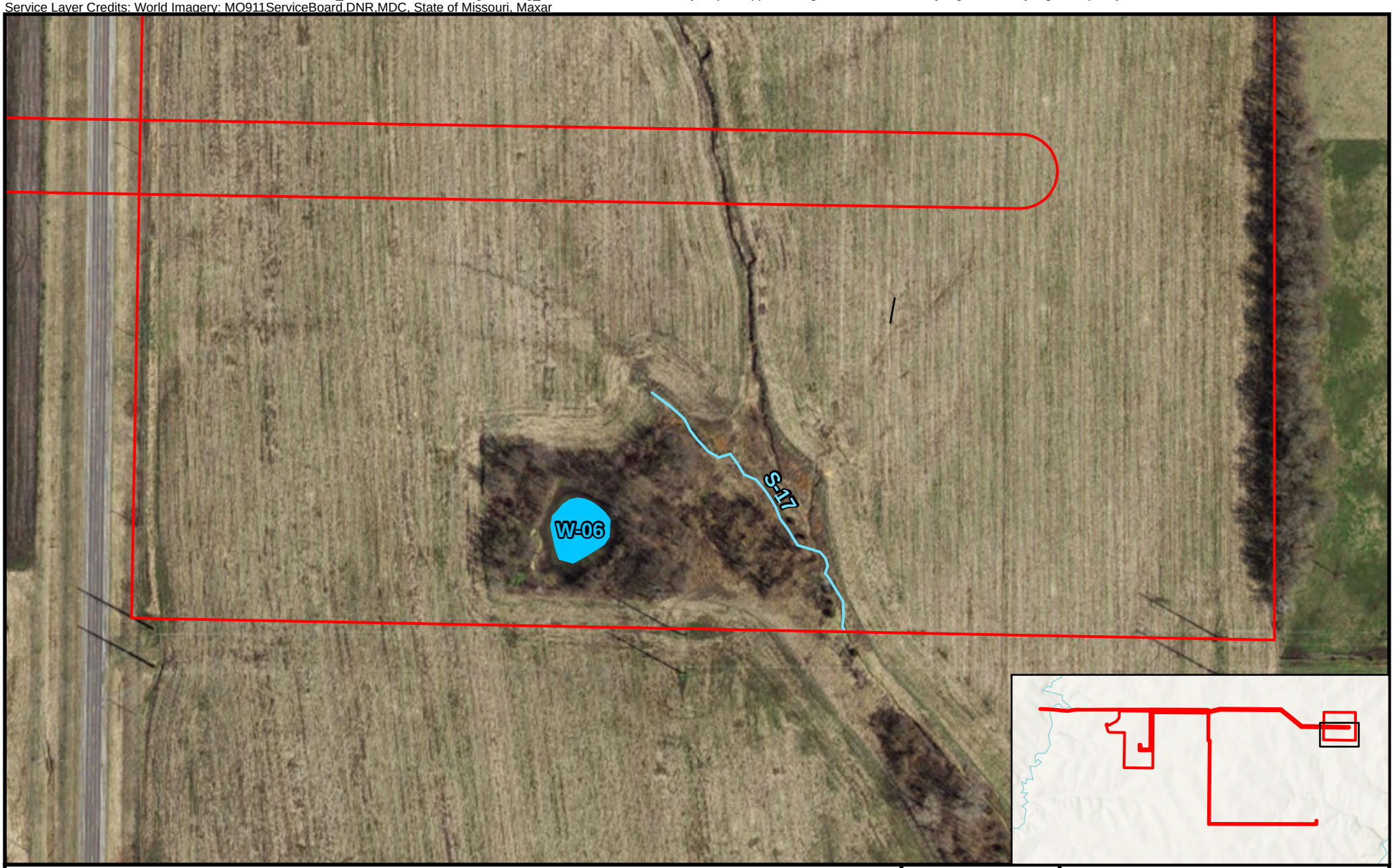
Service Layer Credits: World Imagery: MO911ServiceBoard,DNR,MDC, State of Missouri, Maxar



Survey Area
Sample Plot (SP)

Delineated Streams (S)
Ephemeral
Intermittent
Perennial

Delineated Wetlands (W)
PEM
PFO
PUB

NORTH

100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure A-4
Wetlands and Water Resources
Turney Energy Center
AECI
Clinton County, Missouri
Page 19 of 19

Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell

Issued: 8/15/2024

APPENDIX B – ROUTINE WETLAND DETERMINATION FORMS – MIDWEST REGION

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-04-22

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-01

Investigator(s): J.Ramirez, C. Rogers | Section, Township, Range: S02 T55N R31W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 0 | Lat: 39.61375 | Long: -94.353023 | Datum: NAD 83

Soil Map Unit Name: 30087 - Grundy silt loam, 5 to 9 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

Wetland sample plot within PEM W-02. The USACE Antecedent Precipitation Tool indicates normal climatic conditions three months prior to the survey.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	20	✔	OBL
2. Morus alba	5	✔	FAC
3.			
4.			
5.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	40	✔	FACW
2. Urtica dioica	15	✔	FACW
3. Rumex crispus	10		FAC
4. Solidago altissima	5		FACU
5. Galium aparine	5		FACU
6.			
7.			
8.			
9.			
10.			
	75	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	_____	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	55	x 2 =	110
FAC species	15	x 3 =	45
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	100 (A)		215 (B)

Prevalence Index = B/A = 2.15

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance test is passed. See Photo C-1.

SOIL

Sampling Point: SP-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10YR 2/1	93	5YR 4/6	7	C	M	Silty Clay Loam	
8 - 24	10YR 2/1	95	5YR 4/1	5	D	M	Silty Clay Loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ No _____

Remarks:

Indicator F6 is met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ✔ No ___ Depth (inches): 9

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 6

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators A2, A3, D2, and D5 are met.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-04-25

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-02

Investigator(s): J.Ramirez, C. Rogers | Section, Township, Range: S02 T55N R31W

Landform (hillslope, terrace, etc.): Side Slope | Local relief (concave, convex, none): None

Slope (%): 0 | Lat: 39.613628 | Long: -94.352921 | Datum: NAD 83

Soil Map Unit Name: 30087 - Grundy silt loam, 5 to 9 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland sample plot adjacent to PEM W-02. The USACE Antecedent Precipitation Tool indicates normal climatic conditions three months prior to survey. Vegetation, soils, and hydrology is disturbed due to being on the edge of an active farmed field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	10	✔	OBL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix nigra	10	✔	OBL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Lamium amplexicaule	45	✔	UPL
2. Conium maculatum	20	✔	FACW
3. Galium aparine	5		FACU
4. Thlaspi arvense	5		FACU
5.			
6.			
7.			
8.			
9.			
10.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	45	x 5 =	225
Column Totals:	95 (A)		325 (B)

Prevalence Index = B/A = 3.42

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance test is passed. Vegetation is disturbed due to being on the edge of an active farmed field. See Photo C-2.

SOIL

Sampling Point: SP-02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 2/2	98	7.5YR 5/8	2	C	M	Silty Clay	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compact soil

Depth (inches): 18

Hydric Soil Present? Yes _____ No ✔

Remarks:

No indicators are met. Excavation below 18" was prevented by compact soil. Multiple locations attempted. Soil is disturbed due to being on the edge of an active farmed field.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

D5 indicator is met. Hydrology is disturbed due to being on the edge of an active farmed field.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-04-25

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-03

Investigator(s): J.Ramirez, C. Rogers | Section, Township, Range: S01 T55N R31W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 39.605663 | Long: -94.337336 | Datum: NAD 83

Soil Map Unit Name: 34020 - Colo silty clay loam, drainageway, 2 to 5 percent slopes, frequently flooded | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Wetland sample plot within PEM W-03. The USACE Antecedent Precipitation Tool indicates normal climatic conditions three months prior to survey. Sample plot was in a drainage ditch alongside of a road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Morus alba	10	✔	FAC
2. Ulmus americana	10	✔	FACW
3.			
4.			
5.			
	20	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Salix nigra	30	✔	OBL
2.			
3.			
4.			
5.			
	30	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Typha angustifolia	30	✔	OBL
2. Conium maculatum	5		FACW
3. Rumex crispus	5		FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	15	x 2 =	30
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	90 (A)		135 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance test is passed. See Photo C-3. Vegetation is disturbed due to being in a drainage ditch alongside of a road andfarmed field.

SOIL

Sampling Point: SP-03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 24	10YR 3/1	95	10YR 5/1	5	D	M	Clay	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

No indicators are met. Soil is disturbed due to being in a drainage ditch alongside of a road.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes ✔ No _____ Depth (inches): 2

Saturation Present? (includes capillary fringe) Yes ✔ No _____ Depth (inches): 2

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators A2, A3, D2, and D5 are met. Hydrology disturbed due to being in a drainage ditch alongside of a road.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-04-25

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-04

Investigator(s): J.Ramirez, C. Rogers | Section, Township, Range: S01 T55N R31W

Landform (hillslope, terrace, etc.): Plain | Local relief (concave, convex, none): None

Slope (%): 0 | Lat: 39.605601 | Long: -94.337159 | Datum: NAD 83

Soil Map Unit Name: 34020 - Colo silty clay loam, drainageway, 2 to 5 percent slopes, frequently flooded | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	
Hydric Soil Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland sample plot adjacent to PEM W-03. The USACE Antecedent Precipitation Tool indicates normal climatic conditions three months prior to survey. Vegetation, soils, and hydrology is disturbed due to being adjacent to a farmed crop field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	15	✔	FACW
2. Morus alba	10	✔	FAC
3.			
4.			
5.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Solidago altissima	45	✔	FACU
2. Setaria faberi	20	✔	FACU
3. Lamium amplexicaule	10		UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	75	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	10	x 3 =	30
FACU species	65	x 4 =	260
UPL species	10	x 5 =	50
Column Totals:	100 (A)		370 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

No indicators are met. Vegetation is disturbed due to being adjacent to a farmed crop field. See Photo C-4.

SOIL

Sampling Point: SP-04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 2/1	95	5YR 3/4	5	C	M	Sandy Clay Loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compact soil

Depth (inches): 18

Hydric Soil Present? Yes ✔ No ___

Remarks:

Indicator F6 is met. Excavation below 18" was prevented due to compact soil. Multiple locations attempted. Soil is disturbed due to being adjacent to a farmed crop field.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ___ No ✔ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators are met. Hydrology is disturbed due to being adjacent to a farmed crop field.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-04-25

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-05

Investigator(s): J.Ramirez, C. Rogers | Section, Township, Range: S36 T56N R31W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex

Slope (%): 1 | Lat: 39.615667 | Long: -94.333342 | Datum: NAD 83

Soil Map Unit Name: 30087 - Grundy silt loam, 5 to 9 percent slopes | NWI classification: R5UBH

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland sample plot. The USACE Antecedent Precipitation Tool indicates normal climatic conditions three months prior to survey.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Cornus drummondii	40	✔	FAC
2. Ulmus americana	10	✔	FACW
3.			
4.			
5.			
	50 = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Poa pratensis	40	✔	FACU
2. Solidago altissima	15	✔	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	40	x 3 =	120
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	105 (A)		360 (B)

Prevalence Index = B/A = 3.42

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

No indicators are met. See Photo C-5.

SOIL

Sampling Point: SP-05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10YR 2/2	90	7.5YR 5/8	10	C	M	Clay	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compact soil

Depth (inches): 18

Hydric Soil Present? Yes ✔ No ___

Remarks:

Indicator F6 is met. Excavation below 18" was prevented by compact soil. Multiple locations attempted

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ___ No ✔ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators are met.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-04-25

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-06

Investigator(s): J.Ramirez, C. Rogers | Section, Township, Range: S01 T55N R31W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 39.615151 | Long: -94.324743 | Datum: NAD 83

Soil Map Unit Name: 30087 - Grundy silt loam, 5 to 9 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

Wetland sample plot with PEM W-05. The USACE Antecedent Precipitation Tool indicates that normal climatic conditions three months prior to survey. Vegetation, soils, and hydrology is disturbed due to being in a farmed crop field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Alopecurus carolinianus	40	✔	FACW
2. Persicaria maculosa	20	✔	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	60 (A)		120 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Rapid test for hydrophytic vegetation is passed. See Photo C-6. Vegetation is disturbed due to being in a farmed crop field.

SOIL

Sampling Point: SP-06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 16	10YR 2/2	90	5YR 3/4	10	C	M	Silty Clay	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: High water table

Depth (inches): 16

Hydric Soil Present? Yes ✔ No ___

Remarks:

Indicator F6 is met. Excavation below 16" was prevented by high water table. Soil is disturbed due to being in a farmed crop field.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ✔ No ___ Depth (inches): 10

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators A2, A3, D2, and D5 are met. Hydrology is disturbed due to being in a farmed crop field.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-04-25

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-07

Investigator(s): J.Ramirez, C. Rogers | Section, Township, Range: S01 T55N R31W

Landform (hillslope, terrace, etc.): Side Slope | Local relief (concave, convex, none): None

Slope (%): 1 | Lat: 39.615012 | Long: -94.324621 | Datum: NAD 83

Soil Map Unit Name: 30087 - Grundy silt loam, 5 to 9 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland sample plot adjacent to PEM W-05. The USACE Antecedent Precipitation Tool indicates normal climatic conditions three months prior to survey. Vegetation, soils, and hydrology is disturbed due to being in a farmed crop field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Lamium amplexicaule	40	✔	UPL
2. Thlaspi arvense	20	✔	FACU
3. Alopecurus aequalis	10		OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	40	x 5 =	200
Column Totals:	70 (A)		290 (B)

Prevalence Index = B/A = 4.14

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

No indicators are met. See Photo C-7. Vegetation is disturbed due to being in a farmed crop field.

SOIL

Sampling Point: SP-07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 16	10YR 2/1	97	10YR 3/6	3	C	M	Silty Clay	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compact soil

Depth (inches): 16

Hydric Soil Present? Yes ✔ No ___

Remarks:

Indicator F6 is met. Excavation below 16" was prevented by compact soil. Multiple locations attempted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ___ No ✔ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators are met. Hydrology is disturbed due to being in a farmed crop field.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-08-06

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-08

Investigator(s): J. Ramirez, S. Glaeser | Section, Township, Range: S34 T56N R31W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 2 | Lat: 39.61558 | Long: -94.359576 | Datum: NAD 83

Soil Map Unit Name: 30062 - Gara loam, 9 to 14 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	
Hydric Soil Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Upland sample plot adjacent to PEM W-07. The USACE Antecedent Precipitation Tool indicates drier than normal climatic conditions three months prior to survey. Vegetation, soils, and hydrology is disturbed due to being in a drainage area along an active agriculture field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	10	✔	FACW
2.			
3.			
4.			
5.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Platanus occidentalis	5	✔	FACW
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Bromus inermis	40	✔	FACU
2. Solidago canadensis	20	✔	FACU
3. Solanum carolinense	15		FACU
4. Verbesina alternifolia	15		FACW
5. Urtica dioica	5		FACW
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	75	x 4 =	300
UPL species	0	x 5 =	0
Column Totals:	110 (A)		370 (B)

Prevalence Index = B/A = 3.36

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

No test is passed. Vegetation is disturbed due to being in a drainage area along an active agriculture field. See Photo C-8.

SOIL

Sampling Point: SP-08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 3/3	100					Clay Loam	
4 - 10	10YR 3/2	95	7.5YR 5/8	5	C	M	Clay Loam	
10 - 14	10YR 2/2	98	7.5YR 4/6	2	C	M	Clay Loam	
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compact soil

Depth (inches): 14

Hydric Soil Present? Yes ✔ No ___

Remarks:

Indicator F6 is met. Excavation below 14 inches was prevented by compact soil. Multiple locations attempted. Soil is disturbed due to being in a drainage area along an active agriculture field.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ___ No ✔ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): ___

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators D2 and D5 are met. Hydrology is disturbed due to being in a drainage area along an active agriculture field.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-08-06

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-09

Investigator(s): J. Ramirez, S. Glaeser | Section, Township, Range: S34 T56N R31W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 2 | Lat: 39.615589 | Long: -94.359533 | Datum: NAD 83

Soil Map Unit Name: 30062 - Gara loam, 9 to 14 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Wetland sample plot within PEM W-07. The USACE Antecedent Precipitation Tool indicates drier than normal climatic conditions three months prior to survey. Vegetation, soils, and hydrology is disturbed due to being in a drainage area along an active agriculture field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	10	✔	FACW
2.			
3.			
4.			
5.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Platanus occidentalis	5	✔	FACW
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Urtica dioica	30	✔	FACW
2. Verbesina alternifolia	25	✔	FACW
3. Solidago canadensis	20	✔	FACU
4. Bromus inermis	10		FACU
5. Verbena urticifolia	10		FAC
6.			
7.			
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	10	x 3 =	30
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	110 (A)		290 (B)

Prevalence Index = B/A = 2.63

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance test is passed. Vegetation is disturbed due to being in a drainage area along an active agriculture field. See Photo C-9.

SOIL

Sampling Point: SP-09

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 3/2	100					Clay Loam	
6 - 16	10YR 3/2	95	10YR 6/2	5	C	M	Clay Loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compact soil

Depth (inches): 16

Hydric Soil Present? Yes ✔ No ___

Remarks:

Indicator F6 is met. Soil is disturbed due to being in a drainage area along an active agriculture field.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ___ No ✔ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): ___

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicator D2 and D5 are met. Hydrology is disturbed due to being in a drainage area along an active agriculture field.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-08-06

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-10

Investigator(s): J. Ramirez, S. Glaeser | Section, Township, Range: S03 T55N R31W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 39.615456 | Long: -94.361188 | Datum: NAD 83

Soil Map Unit Name: 30062 - Gara loam, 9 to 14 percent slopes | NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Wetland sample plot within PFO W-08. The USACE Antecedent Precipitation Tool indicates drier than normal climatic conditions three months prior to survey.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	10	✔	FACU
2. Platanus occidentalis	10	✔	FACW
3. Celtis occidentalis	5		FAC
4. Ulmus americana	5		FACW
5.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Celtis occidentalis	5	✔	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Laportea canadensis	40	✔	FACW
2. Ribes aureum	10		FAC
3. Symphoricarpos orbiculatus	10		FACU
4. Campanulastrum americanum	2		FAC
5.			
6.			
7.			
8.			
9.			
10.			
	62	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	55	x 2 =	110
FAC species	22	x 3 =	66
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	97 (A)		256 (B)

Prevalence Index = B/A = 2.63

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance test is passed. See Photo C-10.

SOIL

Sampling Point: SP-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 3/1	100					Silt Loam	
4 - 12	10YR 4/2	98	10YR 6/8	2	C	M	Silt Loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 12

Hydric Soil Present? Yes ✔ No ___

Remarks:

Indicator F3 is met. Excavation below 12" was prevented by gravel. Multiple locations attempted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ___ No ✔ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): ___

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators D2 and D5 are met.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-08-06

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-11

Investigator(s): J. Ramirez, S. Glaeser | Section, Township, Range: S03 T55N R31W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex

Slope (%): 1 | Lat: 39.615377 | Long: -94.361208 | Datum: NAD 83

Soil Map Unit Name: 30062 - Gara loam, 9 to 14 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland sample plot adjacent to PFO W-08. The USACE Antecedent Precipitation Tool indicates drier than normal climatic conditions three months prior to survey.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	15	✔	FACU
2. Celtis occidentalis	10	✔	FAC
3.			
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Celtis occidentalis	20	✔	FAC
2. Cornus drummondii	5	✔	FAC
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Campanulastrum americanum	15	✔	FAC
2. Ageratina altissima	10	✔	FACU
3. Phlox divaricata	10	✔	FACU
4. Ribes aureum	10	✔	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	45 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 62.50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	95 (A)		320 (B)

Prevalence Index = B/A = 3.36

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance test is passed. See Photo C-11.

SOIL

Sampling Point: SP-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	2.5Y 3/3	70	2.5Y 5/6	30	C	M	Silt Loam	
6 - 20	2.5Y 6/6	100					Silt Loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

No indicators are met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators are met.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-08-06

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-12

Investigator(s): J. Ramirez, S. Glaeser | Section, Township, Range: S34 T56N R31W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 2 | Lat: 39.615598 | Long: -94.362286 | Datum: NAD 83

Soil Map Unit Name: 36020 - Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Wetland sample plot within PEM W-09. The USACE Antecedent Precipitation Tool indicates drier than normal climatic conditions three months prior to survey. Wetland is outside of survey area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Celtis occidentalis	5	✔	FAC
2. Maclura pomifera	5	✔	FACU
3.			
4.			
5.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	60	✔	FACW
2. Persicaria pensylvanica	10		FACW
3. Acalypha virginica	5		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	75	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	_____	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.66 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	5	x 3 =	15
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	85 (A)		195 (B)

Prevalence Index = B/A = 2.29

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance test is passed. See Photo C-12.

SOIL

Sampling Point: SP-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 20	10YR 2/1	90	10YR 4/6	10	C	M	Clay	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ No _____

Remarks:

Indicator F6 is met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators B10 and D2 are met.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-08-06

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-13

Investigator(s): J. Ramirez, S. Glaeser | Section, Township, Range: S34 T56N R31W

Landform (hillslope, terrace, etc.): Hill Top | Local relief (concave, convex, none): Convex

Slope (%): 1 | Lat: 39.615559 | Long: -94.362593 | Datum: NAD 83

Soil Map Unit Name: 36028 - Nevin silt loam, 0 to 2 percent slopes, rarely flooded | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland sample plot adjacent to PEM W-09. The USACE Antecedent Precipitation Tool indicates drier than normal climatic conditions three months prior to survey. Wetland is outside of survey area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Maclura pomifera	5	✔	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Maclura pomifera	20	✔	FACU
2. Gleditsia triacanthos	5	✔	FACU
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Rosa multiflora	10	✔	FACU
2. Desmodium paniculatum	5	✔	FACU
3. Solidago canadensis	5	✔	FACU
4. Verbesina alternifolia	5	✔	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	25 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14.28 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	55 (A)		210 (B)

Prevalence Index = B/A = 3.81

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

No test is passed. See Photo C-13.

SOIL

Sampling Point: SP-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 20	10YR 4/1	100					Clay Loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

No indicators are met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators are met.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Turney Energy Center | City/County: Clinton County | Sampling Date: 2024-08-06

Applicant/Owner: Associated Electric Cooperative, Inc. | State: Missouri | Sampling Point: SP-14

Investigator(s): J. Ramirez, S. Glaeser | Section, Township, Range: S34 T56N R31W

Landform (hillslope, terrace, etc.): Plain | Local relief (concave, convex, none): None

Slope (%): N/A | Lat: 39.615627 | Long: -94.364005 | Datum: NAD 83

Soil Map Unit Name: 36020 - Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	
Hydric Soil Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland confirmation sample plot. The USACE Antecedent Precipitation Tool indicates drier than normal climatic conditions three months prior to survey.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juglans nigra	10	✔	FACU
2. Maclura pomifera	10	✔	FACU
3. Gleditsia triacanthos	5	✔	FACU
4.			
5.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Symphoricarpos orbiculatus	10	✔	FACU
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Laportea canadensis	30	✔	FACW
2. Elymus virginicus	30	✔	FACW
3. Impatiens pallida	10		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	105 (A)		280 (B)

Prevalence Index = B/A = 2.66

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

No test is passed. See Photo C-14.

SOIL

Sampling Point: SP-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 20	10YR 3/1	100					Silt Loam	
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

No indicators are met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators are met.

APPENDIX C – GROUND PHOTOGRAPHS

Photograph C-1: View of Sample plot (SP)-01 within PEM W-02, facing east.

Photograph C-2: View of upland SP-02 adjacent to PEM W-02, facing west.

Photograph C-3: View of SP-03 within PEM W-03, facing southeast.

Photograph C-4: View of upland SP-04 adjacent to PEM W-03, facing west.

Associated Electric Cooperative, Inc. Turney Energy Center	BURNS McDONNELL	Ground Photographs April 22 and August 6, 2024 Clinton County. Missouri

Photograph C-5: View of upland SP-05, facing south.

Photograph C-6: View of SP-06 within PEM W-05, facing northwest.

Photograph C-7: View of upland SP-07 adjacent to PEM W-05, facing northwest.

Photograph C-8: View of upland SP-08 adjacent to PEM W-07, facing northwest.

Photograph C-9: View of SP-09 within PEM W-07, facing west.

Photograph C-10: View of SP-10 within PFO W-08, facing northwest.

Photograph C-11: View of upland SP-11 adjacent to PFO W-08, facing northwest.

Photograph C-12: View of SP-12 within PEM W-09, facing west. Wetland is outside of survey area.

Photograph C-13: View of upland SP-13 adjacent to PEM W-09, facing west. Wetland is outside of survey area.

Photograph C-14: View of upland confirmation SP-14, facing east.

Photograph C-15: View of PUB Wetland (W)-01, facing south.

Photograph C-16: View of PUB W-04, facing south. Wetland is outside of survey area.

Photograph C-17: View of PUB W-06, facing northeast.

Photograph C-18: View of intermittent Stream (S)-01, facing northeast.

Photograph C-19: View of intermittent S-02, facing east.

Photograph C-20: View of ephemeral S-03, facing east.

Photograph C-21: View of intermittent S-04, facing west.

Photograph C-22: View of intermittent S-05, facing northeast.

Photograph C-23: View of ephemeral S-06, facing north.

Photograph C-24: View of intermittent S-07, facing south.

Photograph C-25: View of intermittent S-08, facing south.

Photograph C-26: View of intermittent S-09, facing east.

Photograph C-27: View of ephemeral S-10, facing south.

Photograph C-28: View of ephemeral S-11, facing east.

Photograph C-29: View of ephemeral S-12, facing east.

Photograph C-30: View of intermittent S-13, facing west.

Photograph C-31: View of intermittent S-14, facing south.

Photograph C-32: View of ephemeral S-15, facing south.

Photograph C-33: View of ephemeral S-16, facing south.

Photograph C-34: View of ephemeral S-17, facing west.

Photograph C-35: View of ephemeral S-18, facing south.

Photograph C-36: View of ephemeral S-19, facing southeast.

Photograph C-1: View of intermittent S-20, facing northwest.

Photograph C-2: View of ephemeral S-21, facing south.

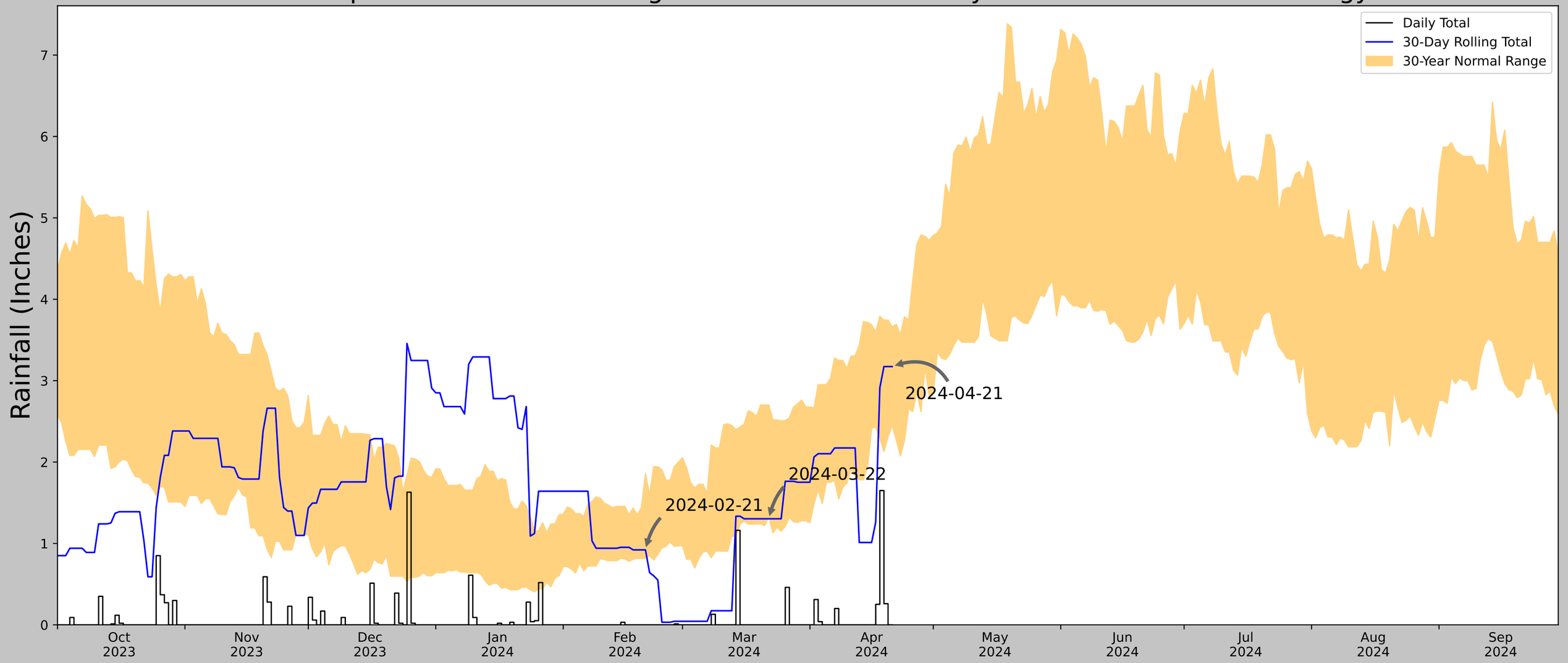
Photograph C-3: View of perennial S-22, facing south.

Photograph C-4: View of ephemeral S-23, facing southwest.

Photograph C-5: View of ephemeral S-24, facing south.

APPENDIX D – ANTECEDENT PRECIPITATION TOOL RESULTS

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	39.61375, -94.3353023
Observation Date	2024-04-21
Elevation (ft)	1034.616
Drought Index (PDSI)	Moderate drought (2024-03)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-21	2.45	3.659055	3.173228	Normal	2	3	6
2024-03-22	1.336614	2.700394	1.30315	Dry	1	2	2
2024-02-21	0.816535	1.856299	0.92126	Normal	2	1	2
Result							Normal Conditions - 10

US Army Corps of Engineers

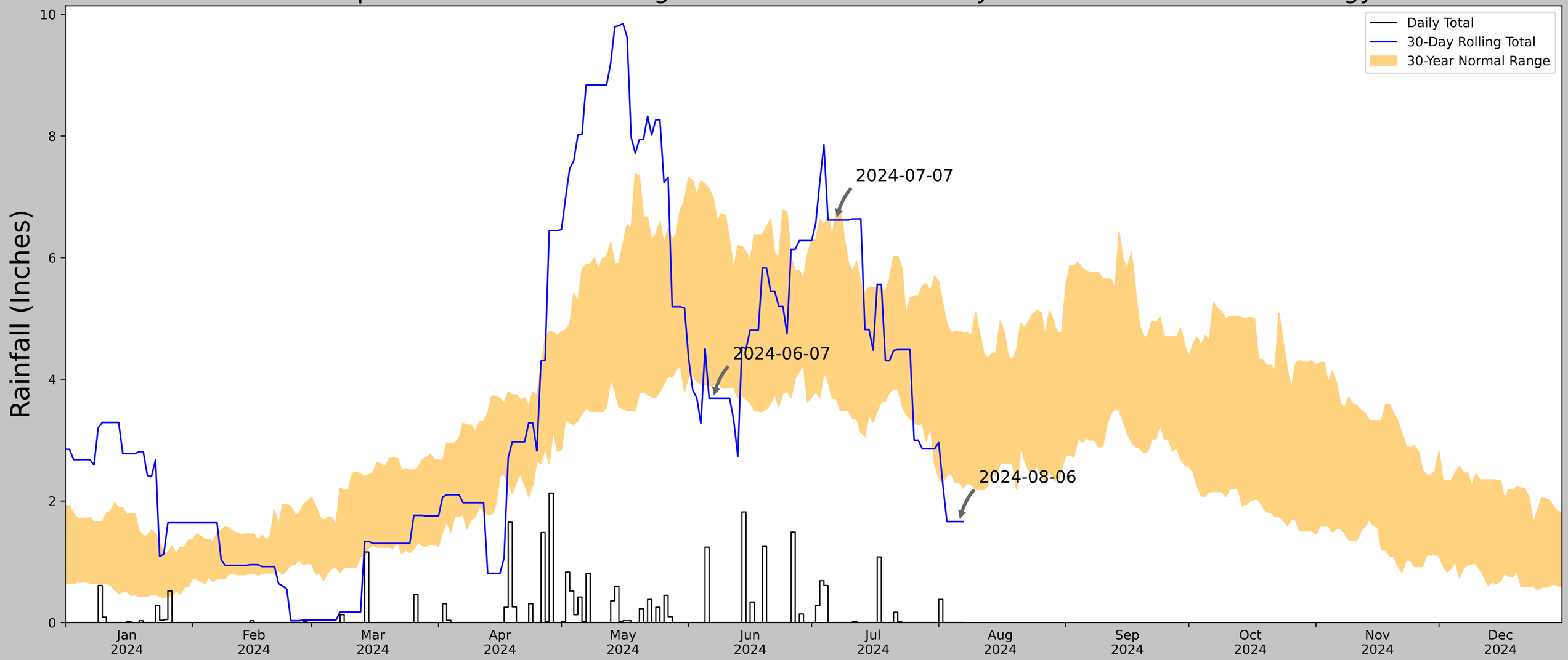
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
PLATTSBURG 0.6 W	39.5647, -94.474	944.882	8.126	89.734	4.386	6122	87
PLATTSBURG	39.5669, -94.4544	904.856	1.055	40.026	0.517	3325	0
PLATTSBURG 3.5 S	39.5143, -94.4689	986.877	3.493	41.995	1.719	147	2
PLATTSBURG 5.7 S	39.4847, -94.4417	974.081	5.789	29.199	2.774	26	0
GOWER 2.7 S	39.5729, -94.6013	858.924	6.804	85.958	3.647	67	1
EDGERTON	39.5075, -94.6328	839.895	9.339	104.987	5.183	1316	0
SMITHVILLE LAKE	39.3903, -94.5497	903.871	12.708	41.011	6.24	330	0
KEARNEY 3E	39.3667, -94.3294	839.895	15.705	104.987	8.716	10	0
CAMERON	39.7469, -94.2531	1009.843	17.221	64.961	8.868	3	0
AMITY 4 NE	39.8914, -94.36	974.081	23.372	29.199	11.2	6	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	39.61558, -94.359576
Observation Date	2024-08-06
Elevation (ft)	978.783
Drought Index (PDSI)	Incipient wetness (2024-07)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-08-06	2.30748	4.790551	1.661417	Dry	1	3	3
2024-07-07	3.688189	6.720866	6.61811	Normal	2	2	4
2024-06-07	3.895276	6.98504	3.688976	Dry	1	1	1
Result							Drier than Normal - 8

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
PLATTSBURG 0.6 W	39.5647, -94.474	944.882	7.034	33.901	3.404	6122	69
PLATTSBURG	39.5669, -94.4544	904.856	1.055	40.026	0.517	3325	0
PLATTSBURG 3.5 S	39.5143, -94.4689	986.877	3.493	41.995	1.719	147	21
PLATTSBURG 5.7 S	39.4847, -94.4417	974.081	5.789	29.199	2.774	26	0
GOWER 2.7 S	39.5729, -94.6013	858.924	6.804	85.958	3.647	67	0
EDGERTON	39.5075, -94.6328	839.895	9.339	104.987	5.183	1316	0
SMITHVILLE LAKE	39.3903, -94.5497	903.871	12.708	41.011	6.24	330	0
KEARNEY 3E	39.3667, -94.3294	839.895	15.705	104.987	8.716	10	0
CAMERON	39.7469, -94.2531	1009.843	17.221	64.961	8.868	3	0
AMITY 4 NE	39.8914, -94.36	974.081	23.372	29.199	11.2	6	0

APPENDIX C - THREATENED AND ENDANGERED SPECIES REPORT

September 16, 2024

Rob LeForce
Environmental Project Manager
Associated Electric Cooperative, Inc.
2814 S Golden Ave
Springfield, MO 65801

Re: Habitat Assessment Report for Turney Energy Center
Burns & McDonnell Project No. 141827

Dear Mr. LeForce:

Burns & McDonnell was retained by Associated Electric Cooperative, Inc. (AECI) to provide habitat assessment services for the proposed Turney Energy Center (Project). The proposed Project and results of the habitat assessment effort are described below.

INTRODUCTION

AECI is considering constructing a simple-cycle combustion turbine in Clinton County, Missouri. The project is located approximately 1.5 miles south of Turney, Missouri (Figure A-1, Appendix A).

Burns & McDonnell conducted a habitat assessment survey for the Project to evaluate the potential for the Project to impact state and federally protected species and designated critical habitats. This habitat assessment letter report included the results of the desktop analysis of species known or likely to occur in the area and the results of a field survey conducted within the Project (Survey Area).

EXISTING DATA REVIEW

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool and the Missouri Department of Conservation (MDC) listed species and known critical habitat for Clinton County, Missouri, were utilized to identify federally and state-protected species that may occur within the Survey Area (Appendix B).

According to the USFWS IPaC tool, 5 species that are protected, or anticipated to be protected, under the Endangered Species Act (ESA) are known or likely to occur in Clinton County in Missouri (Table 1). There is one species protected by MDC in Clinton County, however it is already protected under the ESA (Table 1). The Project was also reviewed for potential impacts to the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*), which are federally protected by the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA).

Table 1: Federally and State Protected Species Known or Likely to Occur in Clinton County, Missouri

Common Name	Scientific Name	Status[1]
Mammals		
Tricolored bat	*Perimyotis subflavus*	FPE
Gray bat	*Myotis grisescens*	FE; SE
Indiana bat	*Myotis sodalis*	FE; SE
Northern long-eared bat	*Myotis septentrionalis*	FE; SE
Insects		
Monarch butterfly	*Danaus plexippus*	FC

Source: USFWS IPaC; http://ecos.fws.gov/ipac, accessed 04/22/2024; MDC field guide: https://mdc.mo.gov/field-guide/statuses?status=994, accessed 04/22/2024.
[1]FC: Federal Candidate Species for Listing; FE: Federally Endangered; FPE: Federally Proposed for Listing as Endangered; SE: State Endangered.

FIELD ASSESSMENT

A field-based habitat assessment was conducted by Burns & McDonnell biologists on April 22, 2024, and August 6, 2024. The habitat assessment field survey was conducted on foot within the Survey Area and encompassed approximately 184 acres. Habitat conditions were recorded using a sub-meter accurate Global Positioning System (GPS) and an iPad camera. Natural color photographs taken onsite are included in Appendix C.

RESULTS

The Survey Area is dominated by agricultural fields and vehicular right-of-way's (Figures A-1). Common vegetation in the Survey Area included eastern cottonwood (*Populus deltoides*), black willow (*Salix nigra*), American elm (*Ulmus americana*), Osage orange (*Maclura pomifera*), American sycamore (*Platanus occidentalis*), white mulberry (*Morus alba*), stinging nettle (*Urtica dioica*), tall goldenrod (*Solidago altissima*), short-awn meadow-foxtail (*Alopecurus aequalis*), and sticky-willy (*Galium aparine*). Representative ground photographs from the field assessment are included in Appendix C.

The following paragraphs provide Burns & McDonnell's evaluation of the Project's potential effect on the protected species as identified in Table 1. The effects determinations of Burns & McDonnell follow effects determinations as put forth by the USFWS and may be categorized as *may affect and is likely to adversely affect*; *may affect but is not likely to adversely affect*; or *no effect.*

Tricolored Bat

The tricolored bat is proposed for listing as endangered under the ESA. This bat species hibernates in caves or abandoned mines during the winter. During the spring, summer, and fall,

tricolored bats roost among live and dead leaf clusters in the trees of hardwood forested habitats. Additionally, the summer roosts of the tricolored bat may include pine trees, eastern red cedar trees, and structures such as barns, sheds, under bridges, or in other buildings that have little human disturbance. Female tricolored bats form maternity colonies, while male tricolored bats tend to roost singly or in small groups. Foraging habitat for the tricolored bat includes forest edges and riparian corridors where small insects such as caddisflies, moths, beetles, wasps, flying ants and flies are concentrated.

The tricolored bat occurs throughout the entire state of Missouri. The field assessment did observe leaf clusters and trees suitable for tricolored bat roosts. Although the Project has been sited to minimize the amount of tree clearing that is necessary, some trees may need to be cleared. The USFWS has not established conservation recommendations for the tricolored bat. Conducting tree clearing during the bats' inactive season is a generally recommended conservation measure for protecting bats. The USFWS has published that November 16–March 31 is the season of inactivity for bats in Missouri. The Project may also conduct presence/absence surveys for tricolored bats. If surveys concluded that this species is likely absent, seasonal tree clearing could be avoided. Coordination with the USFWS and MDC could establish whether presence/absence surveys may be needed. If tree clearing for the Project is restricted to the season of inactivity, it is anticipated that the Project **may affect but is not likely to adversely affect** the tricolored bat.

Gray Bat
The gray bat is listed as federally endangered under the ESA and is listed as state endangered. This species was listed under the ESA in 1976 and hibernates in caves or abandoned mines during the winter. During the spring, summer, and fall, gray bats continue to use caves, or occasionally a cave-like structure such as mines, dams, bridges, quarries, and culverts. Female gray bats form maternity colonies, while male gray bats tend to roost singly or in small groups. Foraging habitat for the gray bat includes bodies of water including lakes, rivers, and streams where stoneflies, mayflies, and caddisflies are concentrated. They may also use wooded habitat for foraging. No caves or mines were observed in the Survey Area, although foraging habitat may occur throughout the Survey Area. Due to lack of potential roosting or hibernating sites and presence of potential foraging habitat, it is anticipated that the Project **may affect but is not likely to adversely affect** the gray bat.

Indiana Bat
The Indiana bat is listed as federally endangered under the ESA and is listed as state endangered. This species was listed under the ESA in 1967 and hibernates in caves or abandoned mines during the winter. During the spring, summer, and fall, Indiana bats roost in bark or cavities within the trunks of trees. Female Indiana bats form maternity colonies, while male Indiana bats

tend to roost singly or in small groups. Foraging habitat for the Indiana bat includes forest edges and riparian corridors where small insects such as caddisflies, moths, beetles, wasps, flying ants, and flies are concentrated.

Indiana bats are a species of conservation concern in Missouri and are present throughout much of the state. The field assessment noted potential Indiana bat roost trees within the Survey Area. Although the Project has been sited to minimize the amount of tree clearing that is necessary, tree clearing may be required. Conducting tree clearing during the bats' inactive season is a generally recommended conservation measure for protecting bats. The USFWS has published that November 16–March 31 is the season of inactivity for bats in Missouri. The Project may also conduct presence/absence surveys for Indiana bats. If surveys concluded that this species is likely absent, seasonal tree clearing could be avoided. Coordination with the USFWS and MDC could establish whether presence/absence surveys may be needed. If tree clearing for the Project is restricted to the season of inactivity, it is anticipated that the Project **may affect but is not likely to adversely affect** the Indiana bat.

Northern Long-eared Bat
The northern long-eared bat is listed as federally endangered under the ESA. This species hibernates in caves or abandoned mines during the winter. During the spring, summer, and fall, northern long-eared bats roost in bark or cavities within the trunks of trees. Additional summer roosts occasionally include structures such as barns, under bridges, or in other buildings that have little human disturbance. Female northern long-eared bats form maternity colonies, while male northern long-eared bats tend to roost singly or in small groups. Foraging habitat for the northern long-eared bat includes forest edges and riparian corridors where small insects such as caddisflies, moths, beetles, wasps, flying ants, and flies are concentrated.

The northern long-eared bat is found throughout the state of Missouri. The field assessment noted potential roost trees within the Survey Area. Although the Project has been sited to minimize the amount of tree clearing that is necessary, some tree clearing may be required. Conducting tree clearing during the bats' inactive season is a generally recommended conservation measure for protecting bats. The USFWS has published that November 16–March 31 is the season of inactivity for bats in Missouri. The Project may also conduct presence/absence surveys for northern long-eared bats. If surveys concluded that this species is likely absent, seasonal tree clearing could be avoided. Coordination with the USFWS and MDC could establish whether presence/absence surveys may be needed. If tree clearing for the Project is restricted to the season of inactivity, it is anticipated that the Project **may affect but is not likely to adversely affect** the northern long-eared bat.

Monarch butterfly
Monarch butterfly is a federal candidate for listing under the ESA. This species feeds on nectar from a variety of flowering plants and requires milkweed to complete its life cycle. Preferred habitat for this species includes prairies, savannas, rights-of-way, and field edges with abundant flowering plants. The Project is located on primarily agricultural fields and roadsides. Any suitable habitat that is currently present is likely fragmented and highly disturbed. All permanent impacts by the Project are sited in agricultural fields and would not disturb potential monarch butterfly habitat. Any temporary impacts to potential habitat, namely alongside roads, are already highly disturbed and fragmented due to the surrounding agricultural fields and vehicular rights-of-way. Coordination with USFWS may be necessary if this species is listed to determine revegetation plans to avoid permanent damage to potential habitats. Therefore, the Project is anticipated to have **no effect** on the monarch butterfly.

Other Federally Protected Species
The MBTA prohibits the take of migratory birds and their eggs, young, or active nests. Recommended conservation measures include conducting tree clearing or unmowed grassland disturbance outside the migratory bird nesting period for Missouri (May 1 – July 1). Due to the existing disturbance and the relatively small amount of potential woodland and shrubland nesting habitat that would be affected by the Project, the Project as proposed is not anticipated to impact migratory bird populations.

The BGEPA prohibits take of bald eagles and golden eagles. The project is within the range of the bald eagle and the migratory range of the golden eagle. Golden eagles may occur in the Project vicinity but would likely be temporary visitors to the area and would not be impacted by proposed Project activities. No bald eagle nests were observed within the vicinity of the Survey Area during the habitat assessment. If an active bald eagle nest is observed during construction activities, AECI should work with the USFWS to minimize potential impacts. The Project as proposed is anticipated to have **no adverse effects** on bald and golden eagles.

CONCLUSIONS
Based on the results of this habitat assessment, the Project as proposed is anticipated to have **no effect** on monarch butterfly. It is anticipated that the Project as proposed may **affect but is not likely to adversely affect** the tricolored bat, gray bat, Indiana bat, and northern long-eared bat.

If you have any questions regarding the proposed Project or the contents of this habitat assessment report, you may contact me at crogers@burnsmcd.com at your convenience.

Sincerely,

Cara Rogers

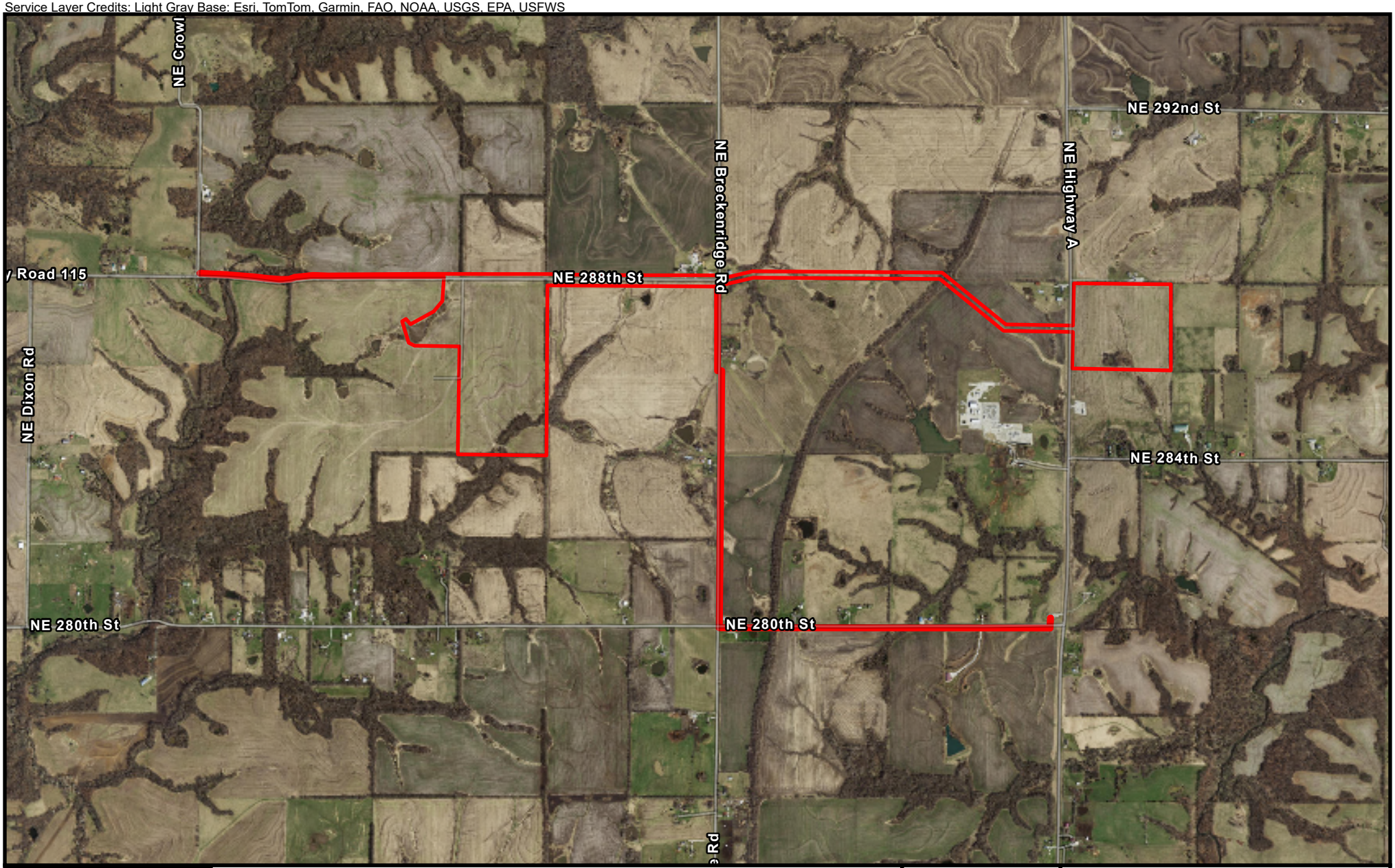
Cara Rogers
Biologist

Attachments:
Appendix A – Figures
Appendix B – Species Lists
Appendix C – Site Photographs

cc: Chris Howell, Burns & McDonnell

APPENDIX A – FIGURES

Service Layer Credits: Light Gray Base: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS



Project Area

NORTH

1,500 750 0 1,500

Feet

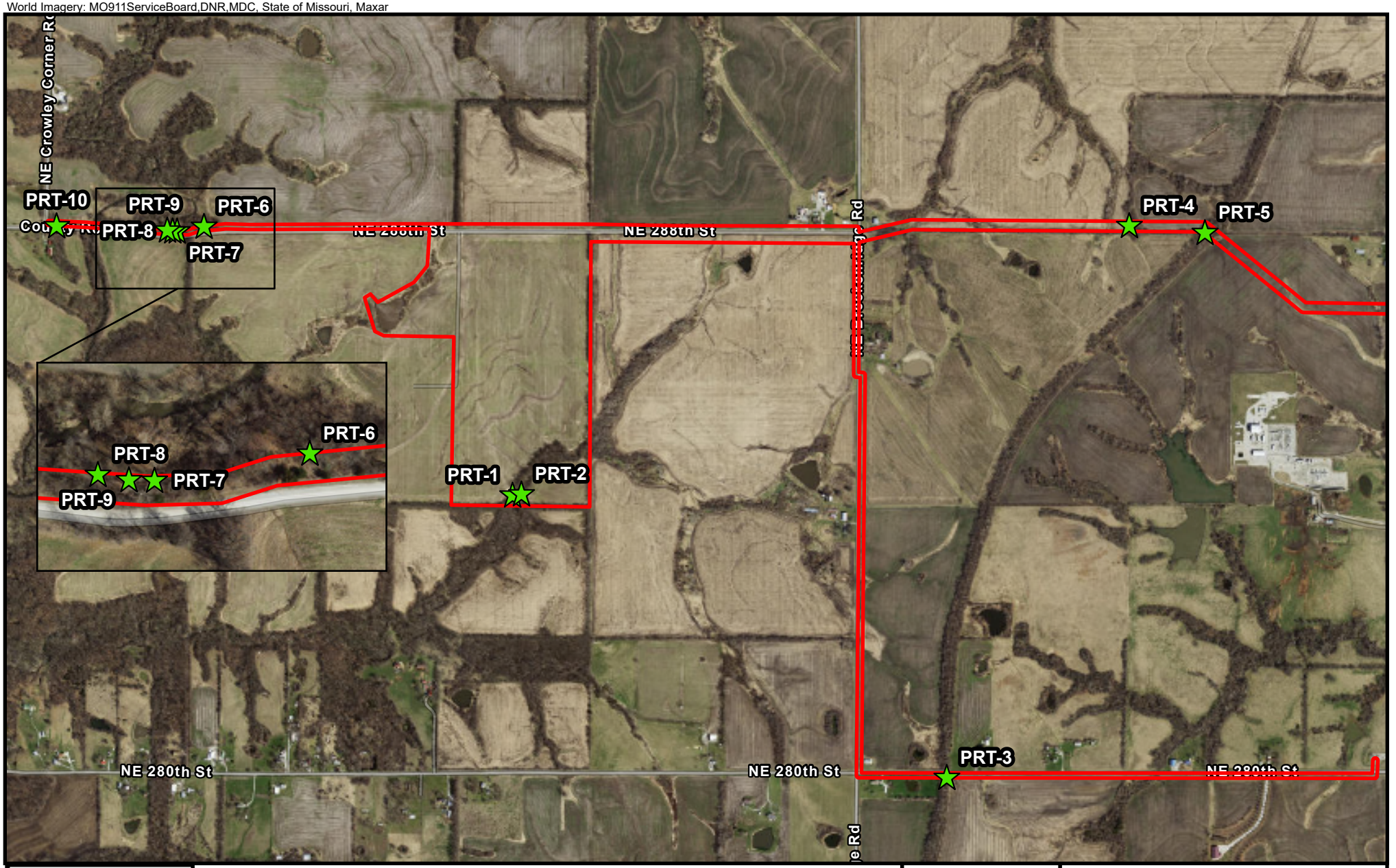
BURNS McDONNELL

Figure A-1
General Location
Turney Study Area
AECI
Clinton County, Missouri

Source: Esri, AECI, and Burns & McDonnell

Issued: 9/17/2024

Service Layer Credits: Light Gray Base: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
World Imagery: MO911ServiceBoard,DNR,MDC, State of Missouri, Maxar



Project Area

Potential Roost Trees

NORTH

1,000 500 0 1,000

Scale in Feet

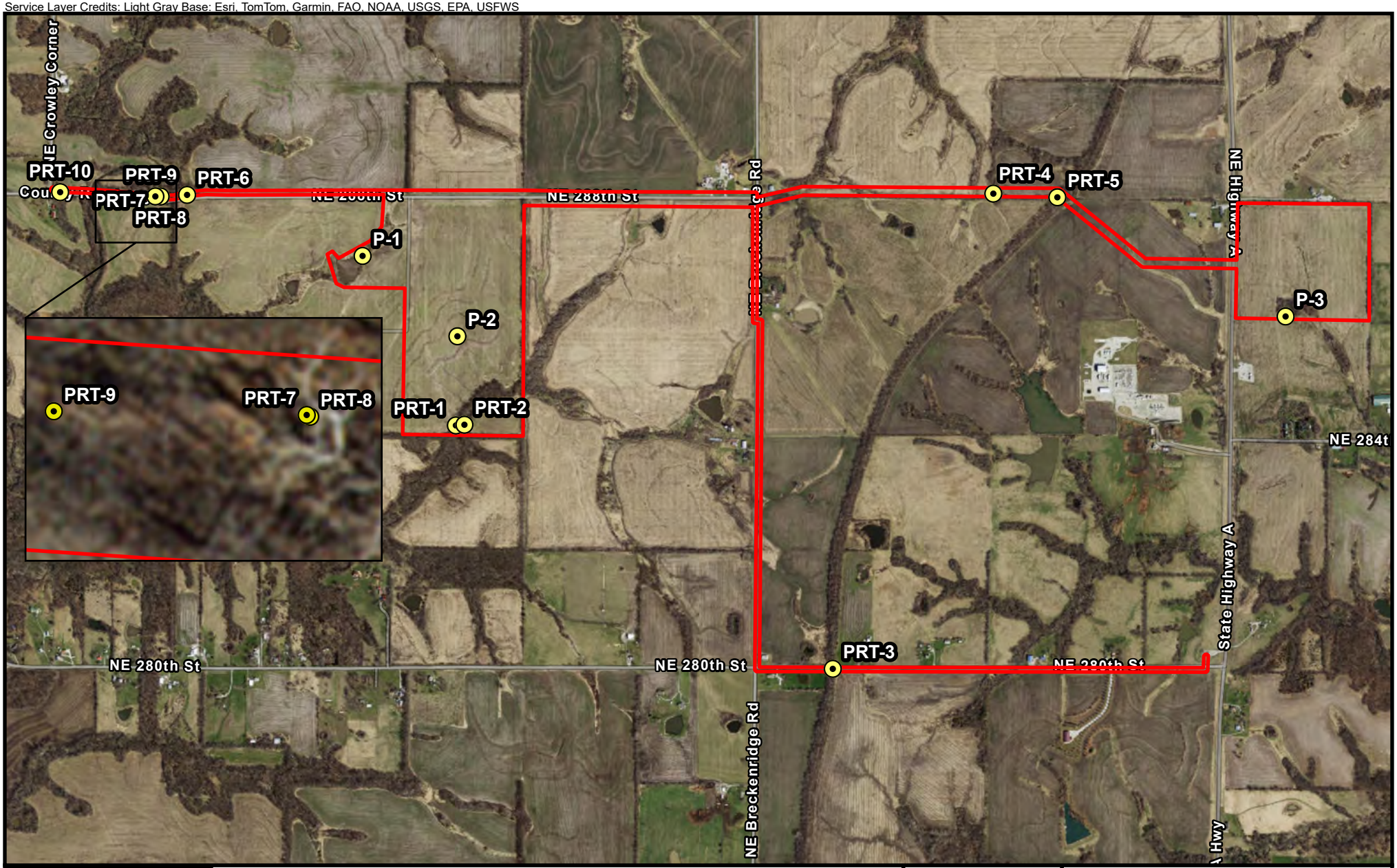
BURNS McDONNELL

Figure A-2
Potential Roost Trees
Turney Study Area
AECI
Clinton County, Missouri

Source: Esri, AECI, and Burns & McDonnell

Issued: 9/17/2024

Service Layer Credits: Light Gray Base: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS



Project Area

Photo Points

NORTH

1,000 500 0 1,000

Scale in Feet

BURNS McDONNELL

Figure A-3
Photo Points
Turney Study Area
AECI
Clinton County, Missouri

Source: Esri, AECI, and Burns & McDonnell

Issued: 9/17/2024

APPENDIX B – SPECIES LISTS

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Clinton County, Missouri

Local office

Missouri Ecological Services Field Office

(573) 234-2132
(573) 234-2181

101 Park Deville Drive
Suite A
Columbia, MO 65203-0057

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Gray Bat Myotis grisescens Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat Myotis septentrionalis Wherever found This species only needs to be considered if the following condition applies: • This species only needs to be considered if the project includes wind turbine operations. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

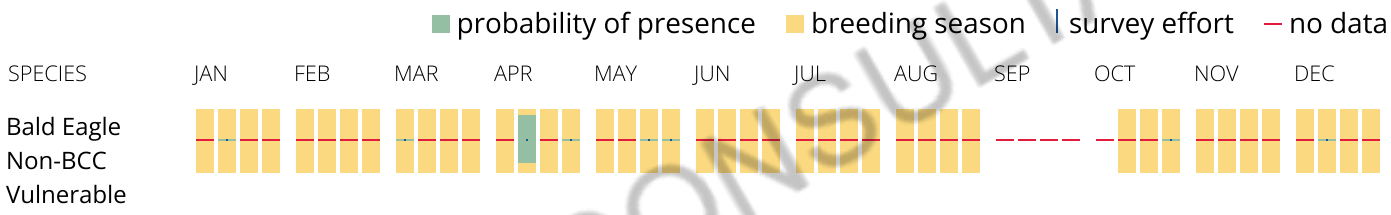
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your

list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Prairie Loggerhead Shrike Lanius ludovicianus excubitorides This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8833	Breeds Feb 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

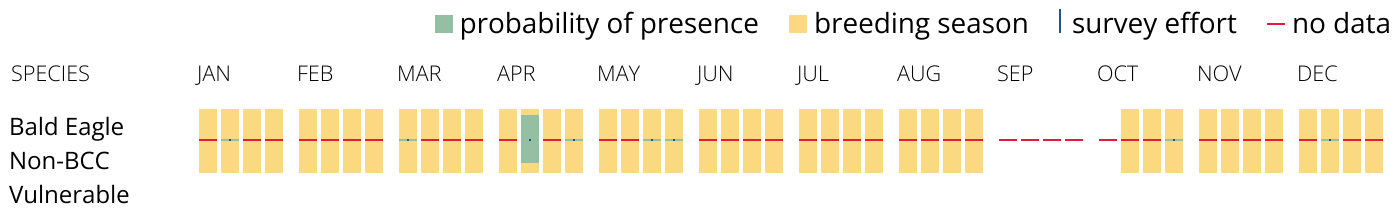
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

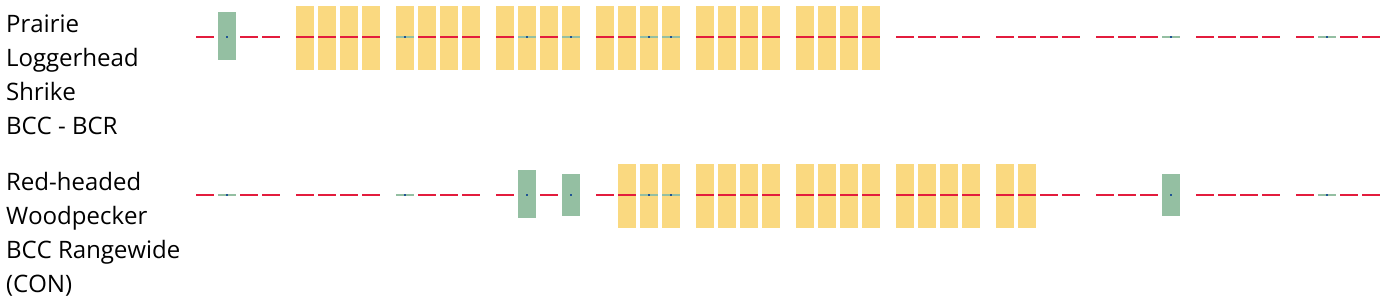
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of

presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Missouri Natural Heritage Program

Missouri Natural Heritage Review Website

Find information about species and natural communities of conservation concern, public lands, and sensitive reso

Go to Missouri Natural Heritage Review website

HISTORY

In 1972, the Missouri General Assembly passed an Act (Section 252.240 RSMo.) charging MDC with establishing a list of endangered species and providing protection for them. Section 4.111 of the Wildlife Code of Missouri regulates these species.

In 1981, the Nature Conservancy, Missouri Department of Natural Resources and Missouri Department of Conservation (MDC) created the Missouri Natural Heritage Program (MONHP) to identify species and natural communities of conservation concern in Missouri.

Since 1983, the MONHP has been part of MDC, where it continues its strong commitment to conserving rare and endangered plants and animals and high-quality natural communities.

SCOPE OF DATA

The MONHP receives biological data from the Missouri Natural Features Inventory, field biologists, universities, scientific literature, herbaria and other individuals and organizations. This information provides an understanding of the abundance, distribution, condition and conservation needs of these sensitive elements. There are currently more than 18,000 element occurrence records of more than 800 sensitive species and natural community types in Missouri.

Species and natural communities are evaluated and ranked on the basis of their global and statewide status. These ranks are revised as new information becomes available; changes in ranking can be the result of changes in species populations or in changes in our knowledge of the species.

SEARCH

The data is managed with Biotics, a geographic information system-based software from NatureServe. Through NatureServe, MONHP is part of an international network of biological and ecological databases.

The Missouri Natural Heritage Program (MONHP) identifies species and natural communities of conservation concern in each Missouri county. You can use this database to get accurate and current information for conservation planning, environmental review, scientific research, land acquisition and planning for economic development.

Heritage Search

County

Clinton Apply Reset

Name	State Rank	Global Rank	State Status	Federal Status
Eastern Tiger Salamander *Ambystoma tigrinum* More Eastern Tiger Salamander information	Vulnerable Code: S3	Secure Code: G5		
Central Plains - Warmwater - Creek	Unranked Code: S?	Not ranked Code: GNR		
Central Plains - Warmwater - Small river	Unranked Code: S?	Not ranked Code: GNR		
Dry-mesic loess/glacial till woodland	Vulnerable Code: S3	Not ranked Code: GNR		
Northern Plains Killifish *Fundulus kansae* More Northern Plains Killifish information	Imperiled Code: S2	Secure Code: G5		

Name	State Rank	Global Rank	State Status	Federal Status
Bald Eagle *Haliaeetus leucocephalus* More Bald Eagle information	Vulnerable Code: S3	Secure Code: G5		
Loggerhead Shrike *Lanius ludovicianus* More Loggerhead Shrike information	Imperiled Code: S2	Apparently secure Code: G4		
Mesic loess/glacial till prairie	Critically imperiled Code: S1	Not ranked Code: GNR		
Least Weasel *Mustela nivalis* More Least Weasel information	Vulnerable Code: S3	Secure Code: G5		
Indiana Myotis *Myotis sodalis* More Indiana Myotis information	Critically imperiled Code: S1	Imperiled Code: G2	Endangered Code: E	Endangered Code: E
Prairie swale	Critically imperiled Code: S1	Not ranked Code: GNR		
Regal Fritillary *Speyeria idalia*	Vulnerable Code: S3	Vulnerable Inexact numeric rank Code: G3?		
American Badger *Taxidea taxus* More American Badger information	Vulnerable Code: S3	Secure Code: G5		
A Grass *Tridens flavus var. chapmanii*	Imperiled Code: S2	Secure Taxonomic subdivision: Vulnerable Code: G5T3		

Name	State Rank	Global Rank	State Status	Federal Status
Rock Elm *Ulmus thomasii*	Imperiled Code: S2	Secure Code: G5		

HERITAGE PROGRAM TERMS AND DEFINITIONS

Federal Status

State Status

Global Rank

State Rank

IN THIS SECTION

Building on Karst: Best Practices

Constructing With Care

Missouri Natural Heritage Program

Species Impact: Best Practices

Streams: Construction Best Practices

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AskMDC Videos

Nature's Calling Videos

Fish Story Videos

MISSION & VISION

We protect and manage the fish, forest, and wildlife of the state. We facilitate and provide opportunity for all citizens to use, enjoy, and learn about these resources.

APPENDIX C – SITE PHOTOGRAPHS

Photograph C-1: View of potential roost tree (PRT)-1, facing west. Large snag with notable habitat for *Myotis sodalis* and *Myotis septentrionalis*.

Photograph C-2: View of PRT-2, facing east. Large snag with notable habitat for *M. sodalis* and *M. septentrionalis*.

Photograph C-3: View of PRT-3, facing southeast. Large snag with notable habitat for *M. sodalis* and *M. septentrionalis*.

Photograph C-4: View of PRT-4, facing north. Large snag with notable habitat for *M. sodalis* and *M. septentrionalis*.

Photograph C-5: View of PRT-5, facing east. Large snag with notable habitat for *M. sodalis* and *M. septentrionalis*.

Photograph C-6: View of PRT-6, facing north. Large snag with notable habitat for *M. sodalis* and *M. septentrionalis.*

Photograph C-7: View of PRT-7, facing south. Large snag with notable habitat for *M. sodalis* and *M. septentrionalis.*

Photograph C-8: View of PRT-8, facing northeast. Large snag with notable habitat for *M. sodalis* and *M. septentrionalis.*

Photograph C-9: View of PRT-9, facing north. Large snag with notable habitat for *M. sodalis* and *M. septentrionalis.*

Photograph C-10: View of PRT-10, facing northwest. Large snag with notable habitat for *M. sodalis* and *M. septentrionalis.*

Photograph C-11: P-1, facing southwest. Large pond and associated wetland within the Study Area.

Photograph C-12: P-2, facing north. Agricultural fields of row crops are an example of the land that largely covers the Study Area.

Photograph C-13: P-3, facing north. Small pond surrounded by forest within the Study Area.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
Phone: (573) 234-2132 Fax: (573) 234-2181

In Reply Refer To: 01/29/2025 14:58:33 UTC
Project Code: 2024-0145147
Project Name: Turney Energy Center

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).
New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. **Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days.** The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance

Refer to the Midwest Region S7 Technical Assistance website for step-by-step instructions for making species determinations and for specific guidance on the following types of projects:

projects in developed areas, HUD, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

Federally Listed Bat Species

Indiana bats, gray bats, and northern long-eared bats occur throughout Missouri and the information below may help in determining if your project may affect these species.

Gray bats - Gray bats roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel. If your project will impact caves, mines, associated riparian areas, or will involve tree removal around these features – particularly within stream corridors, riparian areas, or associated upland woodlots –gray bats could be affected.
Indiana and northern long-eared bats - These species hibernate in caves or mines only during the winter. In Missouri the hibernation season is considered to be November 1 to March 31. During the active season in Missouri (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥5 inches diameter at breast height (dbh) for Indiana bat, and ≥3 inches dbh for northern long-eared bat, that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Tree species often include, but are not limited to, shellbark or shagbark hickory, white oak, cottonwood, and maple. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, Indiana bats or northern long-eared bats could be affected.
Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas;
- Trees found in highly-developed urban areas (e.g., street trees, downtown areas);
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees; and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.

2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see #3 below) – then project proponents can conclude the proposed activities **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species through the Species website.
3. If IPac returns a result that one or more federally listed bat species (Indiana bat, northern long-eared bat, or gray bat) are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** these bat species **IF** one or more of the following activities are proposed:
    a. Clearing or disturbing suitable roosting habitat, as defined above, at any time of year;
    b. Any activity in or near the entrance to a cave or mine;
    c. Mining, deep excavation, or underground work within 0.25 miles of a cave or mine;
    d. Construction of one or more wind turbines; or
    e. Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on listed bat species. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example "No Effect" document also can be found on the S7 Technical Assistance website.
If any of the above activities are proposed in areas where one or more bat species may be present, project proponents can conclude the proposed activities **may affect** one or more bat species. We recommend coordinating with the Service as early as possible during project planning. If your project will involve removal of over 5 acres of suitable forest or woodland habitat, we recommend you complete a Summer Habitat Assessment prior to contacting our office to expedite the consultation process. The Summer Habitat Assessment Form is available in Appendix A of the most recent version of the Range-wide Indiana Bat Summer Survey Guidelines.

Other Trust Resources and Activities

Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA

to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

Next Steps

Should you determine that project activities **may affect** any federally listed species or trust resources described herein, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

If you have not already done so, please contact the Missouri Department of Conservation (Policy Coordination, P. O. Box 180, Jefferson City, MO 65102) for information concerning Missouri Natural Communities and Species of Conservation Concern.
We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

John Weber

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

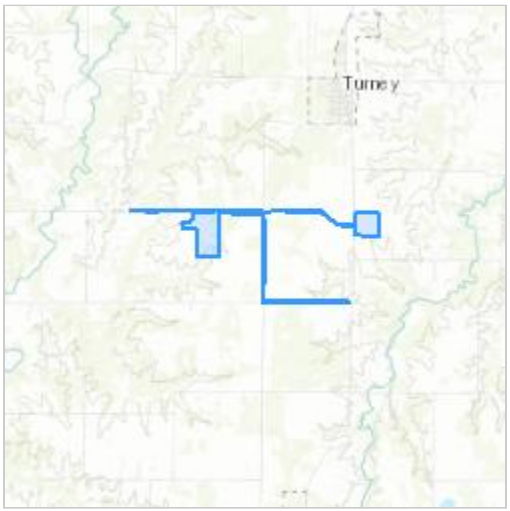
This species list is provided by:

Missouri Ecological Services Field Office
101 Park Deville Drive
Suite A
Columbia, MO 65203-0057
(573) 234-2132

PROJECT SUMMARY

Project Code: 2024-0145147
Project Name: Turney Energy Center
Project Type: Power Gen - Other
Project Description: Potential simple-cycle combustion turbine site.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.6081676,-94.34916449393126,14z



Counties: Clinton County, Missouri

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/HZ6TADRFNZHJTE3EYG62SDOLSM/documents/generated/7280.pdf	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Western Regal Fritillary *Argynnis idalia occidentalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/12017	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Cara Rogers
Address: 9450 Ward Parkway
City: Kansas City
State: MO
Zip: 64114
Email crogers@burnsmcd.com
Phone: 9808751271

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Rural Utilities Service

July 9, 2024

Kathryn Bulliner
Fish & Wildlife Biologist
U.S. Fish & Wildlife Service
101 Park Deville Drive, Suite A
Columbia, MO 65203

Re: Bat Mist-net Survey Report for the Turney Energy Center Project in Clinton County, Missouri
Burns & McDonnell Project Number: 141827

Dear Ms. Bulliner:

Burns & McDonnell was retained by Associated Electric Cooperative, Inc. (AECI) to provide protected species services for the proposed Turney Energy Center Project (Project) in Clinton County, Missouri (Figure 1 in Appendix A). The initial review of protected species information for the Project indicated that potential habitat for Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), little brown bat (*Myotis lucifugus*), and tricolored bat (*Perimyotis subflavus*) may occur in the Project area. Therefore, bat presence/absence surveys were conducted using mist-net survey methods.

Project Description

AECI is considering constructing a simple-cycle combustion turbine in Clinton County, Missouri. The Project will also include an associated transmission line, gas pipeline, and substation. The Project is located approximately 1.5 miles south of Turney, Missouri (Figure 1).

Methods

The following methods were included in a survey plan submitted to the Missouri field office of the U.S. Fish & Wildlife Service (USFWS) on May 10, 2024, and approved on May 17, 2024. The survey protocol followed the 2024 USFWS *Rangewide Indiana Bat and Northern Long-eared Bat Survey Guidelines* (Guidelines). Burns & McDonnell bat biologists Josiah Maine and Cara Rogers (USFWS permit numbers PER0003355 and PER0037840, respectively) conducted the mist-net survey within the survey area.

The Project contains multiple linear and non-linear components. Due to the minimal amount of habitat within the nonlinear areas, the high degree of habitat fragmentation, and the proximity of proposed linear features, Burns & McDonnell applied the linear portion of the survey guidelines to determine the appropriate level of survey effort for the entirety of the project. The level of effort specified in the

Guidelines on linear projects is four net-nights per linear kilometer of suitable habitat. Four linear kilometers were sufficient to cover suitable habitat throughout the Project area. Burns & McDonnell deployed two net sets at four sites for two nights to meet the required level of effort.

Mist-nets were deployed at sunset and were monitored for five hours each night. Weather and temperature data were monitored during the survey period to confirm compliance with the weather conditions outlined in the Guidelines. Biologists were prepared to stop surveying and repeat a night of netting if adverse weather prevented a full five hours of netting. Nets were checked every 10 minutes for bats.

Radio transmitters were available to attach to captured Indiana bats and northern long-eared bats. The biologists were prepared to conduct radio-telemetry and emergence counts according to the methods in the Guidelines.

Results

Mist-net surveys were conducted during the nights of May 20 to May 23, 2024. Nets were placed across streams, field edges, and forested wetlands (Figure 2, Figure 3 in Appendix A). Common tree species in the vicinity included silver maple (*Acer saccharinum*), common hackberry (*Celtis occidentalis*), black willow (*Salix nigra*), slippery elm (*Ulmus rubra*), American sycamore (*Platanus occidentalis*), honey locust (*Gleditsia triacanthos*), eastern cottonwood (*Populus deltoides*), and Osage orange (*Maclura pomifera*). Photos are provided in Appendix B.

Table 0-1: Mist-net Survey Sites

Site	Latitude	Longitude	Nights	Total Net-Nights
KM-01	39.60852	-94.3491	May 22 - 23, 2024	4
KM-02	39.61770	-94.3285	May 20 – 21, 2024	4
KM-03	39.6002	-94.3288	May 22 – 23, 2024	4
KM-04	39.6152	-94.3243	May 20 – 21, 2024	4

No bats were captured during the surveys. Weather conditions during the surveys were within the acceptable limits based on the USFWS Guidelines. Temperatures during the surveys ranged from 55.2 °F to 75.2 °F, with no precipitation or high winds (Appendix C).

Conclusion

Mist-net surveys were conducted at four sites for the Project, and each site was netted for two nights. No bats were captured throughout the 16 net-nights. No federally or state threatened or endangered species were captured, and no radio-telemetry studies or emergence counts were conducted. Therefore, Indiana bat, northern long-eared bat, little brown bat, and tricolored bat are considered likely absent for the Project area.

If you have any questions or comments regarding this report, please contact me by phone at 816-448-7519 or by email at jjmaine@burnsmcd.com.

Sincerely,

Josiah Maine
Senior Environmental Scientist
Burns & McDonnell Engineering Company, Inc.

Attachments:

- Appendix A – Figures
- Appendix B – Site Photographs
- Appendix C - Datasheets

cc: Shelly Colatskie, Missouri Department of Conservation
Rob LeForce, AECI

APPENDIX A – FIGURES

Service Layer Credits: Light Gray Base: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS

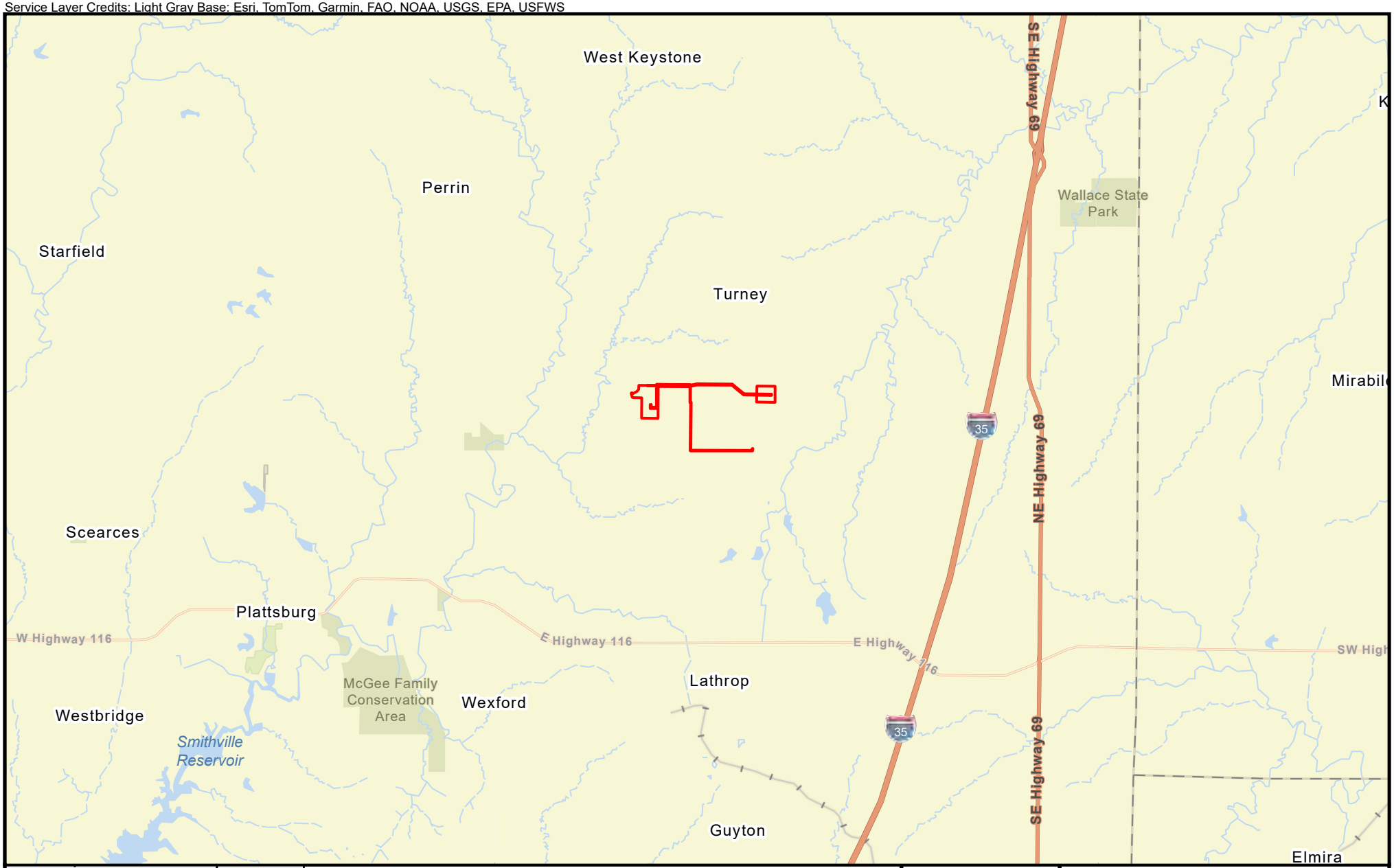


Figure 1 - Site Location Map
Turney Energy Center
Associated Electric Cooperation, Inc.
Clinton County, Missouri

Source: Esri, Associated Electric Cooperation, Inc., and Burns & McDonnell

Issued: 6/26/2024

Service Layer Credits: Light Gray Base: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS

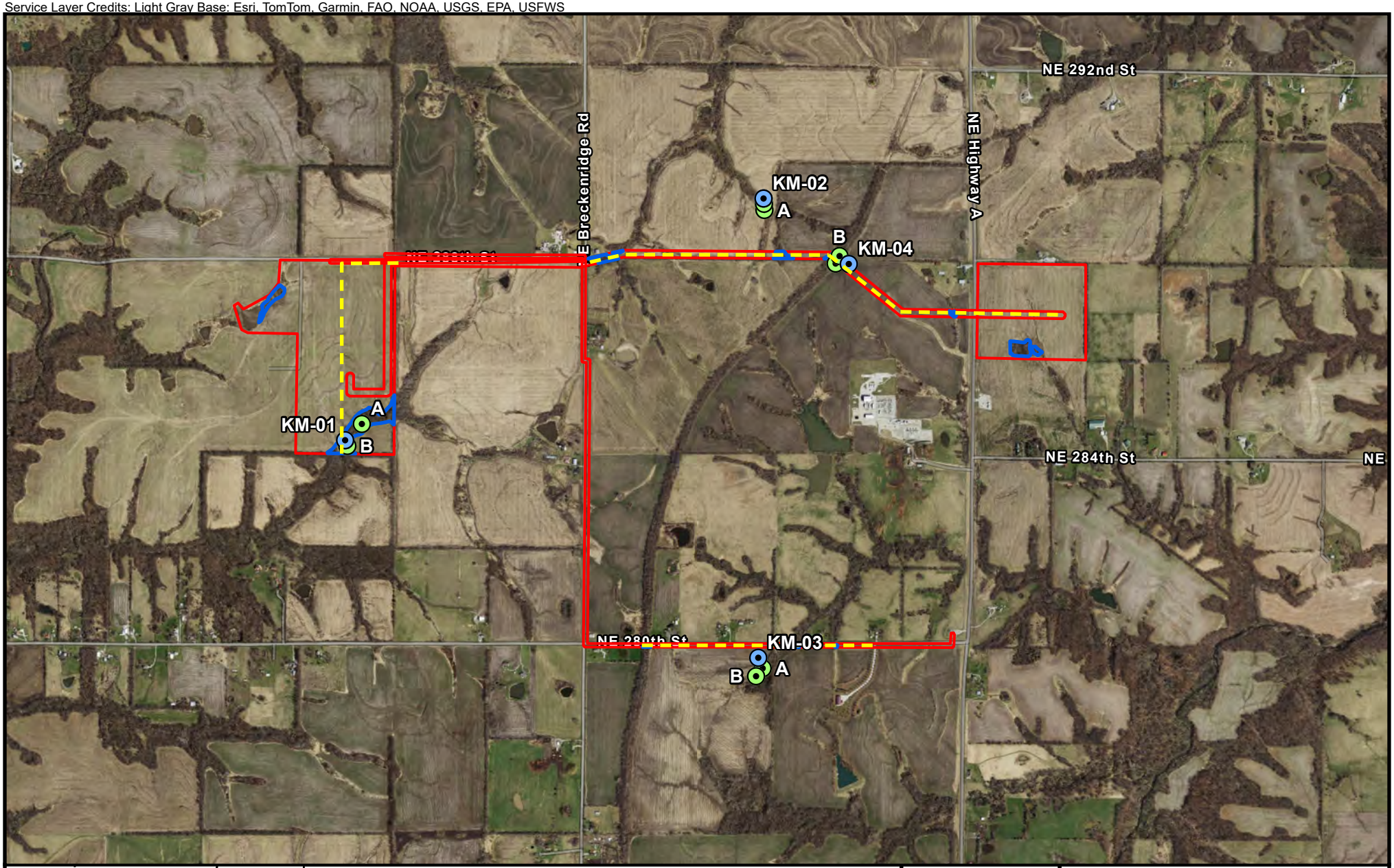
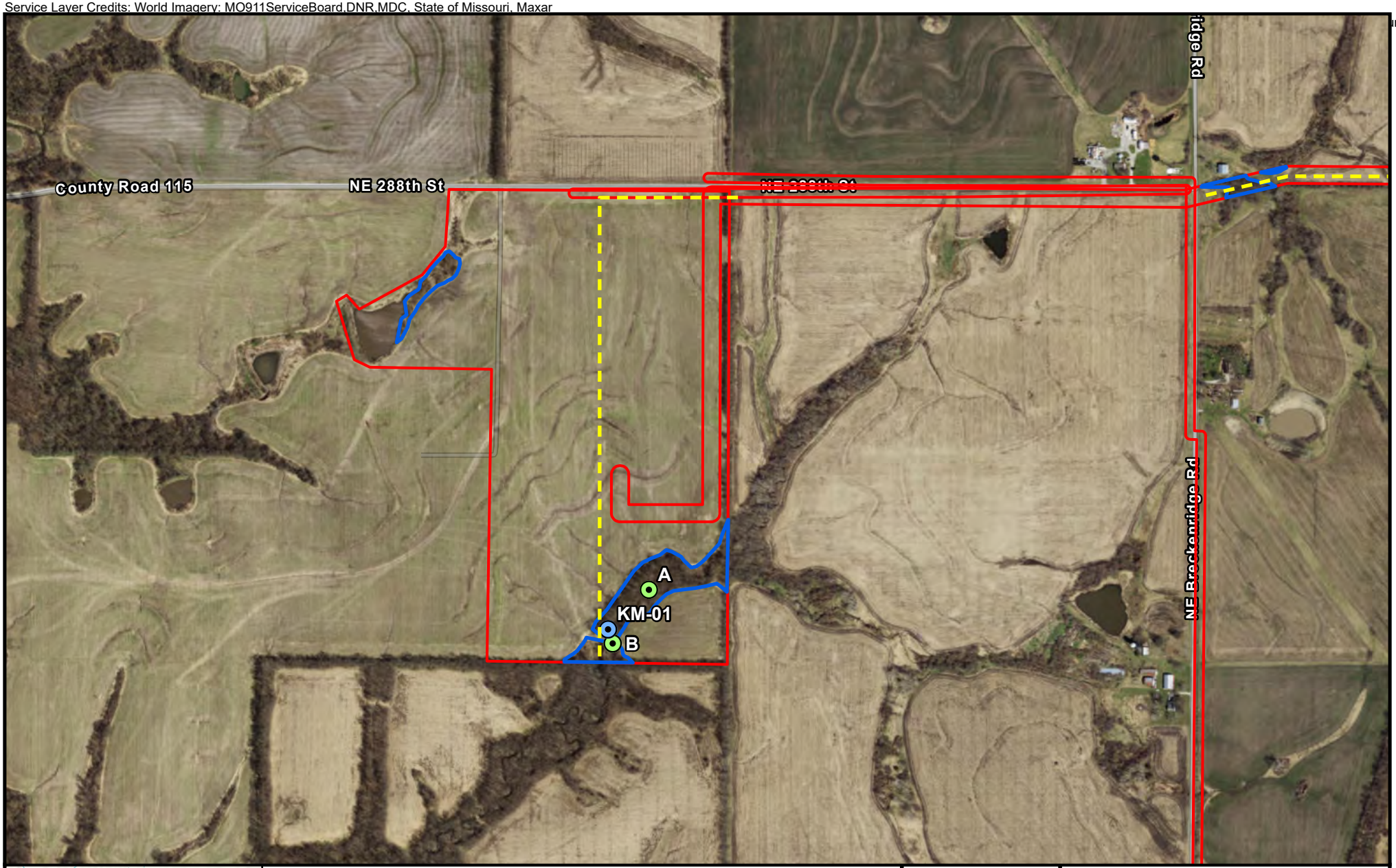


Figure 2 - Net Locations Overview
Turney Energy Center
Associated Electric Cooperation, Inc.
Clinton County, Missouri

Source: Esri, Associated Electric Cooperative, Inc., and Burns & McDonnell

Issued: 6/26/2024

Service Layer Credits: World Imagery: MO911ServiceBoard,DNR,MDC, State of Missouri, Maxar



Survey Area
Potential Tree Clearing
1KM Segments
Net Site Locations
Net Locations

NORTH

500 250 0 500

Scale in Feet

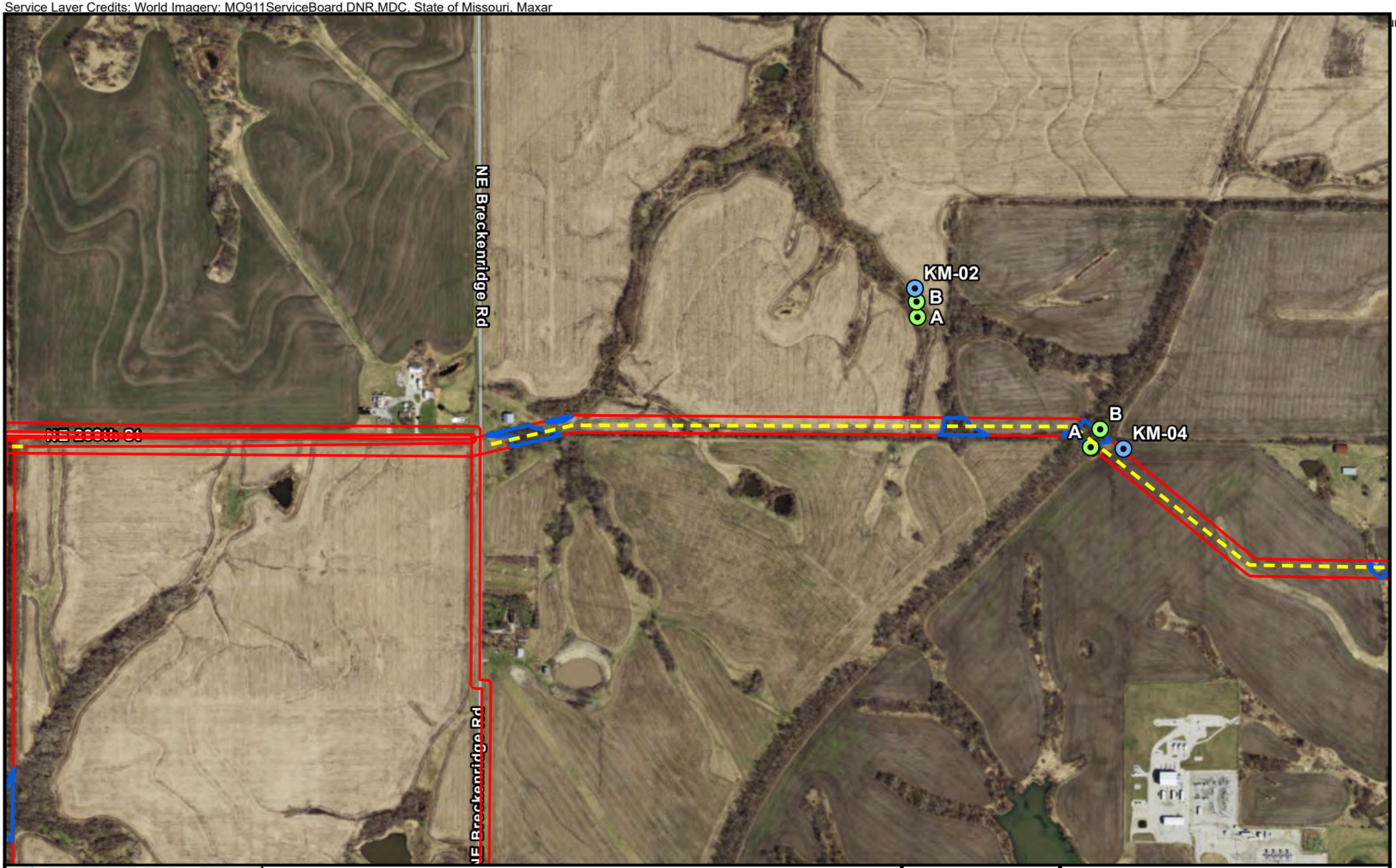
BURNS McDONNELL

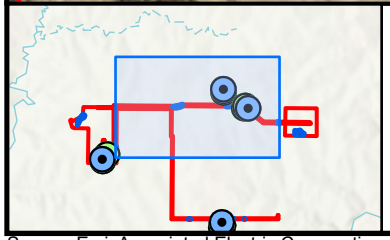
Figure 3 - Net Site Locations
Turney Energy Center
Associated Electric Cooperative, Inc.
Clinton County, Missouri
Page 1 of 4

Source: Esri, Associated Electric Cooperative, Inc., and Burns & McDonnell

Issued: 6/14/2024

Service Layer Credits: World Imagery: MO911ServiceBoard,DNR,MDC, State of Missouri, Maxar





Survey Area
Potential Tree Clearing
1KM Segments
Net Site Locations
Net Locations

NORTH

500 250 0 500

Scale in Feet

BURNS McDONNELL

Figure 3 - Net Site Locations
Turney Energy Center
Associated Electric Cooperative, Inc.
Clinton County, Missouri
Page 2 of 4

Source: Esri, Associated Electric Cooperative, Inc., and Burns & McDonnell

Issued: 6/14/2024

Service Layer Credits: World Imagery: MO911ServiceBoard,DNR,MDC, State of Missouri, Maxar

Survey Area
Potential Tree Clearing
1KM Segments
Net Site Locations
Net Locations

NORTH

500 250 0 500

Scale in Feet

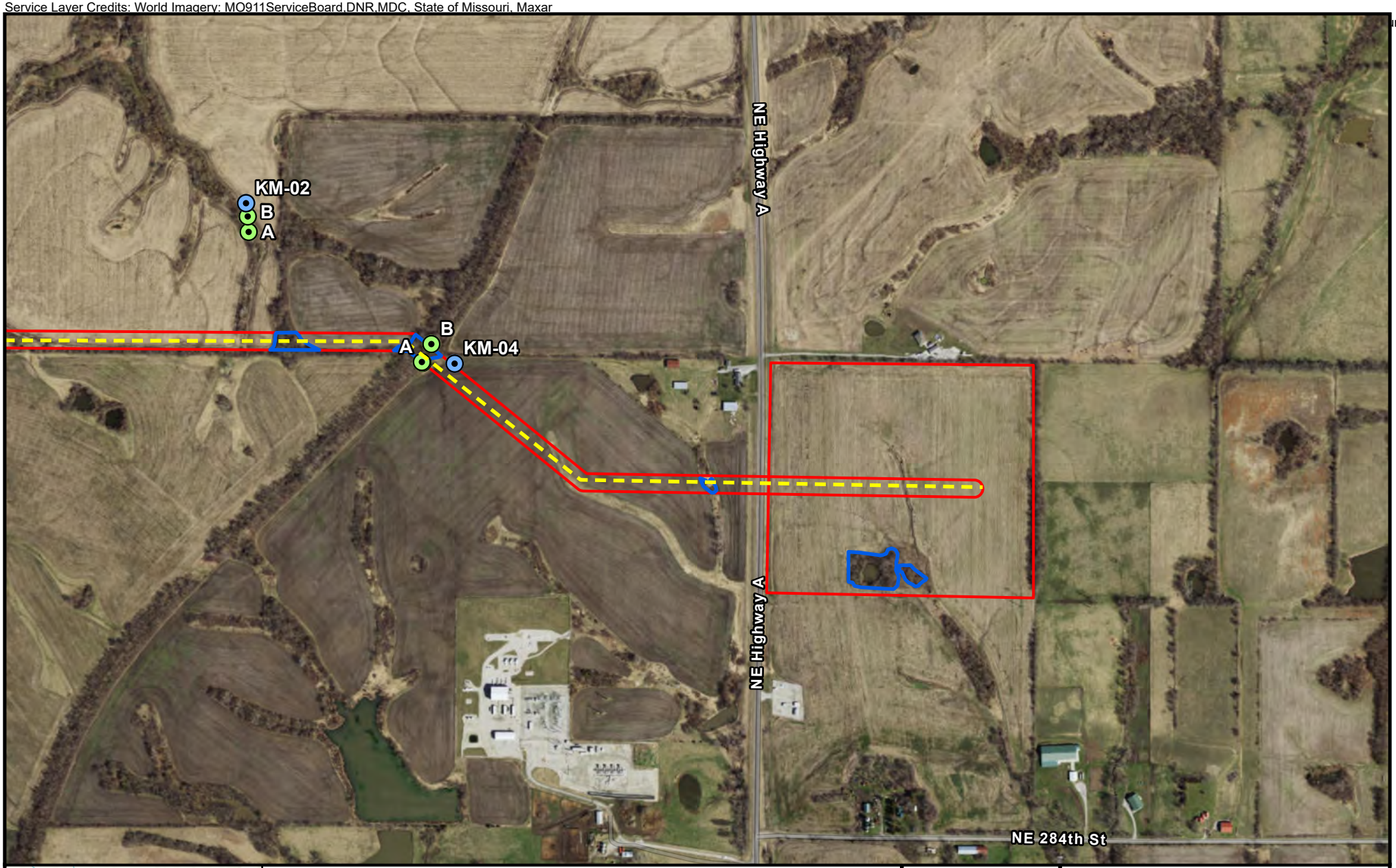
BURNS McDONNELL

Figure 3 - Net Site Locations
Turney Energy Center
Associated Electric Cooperative, Inc.
Clinton County, Missouri
Page 3 of 4

Source: Esri, Associated Electric Cooperative, Inc., and Burns & McDonnell

Issued: 6/14/2024

Service Layer Credits: World Imagery: MO911ServiceBoard,DNR,MDC, State of Missouri, Maxar



Survey Area
Potential Tree Clearing
1KM Segments
Net Site Locations
Net Locations

NORTH

500 250 0 500

Scale in Feet

BURNS McDONNELL

Figure 3 - Net Site Locations
Turney Energy Center
Associated Electric Cooperative, Inc.
Clinton County, Missouri
Page 4 of 4

Source: Esri, Associated Electric Cooperative, Inc., and Burns & McDonnell

Issued: 6/14/2024

APPENDIX B – SITE PHOTOGRAPHS

Photograph B-1: View of net set A at site KM-01.

Photograph B-2: View of net set B at site KM-01.

Photograph B-3: View of net set A at Site KM-02.

Photograph B-4: View of net set B at site KM-02.

Photograph B-5: View net set A at site KM-03.

Photograph B-6: View of net set B at site KM-03.

Photograph B-7: View of net set A at site KM-04.

Photograph B-8: View of net set B at site KM-04.

APPENDIX C - DATASHEETS

Table C-1: Net Site Data

Site ID	Lead Biologist	Night	Net Sets	Net A Habitat	Net B Habitat	Total Net Area (M^2)	Survey Start Time	Survey End Time	Dominant Vegetation	Latitude	Longitude
KM-01	Josiah Maine	5/22/2024	2	Stream	Corridor	124.8	20:30	01:30	Honey locust, eastern cottonwood, Osage orange	39.608524	-94.3491465
KM-01	Josiah Maine	5/23/2024	2	Stream	Corridor	124.8	20:33	01:33	Honey locust, eastern cottonwood, Osage orange	39.608524	-94.3491465
KM-02	Josiah Maine	5/20/2024	2	Stream	Corridor	109.2	20:30	01:30	Silver maple, common hackberry, black willow	39.61771	-94.3285081
KM-02	Josiah Maine	5/21/2024	2	Stream	Corridor	109.2	20:30	01:30	Silver maple, common hackberry, black willow	39.61771	-94.3285081
KM-03	Cara Rogers	5/22/2024	2	Corridor	Corridor	163.8	20:33	01:35	Mulberry, Osage orange, poison ivy	39.600197	-94.3288061
KM-03	Cara Rogers	5/23/2024	2	Corridor	Corridor	163.8	20:35	01:35	Mulberry, Osage orange, poison ivy	39.600197	-94.3288061
KM-04	Cara Rogers	5/20/2024	2	Pond	Pond	109.2	20:45	01:45	Slippery elm, sycamore, reed canary grass, poison ivy	39.615198	-94.3243042
KM-04	Cara Rogers	5/21/2024	2	Pond	Pond	109.2	20:30	01:31	Slippery elm, sycamore, reed canary grass, poison ivy	39.615198	-94.3243042

Table C-2: Net Set Data

Site ID	Net Letter	Stacked Nets	Net Width (M)	Net Area (M^2)	Habitat	Latitude	Longitude
KM-01	A	2	6	31.2	Stream	39.609141	-94.348321
KM-01	B	3	12	93.6	Corridor	39.608304	-94.349054
KM-02	A	1	6	15.6	Stream	39.617261	-94.328456
KM-02	B	3	12	93.6	Corridor	39.617503	-94.328474
KM-03	A	3	9	70.2	Corridor	39.599792	-94.328586
KM-03	B	3	12	93.6	Corridor	39.599494	-94.32892
KM-04	A	2	9	46.8	Pond	39.615214	-94.324949
KM-04	B	2	12	62.4	Pond	39.615504	-94.324773

Table C-3: Weather Data

Site	Night	Time	Temperature (°F)	Sky Code	Wind Code	Number of Bats
KM-01	5/22/2024	21:00	65.5	0	0	0
KM-01	5/22/2024	22:04	58.1	0	0	0
KM-01	5/22/2024	23:02	56.3	0	0	0
KM-01	5/22/2024	0:03	55.4	0	0	0
KM-01	5/22/2024	0:53	55.2	0	0	0
KM-01	5/23/2024	20:50	75.2	0	1	0
KM-01	5/23/2024	21:46	73.2	1	1	0
KM-01	5/23/2024	23:13	73.3	3	1	0
KM-01	5/23/2024	0:03	74.1	3	1	0
KM-01	5/23/2024	1:03	55.2	3	1	0
KM-02	5/20/2024	21:50	74.9	1	1	0
KM-02	5/20/2024	22:29	73.8	1	1	0
KM-02	5/20/2024	23:30	73.9	3	2	0
KM-02	5/20/2024	0:33	72.8	2	2	0
KM-02	5/20/2024	1:21	73.3	2	2	0
KM-02	5/21/2024	20:45	66	3	2	0
KM-02	5/21/2024	21:28	62.5	2	2	0
KM-02	5/21/2024	22:23	61	1	2	0
KM-02	5/21/2024	23:33	58.4	1	1	0
KM-02	5/21/2024	0:31	58.5	1	1	0
KM-03	5/22/2024	20:29	66	0	1	0
KM-03	5/22/2024	21:36	64	0	1	0
KM-03	5/22/2024	22:22	62	0	1	0
KM-03	5/22/2024	23:33	60	0	1	0
KM-03	5/22/2024	0:22	59	0	1	0
KM-03	5/22/2024	1:17	58	0	1	0
KM-03	5/23/2024	20:29	73	1	1	0
KM-03	5/23/2024	23:01	71	1	2	0
KM-04	5/21/2024	20:25	66	1	2	0
KM-04	5/21/2024	22:16	62	1	2	0
KM-04	5/21/2024	23:18	61	0	1	0
KM-04	5/21/2024	0:55	59	0	1	0
KM-04	5/21/2024	1:26	59	0	1	0
KM-04	5/22/2024	21:16	73	0	1	0
KM-04	5/22/2024	22:38	71	3	1	0
KM-04	5/22/2024	23:42	71	2	2	0
KM-04	5/22/2024	1:02	71	2	2	0

September 12, 2024

Ms. Kathryn Bulliner
Energy Coordinator
U.S. Fish & Wildlife Service
101 Park Deville Drive, Suite A
Columbia, Missouri 65203

Re: Acoustic Bat Survey Report for the Turney Waterline Addition in Clinton County, Missouri

Dear Ms. Bulliner:

Burns & McDonnell (Burns & McDonnell) has been retained by Associated Electric Cooperation, Inc. (AECI) to conduct environmental surveys for the Turney Energy Center Project (Project). AECI is considering constructing a simple-cycle combustion turbine in Clinton County, Missouri. The Project will include a waterline that will connect to the main turbine facility. The Project is located approximately 1.5 miles south of Turney, Missouri (Figure 1). The initial review of protected species information for the Project indicated that potential habitat for Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), and tricolored bat (*Perimyotis subflavus*) may be impacted by the tree clearing activities.

A mist-net survey was conducted along the Project transmission line route, gas pipeline route, generation site, and substation site in May 2024, with the results submitted to your office. No Indiana bats, northern long-eared bats, or tricolored bats were documented during the mist-net survey. In July 2024, an additional component was added to the Project for a water line. Accordingly, Burns & McDonnell conducted presence/probable absence surveys for Indiana bat, northern long-eared bat, and tricolored bat along the waterline using acoustic methods.

Methods

The following methods were included in a survey plan submitted to the Missouri field office of the U.S. Fish & Wildlife Service (USFWS) on August 4, 2024, and approved on August 5, 2024. The survey protocol followed the 2024 USFWS *Rangewide Indiana Bat and Northern Long-eared Bat Survey Guidelines* (Guidelines).

The level of effort specified in the Guidelines on linear projects is four detector-nights per kilometer of suitable habitat. One one-kilometer segment of suitable habitat occurs along the Project route. Burns & McDonnell biologists deployed a detector at one location for four nights. The location of the deployed detector was determined in

the field and based on site conditions. The detector location is shown in Figure 1 in Attachment 1.

The detector model used was a Wildlife Acoustics SM Mini Bat unit with the integrated omnidirectional microphone. Site 1 was located at a forest edge near a river (Table 1; photographs in Attachment 2). The microphone was elevated 2-3 meters above ground level, at least 3 meters from obstructions and with minimal clutter within 10 meters. The detector was set to record from 30 minutes before sunset to 30 minutes after sunrise. The detector was placed on August 5, 2024, and was retrieved on August 9, 2024, recording 4 nights of data.

Recordings were made in full spectrum, with settings optimized for detection of Indiana bat, northern long-eared bat, little brown bat, and tricolored bat (Table 2). Settings were carefully assessed in the field to determine that the detectors would be operating properly. Log files and acoustic data were also reviewed following data retrieval to confirm that the detectors were operating as planned.

Table 1: Acoustic survey site coordinates and habitat

Site	Lat	Long	Microphone Orientation	Habitat
1	39.61607	-94.36251	West	Forest Edge

Table 2: Key settings for the acoustic detectors used for acoustic bat surveys

Setting Type	Setting[1]
Detector model	Wildlife Acoustics SM Mini Bat
Nightly recording time	0.5-hour before sunset to 0.5-hour after sunrise
Recording format	Full-spectrum .wav
Sample frequency	256 kHz
Minimum trigger frequency	16 kHz
Trigger level	12 dB

[1] All other settings were default values for recording bats.

Bat calls were classified to species using Kaleidoscope Pro version 5.6.6 with the Bats of North America classifier version 5.4.0 with a -1 (more sensitive) setting. If Kaleidoscope indicated likely presence ($p < 0.05$) of Indiana bat, northern long-eared bat, or tricolored bat, all bat calls from that site and night would be reviewed

manually by Cara Rogers and Josiah Maine. Call characteristics would be compared to known representative calls and known call parameters to determine species.

Weather data such as temperature and wind speed were collected from the online resource Weather Underground at weather station KEZZ located at approximately 39.72° N, -94.28° W.

Results

Weather during the survey period included temperatures ranging from 58.3 degrees Fahrenheit to 94.1 degrees Fahrenheit, and wind speeds of 0 to 17 miles per hour (www.mesowest.com). Temperatures did not drop below 50 degrees Fahrenheit during the survey period. Winds did not exceed 9 miles per hour for more than 30 minutes. No rain occurred throughout the sampling period.

At the site, five species were determined to be potentially present by the Kaleidoscope Pro classifier: big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and little brown bat (*Myotis lucifugus*). The classifier did not indicate likely presence of Indiana bat, northern long-eared bat, or tricolored bat for any night. Therefore, qualitative analysis (manual review) was not needed.

Data tables with detailed analysis results for each site and night are included in Attachment 3.

Table 3: Presence/probable absence results for the acoustic sites

Common Name	Scientific Name	Site 1[a]
Big brown bat	*Eptesicus fuscus*	P
Eastern red bat	*Lasiurus borealis*	P
Hoary bat	*Lasiurus cinereus*	P
Silver-haired bat	*Lasionycteris noctivagans*	P
Little brown bat	*Myotis lucifugus*	P
Northern long-eared bat	*Myotis septentrionalis*	A
Indiana bat	*Myotis sodalis*	A
Evening bat	*Nycticeius humeralis*	A
Tricolored bat	*Permyotis subflavus*	A

[a]: Presence; A: Probable Absence
Presence determined by Kaleidoscope Pro, as indicated by MLE less than 0.05, or by manual review as applicable.

Conclusion

Acoustic surveys were conducted at one site for the Project, in accordance with USFWS Guidelines. Indiana bat, northern long-eared bat, and tricolored bat were determined to be likely absent based on automated identification results.

If you have any questions or comments regarding this report, please contact me by phone at 980-875-1271 or by email at crogers@burnsmcd.com.

Sincerely,

Cara Rogers

Cara Rogers, PER0037840
Biologist
Burns & McDonnell

Josiah Maine, PER0003355
Senior Environmental Scientist
Burns & McDonnell

Attachments:

- Attachment 1 – Figures
- Attachment 2 - Photographs
- Attachment 3 – Data Tables

cc: Rob LeForce, AECI
Keslie Inman, AECI
Chris Howell, Burns & McDonnell

ATTACHMENT 1 – FIGURES

Service Layer Credits: Light Gray Base: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS

Acoustic Detector Location

Project Area

NORTH

1,000 500 0 1,000

Scale in Feet

BURNS McDONNELL

Figure 1
General Location
Turney Energy Center Project
AECI
Clinton County, Missouri

Source: Esri, Associated Electric Cooperative, Inc., and Burns & McDonnell

Issued: 8/28/2024

ATTACHMENT 2 - PHOTOGRAPHS

Photograph 1: View of acoustic detector at Site 1, facing west.

Photograph 2: View of acoustic detector at Site 1, facing west.

Turney Energy Center AECI	BURNS McDONNELL	Bat Acoustic Survey Photographs August 5, 2024 Randolph County, Missouri

ATTACHMENT 3 – DATA TABLES

Table 3-1: Automated Classification Results Of Acoustic Bat Data Collected At Site 1 The Nights Of August 5 through August 8, 2024.

Species[a]	Night 1		Night 2		Night 3		Night 4	
	Files	MLE[b]	Files	MLE[b]	Files	MLE[b]	Files	MLE[b]
EPFU	24	<0.01	11	<0.01	3	0.54	7	<0.01
LABO	48	<0.01	21	<0.01	36	<0.01	32	<0.01
LACI	11	<0.01	1	1	10	<0.01	14	<0.01
LANO	6	1	5	0.53	6	0.29	1	1
MYLU	285	<0.01	71	<0.01	364	<0.01	29	<0.01
MYSE	2	1	2	1	5	1	2	1
MYSO	15	1	8	1	9	1	4	1
NYHU	24	1	7	1	8	1	14	1
PESU	3	1	2	1	6	1	3	1
UNKN	9		3		12		1	
Noise	87		112		88		20	
Total Bat Files[c]	427		131		459		107	

[a]EPFU: Big brown bat (*Eptesicus fuscus*); LABO: Eastern red bat (*Lasiurus borealis*); LACI: Hoary bat (*Lasiurus cinereus*); LANO: Silver-haired bat (*Lasionycteris noctivagans*); MYLU: Little brown bat (*Myotis lucifugus*); MYSE: Northern long-eared bat (*Myotis septentrionalis*); MYSO: Indiana bat (*Myotis sodalis*); NYHU: Evening bat (*Nycticeius humeralis*); PESU: Tricolored bat (*Perimyotis subflavus*); UNKN: Unknown bat.

[b]Maximum Likelihood Estimator: values less than 0.05 indicate “likely presence” as determined by Kaleidoscope Pro. Final determination of presence/absence may differ due to manual vetting.

[c]Does not include the Noise category in the Total.

Table 3-7: Weather Conditions During The First 5 Hours Of Sampling Each Night.

Night	Low Temperature (°F)	Wind Speed > 9 MPH for > 30 Minutes	Precipitation for > 30 Minutes
8/5/2024	77.7	No	No
8/6/2024	66.9	No	No
8/7/2024	66.7	No	No
8/8/2024	59.7	No	No

Source: Weather data for Cameron, Missouri (Weather Station KEZZ), retrieved from MesoWest (https://mesowest.utah.edu/).

APPENDIX D – PROJECT CORRESPONDENCE

Associated Electric Cooperative, Inc.
www.aeci.org • 417-881-1204 • FAX 417-885-9252
2814 S. Golden, P.O. Box 754 Springfield, Missouri 65801-0754

September 5, 2024

Kansas City District
United States Army Corp of Engineers
601 East 12th Street Room 641
Kansas City, MO 64106

Re: Turney Energy Center Environmental Assessment

Dear Madam or Sir:

Associated Electric Cooperative, Inc. (AECI) is seeking financial assistance from the USDA Rural Development, Rural Utilities Service (RUS) under the RUS Electric Program for the Turney Energy Center, a new natural gas-fired, simple-cycle electric generating facility (Project). In anticipation of National Environmental Policy Act (NEPA), Clean Air Act, Endangered Species Act, and National Historic Preservation Act compliance, the purpose of this letter is to introduce the Project and gather information from your office on preliminary concerns, if any, for consideration in this compliance process. RUS has determined that an Environmental Assessment (EA) is the appropriate NEPA class of action for this Project pursuant to 7 Code of Federal Regulations § 1970.101. RUS has delegated transmittal of Agency Scoping letters to AECI and their consultant Burns & McDonnell per 7 CFR 1970.5(b)(2). This letter serves to notify you of the Project and to request your input.

The Project would be located near Turney, Missouri (Project Site; **Figure 1**). The Project would consist of a single Advanced Class simple-cycle gas turbine generator and associated equipment with a nominal capacity of 420-445 MW. The Project would burn natural gas with the capability to use fuel oil as a backup and employ selective catalytic reduction (SCR) technology to control emissions of nitrogen oxides. The approximately 95.5 acres that AECI owns, of which, approximately 45 acres will be disturbed for construction of the generation site and approximately 37 acres will ultimately be fenced, is shown in Figure 1. The generation will be interconnected via construction of approximately 2 miles of electrical line between the generation site and a proposed substation. Either AECI or N.W. Electric Cooperative, Inc. will construct, own, operate, and maintain the transmission line and right-of-way (ROW) to the approximately 45.5 acres substation that AECI will own and operate. Approximately 2.5 miles of existing distribution electrical line will be reconstructed within existing ROW to supply power back to the generation site. Additionally, an approximately 1,000-foot natural gas lateral off the existing Rocky Mountain Express Pipeline would need to be constructed on the generation site to supply natural gas to the Project. Approximately 1.5 miles of water line would be needed to supply water to the Project and surrounding community, with a portion being upgraded and a portion being constructed.

Table 1: Project Site Assessment Summary

Parameter	Site Assessment Summary
Location	Missouri/Clinton County
Site Latitude / Longitude	39°36'44.77"N / 94°20'56.37"W (approximate center point of Project)
Total Project Boundary	Approximately 160 acres
Wetlands	Approximately 3.5 acres
Waterbodies	Approximately 3 acres

The project has been submitted for Jurisdictional Determination through USACE Kansas City Office; Approved Jurisdictional Determination (AJD) review number is NWK-2024-00508. A desktop assessment of National Wetland Inventory ("NWI")[1] data indicates the potential presence of riverine wetlands and NWI freshwater ponds within the proposed Project Site. The wetlands in the vicinity of the Project were photo interpreted by the USFWS NWI program using color infrared imagery from 1981. A total of 5 palustrine unconsolidated bottom (PUB) wetlands and 18 riverine wetlands were mapped within the Survey Area. The National Hydrography Dataset (NHD) also shows there are 14 stream crossings within the Study Area. A field survey was conducted in April 2024 to determine if onsite wetlands are present that would be under the jurisdiction of the U.S. Army Corp of Engineers or the State of Missouri. Five wetlands and seventeen streams were identified during the delineation efforts. To avoid the need for a Section 404 Permit from the USACE, the proposed project should be designed to avoid all impacts to potentially jurisdictional waters. Conscious design decisions will help avoid these to the largest extent practical. If impacts to jurisdictional features cannot be avoided entirely, then should be minimized, and a Section 404 Nationwide Permit from the USACE would be required.

AECI requests your review of this Project and asks that you provide information on any concerns, resources, or potential impacts that you believe the forthcoming EA should address. We would appreciate any recommendations you may have to mitigate or avoid environmental impacts. Also, please share any information regarding additional review requirements that your agency may have. We would appreciate a response within 30 days of your receipt of this request. To send comments or request further information, please contact me using one of the methods listed below, mentioning the proposed Turney Energy Center Project.

[1] U.S. Fish and Wildlife Service, 2022. National Wetlands Inventory. Retrieved from https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

1. U.S. Fish and Wildlife Service (USFWS). (2022). National Wetlands Inventory. Retrieved November 2022 from https://www.fws.gov/wetlands/

Contact Information

U.S. Postal Service	2814 S. Golden Ave. Springfield MO 65807
Email	rleforce@aeci.org
Telephone Hotline	(417) 371-5463

Sincerely,

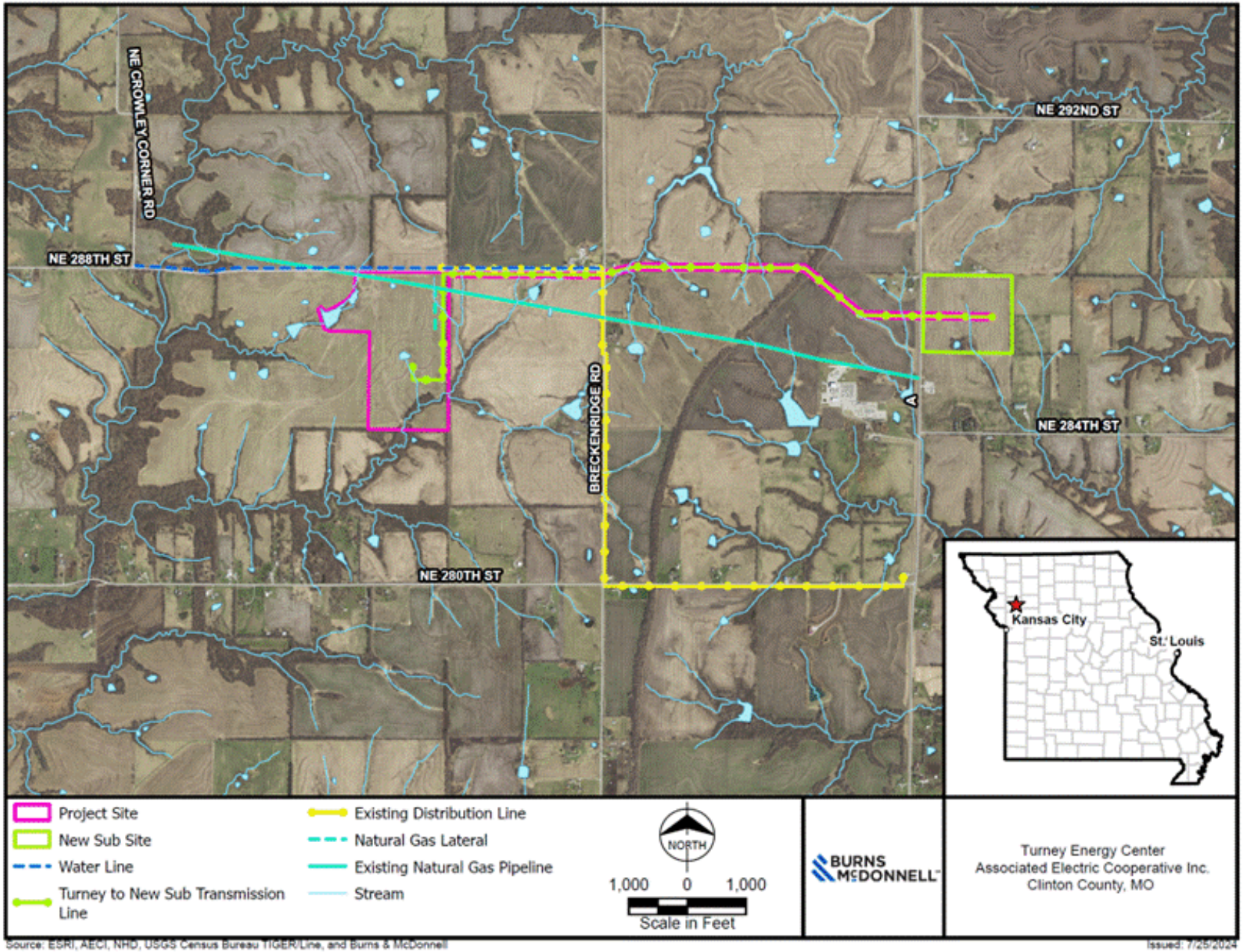
Rob LeForce, B.W.
Environmental Analyst, Land and Water Resources, AECI

Enclosure Figure 1: AECI Project Site

cc: Tate Thriffiley, RUS
Chris Howell, Burns & McDonnell

1. U.S. Fish and Wildlife Service (USFWS). (2022). National Wetlands Inventory. Retrieved November 2022 from https://www.fws.gov/wetlands/

Figure 1: AECI Project Site



July 19, 2024

David R. Hibbs
Chief, Regulatory Branch
U.S. Army Corps of Engineers, Kansas City District
Kansas City Regulatory Office
601 East 12th Street, Room 402
Kansas City, Missouri 64106

Re: Approved Jurisdictional Determination Request for the Turner Energy Center Project

Dear Mr. Hibbs:

On behalf of Associated Electric Cooperative, Inc., Burns & McDonnell respectfully requests an approved jurisdictional determination (AJD) of an approximately 112-acre (Project Area) portion of the proposed Turney Energy Center Project (Project) in Clinton County, Missouri. The proposed Project would include construction of a natural gas-fired simple-cycle electrical generation plant, a new water supply pipeline, an onsite natural gas lateral line, an electrical distribution line upgrade, an electrical interconnection line build, and a new substation. The entire Project is approximately 188 acres; however, this request is regarding the Project Area shown in the attached figure. This request is in advance of a detailed design, and final development of the Project.

To support this request for an AJD, the following documents are attached:

1. Request for Corps Jurisdictional Determination form (Form RGL 16-01)
2. ORM Table Amended to the 2023 Rule
3. Project Area Figure
4. Wetland Delineation Report of the Project

Your response is most appreciated. If you have any questions or need additional information, please contact Christa Wisniewski by phone at 816-652-2970 or by email at cfwisniewski@burnsmcd.com.

Sincerely,

Christa Wisniewski
Natural Resource Section Manager

9400 Ward Parkway \ Kansas City, MO 64114
o 816-333-9400 \ burnsmcd.com

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, KANSAS CITY DISTRICT
601 E. 12TH STREET, 635 FEDERAL BUILDING
KANSAS CITY, MO 64106-2824

February 3, 2025

Regulatory Program
NWK-2024-00508

Ms. Christa Wisniewski
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

Dear Ms. Wisniewski:

This letter is in response to your request submitted on behalf of Associated Electric Cooperative, Incorporated for a Jurisdictional Determination. The site is located in Sections 1 and 2, Township 55 North, Range 31 West; Section 6, Township 55 North, Range 30 West; and Section 36, Township 56 North, Range 31 West, Clinton County, Missouri. Your request has been assigned Regulatory File No. NWK-2024-00508. Please reference this file number on any correspondence to us or to other interested parties concerning this matter.

This letter contains an approved jurisdictional determination for your project site. This jurisdictional determination is valid for a 5-year period from the date of this letter unless new information warrants revision of the determination before the expiration date. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Administrative Appeal Options and Process and Request for Appeal (NAO-RFA) form. If you request to appeal this determination, you must submit a completed NAO-RFA form to the Northwestern Division Office at the following address:

Division Engineer
U.S. Army Corps of Engineers, Northwestern Division
ATTN: Melinda M. Larsen
Regulatory Appeals Review Officer
1201 NE Lloyd Blvd., Suite 400
Portland, OR 97232
Telephone: 503-808-3888

In order for an NAO-RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAO-RFA. Should you decide to submit an NAO-RFA form, it must be received at the above address by April 4, 2025. It is not necessary to submit an NAO-RFA form to the Division Office if you do not object to the determination in this letter.

In the event that you disagree with an approved jurisdictional determination, and you have **new information** not considered in the original determination, you may request reconsideration of that determination by the Corps District prior to initiating an appeal. To request this reconsideration based upon new information, you must submit the completed NAO-RFA form and the new information to the District Office so that it is received within 60 days of the date of the NAO-RFA. Send approved jurisdictional determination reconsideration requests to:

District Commander
ATTN: David R. Hibbs
Chief, Regulatory Branch
U.S. Army Engineer District, Kansas City
601 East 12th Street, Suite 402
Kansas City, MO 64106-2824
Voice: 816-389-3990 – FAX: 816-389-2032

The Corps of Engineers has jurisdiction over all waters of the United States. Discharges of dredged or fill material in waters of the United States, including wetlands, require prior authorization from the Corps under Section 404 of the Clean Water Act (33 USC 1344). The implementing regulation for this Act is found at 33 CFR 320-332.

We are interested in your thoughts and opinions concerning your experience with the Kansas City District, Corps of Engineers Regulatory Program. Please feel free to complete our Customer Service Survey form on our website at: https://regulatory.ops.usace.army.mil/customer-service-survey/. You may also call and request a paper copy of the survey which you may complete and return to us by mail.

If you have any questions concerning this matter, please feel free to write or contact me at 816-389-3739 or by email at jesse.s.cochran@usace.army.mil. Please reference Regulatory File No. NWK-2024-00508 in all comments and/or inquiries relating to this project. This letter is only being provided to you electronically at: cfwisniewski@burnsmcd.com.

Sincerely,

Mr. Jesse Cochran
Project Manager

Enclosures

cc (electronically w/o enclosures):

Environmental Protection Agency,
Watershed and Grants Branch
U.S. Fish and Wildlife Service, Columbia, Missouri
Missouri Department of Natural Resources,
Water Protection Program
State Historic Preservation Office
Missouri Department of Conservation

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, KANSAS CITY DISTRICT
601 E. 12TH STREET, 635 FEDERAL BUILDING
KANSAS CITY, MO 64106-2824

CENWK-ODR 3 February 2025

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] NWK-2024-00508.

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[2] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[3] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[4] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of "waters of the United States" found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 "Revised Definition of 'Waters of the United States,'" as amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable in the State of Missouri due to litigation.

[1] While the Supreme Court's decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.
[2] 33 CFR 331.2.
[3] Regulatory Guidance Letter 05-02.
[4] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

1. SUMMARY OF CONCLUSIONS.

   a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

      i. Channel 1, 745 linear feet (lf), Jurisdictional, Section 404
      ii. Channel 2, 1154lf, Jurisdictional, Section 404
      iii. Channel 3a, 109lf, Non-Jurisdictional
      iv. Channel 3b, 170lf, Non-Jurisdictional
      v. Channel 4, 131lf, Non-Jurisdictional
      vi. Channel 5, 115lf, Non-Jurisdictional
      vii. Channel 6, 136lf, Non-Jurisdictional
      viii. Channel 7a, 100lf, Jurisdictional, Section 404
      ix. Channel 7b, 69lf, Non-Jurisdictional
      x. Channel 8, 50lf, Non-Jurisdictional
      xi. Channel 9, 55lf, Non-Jurisdictional
      xii. Channel 10, 48lf, Non-Jurisdictional
      xiii. Channel 11, 55lf, Non-Jurisdictional
      xiv. Channel 12a, 100lf, Jurisdictional, Section 404
      xv. Channel 12b, 167lf, Non-Jurisdictional
      xvi. Channel 13, 129lf, Non-Jurisdictional
      xvii. Channel 14, 103lf, Non-Jurisdictional
      xviii. Channel 15, 125lf, Non-Jurisdictional
      xix. Channel 16, 104lf, Non-Jurisdictional
      xx. Channel 17, 444lf, Jurisdictional, Section 404
      xxi. Pond 1, 1.85 acres (ac), Jurisdictional, Section 404
      xxii. Pond 6, 0.12ac, Non-Jurisdictional
      xxiii. Wetland 2, 1.39ac, Jurisdictional, Section 404
      xxiv. Wetland 3, 0.25ac, Non-Jurisdictional
      xxv. Wetland 5, 0.06ac, Non-Jurisdictional

2. REFERENCES.

   a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

   b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

   c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

e. Coordination Memo for the Pre-2015 regulatory regime (27 September 2023)

3. REVIEW AREA. Approximately 166 acres (ac); Lat. 39.61250, Long. -94.34934; Kansas City, Clay County, Missouri. See attached map.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS CONNECTED. The nearest downstream TNWs are the Platte River (for the westward draining portions of the review area) and the Grand River (for the eastward draining portions of the review area), Section 10 navigable waters of the U.S. The Platte River and Grand River are referenced on the District webpage under the Section 10 Navigable Waters list.[5]

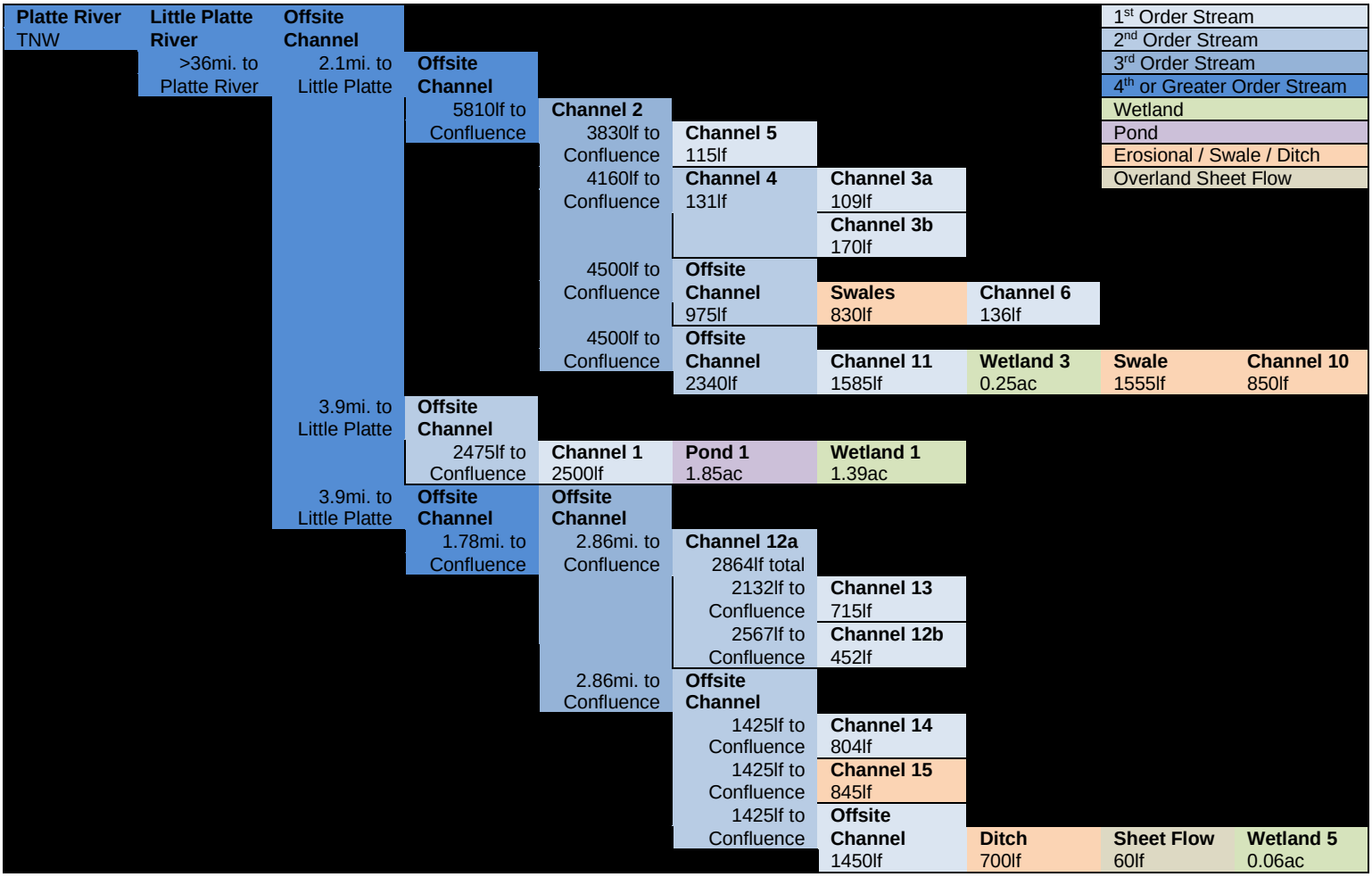
5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS

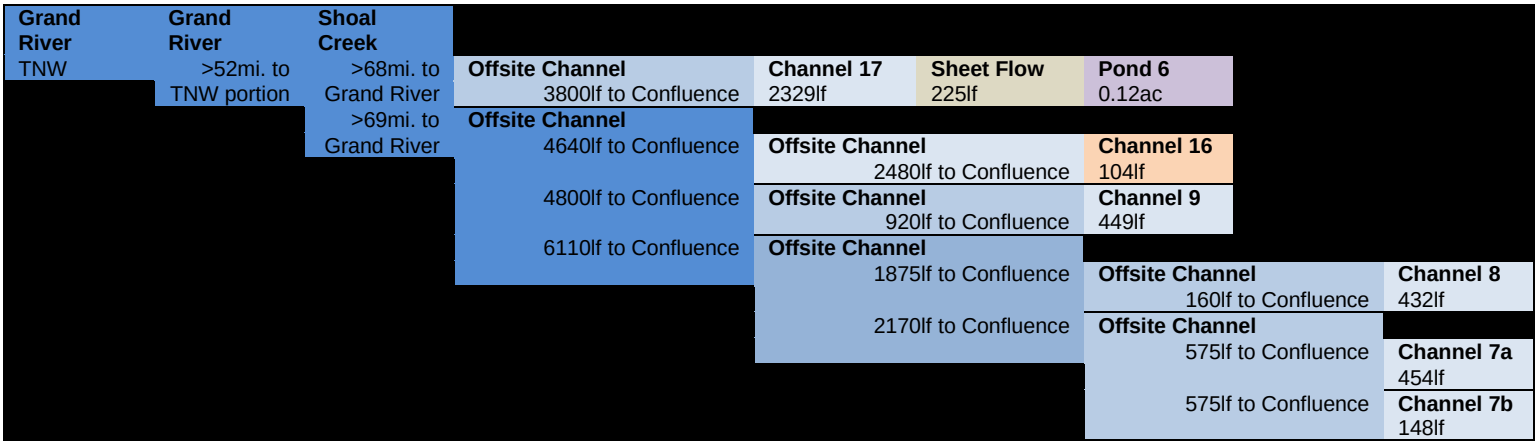
   Channels 1, 2, 3a, 3b, 4, 5, 6, 10, 11, 12a, 12b, 13, 14, and 15, Pond 1, and Wetlands 2 and 3 are all within drainages that flow north and west between 3,485lf and 3.1mi before entering an unnamed tributary to the Little Platte River. From these confluences, the tributary flows between 2.1mi and 3.9mi before draining into the Little Platte River. From there flow continues >36mi, through Smithville Lake, and into the Platte River (TNW).

   Channels 7a, 7b, 8, 9, 16, and 17, Pond 6, and Wetland 5 are all within drainages that flow southeast between 3,800lf and 8,016lf before entering Shoal Creek. From there Shoal Creek continues >69mi to its confluence with the Grand River. The Grand River then flows >52mi to where it becomes a TNW approximately 3mi upstream of its confluence with the Missouri River.

   The following table depicts the connections between onsite and offsite waters as they flow to their respective TNWs.

[5] This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.


Platte River
TNW
Little Platte River
>36mi. to Platte River
Offsite Channel
2.1mi. to Little Platte
Offsite Channel
5810lf to Confluence
Channel 2
3830lf to Confluence
Channel 5
115lf
4160lf to Confluence
Channel 4
131lf
Channel 3a
109lf
Channel 3b
170lf
4500lf to Confluence
Offsite Channel
975lf
Swales
830lf
Channel 6
136lf
4500lf to Confluence
Offsite Channel
2340lf
Channel 11
1585lf
Wetland 3
0.25ac
Swale
1555lf
Channel 10
850lf
3.9mi. to Little Platte
Offsite Channel
2475lf to Confluence
Channel 1
2500lf
Pond 1
1.85ac
Wetland 1
1.39ac
3.9mi. to Little Platte
Offsite Channel
1.78mi. to Confluence
Offsite Channel
2.86mi. to Confluence
Channel 12a
2864lf total
2132lf to Confluence
Channel 13
715lf
2567lf to Confluence
Channel 12b
452lf
2.86mi. to Confluence
Offsite Channel
1425lf to Confluence
Channel 14
804lf
1425lf to Confluence
Channel 15
845lf
1425lf to Confluence
Offsite Channel
1450lf
Ditch
700lf
Sheet Flow
60lf
Wetland 5
0.06ac
1st Order Stream
2nd Order Stream
3rd Order Stream
4th or Greater Order Stream
Wetland
Pond
Erosional / Swale / Ditch
Overland Sheet Flow


Grand River
TNW
Grand River
>52mi. to TNW portion
Shoal Creek
>68mi. to Grand River
Offsite Channel
3800lf to Confluence
Channel 17
2329lf
Sheet Flow
225lf
Pond 6
0.12ac
>69mi. to Grand River
Offsite Channel
4640lf to Confluence
Offsite Channel
2480lf to Confluence
Channel 16
104lf
4800lf to Confluence
Offsite Channel
920lf to Confluence
Channel 9
449lf
6110lf to Confluence
Offsite Channel
1875lf to Confluence
Offsite Channel
160lf to Confluence
Channel 8
432lf
2170lf to Confluence
Offsite Channel
575lf to Confluence
Channel 7a
454lf
575lf to Confluence
Channel 7b
148lf

6. SECTION 10 JURISDICTIONAL WATERS[6]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[7] N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the pre-2015 regulatory regime. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

    a. TNWs (a)(1): N/A

    b. Interstate Waters (a)(2): N/A

    c. Other Waters (a)(3): N/A

    d. Impoundments (a)(4):

        Pond 1 is a 1.85ac impoundment within Channel 1. As Channel 1 has been found to be a jurisdictional relatively permanent water (RPW) (see Part 7.e below), Pond 1 is therefore an impoundment of an RPW and also jurisdictional.

    e. Tributaries (a)(5):

[6] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.

[7] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

In order to analyze the flow duration of the tributaries listed, the following information was collected. Onsite photos provided by the agent were dated 22 April 2024; results from the Corps Antecedent Precipitation Tool (APT) found average normal precipitation conditions for a wet season of the year in a mild drought, with more than 2 inches of rain in 3-5 days previous. While many aerial images were observed, only three other dates were more closely analyzed, being chosen since the majority of channels were most observable in aerial images; 12 April 2020, 11 March 2015, and 31 March 2008. The APT found that on 12 April 2020 precipitation conditions were average and normal for a wet season of the year in a period of severe wetness, with 0.4 inches of rain having fallen the same day. The APT found that on 11 March 2015 precipitation conditions were above average but still normal for a wet season of the year in a period of mild wetness, but with no recent rain having occurred. This aerial appeared to have been taken later in the day with longer deeper shadows making it more challenging to interpret the presence of water in some channels. The APT found that on 31 March 2008 conditions were average and normal for a wet season of the year in a period of mild wetness, with 0.1 inches of rain having fallen the same day.

The stream channel reaches were separated by Strahler Stream Order and evaluated based on the onsite images provided by the agent, and the aerial images described above. Evaluation of the flow regime for each reach was then completed based on assessment of the flow duration that best characterizes the majority of the individual stream reach extents.

Channel 1 drains approximately 74ac. It flows for approximately 745lf within the review area before entering Pond 1, and continues downstream and offsite through another pond for a total length of approximately 2,500lf. Onsite photos show it as a somewhat narrow but deeply eroded channel with a well defined ordinary high water mark (OHWM). Onsite photos and three aerial images indicated the regular presence of water within the channel during the spring months at a minimum, despite precipitation conditions. These factors indicated that Channel 1 is at least a seasonal RPW, and is jurisdictional.

Channel 2 drains approximately 513ac. It flows for approximately 1,154lf within the review area and continues downstream and offsite for a total length of approximately 4,500lf. Onsite photos show it as a flowing channel with a well defined OHWM, and alongside three aerial images, these indicated the regular presence of water within the channel during the spring months at a minimum, despite precipitation conditions. These factors indicated that Channel 2 is at least a seasonal RPW, and is jurisdictional.

Channel 7a drains approximately 35ac. It flows for approximately 100lf within the review area to its confluence with Channel 7b, and extends upstream and offsite for a total length of approximately 545lf. Three aerial images indicated the likely presence of an OHWM and water within the channel during the spring months at a minimum, despite precipitation conditions. These factors indicated that Channel 7a is at least a seasonal RPW, and is jurisdictional.

Channel 12a drains approximately 182ac. It flows for approximately 100lf within the review area and extends both up and downstream and offsite for a total length of approximately 2,405lf. Three aerial images indicated the likely presence of an OHWM and water within the channel during the spring months at a minimum, despite precipitation conditions. These factors indicated that Channel 12a is at least a seasonal RPW, and is jurisdictional.

Channel 17 drains approximately 67ac. It flows for approximately 444lf within the review area and continues downstream and offsite for a total length of approximately 2,329lf. Onsite photos show it the upper end as a poorly defined channel holding water, but alongside three aerial images, these indicated the regular presence of an OHWM and water within the majority of the offsite channel during the spring months at a minimum, despite precipitation conditions. These factors indicated that Channel 17 is at least a seasonal RPW, and is jurisdictional.

Based on review of all the data collected above we have determined that Channels (1, 2, 7a, 12a, & 17) are relatively permanent waters with at least seasonal flows. Based on meeting the characteristics of a relatively permanent water, connecting indirectly through the tributary system to the downstream TNW, these channels satisfy the definition of (a)(5) tributaries and are jurisdictional.

f. The territorial seas (a)(6): N/A

g. Adjacent wetlands (a)(7):

Wetland 2 covers approximately 1.39ac and physically touches/abuts Channel 1 (RPW), constituting a continuous surface connection to an RPW. Wetland 2 is therefore adjacent to an RPW and jurisdictional.

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as “generally non-jurisdictional” in the preamble to the 1986 regulations (referred

to as "preamble waters").[8] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water. N/A

b. Describe aquatic resources and features within the review area identified as "generally not jurisdictional" in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA based on the criteria listed in the guidance.

The 2008 Rapanos guidance states, "In addition, ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water are generally not waters of the United States because they are not tributaries, or they do not have a significant nexus to downstream traditional navigable waters." Note this is a three-part test to determine if a ditch falls within the "generally not jurisdictional" language: 1) excavated wholly in uplands, 2) draining only uplands, and 3) that do not carry relatively permanent flow of water.

Channel 10 consists of a ditch along the east side of a former railroad bed that crosses perpendicular to Northeast 280th Road; it was constructed in uplands prior to 1957. Approximately 48lf of Channel 10 were within the review area (the utility right-of-way), extending north and south along the east side of the former railroad bed for a total of approximately 850lf. A review of LiDAR imagery indicates the Channel 10 is near the top of the hill and was not excavated within a former stream or wetland. Topographic, NWI, and NHD mapping all fail to identify any streams rerouted by Channel 10, or any upgradient waters draining into Channel 10. This information confirms that channel 10 was constructed in, and only drains uplands. Onsite photos indicated a narrow poorly defined and vegetated channel lacking a clear OHWM with little or no water present following over 2 inches of rain across the previous week, indicating the ditch has non-relatively permanent flow; Channel 10 appears to only flow in direct response to precipitation and does not flow at least seasonally. Based on these factors, Channel 10 is consistent with a non-RPW, non-jurisdictional ditch constructed in uplands.

Channel 15 consists of an erosional feature that is intermittently plowed and farmed through for the majority of its length. It flows for approximately 125lf within the review area, with onsite photos in the unfarmed section indicating a shallow, poorly defined muddy depression lacking a clear OHWM and little or no apparent water following with over 2 inches of rain across the previous week.

[8] 51 FR 41217, November 13, 1986.

NWI and NHD mapping identifies a stream channel through the area, but LiDAR and aerial images back to 1957 fail to show consistent bed and bank formation, with regular farming through the channel. Based on these factors, Channel 15 is consistent with a non-RPW, non-jurisdictional erosional feature characterized by low volume, infrequent, or short duration flow.

Channel 16 consists of an erosional feature that has formed within an agricultural swale; however, it is not consistently observable throughout the swale in all aerial images. It flows for approximately 104lf within the review area. Onsite photos indicate a shallow barely defined and vegetated depression lacking a clear OHWM and with little or no apparent water following with over 2 inches of rain across the previous week. NWI and NHD mapping identifies a stream channel through the area, but LiDAR and aerial images back to 1957 fail to show bed and bank formation within the swale in all but a few instances. Based on these factors, Channel 16 is consistent with a non-RPW, non-jurisdictional erosional feature / swale characterized by low volume, infrequent, or short duration flow.

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference 2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland. N/A

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in "*SWANCC*," would have been jurisdictional based solely on the "Migratory Bird Rule." Include the size of the aquatic resource or feature, and how it was determined to be an "isolated water" in accordance with *SWANCC*.

Pond 6 covers approximately 0.12ac, and is an isolated manmade water, constructed in uplands prior to 1957. A review of multiple years of aerial imagery (1957 to present) and an analysis of LiDAR imagery provided no evidence of channels flowing into or out of Pond 6. Topographic, NWI, and NHD mapping all fail to identify channels flowing in, out, or through Pond 6. As such there has been no evidence found to indicate that Pond 6 is an impoundment of a historic or current RPW, and this analysis finds it to be an isolated water located on

private property with no potential to be used by interstate or foreign travelers for recreational purposes, produce fish or shellfish which are or could be taken and sold in interstate or foreign commerce, or be used for industrial purposes by industries in interstate commerce. Based on these factors, Pond 6 is considered a non-jurisdictional water.

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett* (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).

Observations of these channels were made using the methods, onsite images, and aerial images as described in section 7.e.

Channel 3a drains approximately 14ac and flows for approximately 109lf to its confluence with Channel 3b at the head of Channel 4. Onsite photos indicated a narrow OHWM with erosive vertical banks and a small amount of flow following over 2 inches of rain across the previous week. The small size of the feature precluded its visibility under tree cover in aerial images. Based on the small drainage area, the landscape position, and the site photos, this channel does not have continuous flow at least seasonally and is therefore a non-jurisdictional non-relatively permanent water.

Channel 3b drains approximately 15ac and flows for approximately 170lf to its confluence with Channel 3a at the head of Channel 4. Channel 4 drains approximately 30ac and flows for approximately 131lf to its confluence with Channel 2. The provided delineation combined Channels 3b and 4 into one feature, and the onsite photo was imprecise as to its exact location. Regardless, the photo indicated a narrow OHWM with erosive vertical banks and flow following over 2 inches of rain across the previous week. The small size of the features precluded their visibility under tree cover in aerial images. Based on the small drainage area, the landscape position, and the site photos, this channel does not have continuous flow at least seasonally and is therefore a non-jurisdictional non-relatively permanent water.

Channel 5 drains approximately 10ac and flows for approximately 115lf to its confluence with Channel 2. Onsite photos indicated a narrow OHWM with erosive vertical banks but without obvious flow following over 2 inches of rain across the previous week. The small size of the feature precluded its visibility under tree cover in aerial images. Based on the small drainage area, the

landscape position, and the site photos, this channel does not have continuous flows at least seasonally and is therefore a non-jurisdictional non-relatively permanent water.

Channel 6 drains approximately 11ac. It flows for approximately 136lf within the review area. It is fed from the northwest by an erosional feature that is intermittently plowed and farmed through and around at points; and it loses definition southeast of the review area where it drains through a swale before reaching a tributary to Channel 2. Onsite photos indicated a shallow, poorly defined muddy depression lacking clear bank features; the only indication of an OHWM being the lack of vegetation across the muddy bottom, though it was unclear if this was merely due to sediment deposition from the adjacent field. No apparent water was observed in the channel following over 2in of rain across the previous week. Three aerial images where the channel was visible were observed, these indicated inconsistent presence of water within the channel even immediately following rain events. The small drainage area, weak OHWM features, and lack of evidence of at least seasonal flow is consistent with a non-RPW and non-jurisdictional channel. Channel 6 does not have continuous flow at least seasonally and is therefore not jurisdictional.

Channel 7b drains approximately 7ac. It flows for approximately 69lf within the review area to its confluence with Channel 7a, and extends upstream and offsite for a total length of approximately 148lf. The provided delineation combined Channels 7a and 7b into one feature, and the onsite photo was imprecise as to its exact location. Regardless, the photo indicated a narrow and shallow OHWM with water present following over 2 inches of rain across the previous week. Three aerial images where the channel was visible were observed, these indicated inconsistent presence of water within the channel even immediately following rain events. The small drainage area, narrow and shallow bed and banks, and lack of evidence of at least seasonal flow is consistent with a non-RPW and non-jurisdictional channel. Channel 7b does not have continuous flow at least seasonally and is therefore not jurisdictional.

Channel 8 drains approximately 11ac. It flows for approximately 50lf within the review area and extends downstream and offsite for a total length of approximately 432lf. Onsite photos indicated a shallow, poorly defined, densely vegetated, muddy depression, lacking strong OHWM features, and with little or no apparent water following over 2 inches of rain across the previous week. Three aerial images where the upper end of the channel was visible were observed, these failed to indicate the presence of water within the channel even immediately following rain events. The small drainage area, weak OHWM features, and lack of evidence of at least seasonal flow is consistent with a non-

RPW and non-jurisdictional channel. Channel 8 does not have continuous flow at least seasonally and is therefore not jurisdictional.

Channel 9 drains approximately 22ac. It flows for approximately 55lf within the review area and extends downstream and offsite for a total length of approximately 449lf (including around 170lf within a pond). Onsite photos indicated a narrow and shallow OHWM with water present following over 2 inches of rain across the previous week. Three aerial images where the upper end of the channel was visible were observed, these failed to indicate the presence of water within the channel except immediately after rainfall. The relatively permanent segment of the channel was only present within the pond and represented the minority of channel length. The small drainage area, narrow and shallow bed and banks, and lack of evidence of at least seasonal flow in the majority of the channel is consistent with a non-RPW and non-jurisdictional channel. Channel 9 does not have continuous flow at least seasonally and is therefore not jurisdictional.

Channel 11 drains approximately 122ac. It flows for approximately 55lf within the review area and extends downstream and offsite for a total length of approximately 1,585lf. Onsite photos indicated a shallow, poorly defined muddy depression lacking clear bank features; the only indication of an OHWM being the lack of vegetation across the muddy bottom, though it was unclear if this was merely due to sediment deposition from the adjacent field. A small amount of receding water following over 2 inches of rain across the previous week. Three aerial images where the channel was visible were observed, these only indicated the presence of water within the channel immediately following rain events. The weak OHWM features and lack of evidence of at least seasonal flow are consistent with a non-RPW and non-jurisdictional channel. Channel 11 does not have continuous flow at least seasonally and is therefore not jurisdictional.

Channel 12b drains approximately 14ac. It flows for approximately 167lf within the review area and extends upstream and offsite for a total length of approximately 452lf. Onsite photos indicated a shallow, poorly defined muddy depression lacking clear bank features; the only indication of an OHWM being the lack of vegetation across the muddy bottom. No apparent water following over 2 inches of rain across the previous week. Three aerial images where the channel was visible were observed, these only indicated the presence of water within the channel immediately following rain events. The small drainage area, weak OHWM features, and lack of evidence of at least seasonal flow is consistent with a non-RPW and non-jurisdictional channel. Channel 12b does not have continuous flow at least seasonally and is therefore not jurisdictional.

Channel 13 drains approximately 16ac. It flows for approximately 129lf within the review area and extends downstream and offsite for a total length of approximately 715lf. Onsite photos indicated a narrow OHWM with erosive vertical banks and water present following over 2 inches of rain across the previous week. Three aerial images where the channel was visible were observed, these only indicated possible presence of water within the channel immediately following rain events. Based on the small drainage area, the landscape position, and the site photos, this channel does not have continuous flows at least seasonally and is therefore a non-jurisdictional non-relatively permanent water.

Channel 14 drains approximately 18ac. It flows for approximately 103lf within the review area and extends up and downstream and offsite for a total length of approximately 804lf. Onsite photos indicated a narrow OHWM with erosive vertical banks and water present following over 2 inches of rain across the previous week. Three aerial images where the channel was visible were observed, these only indicated inconsistent possible pooling of water within the channel primarily following rain events. Based on the small drainage area, the landscape position, and the site photos, this channel does not have continuous flows at least seasonally and is therefore a non-jurisdictional non-relatively permanent water.

Taking into account the annual rainfall, drainage areas, and locations of these channels within the landscape, they have been identified as ephemeral streams that do not receive flow more than in direct response to precipitation. Even taking into account cases where aerial images were less definitive, these channels still did not have continuous flow at least seasonally and are therefore not jurisdictional.

Wetland 3, covering approximately 0.25ac in the review area, has formed entirely within the confines of the east roadside ditch of Northeast Breckenridge Road. Wetland 3 abuts the head of Channel 11 at its crossing under Northeast Breckenridge Road. Channel 11 is a non-relatively permanent stream which conveys flow approximately 1,585lf before reaching the downstream RPW. Army/EPA Joint Memorandum on NWK-2024-00392 explains that “As the length of the connection increases, even with stronger indicators of flow (including actual flow, indicators of ordinary high water mark, etc.), the length of the connection can become no longer physically close (see Sackett, 598 U.S. at 667, referenced above), such that the discrete features are no longer providing a continuous physical connection.” After consideration of flow, the types, and the lengths of connection between Wetland 3 and it’s downstream RPW, it is not physically close enough to meet the continuous surface connection requirement.

Thus, Wetland 3 does not have a continuous surface connection to the downstream relatively permanent tributary and, consistent with Sackett, it is not "adjacent." Wetland 3 is not a jurisdictional water of the United States.

Wetland 5 covers approximately 0.06ac in the review area and is a depression in an agricultural field. A review of multiple years of aerial imagery (1957 to present) and an analysis of LiDAR imagery, topographic, NWI, and NHD mapping provided no evidence of channels or swales flowing into or out of Wetland 5. Should Wetland 5 discharge, the overland sheetflow would drain north before connecting with a ditch along the former railroad (~700lf), then west through a poorly defined drainage (~1,450lf), before entering a likely RPW (~1,425lf) with similar characteristics to Channel 12a (which it joins). Based on these factors, Wetland 5 is considered a non-jurisdictional feature lacking a continuous surface connection to any jurisdictional waters.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

   a. "Turney Energy Center Wetland Delineation Report" created by Burns & McDonnell and dated 28 May 2024.

   b. Topographic and Aerial Images on Google Earth Pro; 17 dates between 28 February 1996 and 20 May 2023. Particular dates evaluated in more detail were 12 April 2020, 11 March 2015, and 31 March 2008.

   c. Historic aerial images from The State Historical Society of Missouri, dated 1957 and 1969.

   d. Onsite Photos provided by Agent, dated 22 April 2024.

   e. Precipitation Condition Records from the Corps Antecedent Precipitation Tool, dated 28 May 2024, 12 April 2020, 11 March 2015, and 31 March 2008.

   f. LiDAR imagery and NWI and NHD mapping from the Corps Northwest Division GIS Map Viewer.

10. OTHER SUPPORTING INFORMATION.

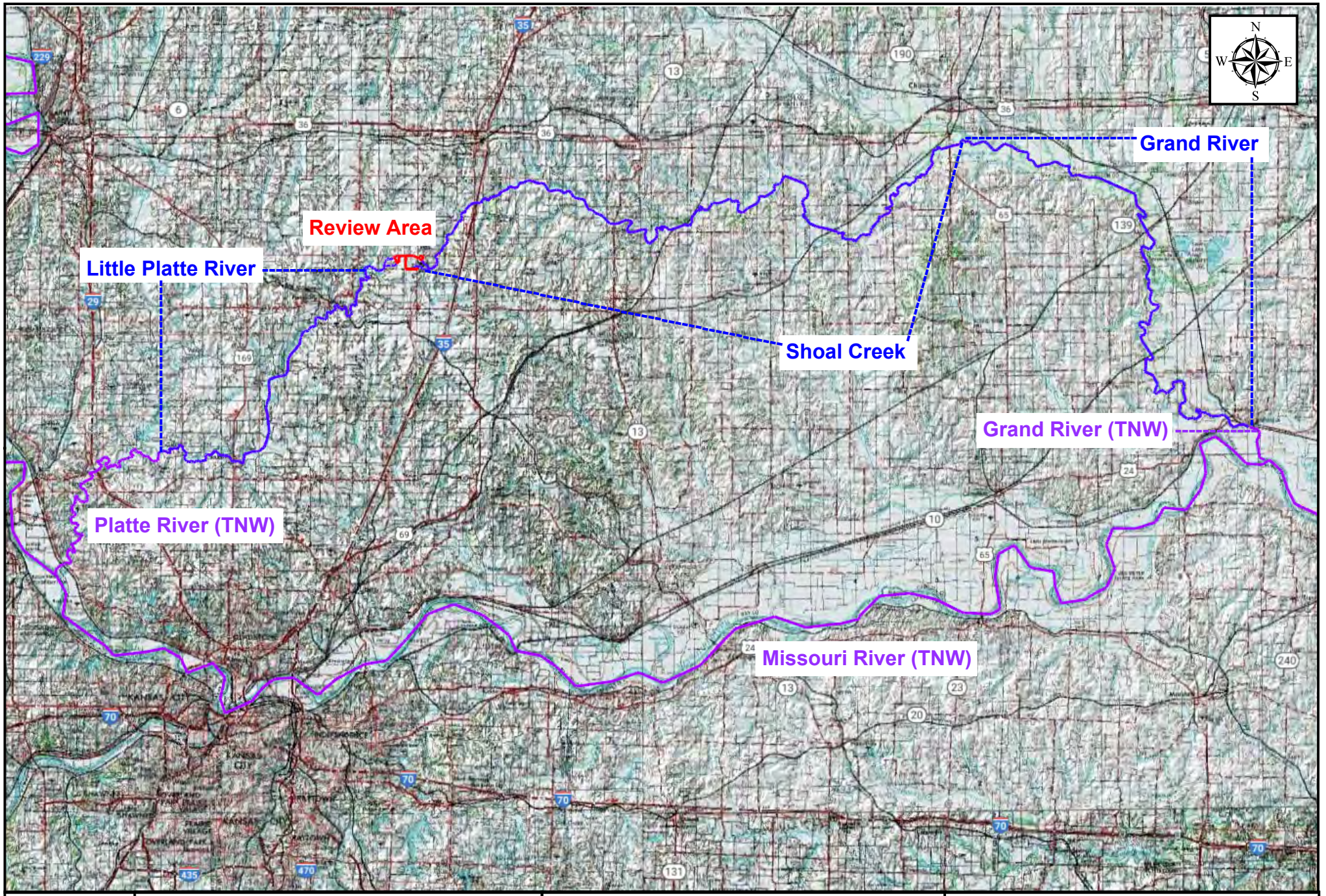
   a. Army/EPA Joint Memorandum on NWK-2024-00392 - Headquarters Field Memo implementing the Pre-2015 Regulatory Regime Consistent with Sackett (November 21, 2024)

b. Prior JDs covering a portion of the site include:

NWK-2006-01992 identified wetlands in the vicinity or Channel 16 and uphill near the head of Channel 17.

NWK-2024-00173 was a PJD that identified the presence of Pond 6 and segments of Channel 17.

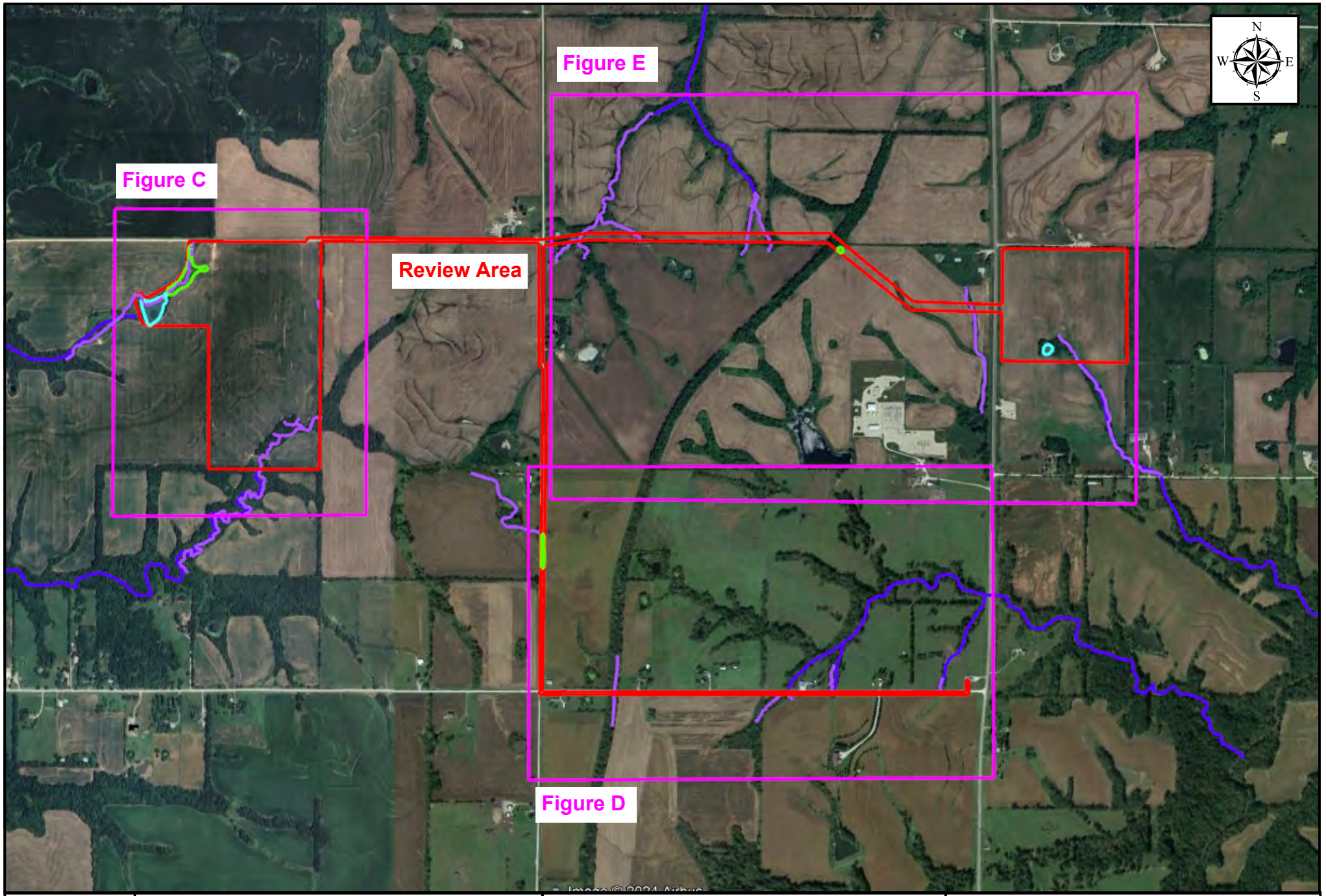
11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.



NWK-2024-00508 - Figure A
Approved Jurisdictional Determination
Topographic and Flowpath Map

Lat. 39.61250, Long. -94.34934

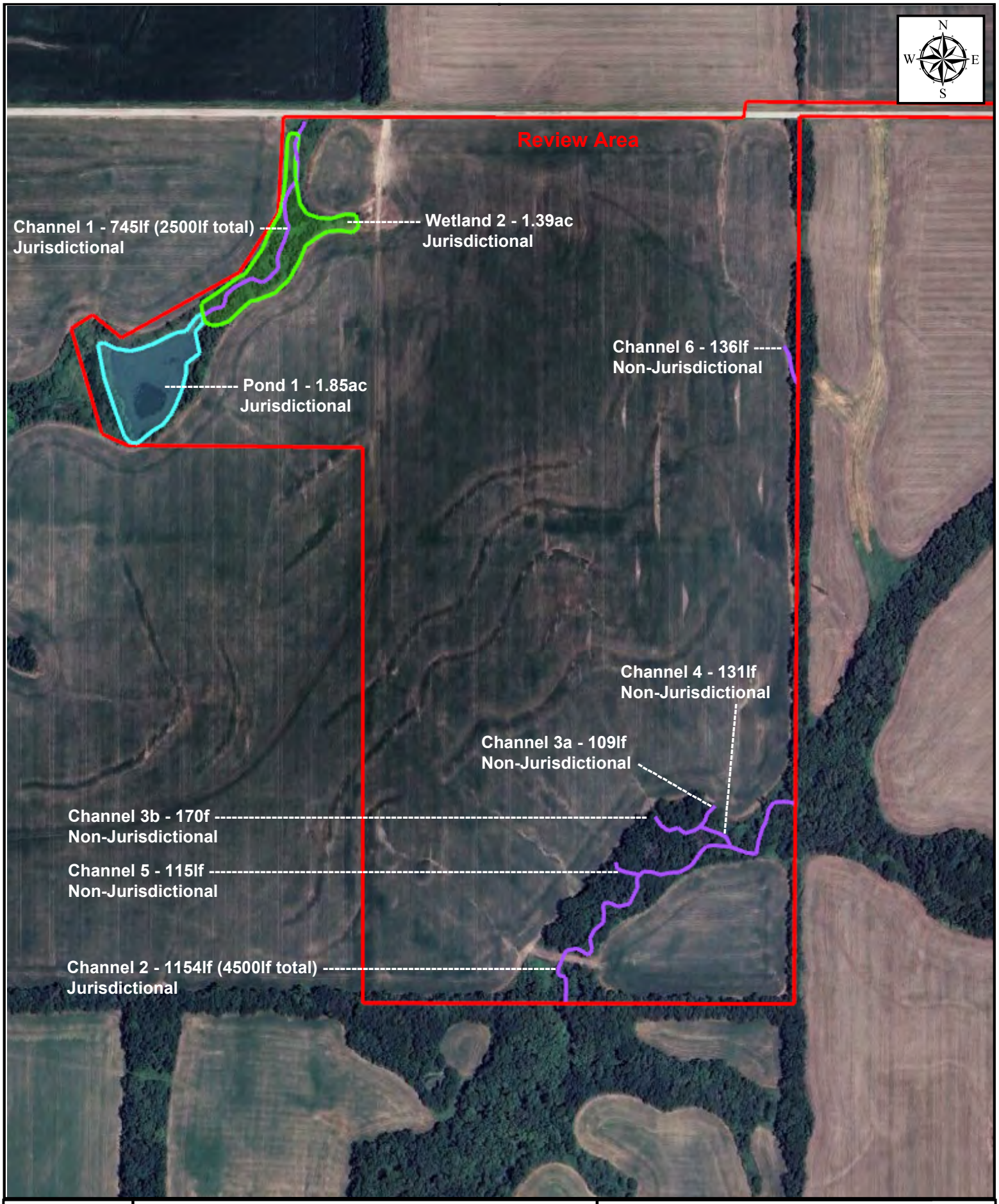
Source: Burns & McDonnell & Google Earth Pro
Created: 29 August 2024



NWK-2024-00508 - Figure B
Approved Jurisdictional Determination
Aerial Image & Review Area Map

Lat. 39.61250, Long. -94.34934

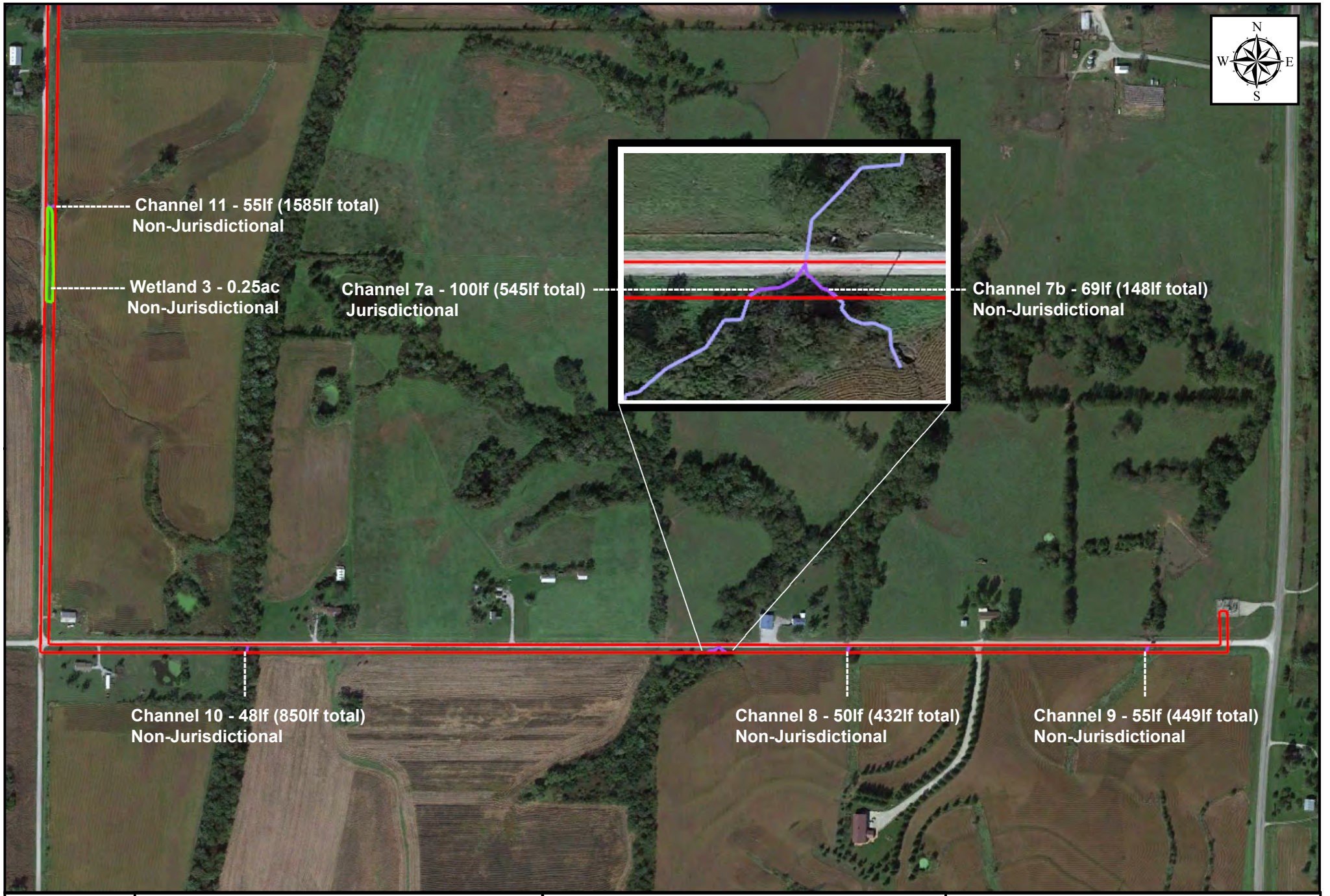
Source: Burns & McDonnell & Google Earth Pro
Created: 29 August 2024



NWK-2024-00508 - Figure C
Approved Jurisdictional Determination
Aerial Image & Waters Map

Lat. 39.61250, Long. -94.34934

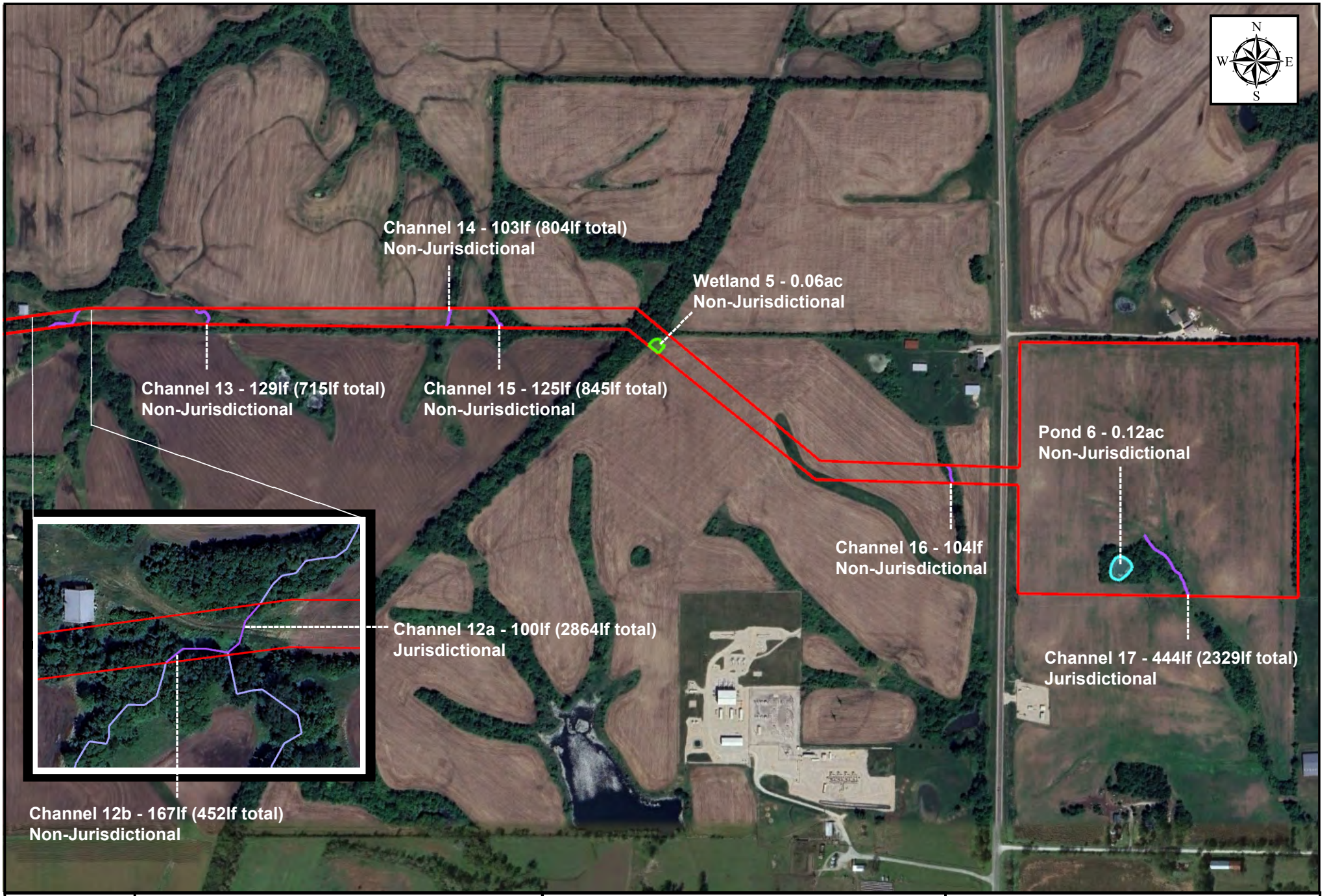
Source: Burns & McDonnell & Google Earth Pro
Created: 29 August 2024



NWK-2024-00508 - Figure D
Approved Jurisdictional Determination
Aerial Image & Waters Map

Lat. 39.61250, Long. -94.34934

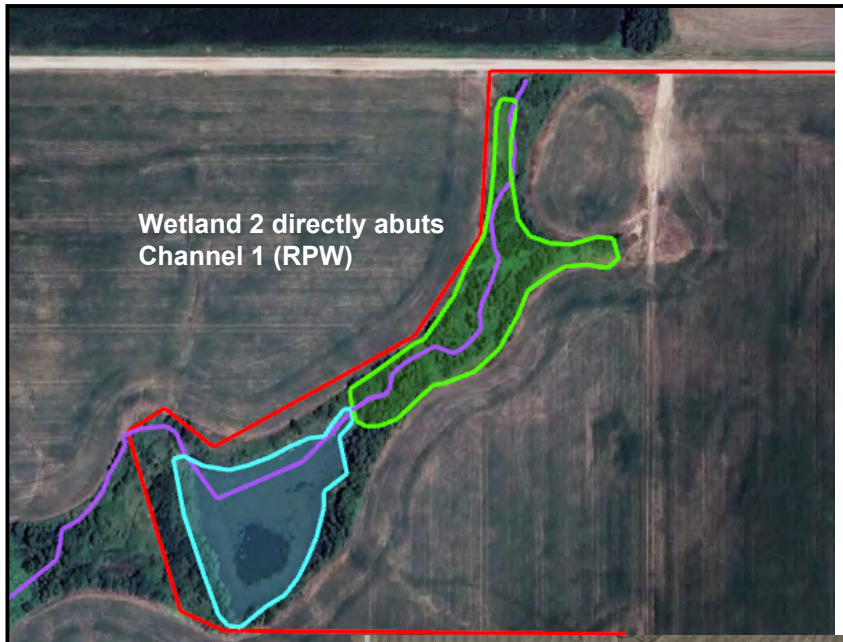
Source: Burns & McDonnell & Google Earth Pro
Created: 29 August 2024

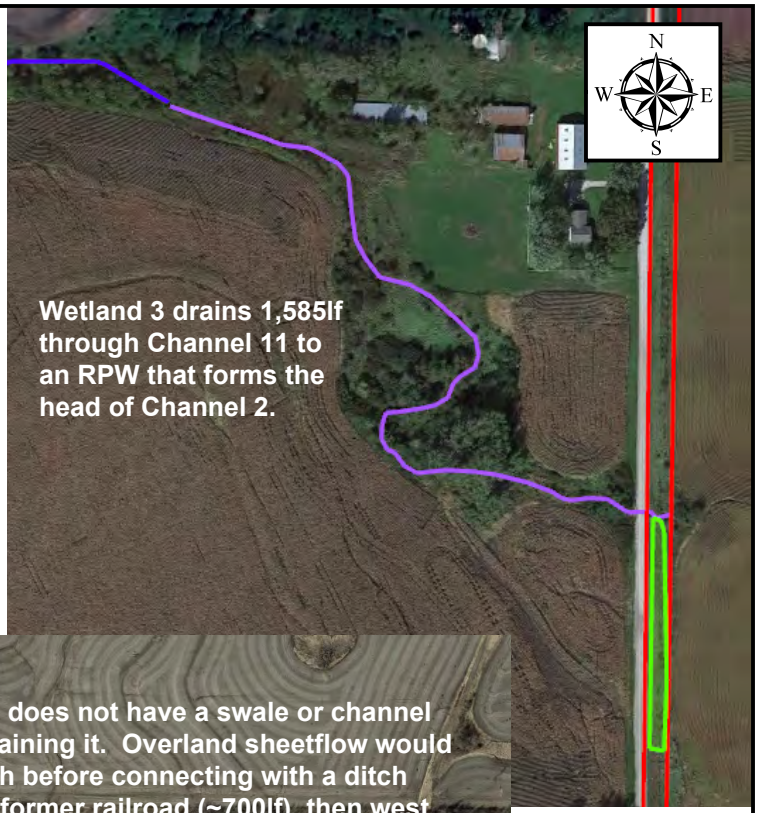


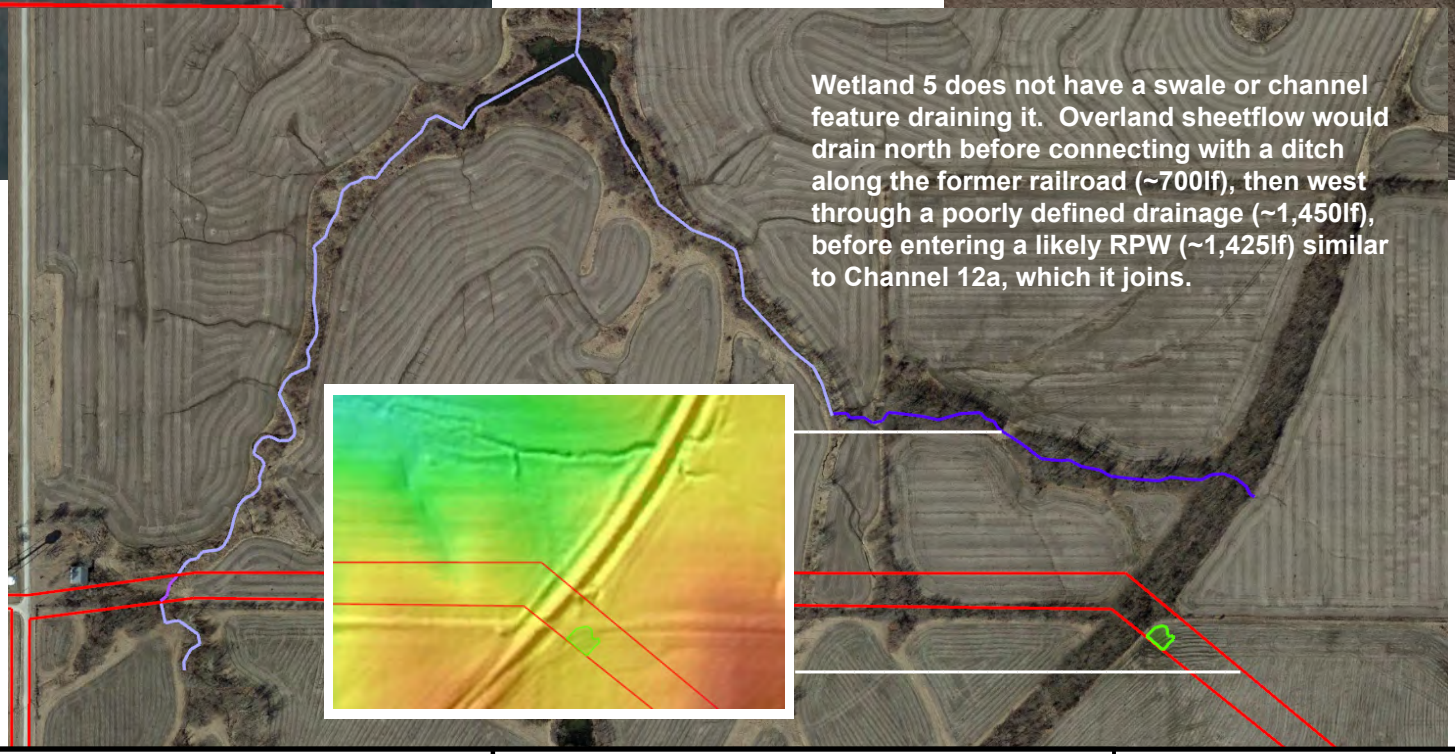
NWK-2024-00508 - Figure E
Approved Jurisdictional Determination
Aerial Image & Waters Map

Lat. 39.61250, Long. -94.34934

Source: Burns & McDonnell & Google Earth Pro
Created: 29 August 2024



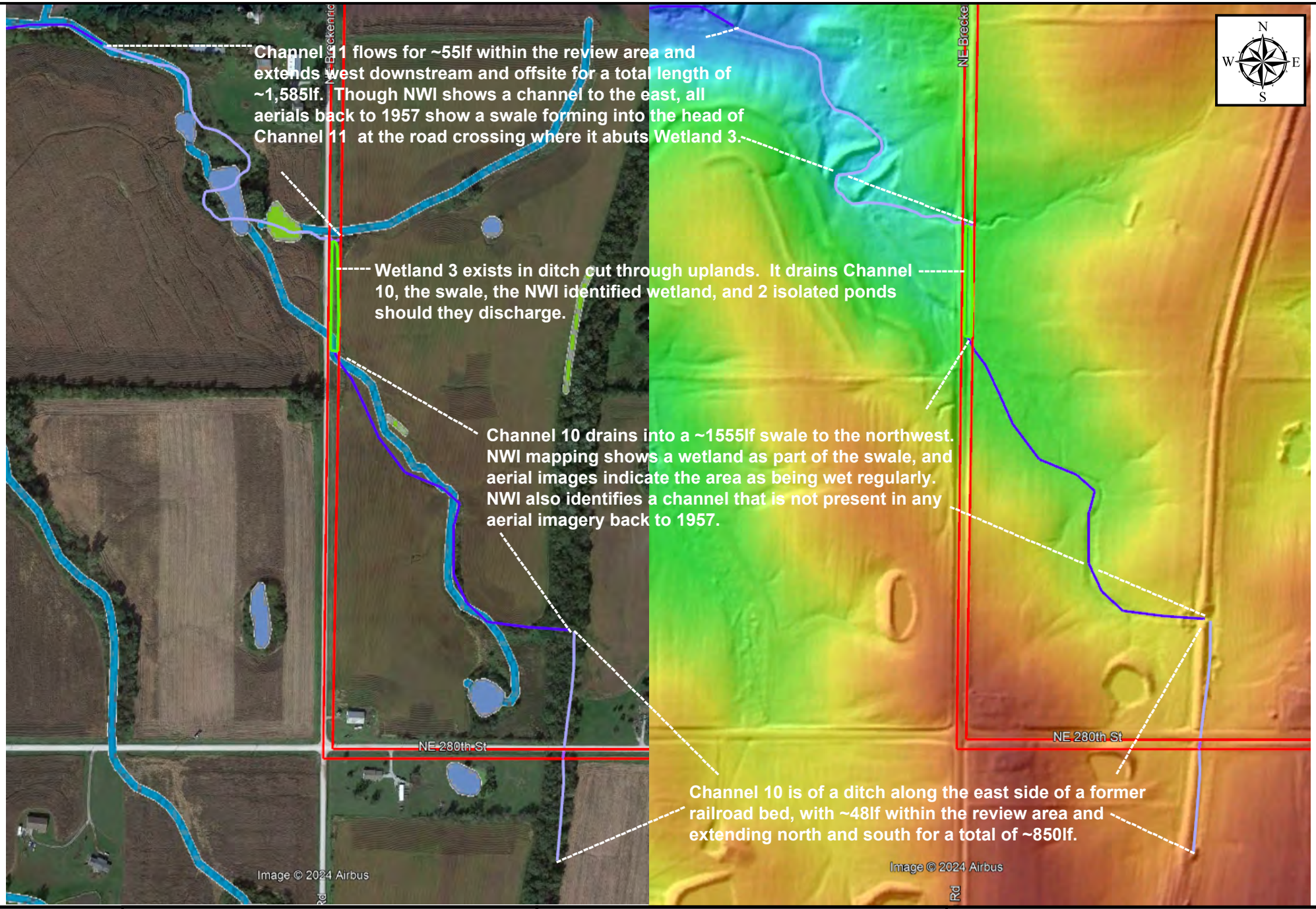




NWK-2024-00508 - Figure F
Approved Jurisdictional Determination
Wetland Drainage Maps

Lat. 39.61250, Long. -94.34934

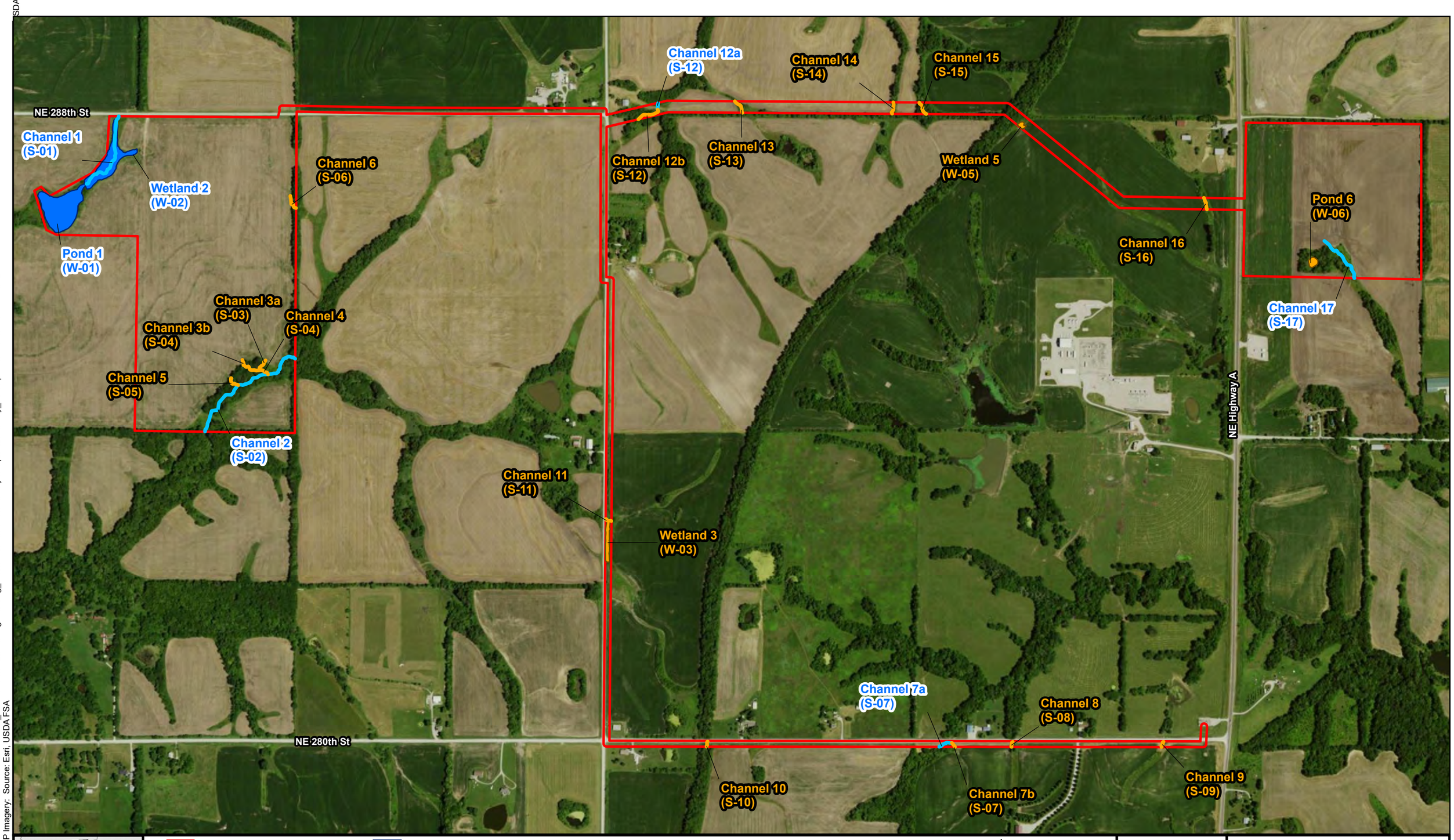
Source: Burns & McDonnell & Google Earth Pro
Created: 29 August 2024



NWK-2024-00508 - Figure G
Approved Jurisdictional Determination
Aerial, LiDAR, & NWI Maps

Lat. 39.61250, Long. -94.34934

Source: Burns & McDonnell & Google Earth
Pro Created: 21 October 2024



Project Area
USACE Jurisdictional Stream
Non-Jurisdictional Stream
USACE Jurisdictional Wetland
Non-Jurisdictional Wetland

NORTH

750 375 0 750

Scale in Feet

BURNS McDONNELL

Figure 1
USACE Jurisdictional Wetlands and Other Water Resources
Turney Energy Center
Associated Electric Cooperative, Inc.
Clinton County, Missouri

Issued: 2/4/2025

Source: ESRI, Associated Electric Cooperative, Inc., and Burns & McDonnell

Path: \\bmcd.burnsmcd.com\dfs\Clients\BTS\AEC\141827_GasPlantDev\Consulting\Working_Files\ENS\Wetlands\Turney\Shapefiles\Turney_AJD.aprx cfwisniewski 2/4/2025
Service Layer Credits: NAIP Imagery: Source: Esri, USDA FSA

Outlook

RE: [EXTERNAL] RE: Turney Energy Center EA - USFWS

From Bulliner, Kathryn M <kathryn_bulliner@fws.gov>
Date Thu 11/14/2024 10:57 AM
To Rob LeForce <rleforce@aeci.org>
Cc Tate.Triffiley@usda.gov <Tate.Triffiley@usda.gov>; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>

****EXTERNAL E-MAIL** Think before clicking links or attachments.**

Rob,

My apologies on the delay in providing concurrence for this project. I was getting several mixed up – it has been a busy few months. I see the negative survey results for bats. Please see the concurrence below.

The U.S. Fish and Wildlife Service (Service) has reviewed the information provided in your September 17, 2024, email and other correspondence regarding the proposed Turney Energy Center in Clinton County, Missouri. The Service offers the following comments pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544).

Based on the information provided, the Service concurs with your determination that the proposed project is not likely to adversely affect federally listed species for the Indiana bat, northern long-eared bat, gray bat, and tricolored bat. Additionally, we agree that the project will not jeopardize the continued existence of the monarch butterfly, a candidate species or the proposed threatened wester regal fritillary. Our data indicate that no other federally listed species, proposed species, candidate species, or designated or proposed critical habitat are likely to be impacted by the proposed project action.* Should the scope, timing, or manner of activity change, please contact this office.

Thank you for your interest in the conservation of threatened and endangered species.

Sincerely,

Kathryn

Kathryn Bulliner, PhD (she/her)
Energy Coordinator
Missouri Field Office
U.S. Fish and Wildlife Service
cell: 573-476-9136
office: 281-227-5115

From: Rob LeForce <rleforce@aeci.org>
Sent: Wednesday, November 13, 2024 9:15 AM
To: Bulliner, Kathryn M <kathryn_bulliner@fws.gov>
Cc: Tate.Triffiley@usda.gov; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>
Subject: RE: [EXTERNAL] RE: Turney Energy Center EA - USFWS

Kathryn,

We calculated everything using GIS and we're at 9.1 acres of trees to be cleared.

Respectfully,
Rob

Rob LeForce BW
Environmental Analyst, Land and Water Resources
Associated Electric Cooperative Inc.
2814 S. Golden Ave.
Springfield, MO 65801
O: 417.371.5652

From: Bulliner, Kathryn M <kathryn_bulliner@fws.gov>
Sent: Tuesday, November 5, 2024 1:55 PM
To: Rob LeForce <rleforce@aeci.org>
Cc: Tate.Triffiley@usda.gov; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>
Subject: RE: [EXTERNAL] RE: Turney Energy Center EA - USFWS

Hi Rob,

Thank you for getting this back on the top of my inbox. Is it expected that less than 10 acres of trees will be removed as part of this project? I understand that winter tree clearing will be implemented.

Once I hear back, I can provide concurrence for the project.

Thank you,
Kathryn
Kathryn Bulliner, PhD (she/her)
Energy Coordinator
Missouri Field Office
U.S. Fish and Wildlife Service
cell: 573-476-9136
office: 281-227-5115

From: Rob LeForce <rleforce@aeci.org>
Sent: Tuesday, November 5, 2024 11:55 AM
To: Bulliner, Kathryn M <kathryn_bulliner@fws.gov>
Cc: Tate.Triffiley@usda.gov; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>
Subject: [EXTERNAL] RE: Turney Energy Center EA - USFWS

Kathryn,

I received an auto-reply last week that you were out to training, so following up with an email to bring it to the top of your inbox. Did USFWS need any further information on the Turney Energy Center Project?

Respectfully,
Rob

Rob LeForce BW
Environmental Analyst, Land and Water Resources
Associated Electric Cooperative Inc.
2814 S. Golden Ave.
Springfield, MO 65801
O: 417.371.5652

From: Rob LeForce
Sent: Wednesday, October 30, 2024 11:07 AM
To: 'Bulliner, Kathryn M' <kathryn_bulliner@fws.gov>
Cc: 'Tate.Triffiley@usda.gov' <Tate.Triffiley@usda.gov>; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>
Subject: RE: Turney Energy Center EA - USFWS

Hi Kathryn,

Checking in on this project to see if the information we provided back on 9/17 was able to answer USFWS questions or if further information was needed? Thank you!

Respectfully,
Rob

Rob LeForce BW
Environmental Analyst, Land and Water Resources
Associated Electric Cooperative Inc.
2814 S. Golden Ave.

Springfield, MO 65801
O: 417.371.5652

From: Rob LeForce
Sent: Tuesday, September 17, 2024 3:13 PM
To: Bulliner, Kathryn M <kathryn_bulliner@fws.gov>
Cc: Tate.Triffiley@usda.gov; Howell, Chris <chowell@burnsmcd.com>
Subject: RE: Turney Energy Center EA - USFWS

Kathryn,

Attached is an updated habitat assessment, the one I sent earlier did not have the waterline addressed. I've also included a kmz file here of the waterline; Chris informed me it wasn't on the kmz file I sent previously.

Respectfully,
Rob

Rob LeForce BW
Environmental Analyst, Land and Water Resources
Associated Electric Cooperative Inc.
2814 S. Golden Ave.
Springfield, MO 65801
O: 417.371.5652

From: Rob LeForce
Sent: Tuesday, September 17, 2024 1:55 PM
To: Bulliner, Kathryn M <kathryn_bulliner@fws.gov>
Cc: Tate.Triffiley@usda.gov; Howell, Chris <chowell@burnsmcd.com>
Subject: RE: Turney Energy Center EA - USFWS

Hi Kathryn,

I know you recently received the bat surveys from Cara Rogers from Burns & McDonnell, but I included them here as well to help consolidate documents. Attached you will find:

1. Official IPaC – Project Code 2024-0145147
2. Habitat Assessment from the proposed project
3. Bat Surveys
4. Project kmz file.

With the negative survey results we would not intend to propose any clearing window restrictions associated with the work. Clearing would occur within the 100 ft. right-of-way (ROW) of the transmission lead line (purple line on kmz file), a much narrower ROW (estimate 30 ft) for the water line on the western end of the water line (pink line on kmz file), some minor clearing on the property outline in green on the kmz file. The distribution line (teal on kmz) is an existing line and will be rebuilt, so I expect very minor clearing to occur along its route. The remaining locations are located within fields not containing trees. Overall, I would conservatively estimate approximately eight (8) acres of total clearing. Please let me know if you have any further questions.

Respectfully,

Rob

Rob LeForce BW
Environmental Analyst, Land and Water Resources
Associated Electric Cooperative Inc.
2814 S. Golden Ave.
Springfield, MO 65801
O: 417.371.5652

From: Bulliner, Kathryn M <kathryn_bulliner@fws.gov>
Sent: Thursday, September 12, 2024 8:35 AM
To: Rob LeForce <rleforce@aeci.org>
Cc: Tate.Triffiley@usda.gov; Howell, Chris <chowell@burnsmcd.com>
Subject: Turney Energy Center EA - USFWS

****EXTERNAL E-MAIL** Think before clicking links or attachments.**

Good Morning Rob,

Our office received your letter dated September 5, 2024, regarding Associated Electric Cooperative, Inc. (AECI) proposed Turney Energy Center project in Clinton County, Missouri. Our office has concerns regarding this project include the amount of suitable bat habitat removal for the proposed project. Can you please clarify the amount and timing of this habitat removal? We have records for listed bats within this county. To provide a better understanding of the risk to listed and proposed bat species, please send a kmz or shapefile of the proposed project. We also request the official IPaC consultation number and associated species list letter.

Thank you for the opportunity to review and provide more detail regarding this project.

Kathryn
Kathryn Bulliner, PhD (she/her)
Energy Coordinator
Missouri Field Office
U.S. Fish and Wildlife Service
cell: 573-476-9136
office: 281-227-5115

FWS VALUES
STEWARDSHIP – INTEGRITY – RESPECT – COLLABORATION – INNOVATION

CONFIDENTIALITY NOTICE: This e-mail message is intended for the exclusive use of the addressee(s) listed above. This message and any file(s) attached hereto may contain confidential information that is privileged or otherwise protected from disclosure. If you have received this message in error, please

notify me immediately by return e-mail and promptly delete this message and any attachments from your computer system.

Associated Electric Cooperative, Inc.
www.aeci.org • 417-881-1204 • FAX 417-885-9252
2814 S. Golden, P.O. Box 754 Springfield, Missouri 65801-0754

September 5, 2024

Chris Smith
Air Traffic Specialist
Federal Aviation Administration
901 Locust Street, #501
Kansas City, MO 64106

Re: Turney Energy Center Environmental Assessment

Dear Specialist Smith:

Associated Electric Cooperative, Inc. (AECI) is seeking financial assistance from the USDA Rural Development, Rural Utilities Service (RUS) under the RUS Electric Program for the Turney Energy Center, a new natural gas-fired, simple-cycle electric generating facility (Project). In anticipation of National Environmental Policy Act (NEPA), Clean Air Act, Endangered Species Act, and National Historic Preservation Act compliance, the purpose of this letter is to introduce the Project and gather information from your office on preliminary concerns, if any, for consideration in this compliance process. RUS has determined that an Environmental Assessment (EA) is the appropriate NEPA class of action for this Project pursuant to 7 Code of Federal Regulations § 1970.101. RUS has delegated transmittal of Agency Scoping letters to AECI and their consultant Burns & McDonnell per 7 CFR 1970.5(b)(2). This letter serves to notify you of the Project and to request your input.

The Project would be located near Turney, Missouri (Project Site; **Figure 1**). The Project would consist of a single Advanced Class simple-cycle gas turbine generator and associated equipment with a nominal capacity of 420-445 MW. The Project would burn natural gas with the capability to use fuel oil as a backup and employ selective catalytic reduction (SCR) technology to control emissions of nitrogen oxides. The approximately 95.5 acres that AECI owns, of which, approximately 45 acres will be disturbed for construction of the generation site and approximately 37 acres will ultimately be fenced, is shown in Figure 1. The generation will be interconnected via construction of approximately 2 miles of electrical line between the generation site and a proposed substation. Either AECI or N.W. Electric Cooperative, Inc. will construct, own, operate, and maintain the transmission line and right-of-way (ROW) to the approximately 45.5 acres substation that AECI will own and operate. Approximately 2.5 miles of existing distribution electrical line will be reconstructed within existing ROW to supply power back to the generation site. Additionally, an approximately 1,000-foot natural gas lateral off the existing Rocky Mountain Express Pipeline would need to be constructed on the generation site to supply natural gas to the Project. Approximately 1.5 miles of water line would be needed to supply water to the Project and surrounding community, with a portion being upgraded and a portion being constructed.

Table 1: Project Site Assessment Summary

Parameter	Site Assessment Summary
Location	Missouri/Clinton County
Site Latitude / Longitude	39°36'44.77"N / 94°20'56.37"W (approximate center point of Project)
Total Project Boundary	Approximately 160 acres

A review of the Federal Aviation Administration (FAA) Sectional Aeronautical Chart (SkyVector, 2020), aerial photography, USGS maps, (AirNav, 2020), and other internet sources identified no FAA-registered airports, no private landing strips, and no heliports within a 5-mile radius of the Project Site.

A review of the Federal Communications Commission (FCC) Antenna Structure Registration website identified no FCC-registered antenna within a 1-mile buffer of the Project Site. Two additional ASR towers and two microwave service towers were identified within a five-mile radius of the Project. No obvious aviation and radar constraints were identified for this Project.

AECI anticipates filing the FAA 7460-1 (Notice of Proposed Construction or Alteration) for the Project. Additionally, any structure exceeding 200-feet above ground level will be filed with the FAA in accordance with CFR Title 14 Part 77.9. AECI requests your review of this Project and asks that you provide information on any concerns, resources, or potential impacts that you believe the forthcoming EA should address. We would appreciate any recommendations you may have to mitigate or avoid air traffic impacts. We would appreciate a response within 30 days of your receipt of this request. To send comments or request further information, please contact me using one of the methods listed below, mentioning the proposed Turney Energy Center Project.

Contact Information

U.S. Postal Service	2814 S. Golden Ave. Springfield MO 65807
Email	rleforce@aeci.org
Telephone Hotline	(417) 371-5463

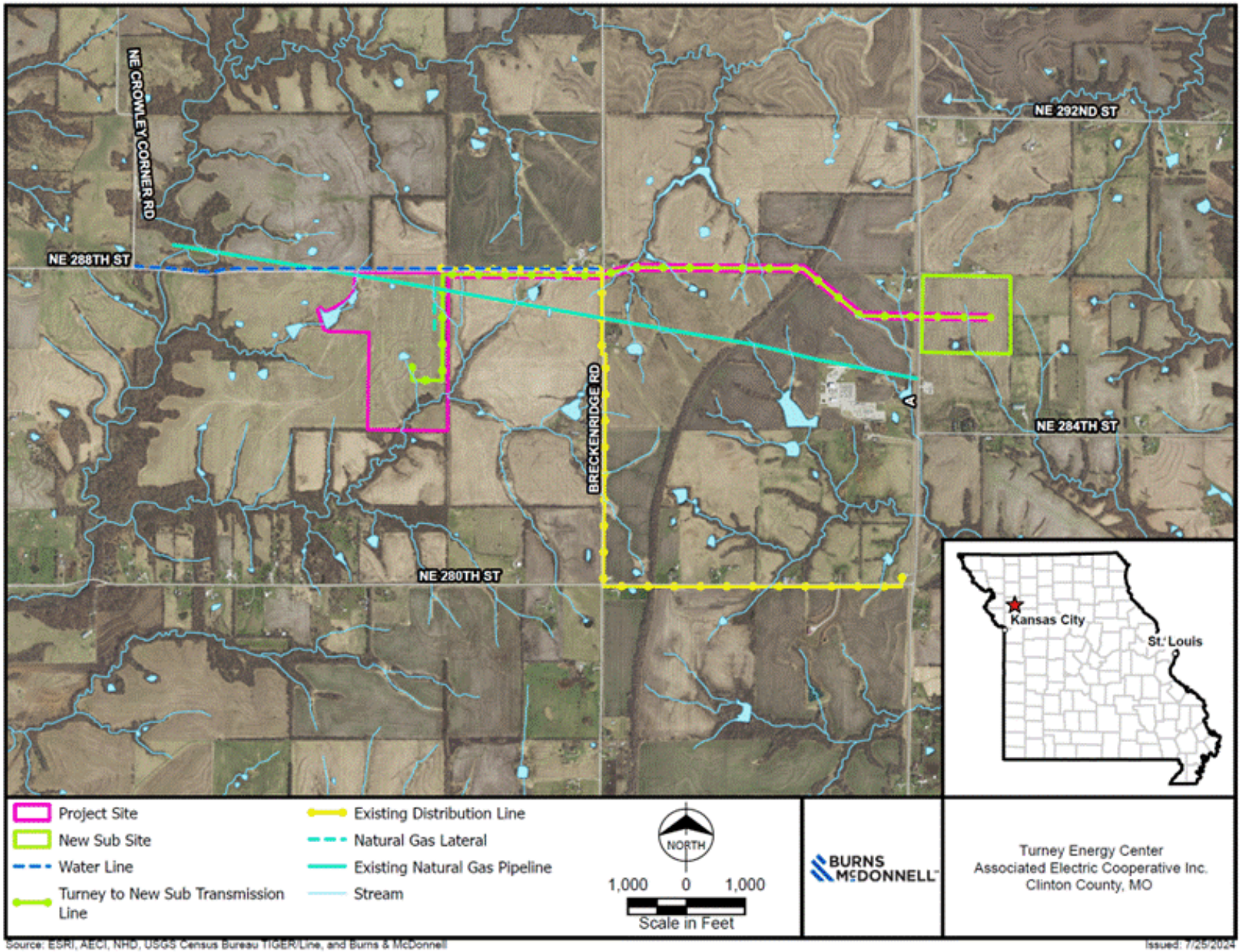
Sincerely,

Rob LeForce, B.W.
Environmental Analyst, Land and Water Resources, AECI

Enclosure Figure 1: AECI Project Site

cc: Tate Thriffiley, RUS
Chris Howell, Burns & McDonnell

Figure 1: AECI Project Site



Outlook

FW: Turney Energy Center EA; Turney, Missouri

From Brian N. Boehmer <Brian.Boehmer@modot.mo.gov>
Date Tue 9/10/2024 1:47 PM
To Rob LeForce <rleforce@aeci.org>
Cc Kyle LePage <Kyle.Lepage@modot.mo.gov>

1 attachment (3 MB)
Turney Energy Center Env Assessment letter 9-5-2024.pdf;

****EXTERNAL E-MAIL** Think before clicking links or attachments.**

Robert Force AECI,

The above was forwarded to our office by the FAA Central Region Office of Airports. Missouri is a block grant state and acts as an arm of the FAA within the State of Missouri and regarding non-primary airports. We appreciate the opportunity to comment on the proposed project. We generally do not provide comments from an environmental perspective.

Airspace Considerations:
The project may require formal notice and review for airspace considerations under 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace. To determine if you need to file with FAA, go to http://oeaaa.faa.gov and click on the "Notice Criteria Tool" found at the left-hand side of the page.

Several items may need to be checked such as any changes in ground elevation, structures, towers, poles, objects, and temporary construction equipment that exceed the notice criteria. For projects involving long routes, multiple locations will need to be checked (usually every mile and changes in elevation).

If after using the tool, you determine that filing with FAA is required, we recommend a 120-day notification to accommodate the review process and issue our determination letter. Proposals may be filed at http://oeaaa.faa.gov. More information on this process may be found at:
http://www.faa.gov/airports/central/engineering/part77/

Please let me know if you have any questions,

Brian N. Boehmer
Aviation Operations Manager
Missouri Department of Transportation
(573)526-3619
Email brian.boehmer@modot.mo.gov

Outlook

Turney Energy Center EA

From Costner, Brian <brian.costner@hq.doe.gov>
Date Fri 10/4/2024 8:14 AM
To Rob LeForce <rleforce@aeci.org>

The Department of Energy has not identified an interest in providing input to the Turney Energy Center EA. Thank you for contacting theDepartment.

Brian Costner, Director
Office of NEPA Policy and Compliance
U.S. Department of Energy

Associated Electric Cooperative, Inc.
www.aeci.org • 417-881-1204 • FAX 417-885-9252
2814 S. Golden, P.O. Box 754 Springfield, Missouri 65801-0754

September 5, 2024

Scott Edwards
State Conservationist
Missouri Natural Resource Conservation Service
601 Business Loop 70 West Suite 250
Columbia, MO 65203

Re: Turney Energy Center Environmental Assessment

Dear Mr. Edwards:

Associated Electric Cooperative, Inc. (AECI) is seeking financial assistance from the USDA Rural Development, Rural Utilities Service (RUS) under the RUS Electric Program for the Turney Energy Center, a new natural gas-fired, simple-cycle electric generating facility (Project). In anticipation of National Environmental Policy Act (NEPA), Clean Air Act, Endangered Species Act, and National Historic Preservation Act compliance, the purpose of this letter is to introduce the Project and gather information from your office on preliminary concerns, if any, for consideration in this compliance process. RUS has determined that an Environmental Assessment (EA) is the appropriate NEPA class of action for this Project pursuant to 7 Code of Federal Regulations § 1970.101. RUS has delegated transmittal of Agency Scoping letters to AECI and their consultant Burns & McDonnell per 7 CFR 1970.5(b)(2). This letter serves to notify you of the Project and to request your input.

The Project would be located near Turney, Missouri (Project Site; **Figure 1**). The Project would consist of a single Advanced Class simple-cycle gas turbine generator and associated equipment with a nominal capacity of 420-445 MW. The Project would burn natural gas with the capability to use fuel oil as a backup and employ selective catalytic reduction (SCR) technology to control emissions of nitrogen oxides. The approximately 95.5 acres that AECI owns, of which, approximately 45 acres will be disturbed for construction of the generation site and approximately 37 acres will ultimately be fenced, is shown in Figure 1. The generation will be interconnected via construction of approximately 2 miles of electrical line between the generation site and a proposed substation. Either AECI or N.W. Electric Cooperative, Inc. will construct, own, operate, and maintain the transmission line and right-of-way (ROW) to the approximately 45.5 acres substation that AECI will own and operate. Approximately 2.5 miles of existing distribution electrical line will be reconstructed within existing ROW to supply power back to the generation site. Additionally, an approximately 1,000-foot natural gas lateral off the existing Rocky Mountain Express Pipeline would need to be constructed on the generation site to supply natural gas to the Project. Approximately 1.5 miles of water line would be needed to

supply water to the Project and surrounding community, with a portion being upgraded and a portion being constructed.

Table 1: Project Site Assessment Summary

Parameter	Site Assessment Summary
Location	Missouri/Clinton County
Site Latitude / Longitude	39°36'44.77"N / 94°20'56.37"W (approximate center point of Project)
Total Project Boundary	Approximately 160 acres
Land Use	Six land use types, primarily cultivated crops
Soils	Approximately 9.5 acres of hydric soils within the Project Site (Colo silty clay loam, 5.9% of Project Boundary).

Desktop-level studies were performed to determine the need for further evaluation or permitting at the Project location. Land cover within the Project Boundary contains large portions of cultivated crops. The vegetation type in the Project Boundary is common for this region. Locations surrounding the Project Boundary are similar in composition and are primarily composed of agricultural lands. It was determined that there are six land use types, including deciduous forest, on the Project Site, along with 9.5 acres of hydric soils (Colo silty clay loam). Based on the results of the desktop review, the Project Boundary land use is summarized as approximately 1.4 acres of open water; 2 acres of developed, open space; 2.6 acres of developed, low intensity; 4.8 acres deciduous forest; 17 acres of pasture/hay; and 134.4 acres of cultivated crops.

AECI requests your review of this Project and asks that you provide information on any concerns, resources, or potential impacts that you believe the forthcoming EA should address. We would appreciate any recommendations you may have to mitigate or avoid environmental impacts. Also, please share any information regarding additional review requirements that your agency may have. We would appreciate a response within 30 days of your receipt of this request. To send comments or request further information, please contact me using one of the methods listed below, mentioning the proposed Turney Energy Center Project.

Contact Information

U.S. Postal Service	2814 S. Golden Ave. Springfield MO 65807
Email	rleforce@aeci.org
Telephone Hotline	(417) 371-5463

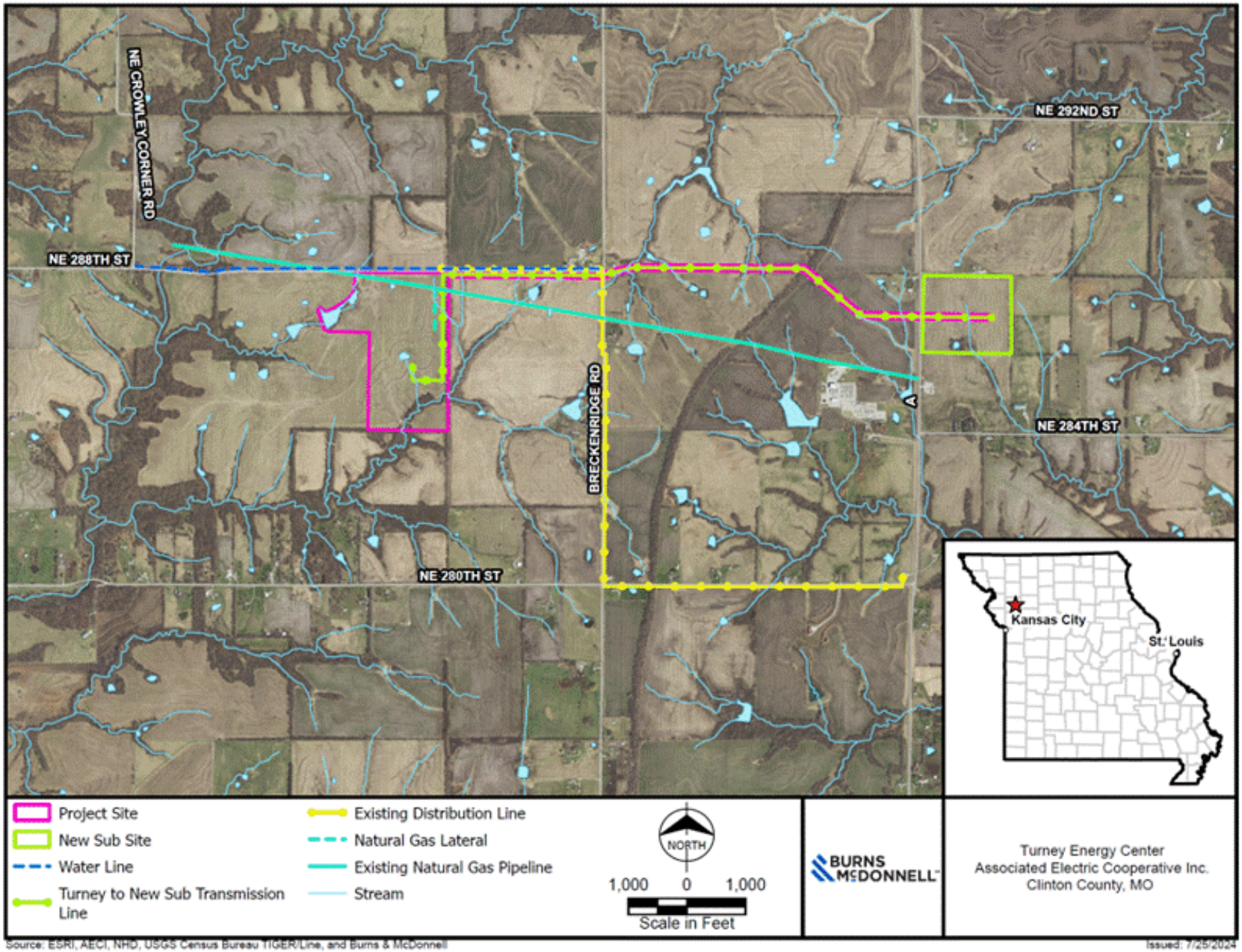
Sincerely,

Rob LeForce, B.W.
Environmental Analyst, Land and Water Resources, AECI

Enclosure Figure 1: AECI Project Site

cc: Tate Thriffiley, RUS
Chris Howell, Burns & McDonnell

Figure 1: AECI Project Site



Outlook

RE: Turney Energy Center Clinton County

From Bilke, Nathan - FPAC-NRCS, MO <nathan.bilke@usda.gov>
Date Thu 11/7/2024 11:53 AM
To Rob LeForce <rleforce@aeci.org>
Cc Lugo-Camacho, Jorge - FPAC-NRCS, MO <jorge.lugo-camacho@usda.gov>; Bradley-Redden, Diane - FPAC-NRCS, MO <diane.bradley-redden@usda.gov>; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>

1 attachment (197 KB)
Turney Energy Project_ Clinton Co AD1006_Farmland Conversion Impact Rating.pdf;

****EXTERNAL E-MAIL** Think before clicking links or attachments.**

Rob,

I have updated the AD-1006 to account for the water and electrical transmission lines (approximately 16 acres). Waterlines will be buried and will not be permanent conversion. Planned overhead electric line easement will allow acres directly below to remain "farmable". Areas where the poles and guy wires are installed in fields and pastures will have only a minor impact on the conversion of important farmlands. These acres will not be evaluated under FPPA rules.

Nathan S. Bilke
Area Soil Scientist
USDA Natural Resource Conservation Service
3915 Oakland Avenue, Suite 103
St. Joseph, Missouri 64506-4920
Cell #660-654-4576
Office Phone: 816-364-3927
nathan.bilke@mo.usda.gov

"It is not the critic who counts; not the man who points out how the strong man stumbles...the credit belongs to the man in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who at his worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat."

Teddy Roosevelt

From: Rob LeForce <rleforce@aeci.org>
Sent: Thursday, November 7, 2024 11:30 AM
To: Bilke, Nathan - FPAC-NRCS, MO <nathan.bilke@usda.gov>
Cc: Lugo-Camacho, Jorge - FPAC-NRCS, MO <jorge.lugo-camacho@usda.gov>; Bradley-Redden, Diane - FPAC-NRCS, MO <diane.bradley-redden@usda.gov>; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>
Subject: Re: Turney Energy Center Clinton County

They will be overhead transmission lines and would allow for farming under the lines. Thank you!

Get Outlook for iOS

From: Bilke, Nathan - FPAC-NRCS, MO <nathan.bilke@usda.gov>
Sent: Thursday, November 7, 2024 11:17:19 AM
To: Rob LeForce <rleforce@aeci.org>
Cc: Lugo-Camacho, Jorge - FPAC-NRCS, MO <jorge.lugo-camacho@usda.gov>; Bradley-Redden, Diane - FPAC-NRCS, MO <diane.bradley-redden@usda.gov>; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>
Subject: RE: Turney Energy Center Clinton County

You don't often get email from nathan.bilke@usda.gov. Learn why this is important

****EXTERNAL E-MAIL** Think before clicking links or attachments.**

Rob,

Will the electric transmission lines be overhead or buried? If they are overhead will the ROW allow farming practices underneath the lines? In regards to the waterline there will be no permanent conversion there. I will update the form to account for these acres one way or another after I receive your response.

Nathan S. Bilke
Area Soil Scientist
USDA Natural Resource Conservation Service
3915 Oakland Avenue, Suite 103
St. Joseph, Missouri 64506-4920
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nathan.bilke@mo.usda.gov

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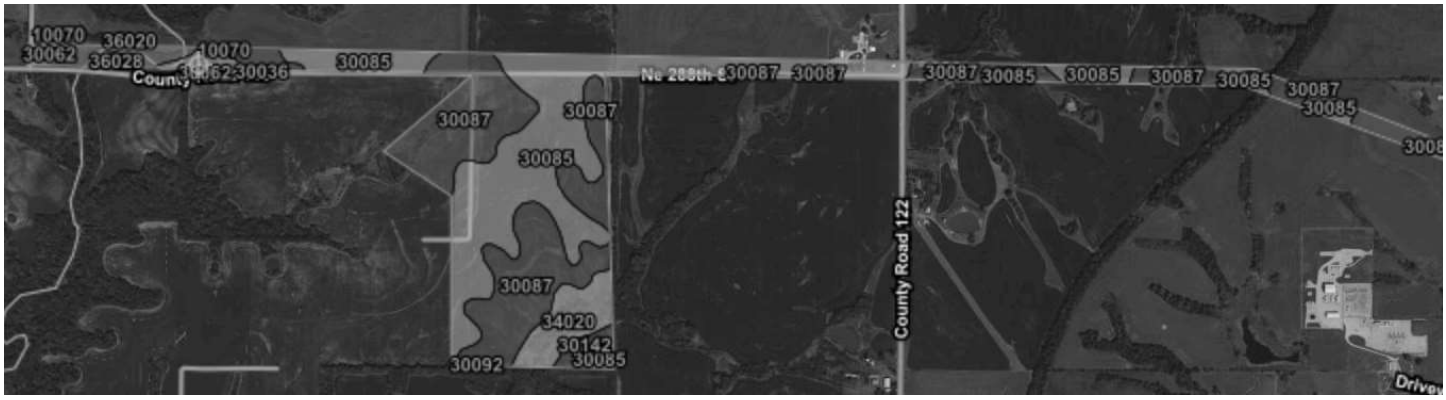
Teddy Roosevelt

From: Rob LeForce <rleforce@aeci.org>
Sent: Tuesday, November 5, 2024 11:50 AM
To: Bilke, Nathan - FPAC-NRCS, MO <nathan.bilke@usda.gov>
Cc: Lugo-Camacho, Jorge - FPAC-NRCS, MO <jorge.lugo-camacho@usda.gov>; Bradley-Redden, Diane - FPAC-NRCS, MO <diane.bradley-redden@usda.gov>; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>
Subject: RE: Turney Energy Center Clinton County

Nathan,

We noticed on the Farmland Classification soil survey that the illustration only appears to address the proposed plant property, but not the transmission line and waterline. I expected to see the classification illustration below for the full scope, so I just wanted to verify that the scoring sheet indeed reflects the full scope of the project? Thanks for the verification and quick review of the project! Feel free to give me a call if you needed any further clarifications.



Respectfully,
Rob

Rob LeForce, PW
Environmental Analyst, Land and Water Resources
Associated Electric Cooperative Inc.
2814 S. Golden Ave.
Springfield, MO 65801
O: 417.371.5652

From: Bilke, Nathan - FPAC-NRCS, MO <nathan.bilke@usda.gov>
Sent: Wednesday, October 30, 2024 10:44 AM
To: Rob LeForce <rleforce@aeci.org>
Cc: Lugo-Camacho, Jorge - FPAC-NRCS, MO <jorge.lugo-camacho@usda.gov>; Bradley-Redden, Diane - FPAC-NRCS, MO <diane.bradley-redden@usda.gov>
Subject: Turney Energy Center Clinton County

Good Morning Rob,

Attached is a Farmland Conversion Impact Rating (AD-1006) and Environmental Review Response for the Turney Energy Project in Clinton County, Missouri. The proposed project area **does** contain prime farmland (approximately 37 acres on the area marked "project site"). These soils have been terraced and tiled (drained) and therefore are considered prime. The area marked as the "substation" does not contain prime farmland because it is not considered "drained". I have attached the area outlining the prime farmland classification of the "project site".

After you complete this form, please return one copy for our records. Please note that if the Total Points (Parts V & VI) in Part VII exceeds 160, alternative sites should be considered. Two alternatives are required if the score is between 160-220, and three alternatives are required if the score is over 220.

If you have any questions or concerns please let me know.

Nathan S. Bilke
Area Soil Scientist
USDA Natural Resource Conservation Service
3915 Oakland Avenue, Suite 103
St. Joseph, Missouri 64506-4920
Cell #660-654-4576
Office Phone: 816-364-3927
nathan.bilke@mo.usda.gov

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Teddy Roosevelt

From: Saunders, Jason - FPAC-NRCS, MO <jason.saunders@usda.gov>
Sent: Thursday, October 24, 2024 9:06 AM
To: Bilke, Nathan - FPAC-NRCS, MO <nathan.bilke@usda.gov>
Subject: FW: [External Email]Turney Energy Center Clinton County

Jason Saunders
District Conservationist
USDA-NRCS
Clay/Clinton/Jackson/Platte FOSA
PO Box 1220
1209 Branch Street
Platte City, MO 64079
Phone: (816) 431-2101 ext. 3101
Cell: 816-244-5855
jason.saunders@usda.gov

From: Rob LeForce <rleforce@aeci.org>
Sent: Wednesday, October 23, 2024 2:54 PM
To: Saunders, Jason - FPAC-NRCS, MO <jason.saunders@usda.gov>
Cc: McCaslin, Audra L <almccaslin@burnsmcd.com>; Howell, Chris <chowell@burnsmcd.com>
Subject: [External Email]Turney Energy Center Clinton County

Good Afternoon Jason,

We are completing an Environmental Assessment (EA) because we are seeking financial assistance from the USDA Rural Utilities Service for a proposed new simple-cycle electric generation facility called Turney Energy Center in Clinton County, Missouri. We sent an agency scoping letter (attached) to Mr. Scott Edwards on September 5th, but have not received a reply in over 30 days, so I wanted to follow up with you on the local level since it's possible you never received the letter. I'd appreciate your review and any recommendations you may have and included the Farmland Conversion Impact Rating Form. Please let me know if you have any questions, thanks!

Respectfully,
Rob

Rob LeForce PW
Environmental Analyst, Land and Water Resources
Associated Electric Cooperative Inc.
2814 S. Golden Ave.
Springfield, MO 65801
O: 417.371.5652

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U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request 10-23-2024	
Name of Project Turney Energy Center		Federal Agency Involved USDA Rural Development, RUS	
Proposed Land Use Energy Generation		County and State Clinton County, Missouri	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS 10/24/24	Person Completing Form: Nathan Bilke

Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated N/A	Average Farm Size 325
Major Crop(s) Yellow Corn and Soy Beans	Farmable Land In Govt. Jurisdiction Acres: 260,10% 96.0	Amount of Farmland As Defined in FPPA Acres: 256,3% 94.6	
Name of Land Evaluation System Used LESA	Name of State or Local Site Assessment System N/A	Date Land Evaluation Returned by NRCS 10/30/2024	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	144			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	160			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	37			
B. Total Acres Statewide Important or Local Important Farmland	0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	.0001			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	44.5			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	94			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	15			
2. Perimeter In Non-urban Use	(10)	10			
3. Percent Of Site Being Farmed	(20)	20			
4. Protection Provided By State and Local Government	(20)	0			
5. Distance From Urban Built-up Area	(15)	15			
6. Distance To Urban Support Services	(15)	0			
7. Size Of Present Farm Unit Compared To Average	(10)	0			
8. Creation Of Non-farmable Farmland	(10)	0			
9. Availability Of Farm Support Services	(5)	0			
10. On-Farm Investments	(20)	0			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	0			
TOTAL SITE ASSESSMENT POINTS	160	60	0	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	94	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	60	0	0	0
TOTAL POINTS ***(Total of above 2 lines)***	260	154	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☑

Reason For Selection:

Approximately 16 acres of new transmission lines in the project (electric and water). There will be very little permanent conversion (poles, guywires etc.). These ares will not be evaluated under FPPA rules. See accompanying email. NB 11/7/2024

Name of Federal agency representative completing this form: JON THRIFFILEY Digitally signed by JON THRIFFILEY Date: 2024.11.18 11:21:44 -06'00'	Date:

(See Instructions on reverse side)

Form AD-1006 (03-02)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Michael L. Parson
Governor

Dru Buntin
Director

September 27, 2024

Rob LeForce, B.W.
2814 S. Golden
Springfield, Missouri 65801-0754

Dear Rob LeForce;

The Missouri Department of Natural Resources appreciates the opportunity to review the materials for the Turney Energy Center Environmental Assessment project.

The department offers the following comments related to environmental considerations for use in evaluating your project's environmental impacts pursuant to National Environmental Policy Act as amended (42 U.S.C. §§ 4321, et seq.).

Project Location
The project is located southwest of Turney, MO in one general area, which is bound by NE 288th St. and NE 292nd St. on the north edge, NE 280th St. along the southern edge, NE Gall Rd. on the eastern edge, and NE Dixon Road on the western edge. The following geographic descriptions apply to the approximate location of the study area.

Geographic Coordinates:
385916E 4386095N

Public Land Survey System:
T55N R31W S02, T55N R31W S01, T55N R30W S06

8-Digit Hydrologic Unit Code:
Platte (10240012)
Upper Grand (10280101)

Ecological Drainage Unit:
Central Plains/Nishnabotna/Platte
Central Plains/Grand/Chariton

Geology and Geospatial Data
The project area is situated in the Northwestern Groundwater Province of Missouri, where the primary aquifers are the alluvial and glacial deposits of the Quaternary System. Underlying the project area are glacial deposits, approximately 75 to 100 feet thick, consisting of clay, silt, gravel, and boulders. Dependent on permeability these deposits have the potential to yield between three and 50 gallons of water per minute. The uppermost bedrock units are of the Pennsylvanian-age Lansing Group, which are not considered significant aquifers as they are not generally water-bearing regionally but can produce small amounts of water locally.

If a full Geologic Assessment is required for a project, the Missouri Geological Survey can be contacted directly at 800-361-4827. Other maps showing natural and cultural resources can be found at https://dnr.mo.gov/land-geology/maps-data-research.

Karst Topography
A review of karst features revealed no sinkholes within five miles of the project area. While no faults were identified within a mile of the site, there are geological structures such as anticlines and synclines within five miles of the site. These structures do not pose a significant earthquake risk. Additionally, two historical limestone surface mines were found within one mile of the study area, it is unclear their potential impact will have on the future project.

There is one spring near the project area. The project area is in the Lathrop quadrangle, which has a cave density of 0. Springs, sinkholes, and caves are features on the landscape associated with karst topography that can act as direct conduits of surface water and pollutants to groundwater. As such, extra precaution should be taken to minimize disturbance of land in or around these features, and to avoid the introduction of pollutants to sensitive groundwater resources. Karst areas may also present the possibility of potential collapse.

Wells
There is one active domestic well within one mile of the site and 42 within five miles of the site. No active public wells were identified in the area, however, there is one abandoned public well near the project area. These identified wells utilize the groundwater zones of the Glacial deposits. This aquifer is unconfined and likely highly susceptibility to surface contaminants due to its moderate permeability. Current and future wells could potentially become impacted if any hazardous materials from the project migrate into the subsurface.

Wells can act as conduits of pollutants to groundwater resources. Abandoned wells should be plugged prior to any land disturbance, and care should be taken to utilize appropriate best management practices to protect any currently operating wells. For more information on locating and plugging wells, or on private domestic wells, please visit the link below for the department's Wellhead Protection Section webpage or contact the department's Geological Survey Program directly. https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/wells-drilling.

Public Land
Public land resource Ronald and Maude Hartell Conservation Area is located near the project area and is owned by Missouri Department of Conservation. Care should be taken to avoid impact to these public lands.

Conservation Opportunity Areas
There is a Conservation Opportunity Area (COA) near the project area: Little Platte River. Both terrestrial and aquatic COAs are identified by the Missouri Department of Conservation (MDC) and its conservation partners as priority areas that support and conserve viable populations of wildlife and the ecological systems on which they depend. Designated COAs are located statewide and may consist of a combination of public and private resources. Please contact the MDC at 573-751-4115 for more information.

Water Protection
Best Management Practices
Best management practices should be utilized during project activities to limit the amount of sediment and other pollutants entering waters of the state, and to protect the water's chemical, physical, and biological characteristics. These practices include, but are not limited to,

conducting work during low flow conditions whenever possible, keeping heavy equipment out of the water, and taking all necessary precautions to avoid the release of fuel or other waste products to streams and other waters. In addition, the department encourages the preservation of existing riparian or buffer areas around each water resource to limit the amount of sediments or other pollutants entering the water. Any stream banks, riparian corridors, lake shores, or wetlands denuded of vegetation should be stabilized and re-vegetated as soon as is practicable.

Watershed Conditions

Public Drinking Water

The project area is in or around the Clinton Co. PWSD #4. There is one tank near the project area. Proposed project personnel should be aware of nearby Public Drinking Water systems. Work associated with any project should take into consideration the protection of surface and groundwater public drinking water supplies, implementing appropriate best management practices as necessary. For additional information regarding source water protection, please contact Ken Tomlin of the department's Public Drinking Water Branch at 573-526-0269.

Designated Uses

Water Bodies with Specific Designated Uses

The proposed project area is in the watershed of the Little Platte River. Water bodies are assigned specific designated uses according to State of Missouri Water Quality regulations at 10 CSR 20-7.031(2). These waters are protected by numeric water quality criteria outlined in 10 CSR 20-7.031(5) and Table A, as well as general water quality criteria outlined at 10 CSR 20-7.031(4). Designated uses of the Little Platte River include the following:

- Protection and propagation of fish, shellfish, and wildlife – warm water habitat (WWH)
- Human health protection (HHP)
- Irrigation (IRR)
- Livestock and wildlife protection (LWP)
- Secondary contact recreation (SCR)
- Whole body contact recreation – Category B (WBC-B)

Water Bodies without Specific Designated Uses

Water bodies that are not assigned specific designated uses are still protected by general water quality criteria outlined at 10 CSR 20-7.031(4) and are subject to the acute toxicity criteria of Tables A and B, as well as whole effluent toxicity conditions.

According to the National Wetlands Inventory https://www.fws.gov/wetlands/, there is the likelihood of freshwater wetlands and ponds within the riparian corridors of the Little Platte River. This project has the potential to impact wetlands, ponds, and the aforementioned tributaries and headwater streams to be impacted, depending on their proximity to land disturbance activities. Project sponsors should avoid such impacts through alternative analysis before compensatory mitigation is considered. If wetlands, ponds, headwaters, or tributaries are not directly impacted but are near any land disturbance, project sponsors should take care to protect water quality. While these water bodies are not assigned specific designated uses, they are protected by Missouri's general water quality criteria.

Sensitive Waters

There are no known sensitive waters in the project area for the following categories: Cold Water Habitat, Outstanding National Resource Waters, Metropolitan No-Discharge streams, bio criteria reference locations, losing streams, 303(d) Impaired and 305(b) Threatened Waters, and Waters with Approved Total Maximum Daily Loads.

Table E, Outstanding State Resource Waters
A portion of this project is located within the watershed of Shoal Creek which has been designated as an Outstanding State Resource Water. There shall be no lowered water quality in Outstanding State Resource Waters, as designated in 10 CSR 20-7.031 Table E.

Permitting Obligations
Clean Water Act Sections 401 and 404
Projects that have the potential to discharge fill or dredged material into a jurisdictional water of the United States must receive a Clean Water Act Section 404 Permit Authorization from the U.S. Army Corps of Engineers (USACE), and a Section 401 Water Quality Certification from the department. Some examples of activities that typically require a 404 permit and a 401 certification include stream bank stabilization, installation or replacement of culverts and low water crossings, fill impacts related to residential and commercial developments, and infrastructure maintenance. To learn more about 404 permits visit the USACE's website: https://rrs.usace.army.mil/rrs/home/permitting. For more information about 401 water certification from the department, go to https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality

If discharge into water has occurred, or will occur, project personnel should immediately contact the appropriate USACE District (link below) and the department's Operating Permits Section at 573-522-4502 for more information.
http://www.mvr.usace.army.mil/Portals/48/docs/regulatory/MORegBound.pdf

Land Disturbance
The project must apply for a land disturbance permit from the department if it involves construction disturbance activities of one or more acres, or construction activities that disturb less than one acre when part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project. Land disturbance activities include clearing, grubbing, excavating, grading, filling, and other activities that result in the destruction of the root zone. Disturbance to valuable resource waters, including springs, sinkholes and losing streams, could require additional conditions or permits.

Information and application for online land disturbance permits are located at https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/stormwater/construction-land-disturbance.

Questions regarding permit requirements may be directed to the appropriate Regional Office.
https://dnr.mo.gov/about-us/division-environmental-quality/regional-office

Demolition and Construction Waste Management
Information on managing construction and demolition waste can be found at https://dnr.mo.gov/print/document-search/pub2045.

Hazardous Waste
Information on hazardous waste and petroleum tanks can be found at https://dnr.mo.gov/waste-recycling/long-term-stewardship-lts/environmental-site-tracking-research-tool-e-start.

During the project, if any underground tanks or contaminated soil is discovered, workers should withdraw to a safe distance and notify the department's spill line at 573-634-2436.

It is the generator's responsibility to determine if materials generated during construction and demolition, are hazardous wastes. Demolition-related waste categories typically include paint residue (paint chips, paint scrapings, etc.), demolition debris (metal and boards that have been painted with lead-based or other heavy metal-based paint), and scrap metal (metal objects that contain lead or other heavy metals). A hazardous waste determination is not required for materials that will be reused or recycled without additional processing.

Asbestos
Prior to demolition activities, regulated structures must be thoroughly inspected by a Missouri-certified asbestos inspector to determine if any Asbestos Containing Materials are present, and a notification made to the department at least ten working days prior to demolition. Regulated structures include any building which has been used as a commercial, institutional, or industrial building (even if it was historic use), and projects involving two or more residential structures. In addition, this includes but is not limited to the following "non-building" structures: bridges, pipelines, cooling towers, chimneys, dams, and tunnels. Any asbestos found must be properly managed to prevent release of asbestos fibers.

Solid Waste
Information about solid waste uncovered during construction activities can be found at https://dnr.mo.gov/document-search/managing-solid-waste-encountered-during-excavation-activities-pub2192/pub2192.

No waste may be buried on-site or at an alternate site, except for clean fill. Clean fill is defined by the Revised Statutes of Missouri as "uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the department for fill, reclamation or other beneficial use." Clean fill must not contain protruding metals or demolition debris. Although not regulated as waste, placement of clean fill materials may be subject to requirements of the department's Water Protection Program if it is placed in contact with surface or subsurface waters of the state or would otherwise violate water quality standards.

Air Pollution
Dust
Ensure fugitive particulate matter emissions, such as dust, resulting from the project do not remain on surfaces or in the air beyond the property line of origin. 10 CSR 10-6.170 restricts the emission of particulate matter to the ambient air beyond the premises of origin. Additional information on general dust emissions may be found at https://dnr.mo.gov/print/document-search/pub2200.

Open Burning
The open burning of refuse and trade waste is restricted according to 10 CSR 10-6.045. Construction, demolition, and trade waste cannot be open burned, except for untreated wood. Brush from land clearing activities may be burned if the burning is conducted outside the city limits and greater than 200 yards from the nearest occupied structure. Additional information on open burning can be found at https://dnr.mo.gov/print/document-search/pub2047.

The above comments concern potential environmental impacts related to air, land, and water. Feedback on this project related to the other topics should be directed as described below:

- Historic Preservation: Project personnel should check with the department's State Historic Preservation Office to determine if a Section 106 Review is needed. Information on the Section 106 Review can be found on the department's web site at https://www.mostateparks.com/page/84261/section-106-review or by contacting the State Historic Preservation Office at 573-751-7858.
- Floodplain: For information concerning flood plains impacts, contact the Missouri State Emergency Management Agency, Floodplain Management and Mitigation Branch, at 573-526-9100 or 2302 Militia Drive, Jefferson City, MO 65101.
- Endangered Species: The MDC is responsible for collecting and managing information on the location and status of endangered species in the state. Contact MDC's Endangered Species Coordinator at 573-751-4115 or P.O. Box 180, Jefferson City, MO 65102 for information about endangered species impacts.

We appreciate the opportunity to provide comments for the proposed project. If you have any questions or need clarification, please contact me at 573-522-6221.

Sincerely,

Hannah Humphrey

Hannah Humphrey
Deputy Director

HH/rab

Associated Electric Cooperative, Inc.
www.aeci.org • 417-881-1204 • FAX 417-885-9252
2814 S. Golden, P.O. Box 754 Springfield, Missouri 65801-0754

September 5, 2024

Patrick McKenna
Director
Missouri Department of Transportation
105 West Capitol Avenue
Jefferson City, MO 65102

Re: Turney Energy Center Environmental Assessment

Dear Director McKenna:

Associated Electric Cooperative, Inc. (AECI) is seeking financial assistance from the USDA Rural Development, Rural Utilities Service (RUS) under the RUS Electric Program for the Turney Energy Center, a new natural gas-fired, simple-cycle electric generating facility (Project). In anticipation of National Environmental Policy Act (NEPA), Clean Air Act, Endangered Species Act, and National Historic Preservation Act compliance, the purpose of this letter is to introduce the Project and gather information from your office on preliminary concerns, if any, for consideration in this compliance process. RUS has determined that an Environmental Assessment (EA) is the appropriate NEPA class of action for this Project pursuant to 7 Code of Federal Regulations § 1970.101. RUS has delegated transmittal of Agency Scoping letters to AECI and their consultant Burns & McDonnell per 7 CFR 1970.5(b)(2). This letter serves to notify you of the Project and to request your input.

The Project would be located near Turney, Missouri (Project Site; **Figure 1**). The Project would consist of a single Advanced Class simple-cycle gas turbine generator and associated equipment with a nominal capacity of 420-445 MW. The Project would burn natural gas with the capability to use fuel oil as a backup and employ selective catalytic reduction (SCR) technology to control emissions of nitrogen oxides. The approximately 95.5 acres that AECI owns, of which, approximately 45 acres will be disturbed for construction of the generation site and approximately 37 acres will ultimately be fenced, is shown in Figure 1. The generation will be interconnected via construction of approximately 2 miles of electrical line between the generation site and a proposed substation. Either AECI or N.W. Electric Cooperative, Inc. will construct, own, operate, and maintain the transmission line and right-of-way (ROW) to the approximately 45.5 acres substation that AECI will own and operate. Approximately 2.5 miles of existing distribution electrical line will be reconstructed within existing ROW to supply power back to the generation site. Additionally, an approximately 1,000-foot natural gas lateral off the existing Rocky Mountain Express Pipeline would need to be constructed on the generation site to supply natural gas to the Project. Approximately 1.5 miles of water line would be needed to supply water to the Project and surrounding community, with a portion being upgraded and a

portion being constructed. The roadways within and adjacent to the Project Area are either rural roads, vehicular trails, or driveways. Rural roads, vehicular trails, and driveways may have a gravel or dirt surface. AECI does not anticipate the need to modify any roads or traffic patterns due to the construction and operation of the Project.

Table 1: Project Site Assessment Summary

Parameter	Site Assessment Summary
Location	Missouri/Clinton County
Site Latitude / Longitude	39°36'44.77"N / 94°20'56.37"W (approximate center point of Project)
Total Project Boundary	Approximately 160 acres

AECI requests your review of this Project and asks that you provide information on any concerns, resources, or potential impacts that you believe the forthcoming EA should address. We would appreciate any recommendations you may have to mitigate or avoid environmental impacts. Also, please share any information regarding additional review requirements that your agency may have. We would appreciate a response within 30 days of your receipt of this request. To send comments or request further information, please contact me using one of the methods listed below, mentioning the proposed Turney Energy Center Project.

Contact Information

U.S. Postal Service	2814 S. Golden Ave. Springfield MO 65807
Email	rleforce@aeci.org
Telephone Hotline	(417) 371-5463

Sincerely,

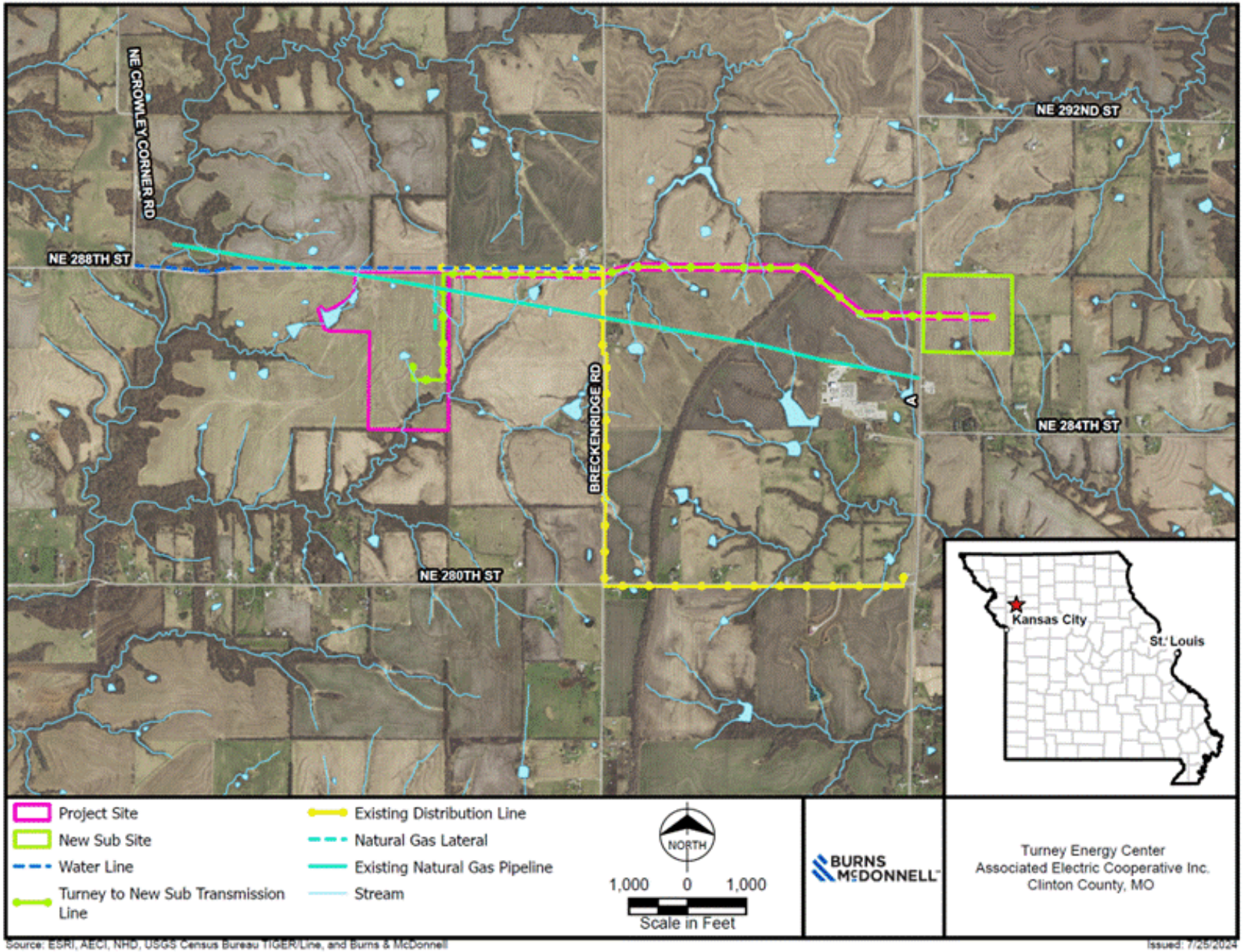
Rob LeForce

Rob LeForce, B.W.
Environmental Analyst, Land and Water Resources, AECI

Enclosure Figure 1: AECI Project Site

cc: Tate Thriffiley, RUS
Chris Howell, Burns & McDonnell

Figure 1: AECI Project Site



Outlook

Turney Energy Center Project

From Melissa Scheperle <Melissa.Scheperle@modot.mo.gov>
Date Mon 9/30/2024 2:20 PM
To Rob LeForce <rleforce@aeci.org>
Cc Kyle E. Grayson <Kyle.Grayson@modot.mo.gov>; Jose A. Rodriguez <Jose.Rodriguez@modot.mo.gov>; Shannon Kusilek <Shannon.Kusilek@modot.mo.gov>

Mr. LeForce,
Thank you for the opportunity to comment on the proposed Turney Energy project near Turney, Missouri. MoDOT has the following concerns and potential impacts regarding the project:

1. Please contact MoDOT if improvements require alteration to or additional traffic control devices or auxiliary turn lanes, etc.
2. Any driveways accessing the site on Route A must be evaluated for sight distance and geometric design compliance with MoDOT EPG standards. A separate driveway permit is required for that work and can be done under any existing performance bonds for this project.
3. The preconstruction condition of Route A will need to be documented and evaluated during construction when the extra heavy equipment is traveling along Route A. Any damage to the roadway by such vehicles and equipment must be remedied by the contractor at their expense.
4. Utility permits will need to be reviewed and issued for any work on the right of way. They will need to have a surety bond established for the permit if the company does not have one.
5. Contact for MoDOT: Jose Rodriguez, P.E., PTOE
   Area Engineer – Western Area
   MoDOT
   Northwest District
   3602 North Belt Hwy
   St. Joseph, MO 64506
   816.387.2428
   Jose.Rodriguez@modot.mo.gov

Thank you,

MELISSA A. SCHEPERLE
Environmental and Historic Preservation Manager

Missouri Department of Transportation
Central Office - Design Division
601 West Main, Jefferson City, MO
573-526-6684
573-508-2848

www.modot.org

Associated Electric Cooperative, Inc.
www.aeci.org • 417-881-1204 • FAX 417-885-9252
2814 S. Golden, P.O. Box 754 Springfield, Missouri 65801-0754

September 5, 2024

Environmental Review Coordinator
Missouri Natural Heritage Inventory
PO Box 180
Jefferson City, MO 65102

Re: Turney Energy Center Environmental Assessment

Dear Sir or Madam:

Associated Electric Cooperative, Inc. (AECI) is seeking financial assistance from the USDA Rural Development, Rural Utilities Service (RUS) under the RUS Electric Program for the Turney Energy Center, a new natural gas-fired, simple-cycle electric generating facility (Project). In anticipation of National Environmental Policy Act (NEPA), Clean Air Act, Endangered Species Act, and National Historic Preservation Act compliance, the purpose of this letter is to introduce the Project and gather information from your office on preliminary concerns, if any, for consideration in this compliance process. RUS has determined that an Environmental Assessment (EA) is the appropriate NEPA class of action for this Project pursuant to 7 Code of Federal Regulations § 1970.101. RUS has delegated transmittal of Agency Scoping letters to AECI and their consultant Burns & McDonnell per 7 CFR 1970.5(b)(2). This letter serves to notify you of the Project and to request your input.

The Project would be located near Turney, Missouri (Project Site; **Figure 1**). The Project would consist of a single Advanced Class simple-cycle gas turbine generator and associated equipment with a nominal capacity of 420-445 MW. The Project would burn natural gas with the capability to use fuel oil as a backup and employ selective catalytic reduction (SCR) technology to control emissions of nitrogen oxides. The approximately 95.5 acres that AECI owns, of which, approximately 45 acres will be disturbed for construction of the generation site and approximately 37 acres will ultimately be fenced, is shown in Figure 1. The generation will be interconnected via construction of approximately 2 miles of electrical line between the generation site and a proposed substation. Either AECI or N.W. Electric Cooperative, Inc. will construct, own, operate, and maintain the transmission line and right-of-way (ROW) to the approximately 45.5 acres substation that AECI will own and operate. Approximately 2.5 miles of existing distribution electrical line will be reconstructed within existing ROW to supply power back to the generation site. Additionally, an approximately 1,000-foot natural gas lateral off the existing Rocky Mountain Express Pipeline would need to be constructed on the generation site to supply natural gas to the Project. Approximately 1.5 miles of water line would be needed to

supply water to the Project and surrounding community, with a portion being upgraded and a portion being constructed.

Table 1: Project Site Assessment Summary

Parameter	Site Assessment Summary
Location	Missouri/Clinton County
Site Latitude / Longitude	39°36'44.77"N / 94°20'56.37"W (approximate center point of Project)
Total Project Boundary	Approximately 160 acres
Public Lands and Conservation Easements	0 acres
Rare, Threatened, and Endangered Species	Three federally-listed species, 1 proposed threatened species, and 1 candidate species are known or likely to occur in the Project Site. Critical habitat does not appear to occur at or in the vicinity of the Project Site.

According to the USFWS, Information, Planning, and Consultation System (IPaC) website and the Missouri Natural Heritage Program (MNHP) three federally and state listed species, all listed as endangered on both levels, are known or likely to occur in Clinton County and in the vicinity of the Project Site (Table 1). Critical habitat for federally protected species has not been designated by the USFWS in the vicinity of the Site.

Table 1: Federally Threatened and Endangered Species Known or Likely to Occur in Clinton Co, Missouri

Species	Habitat	State Status	Federal Status
Mammals			
Northern long-eared bat (Myotis septentrionalis)	Roosts in trees with exfoliating bark, snags, caves or abandoned mines	Endangered	Endangered
Gray bat (Myotis grisescens)	Roosts in caves or cave-like habitats year-round	Endangered	Endangered
Indiana bat (Myotis sodalis)	Roosts in trees with exfoliating bark, snags, caves or abandoned mines	Endangered	Endangered
Tricolored Bat (*Perimyotis subflavus*)	Hibernates in caves or abandoned mines during the winter. During spring, summer, fall, the bats roost among live and dead leaf clusters in trees of hardwood forested habitats including pine trees, eastern red cedar trees, and structures such as	Not Listed	Proposed Endangered

	barns, sheds, under bridges, or in other buildings that have little human disturbance.		
Insects			
Monarch Butterfly *(Danaus plexippus*)	Overwintering populations use the leaves, branches, and trunks of large trees within forested groves.	Not Listed	Candidate
Migratory Birds			
Bald Eagle (Haliaeetus Leucocephalus)	Breeding is concentrated in coastal areas, along rivers, lakes or reservoirs. Typically breeds in forested areas with edge habitat within 1.3 miles of aquatic habitats suitable for foraging. Prefers areas of shallow water and shorelines for fishing and hunting a wide variety of waterfowl, and small aquatic and terrestrial mammals. Fish are preferred prey, but carrion is used extensively whenever encountered. Nests away from human disturbance in large trees and rarely on cliff ledges or on the ground when trees are absent. Winters primarily in coastal areas or along major river systems with adequate prey availability and large trees for perching (Buehler, 2020).	Not Listed	Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c)

Source: USFWS - https://ecos.fws.gov/ipac/ and MNHP - https://mdc.mo.gov/your-property/responsible construction/missouri-natural-heritage-program.

AECI requests your review of this Project and asks that you provide information on any concerns, resources, or potential impacts that you believe the forthcoming EA should address. We would appreciate any recommendations you may have to mitigate or avoid environmental impacts. Also, please share any information regarding additional review requirements that your agency may have. We would appreciate a response within 30 days of your receipt of this request. To send comments or request further information, please contact me using one of the methods listed below, mentioning the proposed Turney Energy Center Project.

Contact Information

U.S. Postal Service	2814 S. Golden Ave. Springfield MO 65807
Email	rleforce@aeci.org
Telephone Hotline	(417) 371-5463

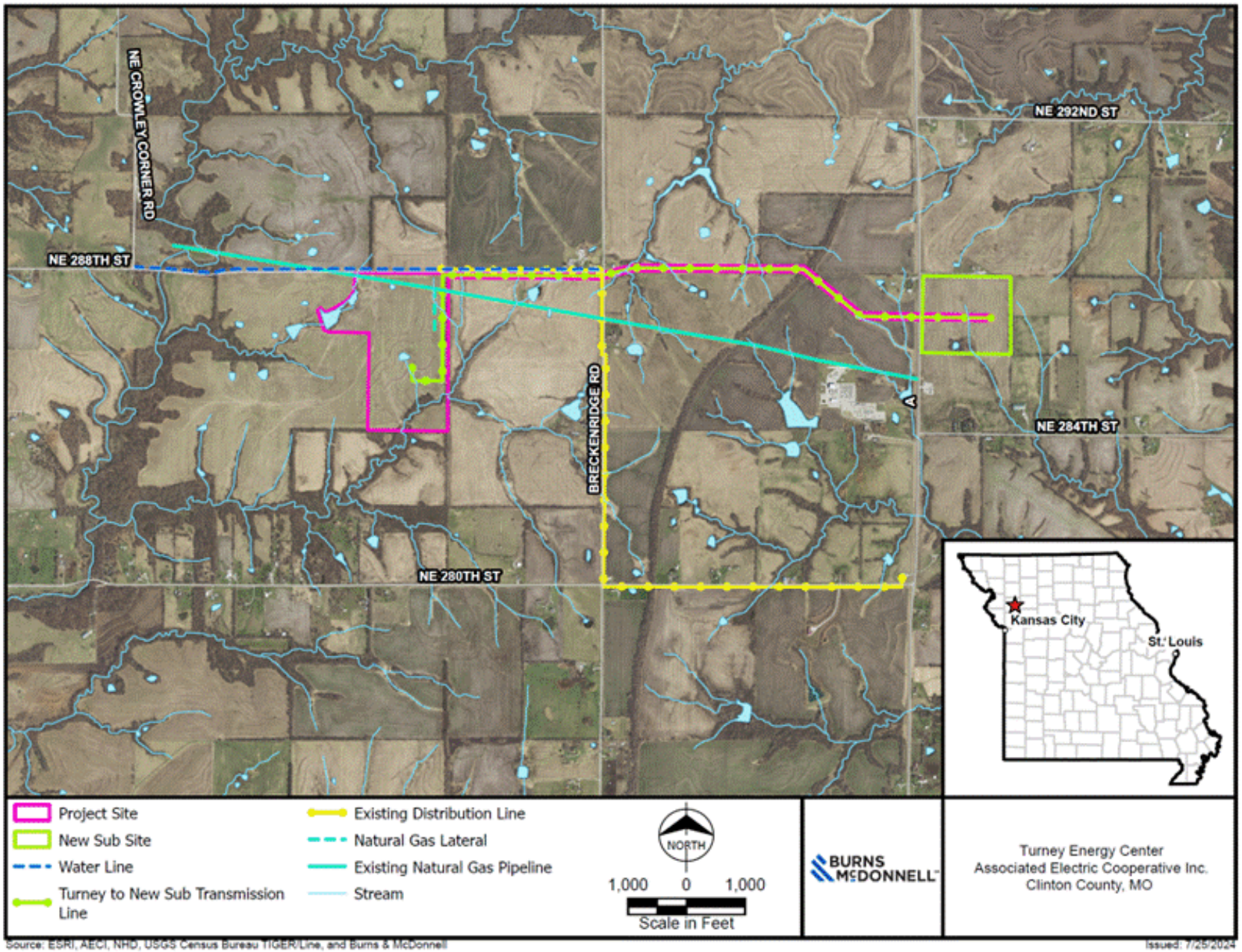
Sincerely,

Rob LeForce, B.W.
Environmental Analyst, Land and Water Resources, AECI

Enclosure Figure 1: AECI Project Site

cc: Tate Thriffiley, RUS
Chris Howell, Burns & McDonnell

Figure 1: AECI Project Site



Missouri Department of Conservation

Natural Heritage Review Report

December 6, 2024

Science Branch
P. O. Box 180
Jefferson City, MO 65102
Prepared by: Dillon Freiburger
NaturalHeritageReview@mdc.mo.gov
(573) 522 - 4115 ext. 3182

Rob Leforce
Associated Electric Cooperative
rleforce@aeci.org

NHR ERT ID:	15765	NHR ERT Level:	2
Project type:	Energy Storage, Production and Transfer, Coal, Gas, Hydro, Nuclear, Oil, Solar or Wind Facility, Coal, Gas or Nuclear Power Plant		
Location/Scope:	Clinton County, Missouri; 39 36'44.77" N, 94 20'56.37"W; Section 02, Township 55N, Range 31 W		
County:	Clinton		
Project Title:	Turney Energy Center		
Query received:	9/11/2024		

This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it identifies public lands and records of sensitive resources located close to and/or potentially affected by the proposed project. If project plans or location change, this report may no longer be valid. Because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, reports include information about records near but not necessarily on the project site. Lack of an occurrence record does not mean that a sensitive species or natural community is not present on or near the project area. On-site verification is the responsibility of the project. These records serve as one reference and additional information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Look for additional information about the biological and habitat needs of records listed to avoid or minimize impacts. More information is at Natural Areas | Missouri Department of Conservation (mo.gov) and Missouri Fish and Wildlife Information System (MOFWIS).

Level 3: Records of federal-listed (also state-listed) species or critical habitats near the project site:

Natural Heritage records identify no wildlife preserves, no designated wilderness areas or critical habitats, and no federal-listed species records within the project area, or in the public land survey section or sections adjacent.

FEDERAL LIST species/habitats are protected under the Federal Endangered Species Act. Contact U.S. Fish & Wildlife Service (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; 573-234-2132) for Endangered Species Act coordination and concurrence information).

Level 2: Records of state-listed (not federal-listed) endangered species AND / OR state-ranked (not state-listed endangered) species and natural communities of conservation concern. The Department tracks these species and natural communities due to population declines and/or apparent vulnerability.

Natural Heritage records indicate the following state-ranked species near the project area:

Scientific Name	Common Name	State Rank	Proximity (miles)	Primary Habitat
Taxidea taxus	American Badger	S3	<4	Grassland matrix, Savanna pasture/orchard, Row/close grown crops
Ambystoma tigrinum	Eastern Tiger Salamander	S3	<2	Savanna/Shrub/Woodland matrix, Grassland matrix, Wetland matrix

State Rank Definitions:

- S1: Critically imperiled in the state because of extreme rarity of or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically, 5 or fewer occurrences or very few remaining individuals (<1,000).
- S2: Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state (6 to 20 occurrences or few remaining individuals).
- S3: Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.
- S4: Uncommon but not rare, and usually widespread in the nation or state. Possible cause of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.
- S#S#: Range Rank: A numeric range rank (e.g., S2S3) is used to indicate the range of uncertainty about the exact status.
- ?: Denotes inexact or uncertain numeric rank.
- SU: Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

There are no regulatory requirements associated with this status, however we encourage voluntary stewardship to minimize the risk of further decline that could lead to listing.

STATE ENDANGERED species are protected under the Wildlife Code of Missouri (3CSR10-4.111).
See the Missouri Species And Communities Of Conservation Concern Checklist (mo.gov) for a complete list.

General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific Natural Heritage records):

- **Construction:** The project should be managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any Clean Water Act permit conditions (Missouri DNR or US Army Corps of Engineers). Revegetate areas in which the natural cover is disturbed to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Annual ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crown vetch and sericea lespedeza. Pollutants, including sediment, can have significant impacts far downstream. Use silt fences and/or vegetative filter strips to buffer streams and drainages and monitor those after rain events and until a well-rooted ground cover is reestablished. Please see Best Management Practices for Construction and Development Projects Affecting Missouri Rivers and Streams (mo.gov).

- **Utility Lines:** Cross-country lines affect both plants and wildlife, as do activities necessary to their construction, maintenance and repair. Stream and drainage crossings are primary concerns, and every effort should be made to avoid erosion, silt introduction, petroleum or chemical pollution, and disruption or realignment of stream banks and beds. All wetlands should be avoided to the extent possible. Where wetlands cannot be avoided, project managers should minimize impacts and develop a mitigation plan to replace lost aquatic functions. See Best Management Practices for Construction and Development Projects Affecting Missouri Rivers and Streams (mo.gov) for best management recommendations for in-stream work.
  - During construction ground disturbance should be minimized. In areas where ground disturbance is necessary, best management practices for erosion control should be implemented to minimize negative impacts.

- Revegetation is an important part of managing utility corridors, and it can have significant resource impacts – for better or worse. Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with native plant species compatible with the local landscape and wildlife needs. Native shrubs (e.g. buttonbush, dogwood, willow) are a good option to stabilize streambanks, slow water velocities, and provide some wildlife habitat. Annuals like Rye Grass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crown vetch and sericea lespedeza.
- Maintenance of ground cover in utility corridors can have significant implications for sensitive resources. Native plant species typically require low maintenance over the long term and provide more benefits to native wildlife. Utility corridors can provide wildlife travel corridors, food sources and types of low-growing plant diversity sometimes rare in adjoining land. Mowing and maintenance schedules should consider nesting seasons, and diversity in plant composition. If herbicides will be used to control vegetation in the corridor after construction has been completed, best management practices should be implemented to avoid impacts to non-target plant species and to avoid impacts to all aquatic species.

➢ **Bald Eagles:** Bald Eagles (*Haliaeetus leucocephalus*) nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at: Do I need an eagle take permit? | U.S. Fish & Wildlife Service (fws.gov) if eagle nests are seen.

➢ **Indiana Bats** occur in Clinton County and could occur in the project area. Indiana Bats *(Myotis sodalis*, federal and state-listed endangered) hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats, especially from September to April. **If any trees need to be removed by your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100) for further coordination under the Endangered Species Act.**

➢ Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, larvae, and aquatic plant material may be moved to new sites on boats or construction equipment, so inspect and clean equipment thoroughly before moving between project sites.
- Remove any mud, soil, trash, plants (or plant material) or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that has operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (≥140° F, typically available at do-it-yourself carwash sites), and dry in the hot sun before using again.

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Natural Heritage records largely reflect sites visited by specialists in the last 30 years. Many privately owned tracts have not been surveyed and could host remnants of species once but no longer common.

Missouri Department of Conservation

Missouri Department of Conservation's Mission is to
protect and manage the forest, fish, and
wildlife resources of the state and to
facilitate and provide opportunities for all citizens to
use, enjoy and learn about these resources.

Natural Heritage Review Level Two Report: State Listed Endangered Species and/or Missouri Species/Natural Communities of Conservation Concern

There are records of state-listed Endangered Species, or Missouri Species or Natural Communities of Conservation Concern within or near the defined Project Area. Please contact Missouri Department of Conservation for further coordination.

Foreword: Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this report is to provide information to federal, state and local agencies, organizations, municipalities, corporations, and consultants regarding sensitive fish, wildlife, plants, natural communities, and habitats to assist in planning, designing, and permitting stages of projects.

PROJECT INFORMATION

Project Name and ID Number: Turney Energy Center #15765
User Project Number: 141827
Project Description: Clinton County, Missouri; 39 36'44.77" N, 94 20'56.37"W; Section 02, Township 55N, Range 31 W
Project Type: Energy Storage, Production and Transfer, Coal, Gas, Hydro, Nuclear, Oil, Solar or Wind Facility, Coal, Gas or Nuclear Power Plant
Contact Person: Audra McCaslin
Contact Information: almccaslin@burnsmcd.com or 816-605-7928

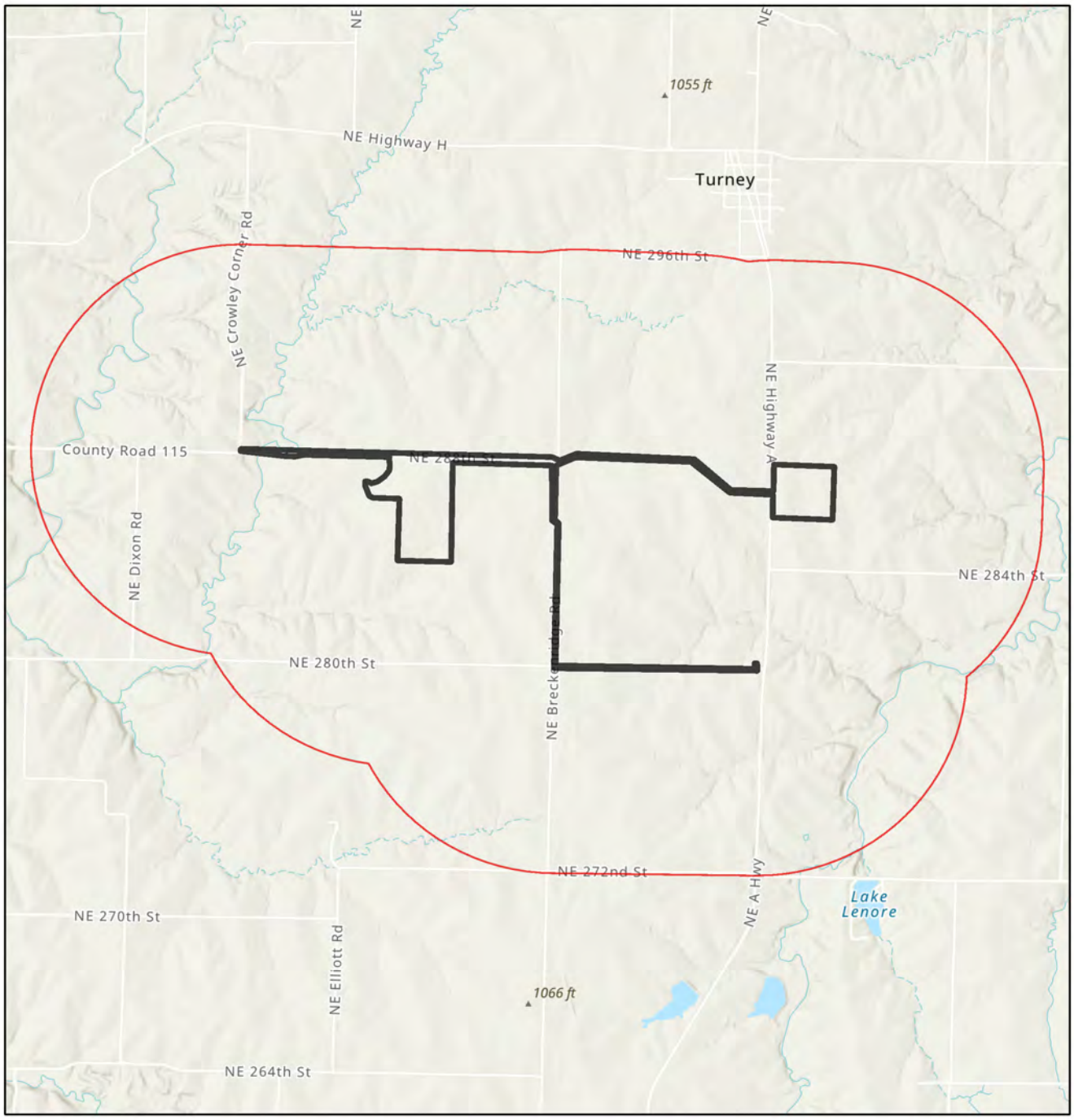
Disclaimer: This NATURAL HERITAGE REVIEW REPORT identifies if a species or natural community tracked by the Natural Heritage Program is known to occur within or near the project area submitted, and shares recommendations to avoid or minimize project impacts to sensitive species or natural habitats. Incorporating information from the Natural Heritage Program into project plans is an important step in reducing impacts to Missouri's sensitive natural resources. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information.

This Natural Heritage Review Report is not a site clearance letter for the project. Rather, it identifies public lands and records of sensitive resources located close to and/or potentially affected by the proposed project. If project plans or location change, this report may no longer be valid. Because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, reports include information about records near but not necessarily on the project site. Lack of an occurrence record does not mean that a sensitive species or natural community is not present on or near the project area. On-site verification is the responsibility of the project. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts and additional information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination: Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. This report does not fulfill Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit IPaC: Home (fws.gov) to initiate USFWS Information for Planning and Conservation (IPaC) consultation. Contact the Columbia Missouri Ecological Field Services Office (573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203) for more information.

Transportation Projects: If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or visit Home Page | Missouri Department of Transportation (modot.org) for additional information on recommendations.

Turney Energy Center



December 4, 2024

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Buffered Project Boundary

Project Boundary

Esri, NASA, NGA, USGS, Missouri Dept. of Conservation, Missouri DNR, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS

Species or Communities of Conservation Concern within the Area:

There are records of state-listed Endangered Species, or Missouri Species or Natural Communities of Conservation Concern within or near the defined Project Area. Please contact the Missouri Department of Conservation for further coordination.

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

Other Special Search Results:

No results have been identified for this project location.

Project Type Recommendations:

Coal, gas or nuclear power plant, including new construction, maintenance, modification and expansion. Fish, forest, and wildlife impacts can be avoided by siting projects in locations that have already been disturbed or previously developed, where and when feasible, and by avoiding alteration of areas providing existing habitat, such as wetlands, streams, forest, native grassland, etc. The project should be managed to minimize erosion and sedimentation/runoff to nearby wetlands, streams and lakes, including adherence to any Clean Water Act permit conditions. Project design should include stormwater management elements that assure storm discharge rates to streams for heavy rain events will not increase from present levels. Revegetate areas in which the natural cover is disturbed to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Annual ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crownvetch and sericea lespedeza. Pollutants, including sediment, can have significant impacts far downstream. Use silt fences and/or vegetative filter strips to buffer streams and drainages, and monitor the site after rain events and until a well-rooted ground cover is reestablished.

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - If this project has the potential to alter habitat (e.g. tree removal, projects in karst habitat) or cause direct mortality of bats, please coordinate directly with U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act. Indiana bats *(Myotis sodalis*, federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis septentrionalis,* federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April.

The project site submitted and evaluated is on or near Fish Spawning Stream Reaches Little Platte River, one of 138 state-designated fish spawning stream segments. These stream reaches were so designated because they have highly diverse fish communities, fish Species of Conservation Concern present, and because they are important to maintaining, restoring, or avoiding future listing of Species of Conservation Concern. These stream reaches also are included as a Missouri Nationwide Permit Regional Condition (Number 2) that must be considered if working under a Clean Water Act Section 404 Permit issued by the U.S. Army Corps of Engineers (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch/NationWidePermit...). A list of all stream reaches is available at http://www.nwk.usace.army.mil/Portals/29/docs/regulatory/nationwidepermi... . Activities that alter or destabilize stream bottoms or banks should be avoided during the important fish spawning period for that stream, in order to not disrupt fish spawning (i.e., laying and fertilizing fish eggs.) The sensitive spawning period for this stream is March 15th to June 15th. At all times, avoid habitat destruction or introducing heavy sediment loads, chemical or organic pollutants.

The project site submitted and evaluated is on or near Fish Spawning Stream Reaches Shoal Creek, one of 138 state-designated fish spawning stream segments. These stream reaches were so designated because they have highly diverse fish communities, fish Species of Conservation Concern present, and because they are important to maintaining, restoring, or avoiding future listing of Species of Conservation Concern. These stream reaches also are included as a Missouri Nationwide Permit Regional Condition (Number 2) that must be considered if working under a Clean Water Act Section 404 Permit issued by the U.S. Army Corps of Engineers (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch/NationWidePermit...). A list of all stream reaches is available at http://www.nwk.usace.army.mil/Portals/29/docs/regulatory/nationwidepermi... . Activities that alter or destabilize stream bottoms or banks should be avoided during the important fish spawning period for that stream, in order to not disrupt fish spawning (i.e., laying and fertilizing fish eggs.) The sensitive spawning period for this stream is May 15th to July 15th. At all times, avoid habitat destruction or introducing heavy sediment loads, chemical or organic pollutants.

Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See Managing Invasive Species in Your Community | Missouri Department of Conservation (mo.gov) for more information.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (>140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparian corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (Kansas City District Regulatory Branch (army.mil)) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (Section 401 Water Quality Certification | Missouri Department of Natural Resources (mo.gov)), if required, should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit Wastewater Permits | Missouri Department of Natural Resources (mo.gov) for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below:

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Miscellaneous Information

FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4.111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

See Missouri Species and Communities of Conservation Concern Checklist (mo.gov) for a complete list of species and communities of conservation concern. Detailed information about the animals and some plants mentioned may be accessed at Mofwis Search Results. Please contact the Missouri Department of Conservation to request printed copies of any materials linked in this document.

USDA United States Department of Agriculture

Rural Development
Rural Utilities Service
1400 Independence Ave SW, Room 2230 Stop 1570,
Washington, DC, 20250
Voice 202.695.2540
Fax 202.690.0649

9/4/2024

Dawn Scott
Deputy State Historic Preservation Officer
Missouri State Historical Preservation Office
P.O. Box 176
Jefferson City, MO 65102

Subject: United States Department of Agriculture (USDA) – Rural Development (RD) Rural Utility Service (RUS) Staff SHPO Section 106 Initiation
Turney Energy Center
Clinton County, Missouri

Dear Ms. Scott:

Associated Electric Cooperative, Inc. (AECI) is seeking financial assistance from the USDA Rural Development (RD), Rural Utilities Service (RUS) under its Electric Program for the Proposed Turney Energy Center (Project). This Project will not be using the NPA.[1]

The Project would be located near Turney, Missouri in Township 55N, Range 31W, Section 02, NW ¼. The coordinates at the approximate the center of the project site are 39°36'44.77"N, 94°20'56.37"W (Project Site; **Figure 1**). The Project would consist of a single Advanced Class simple-cycle gas turbine generator and associated equipment with a nominal capacity of 420-445 MW. The Project would burn natural gas with the capability to use fuel oil as a backup and employ selective catalytic reduction (SCR) technology to control emissions of nitrogen oxides. The approximately 95.5 acres that AECI owns, of which, approximately 45 acres will be disturbed for construction of the generation site and approximately 37 acres will ultimately be fenced, is shown in Figure 1. The generation will be interconnected via construction of approximately 2 miles of electrical line between the generation site and a proposed substation. Either AECI or N.W. Electric Cooperative, Inc. will construct, own, operate, and maintain the transmission line and right-of-way (ROW) to the approximately 45.5 acres substation that AECI will own and operate. Approximately 2.5 miles of existing distribution electrical line will be reconstructed within existing ROW to supply power back to the generation site. Additionally, an approximately 1,000-foot natural gas lateral off the existing Rocky Mountain Express Pipeline would need to be constructed on the generation site to supply natural gas to the Project. The lateral pipeline will not be owned or operated by AECI. Approximately 1.5 miles of water line would be needed to supply water to the Project and surrounding community, with a portion being upgraded and a portion being constructed.

[1] *Nationwide Programmatic Agreement among the U.S. Department of Agriculture Rural Development Programs, National Conference of State Historic Preservation Officers, Tribal Signatories, and The Advisory Council on Historic Preservation for Sequencing Section 106* (NPA).

If RUS elects to fund the Project, it will become an undertaking subject to review under Section 106 of the National Historic Preservation Act, 54 U.S.C. 306108, and its implementing regulations, 36 CFR Part 800.

RUS defines the area of potential effect (APE), as an area that includes all Project construction and excavation activity required to construct, modify, improve, or maintain any facilities; any right-of-way or easement areas necessary for the construction, operation, and maintenance of the Project; all areas used for excavation of borrow material and habitat creation; all construction staging areas, access routes, utilities, spoil areas, and stockpiling areas. Impacts that come from the undertaking at the same time and place with no intervening causes are considered "direct" regardless of its specific type (e.g., whether it is visual, physical, auditory, etc.). "Indirect" effects to historic properties are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable.

The APE for the referenced Project consists of the approximate 160.1 acres where the generation facilities, transmission right-of-way, proposed substation, rebuilt distribution line, and water line will be located. The geographic scope of the APE will not be final until a determination is made by RUS pursuant to 36 CFR § 800.4(a)(1). The APE does not include any tribal lands as defined pursuant to 36 CFR § 800.16(x). The new transmission line, waterline, rebuilt distribution line, and natural gas pipeline would be analyzed as connected actions as part of the National Environmental Policy Act (NEPA) review process.

Based on this definition, AECI proposes that the APE for the referenced project consists of the generation property, the substation property the new interconnection transmission line, new natural gas lateral, the water line, and the rebuilt distribution line, as shown in the enclosed maps. The geographic scope of the APE will not be final until a determination is made by RUS pursuant to 36 CFR § 800.3(a)(1). The APE does not include any tribal lands as defined pursuant to 36 CFR § 800.16(x).

On 9/4/2024 the following Indian tribes were notified about the Turney Energy Center Project:

- Apache Tribe of Oklahoma
- Iowa Tribe of Kansas and Nebraska
- Iowa Tribe of Oklahoma
- Omaha Tribe of Nebraska
- Osage Nation
- Otoe-Missouria Tribe of Indians, Oklahoma
- Sac & Fox Nation of Mississippi in Iowa
- Sac & Fox Nation of Missouri in Kansas and Nebraska
- Sac & Fox Nation, Oklahoma

Please review the Project and enclosed map. After completing your review, please provide RUS with your recommendation(s) about whether or not a study of the APE is needed to identify potentially affected historic properties. If you recommend a study, please explain the nature and scope of the

proposed investigation, specifically in reference to those factors identified in 36 CFR § 800.4(b)(1). If you do not recommend a study or require additional information, please provide a proposed finding of no historic properties affected or no adverse effect.

Please submit your recommendations, request for additional information, or a proposed finding, **electronically** within 30 days of your receipt of this request to RUS. If no timely response is received, RUS will determine how to proceed with Section 106 review in accordance with 36 CFR § 800.3(b)(4). Should you have any questions, please contact me at (504) 940-7564 or trent.stockton@usda.gov.

Sincerely,

Trent Stockton USDA RUS

Digitally signed by Trent Stockton
USDA RUS
Date: 2024.09.04 16:09:10 -05'00'

Trent Stockton
Archaeologist
RUS/Environmental and Historic Preservation Division

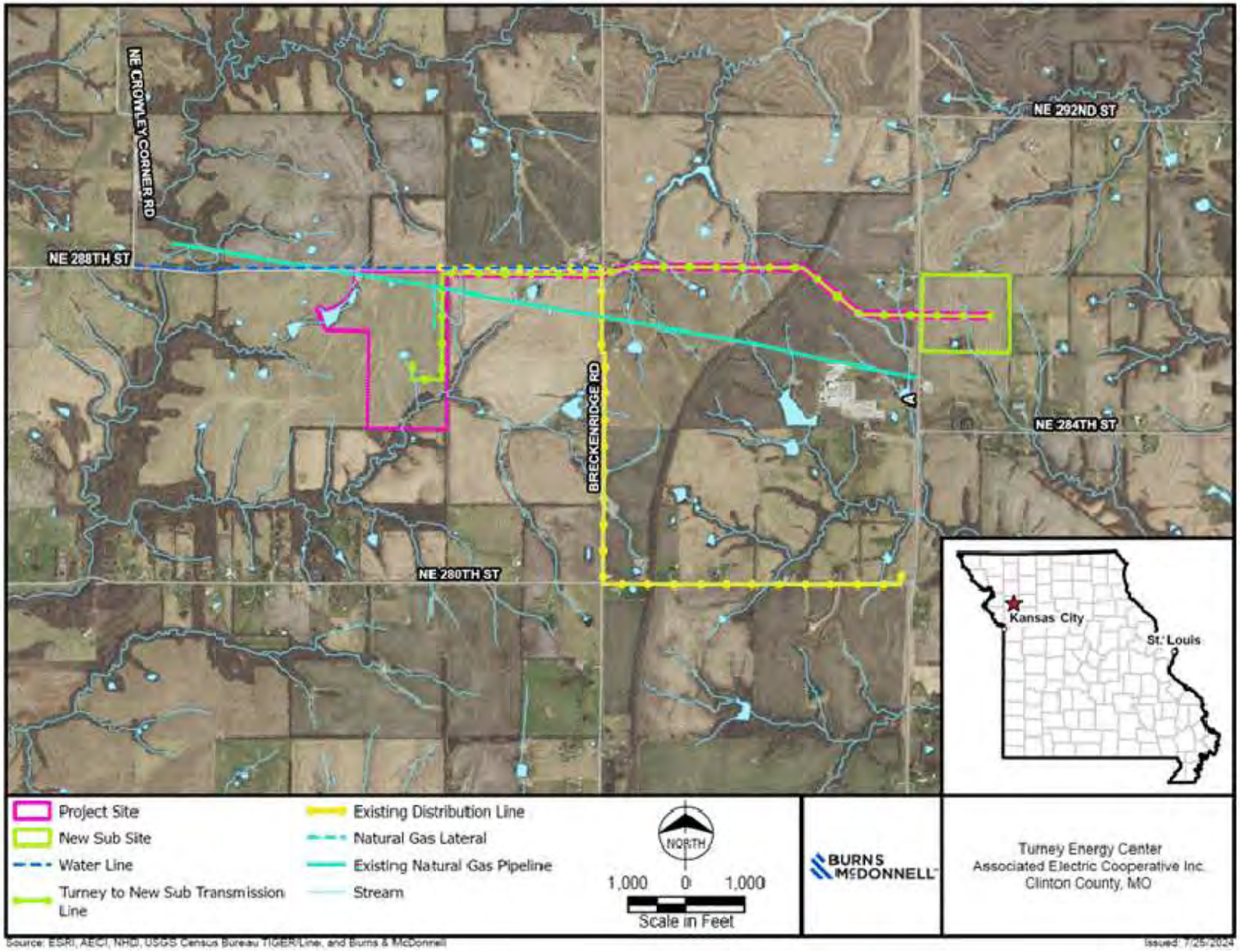
Enclosure(s) Figure 1: AECI Project Site (APE)

CC: Tate Thriffiley, RUS
Rob LeForce, AECI
Chris Howell, Burns & McDonnell

USDA
United States Department of Agriculture

Rural Development
Rural Utilities Service
1400 Independence Ave SW, Room 2230 Stop 1570,
Washington, DC, 20250
Voice 202.695.2540
Fax 202.690.0649

Figure 1: AECI Project Site (APE)



USDA
United States Department of Agriculture

10/25/2024

Rural Development
Rural Utilities Service
1400 Independence Ave SW, Room 2230 Stop 1570,
Washington, DC, 20250
Voice 202.720.9540

Dawn Scott
Deputy SHPO
Missouri State Historic Preservation Office
P.O. Box 176
Jefferson City, MO 65102

Subject: USDA RD RUS Section 106 Finding of No Adverse Effect
Turney Energy Center
Clinton County, Missouri

Dear Deputy SHPO Scott:

Associated Electric Cooperative, Inc. (AECI) is seeking financial assistance from the USDA Rural Development (RD), Rural Utilities Service (RUS) under its Electric Program for the Turney Energy Center (Project). This Project will not be using the NPA.[1]

The Project would be located in Clinton County, Missouri. AECI owns approximately 95.5 acres of agricultural land in the county where the Project would be constructed, shown in the attached project map. It is anticipated that approximately 45 acres would be disturbed for construction of the generation site. The Project would consist of a single advanced class simple-cycle gas turbine generator and associated equipment with a nominal capacity of 420-445 MW. The Project would burn natural gas with the capability to use fuel oil as a backup. It will employ selective catalytic reduction (SCR) technology to control emissions of nitrogen oxides.

The generation site will be interconnected via construction of approximately 2 miles of new electrical transmission line between the generation site and a proposed substation. Either AECI or N.W. Electrical Cooperative, Inc. will construct, own, operate, and maintain the transmission line and right-of-way (ROW) to the approximately 45.5-acre substation that AECI will own and operate. Approximately 2.5 miles of existing

[1] *Nationwide Programmatic Agreement among the U.S. Department of Agriculture Rural Development Programs, National Conference of State Historic Preservation Officers, Tribal Signatories, and The Advisory Council on Historic Preservation for Sequencing Section 106* (NPA).

distribution electrical line will be rebuilt within existing TOW to supply power back to the generation site.

A new natural gas lateral would be constructed to supply fuel to the Project Site. The new 10-inch lateral would extend south from a tap point on the existing Rocky Mountain Express gas pipeline within the Project Site boundary approximately 1,000 feet to supply the SCGT. The lateral pipeline will not be owned or operated by AECI and is considered a connected action. Also, the Project will require a new six-inch high-density polyethylene (HDPE) water line approximately 1.5 miles in length. The new water pipeline would be needed to supply water to the Project and the surrounding community, with a portion of the line being upgraded and a portion being constructed.

If RUS elects to fund the Project, it will become an undertaking subject to review under Section 106 of the National Historic Preservation Act, 54 U.S.C. 306108, and its implementing regulations, 36 CFR Part 800.

RUS defines the area of potential effect (APE), as an area that includes all Project construction and excavation activity required to construct, modify, improve, or maintain any facilities; any right-of-way or easement areas necessary for the construction, operation, and maintenance of the Project; all areas used for excavation of borrow material and habitat creation; all construction staging areas, access routes, utilities, spoil areas, and stockpiling areas. Impacts that come from the undertaking at the same time and place with no intervening causes, are considered “direct” regardless of its specific type (e.g., whether it is visual, physical, auditory, etc.). “Indirect” effects to historic properties are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable.

The APE for the referenced project consists of approximately 160.1 acres where the generation facilities, transmission right-of-way, proposed substation, rebuilt distribution line, and water line will be located, as shown in the enclosed map. The APE does not include any tribal lands as defined pursuant to 36 CFR § 800.16(x). The new transmission line, waterline, rebuilt distribution line, and natural gas pipeline are being analyzed as connected actions as part of the National Environmental Policy Act (NEPA) review process.

On 9/4/2024 the following Indian tribes were notified about the Turney Energy Center: Apache Tribe of Oklahoma, Iowa Tribe of Kansas and Missouri, Iowa Tribe of Oklahoma, Omaha Tribe of Nebraska, Osage Nation, Otoe-Missouria Tribe of Indians, Sac & Fox Nation of Missouri in Kansas and Nebraska, Sac & Fox Nation of Oklahoma, Sac & Fox Tribe of the Mississippi in Iowa. No responses were received following the initiation notice.

The enclosed report titled, *Cultural Resources Investigation Report for the Turney Energy Center* issued October 22, 2024, describes the results of the investigation of the area of potential effects (APE). A historic-age farmstead and historic-age dump site, likely associated with the farmstead, were identified during the investigation; however, both sites are recommended as not eligible for the National Register of Historic Places. An abandoned, historic-age railroad

berm was documented along the Interconnection Line survey corridor. No other cultural resources were identified. Based on the findings of the *Cultural Resources Investigation Report for the Turney Energy Center* issued October 22, 2024, a finding of no adverse effect in accordance with 36 CFR § 800.5(b) is appropriate for the referenced project.

Accordingly, the RUS is submitting a finding of no adverse effect in accordance with 36 CFR § 800.5(b). Please provide your concurrence or objection, **electronically** within 30 days of your receipt of this finding. In accordance with 36 CFR § 800.3(c)(4), RUS will proceed to the next step in review if we do not receive a response from you within thirty days. Please direct any questions you may have to me at (504) 940-7564, or trent.stockton@usda.gov.

Sincerely,

Trent Stockton USDA RUS Digitally signed by Trent Stockton USDA RUS
Date: 2024.10.25 14:35:11 -05'00'

Trent Stockton, Ph.D.
Archaeologist
Environmental and Historic Preservation Division
Rural Utilities Service
United States Department of Agriculture

Attachment(s): Project Map

Cultural Resources Investigation Report for the Turney Energy Center issued October 22, 2024

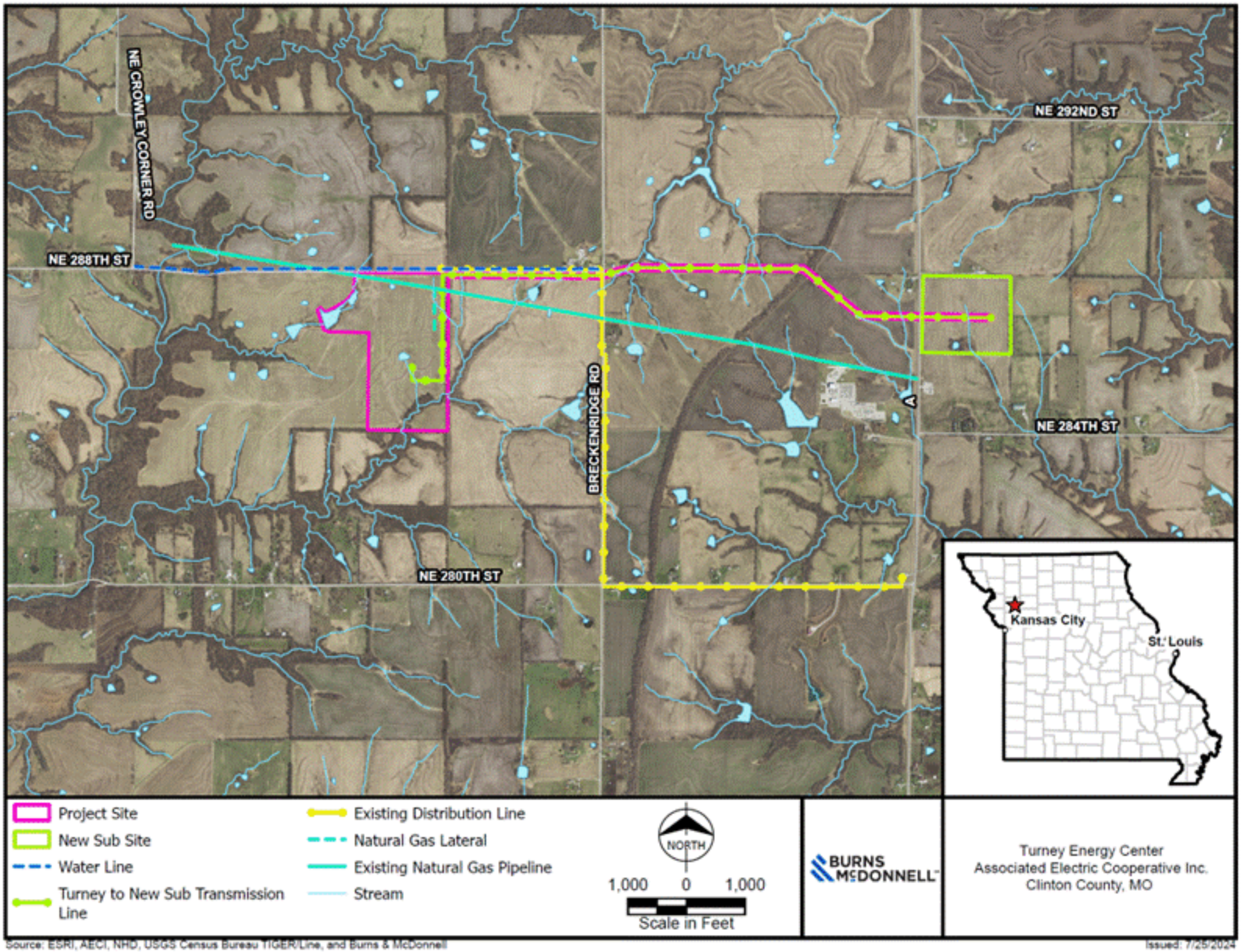
CC: Rob LeForce, AECI
Chris Howell, Burns & McDonnell
Audra McCaslin, Burns & McDonnell

USDA

United States Department of Agriculture

Rural Development
Rural Utilities Service
1400 Independence Ave SW, Room 2230 Stop 1570,
Washington, DC, 20250
Voice 202.695.2540
Fax 202.690.0649

AECI Turney Energy Center Project Site



Outlook

Section 106 Concluded for MO0073 - AECI - Turney Energy Center

From Stockton, Trent - RD, LA <Trent.Stockton@usda.gov>
Date Fri 12/6/2024 11:12 AM
To Rob LeForce <rleforce@aeci.org>
Cc Thriffiley, Tate - RD, MS <Jon.Thriffiley@usda.gov>; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>; Baragary, Whitney - RD, MO <whitney.baragary@usda.gov>

****EXTERNAL E-MAIL** Think before clicking links or attachments.**

Dear All:

This message is to notify you that Section 106 is concluded for the subject project with a finding of No Adverse Effect to Historic Properties. Our administrative record has been updated accordingly.

An inadvertent discovery provision, developed in accordance with 36 CFR § 800.13(b) and (c), will be included as a condition of obligation to address any historic properties which might be inadvertently discovered or affected during project construction.

Thank you,

Trent Stockton, Ph.D.
Archaeologist
Environmental and Historic Preservation Division
Rural Utilities Service, Rural Development
United States Department of Agriculture
1400 Independence Ave., S.W.
Washington, DC 20250
Mobile: 1-504-940-7564

From: Rob LeForce <rleforce@aeci.org>
Sent: Friday, December 6, 2024 10:06 AM
To: Stockton, Trent - RD, LA <Trent.Stockton@usda.gov>
Cc: Thriffiley, Tate - RD, MS <Jon.Thriffiley@usda.gov>; Howell, Chris <chowell@burnsmcd.com>; McCaslin, Audra L <almccaslin@burnsmcd.com>
Subject: [External Email]Turney Energy Center-Any Replies to the findings letters?

Trent,

Our 30-days since confirmed receipt of our findings letters was on 12/4. Did you ever receive any replies from the tribes or Missouri SHPO?

Respectfully,
Rob

Rob LeForce BW
Environmental Analyst, Land and Water Resources
Associated Electric Cooperative Inc.
2814 S. Golden Ave.
Springfield, MO 65801
O: 417.371.5652

APPENDIX E – INADVERTENT DISCOVERY PLAN

Inadvertent Discoveries Plan: Cultural Resources and Human Remains
Associated Electric Cooperative, Inc.
Turney Project

INTRODUCTION

Associated Electric Cooperative, Inc. (AECI) is proposing construction of the Turney Project in Clinton County, Missouri (Project).

Pursuant to 36 CRF 800.13, the following Inadvertent Discoveries Plan (IDP) has been developed to ensure that:

- Sites recommended as eligible or not determined will be protected during construction.
- Discoveries made during construction will be treated as expeditiously as possible to comply with the provisions of the discovery program and (in the case of human remains and associated objects) Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 et seq.) and its implementation regulations (43 CFR Part 10) and, at the same time, to avoid undue delays of construction.

This document describes the procedures for dealing with unanticipated discoveries during the course of Project construction within the State of Missouri. It is intended to:

- Maintain compliance with applicable Federal and State laws and regulations during construction of the Project.
- Describe to regulatory and review agencies the procedure the Project or its representative will follow to prepare for and deal with unanticipated discoveries.
- Provide direction and guidance to Project personnel as to the proper procedure to be followed should an unanticipated discovery occur.

PROCEDURES FOR THE DISCOVERY OF CULTURAL RESOURCES

In the event that any member of the construction work force believes that a cultural resource discovery is encountered the following plan will be implemented:

- All work within 100 feet both sides of the discovery will immediately stop and the Project Manager will be notified. The area of work stoppage will be adequate to provide for the security, protection, and integrity of the materials. A cultural resource can be prehistoric or historic in age and could consist of, but not be limited to, for example:

    - An accumulation of shell, burned rocks, or other subsistence related materials
    - An area of charcoal or very dark soil with artifacts
    - Stone tools, arrowheads, or dense concentrations of stone artifacts
    - A cluster of bones in association with shell, charcoal, burned rocks, or stone artifacts
    - A historic structure or assemblage of historic materials older than 50 years

- If the Project Manager believes that the discovery is a cultural resource, the Project Manager

will take appropriate steps to protect the discovery site. This will include flagging the immediate area of discovery and stop work or exclusion zone. Work in the immediate area will not resume until treatment of the discovery has been completed.

- AECI or its representative will arrange for the discovery to be evaluated by a qualified archaeologist in accordance with applicable regulations. The archaeologist will evaluate the remains and provide recommendations for how to manage the resource.

- If the discovery is within an area of federal jurisdiction, the appropriate federal agency will be consulted. If the discovery is determined to have the potential for eligibility, the archaeologist and AECI will also consult with the State Historic Preservation Officer (SHPO), the Missouri Department of Natural Resources (MODNR), and the Rural Utility Service (RUS) on how best to avoid, minimize, or otherwise mitigate further impacts. Treatment measures may include mapping, photography, sample collection, or excavation activity.

The archaeologist will implement the appropriate treatment measure(s) and provide a report on its methods and results as required. The investigation and technical report will be performed in compliance with the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48 CFR 44734--44737); the Advisory Council on Historic Preservation (ACHP) publication "Treatment of Archaeological Properties" (ACHP 1980); and follow the guidelines set forth after consultation with the SHPO, MODNR, and RUS.

PROCEDURES FOR THE DISCOVERY OF HUMAN REMAINS

In the event that human remains are encountered during either construction or maintenance activities, this IDP outlines the specific procedures to be followed. These procedures meet or exceed the Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects set forth by the National Historic Preservation Act (Public Law [PL] 89-665), its implementing regulations, “Protection of Historic and Cultural Properties” (36 CFR Part 800); the NAGPRA (43 CFR Part 10); Procedures for the Protection of Historic Properties (33 CFR 325 Appendix C); the Archaeological and Historic Preservation Act; and Consultation and Coordination with Tribal Governments (EO 13175); and the Unmarked Human Burial Sites Act, Missouri Revised Statuses, Sections 194.400-410. Missouri law protects all human burials regardless of their historical age, sex, or cultural/ethnic affiliation on both state-owned and privately-owned land. Among the provisions of the Burial Desecration Law:

- It is illegal to knowingly disturb, buy, sell, or barter human skeletal remains or associated items from unmarked graves. Also, these items may not be displayed for profit or in any commercial enterprise.
- People who encounter or discover unmarked graves and their contents should stop any further disturbance activities and report the find to an appropriate law enforcement officer in the county where the remains are found.
- Violators of this law may be guilty of either a misdemeanor or a felony. For a misdemeanor conviction, violators may be fined up to $500 and/or be imprisoned up to six months in the county jail. A felony conviction could result in a $1000 fine with up to two years imprisonment in the state penitentiary.

Through the Community Assistance Program and other MODNR staff work to assist federal, state, and local agencies as they navigate their compliance with these laws and regulatory processes, and as they take steps to protect Missouri's archaeological resources.

All activity that might disturb the remains shall cease and may not resume until authorized by appropriate law enforcement officials, RUS, SHPO, or the MODNR. Any human remains, burial sites, or burial related materials that are discovered during construction will at all times be treated with dignity and respect. Project Manager shall ensure that the following procedures are observed in the event that human remains are encountered during construction:

- Any activity that may disturb the unmarked burial site, human skeletal remains, or burial artifacts associated with the site will immediately cease on discovery. The site will be carefully covered and secured for protection from degradation by weather or unauthorized individuals. No photographs will be allowed.

- The Project Manager will be notified and responsible for taking appropriate steps to protect the discovery. This will include fencing off the immediate area of discovery and flagging the area as an exclusion zone and report the find to the Clinton County Sheriff's Department. Once the appropriate officials have determined that the find is not an active crime scene, the MODNR, SHPO, and RUS will be consulted to determine the appropriate next steps. No activity may resume until authorized by the agency authority governing the disposition of the human remains.

PROJECT CONTACTS

AECI Project Manager

Contact:	Rob LeForce, Environmental Analyst, Land and Water Resources
Telephone:	(o) 417.371.5652
Email:	rleforce@aeci.com
Address:	2814 S. Golden Avenue Springfield, MO 65801

AECI Retained Archeologist, Burns & McDonnell

Contact:	Bruce Darnell, MA
Telephone:	(o) 816.800.9319 (c) 512.431.5459
E-mail:	bdarnell@burnsmcd.com
Address:	9450 Ward Parkway Kansas City, MO 64114

Missouri Department of Natural Resources, State Historic Preservation Office

Contact:	Missouri SHPO
Telephone:	(o) 573.751.7862
E-mail:	moshpo@dnr.mo.gov
Address:	P.O. Box 176 Jefferson City, MO 65102

Clinton County Missouri Sheriff's Office

Contact:	Larry Fish
Telephone:	(o) 816.539.2156
E-mail:	info@clintoncosheriff.org
Address:	207 North Main Street #6 Plattsburg, MO 64477

Clinton County Medical Examiner & Coroner

Contact:	Clinton County Medical Examiner & Coroner
Telephone:	(o) 816.539.2156
E-mail:	info@clintoncosheriff.org
Address:	207 North Main Street Plattsburg, MO 64477

RUS, Water and Environmental Programs – USDA Rural Development
Cultural Resources Specialist

Contact:	Trent Stockton, Ph.D.
Telephone:	(c) 504-940-7564
Email:	Trent.Stockton@usda.gov
Address:	1400 Independence Avenue, SW Washington, DC 20250-1548

Federal Preservation Officer

Contact:	Ira Matt
Telephone:	(c) 703-304-3167
Email:	ira.matt@usda.gov
Address:	1400 Independence Avenue, SW Washington, DC 20250-1548

APPENDIX F – NOISE STUDY

BURNS McDONNELL

ASSOCIATED ELECTRIC COOPERATIVE INC

SOUND STUDY REPORT

TURNEY

PROJECT NO. 141827

REVISION 0

OCTOBER 21, 2024

CONTENTS

TABLES

List of Abbreviations

Abbreviation	Term/Phrase/Name
AECI	Associated Electric Cooperative Inc
ANSI	American National Standards Institute
BOP	balance of plant
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
Hz	hertz
L_{ANS}	A-weighted, noise compensated metric
L_{dn}	day-night average sound level
L_{eq}	equivalent-continuous sound level
L_{10}	10-percentile exceedance sound level
L_{50}	50-percentile exceedance sound level
L_{90}	90-percentile exceedance sound level
MW	megawatt
mph	miles per hour
NIST	U.S. National Institute of Standards and Technology
NSA	noise sensitive area
Project	Turney Energy Center Project
PWL	sound power level
SCR	selective catalytic reduction
SPL	sound pressure level

Executive Summary

Burns & McDonnell conducted a sound study for the proposed Associated Electric Cooperative Inc. (AECI) Turney Energy Center Project (Project), located in Clinton County, Missouri, outside the City of Turney. The Project is a new development of a 450-megawatt (MW) simple-cycle combustion turbine power generating facility built on a green-field site. The Project is expected to include one (1) Siemens 9000H-class simple-cycle unit equipped with a selective catalytic reduction (SCR) system and associated balance-of-plant (BOP) equipment.

The objectives of the sound study were to identify the applicable noise regulations, measure baseline sound levels near the Project property and surrounding area, and create an acoustical model to evaluate potential future noise impacts from the Project.

The State of Missouri does not have any applicable noise statutes and designates authority for noise to local jurisdictions. Clinton County also does not appear to have any applicable noise limits based on online available information. In absence of regulatory limits, sound levels were compared to existing ambient sound levels at the nearest residential receptors.

1.0 Acoustical Terminology

The term “sound level” is often used to describe two different sound characteristics: sound power and sound pressure. Every source that produces sound has a sound power level (PWL). The PWL is the acoustical energy emitted by a sound source and is an absolute number that is not affected by the surrounding environment. The acoustical energy produced by a source propagates through media as pressure fluctuations. These pressure fluctuations, also called sound pressure levels (SPL), are what human ears hear and microphones measure.

Sound is physically characterized by amplitude and frequency. The amplitude of sound is measured in decibels (dB) as the logarithmic ratio of a sound pressure to a reference sound pressure (20 micropascals). The reference sound pressure corresponds to the typical threshold of human hearing. To the average listener, a 3-dB change in a continuous broadband sound is generally considered “just barely perceptible”; a 5-dB change is generally considered “clearly noticeable”; and a 10-dB change is generally considered a doubling (or halving, if the sound is decreasing) of the apparent loudness.

Sound waves can occur at many different wavelengths, also known as the frequency. Frequency is measured in hertz (Hz) and is the number of wave cycles per second that occur. The typical human ear can hear frequencies ranging from approximately 20 to 20,000 Hz. Normally, the human ear is most sensitive to sounds in the middle frequencies (1,000 to 8,000 Hz) and is less sensitive to sounds in the lower and higher frequencies. As such, the A-weighting scale was developed to simulate the frequency response of the human ear to sounds at typical environmental levels. The A-weighting scale emphasizes sounds in the middle frequencies and de-emphasizes sounds in the low and high frequencies. Any sound level to which the A-weighting scale has been applied is expressed in A-weighted decibels, or dBA. For reference, the A-weighted sound pressure level and subjective loudness associated with some common sound sources are listed in Table 1-1. The C-weighting scale has more of an emphasis on low frequency content than the A-weighting scale and is generally used to describe the low frequency characteristics of sound levels (e.g., “rattling” or “rumbling” associated with sound levels).

Sound in the environment is constantly fluctuating, as when a car drives by, a dog barks, or a plane passes overhead. Therefore, sound metrics have been developed to quantify fluctuating environmental sound levels. These metrics include the exceedance sound level. The exceedance sound level is the sound level exceeded during “x” percent of the sampling period and is also referred to as a statistical sound level. Common exceedance sound level values are the 10-, 50-,90-percentile exceedance sound levels, denoted by L_{10}, L_{50}, and L_{90}. The equivalent-continuous sound level (L_{eq}) is the arithmetic average of the varying sound over a given time period and is the most common metric used to describe sound. The USEPA uses a noise metric called the day-night average sound level (L_{dn}) which is a 24-hour average sound level, with a 10-dBA penalty applied to sound measured during nighttime hours (10:00 PM to 7:00 AM).

When audible noise observations and high-frequency octave band data (e.g., above 1,000 Hz) indicate that measured sound levels have a strong insect, bird, or leaf rustle noise component it may be appropriate to estimate what the sound levels would be without the influence of

insect noise or other high-frequency sounds. The A-weighted, noise-compensated metric (ANS-weighted metric, "L_{ANS}") can be used to filter out sounds above 1,000 Hz and more accurately characterize the environment sound levels without the high-frequency noise.

Table 1-1: Typical Sound Pressure Levels Associated with Common Sound Sources

Sound Pressure Level (dBA)	Subjective Evaluation	Environment
140	Deafening	Jet aircraft at 75 feet
130	Threshold of pain	Jet aircraft during takeoff at a distance of 300 feet
120	Threshold of feeling	Elevated train
110	Very loud	Jet flyover at 1,000 feet
100		Motorcycle at 25 feet
90	Moderately loud	Propeller plane flyover at 1,000 feet
80		Diesel truck (40 mph) at 50 feet
70	Loud	B-757 cabin during flight
60	Moderate	Air-conditioner condenser at 15 feet
50	Quiet	Private Office
40		Farm field with light breeze, birdcalls
30	Very quiet	Quiet residential neighborhood
20		Rustling leaves
10	Just audible	--
0	Threshold of hearing	--

Sources:
(1) Adapted from *Architectural Acoustics*, *M. David Egan, 1988*
(2) *Architectural Graphic Standards*, Ramsey and Sleeper, 1994

2.0 Applicable Regulations & Criteria

State and local noise regulations were reviewed to determine the applicable Project noise limits. The Project is located in Clinton County, Missouri. The State of Missouri does not appear to have any noise statutes, nor does Clinton County according to available online zoning information.

3.0 Sound Level Measurements

Burns & McDonnell personnel took sound level measurements to establish the existing ambient sound levels in the areas surrounding the Project. Sound level measurements were made using sound level meters that met the ANSI S1.4 requirements for a Type 1 Precision Sound Level Meter. One-half inch random-incidence microphones were used on the meters. Microphone windscreens were used for all measurements. Sound level meters were calibrated before and after each set of measurements using a sound level calibrator. Calibration level changes did not exceed ± 0.5 dB during the measurements. The meters and calibrator were checked within a year prior of the measurements to verify compliance with the U.S. National Institute of Standards and Technology (NIST) specifications. Calibration certificates for the equipment that was used for the survey are provided in Appendix C.

Continuous, long-term sound level measurements were collected at two measurement locations near the Project site and representative of the surrounding areas. The long-term measurement locations and nearby noise sensitive areas (NSAs) are shown in Figure A-1 of Appendix A. The microphones were placed at a height of approximately five feet above the ground and mounted on a tripod.

The long-term monitors measured sound levels continuously over a 24-hour period from approximately 11:00 AM on August 27, 2024, to 11:00 AM on August 28, 2024. Ambient sound levels near MP1 were mostly insect noise, local agricultural activity, and occasional plane flyovers. MP2 comprised of more local traffic noise and sound from the nearby substation. The measured sound level data is shown in graph and tabular form in Appendix B.

Due to the time of year, there was a significant increase in insect noise over the nighttime hours at MP1. To show the approximate sound levels that could be expected for other times of the year when insect noise is much lower, the ANS-weighted (L_{ANS}) values have been provided, which corrects for the insect noise by filtering out the high-frequencies typically associated with insect noise. A summary of the data is shown in Table 3-1 below and is broken down by time of day (e.g., daytime/nighttime).

Table 3-1: Long-Term Measurement Summary

Measurement Location	Time of Day[a]	L_{Aeq} (dBA)	L_{dn}[b] (dBA)	L_{A90} (dBA)	L_{ANS} (dBA)	L_{Ceq} (dBC)	L_{C90} (dBC)
MP1	Daytime	56	71	46	48	63	49
	Nighttime	64		54	41	64	54
MP2	Daytime	63	69	54	61	69	56
	Nighttime	62		55	54	64	57

a) Daytime is from 7 AM to 10PM, and nighttime is from 10 PM to 7 AM
b) Day-night average L_{eq} with a 10 dB penalty on nighttime sound levels

4.0 Modeled Sound Levels

Operational sound levels for the proposed Project were performed using the Computer Aided Noise Abatement (CadnaA) modeling software. Equipment sound levels used for modeling were based on a combination of in-house data and estimated values based on past experience with similar manufacturer equipment. This model was used for determining expected sound levels due to the Project and the associated impacts to the existing ambient sound levels at the nearest noise sensitive receptors.

4.1 Sound Modeling Methodology and Input Parameters

Predictive noise modeling was performed using the industry-accepted sound modeling software CadnaA, version 2024. The software is a scaled, three-dimensional program, which considers air absorption, terrain, ground absorption, and reflections and shielding for each piece of noise-emitting equipment, and then predicts sound pressure levels at discrete locations and over a gridded area based on input source sound levels. The model calculates sound propagation based on International Organization for Standardization (ISO) 9613-2:1996, General Method of Calculation. ISO 9613-2 assesses the sound level propagation based on the octave band center-frequency range from 31.5 to 8,000 Hz.

The ISO standard considers sound propagation and directivity. The sound-modeling software calculates omnidirectional, downwind sound propagation, in tandem with user-specified directivities and propagation properties. Empirical studies accepted within the industry have demonstrated that modeling may over-predict sound levels in certain directions, and as a result, modeling results generally are considered a conservative measure of the Project's actual sound level.

The modeled atmospheric conditions were assumed to be calm, and the temperature and relative humidity were left at the program's default values. Reflections and shielding were considered for sound waves encountering physical structures. Sound levels around the site can be influenced by the sound reflections from physical structures onsite. The area surrounding the Project has mild elevation changes, which scatter and absorb the sound waves. Thus, terrain was included to account for surface effects such as ground absorption. Average ground absorption for the Project site and surrounding area was set to a value of 0.5 to account for the mix of hard pavement soft vegetative ground. The modeling assumptions are outlined in Table 4-1. This model is exclusive of noise sources not associated with the Project (e.g., traffic noise and local fauna). Only Project sound levels have been evaluated.

Table 4-1: Sound Modeling Parameters

Model Input	Parameter Value
Ground Absorption	0.5
Number of Reflections	2
Receptor Height	5 feet above grade
Terrain	USGS topographic land data
Temperature	50 °F
Humidity	70%

4.2 Project Acoustical Design

The Project general arrangement is included as Figure A-2 of Appendix A. The Project is expected to include one (1) Siemens 9000H-class simple-cycle combustion turbine and associated balance-of-plant (BOP) equipment. The combustion turbine is also expected to include a selective catalytic reduction (SCR) system. All equipment is expected to be typical base-package offerings and has been estimated based on in-house sound levels from projects with similar equipment. A basic silencer has also been included on the exhaust stack. No additional mitigation options beyond what is typically considered base package have been included in the noise model. All modeled sound levels are included in Appendix C.

4.3 Model Results

Project sound levels were modeled for normal operation, steady-state condition (i.e., no start-up, shutdown, or off-normal operating conditions). The acoustic model results are only for the new Project and do not include any contributions for existing ambient sound sources. The predicted A-weighted sound level contours for the existing Project design are shown in Figure A-3 of Appendix A. The Project sound levels predicted at nearby NSAs (i.e., residential areas) are provided in Table 4-2 below.

Table 4-2: Future Predicted Sound Level Results

Receptor Name	Ambient Sound Levels[1]		Model Results	
	dBA	dBC	dBA	dBC
NSA1	46	49	44	62
NSA2	46	49	41	60
NSA3	46	49	42	59
NSA4	46	49	35	55
NSA5	46	49	36	56

1) Existing Ambient sound levels based on lowest daytime/nighttime average L90 measurements at MP1

As shown in the table results, the Project is expected to contribute 44 dBA and 62 dBC at the nearest NSA.

5.0 Conclusion

Burns & McDonnell conducted a sound study for the AECI Turney Energy Center Project, located in Clinton County, Missouri. The study included a discussion of the applicable noise regulations for the Project, existing ambient sound level measurements, and acoustical modeling to estimate Project sound levels at the nearest noise sensitive areas (i.e., residential areas).

The Project does not have any applicable numerical noise limits. Project sound levels have been predicted based on acoustic modeling of expected base-package equipment as part of the Project's current design. Project sound levels have been compared to the existing ambient sound levels in the area surrounding the Project site. The Project is expected to contribute 44 dBA and 62 dBC at the nearest NSA.

APPENDIX A – FIGURES

LEGEND

- Project Area
- NSAs
- MPs

REFERENCE

0 0.2 0.4
MILES

0 0.2 0.4
KILOMETERS

N

Figure A-1
Ambient Measurement Locations

LOCATION:	Clinton County, MO
CLIENT/PROJECT:	AECI Turney
PROJ. NO.:	141827
CREATED:	10/01/2024

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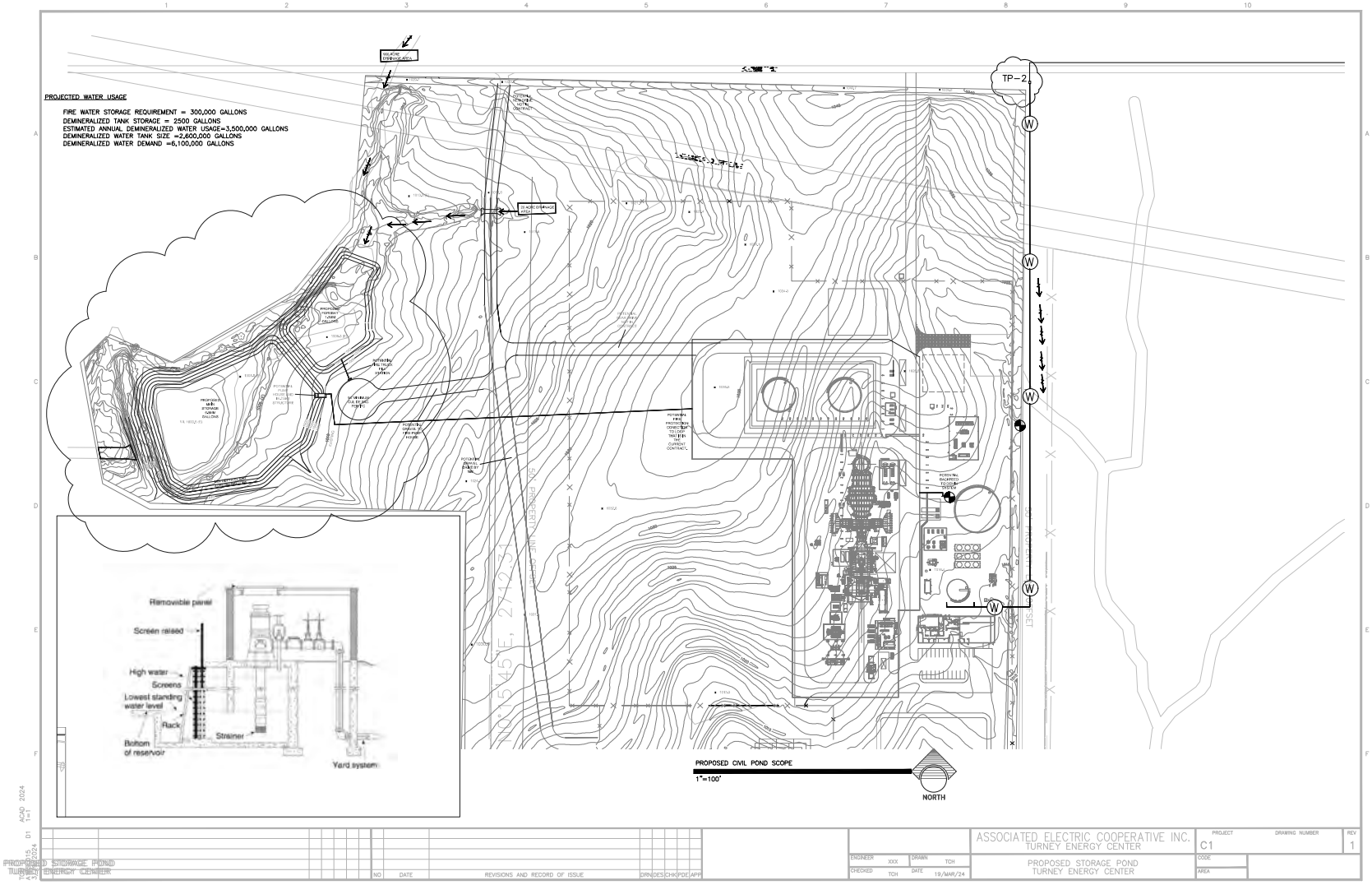
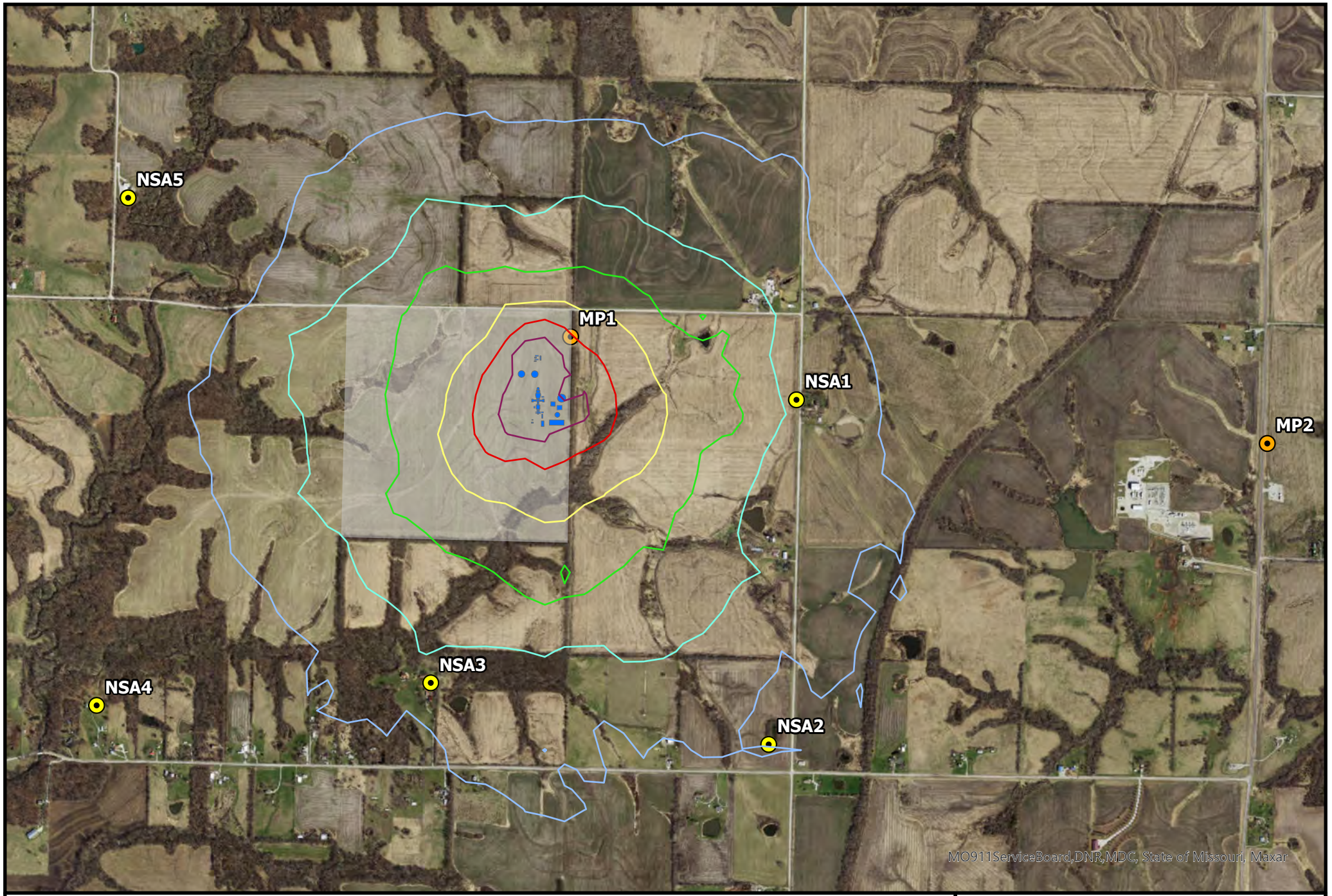
Path: G:\Projects\Air-Noise Dept\Project Files\AECI\Turney Noise\GIS\Turney\Turney Noise_Bit.aprx

Figure A-2 - General Arrangement





LEGEND

- Project Area
- Structures
- NSAs
- MPs
- 40 dBA
- 45 dBA
- 50 dBA
- 55 dBA
- 60 dBA
- 65 dBA

REFERENCE

0 0.2 0.4 MILES

0 0.2 0.4 KILOMETERS

N

Figure A-3
Sound Level Contours

LOCATION:	Clinton County, MO
CLIENT/PROJECT:	AECI Turney
PROJ. NO.:	141827
CREATED:	10/01/2024

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Path: G:\Projects\Air-Noise Dept\Project Files\AECI\Turney Noise\GIS\Turney\Turney Noise_Bit.aprx

APPENDIX B – MEASUREMENT DATA

Turney Energy Center
Ambient Measurement Data

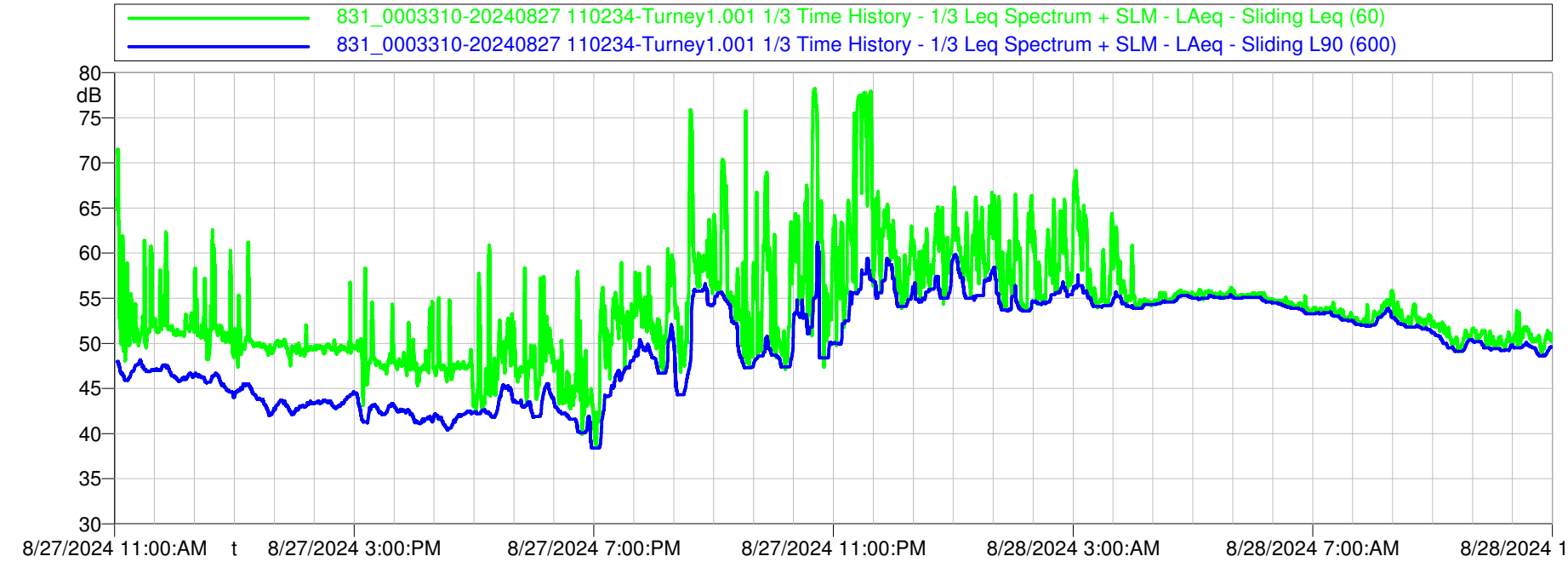
Time	MP1					MP2				
	L_{Aeq} (dBA)	L_{A90} (dBA)	L_{ANS} (dBA)	L_{Ceq} (dBC)	L_{C90} (dBC)	L_{Aeq} (dBA)	L_{A90} (dBA)	L_{ANS} (dBA)	L_{Ceq} (dBC)	L_{C90} (dBC)
8/27/24 11:15 AM	54	47	35	55	50	66	53	63	72	54
8/27/24 12:00 PM	53	46	35	53	47	63	53	61	68	53
8/27/24 1:00 PM	51	44	35	51	45	62	53	60	66	53
8/27/24 2:00 PM	50	43	35	56	44	62	52	60	67	53
8/27/24 3:00 PM	49	43	36	51	44	65	51	64	72	53
8/27/24 4:00 PM	49	42	35	52	43	63	52	61	68	52
8/27/24 5:00 PM	51	43	35	52	44	64	52	62	69	53
8/27/24 6:00 PM	49	42	34	50	44	64	52	62	69	54
8/27/24 7:00 PM	53	43	45	68	51	60	53	57	68	56
8/27/24 8:00 PM	63	47	51	68	59	60	50	58	69	60
8/27/24 9:00 PM	63	48	59	72	56	60	51	57	71	60
8/27/24 10:00 PM	67	49	49	69	53	62	53	53	69	58
8/27/24 11:00 PM	71	55	38	69	54	64	52	48	65	60
8/28/24 12:00 AM	60	55	37	62	57	63	59	53	64	58
8/28/24 1:00 AM	62	55	36	61	55	62	58	40	61	57
8/28/24 2:00 AM	61	54	34	60	54	59	56	43	59	56
8/28/24 3:00 AM	61	54	35	59	54	59	56	47	58	56
8/28/24 4:00 AM	55	54	36	55	54	60	55	54	62	56
8/28/24 5:00 AM	55	55	35	55	55	61	55	57	62	56
8/28/24 6:00 AM	55	54	36	55	54	61	56	59	65	57
8/28/24 7:00 AM	53	52	38	57	53	65	56	64	72	57
8/28/24 8:00 AM	53	52	36	55	53	62	57	59	65	58
8/28/24 9:00 AM	51	50	38	57	53	63	58	61	69	59
8/28/24 10:00 AM	51	49	38	56	53	63	58	60	68	59
8/28/24 11:00 AM	53	49	46	60	54	64	56	62	68	58
Daytime Average	**56**	**46**	**48**	**63**	**49**	**63**	**54**	**61**	**69**	**56**
Nighttime Average	**64**	**54**	**41**	**64**	**54**	**62**	**55**	**54**	**64**	**57**
Day-night Average (L_{dn})	**71**	--	--	--	--	**69**	--	--	--	--

**Daytime is from 7 AM to 10 PM, and nighttime is from 10 PM to 7 AM*

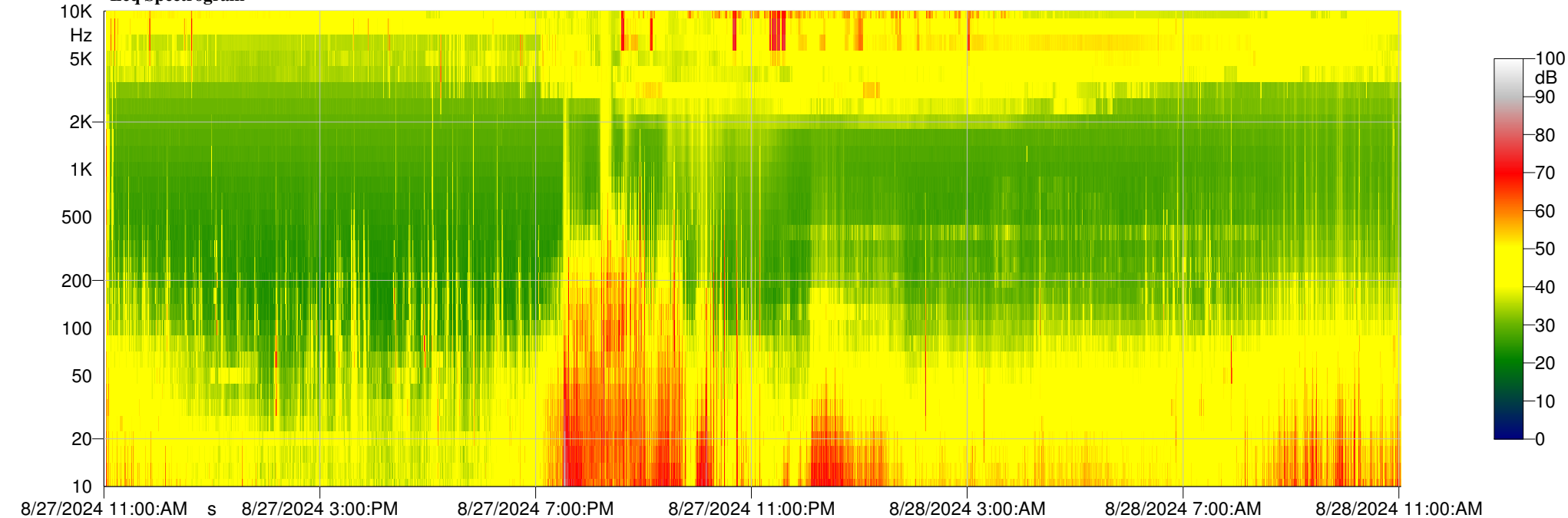
***Day-night average is average Leq with a 10 dB penalty on nighttime sound levels*

Measurement: AECI Turney Energy Center
Location: MP1

Leq is the 1-minute average sound level
L90 is the 10-minute 90th percentile exceedance sound level

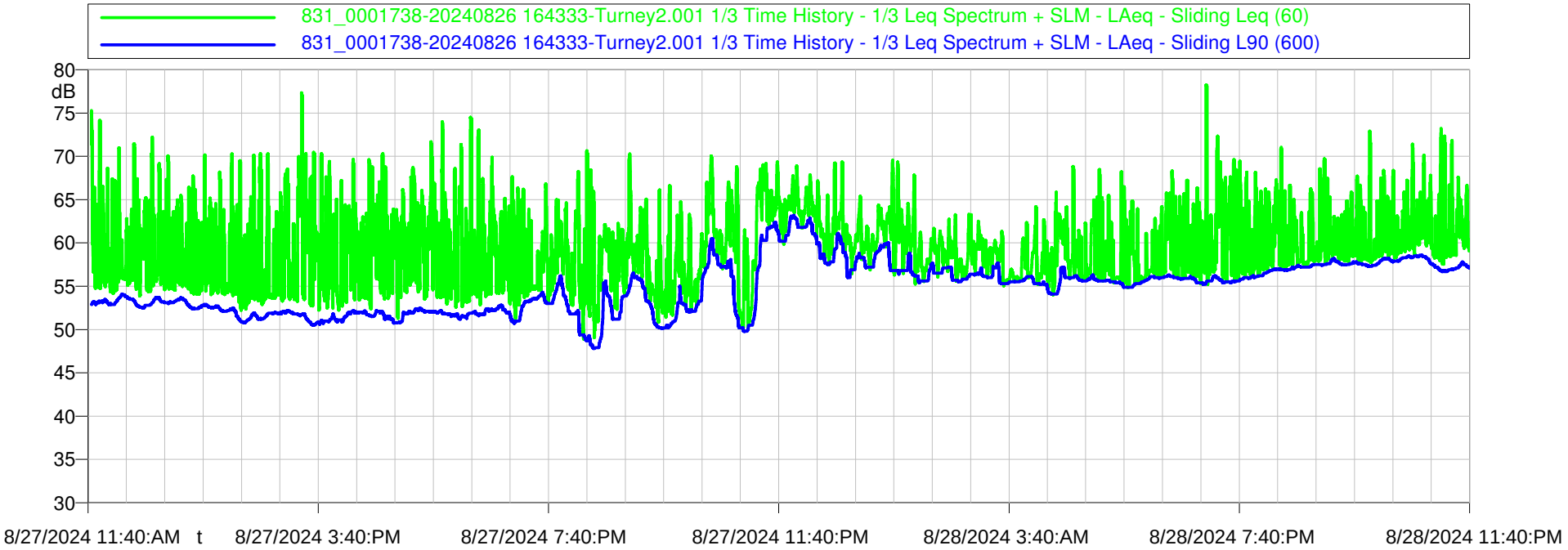


Leq Spectrogram

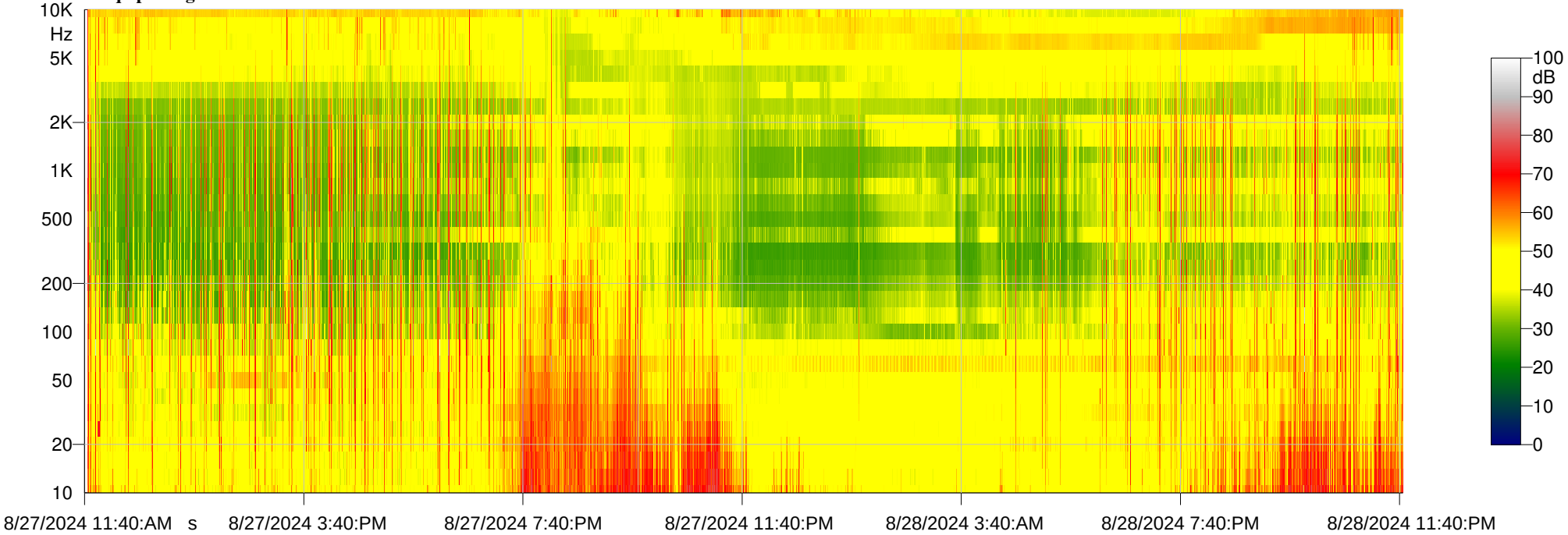


Measurement: AECI Turney Energy Center
Location: MP2

Leq is the 1-minute average sound level
L90 is the 10-minute 90th percentile exceedance sound level



Leq Spectrogram



APPENDIX C – MODELED SOUND LEVELS

Appendix C - Modeled Sound Power Levels

AECI

Turney Energy Center

Name	Number of Sources	Sound Power Level (dB)[1] Octave Band Frequency (Hz) 31.5	63.0	125	250	500	1000	2000	4000	8000	Overall (dBA)	Notes
Ammonia Pumps	4	96	102	100	99	98	97	96	95	91	**103**	Estimated 85 dBA @ 3ft
GT Enclosure Discharge Vent	4	89	96	84	82	79	86	88	89	89	**95**	In-house
GT Enclosure Air Inlet Vent	4	91	98	86	88	87	87	90	90	90	**96**	In-house
Dew Point Heater Stack	1	119	101	93	88	89	95	93	92	91	**100**	Estimated 85 dBA @ 3ft
Fuel Gas Heater	3	103	99	101	91	85	83	83	80	76	**91**	In-house
Fuel Gas Pumps	4	89	95	93	92	91	90	89	88	84	**96**	Estimated 85 dBA @ 3ft
Fuel Gas Valve	6	106	102	91	83	82	88	90	93	91	**98**	Estimated 85 dBA @ 3ft
Fuel Oil Pump Skid	1	98	114	101	104	107	107	109	105	98	**114**	In-house
GT Blower Skid	1	110	106	108	98	92	90	90	87	83	**98**	Estimated 85 dBA @ 3ft
Roto Air Cooler	1	107	105	100	96	94	89	85	83	79	**96**	In-house
Stack Exit	1	130	124	110	92	88	100	114	108	85	**116**	In-house
TA Inlet	4	132	125	108	84	79	77	73	68	80	**100**	In-house
TEC Blower	1	110	106	108	98	92	90	90	87	83	**98**	Estimated 85 dBA @ 3ft
ACHE	1	122	124	110	107	113	107	105	103	96	**114**	Estimated 85 dBA @ 3ft
Air Inlet Duct	1	111	106	105	94	88	102	87	88	93	**103**	In-house
Air Inlet House	1	118	112	108	99	87	90	79	96	105	**105**	In-house
Ammonia Flow Control Skid	1	93	99	97	96	95	94	93	92	88	**100**	Estimated 85 dBA @ 3ft
Aux Transformer	1	95	95	99	99	99	83	78	71	66	**97**	Estimated 80 dBA @ 3ft
GT Enclosure	1	113	117	101	96	96	99	92	93	99	**104**	In-house
CTG Cooling Air Package	1	103	105	91	88	94	88	86	84	77	**95**	Estimated 85 dBA @ 3ft
Dew Point Heater	1	116	108	107	100	96	97	95	92	87	**102**	Estimated 80 dBA @ 3ft
Exhaust Diffuser	1	133	130	115	113	110	108	106	100	77	**114**	In-house
FGC Cooler	2	112	114	100	97	103	97	95	93	86	**104**	Estimated 85 dBA @ 3ft
Fuel Gas Compressor	2	101	97	102	101	99	102	102	100	95	**108**	Estimated 90 dBA @ 3ft
GSUT	1	102	102	106	106	106	90	85	78	73	**104**	Estimated 85 dBA @ 3ft
GT Generator	1	116	122	119	111	118	108	112	110	107	**119**	On-site measurements
GT Oil Package	1	110	104	101	101	101	99	95	94	90	**104**	In-house
SCR Duct	1	106	105	89	78	77	94	86	69	41	**95**	In-house
SCR Transition Section 1	1	107	107	97	88	84	99	91	74	48	**100**	In-house
SCR Transition Section 2	1	107	106	90	80	79	96	88	71	44	**97**	In-house
SCR Transition Section 3	1	102	99	90	87	81	95	89	78	53	**96**	In-house
TA Duct and Casing	2	104	103	89	86	86	106	103	88	61	**108**	In-house
Water Injection Pump Skid	1	99	115	100	106	105	105	105	101	98	**111**	In-house
Stack Casing Upper	1	104	101	88	72	68	50	54	49	25	**77**	In-house
Stack Casing Lower	1	108	105	91	87	84	103	96	85	57	**104**	In-house

Notes:

1. All sound levels are inclusive of any base package designed mitigation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APPENDIX G – TRAFFIC STUDY

Technical Memorandum

Date: December 04, 2024

To: Turney Energy Center (AECI)

From: Burns & McDonnell

Subject: Turney Energy Center Traffic Assessment

Table of Contents

Project Description

Associated Electric Cooperative Incorporated (AECI) plans to construct and operate a new energy center at the proposed site in Turney, MO. This facility operates under typical working hours of 7:00 AM – 4:30 PM. Construction is set to begin in June 2025 and is anticipated to be completed in 2027. This traffic study analyzes the existing, construction, and permanent traffic generated by the facility and sight distance availability at the major intersections within the project scope. The intersections within the project limits are listed below:

1. State Highway A & 280th Street
2. State Highway A & 296th Street
3. NE Breckenridge Road & 280th Street
4. NE Breckenridge Road & 288th Street
5. Proposed Driveway & 288th Street

AECI has identified a preferred route for truck traffic during construction. These trucks will access the site by turning onto 280th Street from State Highway A. They will then make an eastbound right onto NE Breckenridge Road, followed by a northbound left onto 288th Street, where they will access the plant.

State Highway A is a north-south 2-lane highway with no turn lanes, no pedestrian facilities, and a posted speed limit of 60 mph. NE Breckenridge Road is a north-south 2-lane unpaved roadway with no turn lanes, no pedestrian facilities, and a posted speed limit of 35 mph. 280th Street is an east-west 2-lane unpaved roadway with no turn lanes, no pedestrian facilities, and a posted speed limit of 35 mph. 288th Street is an east-west 2-lane unpaved roadway with no turn lanes, no pedestrian facilities, and a posted speed limit of 35 mph. 296th Street is an east-west 2-lane unpaved roadway with no turn lanes, no pedestrian facilities, and a posted speed limit of 35 mph. A site map is provided in Appendix A.

Existing Traffic Volumes

Traffic counts were collected utilizing Gewalt Hamilton Associates, Inc. Turning movement counts were collected from 6AM-6PM on Thursday, November 7th, 2024. Weather was typical this Thursday, reaching a high of 56 and a low of 37.

Due to the concern of school traffic, we investigated the potential presence of school buses in the area. The traffic counts and videos indicate one regular entry and exit trip from a school bus during typical pick-up and drop-off hours. Additionally, because the traffic counts were conducted during a specific time of year, a seasonality adjustment factor of 1.74 was applied to

account for seasonal variations in traffic volume. This factor was derived from MoDOT's data, reflecting the periods of heaviest travel throughout the year.

Vehicle Trip Generation

Historic ADT volumes from MoDOT's interactive ADT traffic map were used to calculate a growth rate for State Highway A. Based on these 2019 and 2023 traffic volumes, an annual growth rate of 4.00% was determined and applied to all movements in the project area.

Under existing conditions, 0 vehicles enter and exit the site during peak hours. It is estimated that 468 personnel, consisting of the construction and operation workforce, will visit the site during peak construction hours. A North-South split of 50% / 50% was applied to the vehicles generated during construction. After construction is completed, the permanent traffic during peak hours is anticipated to be 10 vehicles.

Appendix B provides traffic flow maps displaying turning movements during existing conditions, peak construction conditions, and permanent conditions.

Traffic Operations Analysis

Synchro 12 was used to analyze the level of service, delay, and queue lengths of the identified intersections serving the project site. Synchro 12 uses the Highway Capacity Manual (HCM) 7th Edition methodology to determine the level of service. The peak hours have been identified as 7:15 AM – 8:15 AM and 4:30 PM – 5:30 PM. The traffic analysis results for the existing conditions can be found in Table 1 below and Appendix C.

Table 1: Existing Conditions Results

	Metric	Overall AM (PM)		Turning Movement AM (PM)							
				EB		WB		NB		SB	
State Highway A & 280th St	LOS	A	(A)	A	(A)	-	(-)	A	(A)	A	(A)
	Delay (sec)	0.9	(1.9)	9.0	(9.3)	-	(-)	(0.7)	(1.5)	0.0	(0.0)
State Highway A & 296th St	LOS	A	(A)	A	(A)	-	(-)	A	(A)	A	(A)
	Delay (sec)	0.2	(0.4)	8.8	(8.7)	-	-	0.0	(0.4)	0.0	(0.0)
NE Breckenridge Rd & 280th St	LOS	A	(A)	A	(A)	A	(A)	A	(A)	A	(A)
	Delay (sec)	7.4	(8.6)	8.8	(8.7)	6.5	(8.9)	6.4	(7.0)	8.0	(8.9)
NE Breckenridge Rd & 288th St	LOS	A	(A)	A	(A)	-	(-)	A	(A)	A	(A)
	Delay (sec)	7.2	(4.9)	9.0	(8.8)	-	-	8.1	(4.6)	0.0	(0.0)

The Synchro analysis indicates that the existing conditions operate at an acceptable level.

Construction Conditions Analysis

The construction conditions account for both the existing traffic projected through 2027 and the additional vehicle volume generated by peak construction activity on the site. The traffic analysis results can be found in Table 2 below and Appendix C

Table 2: Construction Conditions Results

	Metric	Overall AM (PM)		Turning Movement AM (PM)							
				EB		WB		NB		SB	
State Highway A & 280th St	LOS	A	(D)	B	(E)	-	(-)	B	(A)	A	(A)
	Delay (sec)	5.4	(26.1)	13.0	(36.0)	-	(-)	(11.8)	(1.6)	0.0	(0.0)
State Highway A & 296th St	LOS	A	(A)	B	(A)	-	(-)	A	(A)	A	(A)
	Delay (sec)	0.1	(0.2)	10.8	(8.7)	-	-	0.0	(0.2)	0.0	(0.0)
NE Breckenridge Rd & 280th St	LOS	B	(F)	A	(B)	B	(B)	A	(A)	A	(F)
	Delay (sec)	11.8	(90.1)	9.4	(11.2)	11.9	(11.5)	7.6	(8.1)	9.2	(98.2)
NE Breckenridge Rd & 288th St	LOS	C	(E)	A	(E)	-	(-)	B	(B)	A	(A)
	Delay (sec)	19.7	(42.1)	9.1	(42.6)	-	-	19.9	(10.9)	0.0	(0.0)

The Synchro analysis indicates that the construction conditions operate at an acceptable level at both intersections along State Highway A. However, NE Breckenridge Road at both 280th Street and 288th Street operates below acceptable levels of service during the PM peak.

Alternative Construction Conditions Analysis

Given the delays during construction, an alternative construction plan was explored. The intersection of NE Breckinridge Rd & 288th St is anticipated to experience very little opposing traffic to the site traffic. Therefore, a flagger is recommended at NE Breckenridge Rd & 288th St. A flagger was modeled as a fully actuated traffic signal. Furthermore, operating NE Breckenridge Rd & 280th St as a two-way stop-controlled intersection, with free flow movement northbound and southbound, is suggested. The traffic analysis results for this alternative can be found in Table 3 below and Appendix C.

Table 3: Alternative Construction Conditions Results

	Metric	Overall AM (PM)		Turning Movement AM (PM)							
				EB		WB		NB		SB	
State Highway A & 280th St	LOS	A	(D)	B	(E)	-	(-)	B	(A)	A	(A)
	Delay (sec)	5.4	(26.1)	13.0	(36.0)	-	(-)	(11.8)	(1.6)	0.0	(0.0)
State Highway A & 296th St	LOS	A	(A)	B	(A)	-	(-)	A	(A)	A	(A)
	Delay (sec)	0.1	(0.2)	10.8	(8.7)	-	-	0.0	(0.2)	0.0	(0.0)
NE Breckenridge Rd & 280th St	LOS	C	(C)	B	(F)	C	(F)	A	(A)	A	(B)
	Delay (sec)	23.1	(20.7)	13.8	(79.4)	23.6	(152.4)	0.0	(2.1)	3.8	(12.1)
NE Breckenridge Rd & 288th St	LOS	A	(A)	D	(A)	-	(-)	A	(C)	A	(C)
	Delay (sec)	3.9	(9.5)	38.6	(9.3)	-	-	3.9	(20.7)	1.1	(20.6)

The Synchro analysis indicates that the alternative construction conditions operate at an acceptable intersection level. However, the site traffic causes significant delays to the stop-controlled traffic at NE Breckenridge Rd & 280th St. The site traffic will also experience delays eastbound on State Highway A & 280th St.

An additional alternative construction plan includes extending the time that the workers arrive and leave from 1 hour to 1.5 hours. The traffic analysis results for this alternative can be found in Table 4 below and Appendix C.

Table 4: Alternative Construction Shift Conditions Results

	Metric	Overall AM (PM)		Turning Movement AM (PM) EB		WB		NB		SB	
State Highway A & 280th St	LOS	A	(A)	B	(A)	-	(-)	A	(A)	A	(A)
	Delay (sec)	0.1	(0.2)	10.0	(8.7)	-	(-)	(0.0)	(0.2)	(0.0)	(0.0)
State Highway A & 296th St	LOS	A	(A)	B	(B)	-	(-)	A	(A)	A	(B)
	Delay (sec)	3.2	(9.0)	10.7	(13.7)	-	-	7.1	(1.6)	0.0	(0.0)
NE Breckenridge Rd & 280th St	LOS	A	(C)	A	(B)	A	(B)	A	(A)	A	(D)
	Delay (sec)	8.8	(23.1)	9.2	(10.4)	8.8	(10.7)	7.2	(7.7)	8.8	(25.1)
NE Breckenridge Rd & 288th St	LOS	B	(C)	B	(A)	-	(-)	A	(A)	A	(C)
	Delay (sec)	11.6	(18.7)	3.4	(7.7)	-	-	0.0	(0.0)	9.1	(19.0)

The Synchro analysis indicates that the alternative construction shift conditions operate at an acceptable level.

Build Conditions Analysis

The build conditions account for both the existing traffic projected through 2027 and the additional vehicle volume generated by the energy center following the completion of construction. The traffic analysis results can be found in Table 5 below and Appendix C

Table 5: Build Conditions Results

	Metric	Overall AM (PM)		Turning Movement AM (PM)							
				EB		WB		NB		SB	
State Highway A & 280th St	LOS	A	(A)	A	(A)	-	(-)	A	(A)	A	(A)
	Delay (sec)	1.1	(2.3)	9.1	(9.6)	-	(-)	(1.4)	(1.6)	0.0	(0.0)
State Highway A & 296th St	LOS	A	(A)	A	(A)	-	(-)	A	(A)	A	(A)
	Delay (sec)	0.2	(0.4)	8.9	(8.7)	-	-	0.0	(0.4)	0.0	(0.0)
NE Breckenridge Rd & 280th St	LOS	A	(A)	A	(A)	A	(A)	A	(A)	A	(A)
	Delay (sec)	7.4	(8.8)	8.8	(8.8)	6.5	(9.1)	6.4	(7.0)	8.0	(9.2)
NE Breckenridge Rd & 288th St	LOS	A	(A)	A	(A)	-	(-)	A	(A)	A	(A)
	Delay (sec)	7.8	(6.9)	9.1	(8.9)	-	-	8.2	(4.6)	0.0	(0.0)

The Synchro analysis indicates that the build conditions operate at an acceptable level.

Sight Distance Evaluation

A sight distance evaluation was performed at the intersections of State Highway A and 280th Street, State Highway A and 296th Street, and Proposed Driveway and 288th Street. The required sight distance was determined based on procedures outlined in *A Policy on Geometric Design of Highways and Streets*, published by the American Association of State Highway and Transportation Officials (AASHTO). The available sight distance was compared to the minimum required stopping sight distance (SSD) and intersection sight distance (ISD) for the design speed of 60 mph for State Highway A and 35 mph for 288th Street. The full evaluation of the ISD and SSD can be found in Appendix D.

Based on the sight distance evaluation, nearly all sight distances met both the required SSD and ISD. However, the sight distance at the intersection of State Highway A and 280th Street observing the northbound vehicles was discovered to be 752', well short of the calculated requirement of

1015'. While there is not an existing safety issue, the additional traffic could lead to an increase in safety issues. To help reduce the risk at this intersection, an installation of a flashing beacon facing both southbound towards the northbound traveling traffic and westbound to the stopped eastbound traffic can be considered. This beacon would flash when a vehicle is approaching within the required intersection sight distance and act as a warning of a potentially unsafe turn. Additionally, construction zone signing can be installed in order to improve awareness to the potential traffic queue. Alternatively, the route could be adjusted to use State Highway A and 296th Street.

Conclusions

The proposed facility's peak construction workforce is expected to be 468 employees during both AM and PM peak hours and will return to 10 employees after construction. A capacity analysis of the project area indicates that the build traffic volumes will not cause delays or queueing issues. However, during construction traffic will cause delays or queueing issues. To mitigate the impacts of construction traffic, two alternatives are proposed:

Alternative 1 uses flaggers at the NE Breckenridge Rd & 288th intersection during arrival and departure times. During other time periods, operations would remain as a two-way stop-controlled intersection, with free flow movement northbound and southbound. The flagging operations allow for flexibility in assigning the right-of-way at the intersections.

Alternative 2 includes expanding the arrival and departure window to 90 minutes, as opposed to the existing 60-minute window and leaving the intersections as two-way stop control. By extending the arrival and departure time to 90 minutes, the number of vehicles using the intersections decreases during peak times.

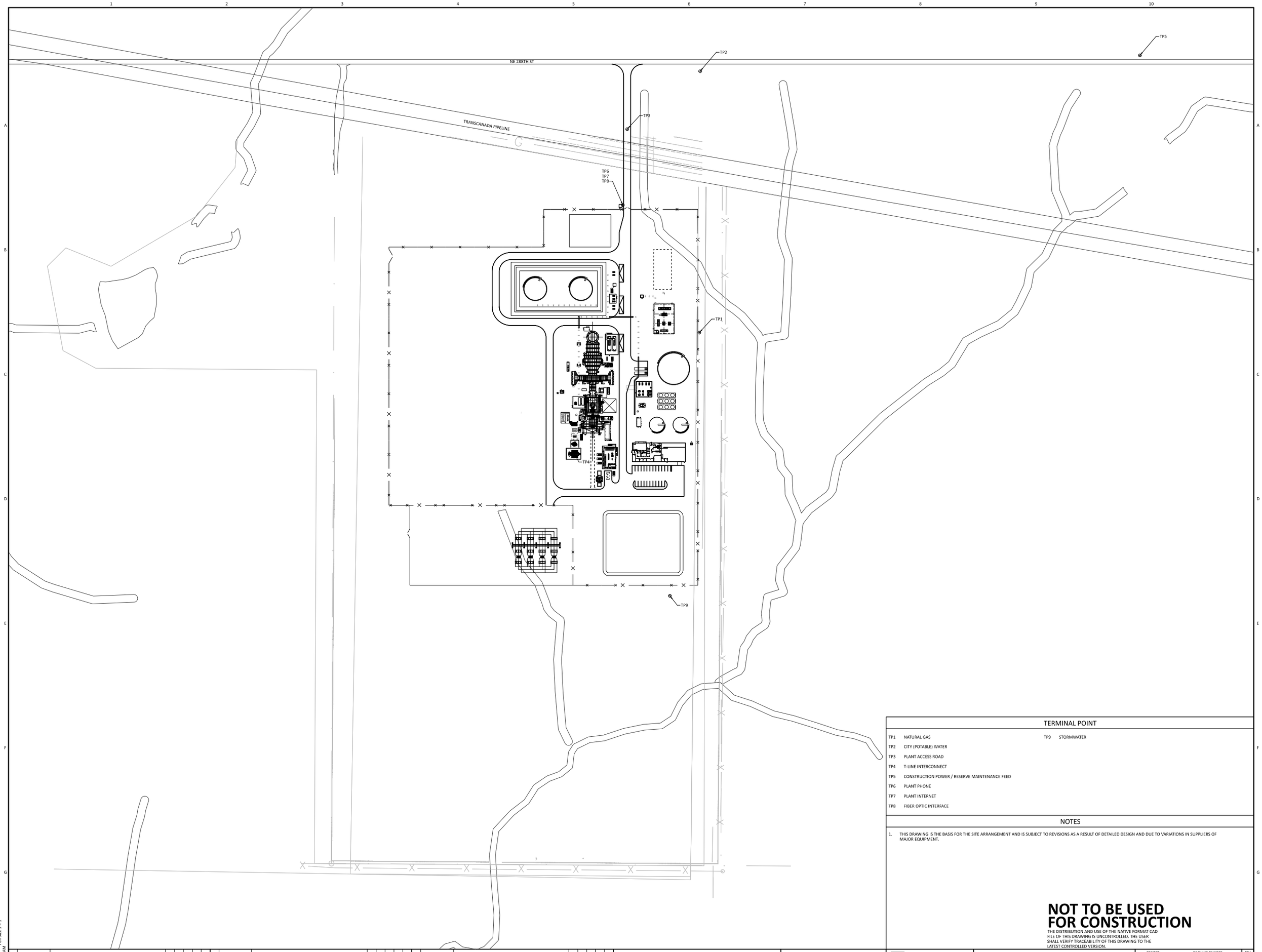
A sight distance evaluation was also conducted. It was found that the existing sight distance at State Highway A and 280th Street does not meet minimum ISD requirements for a 60-mph roadway. To help offset the limited sight distance, three options are proposed: a flashing beacon, construction signage, or moving the access to the northern intersection of 296th Street.

If the construction traffic accesses the site via 296th Street & State Highway A, one less intersection is gone through, sight distance is improved, and operations remain consistent with what is shown at 280th Street & State Highway A. However, this route does have a 90-degree right turn to navigate.

APPENDIX

APPENDIX A

Site Map



TERMINAL POINT

TP1	NATURAL GAS	TP9	STORMWATER
TP2	CITY (POTABLE) WATER		
TP3	PLANT ACCESS ROAD		
TP4	T-LINE INTERCONNECT		
TP5	CONSTRUCTION POWER / RESERVE MAINTENANCE FEED		
TP6	PLANT PHONE		
TP7	PLANT INTERNET		
TP8	FIBER OPTIC INTERFACE		

NOTES

1. THIS DRAWING IS THE BASIS FOR THE SITE ARRANGEMENT AND IS SUBJECT TO REVISIONS AS A RESULT OF DETAILED DESIGN AND DUE TO VARIATIONS IN SUPPLIERS OF MAJOR EQUIPMENT.

NOT TO BE USED FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
B	01/MAR/24	ISSUED FOR CONTRACT	MJW	ATP			
A	27/OCT/23	ISSUED FOR PROPOSAL	KED	ATP			

N

100' 50' 0 100' 200'
1"=100'

BLACK & VEATCH

DESIGNER ATP	DRAWN KED
CHECKED	DATE

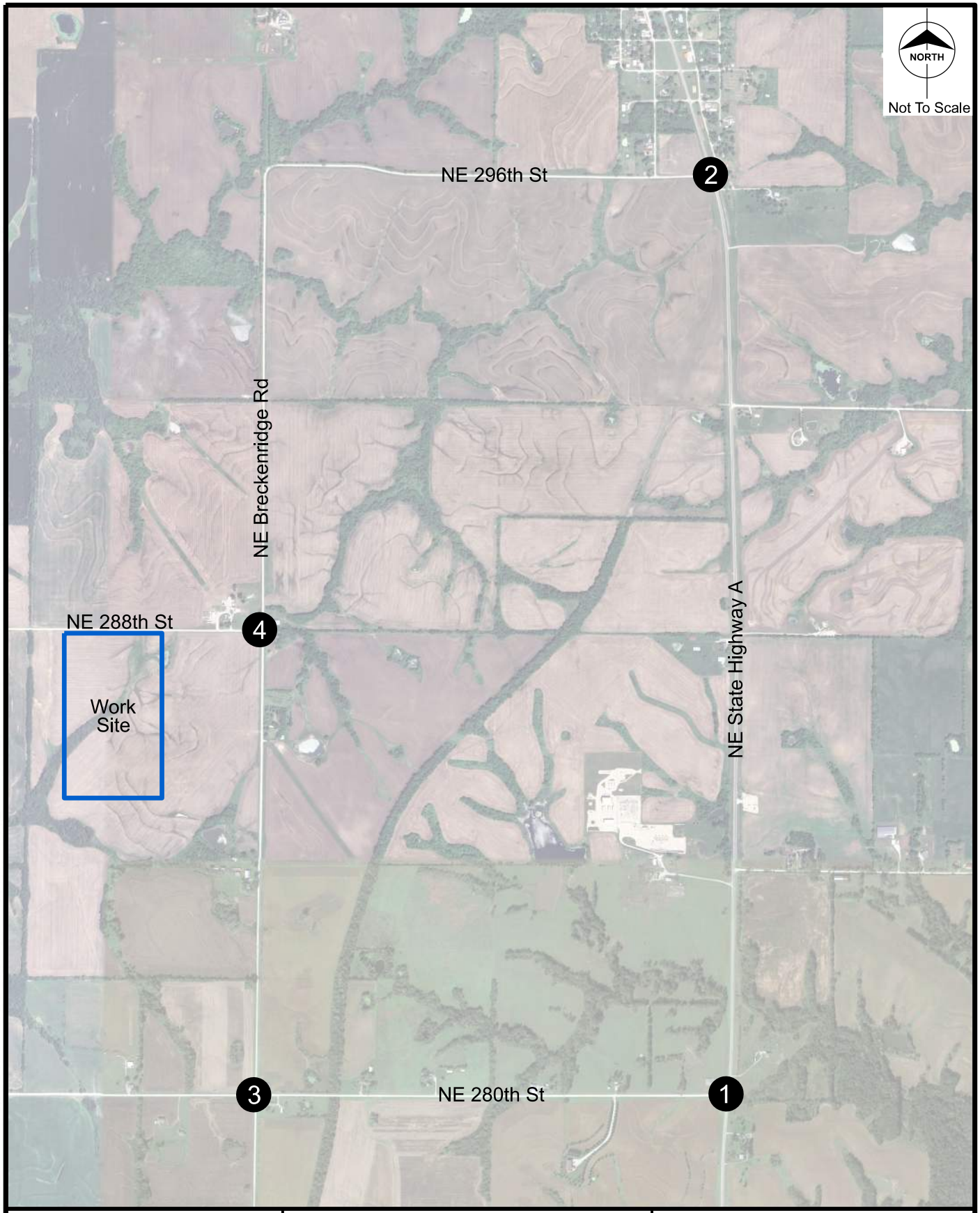
AECI
TURNEY ENERGY CENTER
PLOT PLAN

PROJECT 231389-TGAU-S1000
DRAWING NUMBER
REV B
CODE
AREA

MicroStation v10.15.0.74
Full Size 1 = 1
wsg28297
wed 02/29/2024 09:59 AM

APPENDIX B

Volume Diagrams



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Nov. 2024
date

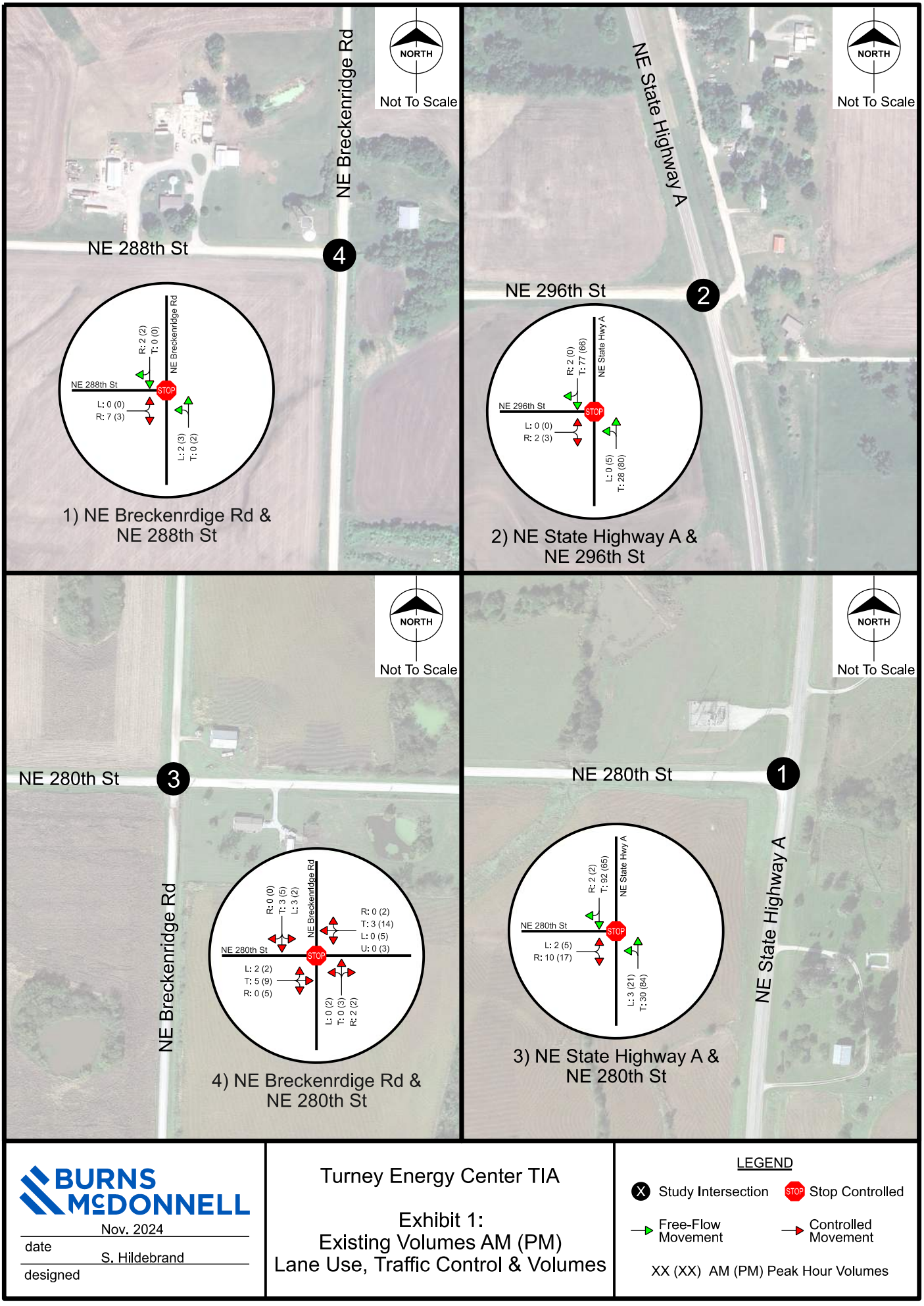
S. Hildebrand
designed

Turney Energy Center TIA

Layout Overview
Lane Use, Traffic Control & Volumes

LEGEND

X Study Intersection


NE Breckenridge Rd
NORTH
Not To Scale
NE 288th St
4
NE 288th St
NE Breckenridge Rd
STOP
R: 2 (2)
T: 0 (0)
L: 0 (0)
R: 7 (3)
L: 2 (3)
T: 0 (2)
1) NE Breckenridge Rd &
NE 288th St
NE State Highway A
NORTH
Not To Scale
NE 296th St
2
NE 296th St
NE State Hwy A
STOP
R: 2 (0)
T: 77 (66)
L: 0 (0)
R: 2 (3)
L: 0 (5)
T: 28 (80)
2) NE State Highway A &
NE 296th St
NORTH
Not To Scale
NE 280th St
3
NE Breckenridge Rd
NE 280th St
NE Breckenridge Rd
STOP
R: 0 (0)
T: 3 (5)
L: 3 (2)
R: 0 (2)
T: 3 (14)
L: 0 (5)
U: 0 (3)
L: 2 (2)
T: 5 (9)
R: 0 (5)
L: 0 (2)
T: 0 (3)
R: 2 (2)
4) NE Breckenridge Rd &
NE 280th St
NORTH
Not To Scale
NE 280th St
1
NE State Highway A
NE 280th St
NE State Hwy A
STOP
R: 2 (2)
T: 92 (65)
L: 2 (5)
R: 10 (17)
L: 3 (21)
T: 30 (84)
3) NE State Highway A &
NE 280th St
BURNS McDONNELL
Nov. 2024
date
S. Hildebrand
designed
Turney Energy Center TIA
Exhibit 1:
Existing Volumes AM (PM)
Lane Use, Traffic Control & Volumes
LEGEND
Study Intersection
STOP Stop Controlled
Free-Flow Movement
Controlled Movement
XX (XX) AM (PM) Peak Hour Volumes

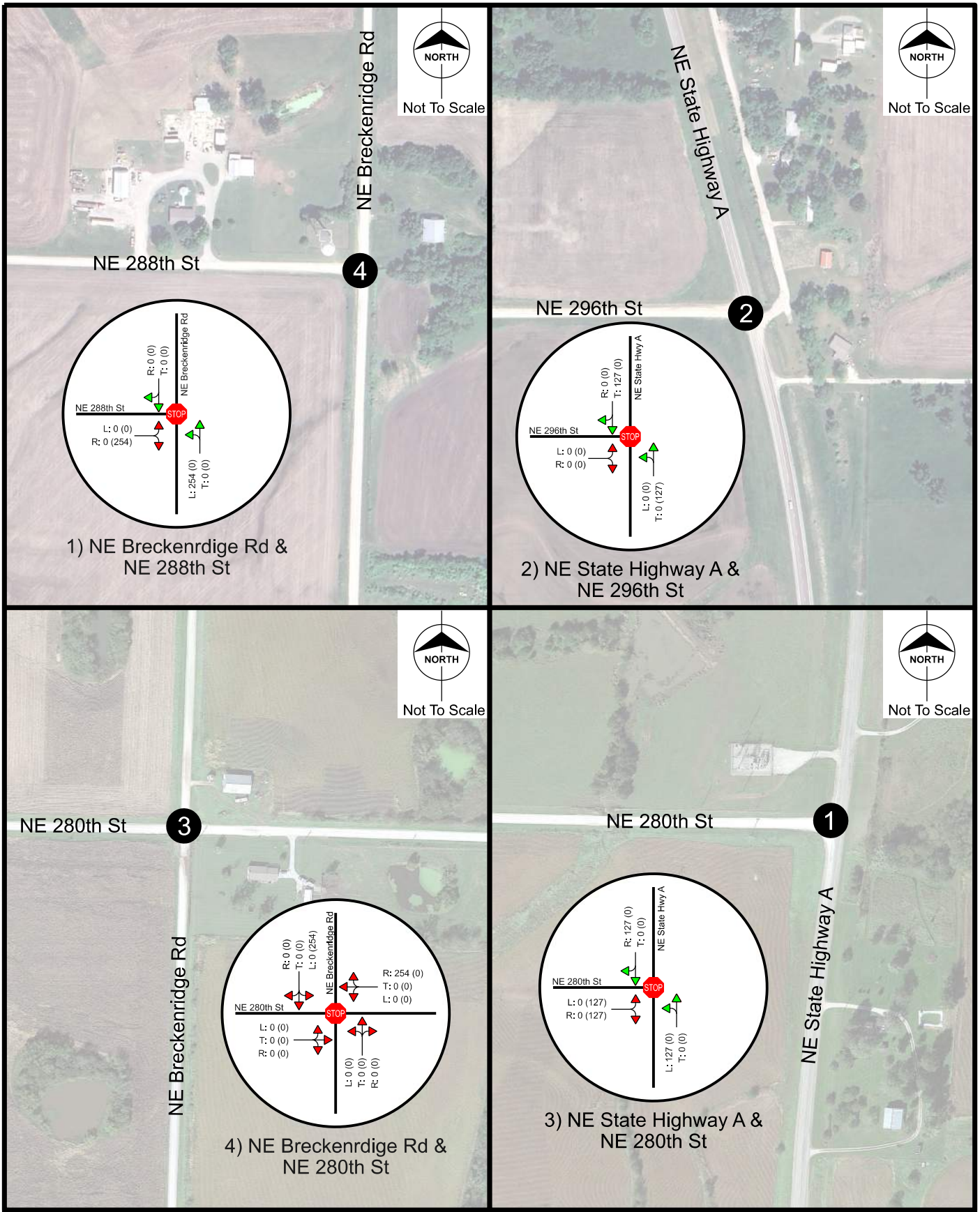


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Exhibit 2:
Site Traffic Volumes AM (PM)
Lane Use, Traffic Control & Volumes

LEGEND

- Study Intersection
- STOP Stop Controlled
- Free-Flow Movement
- Controlled Movement

XX (XX) AM (PM) Peak Hour Volumes

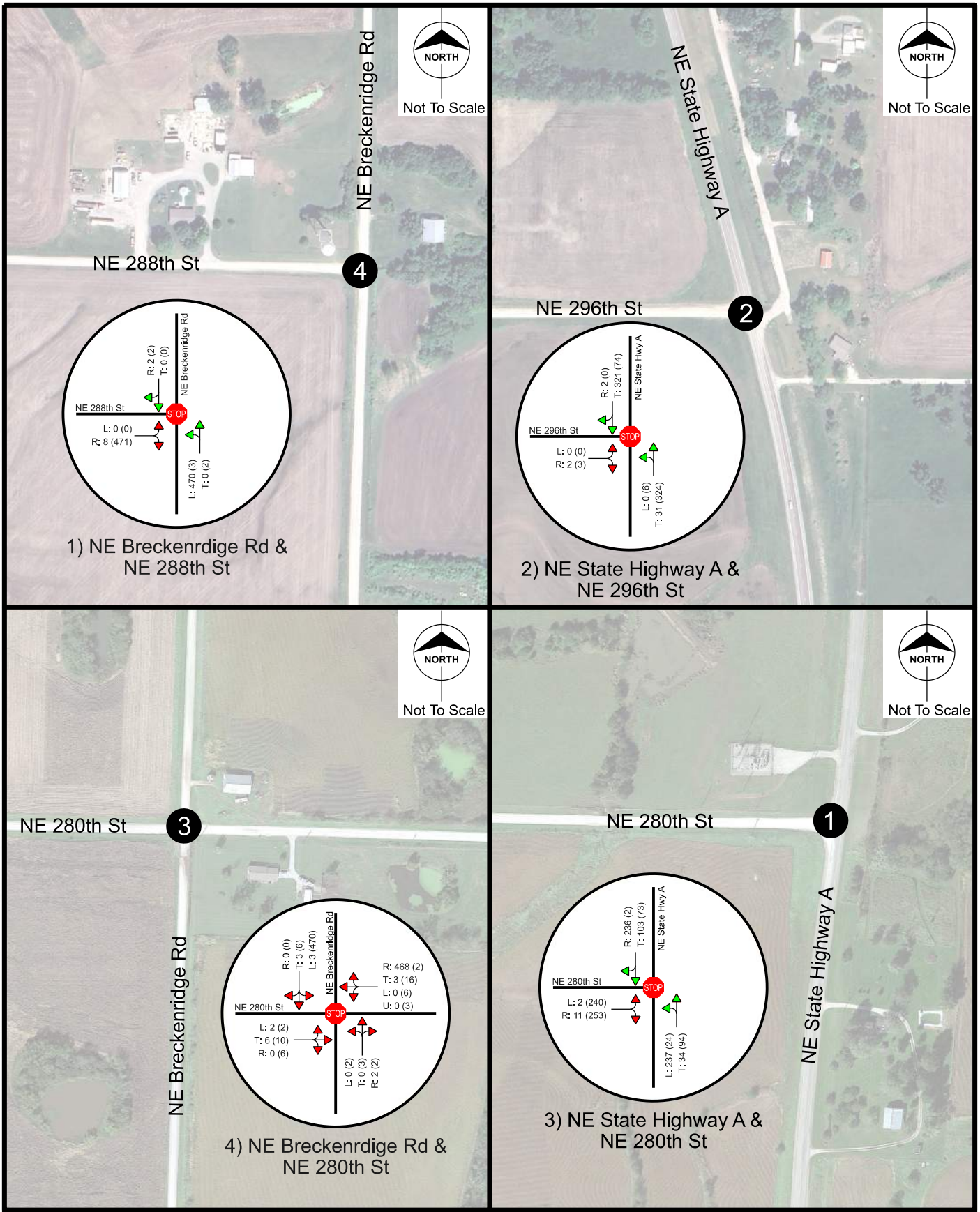

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Exhibit 3:
Construction Conditions
Volumes AM (PM)
Lane Use, Traffic Control & Volumes

LEGEND

- Study Intersection
- Stop Controlled
- Free-Flow Movement
- Controlled Movement

XX (XX) AM (PM) Peak Hour Volumes

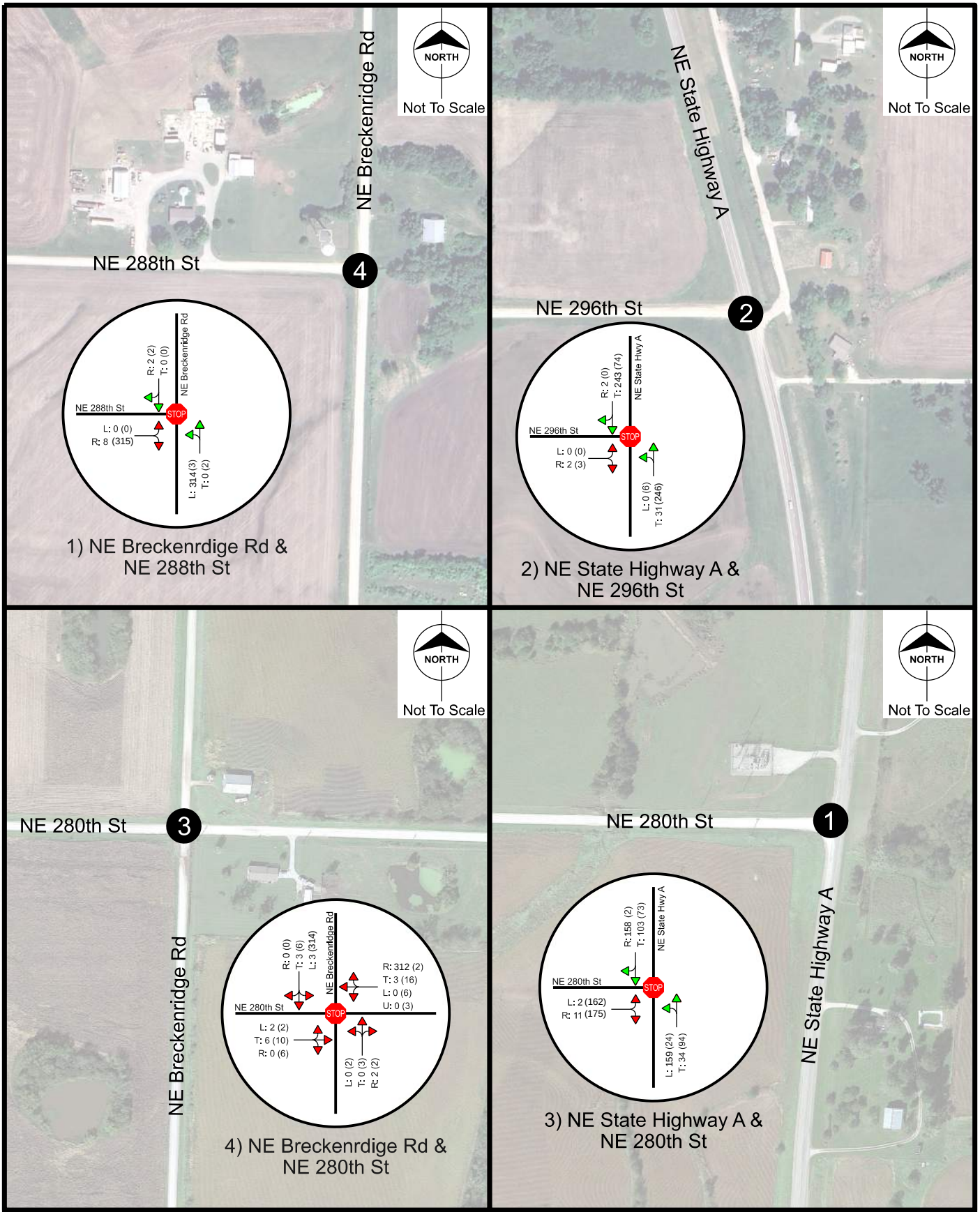

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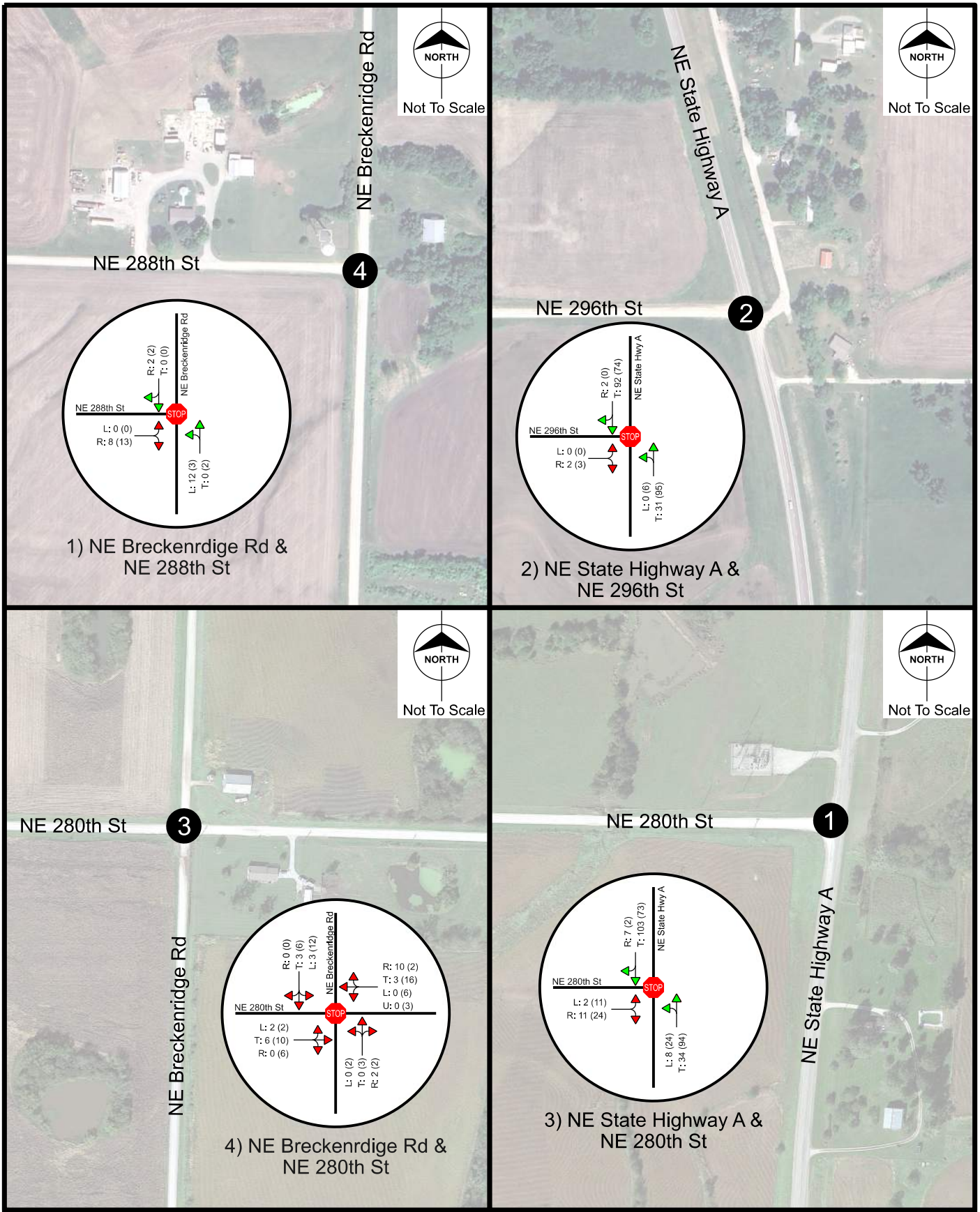
Exhibit 4:
Construction Conditions 2
Volumes AM (PM)
Lane Use, Traffic Control & Volumes

LEGEND

- X Study Intersection
- STOP Stop Controlled
- Free-Flow Movement
- Controlled Movement

XX (XX) AM (PM) Peak Hour Volumes



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Nov. 2024
date

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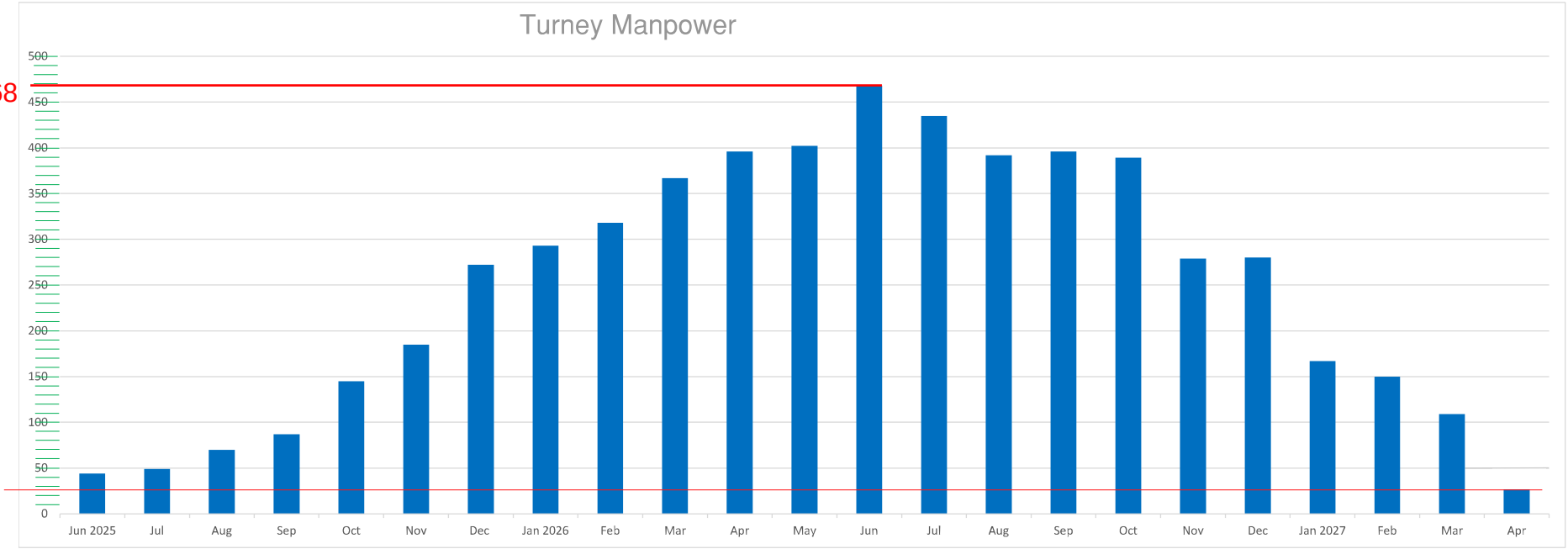
Exhibit 5:
Build Conditions Volumes AM (PM)
Lane Use, Traffic Control & Volumes

LEGEND

- X Study Intersection
- STOP Stop Controlled
- Free-Flow Movement
- Controlled Movement

XX (XX) AM (PM) Peak Hour Volumes



Schedule Rev F

APPENDIX C

Synchro Reports

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	10	3	30	92	2
Future Vol, veh/h	2	10	3	30	92	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	3	14	4	41	124	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	174	126	127	0	-	0
Stage 1	126	-	-	-	-	-
Stage 2	49	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	820	930	1472	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	818	930	1472	-	-	-
Mov Cap-2 Maneuver	818	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	979	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.03	0.68	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	164	-	909	-	-
HCM Lane V/C Ratio	0.003	-	0.018	-	-
HCM Control Delay (s/veh)	7.5	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	28	77	2
Future Vol, veh/h	0	2	0	28	77	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	0	3	0	38	104	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	143	105	107	0	-	0
Stage 1	105	-	-	-	-	-
Stage 2	38	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	854	954	1497	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	990	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	854	954	1497	-	-	-
Mov Cap-2 Maneuver	854	-	-	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	990	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.78	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1497	-	954	-	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s/veh)	0	-	8.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	5	0	0	3	0	0	0	2	3	3	0
Future Vol, veh/h	2	5	0	0	3	0	0	0	2	3	3	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles, %	100	0	0	0	0	0	0	0	0	50	50	0
Mvmt Flow	3	7	0	0	4	0	0	0	3	4	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.8	7	6.4	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	29%	0%	50%
Vol Thru, %	0%	71%	100%	50%
Vol Right, %	100%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	7	3	6
LT Vol	0	2	0	3
Through Vol	0	5	3	3
RT Vol	2	0	0	0
Lane Flow Rate	3	10	4	9
Geometry Grp	1	1	1	1
Degree of Util (X)	0.003	0.016	0.005	0.012
Departure Headway (Hd)	3.332	5.682	3.929	4.878
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	1074	633	913	736
Service Time	1.351	3.691	1.943	2.894
HCM Lane V/C Ratio	0.003	0.016	0.004	0.012
HCM Control Delay, s/veh	6.4	8.8	7	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0	0

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	2	0	0	2
Future Vol, veh/h	0	7	2	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	0	75	100	0	0	0
Mvmt Flow	0	14	4	0	0	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	10	2	4	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	8	-	-	-	-	-
Critical Hdwy	6.4	6.95	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.975	3.1	-	-	-
Pot Cap-1 Maneuver	1015	903	1157	-	-	-
Stage 1	1026	-	-	-	-	-
Stage 2	1020	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1012	903	1157	-	-	-
Mov Cap-2 Maneuver	1012	-	-	-	-	-
Stage 1	1023	-	-	-	-	-
Stage 2	1020	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.05	8.12	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1157	-	903	-	-
HCM Lane V/C Ratio	0.003	-	0.016	-	-
HCM Control Delay (s/veh)	8.1	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	17	21	84	65	2
Future Vol, veh/h	5	17	21	84	65	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	40	25	2	0	0
Mvmt Flow	6	20	24	97	75	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	221	76	77	0	-	0
Stage 1	76	-	-	-	-	-
Stage 2	145	-	-	-	-	-
Critical Hdwy	6.4	6.6	4.35	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.66	2.425	-	-	-
Pot Cap-1 Maneuver	772	889	1388	-	-	-
Stage 1	952	-	-	-	-	-
Stage 2	887	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	758	889	1388	-	-	-
Mov Cap-2 Maneuver	758	-	-	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	887	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.34	1.53	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	360	-	856	-	-
HCM Lane V/C Ratio	0.017	-	0.03	-	-
HCM Control Delay (s/veh)	7.6	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	5	80	66	0
Future Vol, veh/h	0	3	5	80	66	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	0	4	6	101	84	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	197	84	84	0	-	0
Stage 1	84	-	-	-	-	-
Stage 2	114	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	796	981	1526	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	792	981	1526	-	-	-
Mov Cap-2 Maneuver	792	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.68	0.43	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	106	-	981	-	-
HCM Lane V/C Ratio	0.004	-	0.004	-	-
HCM Control Delay (s/veh)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	9	5	5	14	2	2	3	2	2	5	0
Future Vol, veh/h	2	9	5	5	14	2	2	3	2	2	5	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	100	20	0	100	0	0	0	0	100	100	33	0
Mvmt Flow	3	13	7	7	20	3	3	4	3	3	7	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.7	8.9	7	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	13%	24%	29%
Vol Thru, %	43%	56%	67%	71%
Vol Right, %	29%	31%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	16	21	7
LT Vol	2	2	5	2
Through Vol	3	9	14	5
RT Vol	2	5	2	0
Lane Flow Rate	10	23	30	10
Geometry Grp	1	1	1	1
Degree of Util (X)	0.011	0.034	0.046	0.016
Departure Headway (Hd)	3.883	5.495	5.643	5.756
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	910	651	635	618
Service Time	1.955	3.53	3.673	3.825
HCM Lane V/C Ratio	0.011	0.035	0.047	0.016
HCM Control Delay, s/veh	7	8.7	8.9	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.1	0

Existing Conditions

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	3	2	0	2
Future Vol, veh/h	0	3	3	2	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	44	44	44	44	44	44
Heavy Vehicles, %	0	50	50	0	0	0
Mvmt Flow	0	7	7	5	0	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	20	2	5	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.4	6.7	4.6	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.75	2.65	-	-	-
Pot Cap-1 Maneuver	1002	957	1353	-	-	-
Stage 1	1026	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	997	957	1353	-	-	-
Mov Cap-2 Maneuver	997	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1010	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.79	4.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1080	-	957	-	-
HCM Lane V/C Ratio	0.005	-	0.007	-	-
HCM Control Delay (s/veh)	7.7	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	10	130	31	96	129
Future Vol, veh/h	2	10	130	31	96	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	98	6	0	98
Mvmt Flow	3	14	176	42	130	174

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	610	217	304	0	-	0
Stage 1	217	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.4	6.2	5.08	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	3.082	-	-	-
Pot Cap-1 Maneuver	461	828	864	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	365	828	864	-	-	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.4	8.26	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	844	-	683	-	-
HCM Lane V/C Ratio	0.203	-	0.024	-	-
HCM Control Delay (s/veh)	10.2	0	10.4	-	-
HCM Lane LOS	B	A	B	-	-
HCM 95th %tile Q(veh)	0.8	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	29	207	2
Future Vol, veh/h	0	2	0	29	207	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	6	62	0
Mvmt Flow	0	3	0	39	280	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	320	281	282	0	-	0
Stage 1	281	-	-	-	-	-
Stage 2	39	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	677	763	1292	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	677	763	1292	-	-	-
Mov Cap-2 Maneuver	677	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	988	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.74	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1292	-	763	-	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s/veh)	0	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	5	0	0	3	254	0	0	2	3	3	0
Future Vol, veh/h	2	5	0	0	3	254	0	0	2	3	3	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles, %	100	0	0	0	0	100	0	0	0	50	50	0
Mvmt Flow	3	7	0	0	4	368	0	0	3	4	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.1	8.1	7	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	29%	0%	50%
Vol Thru, %	0%	71%	1%	50%
Vol Right, %	100%	0%	99%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	7	257	6
LT Vol	0	2	0	3
Through Vol	0	5	3	3
RT Vol	2	0	254	0
Lane Flow Rate	3	10	372	9
Geometry Grp	1	1	1	1
Degree of Util (X)	0.003	0.017	0.345	0.013
Departure Headway (Hd)	3.969	5.961	3.336	5.523
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	897	602	1080	647
Service Time	2.015	3.984	1.352	3.564
HCM Lane V/C Ratio	0.003	0.017	0.344	0.014
HCM Control Delay, s/veh	7	9.1	8.1	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	1.6	0

Intersection	
Int Delay, s/veh	10.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	256	0	0	2
Future Vol, veh/h	0	7	256	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	0	75	100	0	0	0
Mvmt Flow	0	14	512	0	0	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1026	2	4	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	1024	-	-	-	-	-
Critical Hdwy	6.4	6.95	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.975	3.1	-	-	-
Pot Cap-1 Maneuver	262	903	1157	-	-	-
Stage 1	1026	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	146	903	1157	-	-	-
Mov Cap-2 Maneuver	146	-	-	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	350	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.05	10.56	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1157	-	903	-	-
HCM Lane V/C Ratio	0.443	-	0.016	-	-
HCM Control Delay (s/veh)	10.6	0	9	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	2.3	-	0	-	-

Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	132	145	22	87	68	2
Future Vol, veh/h	132	145	22	87	68	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	96	88	0	6	0	0
Mvmt Flow	152	167	25	100	78	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	230	79	80	0	-	0
Stage 1	79	-	-	-	-	-
Stage 2	151	-	-	-	-	-
Critical Hdwy	7.36	7.08	4.1	-	-	-
Critical Hdwy Stg 1	6.36	-	-	-	-	-
Critical Hdwy Stg 2	6.36	-	-	-	-	-
Follow-up Hdwy	4.364	4.092	2.2	-	-	-
Pot Cap-1 Maneuver	591	787	1530	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	580	787	1530	-	-	-
Mov Cap-2 Maneuver	580	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	692	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	15.06	1.49	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	363	-	673	-	-
HCM Lane V/C Ratio	0.017	-	0.473	-	-
HCM Control Delay (s/veh)	7.4	0	15.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	2.5	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	5	210	69	0
Future Vol, veh/h	0	3	5	210	69	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	61	0	0
Mvmt Flow	0	4	6	266	87	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	366	87	87	0	-	0
Stage 1	87	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	638	977	1521	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	773	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	635	977	1521	-	-	-
Mov Cap-2 Maneuver	635	-	-	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	773	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.7	0.17	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	42	-	977	-	-
HCM Lane V/C Ratio	0.004	-	0.004	-	-
HCM Control Delay (s/veh)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	16.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	9	5	5	15	2	2	3	2	256	5	0
Future Vol, veh/h	2	9	5	5	15	2	2	3	2	256	5	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	100	0	0	0	0	0	0	0	0	100	50	0
Mvmt Flow	3	13	7	7	21	3	3	4	3	361	7	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	10	8.4	7.5	17.6
HCM LOS	A	A	A	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	13%	23%	98%
Vol Thru, %	43%	56%	68%	2%
Vol Right, %	29%	31%	9%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	16	22	261
LT Vol	2	2	5	256
Through Vol	3	9	15	5
RT Vol	2	5	2	0
Lane Flow Rate	10	23	31	368
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.042	0.044	0.602
Departure Headway (Hd)	4.457	6.694	5.13	5.899
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	804	537	702	607
Service Time	2.477	4.702	3.136	3.977
HCM Lane V/C Ratio	0.012	0.043	0.044	0.606
HCM Control Delay, s/veh	7.5	10	8.4	17.6
HCM Lane LOS	A	A	A	C
HCM 95th-tile Q	0	0.1	0.1	4

Intersection	
Int Delay, s/veh	17.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	257	3	2	0	2
Future Vol, veh/h	0	257	3	2	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	44	44	44	44	44	44
Heavy Vehicles, %	0	100	100	0	0	0
Mvmt Flow	0	584	7	5	0	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	20	2	5	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.4	7.2	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	4.2	3.1	-	-	-
Pot Cap-1 Maneuver	1002	854	1156	-	-	-
Stage 1	1026	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	996	854	1156	-	-	-
Mov Cap-2 Maneuver	996	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	1010	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	17.8	4.88	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1080	-	854	-	-
HCM Lane V/C Ratio	0.006	-	0.684	-	-
HCM Control Delay (s/veh)	8.1	0	17.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	5.6	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	10	236	31	96	236
Future Vol, veh/h	2	10	236	31	96	236
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	98	6	0	98
Mvmt Flow	3	14	319	42	130	319

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	969	289	449	0	-	0
Stage 1	289	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Critical Hdwy	6.4	6.2	5.08	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	3.082	-	-	-
Pot Cap-1 Maneuver	284	755	747	-	-	-
Stage 1	765	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	160	755	747	-	-	-
Mov Cap-2 Maneuver	160	-	-	-	-	-
Stage 1	430	-	-	-	-	-
Stage 2	507	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.01	11.81	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	730	-	466	-	-
HCM Lane V/C Ratio	0.427	-	0.035	-	-
HCM Control Delay (s/veh)	13.4	0	13	-	-
HCM Lane LOS	B	A	B	-	-
HCM 95th %tile Q(veh)	2.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	29	321	2
Future Vol, veh/h	0	2	0	29	321	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	6	62	0
Mvmt Flow	0	3	0	39	434	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	474	435	436	0	-	0
Stage 1	435	-	-	-	-	-
Stage 2	39	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	552	625	1134	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	552	625	1134	-	-	-
Mov Cap-2 Maneuver	552	-	-	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	988	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.78	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1134	-	625	-	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s/veh)	0	-	10.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	23.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	6	0	0	3	468	0	0	2	3	3	0
Future Vol, veh/h	2	6	0	0	3	468	0	0	2	3	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	69	69	69	69	69	69	69	69	69	69	69
Heavy Vehicles, %	100	0	0	0	0	100	0	0	0	50	50	0
Mvmt Flow	3	9	0	0	4	678	0	0	3	4	4	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	15	16	4	19	14	1	4	0	0	3	0	0
Stage 1	13	13	-	1	1	-	-	-	-	-	-	-
Stage 2	2	3	-	17	13	-	-	-	-	-	-	-
Critical Hdwy	8.1	6.5	6.2	7.1	6.5	7.2	4.1	-	-	4.6	-	-
Critical Hdwy Stg 1	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.3	3.5	4	4.2	2.2	-	-	2.65	-	-
Pot Cap-1 Maneuver	798	882	1085	1000	884	855	1630	-	-	1355	-	-
Stage 1	804	889	-	1027	899	-	-	-	-	-	-	-
Stage 2	816	897	-	1007	889	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	164	879	1085	987	881	855	1630	-	-	1355	-	-
Mov Cap-2 Maneuver	164	879	-	987	881	-	-	-	-	-	-	-
Stage 1	801	886	-	1027	899	-	-	-	-	-	-	-
Stage 2	168	897	-	994	886	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	13.8	23.55	0	3.83
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1630	-	-	420	856	900	-	-
HCM Lane V/C Ratio	-	-	-	0.028	0.798	0.003	-	-
HCM Control Delay (s/veh)	0	-	-	13.8	23.6	7.7	0	-
HCM Lane LOS	A	-	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	8.5	0	-	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	8	470	0	0	2
Future Volume (veh/h)	0	8	470	0	0	2
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	789	418	1900	1900	1900
Adj Flow Rate, veh/h	0	16	940	0	0	4
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Percent Heavy Veh, %	0	75	100	0	0	0
Cap, veh/h	0	27	1367	0	0	1474
Arrive On Green	0.00	0.02	0.92	0.00	0.00	0.92
Sat Flow, veh/h	0	1529	1434	0	0	1610
Grp Volume(v), veh/h	0	17	940	0	0	4
Grp Sat Flow(s),veh/h/ln	0	1625	1434	0	0	1610
Q Serve(g_s), s	0.0	1.4	21.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.4	21.6	0.0	0.0	0.0
Prop In Lane	0.00	0.94	1.00			1.00
Lane Grp Cap(c), veh/h	0	28	1367	0	0	1474
V/C Ratio(X)	0.00	0.60	0.69	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	218	1367	0	0	1474
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	65.5	1.4	0.0	0.0	0.5
Incr Delay (d2), s/veh	0.0	18.5	2.8	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	1.8	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	84.0	4.2	0.0	0.0	0.5
LnGrp LOS		F	A			A
Approach Vol, veh/h	17			940	4	
Approach Delay, s/veh	84.0			4.2	0.5	
Approach LOS	F			A	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		127.5		6.8		127.5
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		123.0		18.0		123.0
Max Q Clear Time (g_c+I1), s		23.6		3.4		2.0
Green Ext Time (p_c), s		10.4		0.0		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	5.6
HCM 7th LOS	A

Intersection	
Int Delay, s/veh	26.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	240	253	24	94	73	2
Future Vol, veh/h	240	253	24	94	73	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	98	92	25	2	0	0
Mvmt Flow	276	291	28	108	84	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	248	85	86	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	163	-	-	-	-	-
Critical Hdwy	7.38	7.12	4.35	-	-	-
Critical Hdwy Stg 1	6.38	-	-	-	-	-
Critical Hdwy Stg 2	6.38	-	-	-	-	-
Follow-up Hdwy	4.382	4.128	2.425	-	-	-
Pot Cap-1 Maneuver	572	774	1377	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	560	774	1377	-	-	-
Mov Cap-2 Maneuver	560	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	678	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	35.99	1.56	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	366	-	652	-	-
HCM Lane V/C Ratio	0.02	-	0.869	-	-
HCM Control Delay (s/veh)	7.7	0	36	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.1	-	10.2	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	6	324	74	0
Future Vol, veh/h	0	3	6	324	74	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	72	0	0
Mvmt Flow	0	4	8	410	94	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	519	94	94	0	-	0
Stage 1	94	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	521	969	1513	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	517	969	1513	-	-	-
Mov Cap-2 Maneuver	517	-	-	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	664	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.73	0.13	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	33	-	969	-	-
HCM Lane V/C Ratio	0.005	-	0.004	-	-
HCM Control Delay (s/veh)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	20.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	10	6	6	16	2	2	3	2	470	6	0
Future Vol, veh/h	2	10	6	6	16	2	2	3	2	470	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	100	20	0	100	0	0	0	0	100	100	33	0
Mvmt Flow	3	14	8	8	23	3	3	4	3	662	8	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1354	1345	8	1351	1344	6	8	0	0	7	0	0
Stage 1	1332	1332	-	11	11	-	-	-	-	-	-	-
Stage 2	21	13	-	1339	1332	-	-	-	-	-	-	-
Critical Hdwy	8.1	6.7	6.2	8.1	6.5	6.2	4.1	-	-	5.1	-	-
Critical Hdwy Stg 1	7.1	5.7	-	7.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.1	5.7	-	7.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4.18	3.3	4.4	4	3.3	2.2	-	-	3.1	-	-
Pot Cap-1 Maneuver	80	139	1079	80	153	1083	1625	-	-	1153	-	-
Stage 1	120	205	-	806	890	-	-	-	-	-	-	-
Stage 2	795	850	-	118	225	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	27	59	1079	30	65	1083	1625	-	-	1153	-	-
Mov Cap-2 Maneuver	27	59	-	30	65	-	-	-	-	-	-	-
Stage 1	51	87	-	804	889	-	-	-	-	-	-	-
Stage 2	771	849	-	42	95	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	79.4	152.42	2.06	12.09
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	476	-	-	72	53	1148	-	-
HCM Lane V/C Ratio	0.002	-	-	0.35	0.636	0.574	-	-
HCM Control Delay (s/veh)	7.2	0	-	79.4	152.4	12.2	0	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	1.3	2.6	3.8	-	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	471	3	2	0	2
Future Volume (veh/h)	0	471	3	2	0	2
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	418	418	1900	1900	1900
Adj Flow Rate, veh/h	0	1070	7	5	0	5
Peak Hour Factor	0.44	0.44	0.44	0.44	0.44	0.44
Percent Heavy Veh, %	0	100	100	0	0	0
Cap, veh/h	0	1161	182	97	0	160
Arrive On Green	0.00	0.72	0.10	0.10	0.00	0.10
Sat Flow, veh/h	0	1609	695	979	0	1610
Grp Volume(v), veh/h	0	1071	12	0	0	5
Grp Sat Flow(s),veh/h/ln	0	1610	1674	0	0	1610
Q Serve(g_s), s	0.0	27.8	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	27.8	0.3	0.0	0.0	0.1
Prop In Lane	0.00	1.00	0.58			1.00
Lane Grp Cap(c), veh/h	0	1162	280	0	0	160
V/C Ratio(X)	0.00	0.92	0.04	0.00	0.00	0.03
Avail Cap(c_a), veh/h	0	2962	708	0	0	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.8	20.5	0.0	0.0	20.5
Incr Delay (d2), s/veh	0.0	3.6	0.1	0.0	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	0.1	0.0	0.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	0.0	9.4	20.6	0.0	0.0	20.5
LnGrp LOS		A	C			C
Approach Vol, veh/h	1071			12	5	
Approach Delay, s/veh	9.4			20.6	20.5	
Approach LOS	A			C	C	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		9.5		40.8		9.5
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		18.5		92.5		18.5
Max Q Clear Time (g_c+I1), s		2.3		29.8		2.1
Green Ext Time (p_c), s		0.0		6.5		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	9.6
HCM 7th LOS	A

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	11	159	34	103	158
Future Vol, veh/h	2	11	159	34	103	158
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	3	15	215	46	139	214

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	722	246	353	0	-	0
Stage 1	246	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	397	798	1217	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	325	798	1217	-	-	-
Mov Cap-2 Maneuver	325	-	-	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	629	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.68	7.08	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1186	-	652	-	-
HCM Lane V/C Ratio	0.177	-	0.027	-	-
HCM Control Delay (s/veh)	8.6	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.6	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	31	243	2
Future Vol, veh/h	0	2	0	31	243	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	0	3	0	42	328	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	372	330	331	0	-	0
Stage 1	330	-	-	-	-	-
Stage 2	42	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	633	716	1240	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	986	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	633	716	1240	-	-	-
Mov Cap-2 Maneuver	633	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.04	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1240	-	716	-	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s/veh)	0	-	10	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	6	0	0	3	312	0	0	2	3	3	0
Future Vol, veh/h	2	6	0	0	3	312	0	0	2	3	3	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles, %	100	0	0	0	0	0	0	0	0	50	50	0
Mvmt Flow	3	9	0	0	4	452	0	0	3	4	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.2	8.8	7.2	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	25%	0%	50%
Vol Thru, %	0%	75%	1%	50%
Vol Right, %	100%	0%	99%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	8	315	6
LT Vol	0	2	0	3
Through Vol	0	6	3	3
RT Vol	2	0	312	0
Lane Flow Rate	3	12	457	9
Geometry Grp	1	1	1	1
Degree of Util (X)	0.003	0.019	0.423	0.014
Departure Headway (Hd)	4.116	6.018	3.335	5.672
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	863	596	1082	629
Service Time	2.171	4.045	1.355	3.721
HCM Lane V/C Ratio	0.003	0.02	0.422	0.014
HCM Control Delay, s/veh	7.2	9.2	8.8	8.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	2.1	0

Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	314	0	0	2
Future Vol, veh/h	0	8	314	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	0	75	100	0	0	0
Mvmt Flow	0	16	628	0	0	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1258	2	4	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	1256	-	-	-	-	-
Critical Hdwy	6.4	6.95	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.975	3.1	-	-	-
Pot Cap-1 Maneuver	190	903	1157	-	-	-
Stage 1	1026	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	87	903	1157	-	-	-
Mov Cap-2 Maneuver	87	-	-	-	-	-
Stage 1	469	-	-	-	-	-
Stage 2	271	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.06	11.74	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1157	-	903	-	-
HCM Lane V/C Ratio	0.543	-	0.018	-	-
HCM Control Delay (s/veh)	11.7	0	9.1	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	3.4	-	0.1	-	-

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	162	175	24	94	73	2
Future Vol, veh/h	162	175	24	94	73	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	40	25	2	0	0
Mvmt Flow	186	201	28	108	84	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	248	85	86	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	163	-	-	-	-	-
Critical Hdwy	6.4	6.6	4.35	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.66	2.425	-	-	-
Pot Cap-1 Maneuver	745	878	1377	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	729	878	1377	-	-	-
Mov Cap-2 Maneuver	729	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	871	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.66	1.56	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	366	-	799	-	-
HCM Lane V/C Ratio	0.02	-	0.485	-	-
HCM Control Delay (s/veh)	7.7	0	13.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	2.7	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	6	246	74	0
Future Vol, veh/h	0	3	6	246	74	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	0	4	8	311	94	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	420	94	94	0	-	0
Stage 1	94	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	594	969	1513	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	590	969	1513	-	-	-
Mov Cap-2 Maneuver	590	-	-	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	736	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.73	0.18	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	43	-	969	-	-
HCM Lane V/C Ratio	0.005	-	0.004	-	-
HCM Control Delay (s/veh)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	23.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	10	6	6	16	2	2	3	2	314	6	0
Future Vol, veh/h	2	10	6	6	16	2	2	3	2	314	6	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	100	20	0	100	0	0	0	0	100	100	33	0
Mvmt Flow	3	14	8	8	23	3	3	4	3	442	8	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	10.4	10.7	7.7	25.1
HCM LOS	B	B	A	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	11%	25%	98%
Vol Thru, %	43%	56%	67%	2%
Vol Right, %	29%	33%	8%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	18	24	320
LT Vol	2	2	6	314
Through Vol	3	10	16	6
RT Vol	2	6	2	0
Lane Flow Rate	10	25	34	451
Geometry Grp	1	1	1	1
Degree of Util (X)	0.013	0.049	0.067	0.753
Departure Headway (Hd)	4.638	6.981	7.142	6.012
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	770	513	502	604
Service Time	2.677	5.017	5.176	4.037
HCM Lane V/C Ratio	0.013	0.049	0.068	0.747
HCM Control Delay, s/veh	7.7	10.4	10.7	25.1
HCM Lane LOS	A	B	B	D
HCM 95th-tile Q	0	0.2	0.2	6.7

Intersection	
Int Delay, s/veh	18.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	315	3	2	0	2
Future Vol, veh/h	0	315	3	2	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	44	44	44	44	44	44
Heavy Vehicles, %	0	50	50	0	0	0
Mvmt Flow	0	716	7	5	0	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	20	2	5	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.4	6.7	4.6	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.75	2.65	-	-	-
Pot Cap-1 Maneuver	1002	957	1353	-	-	-
Stage 1	1026	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	997	957	1353	-	-	-
Mov Cap-2 Maneuver	997	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1010	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	19	4.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1080	-	957	-	-
HCM Lane V/C Ratio	0.005	-	0.748	-	-
HCM Control Delay (s/veh)	7.7	0	19	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	7.2	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	11	8	34	103	7
Future Vol, veh/h	2	11	8	34	103	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	3	15	11	46	139	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	211	144	149	0	-	0
Stage 1	144	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	781	909	1445	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	775	909	1445	-	-	-
Mov Cap-2 Maneuver	775	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	960	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.15	1.43	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	343	-	885	-	-
HCM Lane V/C Ratio	0.007	-	0.02	-	-
HCM Control Delay (s/veh)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	31	92	2
Future Vol, veh/h	0	2	0	31	92	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	0	3	0	42	124	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	168	126	127	0	-	0
Stage 1	126	-	-	-	-	-
Stage 2	42	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	827	930	1472	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	986	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	827	930	1472	-	-	-
Mov Cap-2 Maneuver	827	-	-	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.88	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1472	-	930	-	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s/veh)	0	-	8.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	6	0	0	3	10	0	0	2	3	3	0
Future Vol, veh/h	2	6	0	0	3	10	0	0	2	3	3	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles, %	100	0	0	0	0	0	0	0	0	50	50	0
Mvmt Flow	3	9	0	0	4	14	0	0	3	4	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.8	6.5	6.4	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	25%	0%	50%
Vol Thru, %	0%	75%	23%	50%
Vol Right, %	100%	0%	77%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	8	13	6
LT Vol	0	2	0	3
Through Vol	0	6	3	3
RT Vol	2	0	10	0
Lane Flow Rate	3	12	19	9
Geometry Grp	1	1	1	1
Degree of Util (X)	0.003	0.018	0.018	0.012
Departure Headway (Hd)	3.359	5.686	3.468	4.906
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	1065	632	1034	731
Service Time	1.38	3.695	1.483	2.923
HCM Lane V/C Ratio	0.003	0.019	0.018	0.012
HCM Control Delay, s/veh	6.4	8.8	6.5	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.1	0

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	12	0	0	2
Future Vol, veh/h	0	8	12	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	0	75	100	0	0	0
Mvmt Flow	0	16	24	0	0	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	50	2	4	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	48	-	-	-	-	-
Critical Hdwy	6.4	6.95	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.975	3.1	-	-	-
Pot Cap-1 Maneuver	964	903	1157	-	-	-
Stage 1	1026	-	-	-	-	-
Stage 2	980	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	944	903	1157	-	-	-
Mov Cap-2 Maneuver	944	-	-	-	-	-
Stage 1	1005	-	-	-	-	-
Stage 2	980	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.06	8.18	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1157	-	903	-	-
HCM Lane V/C Ratio	0.021	-	0.018	-	-
HCM Control Delay (s/veh)	8.2	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	24	24	94	73	2
Future Vol, veh/h	11	24	24	94	73	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	40	25	2	0	0
Mvmt Flow	13	28	28	108	84	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	248	85	86	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	163	-	-	-	-	-
Critical Hdwy	6.4	6.6	4.35	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.66	2.425	-	-	-
Pot Cap-1 Maneuver	745	878	1377	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	729	878	1377	-	-	-
Mov Cap-2 Maneuver	729	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	871	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.59	1.56	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	366	-	825	-	-
HCM Lane V/C Ratio	0.02	-	0.049	-	-
HCM Control Delay (s/veh)	7.7	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	6	95	74	0
Future Vol, veh/h	0	3	6	95	74	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	6	0	0
Mvmt Flow	0	4	8	120	94	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	229	94	94	0	-	0
Stage 1	94	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	764	969	1513	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	759	969	1513	-	-	-
Mov Cap-2 Maneuver	759	-	-	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	896	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.73	0.44	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	107	-	969	-	-
HCM Lane V/C Ratio	0.005	-	0.004	-	-
HCM Control Delay (s/veh)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	10	6	6	16	2	2	3	2	12	6	0
Future Vol, veh/h	2	10	6	6	16	2	2	3	2	12	6	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	100	20	0	100	0	0	0	0	100	100	33	0
Mvmt Flow	3	14	8	8	23	3	3	4	3	17	8	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.8	9.1	7	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	11%	25%	67%
Vol Thru, %	43%	56%	67%	33%
Vol Right, %	29%	33%	8%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	18	24	18
LT Vol	2	2	6	12
Through Vol	3	10	16	6
RT Vol	2	6	2	0
Lane Flow Rate	10	25	34	25
Geometry Grp	1	1	1	1
Degree of Util (X)	0.011	0.039	0.053	0.041
Departure Headway (Hd)	3.909	5.511	5.683	5.846
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	900	646	628	608
Service Time	2	3.571	3.737	3.925
HCM Lane V/C Ratio	0.011	0.039	0.054	0.041
HCM Control Delay, s/veh	7	8.8	9.1	9.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.2	0.1

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	3	2	0	2
Future Vol, veh/h	0	13	3	2	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	44	44	44	44	44	44
Heavy Vehicles, %	0	50	50	0	0	0
Mvmt Flow	0	30	7	5	0	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	20	2	5	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.4	6.7	4.6	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.75	2.65	-	-	-
Pot Cap-1 Maneuver	1002	957	1353	-	-	-
Stage 1	1026	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	997	957	1353	-	-	-
Mov Cap-2 Maneuver	997	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1010	-	-	-	-	-

Build Conditions

Approach	EB	NB	SB
HCM Control Delay, s/v	8.88	4.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1080	-	957	-	-
HCM Lane V/C Ratio	0.005	-	0.031	-	-
HCM Control Delay (s/veh)	7.7	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

APPENDIX D

Sight Distance Evaluation

NE 296th

Stopping Sight Distance

V = Speed (mph)	V = 60 mph
G = Grade (%)	G = < 1 %
t = Brake Reaction Time (s)	t = 2.5 s
a = Deceleration Rate (ft/s^2)	a = 11.2 ft/s^2

Brake Reaction Distance = 1.47*V*t = 1.47*(60)*(2.5)
Brake Reaction Distance = 221 ft

Braking Distance = $1.075*V^2 / a = 1.075*(60)^2 / 11.2$
Braking Distance = 346 ft

Stopping Sight Distance = Brake Reaction Distance + Braking Distance
Stopping Sight Distance = 567 ft

Intersection Sight Distance

V = Speed — V = 60 mph

t_g = Time Gap (s)

t_g = 7.5 s Passenger Car Left Turn
t_g = 9.5 s Single-Unit Truck Left Turn
t_g = 11.5 s Combination Truck Left Turn

t_g = 6.5 s Passenger Car Right Turn
t_g = 8.5 s Single-Unit Truck Right Turn
t_g = 10.5 s Combination Truck Right Turn

Intersection Sight Distance = 1.47*V*t = 1.47*(60)*(11.5)
Intersection Sight Distance = 1,015 ft (Combination Truck Left Turn)

Intersection Sight Distance = 1.47*V*t = 1.47*(60)*(10.5)
Intersection Sight Distance = 927 ft (Combination Truck Right Turn)

NE 288th

Stopping Sight Distance

V = Speed (mph)	V = 35 mph
G = Grade (%)	G = < 1 %
t = Brake Reaction Time (s)	t = 2.5 s
a = Deceleration Rate (ft/s^2)	a = 11.2 ft/s^2

Brake Reaction Distance = 1.47*V*t = 1.47*(35)*(2.5)
Brake Reaction Distance = 129 ft

Braking Distance = $1.075*V^2 / a = 1.075*(35)^2 / 11.2$
Braking Distance = 118 ft

Stopping Sight Distance = Brake Reaction Distance + Braking Distance
Stopping Sight Distance = 247 ft

Intersection Sight Distance

V = Speed — V = 35 mph

t_g = Time Gap (s)

t_g = 7.5 s Passenger Car Left Turn
t_g = 9.5 s Single-Unit Truck Left Turn
t_g = 11.5 s Combination Truck Left Turn

t_g = 6.5 s Passenger Car Right Turn
t_g = 8.5 s Single-Unit Truck Right Turn
t_g = 10.5 s Combination Truck Right Turn

Intersection Sight Distance = 1.47*V*t = 1.47*(35)*(11.5)
Intersection Sight Distance = 592 ft (Combination Truck Left Turn)

Intersection Sight Distance = 1.47*V*t = 1.47*(35)*(10.5)
Intersection Sight Distance = 541 ft (Combination Truck Right Turn)

NE 280th

Stopping Sight Distance

V = Speed (mph)	V = 60 mph
G = Grade (%)	G = -3 %
t = Brake Reaction Time (s)	t = 2.5 s
a = Deceleration Rate (ft/s^2)	a = 11.2 ft/s^2

Brake Reaction Distance = 1.47*V*t = 1.47*(60)*(2.5)
Brake Reaction Distance = 221 ft

Braking Distance = V^2 / 30*[(a/32.2) + G] = $(60)^2$ / 30*[(11.2/32.2) – 0.03]
Braking Distance = 378 ft

Stopping Sight Distance = Brake Reaction Distance + Braking Distance
Stopping Sight Distance = 599 ft

Intersection Sight Distance

V = Speed — V = 60 mph

t_g = Time Gap (s)

t_g = 7.5 s Passenger Car Left Turn
t_g = 9.5 s Single-Unit Truck Left Turn
t_g = 11.5 s Combination Truck Left Turn

t_g = 6.5 s Passenger Car Right Turn
t_g = 8.5 s Single-Unit Truck Right Turn
t_g = 10.5 s Combination Truck Right Turn

Intersection Sight Distance = 1.47*V*t = 1.47*(60)*(11.5)
Intersection Sight Distance = 1,015 ft (Combination Truck Left Turn)

Intersection Sight Distance = 1.47*V*t = 1.47*(60)*(10.5)
Intersection Sight Distance = 927 ft (Combination Truck Right Turn)

APPENDIX E

Sight Distance Photos

State Highway A & 280th Street (Facing South)

Proposed Driveway & 288th Street (Facing East)

Proposed Driveway & 288th Street (Facing West)

APPENDIX H – PERMIT MATRIX

Item No.	Permit/Clearance	Regulatory Agency	Regulation	Details	Required for	Application Requirements	Typical Time for Application Preparation	Anticipated Agency Review Time	Permit Fee	Comments/Notes	Document or Website Link
Federal											
1	National Environmental Policy Act (NEPA) Review	Lead Federal Agency	National Environmental Policy Act	Required pursuant to NEPA for public disclosure of environmental impacts resulting from Federal actions.	Construction	Process can be a phased approach. The applicant typically prepares a preliminary Environmental Assessment (EA). The agency reviews the document and can either attach a Finding of No Significant Impact or require the preparation of an Environmental Impact Statement (EIS).	4 to 9 months	6 to 12 months	No	The level of NEPA review is dependent on the extent of impacts. The U.S. Army Corps of Engineers may take on the role of Lead Federal Agency if a Section 404 Permit is required due to wetland and/or stream impacts.	https://www.epa.gov/nepa
2	Section 404 Wetland/Stream Disturbance Permit	U.S. Army Corps of Engineers (USACE) - Kansas City District	Section 404 of the Clean Water Act	Required to dredge or place fill in a jurisdictional water, including wetlands. Nationwide Permit (NWP): Less than or equal to 0.5 acre of wetland impacts Individual Permit: More than 0.5 acre of wetland impacts	Construction	Complete field delineation to determine extent of jurisdictional wetlands and waters of the U.S. within the Project boundary. Develop wetland delineation report and calculate extent of impacts to jurisdictional waters.	4 weeks for wetland delineation and report preparation; 2 weeks for NWP application; 1 to 2 months for Individual Permit application	NWP Permit - 2 to 3 months; Individual Permit - 10 to 18 months	No	The entire proposed work area should be evaluated for wetlands and streams to avoid impacts to the extent practicable.	https://www.nwk.usace.army.mil/Missions/Regulatory-Branch/Nation-Wide-Permits/ https://www.nwk.usace.army.mil/Portals/29/docs/regulatory/NWP/2021/MO/2022_MORC.pdf?ver=RdItt9lYeTUW_cvlGGTwZg%3d%3d
3	Section 408 Permit	USACE - Kansas City District	Section 408 of the Clean Water Act	Required for any alterations, modifications, or to occupy any existing USACE civil works project. This includes dams, levees, channels, navigational channels, and any other flood risk management, navigation, recreation, and infrastructure and environmental stewardship projects constructed by USACE. Includes an engineering, environmental, real estate, and legal review from the USACE.	Construction	1 Written request letter 2 Engineering drawings	1 week for letter preparation	60 days for a low risk project; 90+ days for a high risk project	No	If a Section 404 permit is required, the 408 application is submitted concurrently with the 404 application, and the USACE Regulatory Department will handle coordination with the 408 reviewer.	https://www.nwk.usace.army.mil/Missions/Section-408/ https://nid.sec.usace.army.mil/#/ https://levees.sec.usace.army.mil/#/
4	Section 10 Permit	USACE - Kansas City District	Section 10 of the Rivers and Harbors Act	Required to construct over, in, or under a Section 10 navigable waterway.	Construction	Typically, the same application can be used for the Section 10 process as for the Section 404 process.	2 weeks for NWP application; 1 to 2 months for Individual Permit application	45 to 60 days or simultaneous with another USACE permit	No	Seven streams listed as Section 10 in the USACE Kansas City District.	https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/4035
5	Section 7 Threatened & Endangered Species Consultation and Clearance	U.S. Fish & Wildlife Service (FWS), Ecological Services	Section 7 of the Endangered Species Act (ESA), 16 USC 1531-1534	If the Project will potentially impact protected species or their respective habitat, or if a Section 404 and/or NPDES permit is required, then the FWS must be consulted for compliance with the Endangered Species Act.	Construction	The FWS will determine the level of effort needed for the Project to proceed (e.g., desktop survey, habitat assessment, species surveys, avian impact studies).	1 week to complete habitat assessment field survey; 1 week to draft letter to FWS to request concurrence of no impact	30 days for data request, 30 days for report review (if required)	No	Habitat assessment and species surveys not likely required if construction will take place in an already developed area, requiring no tree clearing, and no Section 404 Permit.	https://www.fws.gov/office/missouri-ecological-services
6	Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) Compliance	U.S. Fish & Wildlife Service (FWS), Ecological Services	Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA)	If an activity may affect bald eagles, golden eagles, and/or their nests, coordination with the FWS may be required. Disturbance of any known eagle nesting areas will require FWS coordination.	Construction	Bird nest surveys could be required by the FWS to demonstrate compliance with the BGEPA. Even if not required by the FWS, project owners will typically conduct bird nest surveys to assess the potential risks to nesting bald and golden eagles.	1 week to complete bird nest survey; 1 week to draft letter to FWS to request concurrence of no impact	30 days for data request, 30 days for report review (if required)	No	Habitat assessment and species surveys not likely required if construction will take place in an already developed area, requiring no tree clearing, and no Section 404 Permit.	https://www.fws.gov/office/missouri-ecological-services
7	Notice of Proposed Construction	Federal Aviation Administration (FAA)	14 CFR Part 77	Required for the construction of structures 200 feet tall or within the distance to height ratio from the nearest point of a FAA airport runway. Also required for construction equipment reaching heights over 200 feet.	Construction	Complete Form FAA 7460-1 Notice of Proposed Construction or Alteration	1 week	45+ days	No		https://www.faa.gov/forms/index.cfm/go/document.information/documentid/186273
8	Hazardous Waste Generator Registration	U.S. Environmental Protection Agency (EPA)	Resource Conservation and Recovery Act	Required for facilities that manage hazardous waste. Employers must train personnel on proper hazardous waste management and comply with stringent requirements for generating, storing, treating, and disposing of hazardous wastes.	Operation	Must complete RCRA Subtitle C Site Identification Form to register as a hazardous waste generator, as appropriate.	1 to 2 weeks	30 to 60 days	No		https://rcrapublic.epa.gov/rcrainfoweb/documents/rcra_subtitleC_forms_and_instructions.pdf
9	Spill Prevention, Control, and Countermeasure Plan (SPCC Plan)	U.S. Environmental Protection Agency (EPA)	40 CFR Part 112	Facilities that store, process, refine, use or consume oil or oil products; store more than 1,320 gallons in total of all aboveground containers (only count containers with 55 gallons or greater storage capacity) or more than 42,000 gallons in completely buried containers; and could reasonably be expected to discharge oil to navigable waters of the U.S. or adjoining shorelines, such as lakes, rivers and streams.	Operation	SPCC Plan must be prepared in accordance with good engineering practices and certified by a Professional Engineer. SPCC Plan requires regular inspections and documentation of aboveground storage tanks holding regulated substances. https://www.epa.gov/sites/production/files/2013-08/documents/qf_app_guidance_0.pdf	30 to 60 days	No pre-approval required. Must be kept onsite and reviewed every 5 years or if there is a change within the site.	No	If fuel is stored onsite during construction that exceeds SPCC Plan thresholds, the Project owner or contractor will be required to develop an SPCC Plan for construction.	https://www.epa.gov/sites/production/files/2013-08/documents/qf_app_guidance_0.pdf https://www.epa.gov/oil-spills-prevention-and-preparedness-regulations/spill-prevention-control-and-countermeasure-10

State - Missouri											
10	Construction Permit (New Source Review)	Missouri Department of Natural Resources (DNR) - Air Pollution Control Program	10 CSR 10-6	Construction permits are required prior to commencing construction of an emission source and may be obtained by submitting a completed Application for Authority to Construct to the Air Pollution Control Program.	Construction	Application requirements dependent on Criteria Air Pollutants	2 to 3 months	60 to 180 days	$250 to $5,000 filing fee, processing fees TBD	Estimate source potential emissions to determine appropriate permitting process. The Air Pollution Control Program issues several types of construction permits: Major, Minor and De Minimis permits, portable relocation permits, temporary permits, and permits-by-rule.	https://dnr.mo.gov/air/business-industry/permits/construction
11	Operating Permit (Intermediate Permit)	Missouri Department of Natural Resources (DNR) - Air Pollution Control Program	10 CSR 10-6	An Intermediate installation is a Part 70 installation that accepts voluntary, federally-enforceable limitations on production and/or emissions, type of materials combusted or processed, operating rates, or hours of operation in order to reduce the potential to emit and maintain the installation's actual emissions below major source levels.	Operation	Application requirements dependent on Criteria Air Pollutants	2 to 3 months	Within 18 months	TBD	Estimate source potential emissions to determine appropriate permitting process. The Air Pollution Control Program issues several types of construction permits: Major, Minor and De Minimis permits, portable relocation permits, temporary permits, and permits-by-rule.	https://dnr.mo.gov/air/business-industry/permits/operating
12	Title V Operating Permit	Missouri Department of Natural Resources (DNR) - Air Pollution Control Program	10 CSR 10-6	Required for emission sources producing more than 100 tons/year of pollutants	Operation	Application requirements dependent on Criteria Air Pollutants	2 to 3 months	Within 18 months	$750 to $6000	Determine if Project will produce more than 100 tons/year of pollutants.	https://dnr.mo.gov/air/business-industry/permits/operating
13	Section 401 Water Quality Certification (WQC)	Missouri Department of Natural Resources (DNR) - Water Protection Program	Section 401 of the Clean Water Act; 10 CSR 20-6	Required prior to Section 404 approval to verify that Project activities will not violate the State water quality standards. If 401 Water Quality Conditions are met under a USACE Nationwide Permit, then 401 WQC is granted upon issuance of the Nationwide Permit related to wetland and waterbody impacts. Otherwise, an Individual 401 Water Quality Certification is required from MDNR.	Construction	No application required if Project qualifies for Section 404 Nationwide Permit.	1 to 2 weeks	Approval process runs concurrently with Section 404 application process for USACE Nationwide Permits; at least 60 days for an Individual 401 WQC	Only for an Individual 401 WQC - $75		https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality https://dnr.mo.gov/document-search/clean-water-act-section-401-water-quality-certification-2021-general-specific-conditions
14	NPDES Industrial Discharge Permit	Missouri Department of Natural Resources (DNR) - Water Protection Program	Section 402 of the Clean Water Act	Required to discharge operational wastewaters from industrial facilities to surface waters of the State. Also required for land application of wastewaters.	Operation	1 Form A - MO 780-1479 2 Form C - MO 780-1545 3 Form D - MO 780-1516 May require antidegradation assessment to demonstrate no degradation to receiving water. Application would require: 1 Map showing location of all outfalls, with scale, as well as a flowchart indicating each process, which contributes to the outfall 2 A geohydrological evaluation conducted by MDNR's Geological Survey 3 Engineering certification that the project was designed to meet the requirements of 10 CSR 20-8	2 to 12 months	180 days	TBD	Would be required for combined-cycle facility if discharging wastewater to a surface water or land applying any waste streams. Time frame of 2 to 12 months depending on the complexity of the project.	https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/stormwater?order=field_expiration_date&sort=desc&title= https://dnr.mo.gov/forms-applications?order=title&page=21&sort=desc&term_node_tid_depth=All&title=
15	POTW Pretreatment Permit	Missouri Department of Natural Resources (DNR) - Water Protection Program	Section 403 of the Clean Water Act	Required for industries discharging into a municipal sewer system. Typically industries must meet numeric limits on pollutants and employ best management practices to control the amount of pollutants being discharged. POTWs with design flows greater than 5 million gallons per day and receiving industrial discharges that are subject to federal limitations or pass through or interfere with the operation of the POTW to develop and implement and approved pretreatment program.	Operation	This will be dependent upon the ordinances of the city with the POTW permitting authority.	2 to 3 months	This will be dependent on the POTW that issues the permit.	TBD	Would be required for combined-cycle facility if discharging wastewater to a municipal wastewater treatment system.	https://dnr.mo.gov/document-search/capacity-management-operations-maintenance-plan-model-guidance-pub2574/pub2574
16	Wastewater Impoundment Construction Permit	Missouri Department of Natural Resources (DNR) - Water Pollution Control Branch	10 CSR 20-6.010(5)	Required for wastewater that is impounded onsite for treatment and/or flow rate control prior to discharge.	Construction	1 Application for Construction Permit - Wastewater Treatment Facility 2 Facility Plan 3 Summary of Design 4 Geohydrological Evaluation	3 to 6 months	180 day for wastewater treatment or 60 days for collection system projects in advance of the construction start date.	TBD		https://casetext.com/regulation/missouri-administrative-code/title-10-department-of-natural-resources/division-20-clean-water-commission/chapter-6-permits/section-10-csr-20-6010-construction-and-operating-permits
17	Onsite Sanitary Disposal Permit - Onsite Wastewater Treatment Septic System (OWTS)	Missouri Department of Health and Senior Services	10 CSR 20-6.030	Cluster or centralized systems with subsurface soil dispersal under the same common promotional plan within the same operating location when the maximum daily flows of domestic wastewater is less than or equal to 3,000 gallons per day including offices, motels/hotels, RV parks, theaters, and restaurants. The City or County may have more restrictive standards.	Construction	MO Dept. of Health and Senior Services must approve of method of domestic wastewater treatment. Construction permit is required before installation or repair of OWTS, which may fall under the city or county authority if a local onsite sewage ordinance has been adopted.	TBD	Will be dependent on who has onsite authority (State vs city or county)	TBD		https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/wastewater/wastewater-and-septic-systems https://s1.sos.mo.gov/cmsimages/adrules/csr/current/19csr/19c20-3a.pdf https://health.mo.gov/living/environment/onsite/permitprocess.php
18	NPDES Land Disturbance Permit & Stormwater Pollution Prevention Plan (SWPPP)	Missouri Department of Natural Resources (MDNR) - Water Protection Program	Section 402 of the Clean Water Act	Required for construction activities which will disturb 1 or more acres of land.	Construction	The General Permit requires the development of a SWPPP prior to permit approval.	3 to 4 weeks	Through the ePermitting process, permit approval is typically granted instantaneously upon application submittal.	Depends on acreage of disturbance		https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/stormwater/construction-or-land-disturbance-mo-ra00000
19	Cultural Resources Clearance	Missouri Department of Natural Resources (MDNR) - State Historic Preservation Office (SHPO)	National Historic Preservation Act – Section 106	Under Section 106 of the National Historic Preservation Act, Federal agencies must work with the State Historic Preservation Office to address historic preservation issues when planning projects or issuing funds or permits that may affect historic properties and archaeological resources listed in or determined eligible for the National Register of Historic Places.	Construction	1 Desktop evaluation 2 Agency coordination letter SHPO will determine if further consultation is required, such as a Phase I Cultural Resources survey.	SHPO determines level of consultation (resources surveys, etc.).	1 to 2 months for each response	No	SHPO consultation not likely required if construction will take place in an already developed area, no Federal funds are used for Project development, and no Section 404 Permit or other Federal permit is required.	https://mostateparks.com/page/84261/section-106-review

State - Missouri											
20	Threatened & Endangered Species Clearance (State)	Missouri Department of Conservation (MDC)	RsMo Section 252.240	Required for projects with the potential to affect State-listed threatened and/or endangered species	Construction	1 Cover letter 2 Site location figures 3 Maps delineating the area of impact or work area 4 Site photographs	2 weeks for initial consultation; 1 to 2 months if field survey and report are required. MDC determines level of consultation.	45 days for initial response, additional 45 days for determination of field survey results (if required)	No	Habitat assessment and species surveys not likely required if construction will take place in an already developed area, requiring no tree clearing and no Section 404 Permit.	https://mdc.mo.gov/your-property/responsible-construction/missouri-natural-heritage-program
21	Well Certification- PUB98 Certification and Registration of Records	Missouri Department of Natural Resources (MDNR) - Missouri Geological Survey	10 CSR 23	Required for the construction of any water well, monitoring well, mineral exploratory well, or ground source heat pump system.	Construction	Well Certification Record	1 to 2 weeks	10 Days	Water well certification: $80 Monitoring well certification: $100		https://dnr.mo.gov/document-search/monitoring-well-certification-report-mo-780-1415
22	Major Water Users	Missouri Department of Natural Resources (MDNR) - Missouri Geological Survey	Sections 256.400-433, RsMo	Major water users are required to register their water use annually. Any entity withdrawing or diverting 100,000 gallons or more of water per day (or approx. 70 gallons per minute) from all their combined wells and/or surface intakes.	Annually	1 Water Use Inventory form 2 Source of Water form 3 Map showing location of the water source by section, township, and range	1 week	2 weeks	No	Length of permit is for the lifetime of the water source. *** this is only a registration, no permit is issued.	https://dnr.mo.gov/document-search/major-water-use-registration-mo-780-2019
23	Aboveground Storage Tank (AST) Inspection	Missouri Department of Agriculture (MDA), Petroleum/Propane/Anhydrous Ammonia Program	Petroleum Inspection Program: Cpt 414.142 RS Mo	MDA performs petroleum and anhydrous ammonia AST safety inspections.	Operation	https://s1.sos.mo.gov/cmsimages/adrules/csr/current/2csr/2c90-30.pdf	NA	NA	NA		https://agriculture.mo.gov/weights/fdsa/
24	Boiler/Pressure Vessel Inspection Certificate	Missouri Department of Public Safety /Fire Safety	RsMo Section 650.200 to 650.295 11 CSR 40-2.010 to 40-2.060	Boilers/pressure vessels must be constructed to the ASME Boiler & Pressure Vessel Codes and registered with the National Board of Boiler and Pressure Vessel Inspectors. Certificate inspections are the responsibility of the owner and required every 1 to 2 years.	Construction / Operation	1 Boiler & Pressure Vessel Installation Permit 2 Attachments A and B	TBD	Completed applications shall be submitted to the Chief Inspector at least 60 days prior to the start of the installation.	Fees per vessel		https://dfs.dps.mo.gov/programs/bpv/
Clinton County											
25	Zoning Map Amendment / Zoning Permit	Clinton County Planning and Zoning	Clinton County Zoning Ordinance 1.12; 7.4-1	Zoning Map Amendment will likely be required to change the zoning district of the property from Agricultural to Heavy Industrial (M-2). Electric power plants are listed as a permitted use by right in the M-2 Zoning District.	Construction	Adjacent Property Owners Water Supply Approval Sanitary Sewer Approval Road Department Approval (County and State) Preliminary Plat/Site Plan	4 weeks	8 weeks	TBD, consultation necessary	No Clinton County Zoning Map was identified during review of the County Government Webpage and GIS Viewer. The underlying zoning designation of the Breckenridge Run property is assumed to be agricultural. "The Official Zoning Map is posted on the wall in the zoning administrator's office". Public hearing will be required from the Planning and Zoning Department for ultimate Zoning Map Amendment approval by the County Commissioners. Conditional Rezoning process for a specific use is available (7.4-3). Construction of an electric power plant will likely require stringent review from the Clinton County Engineer and the Planning and Zoning Commission.	https://clintoncomo.org/government/courthouse/planning-and-zoning/ordinances-forms/ https://clintoncomo.org/wp-content/uploads/2023/03/Special-Use-Permit-Application-2023.pdf https://clintoncomo.org/wp-content/uploads/2023/02/CLINTON-COUNTY-SETBACKS.pdf https://clintoncomo.org/wp-content/uploads/2023/01/APPLICANT-CONTACT-INFORMATION-2023.pdf https://clintoncomo.org/wp-content/uploads/2023/03/Clinton-Co-Zoning-Order-Amended-03-07-2023.pdf
26	Commercial Construction Application for Permit (Building Permit)	Clinton County Planning and Zoning	County building codes and other ordinances	Required for all types of new building construction, additions, remodeling, or repair work prior to the start of construction.	Construction	Building Plans (including square footage) Septic Application Morphology Report Land/Parcel Information & Survey	1 week	4 weeks	$0.30/sq. ft.		https://clintoncomo.org/wp-content/uploads/2023/01/COMMERCIAL-BUILDING-PERMIT-APPLICATION-2023.pdf
27	Driveway Permit	Clinton County Planning and Zoning	County building codes and other ordinances, and all requirements of the County Road and Bridge Department	Required prior any proposed excavation, construction, or other encroachment on Clinton County roadways.	Construction	Driveway/Road Type Number of Access Points Distance from other driveways Contact Sheet	1 week	2 weeks	TBD, consultation necessary	Construction must be completed within 6 months of approval.	https://clintoncomo.org/wp-content/uploads/2023/01/DRIVEWAY-PERMIT-2023.pdf
28	On-Site Waste Water Permit	Clinton County Planning and Zoning	10 CSR 20-6.030	Construction of an onsite wastewater disposal system or septic system.	Construction	Contact Sheet Parcel and Property Details Morphology Report	1 week	2 weeks	$235	Morphology report must be conducted by a licensed Missouri Soil Evaluator (http://health.mo.gov/living/environment/onsite/ose/index.php)	https://clintoncomo.org/wp-content/uploads/2019/11/On-Site-Application.pdf http://health.mo.gov/living/environment/onsite/ose/index.php

Notes:
This is not an exhaustive list of all permits that may be required.
Some permits listed may not be applicable after field surveys are performed.