ENVIRONMENTAL ASSESSMENT

For

Salem Bulk to Valley View 69kV Line

Citizens Electric Corporation
A Touchstone Energy® Cooperative

USDA Rural Development
Committed to the future of rural communities.

Dated: June 2025

Prepared By

TOTH & ASSOCIATES

Phone:	1550 E. Republic Road	Fax:
417-888-0645	Springfield, MO 65804	417-888-0657

Table of Contents

1 PROJECT DESCRIPTION 6
1.1 AGENCY AND PROGRAM OBJECTIVES 6
1.2 REGULATORY GUIDELINES 8
1.3 PURPOSE AND NEED 8
2 ALTERNATIVES EVALUATED 8
2.1 PROPOSED ACTION 8
2.2 NO ACTION ALTERNATIVE 9
2.3 CONSIDERATIONS NOT CARRIED FORWARD 9
2.3.1 LAND USE 9
2.3.2 IMPORTANT FARMLAND 9
2.3.3 FORMALLY CLASSIFIED LANDS 9
2.3.4 COASTAL RESOURCES 10
2.3.5 INVASIVE SPECIES 10
2.3.6 AESTHETICS 10
2.3.7 AIR QUALITY 10
2.3.8 NOISE 10
2.3.9 HUMAN HEALTH AND SAFETY 10
3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES 11
3.1 FLOODPLAINS 11
3.1.1 AFFECTED ENVIRONMENT 11
3.1.2 ENVIRONMENTAL CONSEQUENCES 14
3.1.3 MITIGATION MEASURES 14
3.2 WETLANDS 14
3.2.1 AFFECTED ENVIRONMENT 14
3.2.2 ENVIRONMENTAL CONSEQUENCES 15
3.2.3 MITIGATION MEASURES 15
3.3 WATER RESOURCES 15
3.3.1 AFFECTED ENVIRONMENT 15
3.3.2 ENVIRONMENTAL CONSEQUENCES 15
3.3.3 MITIGATION MEASURES 16
3.4 GENERAL FISH, WILDLIFE, AND VEGETATION 16

3.4.1 AFFECTED ENVIRONMENT 16
3.4.2 ENVIRONMENTAL CONSEQUENCES 16
3.4.3 MITIGATION MEASURES 17
3.5 THREATENED AND ENDANGERED SPECIES 17
3.5.1 AFFECTED ENVIRONMENT 17
3.5.2 ENVIRONMENTAL CONSEQUENCES 17
3.5.3 MITIGATION MEASURES 20
3.6 MIGRATORY BIRD TREATY ACT 21
3.6.1 AFFECTED ENVIRONMENT 21
3.6.2 ENVIRONMENTAL CONSEQUENCES 21
3.6.3 MITIGATION MEASURES 21
3.7 BALD AND GOLDEN EAGLE PROTECTION ACT 22
3.7.1 AFFECTED ENVIRONMENT 22
3.7.2 ENVIRONMENTAL CONSEQUENCES 22
3.7.3 MITIGATION MEASURES 22
3.8 CULTURAL RESOURCES AND HISTORIC PROPERTIES 22
3.8.1 AFFECTED ENVIRONMENT 22
3.8.2 ENVIRONMENTAL CONSEQUENCES 23
3.8.3 MITIGATION MEASURES 24
3.9 TRANSPORTATION 24
3.9.1 AFFECTED ENVIRONMENT 24
3.9.2 ENVIRONMENTAL CONSEQUENCES 24
3.9.3 MITIGATION MEASURES 24
4 SUMMARY OF EFFECTS 24
4.1 SUMMARY OF ENVIRONMENTAL EFFECTS 25
5 SUMMARY OF MITIGATION MEASURES 26
6 COORDINATION, CONSULTATION, AND CORRESPONDENCE 28
7 REFERENCES 29
8 LIST OF PREPARERS 32
9 APPENDIX 32

A01 - Public Fact Sheet 2023
A02 - Topographic Map with Notes (can be found in Biological Assessment Appendix)

A03 - NEPAssist Report SBtoVV (can be found in Biological Assessment Appendix)
A04 - USGS National Map SBtoVV (can be found in Biological Assessment Appendix)
A05 - PADUS Map
A06 - Species List SBtoVV (can be found in Biological Assessment Appendix)
A07 - Wetlands Mapper 1
A08 - Wetlands Mapper 2
A09 - Wetlands Mapper 3
A10 - FEMA Firmette 42 Pages
A11 - Important Farmland
A12 - Soil Report SBtoVV
A13 - Airport Proximity
A14 - Sole Source Aquifer
A15 - EO14156 Declaring a National Energy Emergency (can be found in Biological Assessment Appendix)
A16 - USFWS Determination Letter (can be found in Biological Assessment Appendix)
A17 - TDAT Ste. Genevieve County MO
A18 - IPaC_ Explore Location resources
A19 - Threatened and Endangered Species Habitat Assessment Report (can be found in Biological Assessment Appendix)
A20 - Bat Habitat Assessment (can be found in Biological Assessment Appendix)

List of Acronyms and Abbreviations

APE	AREA OF POTENTIAL EFFECT
BMP	BEST MANAGEMENT PRACTICE
CFR	CODE OF FEDERAL REGULATIONS
DC	DIRECT CURRENT
EA	ENVIRONMENTAL ASSESSMENT
EMF	ELECTROMAGNETIC FIELD
EO	EXECUTIVE ORDER
EPA	ENVIRONMENTAL PROTECTION AGENCY
ESA	ENDANGERED SPECIES ACT
FCL	FORMALLY CLASSIFIED LANDS
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY

FPPA	FARMLAND PROTECTION POLICY ACT
FONSI	FINDING OF NO SIGNIFICANT IMPACT
IPAC	INFORMATION FOR PLANNING AND CONSULTATION
NAA	NO ACTION ALTERNATIVE
NEPA	NATIONAL ENVIRONMENTAL POLICY ACT
NOA	NOTICE OF AVAILABILITY
NOI	NOTICE OF INTENT
NRCS	NATURAL RESOURCES CONSERVATION SERVICE
NWI	NATIONAL WETLANDS INVENTORY
PAD-US	PROTECTED LANDS DATABASE OF THE U.S.
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RD	RURAL DEVELOPMENT
RUS	RURAL UTILITIES SERVICE
SHPO	STATE HISTORIC PRESERVATION OFFICE
SSA	SOLE SOURCE AQUIFER
THPO	TRIBAL HISTORIC PRESERVATION OFFICE
USC	UNITED STATES CODE
USDA	UNITED STATES DEPARTMENT OF AGRICULTURE
USFWS	UNITED STATES FISH AND WILDLIFE SERVICE
USGS	UNITED STATES GEOLOGICAL SURVEY

1 PROJECT DESCRIPTION

Citizen's Electric Corporation (CEC) serves all of Ste. Genevieve County [1] and parts of St. Francois and Cape Girardeau Counties in Missouri. CEC serves over 27,000 customers with approximately 3,000 miles of overhead and underground electric distribution lines. CEC is proposing to construct a new, approximately 21.3-mile 69 kV transmission line to improve energy reliability for local communities in Southeast Missouri. The new line will connect the Salem Bulk Substation north of Farmington, MO to the Valley View Substation north of Bloomsdale, MO.

This undertaking is being proposed to improve the electric system reliability, transmission capacity, and allow for regional and local growth in southeast Missouri. The undertaking consists of the construction of an approximately 21.3-mile 69 kV transmission line that will connect the Salem Bulk Substation north of Farmington, MO to the Valley View Substation north of Bloomsdale, MO. CEC proposes that the area of potential effects (APE) of the undertaking consists of the area shown on the enclosed location maps (included in Figure 1 on the next page and in the Appendix).

1.1 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 [2], 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 [U.S.C.] § 904) [3]. A primary function or mission of RUS is to carry out the electric loan program (7 U.S.C. 6942) [4].

USDA, Rural Development is a mission area that includes three federal agencies – Rural Business-Cooperative Service, Rural Housing Service, and Rural Utilities Service. The agencies have in excess of 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 in order to accomplish program objectives.

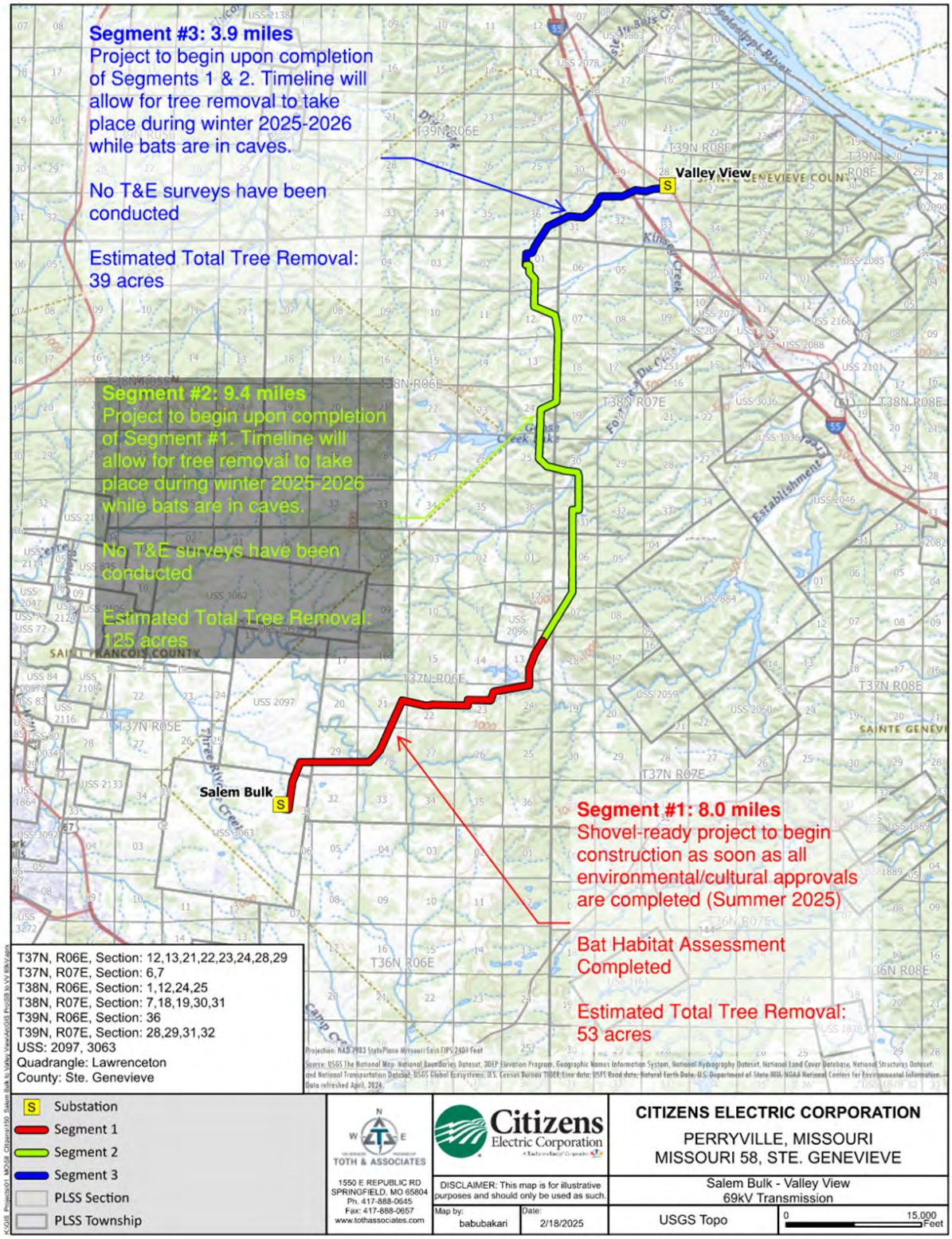


Figure 1: The Project Area Map (by section with notes) [5].

1.2 REGULATORY GUIDELINES

This Environmental Assessment (EA) was prepared in accordance with Title 7 of the Code of Federal Regulations (CFR) Part 3100 (7 CFR 3100) [6], which prescribes the policies and procedures of the USDA for implementing the National Environmental Policy Act (NEPA) of 1969, as amended, 7 CFR 1970 [7] which provides environmental policies and procedures for the Rural Utilities Service (RUS), and the USDA Rural Development guidance document 1970-C which serves as a guide for preparing EAs under NEPA [8].

Under Presidential Executive Order 14156 of January 20, 2025 (Declaring a National Energy Emergency), this undertaking has been designated as an Emergency Project [9]. The remainder of this Environmental Assessment is truncated as a result of the Emergency status of this project. The full text of EO 14156 [10] can be found in the Appendix.

1.3 PURPOSE AND NEED

The primary purpose of the proposed action is to increase the reliability and capacity of CEC's 69kV system. The proposed action will establish a 69kV loop in the area, which will be able to serve three existing substations and two future planned substations effectively, even when portions of the line have to be taken out of service for maintenance. The aforementioned substations are currently fed from a radial 69kV line, which means these substations must be taken completely out of service when the radial line needs to be deenergized for maintenance. The proposed line will allow these substations to remain energized even when portions of the 69kV line are out of service.

2 ALTERNATIVES EVALUATED

In this section, we consider other alternatives to the Proposed Action alongside the Proposed Action.

2.1 PROPOSED ACTION

The undertaking consists of the construction of an approximately 21.3-mile 69 kV transmission line that will connect the Salem Bulk Substation north of Farmington, MO to the Valley View Substation north of Bloomsdale, MO. There will be some tree clearing within a one hundred foot easement along the proposed route. The route was chosen to maximize benefits and minimize mitigations. See the Appendix for more information on the route.

2.2 NO ACTION ALTERNATIVE

Under the NAA, there would be no tree clearing within the one hundred foot easement along the proposed route. There would be no potential for energization of future planned substations along the route. The status quo of three CEC substations taking outages for line maintenance would remain. Additional costly upgrades to CEC's distribution system would be required under the NAA in order to feed growing loads across long distances from CEC's existing substations. Potential large industrial companies that could seek to invest in the local economy by opening up plants in the area could be dissuaded from doing so due to the lack of available electric power to run their plants. Additionally, the NAA would negatively affect the Regional Transmission Organization in the area, reducing the overall reliability and capacity of the transmission system in the area. Furthermore, energy infrastructure projects have been declared an Emergency (under EO 14156) and an essential element of national security. Thus, the NAA could have a negative impact on national security.

2.3 CONSIDERATIONS NOT CARRIED FORWARD

Under Presidential Executive Order 14156 of January 20, 2025 (Declaring a National Energy Emergency) [10], this undertaking has been designated as an Emergency. As such, several considerations have been designated as "Not Carried Forward" items.

2.3.1 LAND USE

Land Use considerations are Not Carried Forward. The route was studied in detail to minimize cost, environmental impacts, and impacts to landowners. All right-of-way negotiations are complete, and CEC currently has agreements with all landowners along the route.

2.3.2 IMPORTANT FARMLAND

According to the "Custom Soil Resource Report for Ste. Genevieve County, Missouri: Salem Bulk to Valley View 69kV T-Line" by the Natural Resources Conservation Service (NRCS) on February 26, 2025, 7.8 acres of the APE is on "Prime Farmland" and 96.7 acres of the APE is on "Farmland of Statewide Importance." The details of this soil report can be found in the Appendix. The proposed transmission line path was chosen to minimize land use impacts. This includes Important Farmland as a factor of consideration. The route chosen tends to go along property boundaries, so it does not bisect large tracts of land. In particular, it does not bisect land with the potential to be used for agriculture. As a result, further Important Farmland considerations are not carried forward.

2.3.3 FORMALLY CLASSIFIED LANDS

Formally Classified Lands considerations are Not Carried Forward because according to the attached maps using the EPA-provided NEPAssist tool [8] as well as the USGS National Map, and the PAD US Map provided by USGS the proposed project is not within the boundary of properties administered by Federal, State, or local agencies, or that have been given special

protection through formal legislative designation. For more information, see the corresponding Appendix items.

2.3.4 COASTAL RESOURCES

Coastal Resources considerations are Not Carried Forward because no part of the undertaking is within any Coastal Zone Management Area (CZMA).

2.3.5 INVASIVE SPECIES

Many Invasive Species have the potential to be found throughout Missouri [11] [12]. As such, some invasive species may be present in the APE. However, the proposed Project site has no known invasive species present. Furthermore, soils and filler material used as a part of the construction will be locally sourced. As a result, Invasive Species considerations are Not Carried Forward.

2.3.6 AESTHETICS

Aesthetics considerations are Not Carried Forward. Much of the line runs through forests and agricultural fields, which are not aesthetically sensitive areas. The abundance of trees in the area obscures the field of view. Additionally, there are no parks, scenic overlooks, or otherwise aesthetically sensitive areas in the vicinity of the proposed action, and the cultural resource survey of the area did not identify any culturally significant properties or locations in the area.

2.3.7 AIR QUALITY

Air Quality considerations are Not Carried Forward because transmission lines do not contribute to air pollution. There is not expected to be any increase in air quality as a result of the construction of this line. Additionally, the NEPAssist report [8], included in the Appendix, did not indicate that the area is sensitive to air quality concerns.

2.3.8 NOISE

Noise considerations are Not Carried Forward because effects to Noise would be very minimal and only during construction. After construction, noise levels will return to the status quo. All noise-related ordinances will be followed during construction.

2.3.9 HUMAN HEALTH AND SAFETY

Human Health and Safety considerations are Not Carried Forward because Forward because there are no anticipated effects to Human Health and Safety. There are always inherent risks in the construction and operation of transmission lines. As such, all standard safety protocols will be implemented. All Federal, State, and local ordinances will be followed during construction.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

In this section, we will consider the possible environmental consequences that may result from the Proposed Action in comparison with possible alternative actions. In the previous section, we eliminated all alternative actions from consideration except the 'No Action Alternative.' Additionally, under the Emergency Project Status, several items of consideration were moved to the "Not Carried Forward" status.

3.1 FLOODPLAINS

Floodplains are identified and classified by Federal Emergency Management Agency (FEMA). These "firmette" maps are available on the FEMA website [13].

3.1.1 AFFECTED ENVIRONMENT

The avoidance of floodplains was one of the initial criteria for route selection. Any location with a transmission pole is in the designation of "Area of Minimal Flood Hazard." There are several areas where the transmission lines between two poles spans over an area with the designation, "Special Flood Hazard Areas: Zone A, Without Base Flood Elevation (BFE)." There are 42 Firmettes in the Appendix. In the bottom right corner, they have the designation "Firmette # of 42." The following table summarizes the designations found on the FEMA Firmettes in the Appendix.

Page Number (# of 42)	Firmette Number	Effective Date	Primary Flood Designation	Secondary Flood Designation
1	29186C0275E	2/15/2019	Area of Minimal Flood Hazard	N/A
2	29186C0150E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)
3	29186C0150E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)
4	29186C0150E	2/15/2019	Area of Minimal Flood Hazard	N/A
5	29186C0150E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)

Page Number (# of 42)	Firmette Number	Effective Date	Primary Flood Designation	Secondary Flood Designation
6	29186C0150E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)
7	29186C0150E 29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
8	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
9	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
10	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
11	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
12	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
13	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
14	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
15	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
16	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
17	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
18	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
19	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
20	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
21	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
22	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A

Page Number (# of 42)	Firmette Number	Effective Date	Primary Flood Designation	Secondary Flood Designation
23	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)
24	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)
25	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)
26	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)
27	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
28	29186C0175E	2/15/2019	Area of Minimal Flood Hazard	N/A
29	29186C0175E 29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
30	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
31	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
32	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)
33	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	Special Flood Hazard Area Zone A: Without Base Flood Elevation (BFE)
34	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
35	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A

Page Number (# of 42)	Firmette Number	Effective Date	Primary Flood Designation	Secondary Flood Designation
36	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
37	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
38	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
39	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
40	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
41	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A
42	29186C0075E	2/15/2019	Area of Minimal Flood Hazard	N/A

3.1.2 ENVIRONMENTAL CONSEQUENCES

Proposed Action

Based upon all available data for this Project, no environmental impact is anticipated to any floodplain because all potential floodplains will be spanned and no poles will be place directly within a floodplains. As a result, this project will not require any floodplain permits.

No Action Alternative

The NAA does not apply as there is no impact to any floodplains.

3.1.3 MITIGATION MEASURES

No mitigation is warranted.

3.2 WETLANDS

Wetlands are identified and classified by the National Wetlands Inventory (of USFWS). There are Wetlands Maps based on these classifications in the Appendix.

3.2.1 AFFECTED ENVIRONMENT

The avoidance of wetlands was one of the initial criteria for route selection. According to the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory Wetlands Mapper,

included in the appendices, there are Riverine and Freshwater Pond Wetlands in the APE [14]. However, the line was specifically designed to avoid impacts such that no construction will take place within a wetland location. All wetlands will be spanned between transmission poles. There will be no transmission within a wetland area. As a result, this project will not require any wetland permits.

3.2.2 ENVIRONMENTAL CONSEQUENCES

Proposed Action

Based upon all available data for this Project, no environmental impact is anticipated to any floodplain as a result of this Project.

No Action Alternative

The NAA does not apply as there is no impact to any floodplains.

3.2.3 MITIGATION MEASURES

No mitigation is warranted.

3.3 WATER RESOURCES

Water resources that could be affected by the proposed action were assessed for potential effects.

3.3.1 AFFECTED ENVIRONMENT

The proposed Project is not within a known well-head or watershed protection area. The nearest body of water to the proposed Project is the Goose Creek Lake, located 0.8 mile to the west of the Project APE. The Mississippi River runs over 3 miles to the northeast of the undertaking.

The project is not within the drainage area of any SSA. The closest aquifer, the Mahomet Aquifer, is approximately 135 miles away. See the “Sole Source Aquifer” in the Appendix for more information.

3.3.2 ENVIRONMENTAL CONSEQUENCES

Proposed Action

The proposed action route would result in no direct impacts to surface waters or wetlands associated with the construction and operation of the facility as no surface waters were identified and the wetland that is present will not be disturbed. The proposed action may result in negligible, short-term negative indirect effects during the construction process. All Federal, State, and local ordinances will be followed during construction.

The project is not within the limits of a Sole Source Aquifer. As mentioned above, the Project will also not result in any new effluent discharge, BMPs will be used during construction, and stormwater quality is not anticipated to be affected by the Project. No effects or impacts to water resources are anticipated as a result of the proposed Project.

No-Action Alternative

If the no-action alternative is taken, the existing land and associated vegetation would remain. No impacts to groundwater or surface water resources are anticipated as a result of the NAA.

3.3.3 MITIGATION MEASURES

All necessary permits will be in place prior to construction. Controls, such as silt fences, stabilization, and other Best Management Practices (BMPs) will be used during and after construction as needed to minimize any potential indirect adverse environmental effects to water quality. During construction activities, routine inspections will also take place to ensure that these controls are implemented correctly. All Federal, State, and local ordinances will be followed during construction.

3.4 GENERAL FISH, WILDLIFE, AND VEGETATION

Fish, wildlife, and vegetation that could be affected by the proposed action were assessed for potential effects.

3.4.1 AFFECTED ENVIRONMENT

CEC is proposing to construct a new, approximately 21.3-mile 69 kV transmission line to improve energy reliability for local communities in Southeast Missouri. The new line will connect the Salem Bulk Substation north of Farmington, MO to the Valley View Substation north of Bloomsdale, MO. There is a 100 foot easement along the proposed route.

3.4.2 ENVIRONMENTAL CONSEQUENCES

Proposed Action

The route does have Riverine Wetlands in the project area [14]. The poles are spaced so that none of the poles will be installed in a wetland. As a result, wetlands are not expected to be adversely affected.

No Action Alternative

The NAA would result in no additional impact on any kind fish, wildlife, or vegetation.

3.4.3 MITIGATION MEASURES

Best Management Practices will be implemented in order to minimize the potential for sedimentation and erosion, which will minimize the potential for impacts to aquatic life. These BPMs will also minimize the spread of potential invasive species.

3.5 THREATENED AND ENDANGERED SPECIES

Threatened and Endangered Species, as defined by the Endangered Species Act of 1973 [15], were considered. The result of a Threatened and Endangered Species Habitat Assessment Report [16] can be found in the Appendix.

3.5.1 AFFECTED ENVIRONMENT

Toth and Associates accessed the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website on January 16, 2024 [17]. The official IPaC species list is provided in the Appendix and in the following table.

3.5.2 ENVIRONMENTAL CONSEQUENCES

Proposed Action

Toth & Associates accessed the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPAC) tool and obtained official species lists on January 21, 2025. Below are the possible species along with their protection status, preferred habitat, and an assessment of the presence of their preferred habitat. All images and Habitat Descriptions come directly from fws.gov. Additional details regarding threatened and endangered species are included in the Biological Assessment, created by Toth and Associates, and the Biological Opinion created by the USFWS as a part of formal consultation.

Species and Protection Status	Habitat Description	Evaluation
Mammals		
Gray Bat Endangered  Photo By Alvarez Photography [18]	Gray bats occupy caves or cave-like structures year-round. While gray bats prefer caves, summer colonies have been documented using dams, mines, quarries, concrete box culverts and the undersides of bridges. Summer caves must be warm or have restricted rooms that can trap the body heat of clustered bats. Winter hibernation sites are often deep vertical caves that trap large volumes of cold air. [19] [20]	There are no caves on site. As a result, there is no suitable habitat present within the project's boundary. Therefore, the proposed action is not likely to adversely affect the Gray Bat.
Indiana Bat Endangered  Photo By Andrew King/USFWS [21]	Indiana bats require forests for foraging and roosting and are found in forested areas in the eastern half of the United States. In winter, Indiana bats hibernate in caves and mines. [22] [23]	There are no caves on site. However, there are trees on site that are suitable for foraging and roosting. Per formal consultation with USFWS, CEC has been given three options regarding the mitigation for clearing trees that may be suitable for the Indiana Bat. The details for these options may be reviewed in the following "Mitigation Measures" section in this Environmental Assessment. Therefore, the proposed action **May Affect** the Indiana Bat.

Species and Protection Status	Habitat Description	Evaluation
Northern Long-eared Bat Endangered  Photo By Jill Utrup/USFWS [24]	Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. During the summer and portions of the fall and spring, northern long-eared bats may be found roosting singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags, or dead trees. [25] [26]	There are no caves on site. However, there are trees on site that are suitable for foraging and roosting. Per formal consultation with USFWS, CEC has been given three options regarding the mitigation for clearing trees that may be suitable for the Northern Long-eared Bat. The details for these options may be reviewed in the following "Mitigation Measures" section in this Environmental Assessment. Therefore, the proposed action **May Affect** the Northern Long-eared Bat.
Tricolored Bat Proposed Endangered  Photo By Pete Pattavina/USFWS [27]	During the spring, summer and fall tricolored bats primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees. During the winter, tricolored bats hibernate in caves and mines. [28] [29]	There are no caves on site. However, there are trees on site that are suitable for foraging and roosting. Should the Tricolored Bat be officially listed prior to construction, CEC will consult with USFWS on mitigation requirements as outlined in the Conference Opinion.

A Bat Habitat Assessment [30] can be found in the Appendix.

Species and Protection Status	Habitat Description	Evaluation
Amphibians		
Eastern Hellbender Endangered  Photo By Ryan Hagerty/USFWS [31]	The eastern hellbender is a large, aquatic salamander that occurs in cool, permanent streams. Cool and clear water is important because hellbenders breathe entirely through their skin, which contains numerous folds to increase oxygen absorption. Adult eastern hellbenders spend most of their life under large, flat rocks that shelter them; whereas larval and juvenile hellbenders hide beneath large rocks and under small stones in gravel beds. [32] [33]	The proposed undertaking will build transmission line poles strictly outside of any possible habitat of the Eastern Hellbender. Therefore, the proposed undertaking will have **No Effect** on the Eastern Hellbender.
Insects		
Monarch Butterfly Proposed Threatened  Public Domain Image from fws.org [34]	The Monarch Butterfly prefers to live in prairies, meadows, grasslands, and along roadways across most of North America. Additionally, the Monarch Butterfly is dependent on the milkweed plant. [35] [36]	The construction will partially take place in any uncultivated fields. It is unknown if there is any milkweed within the APE. As a result, the proposed undertaking is **Not Likely to Adversely Affect** the Monarch Butterfly.

No Action Alternative

Under the no-action alternative, the proposed project site would remain in its current condition and there would be no impact on any possible habitat. Other, well established, bat habitats would not receive the benefits of mitigation.

3.5.3 MITIGATION MEASURES

Per formal consultation with USFWS, CEC has 3 options for mitigation regarding the Indiana Bat and Northern Long-eared Bat:

1. Clearing trees between October 15th, 2025 and April 1st, 2026 to minimize affects to all bats.

2. CEC may commission a bat survey to determine areas where the Indiana Bat and Northern Long-eared Bat have no presence. The areas where these bats are not present may be cleared with no mitigation.

3. Any clearing of suitable bat habitat that has not been exempted by a survey showing no presence and taking place prior to October 15th will require mitigation credits at a certified bat conservation bank. This tree clearing will take place after August 1st, 2025 to avoid the bats' pup season.

3.6 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service [37].

3.6.1 AFFECTED ENVIRONMENT

The U.S. Fish and Wildlife Service (USFWS) IPaC portal identified fifteen migratory bird species that have the potential of nesting in the vicinity of the proposed action. This list is available in the Appendix.

3.6.2 ENVIRONMENTAL CONSEQUENCES

Proposed Action

The proposed undertaking will consist of clearing approximately 217 acres of trees spanning a 21 mile corridor for the installation of new electric transmission lines. Approximately 75% of the tree clearing will occur between October 15th and April 1st (Missouri Bat Hibernation Season). Thus, tree clearing will take place outside of the breeding season for all of the migratory birds in the area with the exception of the Bald Eagle. Should any of the bird species mentioned within this report be discovered to be nesting or roosting within the APE, construction will be halted, and additional consultation will be initiated with the USFWS.

No Action Alternative

Under the NAA, the proposed APE would remain in its current condition and there would be no impact to migratory birds.

3.6.3 MITIGATION MEASURES

Tree clearing will take place outside of the breeding windows for migratory birds with the exception of the Bald Eagle. The Bald Eagle is discussed in more detail under heading 2.6 below.

3.7 BALD AND GOLDEN EAGLE PROTECTION ACT

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA) [38] [37].

3.7.1 AFFECTED ENVIRONMENT

According to the Missouri Department of Conservation, there are almost no Golden Eagles in Missouri. There are several areas in Missouri with many Bald Eagle nests. However, Ste. Geneveive and surrounding counties have very few Bald Eagle nests [39]. The Bald Eagle is large and easily-recognizable as it is the national bird of the United States. Construction crews will be instructed not to interfere with Bald Eagles or their nests should they be discovered in the area.

3.7.2 ENVIRONMENTAL CONSEQUENCES

Proposed Action

Should any of the bird species mentioned within this report be discovered to be nesting or roosting within the APE, construction will be halted, and additional consultation will be initiated with the USFWS. Thus, the proposed action is anticipated to have no effect on the Bald or Golden Eagle.

No Action Alternative

Under the NAA, the proposed APE would remain in its current condition and there would be no impact to migratory birds including Bald and Golden Eagles.

3.7.3 MITIGATION MEASURES

No mitigation measures are warranted. Should any Bald or Golden Eagles be found roosting or nesting within the project boundary, CEC will halt operation and consult USFWS.

3.8 CULTURAL RESOURCES AND HISTORIC PROPERTIES

Cultural resources and historic properties that could be affected by the proposed action were assessed for potential effects. The cultural resources desktop review and the results from the Tribal Directory Assessment Tool (TDAT) [40] can be found in the Appendix.

3.8.1 AFFECTED ENVIRONMENT

The proposed action is for constructing approximately 21 miles of transmission line in Ste. Genevieve County Missouri. One of the consideration on the chosen route was to avoid any cultural resources or historic properties.

3.8.2 ENVIRONMENTAL CONSEQUENCES

Proposed Action

The Missouri State Historic Preservation Office (SHPO) was contacted for their review and comment on the proposed Project. In accordance with the online Tribal Directory Assessment Tool (TDAT) [40], the following Indian tribes were provided a finding of "no historic properties affected" regarding the proposed Project:

- Apache Tribe of Oklahoma
- Delaware Nation, Oklahoma
- Delaware Tribe of Indians
- Miami Tribe of Oklahoma
- Osage Nation
- Peoria Tribe of Indians of Oklahoma
- Quapaw Nation
- Seneca-Cayuga Nation

To determine the potential impact of the proposed projects on the cultural resources, CEC commissioned a cultural resource survey of the APE for the Salem Bulk to Valley View Project, the survey stated that "the proposed undertaking meets the criteria for a finding of no historic properties affected as per 36 CFR 800.4(d)(1)" The report titled, "Cultural Resource Desktop Review for the Proposed Salem Bulk to Valley View 69kV Transmission Line Project in Ste. Genevieve County, Missouri" [41], describes the results of the investigation of the APE. Based on the results of the background research and survey, "Flat Earth Archeology recommends that the proposed undertaking meets the criteria for a finding of No Historic Properties Affected as per 36 CFR 800.4(d)(1). Flat Earth Archeology recommends no further archeological work for the Project Area [41]."

The cultural resource survey was provided to all listed tribes, as well as the Advisory Council on Historic Preservation and the Missouri SHPO.

As a result, RUS concludes the proposed undertaking will have no effect on historic properties or cultural resources.

No Action Alternative

No cultural resources are present on the site and the site will remain the same; therefore, no impacts would occur.

3.8.3 MITIGATION MEASURES

An Inadvertent Discovery Plan is in place, and if any archaeological material or human remains are found the appropriate authorities will be contacted.

3.9 TRANSPORTATION

Transportation impacts that could be affected by the proposed action were assessed for potential effects.

3.9.1 AFFECTED ENVIRONMENT

The attached map, using FAA-provided data, shows that the proposed Project is approximately 6.25 miles from the nearest airport. See the "Airport Proximity" map in the Appendix for more information.

3.9.2 ENVIRONMENTAL CONSEQUENCES

Based on the information found in 14 CFR 77.9 (b)(1) [42], and that site developments are not expected to be 100 feet above the ground surface, and the project is more than 20,000 feet from the airport (6.25 miles from the nearest airport), no official notice must be filed with the Federal Aviation Administration and no impact to air traffic is expected as a result of this Project [42].

The construction activities for the Project do not propose to impact traffic patterns, nor have any impact on the existing roadway. No impact on traffic is anticipated as a result of this undertaking.

3.9.3 MITIGATION MEASURES

No mitigation measures are warranted.

4 SUMMARY OF EFFECTS

The following tables summarize the Effects and Mitigations concerning Environmental Resources that are anticipated as a result of the proposed action.

4.1 SUMMARY OF ENVIRONMENTAL EFFECTS

Environmental Resource	Determination of Effect
Land Use	No known development plans for the project area. Land Use considerations are Not Carried Forward.
Important Farmland	The land within the project area was not being used for farming.
Formally Classified Land	No known Formally Classified Lands within project area. Formally Classified Land considerations are Not Carried Forward.
Floodplains	Floodplains are withing the project area. All of the pole locations are in "Area of Minimal Flood Hazard." No Effect is Anticipated.
Wetlands	Wetlands are within the project area. All construction and all construction activities will take place outside of the delineated wetland area. Not Carried Forward.
Water Resources	No well-heads, watershed protection areas, or Sole Source Aquifers within the project area. Project will not alter existing topography, excavate to any appreciable depth, nor add any effluent discharge to the drainage area. BMPs will be utilized for construction. No Effect Anticipated.
Coastal Resources	No coastal areas or aquatic habitats in this region. No Effect Anticipated. Coastal Resources considerations are Not Carried Forward.
General Fish, Wildlife and Vegetation	Removal of a total of approximately 217 acres of trees will be required for this project.
Threatened and Endangered Species	Proposed Action May Affect Indiana Bat and Northern Long-eared Bat. Formal consultation was undertaken with USFWS and a Biological Opinion was issued. Mitigation credits will be purchased.
Migratory Bird Treaty Act	Tree clearing will primarily take place after October 15th, which is after the close of all migratory bird breeding seasons except for the Bald Eagle.
Bald and Golden Eagle Protection Act	According to the Missouri Department of Conservation (MDC), there may be 1-2 Bald Eagle nests in Ste. Genevieve county [39]. However, there are no established Bald Eagle populations in the county and little to no Golden Eagles in the entire state of Missouri [39]. No Effect Anticipated.
Invasive Species	Project will not promote the introduction or growth of invasive species. No Effect Anticipated. Not Carried Forward.
Cultural Resources and Historic Properties	Cultural resource survey concluded "no historic properties affected". Consultation concluded for all other tribes. No Historic Properties Affected.

Environmental Resource	Determination of Effect
Aesthetics	Project is outside of any aesthetically sensitive area. Aesthetics considerations are Not Carried Forward.
Air Quality	Project is outside of any EPA-designated non-attainment or maintenance areas for air quality criteria pollutants. Short-term increases to dust will be mitigated by BMPs, and short-term increases to emissions will be negligible during construction. No Adverse Effect Anticipated. Not Carried Forward.
Noise	Short-term noise during construction will be very minimal. Post-construction noise levels will be equivalent to current ambient noise levels in the area. All state and local noise ordinances will be followed. No Effect Anticipated. Noise considerations are Not Carried Forward.
Transportation	Project is 6.25 miles from nearest airport. No significant short-term obstruction to traffic planned for construction. No significant long-term increase to traffic during Project life. No Effect Anticipated.
Human Health and Safety	The only Human Health and Safety considerations are regarding the construction crews that install the transmission lines and the utility crews that maintain them. As a result, Human Health and Safety considerations are Not Carried Forward.

5 SUMMARY OF MITIGATION MEASURES

MITIGATIONS	
Land use	No mitigations are warranted.
Important farmland	No mitigations are warranted.
Formally classified land	No mitigations are warranted.
Floodplains	No mitigations are warranted.
Wetlands	No mitigations are warranted.
Water resources	All necessary BMPs will be implemented by the contractor.
Coastal resources	No mitigations are warranted.
General fish, wildlife, and vegetation	Best management practices will be implemented

MITIGATIONS	
Threatened and endangered species	Per formal consultation with USFWS, CEC has 3 options for mitigation regarding the Indiana Bat and Northern Long-eared Bat: 1. Clearing trees between October 15th, 2025 and April 1st, 2026 to minimize affects to all bats. 2. CEC may commission a bat survey to determine areas where the Indiana Bat and Northern Long-eared Bat have no presence. The areas where these bats are not present may be cleared with no mitigation. 3. Any clearing of suitable bat habitat that has not been exempted by a survey showing no presence and taking place prior to October 15th will require mitigation credits at a certified bat conservation bank. This tree clearing will take place after August 1st, 2025 to avoid the bats' pup season.
Migratory bird treaty act	Winter tree clearing will minimize potential for impacts to migratory birds.
Bald and golden eagle protection act	No mitigations are warranted.
Invasive species	No mitigations are warranted.
Cultural resources	Inadvertent discovery plan in place.
Aesthetics	No mitigations are warranted.
Air quality	All necessary BMPs will be implemented by the contractor.
Noise	All local and state noise ordinances will be followed. Construction will be restricted to daylight hours.
Transportation	During construction all state and local codes and ordinances will be followed.
Human and health safety	Proper OSHA regulations followed.

The initial criteria for site selection, the use of BMPs such as silt fences, and stabilization are anticipated to effectively minimize the potential effects of the proposed action upon the environment. Conditional approval measures were requested by interested Agencies, such as the appropriate actions to be taken in case of incidentally encountering human remains or artifacts in the Project area. All mitigation issues are discussed above as well as in the appropriate

appendices, and additional mitigation measures beyond those listed do not appear warranted at this time.

6 COORDINATION, CONSULTATION, AND CORRESPONDENCE

The EA was be made available for public review at the RD website (https://www.rd.usda.gov/resources/environmental-studies/assessment/salem-bulk-valley-view-transmission-line). The public was notified on 6/4/2025 and 6/11/2025 through newspaper publication via the Ste. Genevieve Herald. RUS has not received any comments from the public regarding this undertaking.

The following agencies or agency websites were consulted as part of the preparation of this EA, all supporting documentation and agency correspondence are provided in the Appendices:

- Apache Tribe of Oklahoma
- Delaware Nation, Oklahoma
- Delaware Tribe of Indians
- Miami Tribe of Oklahoma
- Osage Nation
- Peoria Tribe of Indians of Oklahoma
- Quapaw Nation
- Seneca-Cayuga Nation
- State Historic Preservation Office
- FEMA Floodplain Map
- NEPAssist
- USDA – NRCS
- US Fish and Wildlife Services

7 REFERENCES

[1] "Ste. Genevieve County, Missouri," United States Census Bureau, [Online]. Available: https://data.census.gov/profile/Ste._Genevieve_County,_Missouri?g=050XX00US29186. [Accessed 25 March 2025].

[2] U.S. House of Representatives, "Rural Electrification Act of 1936," 20 May 1936. [Online]. Available: https://www.rd.usda.gov/files/utprea36.pdf. [Accessed 10 April 2025].

[3] United States Congress, "7 USC §904. Loans by Secretary of Agriculture for electrical plants and transmission lines; preferences; consent of State authorities," 4 January 1995. [Online]. Available: https://uscode.house.gov/view.xhtml?req=granuleid:USC-1994-title7-section904&num=0&edition=1994. [Accessed 10 April 2025].

[4] United States Congress, "7 USC 6942: Rural Utilities Service," 9 April 2025. [Online]. Available: https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title7-section6942&num=0&edition=prelim. [Accessed 10 April 2025].

[5] "USGS National Map," United States Geological Survey, [Online]. Available: https://apps.nationalmap.gov/viewer/. [Accessed 14 February 2025].

[6] United States Congress, "7 CFR PART 3100—CULTURAL AND ENVIRONMENTAL QUALITY," 4 April 2025. [Online]. Available: https://www.ecfr.gov/current/title-7/subtitle-B/chapter-XXXI/part-3100. [Accessed 10 April 2025].

[7] United States Congress, "7 CFR PART 1970—ENVIRONMENTAL POLICIES AND PROCEDURES," 4 April 2025. [Online]. Available: https://www.ecfr.gov/current/title-7/subtitle-B/chapter-XVIII/subchapter-H/part-1970. [Accessed 10 April 2025].

[8] "EPA NEPAssist Tool," [Online]. Available: https://nepassisttool.epa.gov/nepassist/nepamap.aspx.

[9] *Executive Order 14156 Declaring a National Energy Emergency,* Federal Register Vol. 90, No. 18, 2025.

[10] D. J. Trump, "Executive Order 14156-Declaring a National Energy Emergency," 20 January 2025. [Online]. Available: https://www.presidency.ucsb.edu/documents/executive-order-14156-declaring-national-energy-emergency. [Accessed 25 March 2025].

[11] "Invasive Animals," Missouri Department of Conservation, [Online]. Available: https://mdc.mo.gov/wildlife/invasive-animals. [Accessed 24 March 2025].

[12] "Top Invasive Plants in Missouri," MO Invasive Plants, [Online]. Available: https://moinvasives.org/lists/. [Accessed 25 March 2025].

[13] "FEMA Flood Map Service Center," Federal Emergency Management Agency, [Online]. Available: https://msc.fema.gov/portal/.

[14] "National Wetlands Inventory," U.S. Fish and Wildlife Service, [Online]. Available: https://www.fws.gov/wetlands/data/mapper.html. [Accessed 17 February 2025].

[15] United States Congress, "Endangered Species Act of 1973," 1973. [Online]. Available: https://www.fws.gov/sites/default/files/documents/endangered-species-act-accessible_7.pdf. [Accessed 10 April 2025].

[16] SCI Engineering, Inc., "Threatened and Endangered Species Habitat Assessment Report WVPA Salem Bulk – Valley View 69kV Transmission Line (Salem to Sprott) Ste. Genevieve County, Missouri SCI No. 2023-0860.3B," SCI Engineering Inc., 2023.

[17] "Information for Planning and Consultation," U.S. Fish and Wildlife Service, [Online]. Available: https://ipac.ecosphere.fws.gov/. [Accessed 17 January 2025].

[18] "Gray Bat (Pic)," Alvarez Photography, 01 January 2024. [Online]. Available: https://www.fws.gov/media/gray-bat-1. [Accessed 03 March 2025].

[19] "Gray Bat," U.S. Fish and Wildlife Service, [Online]. Available: https://www.fws.gov/species/gray-bat-myotis-grisescens. [Accessed 3 March 2025].

[20] "Gray Bat Myotis Grisescens," U.S. Fish and Wildlife Service, [Online]. Available: https://ecos.fws.gov/ecp/species/6329. [Accessed 3 March 2025].

[21] "Indiana Bats (Pic)," Andrew King/USFWS, [Online]. Available: https://www.fws.gov/media/indiana-bats-3. [Accessed 3 March 2025].

[22] "Indiana Bat," U.S. Fish and Wildlife Service, [Online]. Available: https://www.fws.gov/species/indiana-bat-myotis-sodalis. [Accessed 3 March 2025].

[23] "Indiana Bat Myotis Grisescens," U.S. Fish and Wildlife Service, [Online]. Available: https://ecos.fws.gov/ecp/species/5949. [Accessed 3 March 2025].

[24] "Northern Long-eared Bat (pic)," U.S. Fish and Wildlife Service, [Online]. Available: https://www.fws.gov/media/northern-long-eared-bat. [Accessed 3 March 2025].

[25] "Northern Long-eared Bat," U.S. Fish and Wildlife Service, [Online]. Available: https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis. [Accessed 3 March 2025].

[26] "Northern Long-eared Bat Myotis Septentrionalis," U.S. Fish and Wildlife Service, [Online]. Available: https://ecos.fws.gov/ecp/species/9045. [Accessed 3 March 2025].

[27] "Tricolored Bat Cluster (Pic)," Pete Pattavina/USFWS, 01 01 2020. [Online]. Available: https://www.fws.gov/media/tricolored-bat-cluster. [Accessed 3 March 2025].

[28] "Tricolored Bat," U.S. Fish and Wildlife Service, [Online]. Available: https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus. [Accessed 3 March 2025].

[29] "Tricolored Bat Perimyotis Subflavus," U.S. Fish and Wildlife Service, [Online]. Available: https://ecos.fws.gov/ecp/species/10515. [Accessed 3 March 2025].

[30] SCI Engineering, Inc., "Bat Habitat Assessment," SCI Engineering, Inc., 2024.

[31] "Eastern Hellbender (Pic)," Ryan Hagerty / USFWS, 27 February 2019. [Online]. Available: https://www.fws.gov/media/hellbender-2. [Accessed 3 March 2025].

[32] "Eastern Hellbender," [Online]. Available: https://www.fws.gov/species/eastern-hellbender-cryptobranchus-alleganiensis-alleganiensis. [Accessed 3 March 2025].

[33] "Eastern Hellbender (Cryptobranchus alleganiensis alleganiensis)," [Online]. Available: https://ecos.fws.gov/ecp/species/9039. [Accessed 3 March 2025].

[34] "Monarch Butterfly (Pic)," U.S. Fish and Wildlife Service, [Online]. Available: https://www.fws.gov/media/monarch-butterfly-danaus-plexippus. [Accessed 3 March 2025].

[35] "Monarch," U.S. Fish and Wildlife Service, [Online]. Available: https://www.fws.gov/species/monarch-danaus-plexippus. [Accessed 3 March 2025].

[36] "Monarch Butterfly Danaus Plexippus," U.S. Fish and Wildlife Service, [Online]. Available: https://ecos.fws.gov/ecp/species/9743. [Accessed 3 March 2025].

[37] United States Congress, "16 USC CHAPTER 7, SUBCHAPTER II: MIGRATORY BIRD TREATY," 3 July 1918. [Online]. Available: https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter7/subchapter2&edition=prelim. [Accessed 10 April 2025].

[38] United States Congress, "16 USC CHAPTER 5A, SUBCHAPTER II: PROTECTION OF BALD AND GOLDEN EAGLES," 8 June 1940. [Online]. Available: https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter5A/subchapter2&edition=prelim. [Accessed 10 April 2025].

[39] "The Bald Eagle in Missouri," Missouri Department of Conservation, [Online]. Available: https://mdc.mo.gov/sites/default/files/mo_nature/downloads/baldeaglemo2012.pdf. [Accessed 24 March 2025].

[40] "Tribal Directory Assessment Tool (TDAT)," U.S. Department of Housing and Urban Development, [Online]. Available: https://egis.hud.gov/tdat/. [Accessed 25 March 2025].

[41] C. Branam and D. Sorrows, "A Cultural Resources Survey of the Proposed Salem Bulk to Valley View 69kV Transmission Line Project in Sainte Genevieve County, Misssouri," Flat Earth Archeology, LLC., Cabot, AR, March 2025.

[42] United States Congress, "14 CFR PART 77—SAFE, EFFICIENT USE, AND PRESERVATION OF THE NAVIGABLE AIRSPACE," 2 April 2025. [Online]. Available: https://www.ecfr.gov/current/title-14/chapter-I/subchapter-E/part-77. [Accessed 10 April 2025].

[43] SCI Engineering, Inc., "Bat Habitat Assessment SCI No. 2023-0860.3B," 2024, April 17.

[44] Council on Environmental Quality of the Executive Office of the President, "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act," 2005 Print. [Online]. Available: https://www.energy.gov/sites/default/files/NEPA-40CFR1500_1508.pdf. [Accessed 10 April 2025].

8 LIST OF PREPARERS

This Environmental Assessment was prepared by:

Will Deckard, PE
Engineer, Toth & Associates

Kevin Bechtold, MS
Planning Engineer Technician, Toth & Associates

9 APPENDIX

A01 - Public Fact Sheet 2023
A02 - Topographic Map with Notes (can be found in Biological Assessment Appendix)
A03 - NEPAssist Report SBtoVV (can be found in Biological Assessment Appendix)
A04 - USGS National Map SBtoVV (can be found in Biological Assessment Appendix)
A05 - PADUS Map
A06 - Species List SBtoVV (can be found in Biological Assessment Appendix)
A07 - Wetlands Mapper 1
A08 - Wetlands Mapper 2
A09 - Wetlands Mapper 3
A10 - FEMA Firmette 42 Pages
A11 - Important Farmland
A12 - Soil Report SBtoVV
A13 - Airport Proximity
A14 - Sole Source Aquifer
A15 - EO14156 Declaring a National Energy Emergency (can be found in Biological Assessment Appendix)
A16 - USFWS Determination Letter (can be found in Biological Assessment Appendix)
A17 - TDAT Ste. Genevieve County MO
A18 - IPaC_ Explore Location resources
A19 - Threatened and Endangered Species Habitat Assessment Report (can be found in Biological Assessment Appendix)
A20 - Bat Habitat Assessment (can be found in Biological Assessment Appendix)

CITIZENS ELECTRIC CORPORATION
SALEM BULK TO VALLEY VIEW 69KV LINE
ENVIRONMENTAL ASSESSMENT
APPENDIX

A01 - Public Fact Sheet 2023

A02 - Topographic Map with Notes (can be found in Biological Assessment Appendix)

A03 - NEPAssist Report SBtoVV (can be found in Biological Assessment Appendix)

A04 - USGS National Map SBtoVV (can be found in Biological Assessment Appendix)

A05 - PADUS Map

A06 - Species List SBtoVV (can be found in Biological Assessment Appendix)

A07 - Wetlands Mapper 1

A08 - Wetlands Mapper 2

A09 - Wetlands Mapper 3

A10 - FEMA Firmette 42 Pages

A11 - Important Farmland

A12 - Soil Report SBtoVV

A13 - Airport Proximity

A14 - Sole Source Aquifer

A15 - EO14156 Declaring a National Energy Emergency (can be found in Biological Assessment Appendix)

A16 - USFWS Determination Letter (can be found in Biological Assessment Appendix)

A17 - TDAT Ste. Genevieve County MO

A18 - IPaC_ Explore Location resources

A19 - Threatened and Endangered Species Habitat Assessment Report (can be found in Biological Assessment Appendix)

A20 - Bat Habitat Assessment (can be found in Biological Assessment Appendix)

salembulk@wvpa.com
(888) 997-0766

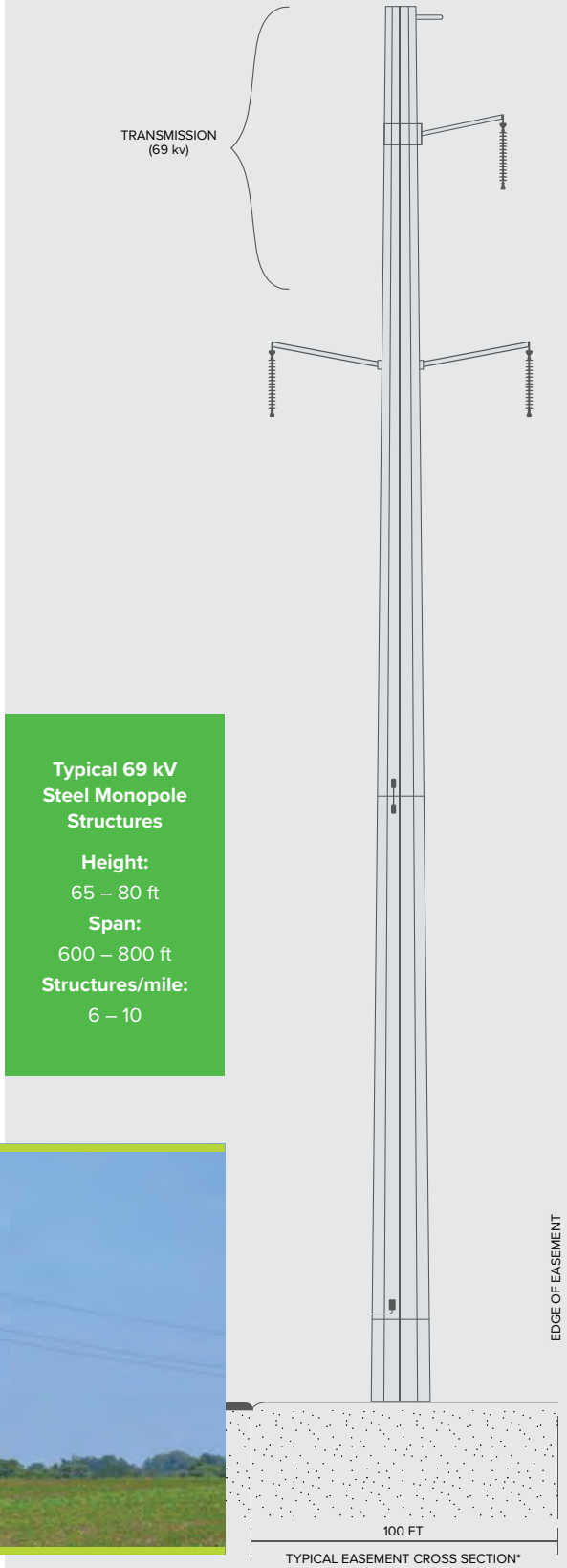
Wabash Valley POWER ALLIANCE

Citizens Electric Corporation
A Touchstone Energy® Cooperative

SALEM BULK - VALLEY VIEW PROJECT

Wabash Valley Power Alliance, Citizens Electric's wholesale power supplier, is proposing to construct a new, approximately 22-mile 69 kV* transmission line to improve energy reliability for local communities in Southeast Missouri. The new line will connect the Salem Bulk Substation north of Farmington to the Valley View Substation north of Bloomsdale. The proposed in-service date for the project is early 2026.

Connecting the Salem Bulk Substation located north of Farmington to the Valley View Substation located north of Bloomsdale allows power to be restored much more quickly in the event of an outage. This also provides flexibility for maintenance of the existing system without causing outage impacts to the Membership. Most importantly, it assures the necessary voltage support to homes and businesses in the future. The project will energize two future substations to reduce the electric load that has been increasing on the substations due to residential growth. It is extremely important to be proactive in building a strong energy grid in Ste. Genevieve county to accommodate future energy needs.



Typical 69 kV Steel Monopole Structures

Height:
65 – 80 ft
Span:
600 – 800 ft
Structures/mile:
6 – 10

*Vegetation is removed

SCHEDULE

2021 - 2023

- o Engineering & permitting
- o Field surveys
- o Obtain easements

2023 - 2026

- o Construction

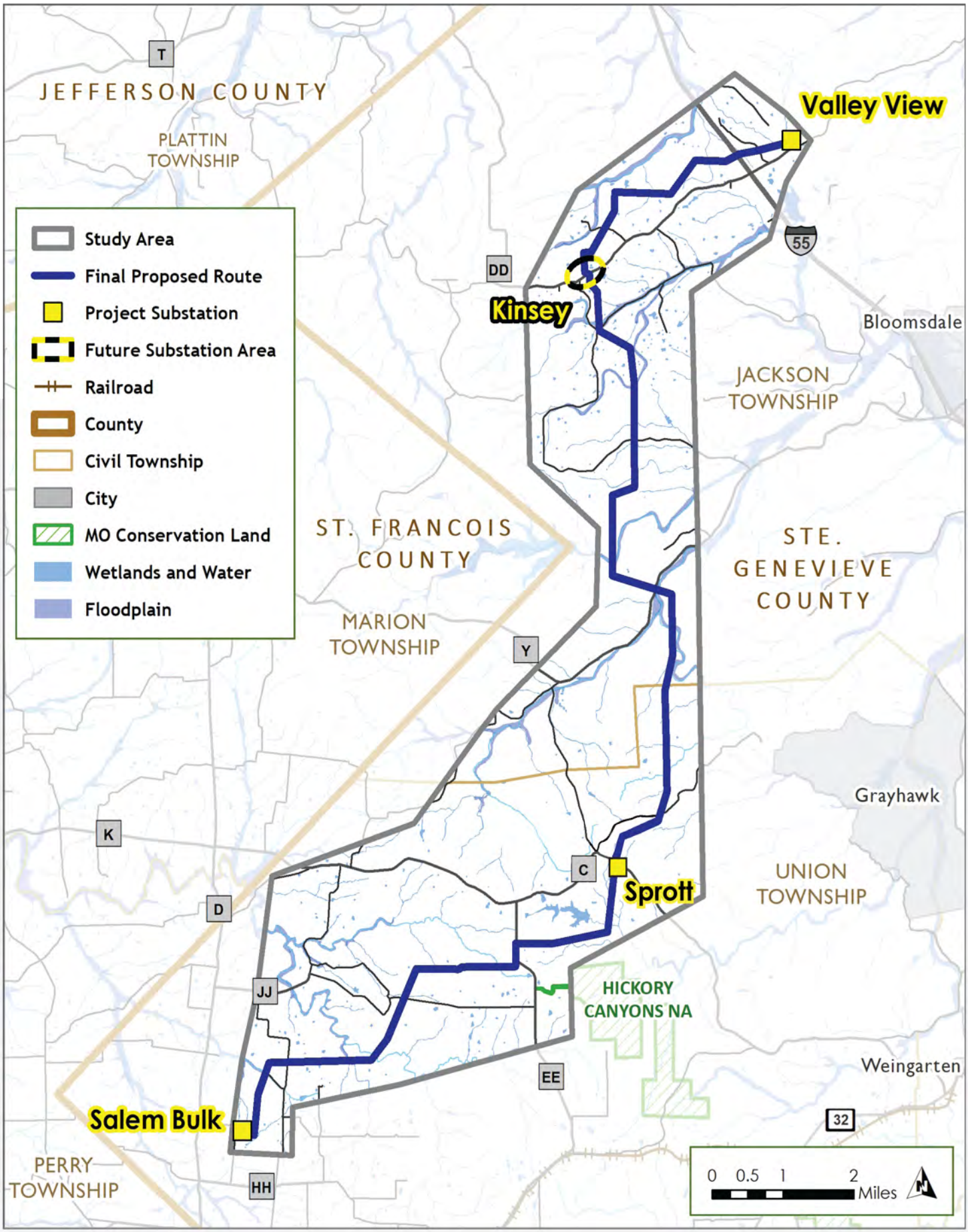
EARLY 2026

- o Project in-service

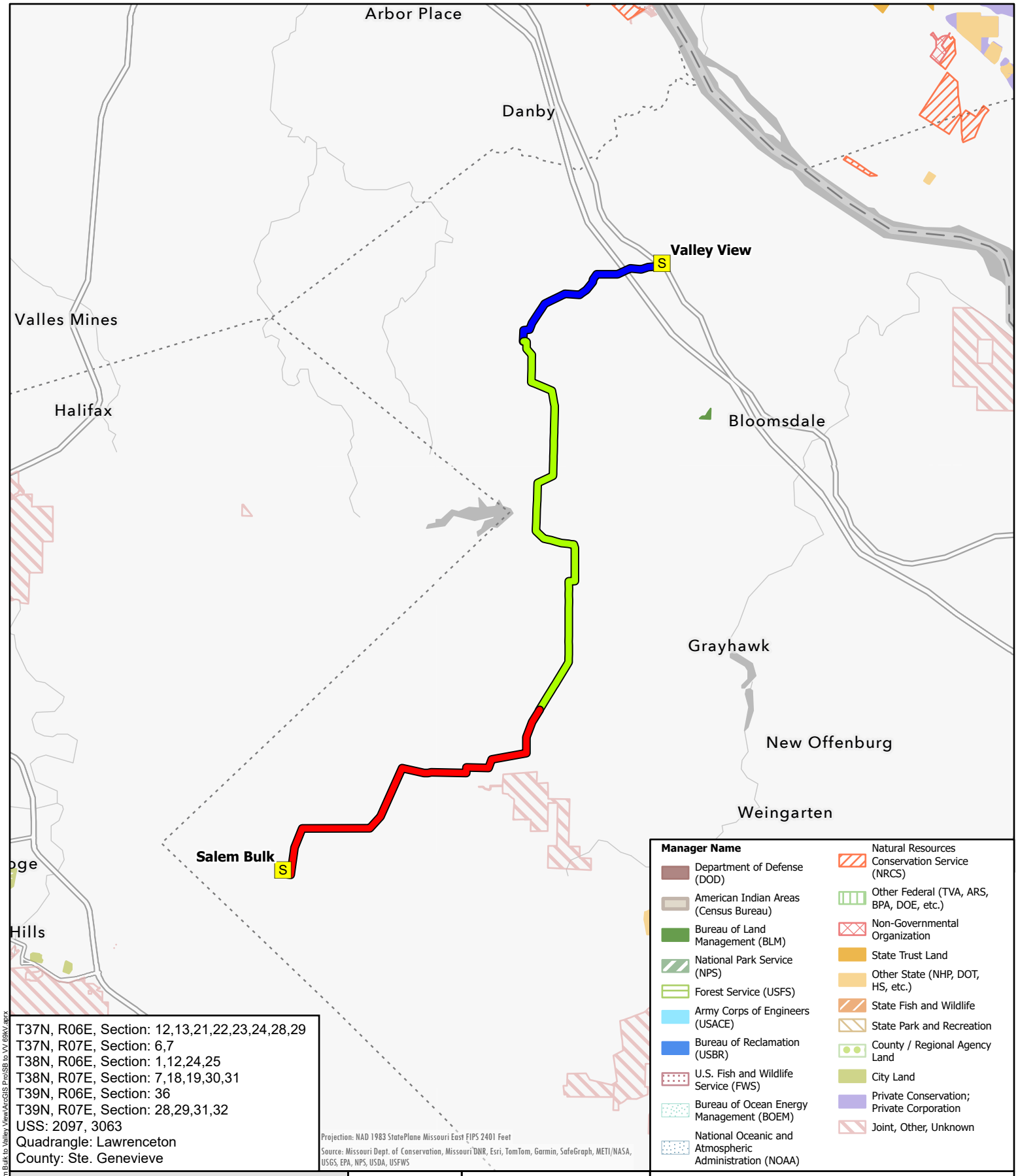
*1kV = 1,000 volts

For more information about the project, please visit: wvpa.com/salembulk or call (888) 997-0766

FINAL PROPOSED ROUTE



For more information about the project, please visit: wvpa.com/salembulk or call (888) 997-0766



T37N, R06E, Section: 12,13,21,22,23,24,28,29
T37N, R07E, Section: 6,7
T38N, R06E, Section: 1,12,24,25
T38N, R07E, Section: 7,18,19,30,31
T39N, R06E, Section: 36
T39N, R07E, Section: 28,29,31,32
USS: 2097, 3063
Quadrangle: Lawrenceton
County: Ste. Genevieve

S Substation
Segment 1
Segment 3
Segment 2

TOTH & ASSOCIATES
GIS SERVICES PROVIDED BY
1550 E REPUBLIC RD
SPRINGFIELD, MO 65804
Ph. 417-888-0645
Fax: 417-888-0657
www.tothassociates.com

Citizens Electric Corporation
A Touchstone Energy® Cooperative

DISCLAIMER: This map is for illustrative purposes and should only be used as such.

Map by: babubakari
Date: 2/15/2025

CITIZENS ELECTRIC CORPORATION

PERRYVILLE, MISSOURI
MISSOURI 58, STE. GENEVIEVE

Salem Bulk - Valley View
69kV Transmission

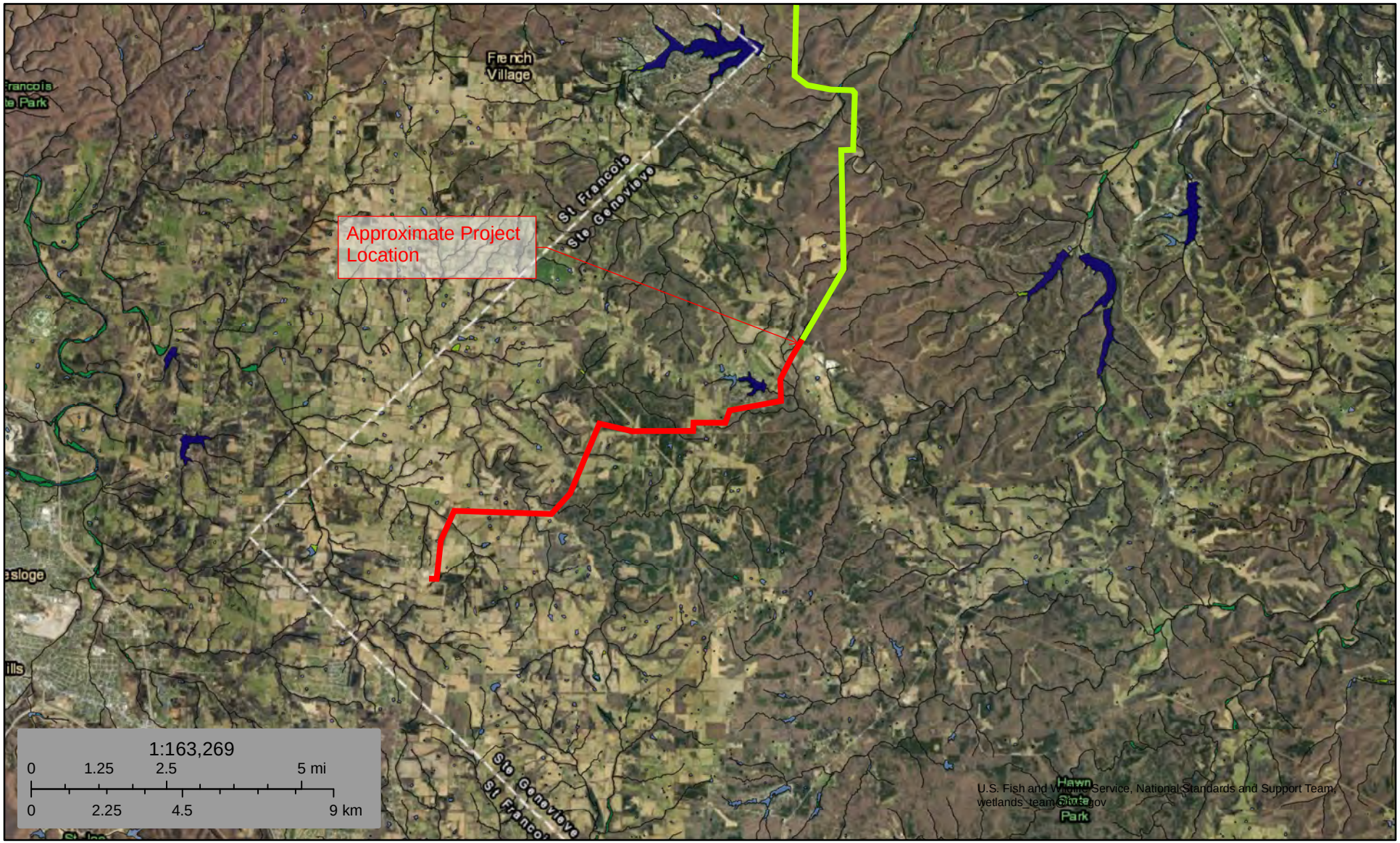
PAD-US v4.0
Manager Name

0 15,000 Feet

K:\GIS_Projects\01_MO\58_Citizens\150_Salem Bulk to Valley View\ArcGIS Pro\SB to VV 69kV.aprx

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands



February 15, 2025

Wetlands

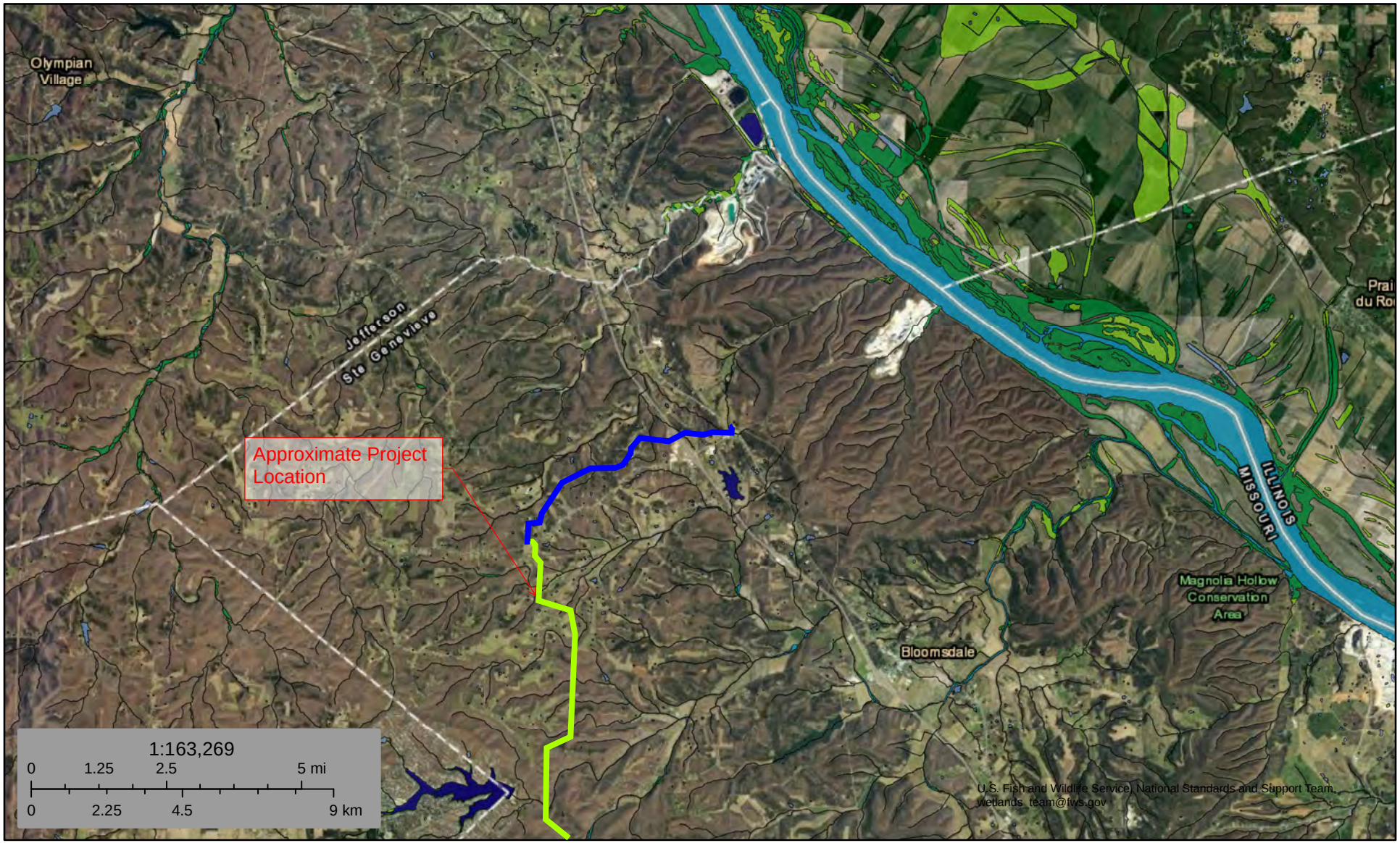
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands

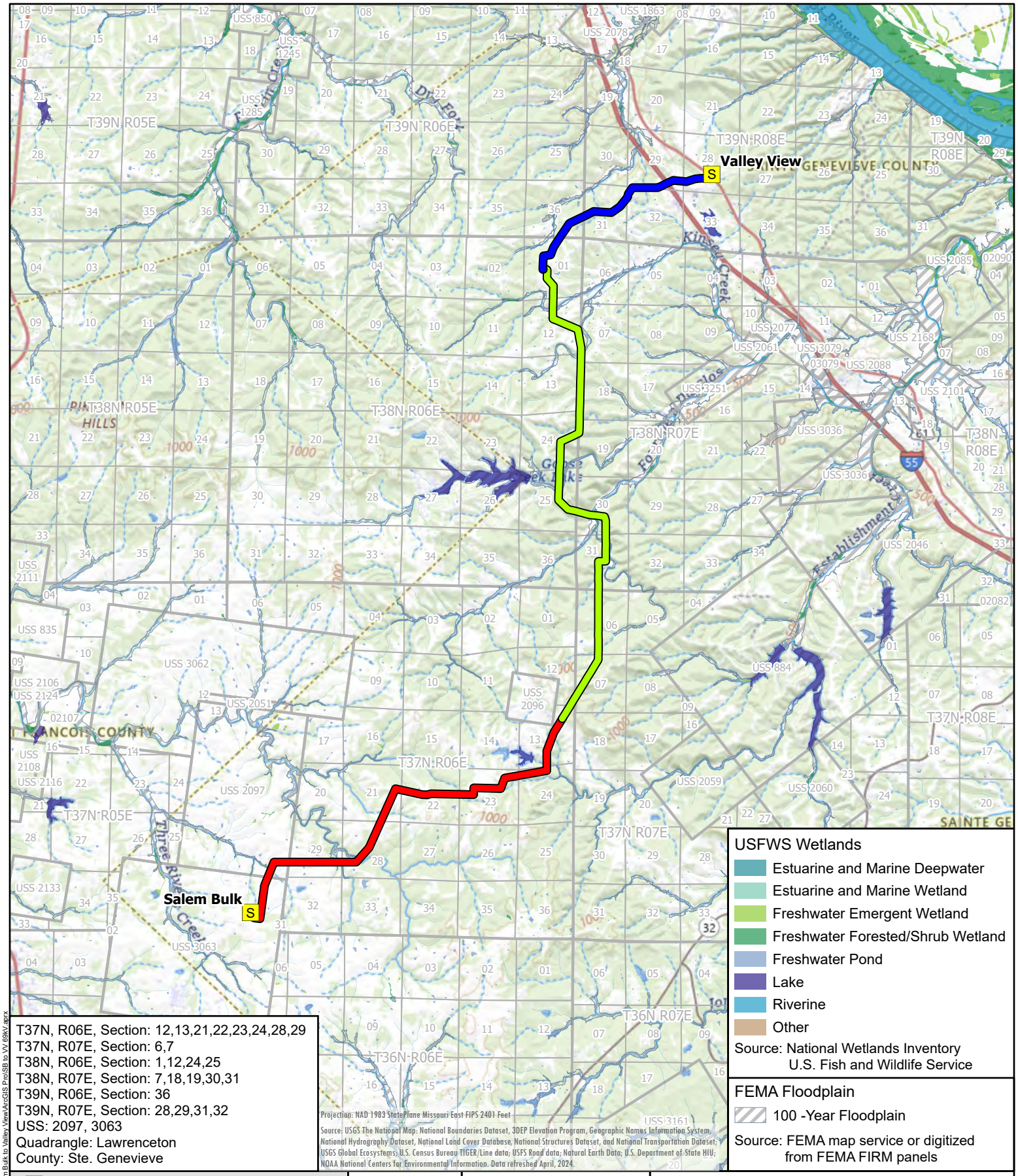


February 15, 2025

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



T37N, R06E, Section: 12,13,21,22,23,24,28,29
T37N, R07E, Section: 6,7
T38N, R06E, Section: 1,12,24,25
T38N, R07E, Section: 7,18,19,30,31
T39N, R06E, Section: 36
T39N, R07E, Section: 28,29,31,32
USS: 2097, 3063
Quadrangle: Lawrenceton
County: Ste. Genevieve

Projection: NAD 1983 StatePlane Missouri East FIPS 2401 Feet

Source: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA National Centers for Environmental Information. Data refreshed April, 2024.

USFWS Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Other

Source: National Wetlands Inventory
U.S. Fish and Wildlife Service

FEMA Floodplain

- 100 -Year Floodplain

Source: FEMA map service or digitized from FEMA FIRM panels

- S Substation
- Segment 1
- Segment 2
- Segment 3
- PLSS Section
- PLSS Township

TOTH & ASSOCIATES
GIS SERVICES PROVIDED BY
1550 E REPUBLIC RD
SPRINGFIELD, MO 65804
Ph. 417-888-0645
Fax: 417-888-0657
www.tothassociates.com

Citizens Electric Corporation
A Touchstone Energy® Cooperative

CITIZENS ELECTRIC CORPORATION

PERRYVILLE, MISSOURI
MISSOURI 58, STE. GENEVIEVE

DISCLAIMER: This map is for illustrative purposes and should only be used as such.

Salem Bulk - Valley View
69kV Transmission

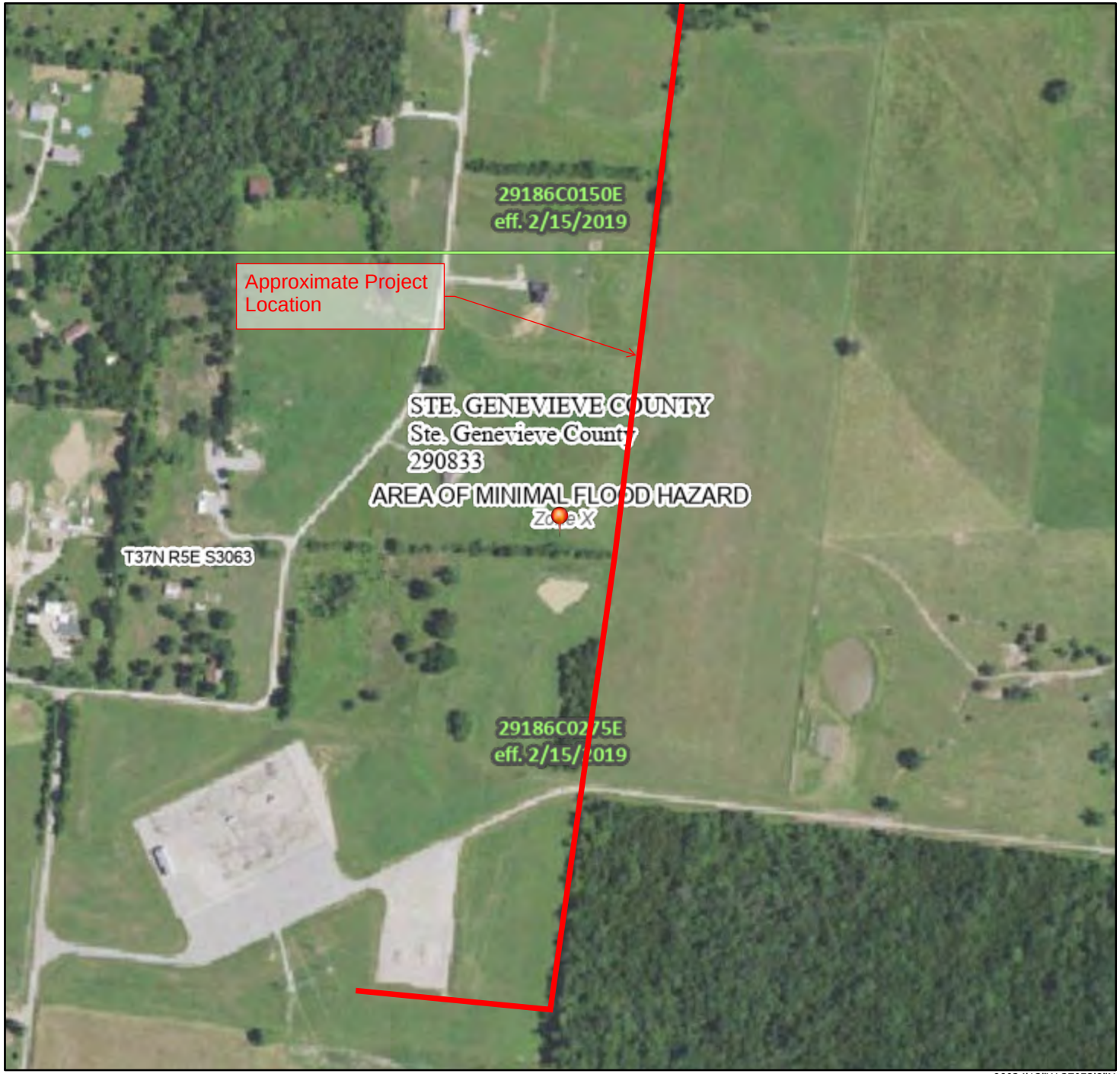
Map by:	Date:		
babubakari	2/15/2025	Wetlands	0 — 13,000 Feet

K:\GIS_Projects\01_MO\58_Citizens\150_Salem Bulk to Valley View\ArcGIS Pro\SB to VV 69kV.aprx

National Flood Hazard Layer FIRMette

FEMA

90°24'50"W 37°52'37"N



90°24'12"W 37°52'8"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/16/2025 at 12:07 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°24'40"W 37°53'1"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°24'3"W 37°52'33"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

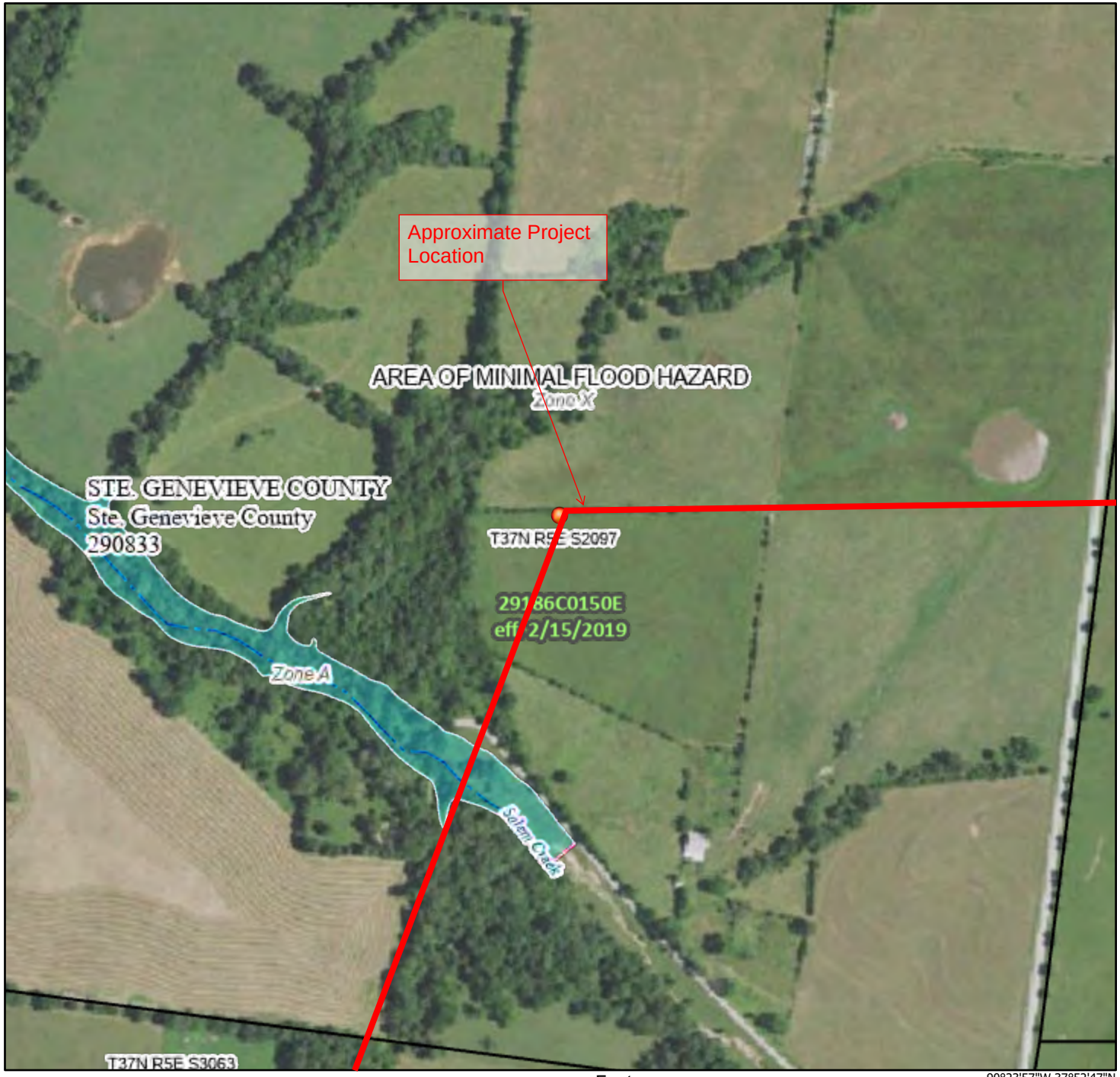
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/16/2025 at 12:10 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°24'35"W 37°53'15"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°23'57"W 37°52'47"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/16/2025 at 12:11 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°24'6"W 37°53'15"N

90°23'29"W 37°52'47"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 2:54 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°23'32"W 37°53'17"N

90°22'54"W 37°52'48"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

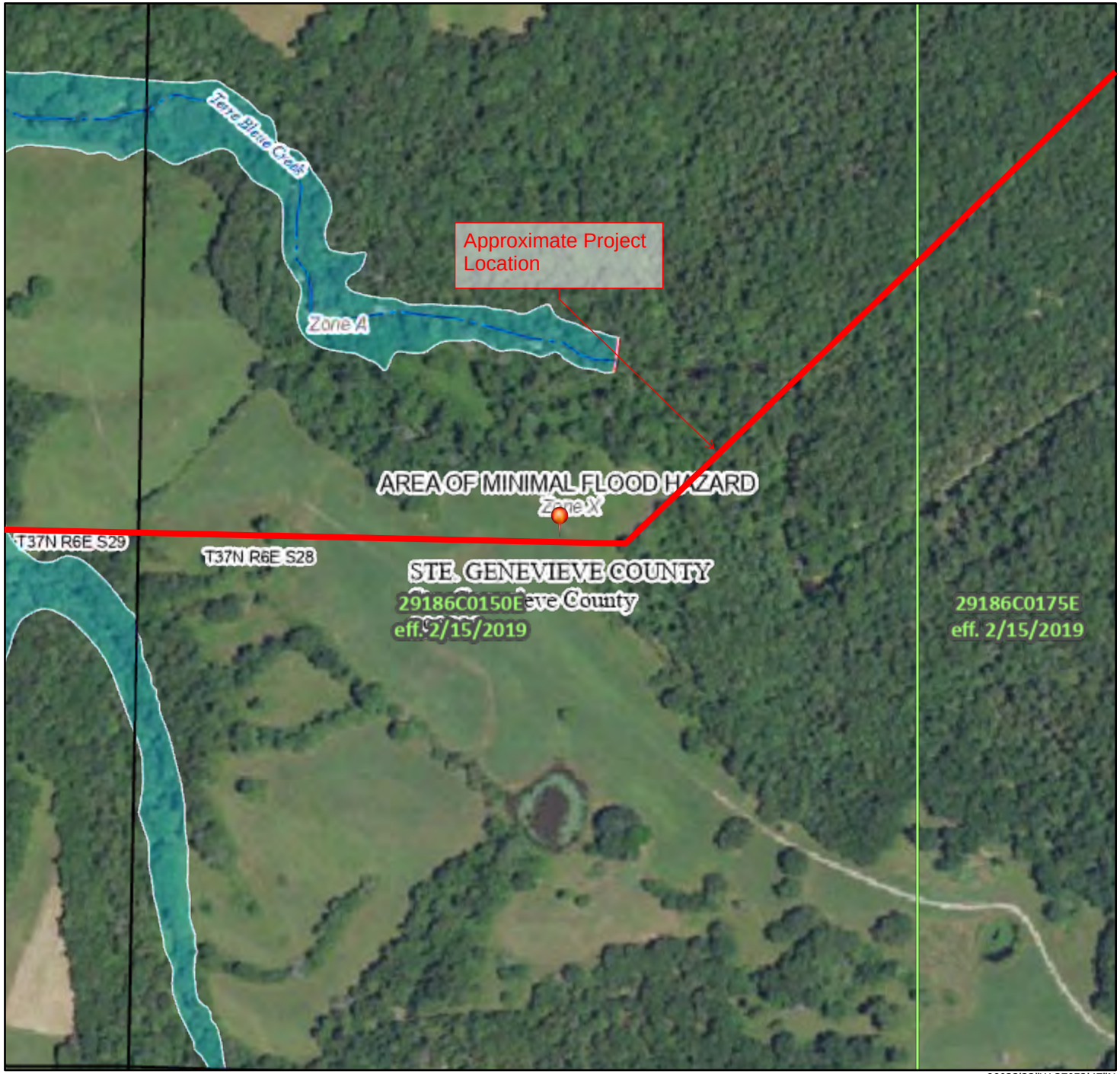
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 4:56 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°23'1"W 37°53'16"N



90°22'23"W 37°52'47"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 4:57 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°22'47"W 37°53'28"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°22'10"W 37°53'N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

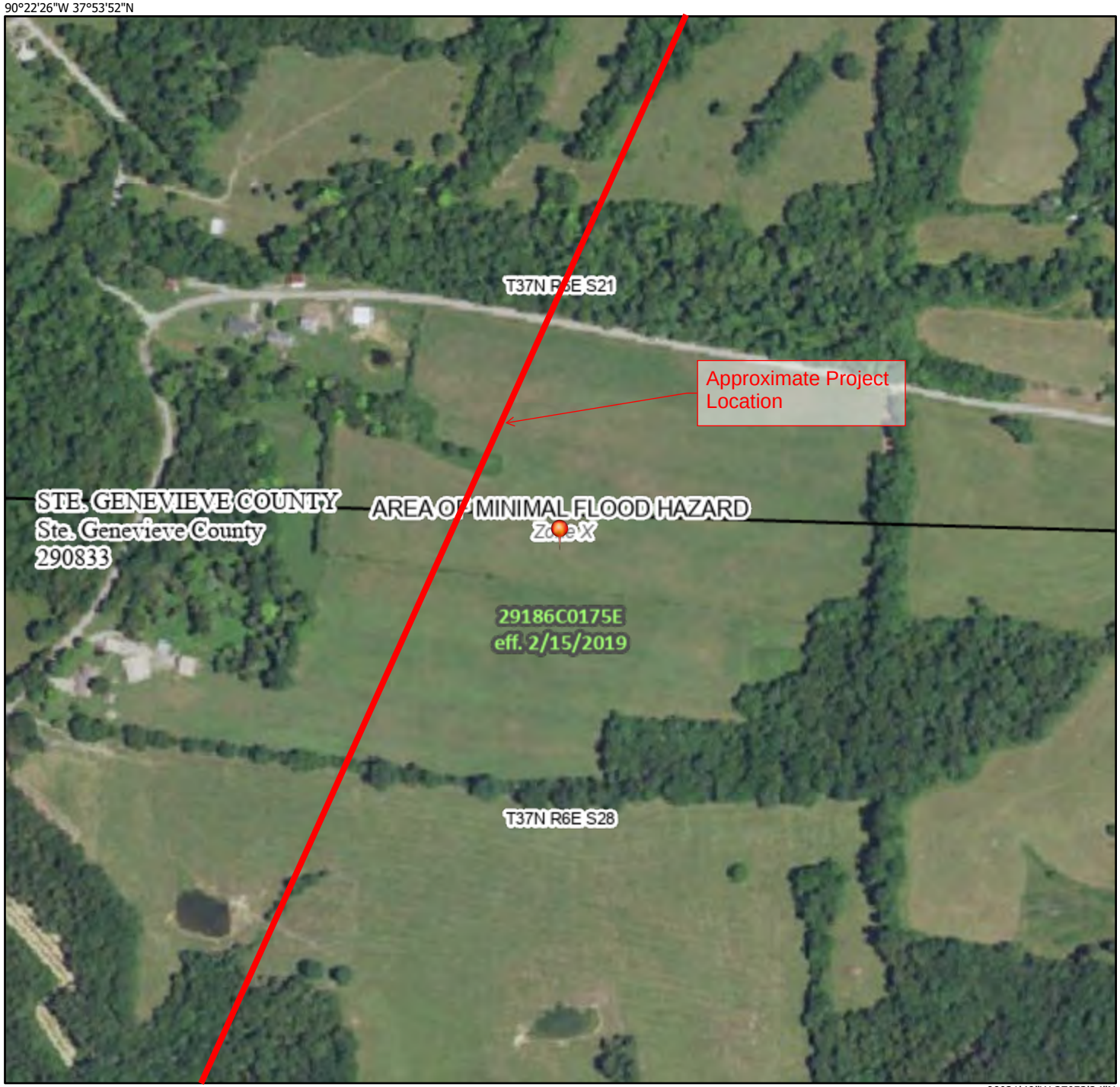
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 4:59 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°22'26"W 37°53'52"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°21'49"W 37°53'24"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

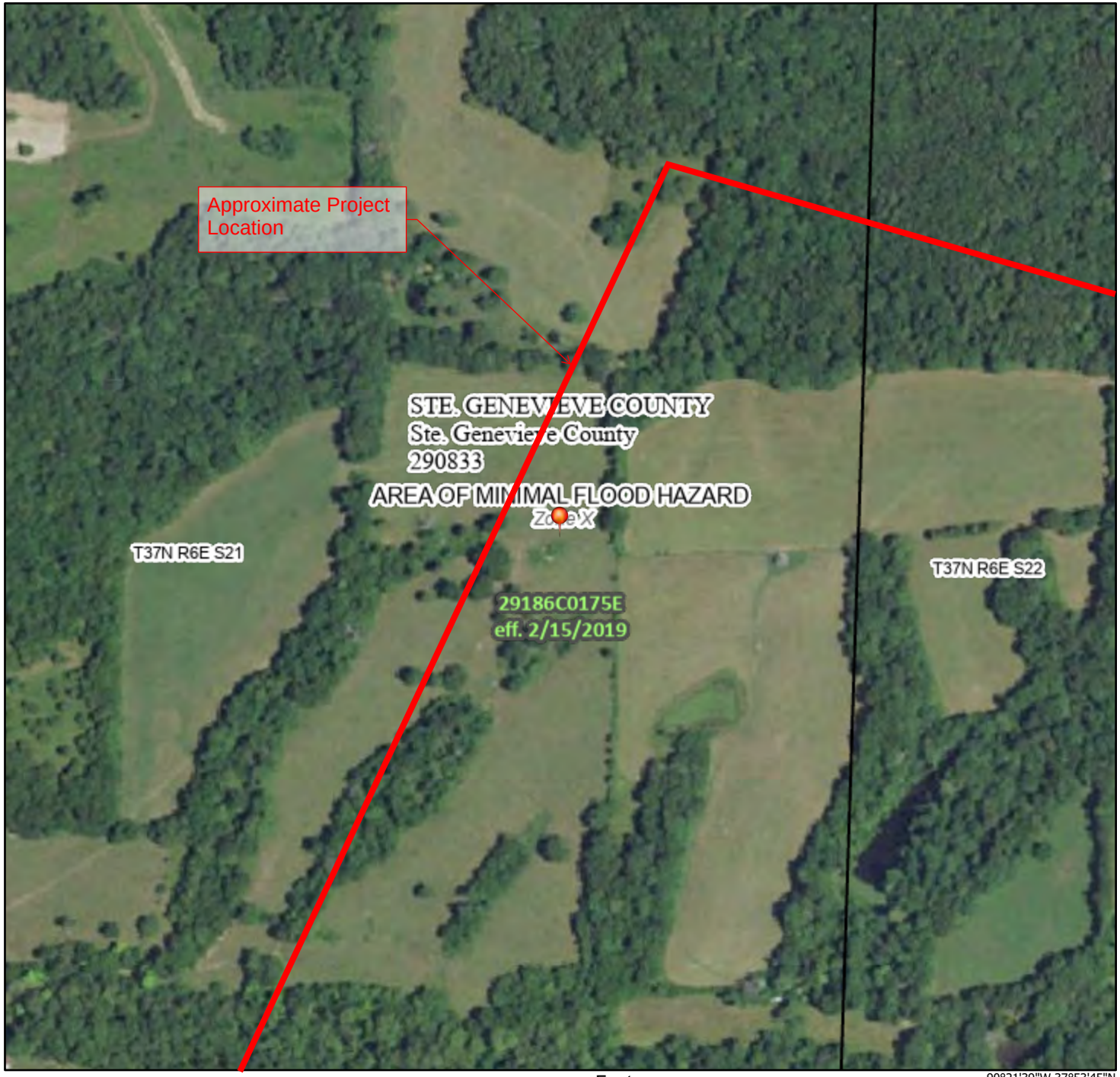
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:02 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°22'16"W 37°54'13"N



90°21'39"W 37°53'45"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

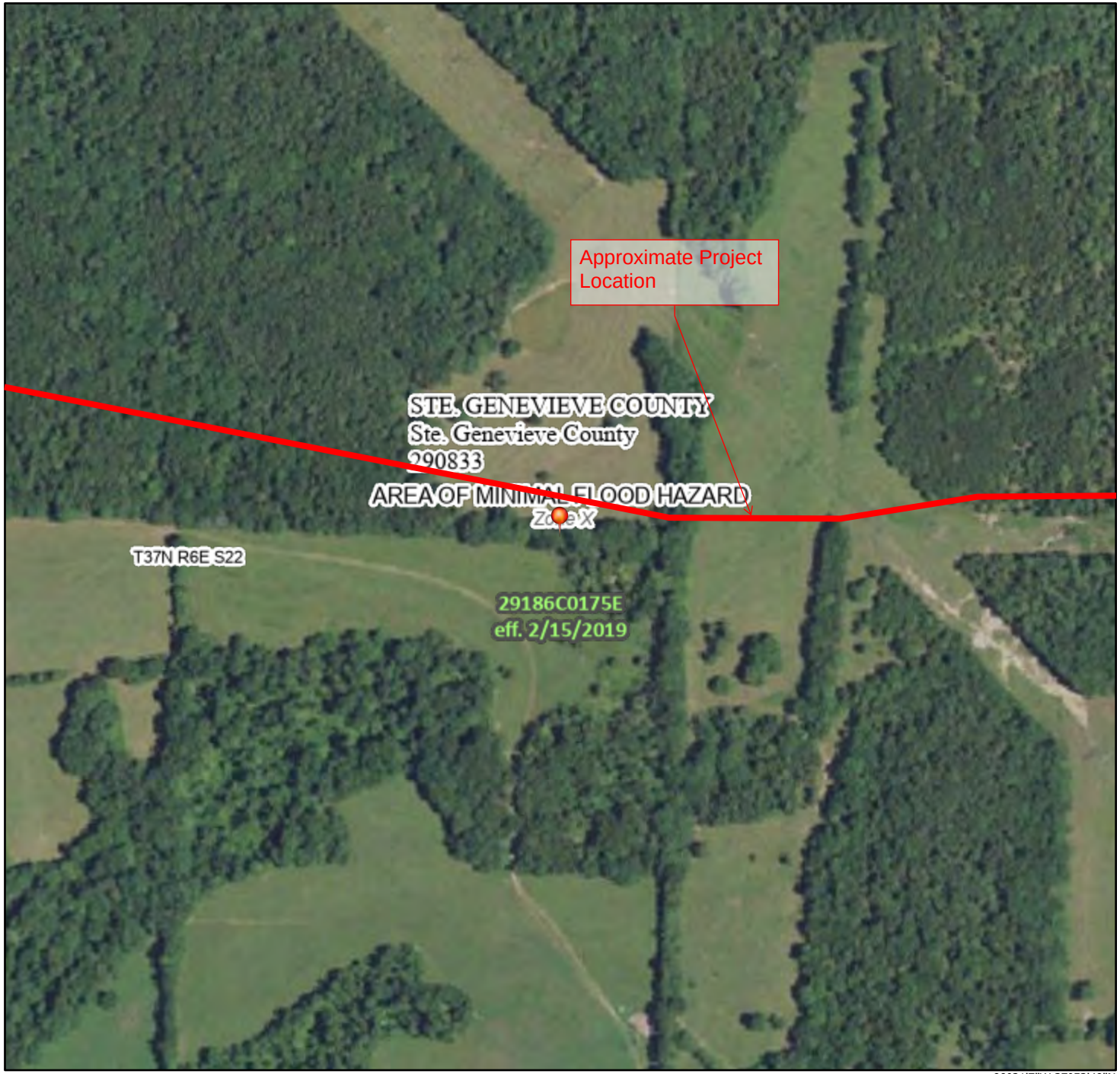
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:04 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°21'45"W 37°54'17"N



90°21'7"W 37°53'49"N

Feet 0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- **SPECIAL FLOOD HAZARD AREAS**
  - Without Base Flood Elevation (BFE) *Zone A, V, A99*
  - With BFE or Depth *Zone AE, AO, AH, VE, AR*
  - Regulatory Floodway
- **OTHER AREAS OF FLOOD HAZARD**
  - 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
  - Future Conditions 1% Annual Chance Flood Hazard *Zone X*
  - Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
  - Area with Flood Risk due to Levee *Zone D*
- **OTHER AREAS**
  - NO SCREEN Area of Minimal Flood Hazard *Zone X*
  - Effective LOMRs
  - Area of Undetermined Flood Hazard *Zone D*
- **GENERAL STRUCTURES**
  - Channel, Culvert, or Storm Sewer
  - Levee, Dike, or Floodwall
- **OTHER FEATURES**
  - 20.2 Cross Sections with 1% Annual Chance
  - 17.5 Water Surface Elevation
  - Coastal Transect
  - Base Flood Elevation Line (BFE)
  - Limit of Study
  - Jurisdiction Boundary
  - Coastal Transect Baseline
  - Profile Baseline
  - Hydrographic Feature
- **MAP PANELS**
  - Digital Data Available
  - No Digital Data Available
  - Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

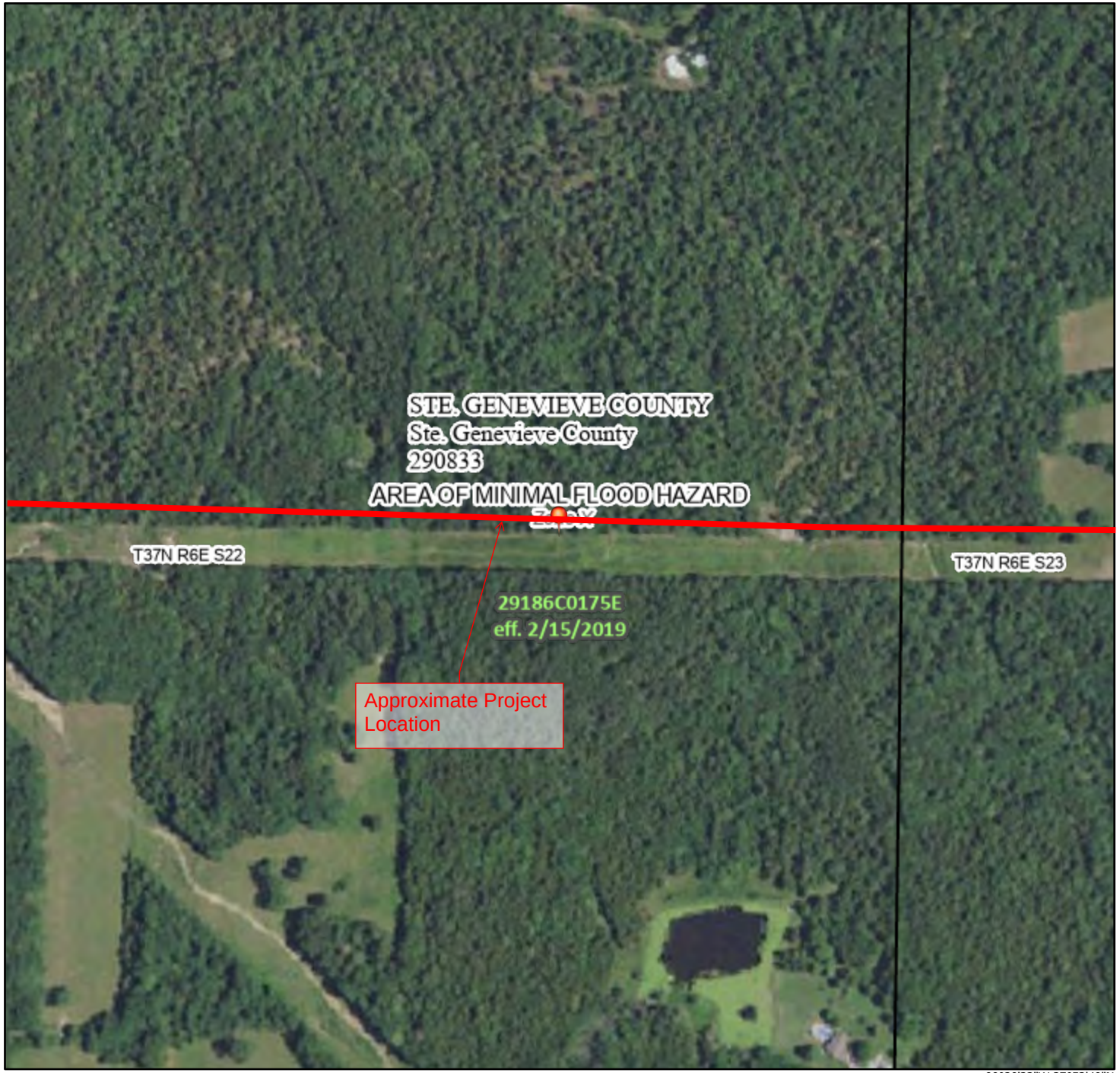
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:06 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°21'10"W 37°54'17"N



90°20'33"W 37°53'49"N

Feet 0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

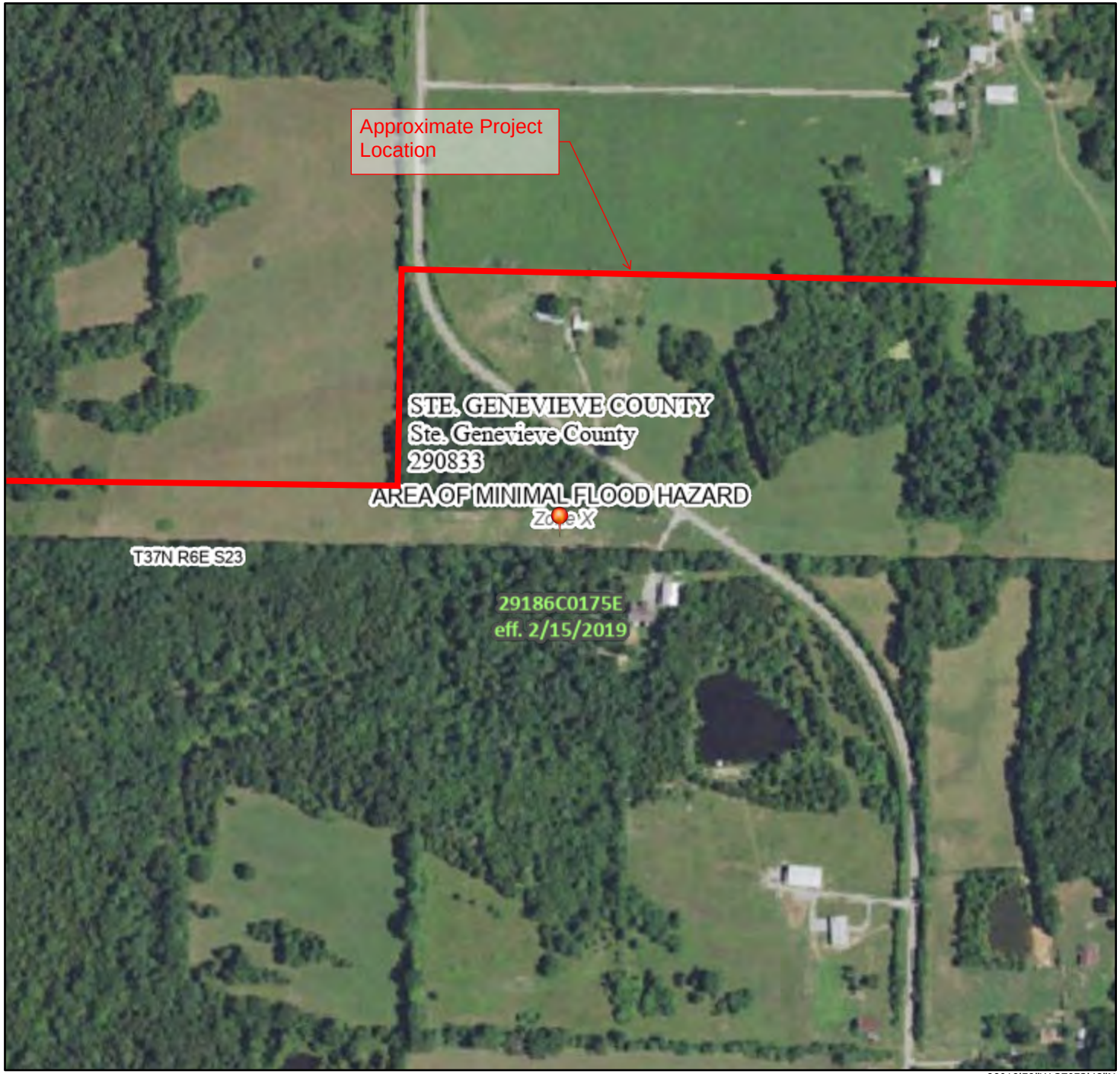
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:09 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°20'36"W 37°54'16"N



90°19'59"W 37°53'48"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:11 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°20'2"W 37°54'28"N

90°19'24"W 37°53'59"N

Feet 0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:23 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°19'32"W 37°54'49"N

90°18'55"W 37°54'21"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:27 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°19'4"W 37°55'9"N

90°18'27"W 37°54'41"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

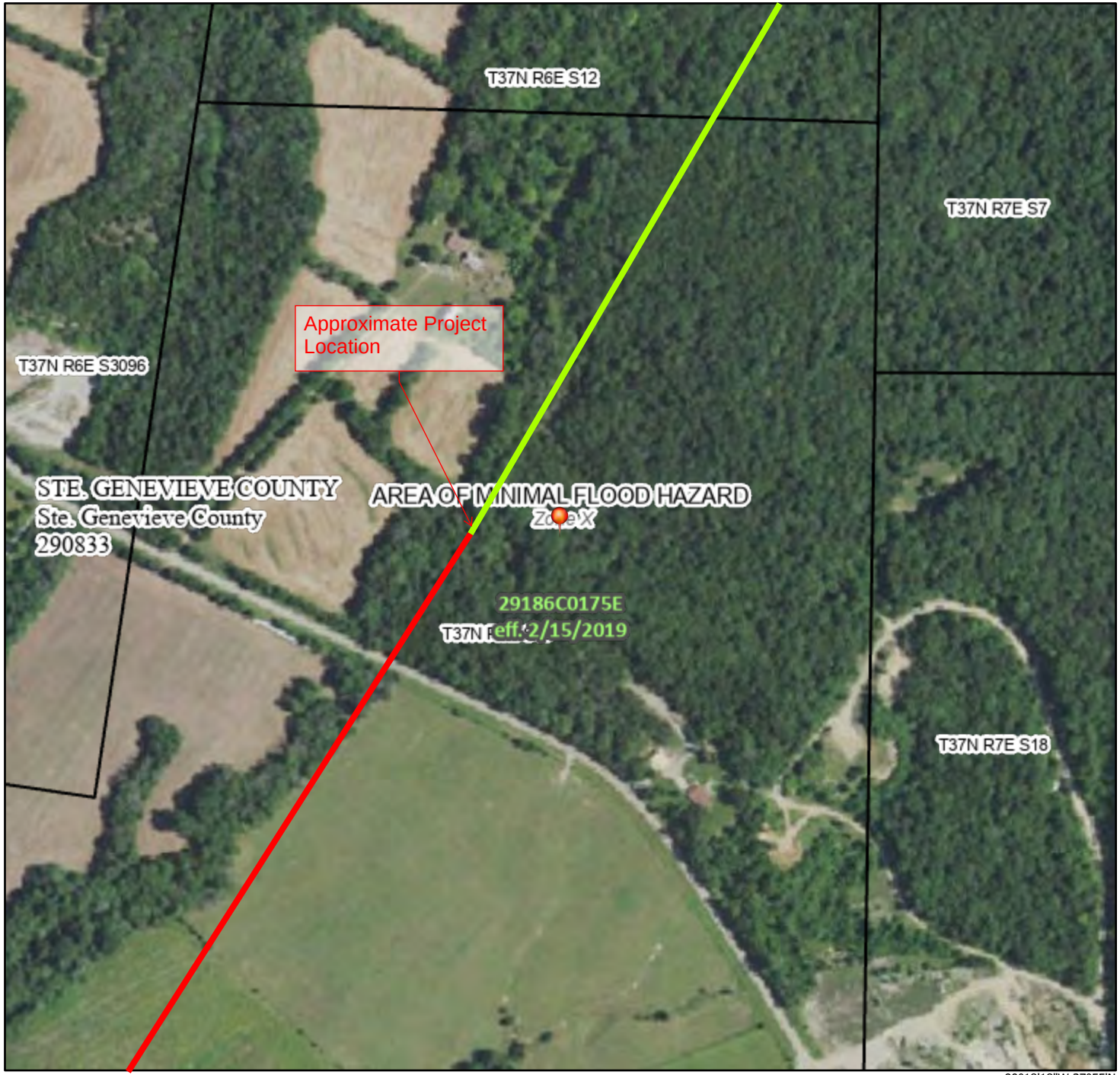
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:30 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'55"W 37°55'28"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°18'18"W 37°55'N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

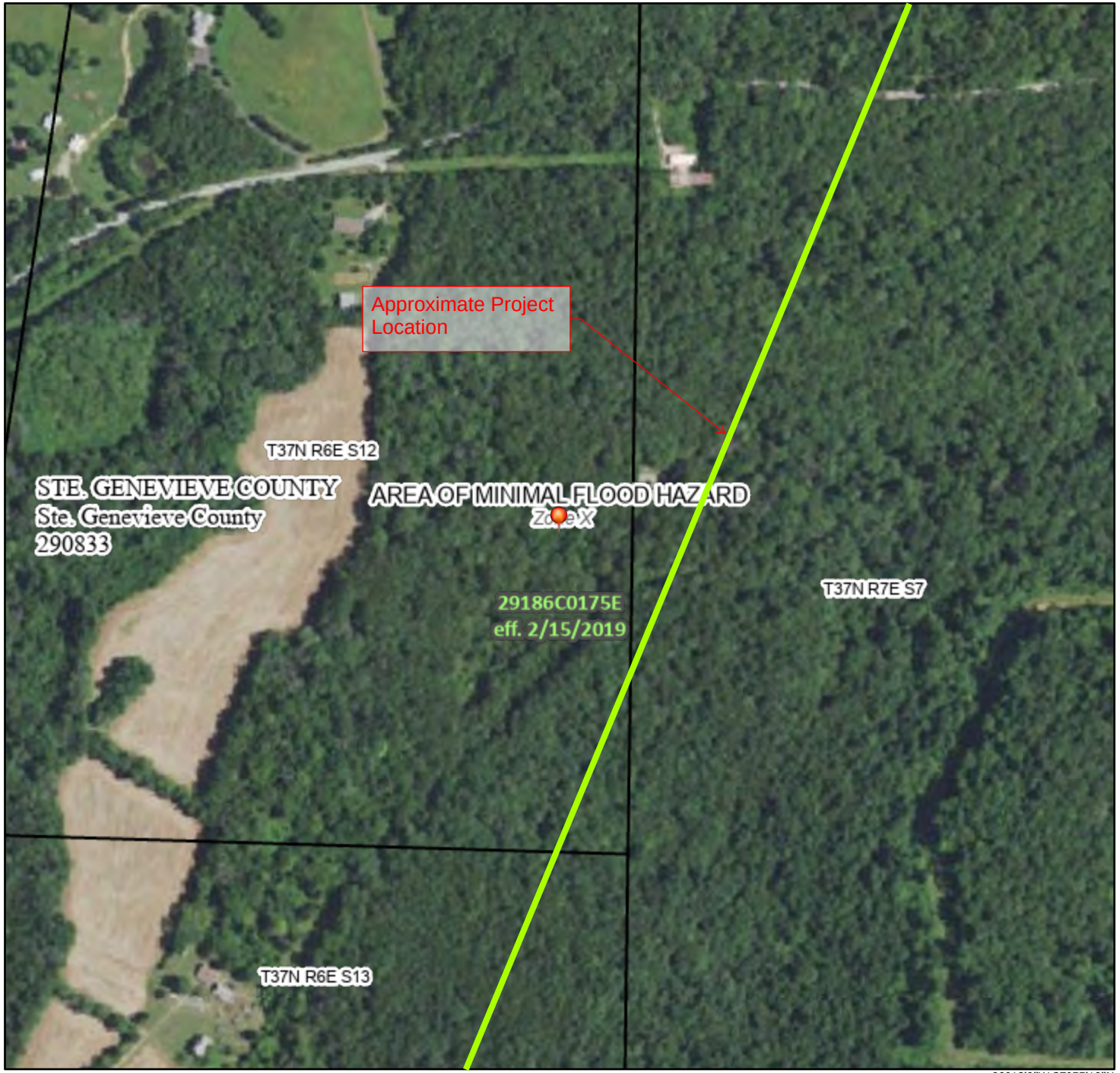
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:31 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'47"W 37°55'48"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°18'9"W 37°55'19"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 9:24 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'20"W 37°56'17"N

90°17'42"W 37°55'49"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

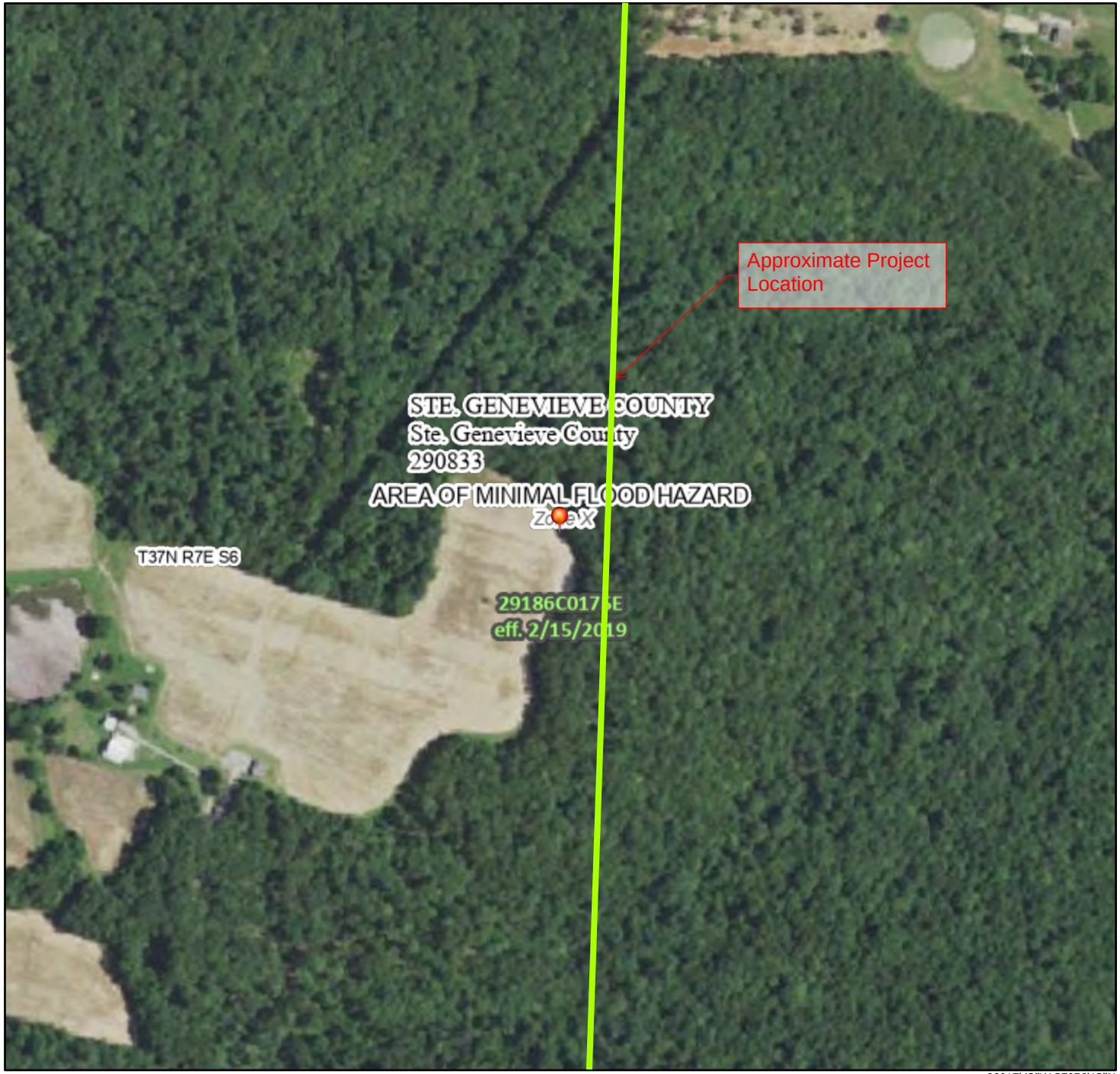
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:38 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'19"W 37°56'41"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°17'42"W 37°56'12"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

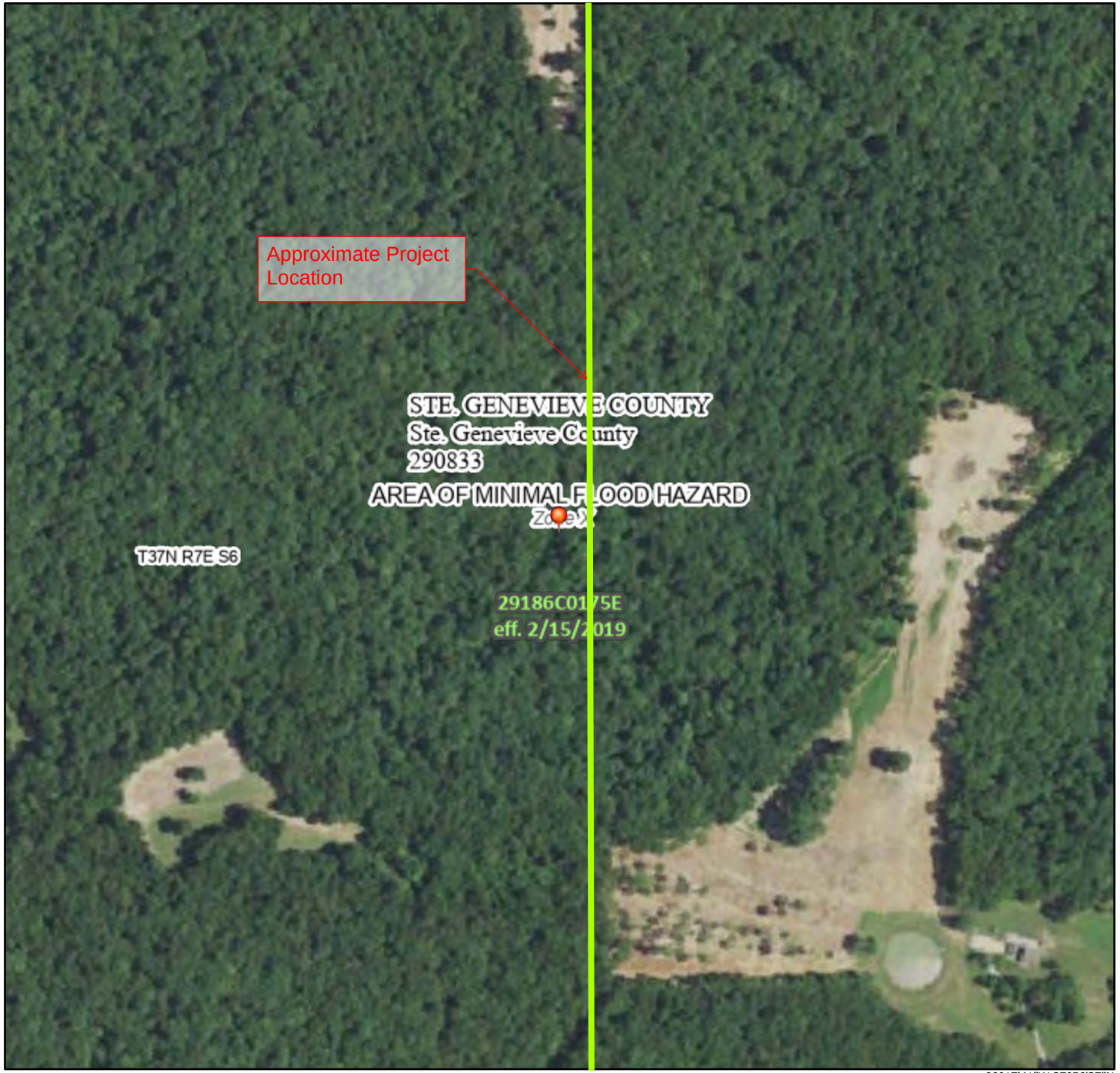
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:41 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'18"W 37°57'5"N



90°17'41"W 37°56'37"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

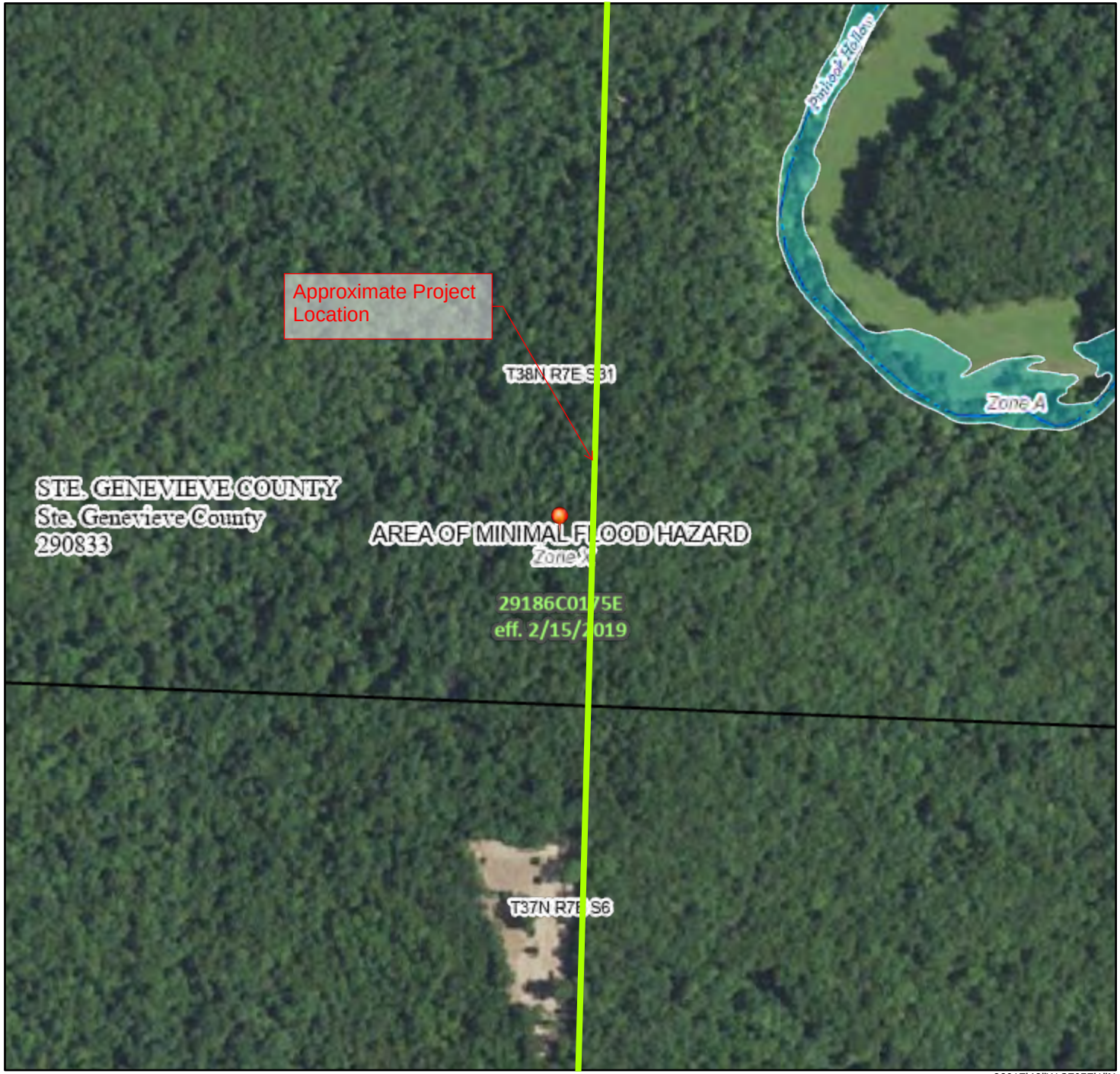
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:42 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'17"W 37°57'30"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°17'40"W 37°57'1"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'16"W 37°57'49"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°17'39"W 37°57'21"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

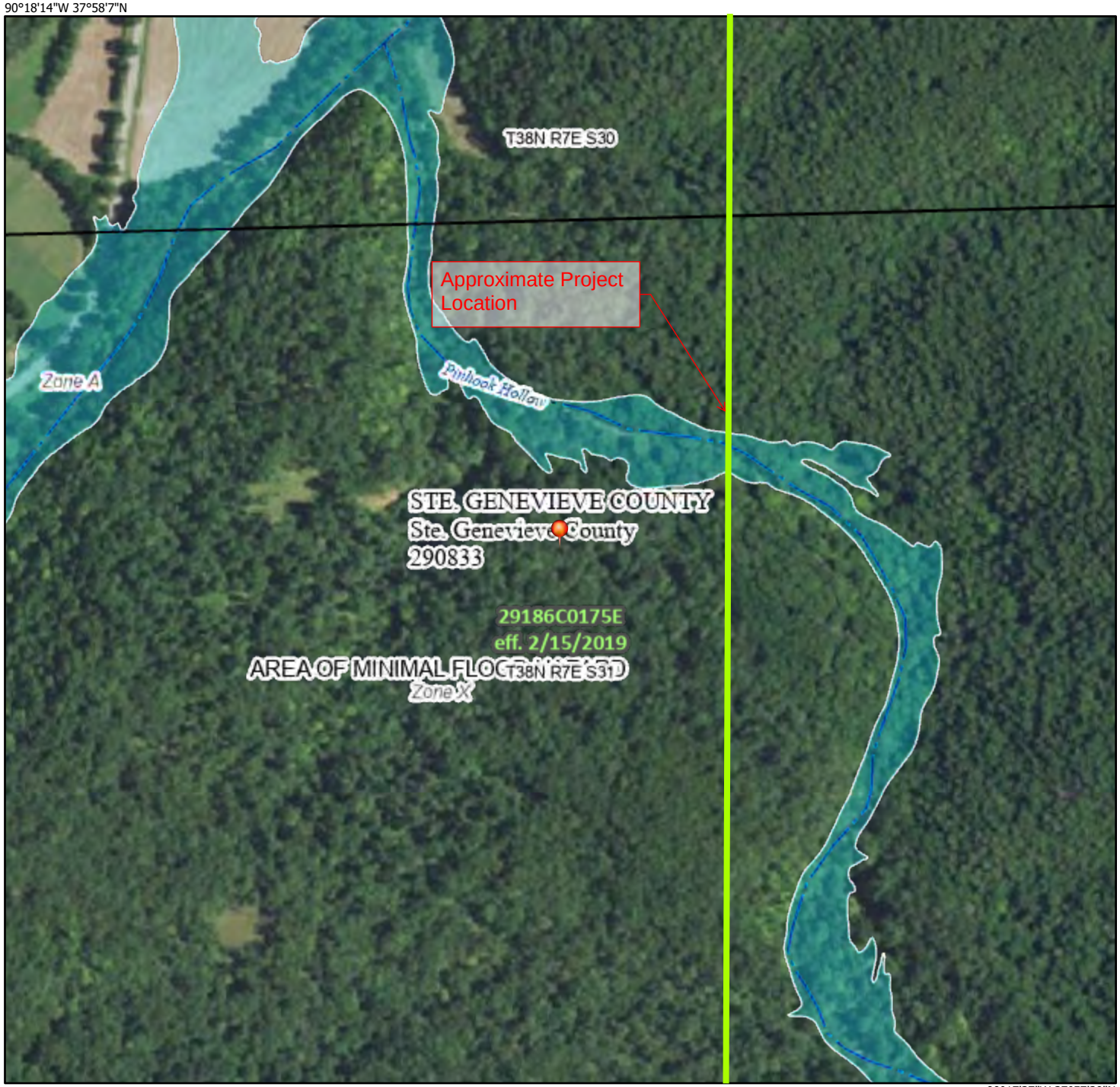
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:47 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'14"W 37°58'7"N



90°17'37"W 37°57'39"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

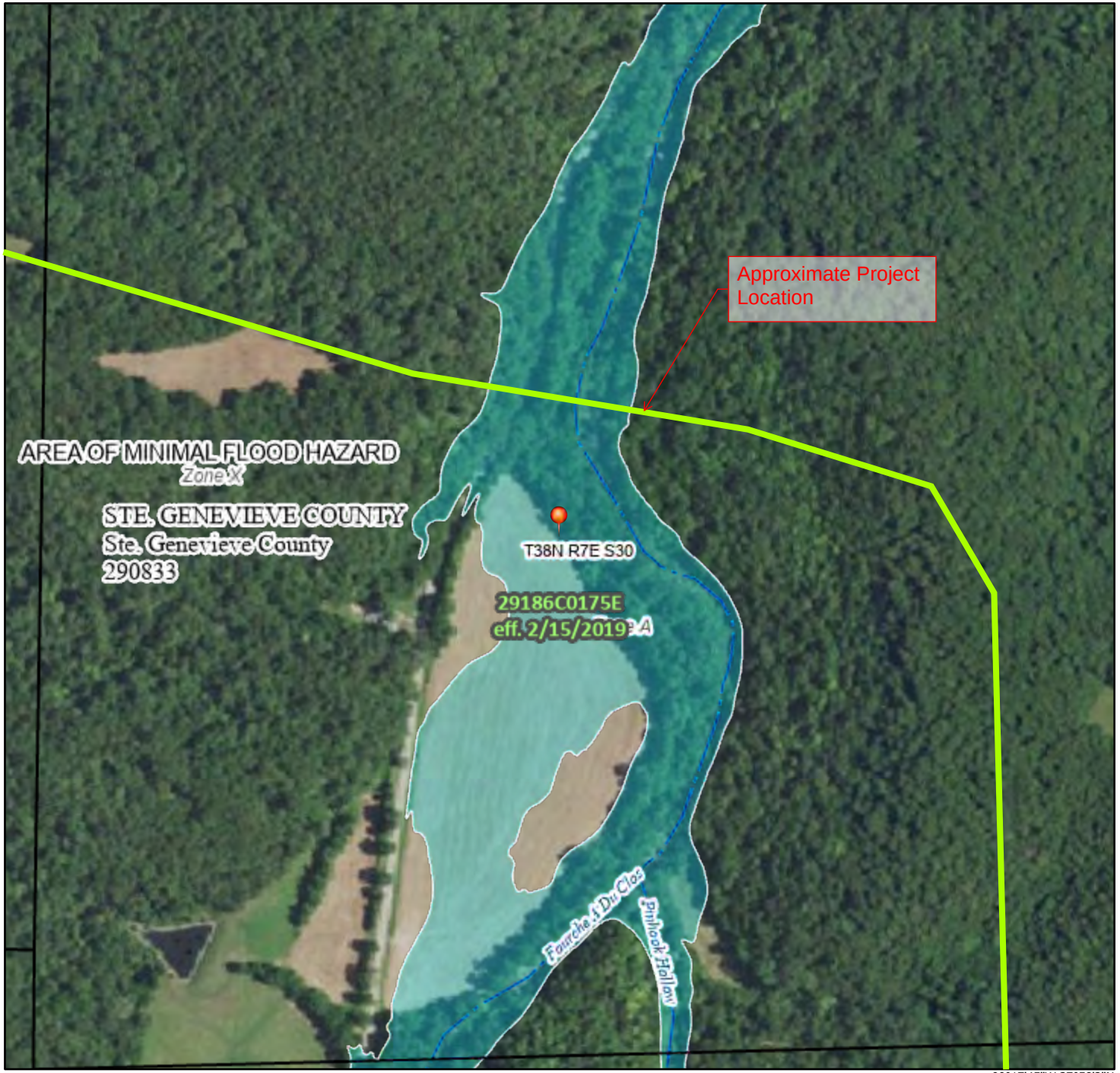
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:48 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'23"W 37°58'30"N



90°17'45"W 37°58'2"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:51 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'52"W 37°58'48"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°18'15"W 37°58'19"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

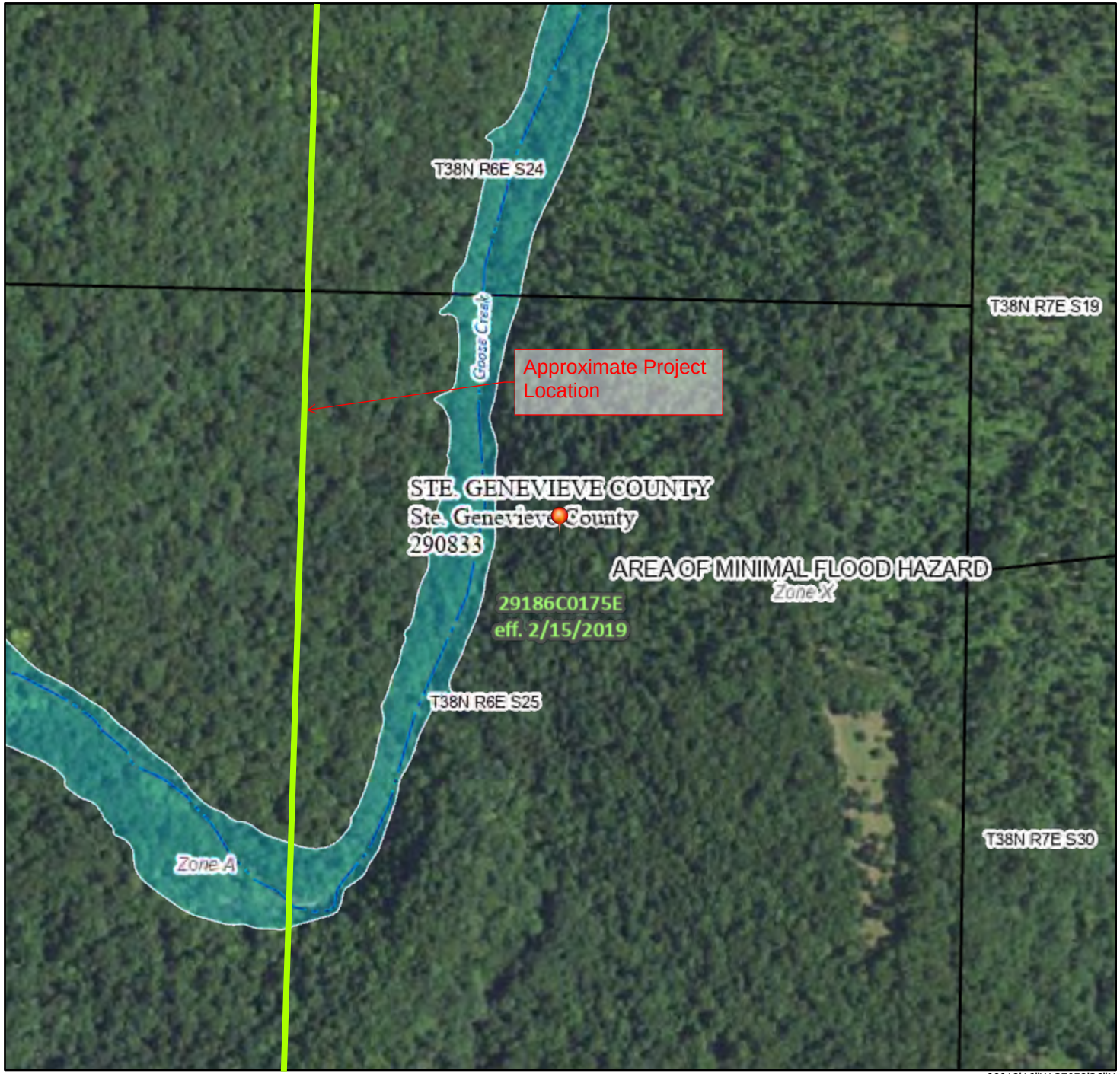
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:52 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'53"W 37°59'5"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°18'16"W 37°58'36"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

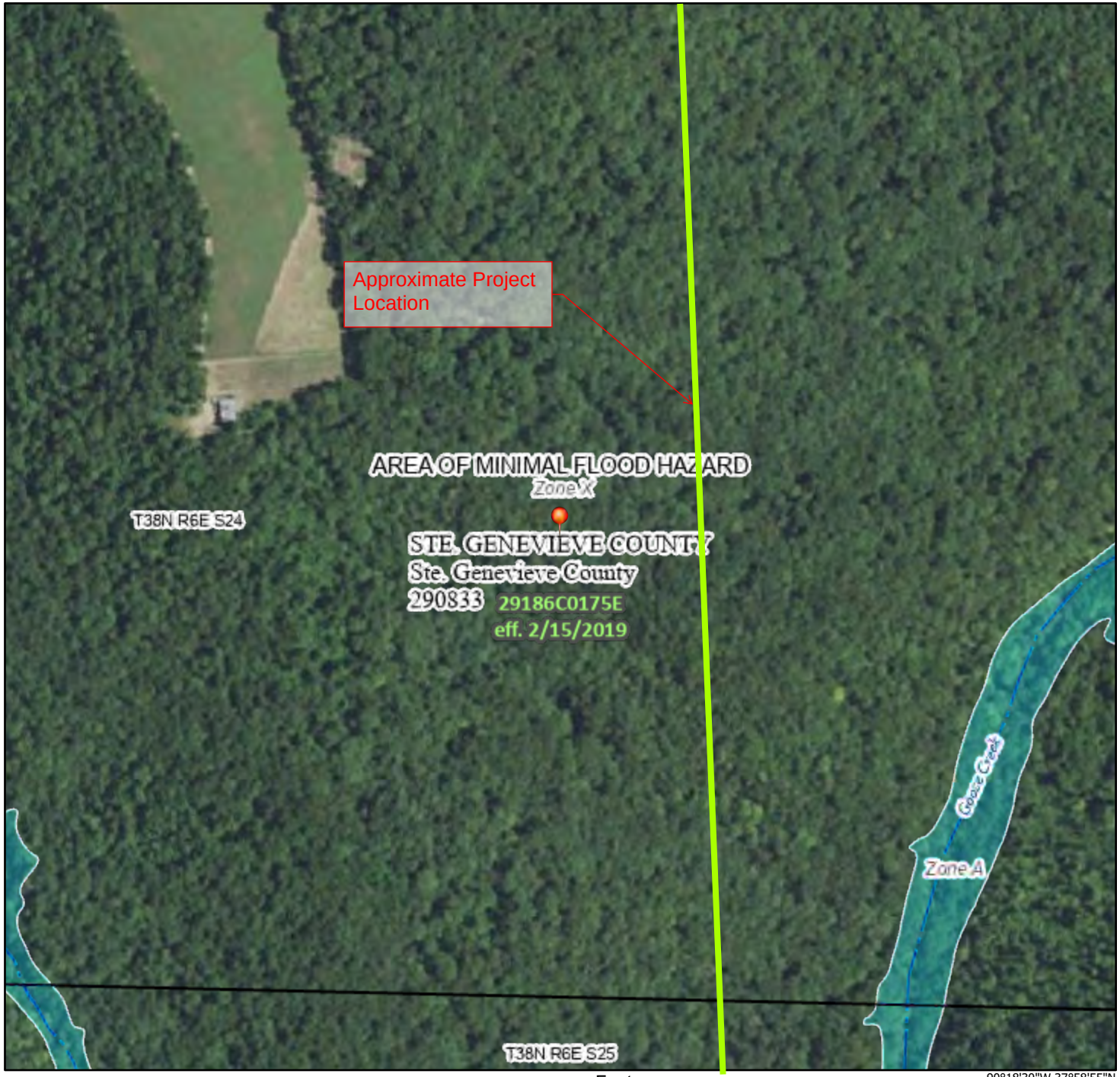
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:53 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°19'8"W 37°59'24"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°18'30"W 37°58'55"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

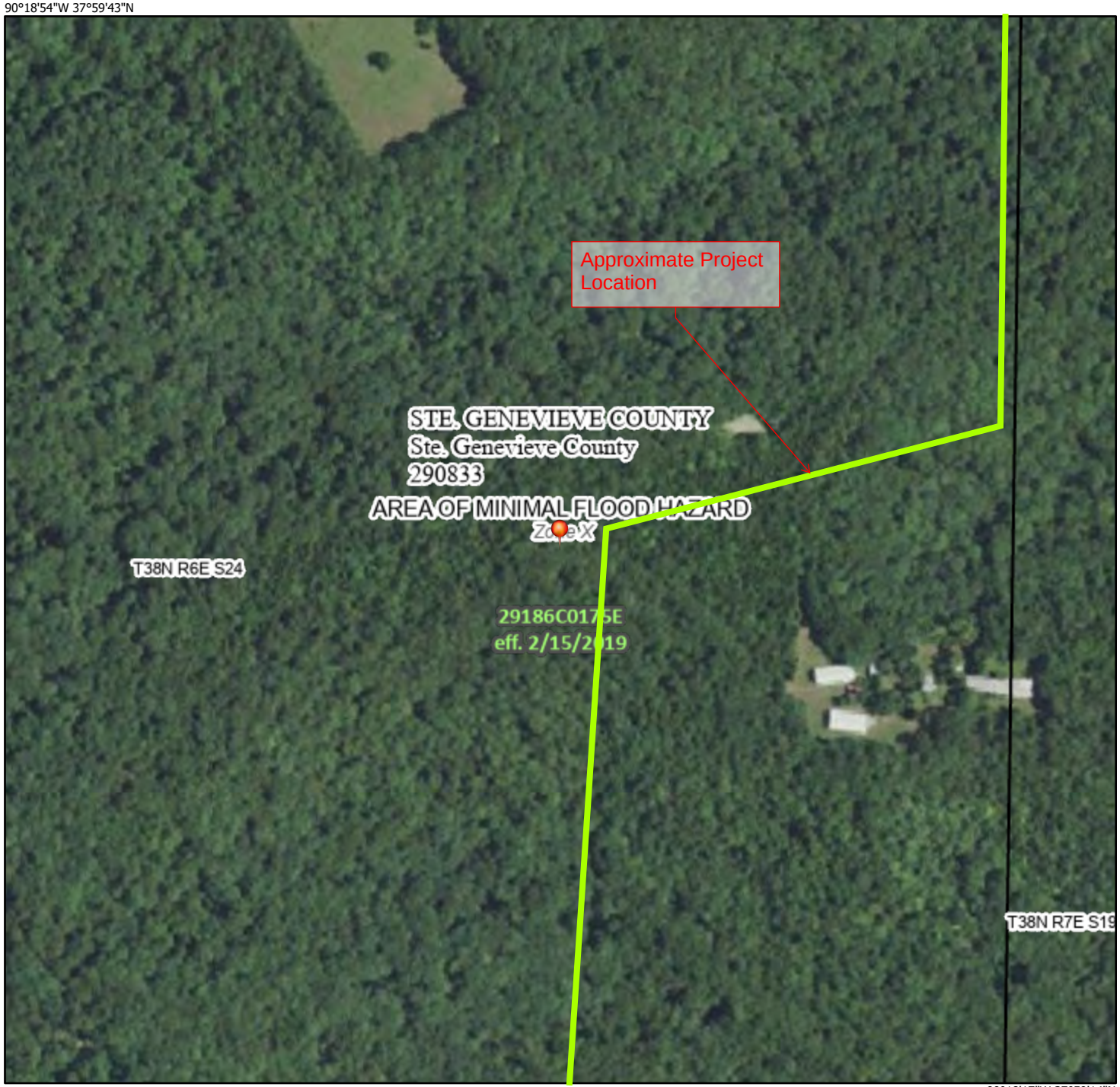
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 5:59 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'54"W 37°59'43"N



Feet

0 250 500 1,000 1,500 2,000

1:6,000

90°18'17"W 37°59'14"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

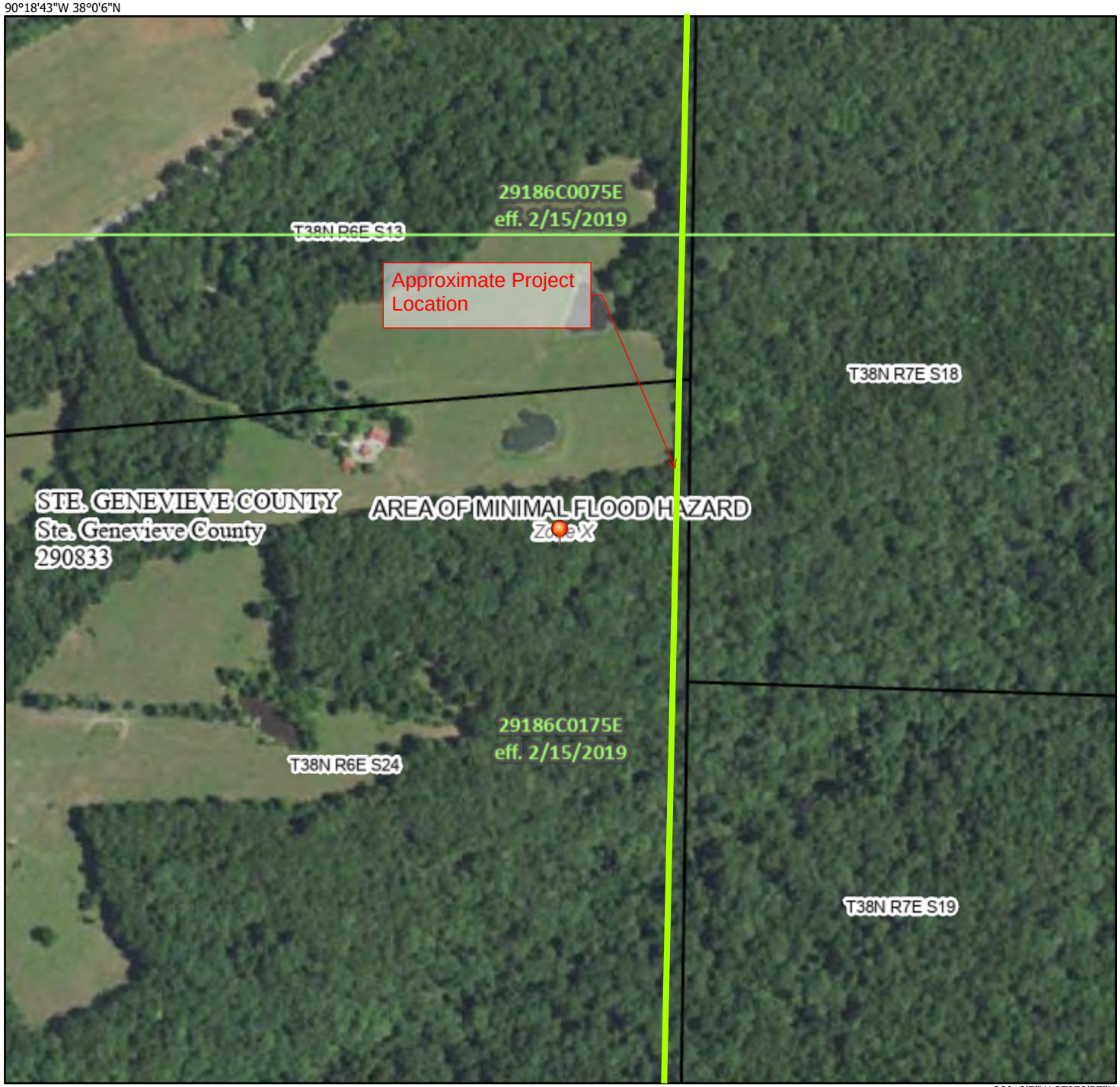
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 6:01 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'43"W 38°0'6"N



90°18'5"W 37°59'37"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

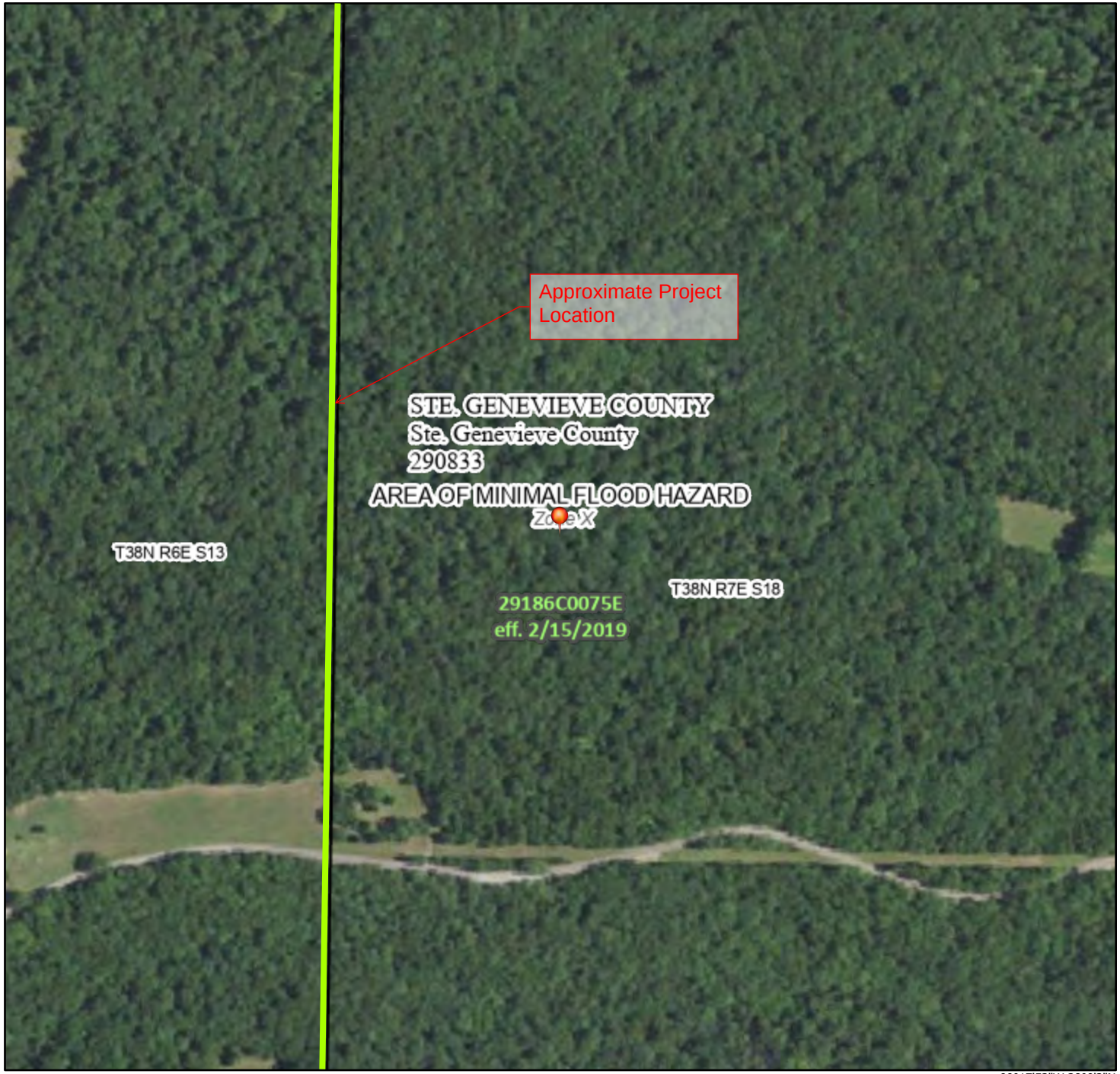
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 6:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'30"W 38°0'30"N



Feet

0 250 500 1,000 1,500 2,000

1:6,000

90°17'53"W 38°0'2"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

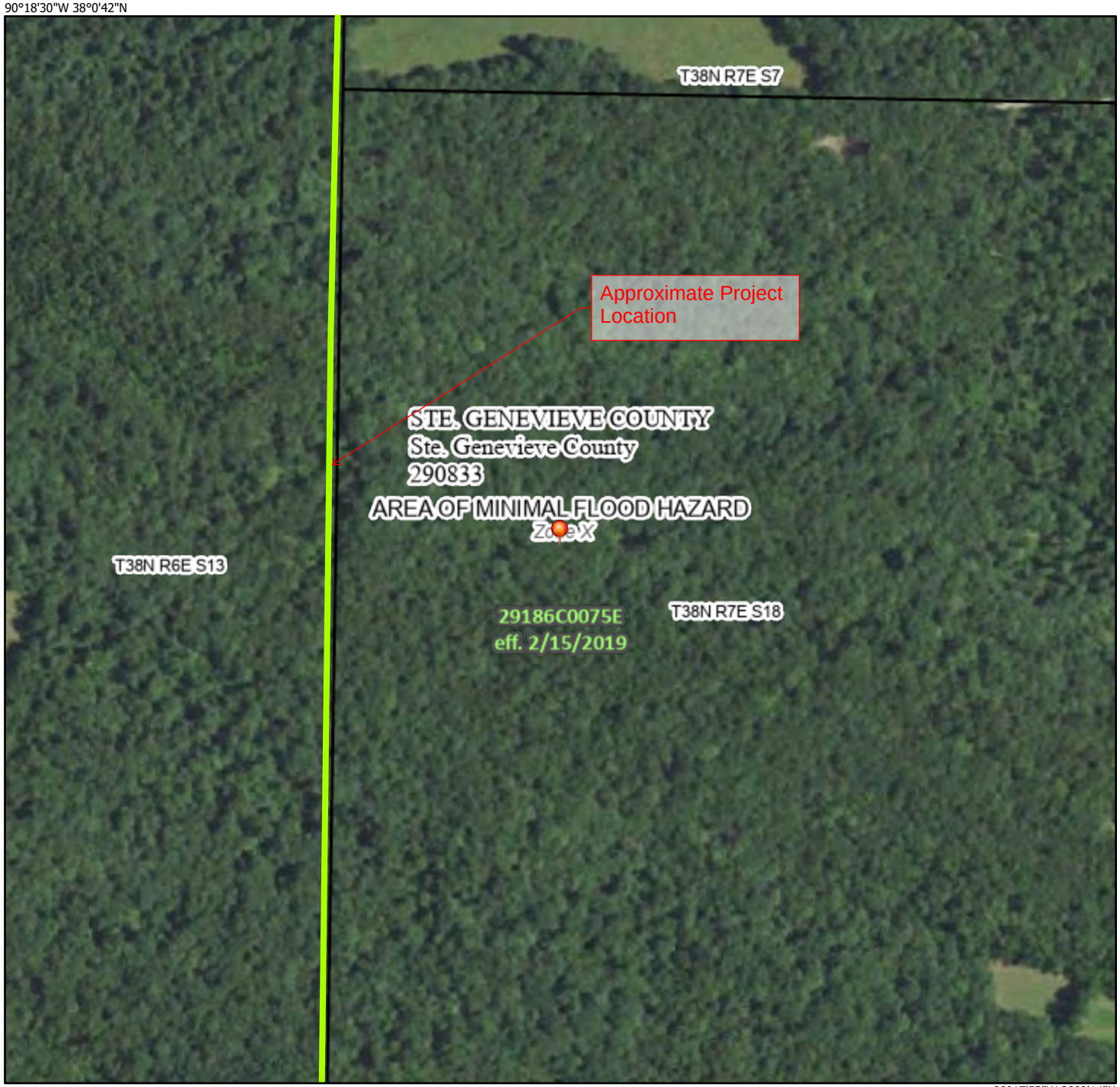
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 6:05 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'30"W 38°0'42"N



90°17'53"W 38°0'14"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

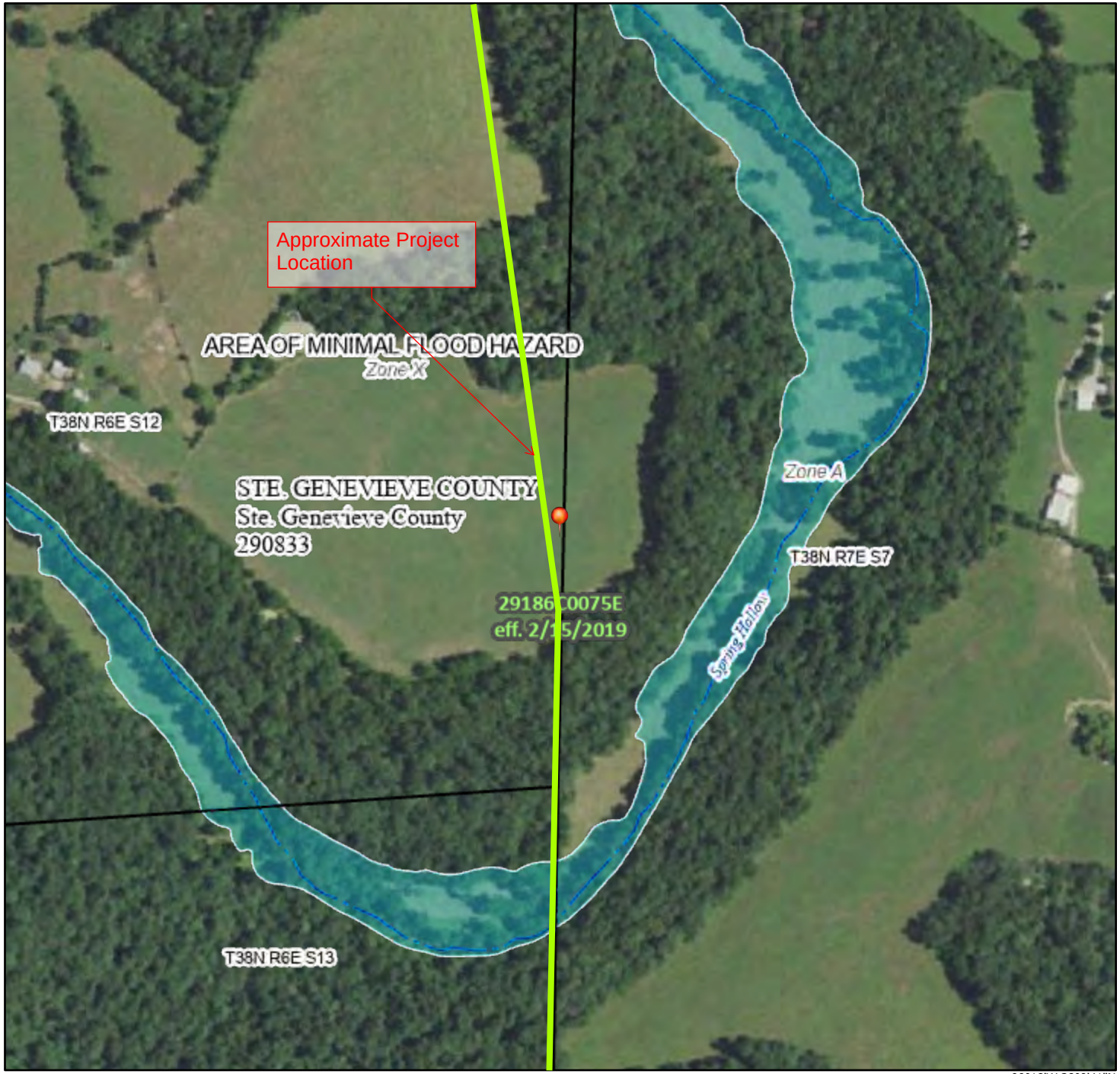
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 6:07 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'37"W 38°1'9"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°18'W 38°0'41"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

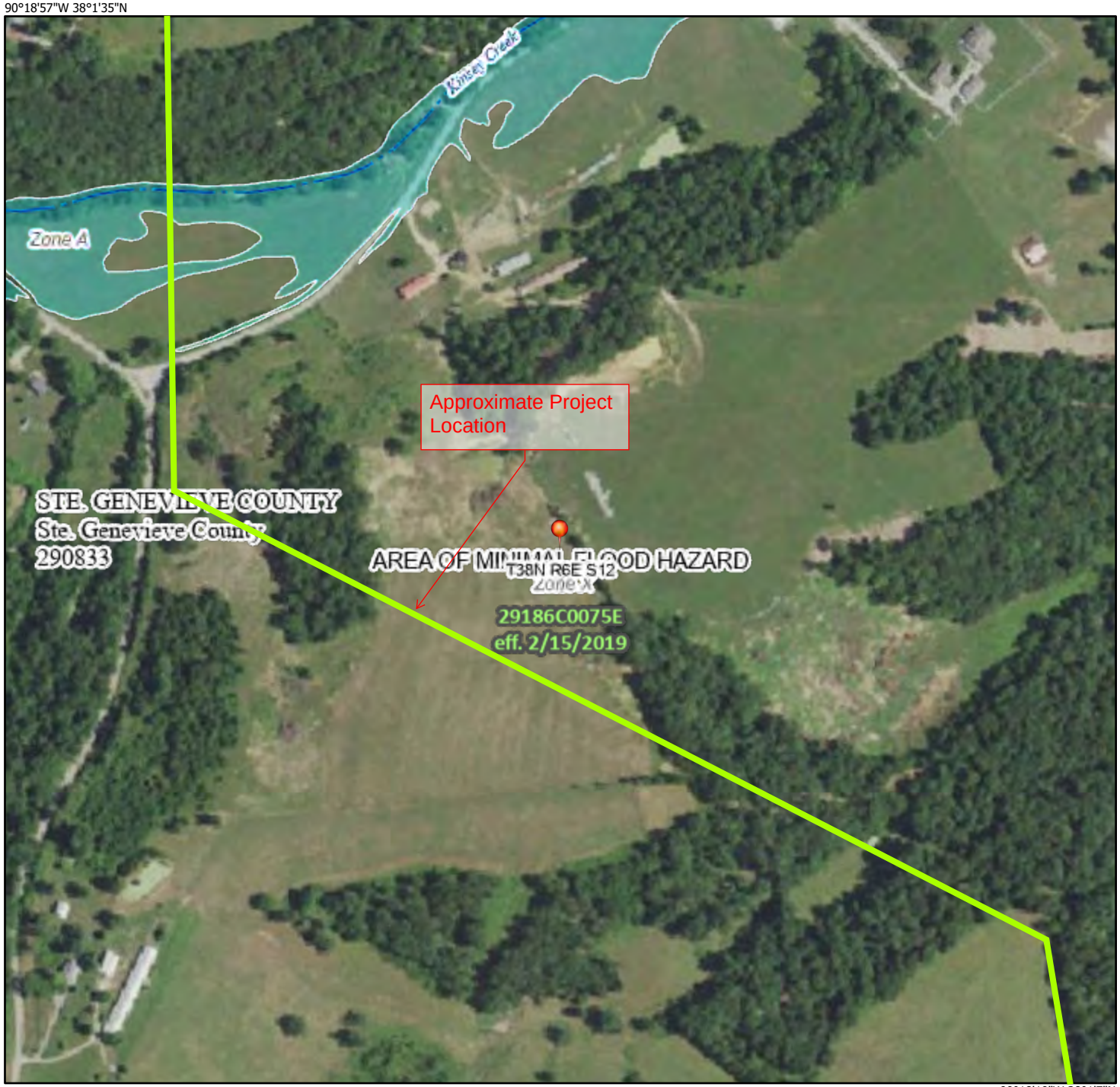
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 10:01 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'57"W 38°1'35"N



90°18'19"W 38°1'7"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

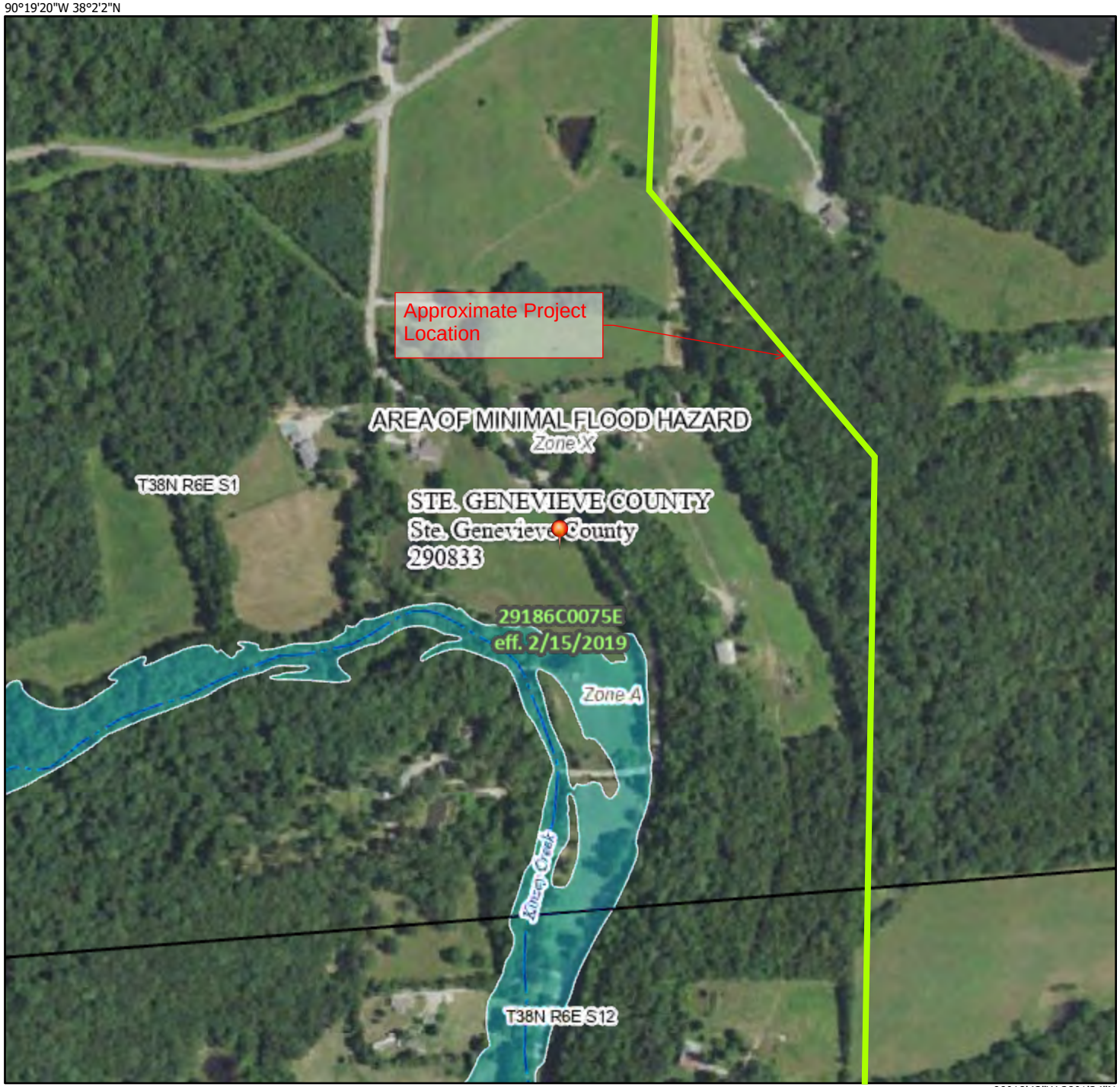
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 6:10 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°19'20"W 38°2'2"N



90°18'42"W 38°1'34"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

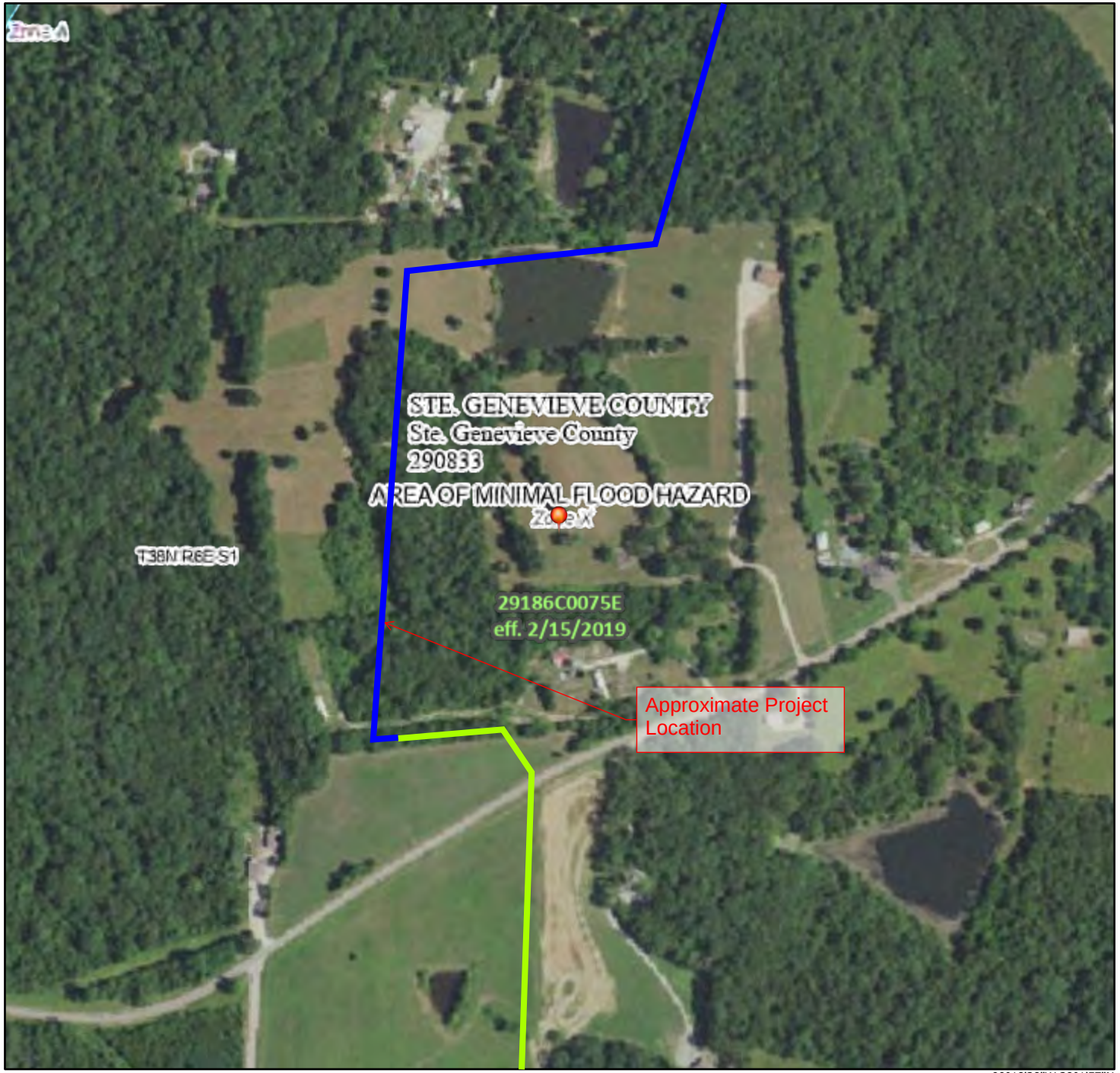
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 6:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°19'15"W 38°2'25"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°18'38"W 38°1'57"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 6:16 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°19'7"W 38°2'47"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°18'30"W 38°2'19"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

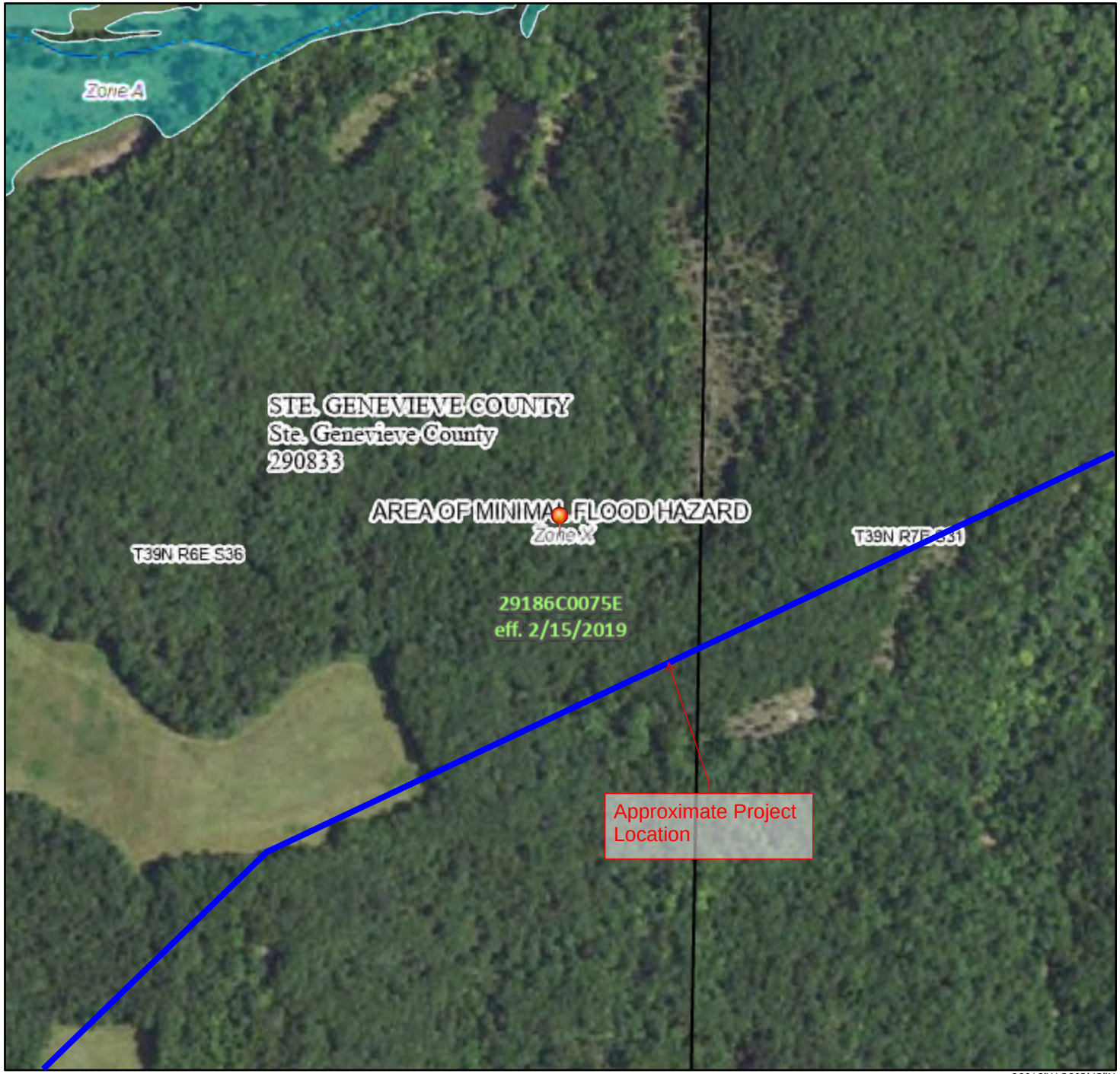
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 6:32 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'38"W 38°3'11"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°18'W 38°2'43"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 6:38 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°18'14"W 38°3'14"N

90°17'36"W 38°2'46"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

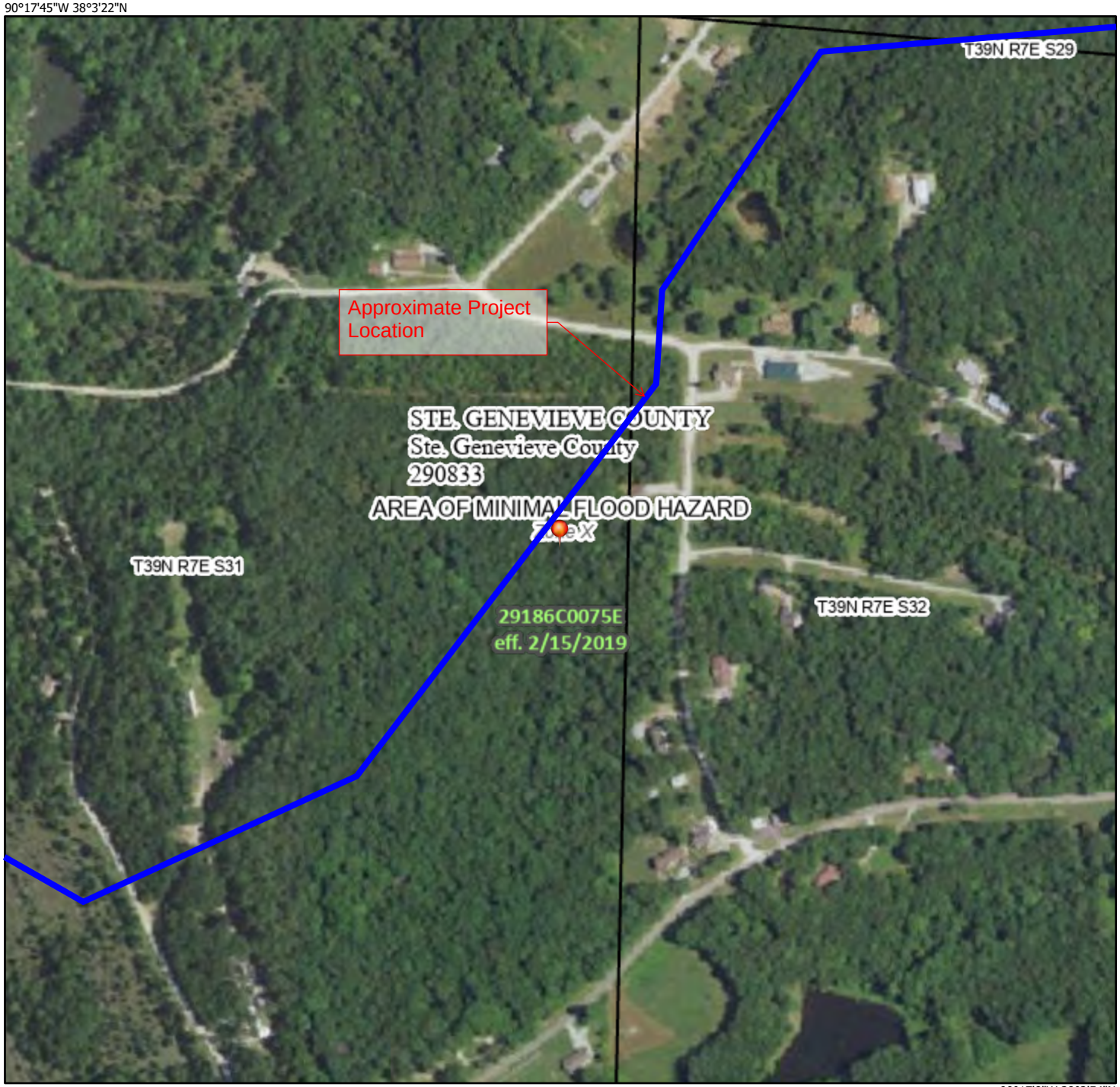
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 10:17 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°17'45"W 38°3'22"N



90°17'8"W 38°2'54"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

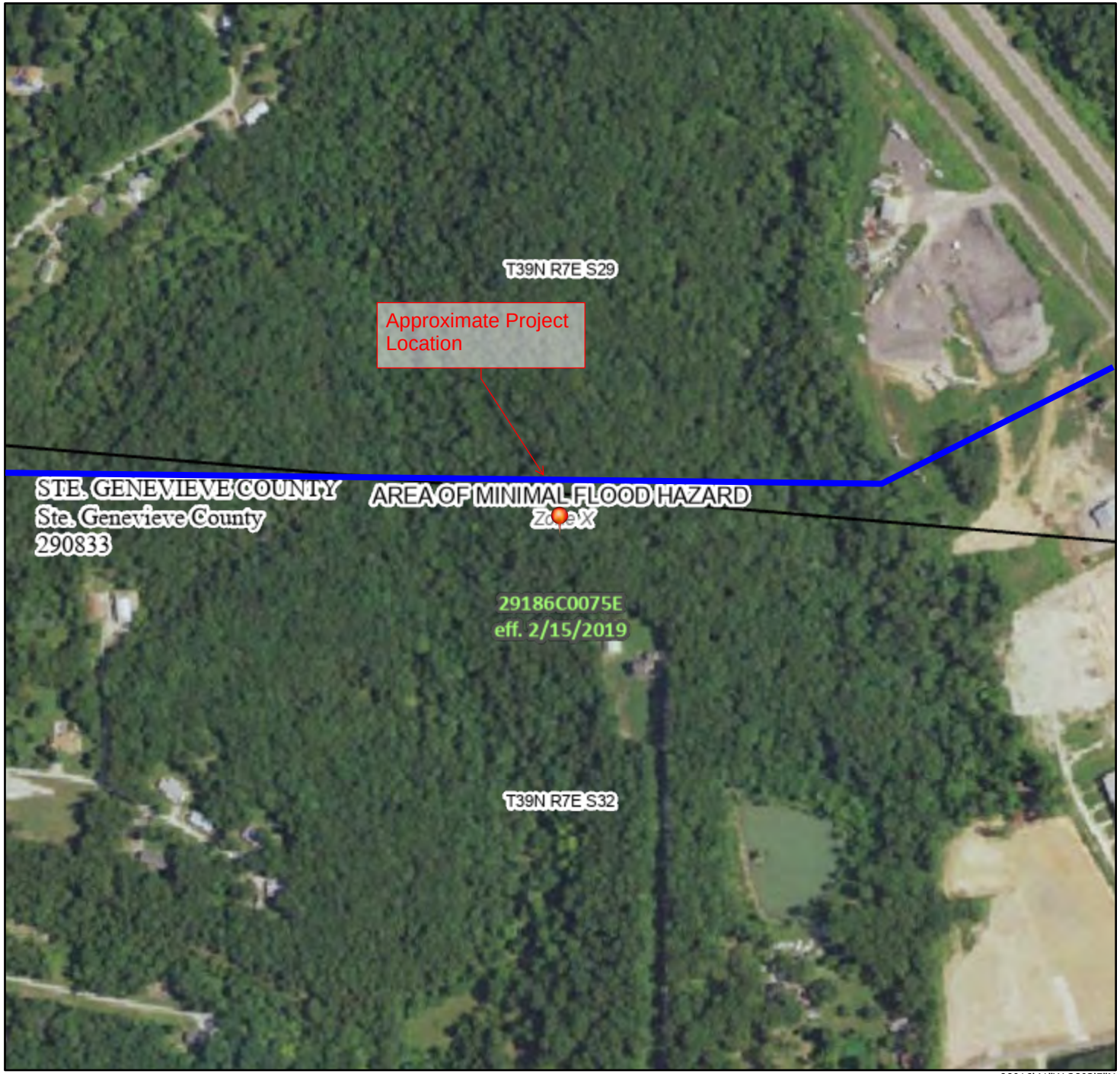
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 7:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°17'18"W 38°3'33"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°16'41"W 38°3'5"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

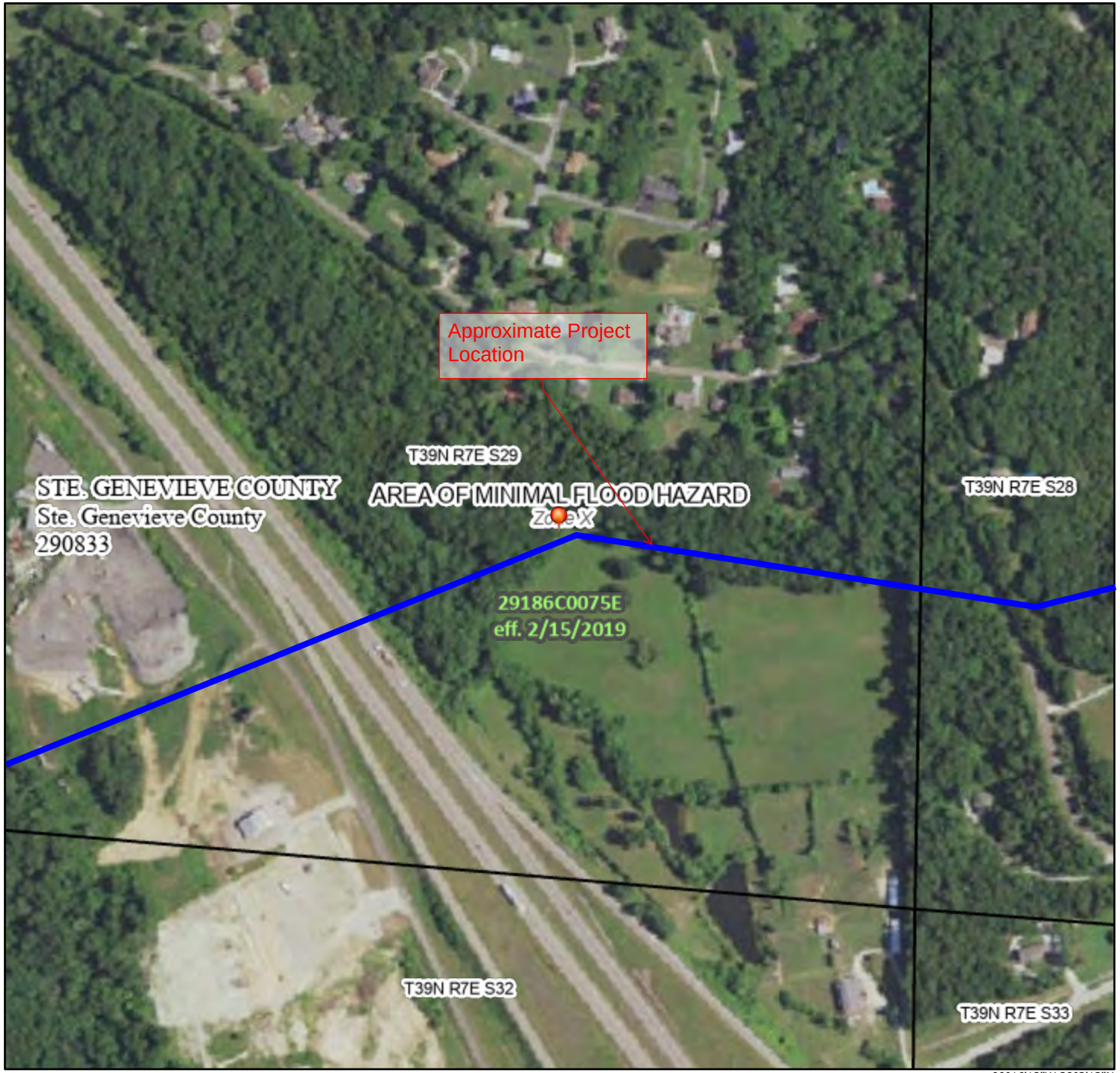
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 7:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°16'49"W 38°3'42"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

90°16'12"W 38°3'13"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

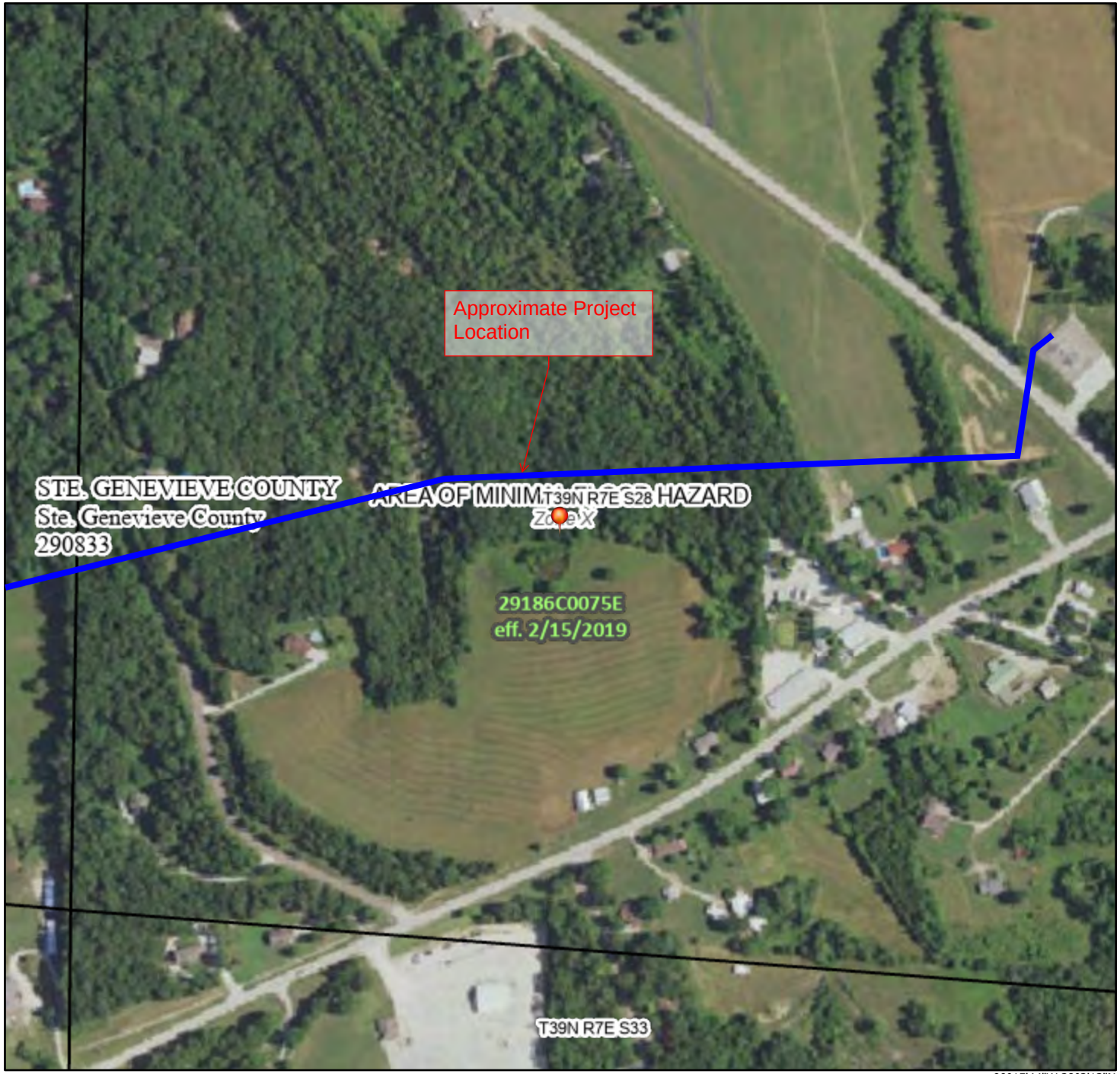
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 7:05 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°16'21"W 38°3'42"N



90°15'44"W 38°3'13"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

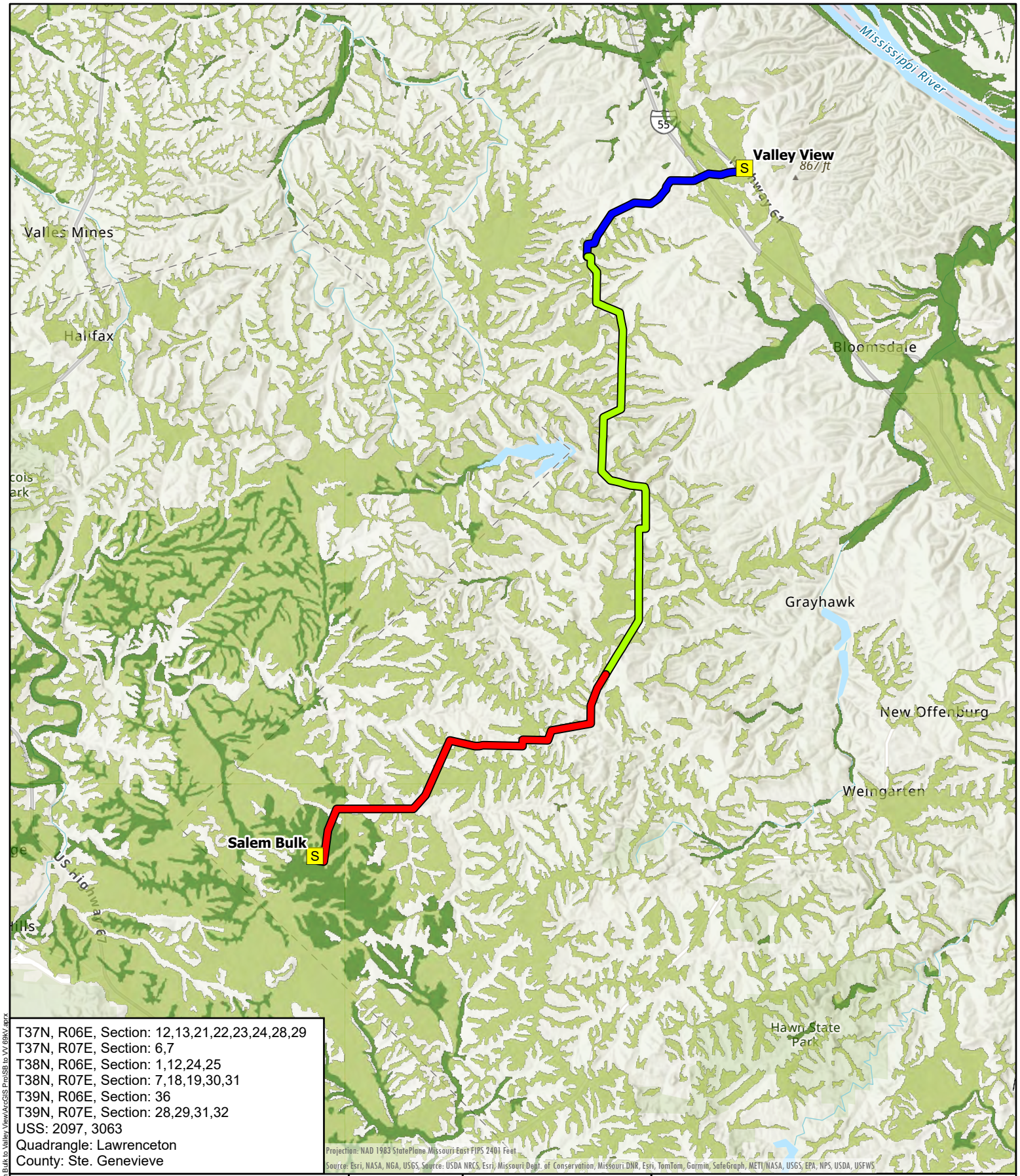
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2025 at 7:07 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



T37N, R06E, Section: 12,13,21,22,23,24,28,29
T37N, R07E, Section: 6,7
T38N, R06E, Section: 1,12,24,25
T38N, R07E, Section: 7,18,19,30,31
T39N, R06E, Section: 36
T39N, R07E, Section: 28,29,31,32
USS: 2097, 3063
Quadrangle: Lawrenceton
County: Ste. Genevieve

S Substation
Segment 1
Segment 2
Segment 3
Prime Farmland
Farmland of Local Importance
Farmland of Statewide Importance

GIS SERVICES PROVIDED BY
TOTH & ASSOCIATES
1550 E REPUBLIC RD
SPRINGFIELD, MO 65804
Ph. 417-888-0645
Fax: 417-888-0657
www.tothassociates.com

Citizens Electric Corporation
A Touchstone Energy® Cooperative

DISCLAIMER: This map is for illustrative purposes and should only be used as such.

Map by: babubakari
Date: 2/15/2025

CITIZENS ELECTRIC CORPORATION

PERRYVILLE, MISSOURI
MISSOURI 58, STE. GENEVIEVE

Salem Bulk - Valley View
69kV Transmission

SSURGO Farmland

0 15,000 Feet

K:\GIS_Projects\01_MO\58_Citizens\150_Salem Bulk to Valley View\ArcGIS Pro\SB to VV 69kV.aprx

United States Department of Agriculture

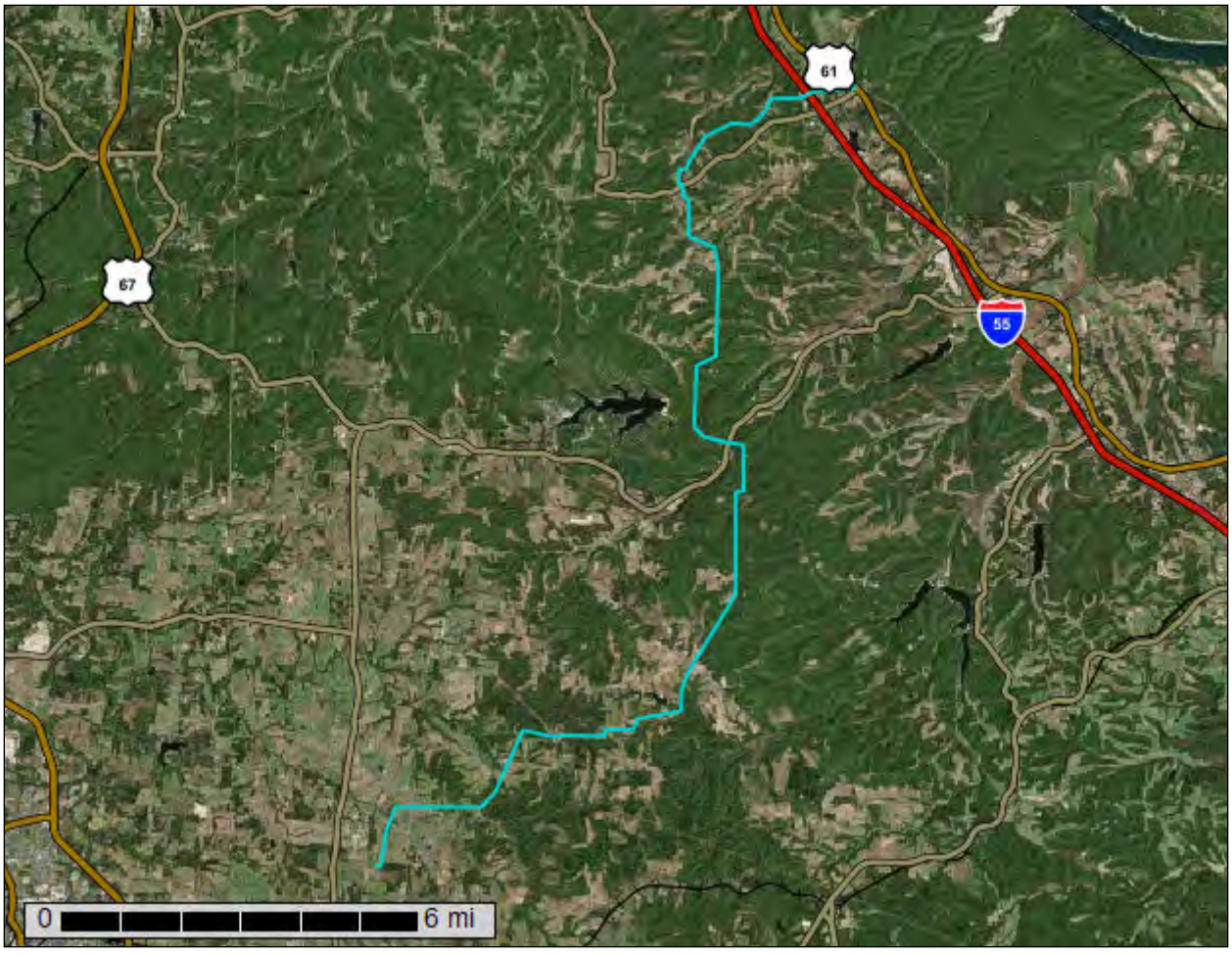
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Ste. Genevieve County, Missouri

Salem Bulk to Valley View 69kV T-Line



February 26, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....12
Ste. Genevieve County, Missouri.....14
60003—Menfro silt loam, 9 to 14 percent slopes, eroded.....14
60024—Menfro silt loam, 3 to 9 percent slopes, eroded.....15
60045—Minnith silt loam, 8 to 15 percent slopes, eroded.....16
73101—Wrengart silt loam, 5 to 9 percent slopes.....18
73147—Fourche silt loam, 3 to 8 percent slopes.....19
73148—Jonca silt loam, 3 to 8 percent slopes.....21
73204—Ramsey-Rock outcrop complex, 8 to 50 percent slopes.....22
73207—Caneyville silt loam, 3 to 8 percent slopes.....24
73208—Caneyville silt loam, 8 to 15 percent slopes.....26
73210—Goss very cobbly silt loam, 15 to 50 percent slopes, extremely stony.....27
73212—Gasconade-Rock outcrop complex, 15 to 50 percent slopes, rubbly.....29
73272—Hildebrecht silt loam, 3 to 8 percent slopes.....31
73380—Caneyville silt loam, 15 to 20 percent slopes, stony.....33
73423—Fourche silt loam, 1 to 3 percent slopes.....34
73445—Gerald silt loam, 1 to 4 percent slopes.....36
73456—Hildebrecht silt loam, 8 to 15 percent slopes.....38
73459—Lamotte silt loam, 3 to 8 percent slopes.....39
73460—Lamotte silt loam, 8 to 15 percent slopes.....41
73469—Lily loam, 8 to 15 percent slopes.....42
73579—Wilderness gravelly silt loam, 15 to 30 percent slopes.....44
73977—Wrengart silt loam, 8 to 15 percent slopes, eroded.....45
75450—Bloomsdale silt loam, 0 to 3 percent slopes, frequently flooded.....47
76004—Bloomsdale silt loam, 1 to 3 percent slopes, frequently flooded.....48
76025—Midco very gravelly loam, 1 to 3 percent slopes, frequently flooded.....50
76032—Midco gravelly loam, 1 to 3 percent slopes, frequently flooded.....51
References.....54

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

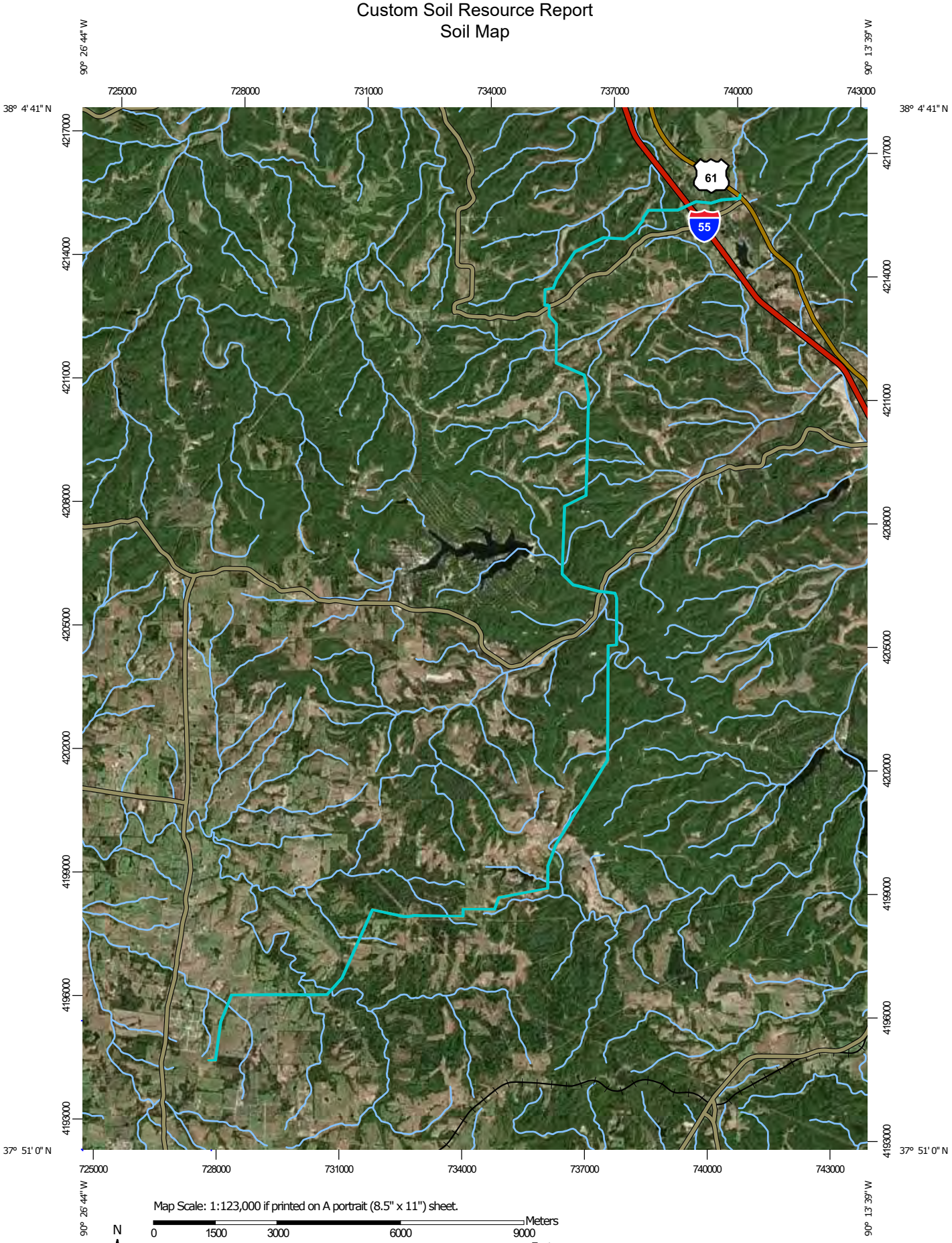
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:123,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 1500 3000 6000 9000

Feet
0 5000 10000 20000 30000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ste. Genevieve County, Missouri
Survey Area Data: Version 6, Aug 27, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 16, 2020—Aug 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
60003	Menfro silt loam, 9 to 14 percent slopes, eroded	3.1	1.2%
60024	Menfro silt loam, 3 to 9 percent slopes, eroded	0.8	0.3%
60045	Minnith silt loam, 8 to 15 percent slopes, eroded	3.0	1.2%
73101	Wrengart silt loam, 5 to 9 percent slopes	1.1	0.4%
73147	Fourche silt loam, 3 to 8 percent slopes	4.8	1.9%
73148	Jonca silt loam, 3 to 8 percent slopes	27.2	10.5%
73204	Ramsey-Rock outcrop complex, 8 to 50 percent slopes	13.8	5.3%
73207	Caneyville silt loam, 3 to 8 percent slopes	3.2	1.2%
73208	Caneyville silt loam, 8 to 15 percent slopes	5.0	2.0%
73210	Goss very cobbly silt loam, 15 to 50 percent slopes, extremely stony	68.9	26.7%
73212	Gasconade-Rock outcrop complex, 15 to 50 percent slopes, rubbly	12.7	4.9%
73272	Hildebrecht silt loam, 3 to 8 percent slopes	19.7	7.7%
73380	Caneyville silt loam, 15 to 20 percent slopes, stony	2.0	0.8%
73423	Fourche silt loam, 1 to 3 percent slopes	7.8	3.0%
73445	Gerald silt loam, 1 to 4 percent slopes	7.0	2.7%
73456	Hildebrecht silt loam, 8 to 15 percent slopes	31.5	12.2%
73459	Lamotte silt loam, 3 to 8 percent slopes	2.3	0.9%
73460	Lamotte silt loam, 8 to 15 percent slopes	3.1	1.2%
73469	Lily loam, 8 to 15 percent slopes	24.3	9.4%
73579	Wilderness gravelly silt loam, 15 to 30 percent slopes	0.7	0.3%
73977	Wrengart silt loam, 8 to 15 percent slopes, eroded	11.3	4.4%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
75450	Bloomsdale silt loam, 0 to 3 percent slopes, frequently flooded	1.3	0.5%
76004	Bloomsdale silt loam, 1 to 3 percent slopes, frequently flooded	1.0	0.4%
76025	Midco very gravelly loam, 1 to 3 percent slopes, frequently flooded	0.6	0.2%
76032	Midco gravelly loam, 1 to 3 percent slopes, frequently flooded	1.4	0.5%
Totals for Area of Interest		**257.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Ste. Genevieve County, Missouri

60003—Menfro silt loam, 9 to 14 percent slopes, eroded

Map Unit Setting

National map unit symbol: 31hhh
Elevation: 390 to 820 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Menfro and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Menfro

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

Ap - 0 to 10 inches: silt loam
Bt1 - 10 to 33 inches: silty clay loam
Bt2 - 33 to 79 inches: silty clay loam

Properties and qualities

Slope: 9 to 14 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F115XB001MO - Deep Loess Upland Woodland
Hydric soil rating: No

Minor Components

Winfield

Percent of map unit: 10 percent
Landform: Hillslopes, ridges

Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB001MO - Deep Loess Upland Woodland
Hydric soil rating: No

60024—Menfro silt loam, 3 to 9 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2qp0s
Elevation: 360 to 900 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 184 to 228 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Menfro and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Menfro

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

Ap - 0 to 7 inches: silt loam
BE - 7 to 11 inches: silt loam
Bt1 - 11 to 33 inches: silty clay loam
Bt2 - 33 to 60 inches: silty clay loam

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F115XB001MO - Deep Loess Upland Woodland
Hydric soil rating: No

Minor Components

Winfield

Percent of map unit: 10 percent
Landform: Ridges, hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB003MO - Deep Loess Protected Backslope Forest, F115XB043MO - Deep Loess Exposed Backslope Woodland
Hydric soil rating: No

Weller

Percent of map unit: 5 percent
Landform: Hillslopes, interfluves
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Ecological site: F115XB001MO - Deep Loess Upland Woodland
Hydric soil rating: No

60045—Minnith silt loam, 8 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2qp17
Elevation: 500 to 950 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 184 to 228 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Minnith and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Minnith

Setting

Landform: Hillslopes, ridges
Landform position (two-dimensional): Backslope, summit

Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over residuum weathered from sandstone

Typical profile

Ap - 0 to 5 inches: silt loam
Bt1 - 5 to 35 inches: silty clay loam
2Bt2 - 35 to 80 inches: loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F115XB005MO - Loamy Upland Woodland
Hydric soil rating: No

Minor Components

Holstein

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F115XB005MO - Loamy Upland Woodland
Hydric soil rating: No

Pevely

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB016MO - Sandstone Upland Woodland
Hydric soil rating: No

73101—Wrengart silt loam, 5 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2qphc
Elevation: 360 to 1,020 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 184 to 228 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wrengart and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wrengart

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over pedisediment over residuum weathered from dolomite

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 36 inches: silty clay loam
2Btx - 36 to 61 inches: silty clay loam
3Bt - 61 to 80 inches: gravelly silty clay

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: 20 to 40 inches to undefined
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F115XB005MO - Loamy Upland Woodland
Hydric soil rating: No

Minor Components

Gravois

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY008MO - Loamy Upland Woodland
Hydric soil rating: No

Gatewood

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY044MO - Chert Dolomite Upland Woodland
Hydric soil rating: No

73147—Fourche silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2vxqj
Elevation: 1,000 to 1,300 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Fourche and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fourche

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess over residuum weathered from dolomite

Typical profile

Ap - 0 to 6 inches: silt loam
Bt1 - 6 to 30 inches: silty clay loam

Bt/E - 30 to 54 inches: silty clay loam
2Bt2 - 54 to 79 inches: clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: F116AY032MO - Loamy Footslope Forest
Hydric soil rating: No

Minor Components

Hildebrecht

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

Higdon

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F116AY033MO - Wet Footslope Forest
Hydric soil rating: No

Crider

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY032MO - Loamy Footslope Forest
Hydric soil rating: No

73148—Jonca silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2vxqk
Elevation: 800 to 1,200 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Jonca and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jonca

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over pedisediment over residuum weathered from sandstone

Typical profile

Ap - 0 to 5 inches: silt loam
E - 5 to 12 inches: silt loam
Bt1 - 12 to 32 inches: silty clay loam
2Btx - 32 to 52 inches: loam
3Bt2 - 52 to 62 inches: sandy loam
3R - 62 to 79 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 24 to 38 inches to fragipan; 60 to 79 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 24 to 38 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

Minor Components

Lily

Percent of map unit: 6 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY023MO - Low-Base Sandstone Upland Woodland
Hydric soil rating: No

Pevely

Percent of map unit: 3 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB016MO - Sandstone Upland Woodland
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Unranked

73204—Ramsey-Rock outcrop complex, 8 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2vxr0
Elevation: 600 to 900 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Ramsey and similar soils: 60 percent
Rock outcrop: 25 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramsey

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: fine sandy loam
E - 3 to 7 inches: fine sandy loam
Bw - 7 to 17 inches: fine sandy loam
R - 17 to 79 inches: bedrock

Properties and qualities

Slope: 8 to 50 percent
Depth to restrictive feature: 4 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R116AY027MO - Shallow Sandstone Upland Glade/Woodland
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Properties and qualities

Slope: 8 to 50 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

Minor Components

Jonca

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

Lily

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY023MO - Low-Base Sandstone Upland Woodland
Hydric soil rating: No

73207—Caneyville silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2vxr1
Elevation: 350 to 2,500 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Caneyville and similar soils: 81 percent
Minor components: 19 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Caneyville

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over residuum weathered from dolomite

Typical profile

Ap - 0 to 4 inches: silt loam

2Bt1 - 4 to 11 inches: silty clay
2Bt2 - 11 to 32 inches: silty clay
2R - 32 to 79 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: F116AY018MO - Loamy Dolomite Upland Woodland
Hydric soil rating: No

Minor Components

Bucklick

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY030MO - Loamy Protected Backslope Forest, F116AY046MO - Loamy Exposed Backslope Woodland
Hydric soil rating: No

Crider

Percent of map unit: 8 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY032MO - Loamy Footslope Forest
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Hills, interfluves
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Unranked

73208—Caneyville silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2vxr2
Elevation: 400 to 700 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Caneyville and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Caneyville

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from dolomite

Typical profile

Ap - 0 to 8 inches: silt loam
2Bt1 - 8 to 18 inches: clay
2Bt2 - 18 to 34 inches: clay
2R - 34 to 79 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: F116AY018MO - Loamy Dolomite Upland Woodland
Hydric soil rating: No

Minor Components

Bucklick

Percent of map unit: 9 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY030MO - Loamy Protected Backslope Forest, F116AY046MO - Loamy Exposed Backslope Woodland
Hydric soil rating: No

Crider

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY032MO - Loamy Footslope Forest
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Hills, hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Unranked

73210—Goss very cobbly silt loam, 15 to 50 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2vxws
Elevation: 800 to 1,200 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Goss and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Goss

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium over residuum weathered from dolomite

Typical profile

A - 0 to 3 inches: very cobbly silt loam
E - 3 to 9 inches: very gravelly silt loam
2Bt - 9 to 79 inches: very cobbly clay

Properties and qualities

Slope: 15 to 50 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F116AY002MO - Chert Protected Backslope Forest, F116AY062MO - Chert Exposed Backslope Woodland
Hydric soil rating: No

Minor Components

Rueter

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY002MO - Chert Protected Backslope Forest, F116AY062MO - Chert Exposed Backslope Woodland
Hydric soil rating: No

Alred

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex

Across-slope shape: Convex
Ecological site: F116AY002MO - Chert Protected Backslope Forest, F116AY062MO - Chert Exposed Backslope Woodland
Hydric soil rating: No

Gatewood

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F116AY016MO - Chert Dolomite Protected Backslope Forest, F116AY048MO - Chert Dolomite Exposed Backslope Woodland
Hydric soil rating: No

Gepp

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY011MO - Chert Upland Woodland
Hydric soil rating: No

73212—Gasconade-Rock outcrop complex, 15 to 50 percent slopes, rubbly

Map Unit Setting

National map unit symbol: 2q0qx
Elevation: 360 to 1,020 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Gasconade and similar soils: 60 percent
Rock outcrop: 28 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gasconade

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex

Across-slope shape: Linear
Parent material: Residuum weathered from limestone

Typical profile

A - 0 to 10 inches: very channery silty clay
Bw - 10 to 13 inches: channery silty clay
R - 13 to 80 inches: bedrock

Properties and qualities

Slope: 15 to 50 percent
Surface area covered with cobbles, stones or boulders: 35.0 percent
Depth to restrictive feature: 4 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R115XB009MO - Shallow Limestone/Dolomite Upland Glade/ Woodland
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes
Parent material: Limestone

Typical profile

R - 0 to 80 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Caneyville

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest

Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY018MO - Loamy Dolomite Upland Woodland
Hydric soil rating: No

Sonsac

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY016MO - Chert Dolomite Protected Backslope Forest, F116AY048MO - Chert Dolomite Exposed Backslope Woodland
Hydric soil rating: No

Menfro

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB001MO - Deep Loess Upland Woodland
Hydric soil rating: No

73272—Hildebrecht silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2vxrf
Elevation: 700 to 1,300 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hildebrecht and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hildebrecht

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Loess over pedisediment over residuum weathered from dolomite

Typical profile

Ap - 0 to 4 inches: silt loam
E - 4 to 9 inches: silt loam
Bt1 - 9 to 26 inches: silty clay loam
2Btx - 26 to 40 inches: very gravelly silt loam
3Bt2 - 40 to 79 inches: gravelly clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 24 to 36 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

Minor Components

Wrengart

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F116AY008MO - Loamy Upland Woodland
Hydric soil rating: No

Rueter

Percent of map unit: 3 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY002MO - Chert Protected Backslope Forest, F116AY062MO - Chert Exposed Backslope Woodland
Hydric soil rating: No

Wilderness

Percent of map unit: 2 percent
Landform: Interfluves
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve

Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F116AY012MO - Low-Base Chert Upland Woodland
Hydric soil rating: No

73380—Caneyville silt loam, 15 to 20 percent slopes, stony

Map Unit Setting

National map unit symbol: 2vxsh
Elevation: 350 to 2,500 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Caneyville and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Caneyville

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from dolomite

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: silt loam
2Bt1 - 4 to 11 inches: silty clay
2Bt2 - 11 to 34 inches: silty clay
2R - 34 to 79 inches: bedrock

Properties and qualities

Slope: 15 to 20 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F116AY019MO - Loamy Dolomite Protected Backslope Forest, F116AY051MO - Loamy Dolomite Exposed Backslope Woodland
Hydric soil rating: No

Minor Components

Bucklick

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY030MO - Loamy Protected Backslope Forest, F116AY046MO - Loamy Exposed Backslope Woodland
Hydric soil rating: No

Crider

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY032MO - Loamy Footslope Forest
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Unranked

73423—Fourche silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2vxt5
Elevation: 950 to 1,050 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Fourche and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fourche

Setting

Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over residuum weathered from dolomite

Typical profile

Ap - 0 to 6 inches: silt loam
Bt1 - 6 to 30 inches: silty clay loam
Bt/E - 30 to 54 inches: silty clay loam
2Bt2 - 54 to 79 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Ecological site: F116AY032MO - Loamy Footslope Forest
Hydric soil rating: No

Minor Components

Hildebrecht

Percent of map unit: 4 percent
Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

Higdon

Percent of map unit: 3 percent
Landform: Divides

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F116AY033MO - Wet Footslope Forest
Hydric soil rating: No

Crider

Percent of map unit: 3 percent
Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY032MO - Loamy Footslope Forest
Hydric soil rating: No

73445—Gerald silt loam, 1 to 4 percent slopes

Map Unit Setting

National map unit symbol: 2vxt6
Elevation: 800 to 1,300 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Gerald and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gerald

Setting

Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loess over pedisediment over residuum weathered from dolomite

Typical profile

Ap - 0 to 11 inches: silt loam
E - 11 to 16 inches: silt loam
Bt1 - 16 to 33 inches: silty clay
2Btx - 33 to 49 inches: gravelly silty clay loam
3Bt2 - 49 to 79 inches: clay

Properties and qualities

Slope: 1 to 4 percent

Depth to restrictive feature: 20 to 40 inches to fragipan
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R116AY001MO - Claypan Summit Prairie
Hydric soil rating: No

Minor Components

Tonti

Percent of map unit: 5 percent
Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

Scholten

Percent of map unit: 3 percent
Landform: Divides
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY012MO - Low-Base Chert Upland Woodland
Hydric soil rating: No

Viburnum

Percent of map unit: 2 percent
Landform: Divides
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY007MO - Low-Base Loamy Upland Woodland
Hydric soil rating: No

73456—Hildebrecht silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2vxt7
Elevation: 700 to 1,300 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hildebrecht and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hildebrecht

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loess over pedisediment over residuum weathered from dolomite

Typical profile

Ap - 0 to 4 inches: silt loam
E - 4 to 9 inches: silt loam
Bt1 - 9 to 26 inches: silty clay loam
2Btx - 26 to 40 inches: very gravelly silt loam
3Bt2 - 40 to 79 inches: gravelly clay

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 24 to 35 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 24 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: F116AY004MO - Fragipan Upland Woodland

Hydric soil rating: No

Minor Components

Rueter

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY002MO - Chert Protected Backslope Forest, F116AY062MO - Chert Exposed Backslope Woodland
Hydric soil rating: No

Wrengart

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F116AY008MO - Loamy Upland Woodland
Hydric soil rating: No

Wilderness

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F116AY012MO - Low-Base Chert Upland Woodland
Hydric soil rating: No

73459—Lamotte silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2q24r
Elevation: 600 to 1,200 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 170 to 232 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lamotte and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lamotte

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loess over residuum weathered from sandstone

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 12 inches: silt loam
2Bt - 12 to 57 inches: clay loam
2C - 57 to 66 inches: sandy clay loam
2R - 66 to 79 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 59 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F116AY008MO - Loamy Upland Woodland
Hydric soil rating: No

Minor Components

Lily

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY023MO - Low-Base Sandstone Upland Woodland
Hydric soil rating: No

Jonca

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex

Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

73460—Lamotte silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2vxtb
Elevation: 800 to 1,200 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Lamotte and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lamotte

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loess over residuum weathered from sandstone

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 12 inches: silt loam
2Bt - 12 to 57 inches: clay loam
2C - 57 to 66 inches: sandy clay loam
2R - 66 to 79 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 59 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: B
Ecological site: F116AY008MO - Loamy Upland Woodland
Hydric soil rating: No

Minor Components

Lily
Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY023MO - Low-Base Sandstone Upland Woodland
Hydric soil rating: No

Jonca
Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

Pevely
Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB016MO - Sandstone Upland Woodland
Hydric soil rating: No

73469—Lily loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2vxtc
Elevation: 700 to 950 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition
Lily and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lily

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

Ap - 0 to 3 inches: loam
Bt1 - 3 to 10 inches: loam
Bt2 - 10 to 24 inches: channery loam
R - 24 to 79 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: F116AY023MO - Low-Base Sandstone Upland Woodland
Hydric soil rating: No

Minor Components

Jonca

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

Ramsey

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Concave
Ecological site: R116AY027MO - Shallow Sandstone Upland Glade/Woodland

Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Unranked

73579—Wilderness gravelly silt loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2vxtt
Elevation: 900 to 1,200 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Wilderness and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wilderness

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium over pedisediment over residuum weathered from dolomite

Typical profile

A - 0 to 6 inches: gravelly silt loam
E - 6 to 11 inches: gravelly silt loam
Bt1 - 11 to 25 inches: extremely gravelly silt loam
2Btx - 25 to 32 inches: very gravelly silt loam
3Bt2 - 32 to 79 inches: gravelly clay

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 15 to 29 inches to fragipan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C/D
Ecological site: F116AY013MO - Low-Base Chert Protected Backslope Woodland, F116AY049MO - Low-Base Chert Exposed Backslope Woodland
Hydric soil rating: No

Minor Components

Viraton

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY004MO - Fragipan Upland Woodland
Hydric soil rating: No

Rueter

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY002MO - Chert Protected Backslope Forest, F116AY062MO - Chert Exposed Backslope Woodland
Hydric soil rating: No

73977—Wrengart silt loam, 8 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2tbr3
Elevation: 350 to 1,200 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Wrengart and similar soils: 90 percent
Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wrengart

Setting

Landform: Ridges, hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over pedisediment over residuum weathered from cherty limestone

Typical profile

A - 0 to 4 inches: silt loam
E - 4 to 7 inches: silt loam
Bt - 7 to 29 inches: silty clay loam
2Btx - 29 to 41 inches: silty clay loam
3Bt - 41 to 79 inches: cobbly silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 24 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F115XB005MO - Loamy Upland Woodland
Hydric soil rating: No

Minor Components

Goss

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F115XB013MO - Chert Upland Woodland
Hydric soil rating: No

Gatewood

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear

Across-slope shape: Convex
Ecological site: F115XB014MO - Chert Limestone/Dolomite Protected Backslope Forest, F115XB046MO - Chert Limestone/Dolomite Exposed Backslope Woodland
Hydric soil rating: No

75450—Bloomsdale silt loam, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2q29f
Elevation: 200 to 1,050 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Bloomsdale and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bloomsdale

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium over gravelly alluvium over clayey alluvium

Typical profile

A - 0 to 20 inches: silt loam
Bt1 - 20 to 32 inches: very gravelly clay loam
2Bt2 - 32 to 79 inches: extremely gravelly clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C
Ecological site: F116AY042MO - Sandy/Gravelly Floodplain Forest
Hydric soil rating: No

Minor Components

Haymond
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F115XB031MO - Loamy Floodplain Forest
Hydric soil rating: No

Gladden
Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F116AY037MO - Gravelly/Loamy Upland Drainageway Forest
Hydric soil rating: No

Waben
Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY031MO - Dry Footslope Forest
Hydric soil rating: No

Higdon
Percent of map unit: 2 percent
Landform: Divides
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F116AY033MO - Wet Footslope Forest
Hydric soil rating: No

76004—Bloomsdale silt loam, 1 to 3 percent slopes, frequently flooded

Map Unit Setting
National map unit symbol: 2phqp
Elevation: 300 to 550 feet

Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Bloomsdale and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bloomsdale

Setting

Landform: Drainageways, flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium over gravelly alluvium over clayey alluvium

Typical profile

A - 0 to 20 inches: silt loam
Bt1 - 20 to 32 inches: very gravelly clay loam
2Bt2 - 32 to 79 inches: extremely gravelly clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Ecological site: F116AY037MO - Gravelly/Loamy Upland Drainageway Forest
Hydric soil rating: No

Minor Components

Bloomsdale

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F116AY037MO - Gravelly/Loamy Upland Drainageway Forest
Hydric soil rating: No

76025—Midco very gravelly loam, 1 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2t7gv
Elevation: 330 to 1,300 feet
Mean annual precipitation: 38 to 48 inches
Mean annual air temperature: 55 to 59 degrees F
Frost-free period: 160 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Midco and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Midco

Setting

Landform: Drainageways
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

A - 0 to 5 inches: very gravelly loam
C1 - 5 to 40 inches: very gravelly coarse sandy loam
C2 - 40 to 79 inches: stratified extremely gravelly loamy coarse sand to very gravelly coarse sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A
Ecological site: F116AY037MO - Gravelly/Loamy Upland Drainageway Forest
Hydric soil rating: No

Minor Components

Batcave

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Convex
Ecological site: F116AY036MO - Wet Upland Drainageway Forest
Hydric soil rating: No

Secesh

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F116AY034MO - Loamy Terrace Forest
Hydric soil rating: No

Tilk

Percent of map unit: 5 percent
Landform: Drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F116AY042MO - Sandy/Gravelly Floodplain Forest
Hydric soil rating: No

76032—Midco gravelly loam, 1 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2t7h1
Elevation: 500 to 900 feet
Mean annual precipitation: 39 to 49 inches
Mean annual air temperature: 54 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Midco and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Midco

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

A - 0 to 5 inches: gravelly loam
C1 - 5 to 40 inches: very gravelly coarse sandy loam
C2 - 40 to 79 inches: stratified extremely gravelly loamy coarse sand to very gravelly coarse sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 49 to 79 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Ecological site: F116AY037MO - Gravelly/Loamy Upland Drainageway Forest
Hydric soil rating: No

Minor Components

Relfe

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F116AY042MO - Sandy/Gravelly Floodplain Forest
Hydric soil rating: No

Tilk

Percent of map unit: 3 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F116AY042MO - Sandy/Gravelly Floodplain Forest
Hydric soil rating: No

Secesh

Percent of map unit: 2 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Ecological site: F116AY034MO - Loamy Terrace Forest
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

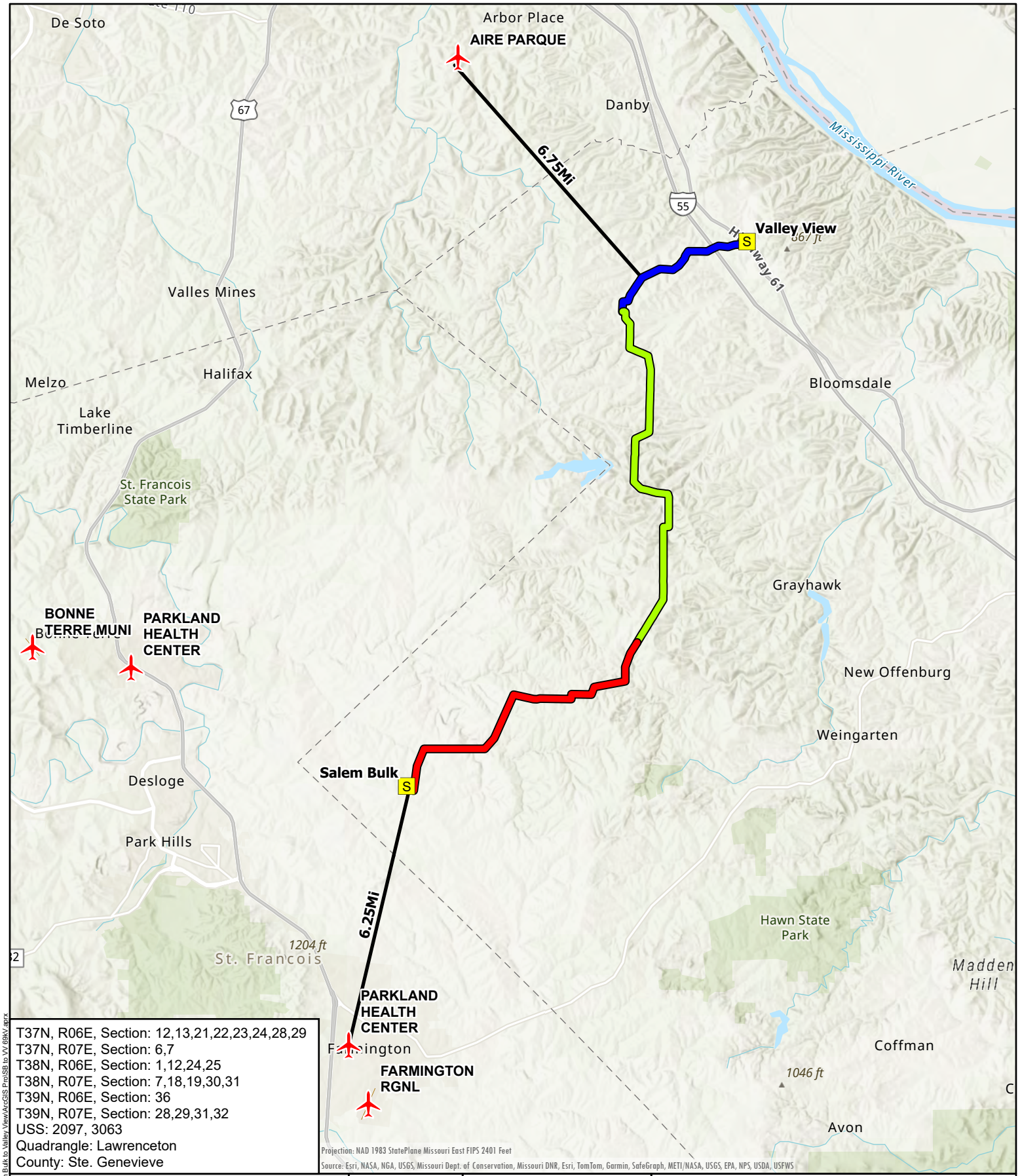
United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf



TOTH & ASSOCIATES
GIS SERVICES PROVIDED BY
1550 E REPUBLIC RD
SPRINGFIELD, MO 65804
Ph. 417-888-0645
Fax: 417-888-0657
www.tothassociates.com

Citizens Electric Corporation
A Touchstone Energy® Cooperative

DISCLAIMER: This map is for illustrative purposes and should only be used as such.

Map by: babubakari
Date: 2/15/2025

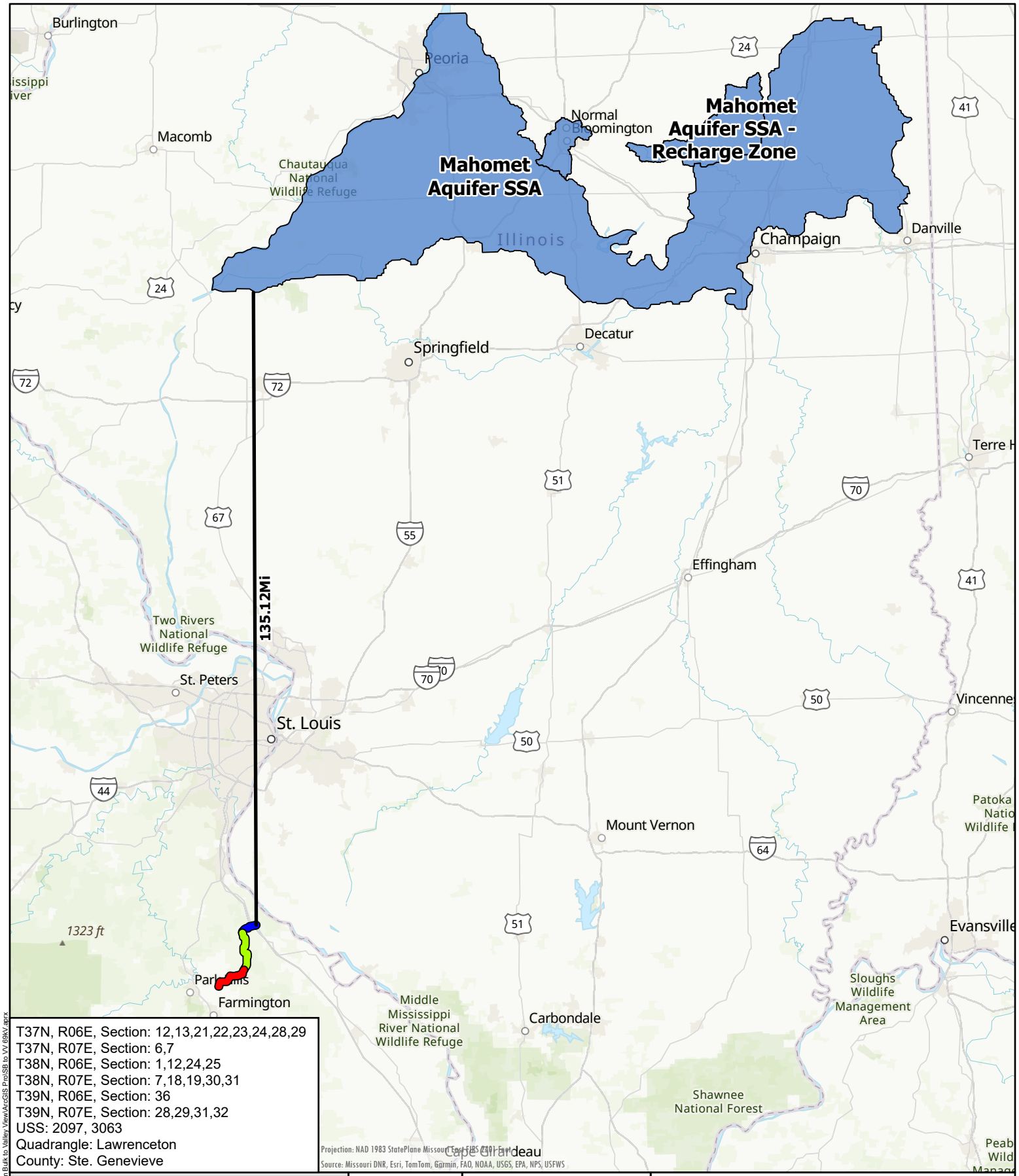
CITIZENS ELECTRIC CORPORATION

PERRYVILLE, MISSOURI
MISSOURI 58, STE. GENEVIEVE

Salem Bulk - Valley View
69kV Transmission

Airport Proximity

0 15,000 Feet



T37N, R06E, Section: 12,13,21,22,23,24,28,29
T37N, R07E, Section: 6,7
T38N, R06E, Section: 1,12,24,25
T38N, R07E, Section: 7,18,19,30,31
T39N, R06E, Section: 36
T39N, R07E, Section: 28,29,31,32
USS: 2097, 3063
Quadrangle: Lawrenceton
County: Ste. Genevieve

- Segment 1
- Segment 2
- Segment 3
- Distance
- EPA Sole Source Aquifer (2019)

TOTH & ASSOCIATES
GIS SERVICES PROVIDED BY
1550 E REPUBLIC RD
SPRINGFIELD, MO 65804
Ph. 417-888-0645
Fax: 417-888-0657
www.tothassociates.com

Citizens Electric Corporation
A Touchstone Energy® Cooperative

CITIZENS ELECTRIC CORPORATION

PERRYVILLE, MISSOURI
MISSOURI 58, STE. GENEVIEVE

DISCLAIMER: This map is for illustrative purposes and should only be used as such.

Salem Bulk - Valley View
69kV Transmission

Map by: babubakari
Date: 2/15/2025

Sole Source Aquifer

0 120,000 Feet

K:\GIS_Projects\01_MO\58_Citizens\150_Salem Bulk to Valley View\ArcGIS Pro\SB to VV 69kV.aprx

Tribal Directory Assessment Information

Contact Information for Tribes with Interests in Ste. Genevieve County, Missouri

	Tribal Name	County Name
−	Apache Tribe of Oklahoma	Ste. Genevieve

Contact Name	Title	Mailing Address	Work Phone	Fax Number	Email Address	URL
Matthew Tselee	Chairman	PO Box 1330, Anadarko, OK - 73005	(405) 247-9493	(405) 247-2763	matthew.tselee@apachetribe.org	http://www.apachetribe.org/

	Tribal Name	County Name
−	Delaware Nation, Oklahoma	Ste. Genevieve

Contact Name	Title	Mailing Address	Work Phone	Fax Number	Email Address	URL
Deborah Dotson	President	31064 State Highway 281, Building 100, Anadarko, OK - 73005	(405) 247-2448	(405) 247-9393	ddotson@delawarenation-nsn.gov	www.delawarenation.com
Katelyn Lucas	THPO	P.O. Box 825, Anadarko, OK - 73005	405-544-8115		klucas@delawarenation-nsn.gov	www.delawarenation.com

	Tribal Name	County Name
−	Delaware Tribe of Indians	Ste. Genevieve

Contact Name	Title	Mailing Address	Work Phone	Fax Number	Email Address	URL
Susan Bachor	THPO	5100 Tuxedo Blvd, Bartlesville, OK - 64006	539.529.1671	(435) 734-0424	sbachor@delawaretribe.org	
Larry Heady	THPO	125 Dorry Lane, Grants Pass Oregon, OR - 97527	262-825-7586		lheady@delawaretribe.org	www.delawaretribe.org
Brad Killscrow	Chief	5100 Tuxedo Blvd., Bartlesville, OK - 74006	(918) 337-6590	(918) 337-6591	bkillscrow@delawaretribe.org	www.delawaretribe.org

	Tribal Name	County Name
−	Miami Tribe of Oklahoma	Ste. Genevieve

Contact Name	Title	Mailing Address	Work Phone	Fax Number	Email Address	URL
Douglas Lankford	Chief	3410 P St., Miami, OK - 74354	(918) 541-1300	(918) 542-7260	thpo@miamination.com	http://www.miamination.com
Logan York	THPO	P.O. Box 1326, Miami, OK - 74355	918-541-7885		thpo@miamination.com	http://www.miamination.com

− Osage Nation — Ste. Genevieve

Contact Name	Title	Mailing Address	Work Phone	Fax Number	Email Address	URL
Andrea A. Hunter	Director and THPO	N/A, Pawhuska, OK - 74056	(918) 287-5328	(918) 287-5376	s106@osagenation-nsn.gov	https://www.osageculture.com/culture/historic-preservation-office

− Peoria Tribe of Indians of Oklahoma — Ste. Genevieve

Contact Name	Title	Mailing Address	Work Phone	Fax Number	Email Address	URL
Burgundy Fletcher	THPO	1181915 Cleveland Ave, Miami, OK - 74355	(918) 540-2535 Ext.9234	(918) 540-2538	bfletcher@peoriatribe.com	http://www.peoriatribe.com
Craig Harper	Chief	118 South Eight Tribes Trail, Miami, OK - 74354	(918) 540-2535	(918) 540-2538	chiefharper@peoriatribe.com	http://www.peoriatribe.com

− Quapaw Nation — Ste. Genevieve

Contact Name	Title	Mailing Address	Work Phone	Fax Number	Email Address	URL
Billie Burtrum	THPO	P.O. Box 765, Quapaw, OK - 74363	918-238-3100	918-674-2456	bburtrum@quapawnation.com	http://www.quapawtribe.com
Wena Supernaw	Chair	5681 South 630 Road, Quapaw, OK - 74364	918-542-1853	918-542-4694	wena.supernaw@quapawnation.com	http://www.quapawtribe.com

− Seneca-Cayuga Nation — Ste. Genevieve

Contact Name	Title	Mailing Address	Work Phone	Fax Number	Email Address	URL
Charles Diebold	Chief	23701 South 655 Road, Grove, OK - 74344	(918) 787-5452	(918) 787-5452	cdiebold@sctribe.com	http://www.sctribe.com/
William Tarrant	THPO	P.O. Box 453220, Grove, OK - 74345	(918)-791-6061		wtarrant@sctribe.com	http://www.sctribe.com/

1 - 8 of 8 results « ‹ 1 › » 10

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.

Project information

NAME

MO-58 CEC Salem Bulk to Valley View 69kV Transmission Line

LOCATION

Ste. Genevieve County, Missouri

DESCRIPTION

Some(Transmission line to be constructed in 2025.)

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. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. 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 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

Amphibians

NAME	STATUS
Eastern Hellbender Cryptobranchus alleganiensis alleganiensis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9039	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

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 [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

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 avoidance and minimization 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 Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

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.	Breeds Sep 1 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.

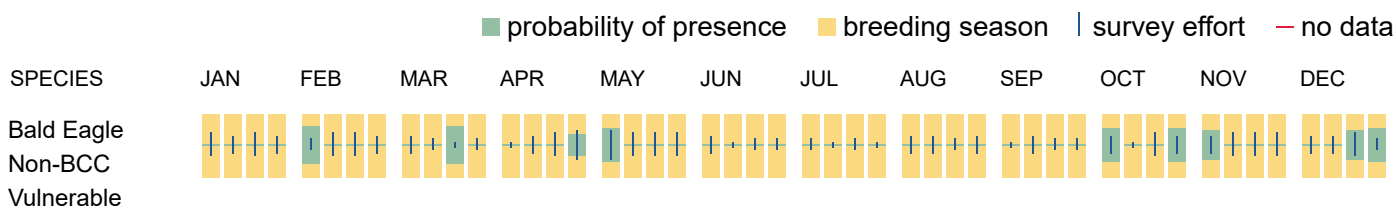
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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.



Bald & Golden Eagles FAQs

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 an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). 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 line or no data line (red horizontal) 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 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 and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are 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 resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), 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.

Interpreting the Probability of Presence Graphs

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 taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
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.

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.

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.

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.

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.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

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 avoidance and minimization measures for birds
- 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

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

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.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
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.	Breeds Sep 1 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Cerulean Warbler Setophaga cerulea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 21 to Jul 20
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

Eastern Whip-poor-will Antrostomus vociferus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Field Sparrow Spizella pusilla This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Aug 15
Grasshopper Sparrow Ammodramus savannarum perpallidus 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/8329	Breeds Jun 1 to Aug 20
Kentucky Warbler Geothlypis formosa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler Setophaga discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 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
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 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.

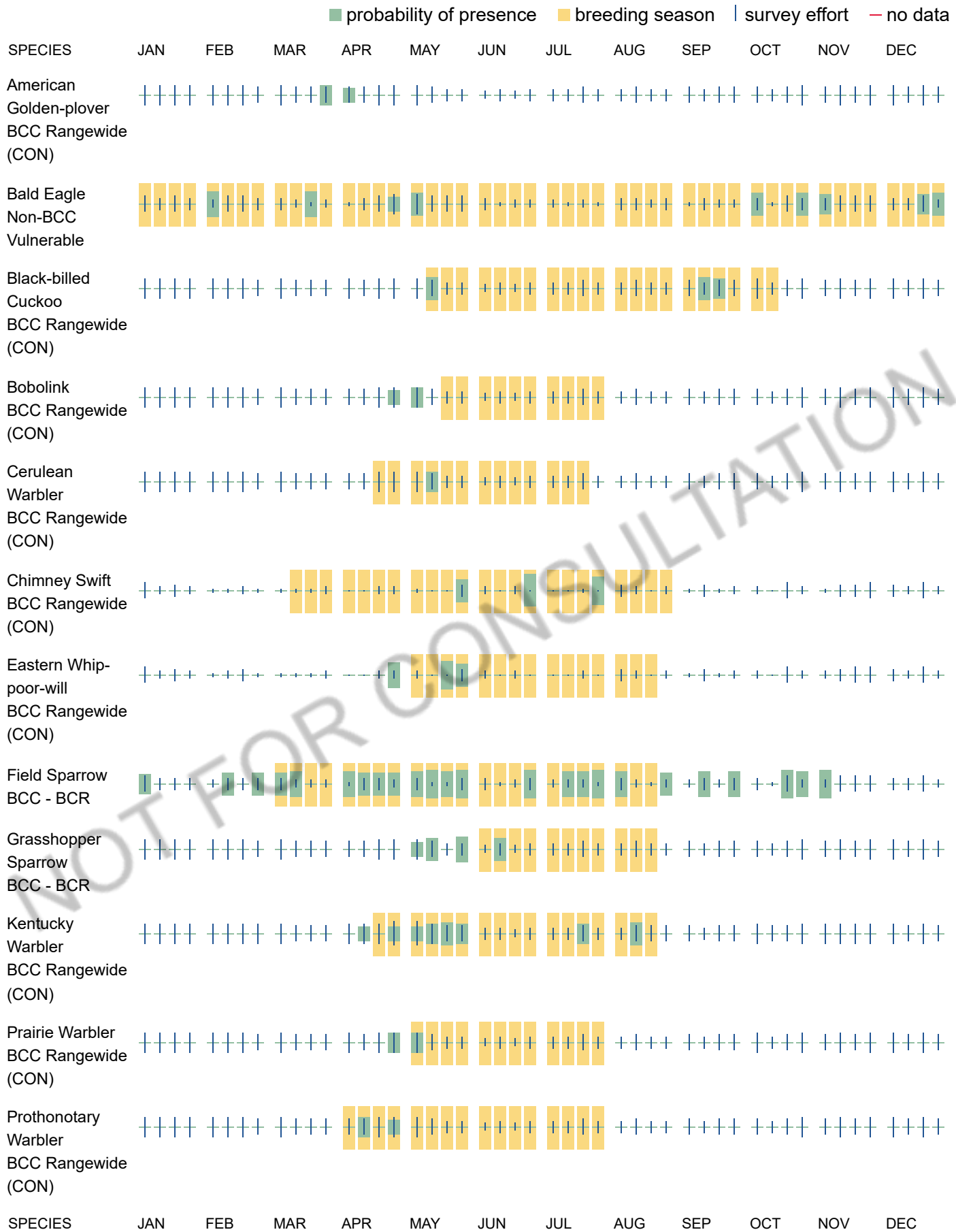
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

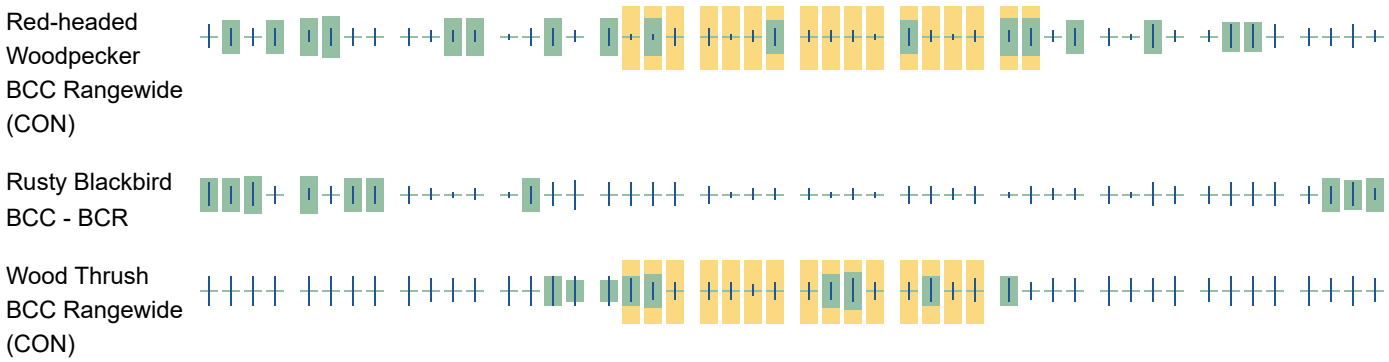
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

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.





Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed 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 Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

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) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection 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, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

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 to 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 resident), you may query your location using the RAIL Tool and view 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 IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), 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 Bald and Golden Eagle Protection 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 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 BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

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.

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 look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). 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 does not represent all birds present in your project area. 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 and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
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 taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
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.

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.

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.

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.

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.

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.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND
- PEM1Ch

FRESHWATER POND
- PUBGh

RIVERINE
- R2UBH
- R4SBC

R3UBG
R2USA

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

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.