state college area
CONNECTOR

PennDOT.gov/SCAC

Terrestrial Habitat Technical Memorandum

for the

State College Area Connector Planning and Environmental Linkage (PEL) Study

pennsylvania
DEPARTMENT OF TRANSPORTATION

U.S. Department of Transportation
Federal Highway Administration

MAY 20, 2021

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List of Acronyms

CNHI	County Natural Heritage Inventory
PA DEP	Pennsylvania Department of Environmental Protection
PA DCNR	Pennsylvania Department of Conservation and Natural Resources
GIS	Geographic Information System
I	Interstate
IBA	Important Bird Areas
NEPA	National Environmental Policy Act
NHCH	Natural Heritage Core Habitat
PA	Pennsylvania or Pennsylvania Route
PASDA	Pennsylvania Spatial Data Access
PEL	Planning and Environmental Linkage
PNHP	Pennsylvania Natural Heritage Program
SCAC	State College Area Connector

1.0 Introduction

The Planning and Environmental Linkage Study (PEL) for the State College Area Connector (SCAC) is intended to identify, evaluate, and recommend transportation improvements in the PEL Study Area for project delivery. The PEL process allows early planning-level decisions to be carried forward into future transportation projects so that National Environmental Policy Act (NEPA) requirements are connected and planning analyses and decisions are not revisited. To ensure that the PEL Study results can be used in future NEPA projects, the PEL investigations will meet standards established by NEPA regulations and guidance as well as use consistent NEPA terms (e.g. purpose and need, alternatives, affected environment, environmental consequences, etc.). The PEL Study Area is approximately 70 square miles, extends through the southern portion of Centre County, and includes all or parts of six municipalities: Centre Hall Borough and Potter, Spring, Harris, College, and Benner Townships (Figure 1). The study area includes key transportation routes that provide access to regional destinations and beyond via major transportation routes such as U.S. Route (U.S.) 322, Pennsylvania Route (PA) 144, PA 45, and Interstate 99 (I-99) which, in turn, provide access to nearby Interstate 80 (I-80). The initial data collection area is also shaped by the topography of the area. In general, the study area encompasses the southwestern portion of Penns Valley that extends between the Nittany Mountain to the north and the Seven Mountains area of the Tussey Mountain range to the south. The limits of the study area will be refined as the process advances.

This document is intended to identify the terrestrial habitat resource features of the PEL Study Area including, but not limited to; forest habitat resources, state forests, agricultural habitats, and mineral mining. This information will be used to identify and analyze terrestrial habitat resource impacts associated with proposed transportation improvement alternatives that may be developed during the PEL process.

2.0 Methods

Data was collected from secondary sources including online resources and mapping from the Pennsylvania Department of Environmental Protection (PA DEP), Pennsylvania Department of Conservation and Natural Resources (PA DCNR), Pennsylvania Spatial Data Access (PASDA), Pennsylvania Audubon, and the Pennsylvania Natural Heritage Program (PNHP). Review of the secondary source data, including review of Geographic Information Systems (GIS) mapping data acquired through the public data access within PASDA and PA DCNR websites, was completed to create map figures used in this report.

3.0 Results

The entirety of the PEL Study Area occurs in a predominantly rural, highly fragmented landscape located in Penns Valley between Nittany Mountain to the north and the Tussey Mountain range to the south. Larger tracts of forested habitat are located primarily in the Nittany Mountain range and the Tussey Mountain range in Rothrock State Forest to the south. Agriculture, both active and inactive, and rural residential/developments comprise the majority of the study area.

Terrestrial habitat resources for the study area were separated into several habitat components including; Forested/Wooded Habitat, Old Growth Forest, State Forest, Productive Agricultural Land, Quarries, Industrial Mineral Mining Operations, Karst areas, Important Birding Areas (IBAs), and Pennsylvania Natural Heritage Core Habitats (PNHCH).

3.1 Forested/Wooded Habitat

Terrestrial forest habitat (Figure 2) can be found throughout the study area in varying acreages ranging between larger open forest habitat to smaller woodlots and wooded fence rows located in highly fragmented agriculture and residential development landscapes. Larger tracts of forested/wooded habitat can be found at the northern half (Nittany Mountain) of the study area as well as two areas of Rothrock State Forest to the south including the Tussey Mountain range.

Approximately 18,887 acres of forested/wooded habitat is located within the study area. Individual components of the forested/wooded habitat were not able to be attained through GIS data. However, it can be assumed that deciduous, coniferous, and scrub/shrub lands are present in the forested/wooded areas of the study area.

3.2 State Forest Land Habitat

State forest land habitat (Figure 3) is present in the north and south of the study area. Bald Eagle State Forest is approximately 194,000 acres in total area and is present in the northern and southern portion of the study area and includes Mount Nittany. Approximate acreage of Bald Eagle State Forest present in the study area is 2,609 acres. Rothrock State Forest is approximately 97,000 acres in total area and is present in the southern portion of the study area. Approximate acreage of Rothrock State Forest present in the study area is 1,739 acres. Total state forest lands acreage in the PEL Study Area is approximately 4,348 acres. Both state forests contain numerous natural resources available for public recreational use. Trout streams, hiking and biking trails, and eight wild and natural areas are present in both the Bald Eagle State Forest and the Rothrock State Forest. Wild and Natural areas do not extend into the study area.

3.3 Old Growth Forest Habitat

Old growth forest habitat (Figure 4) is present in the northeast and southern portions of the study area. Old growth forest habitat is not defined exclusively by age. Depending on the frequency and intensity of disturbances and site conditions, old-growth forests will have different structures, species compositions, age distributions, and functional capacities than younger forests. Each old growth ecosystem is unique based on its biological and physical components and natural processes and human impacts acting upon it (http://elibrary.dcnr.pa.gov/). Old growth forest habitat acreage within the study area is estimated at approximately 1,347 acres. Old growth forest habitat was previously identified during the Route 322/144/45 Corridors Data Refresh Project.

3.4 Productive Agricultural Land

Productive agriculture land areas (Figure 5) are located throughout the study area. Productive agricultural land areas are important components for not only the production of crops and domesticated livestock, they also serve as habitats for wildlife such as white-tailed deer, game birds, reptiles, and amphibians. Productive agricultural land acreage within the study area is estimated at approximately 16,500 acres.

3.5 Quarry Operations and Industrial Mining Operations

Quarry operations (Figure 6) within the study area total approximately 354 acres. Active and inactive quarry sites have the potential to provide overwinter habitat for bat species. Bat hibernacula can exist in openings and voids created as a result of mining operations. Two quarry sites are present in the northeastern corner of the study area.

Industrial mining operations (Figure 6) are present in the study area totaling approximately 136 acres. Industrial mining operations are important in providing potential habitat for wildlife. Specifically, openings and voids that may be present can be used as potential bat hibernacula and summer roost habitat within active and inactive mineral mining sites.

3.6 Karst Geologic Areas

Karst geologic areas are present throughout much of the study area. Point locations for karst geologic areas can be seen in Figure 7. These point locations are known to possess karst geologic features such as sinkholes and natural caves that can potentially serve as overwinter bat hibernacula and provide a constant underground temperature through the year. Several species of bats in Pennsylvania utilize natural caves and mines for overwinter hibernacula habitat.

3.7 Important Bird Areas

IBAs are present within Rothrock State Forest which extends along the southern portion of the study area (Figure 8). Rothrock State Forest is a designated IBA and is located to the south and east of U.S. 322 in both Centre and Mifflin Counties. The Rothrock State Forest (part) and Stone Mountain IBA are approximately 89,736 acres in total acreage with a portion of the IBA falling within the study area. The portion of the Rothrock State Forest (part) and Stone Mountain IBA that falls within the study area is approximately 6,616 acres.

For more information on IBAs, visit the following links: https://www.birdlife.org/worldwide/programme-additional-info/important-bird-and-biodiversity-areas-ibas and https://www.audubon.org/important-bird-areas/rothrock-state-forest-part-stone-mountain.

3.8 Pennsylvania Natural Heritage Core Habitat

Pennsylvania Natural Heritage Core Habitat (NHCH) refers to areas containing plant or animal species of concern at the state or federal levels, exemplary natural communities, or exceptional native diversity. Core habitats delineate essential habitat that cannot absorb significant levels of activity without substantial impact to the elements of concern. These areas are prioritized based upon their ecological qualities and are provided with recommendations regarding their management and protection. Approximately 2,684 acres of NHCH was identified within the study area through County Natural Heritage Inventory surveys. NHCH types and locations are listed in Table 1. General locations of the resources are illustrated in Figure 9.

Table 1: Natural Heritage Core Habitat

Map ID	Resource Name	Resource Description
1	Gailbraith Gap Headwaters Seep	Extensive undisturbed mountain seepage wetland
2	Sinking Creek Wetland #2	Floodplain forest in riparian zone of Sinking Creek
3	Sinking Creek Wetland #3	Floodplain forest in riparian zone of Sinking Creek
4	Potter Run Tributary Wetland	Wetland along tributary to Potter Run
5	Sinking Creek Wetland #1	Mosaic of wetland communities along Sinking Creek including a Hemlock palustrine forest natural community
6	Potter Run Wetland	Several wetland communities along Potter Run
7	Boalsburg Road Hillside	Habitat for plant species of concern
8	Sharer Cave	Habitat for 3 species of concern
9	Greens Valley Road	Golden saxifrage forest seep natural community. Plant species of concern
10	Shingletown Gap	Hemlock forest natural community
11	Linden Hall Park	Habitat for plant species of concern
12	Millbrook Marsh	Fen community containing several plant species of concern
13	J-4 Cave	Habitat for species of concern

3.9 Additional Potential Habitat Concerns

Additional potential concerns that could arise through the preliminary engineering process include:

1. Pollinator Habitat: Pollinator habitat and it's associated species represent important components to ecosystems in the production of fruit and vegetable crops. It is estimated

that 75% of flowering plants and crops are pollinator dependent (PennDOT Pollinator Habitat Plan). Species typically identified as pollinators are bees and monarch butterflies. Strategies for identifying and protecting specific pollinator habitats and their species will be addressed in future NEPA studies for the SCAC Project and may include the development of landscaping plans for proposed transportation improvements that include plant species to enhance the pollinator habitat in the study area.

2. Invasive Species: Invasive plant and animal species represent a threat to native plant and animal ecosystems. Invasive species can be introduced either intentionally or unintentionally and can change the ecological structure of the native resources that they invade. Best Management Practices (BMP's) to address invasive species can be incorporated into the design and construction of proposed transportation improvements to address these concerns (Pennsylvania Department of Transportation Invasive Species Best Management Practices, 2014). Identification of existing invasive species habitats and efforts to manage them during construction and to proactively control invasive species through the development of landscaping plans using native plant species for proposed transportation improvements will be addressed in future NEPA studies for the SCAC Project.

3. Wildlife Crossings and Habitat Connectivity: Habitat connectivity and how wildlife travel between fragmented habitats is an important component to the terrestrial environment. Avoidance, minimization, and mitigation (AMM's) strategies can be developed as part of the SCAC planning and design process to address habitat connectivity concerns and to reduce human-wildlife conflicts (i.e. deer-car collisions). Wildlife crossings are structures that allow animals to cross human-made barriers between one habitat fragment and another. Crossings such as underpass tunnels, viaducts, overpasses (wildlife bridges for large wildlife), amphibian tunnels, and culverts (smaller mammals) (Publication 13M (DM-2), Chapter 20 – Wildlife Crossings, 2012) all represent mitigation strategies to address wildlife crossings and habitat connectivity. Future NEPA studies for the SCAC Project are anticipated to identify existing wildlife habitats and travel corridors that may be affected by

proposed transportation improvements and the subsequent development of AMM's strategies that could be beneficial and incorporated into the location and design of the proposed improvements.

4.0 Summary

Terrestrial habitat resources are present throughout the PEL Study Area as described in this memorandum. Table 2 summarizes the terrestrial habitat type and the approximate acreage found within the study area.

Table 2: Terrestrial Habitat Component Approximate Acreages

Terrestrial Habitat Component	Approximate Acreage	Corresponding Figure
Forested/Woods	18,887	Figure 2
State Forest (Rothrock and Bald Eagle)	4,348	Figure 3
Old Growth Forest	1,347	Figure 4
Productive Agriculture	16,500*	Figure 5
Quarry	354	Figure 6
Industrial Mineral Mining Operations	136	
Karst Areas	Point Data Locations	Figure 7
Important Bird Areas (Rothrock State Forest)	6,616	Figure 8
Pennsylvania Natural Heritage Core Habitat	2,684	Figure 9

*Acreage likely to change based on further assessment

The terrestrial habitat resources identified within the PEL Study Area are considered to be sensitive in nature and have the potential to support numerous species of plants and animals

including threatened and endangered species. Sensitive habitats of note include Old Growth Forest, IBAs, and NHCHs. These specific sensitive ecosystems are home to various species of plants and animals having specific habitat needs and requirements.

In addition to the aforementioned sensitive habitats present in the PEL Study Area, habitats containing pollinator plants and animals, invasive species, and wildlife crossing areas have been identified as potential concerns for the SCAC Project. Future NEPA studies will identify specific areas where these concerns are present and measures to be incorporated into the design, construction, and maintenance of proposed transportation improvements projects.

The information presented in the technical memorandum is intended to be used to identify areas of sensitive natural resources and habitats within the PEL Study Area. Identification of these resource areas can be used to determine appropriate project alternatives and avoidance and minimization measures necessary to reduce potential impacts to sensitive resources. Preliminary impact findings will allow for refinement of project alternatives as part of future NEPA project previews and coordination. Agency coordination and further surveys of threatened and endangered plant and animal species identified within sensitive habitats will likely be required for the advancement of future projects identified as part of the PEL study process.

5.0 Preparers

James A. Sinclair, Senior Scientist, Skelly and Loy, Inc., *A Terracon Company*

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BELLEFONTE

WALKER TWP

SPRING TWP

GREGG TWP

PATTON TWP

BENNER TWP

CENTRE HALL

COLLEGE TWP

STATE COLLEGE

POTTER TWP

HARRIS TWP

0 3,000 6,000 9,000 Feet

LEGEND

PEL Study Area

Municipal Boundaries

pennsylvania
DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

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May 2021

State College Area Connector PEL Study

STUDY LOCATION

CENTRE HALL BOROUGH, BENNER, COLLEGE, HARRIS, POTTER, AND SPRING TOWNSHIPS
CENTRE COUNTY, PENNSYLVANIA

Figure 1	1 Inch = 6,000 Feet

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Service Layer Credits: NAIP: Esri, USDA Farm Service Agency, Community: Centre County Government, data.pa.gov, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

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BELLEFONTE

WALKER TWP

SPRING TWP

GREGG TWP

PATTON TWP

BENNER TWP

CENTRE HALL

COLLEGE TWP

STATE COLLEGE

HARRIS TWP

POTTER TWP

550 150 144 99 64 192 26 45 322

0 3,000 6,000 9,000 Feet

LEGEND

- PEL Study Area
- Municipal Boundaries
- Forested/Wooded Habitat

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May 2021

State College Area Connector PEL Study

FORESTED/WOODED HABITAT

CENTRE HALL BOROUGH, BENNER, COLLEGE, HARRIS, POTTER, AND SPRING TOWNSHIPS
CENTRE COUNTY, PENNSYLVANIA

Figure 2	1 Inch = 6,000 Feet

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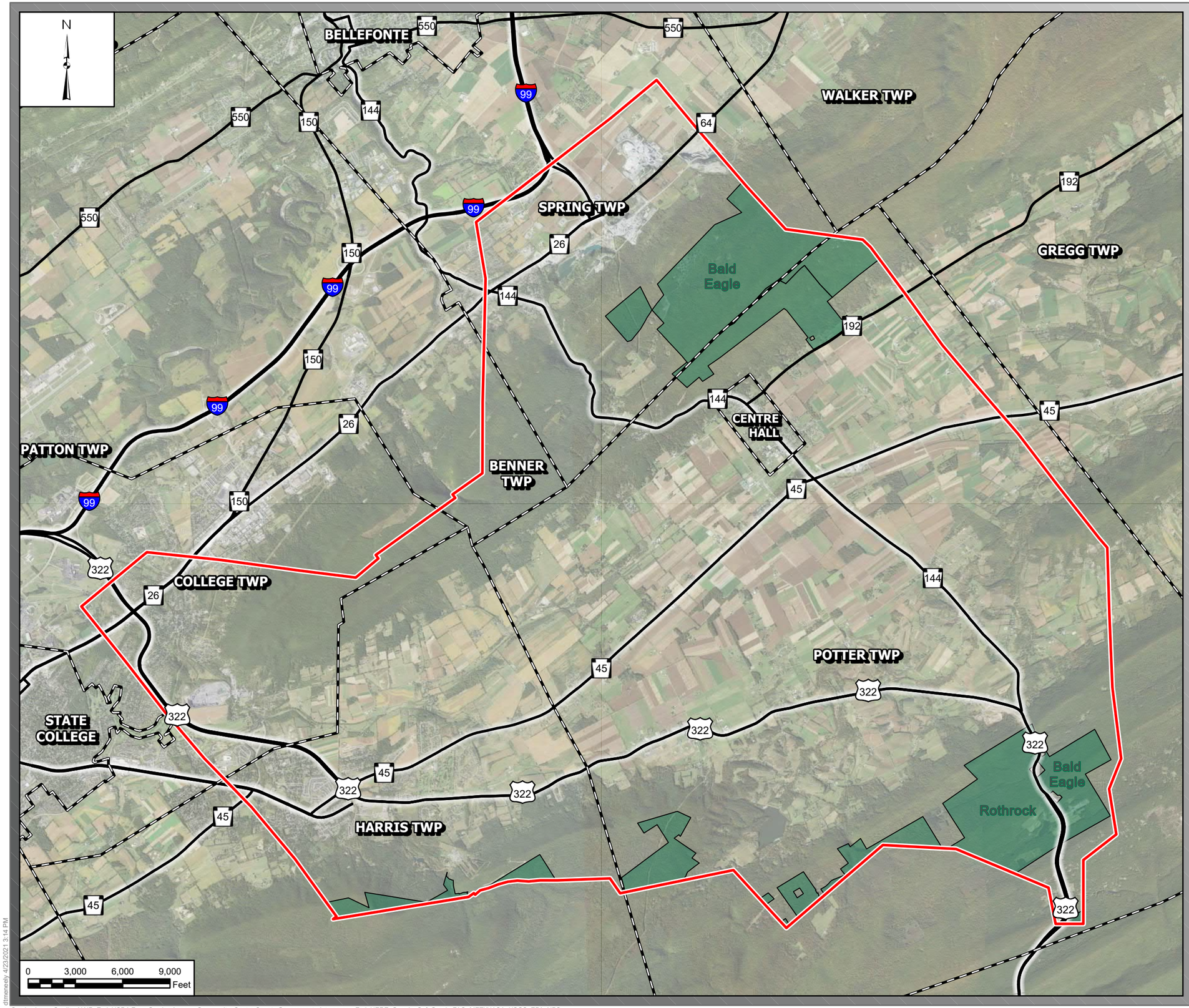

LEGEND

- PEL Study Area
- Municipal Boundaries
- State Forest

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May 2021

State College Area Connector PEL Study

STATE FOREST LAND HABITAT

CENTRE HALL BOROUGH, BENNER, COLLEGE, HARRIS, POTTER, AND SPRING TOWNSHIPS
CENTRE COUNTY, PENNSYLVANIA

Figure 3	1 Inch = 6,000 Feet

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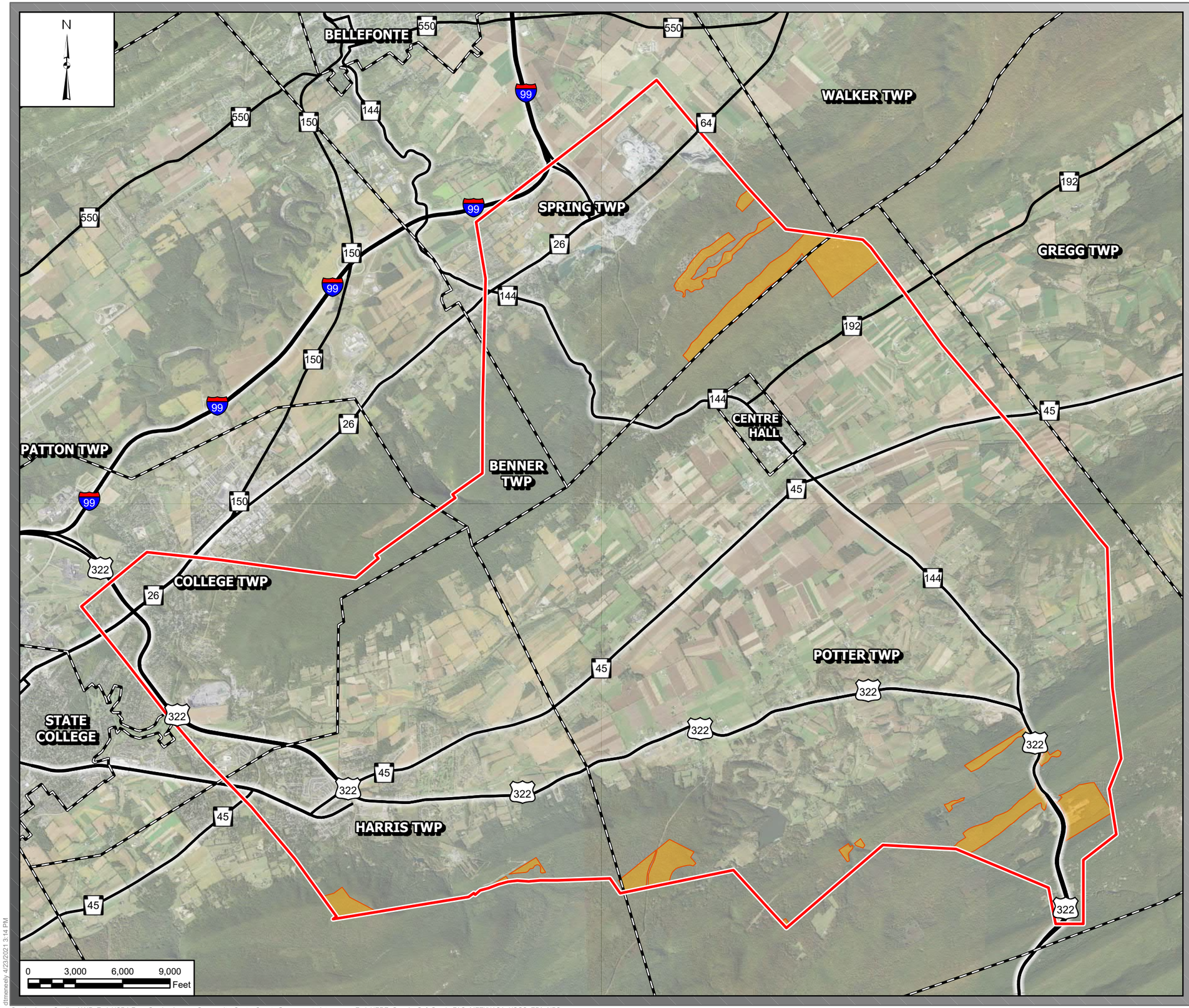

LEGEND

- PEL Study Area
- Municipal Boundaries
- Old Growth Forest Habitat

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May 2021

State College Area Connector PEL Study

OLD GROWTH FOREST HABITAT

CENTRE HALL BOROUGH, BENNER, COLLEGE, HARRIS, POTTER, AND SPRING TOWNSHIPS
CENTRE COUNTY, PENNSYLVANIA

Figure 4	1 Inch = 6,000 Feet

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PATTON TWP

BENNER TWP

CENTRE HALL

COLLEGE TWP

STATE COLLEGE

POTTER TWP

HARRIS TWP

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LEGEND

- PEL Study Area
- Municipal Boundaries
- Productive Agricultural Land

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State College Area Connector PEL Study

PRODUCTIVE AGRICULTURAL LAND

CENTRE HALL BOROUGH, BENNER, COLLEGE, HARRIS, POTTER, AND SPRING TOWNSHIPS
CENTRE COUNTY, PENNSYLVANIA

Figure 5	1 Inch = 6,000 Feet

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GREGG TWP

PATTON TWP

BENNER TWP

CENTRE HALL

COLLEGE TWP

STATE COLLEGE

POTTER TWP

HARRIS TWP

0 3,000 6,000 9,000 Feet

LEGEND

- PEL Study Area
- Municipal Boundaries
- Industrial Mineral Mining Operations
- Industrial Mineral Mining Operations Limits
- Quarries

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State College Area Connector PEL Study

QUARRY AND MINERAL MINING OPERATIONS

CENTRE HALL BOROUGH, BENNER, COLLEGE, HARRIS, POTTER, AND SPRING TOWNSHIPS
CENTRE COUNTY, PENNSYLVANIA

Figure 6	1 Inch = 6,000 Feet

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SPRING TWP

GREGG TWP

PATTON TWP

BENNER TWP

CENTRE HALL

COLLEGE TWP

STATE COLLEGE

POTTER TWP

HARRIS TWP

0 3,000 6,000 9,000 Feet

LEGEND

- PEL Study Area
- Municipal Boundaries
- Karst Geologic Areas

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State College Area Connector PEL Study

KARST GEOLOGIC AREAS

CENTRE HALL BOROUGH, BENNER, COLLEGE, HARRIS, POTTER, AND SPRING TOWNSHIPS
CENTRE COUNTY, PENNSYLVANIA

Figure 7	1 Inch = 6,000 Feet

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BELLEFONTE

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GREGG TWP

PATTON TWP

BENNER TWP

CENTRE HALL

COLLEGE TWP

STATE COLLEGE

POTTER TWP

HARRIS TWP

0 3,000 6,000 9,000 Feet

LEGEND

- PEL Study Area
- Municipal Boundaries
- Rothrock State Forest (part) and Stone Mountain Important Bird Area

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State College Area Connector PEL Study

IMPORTANT BIRD AREAS

CENTRE HALL BOROUGH, BENNER, COLLEGE, HARRIS, POTTER, AND SPRING TOWNSHIPS
CENTRE COUNTY, PENNSYLVANIA

Figure 8	1 Inch = 6,000 Feet

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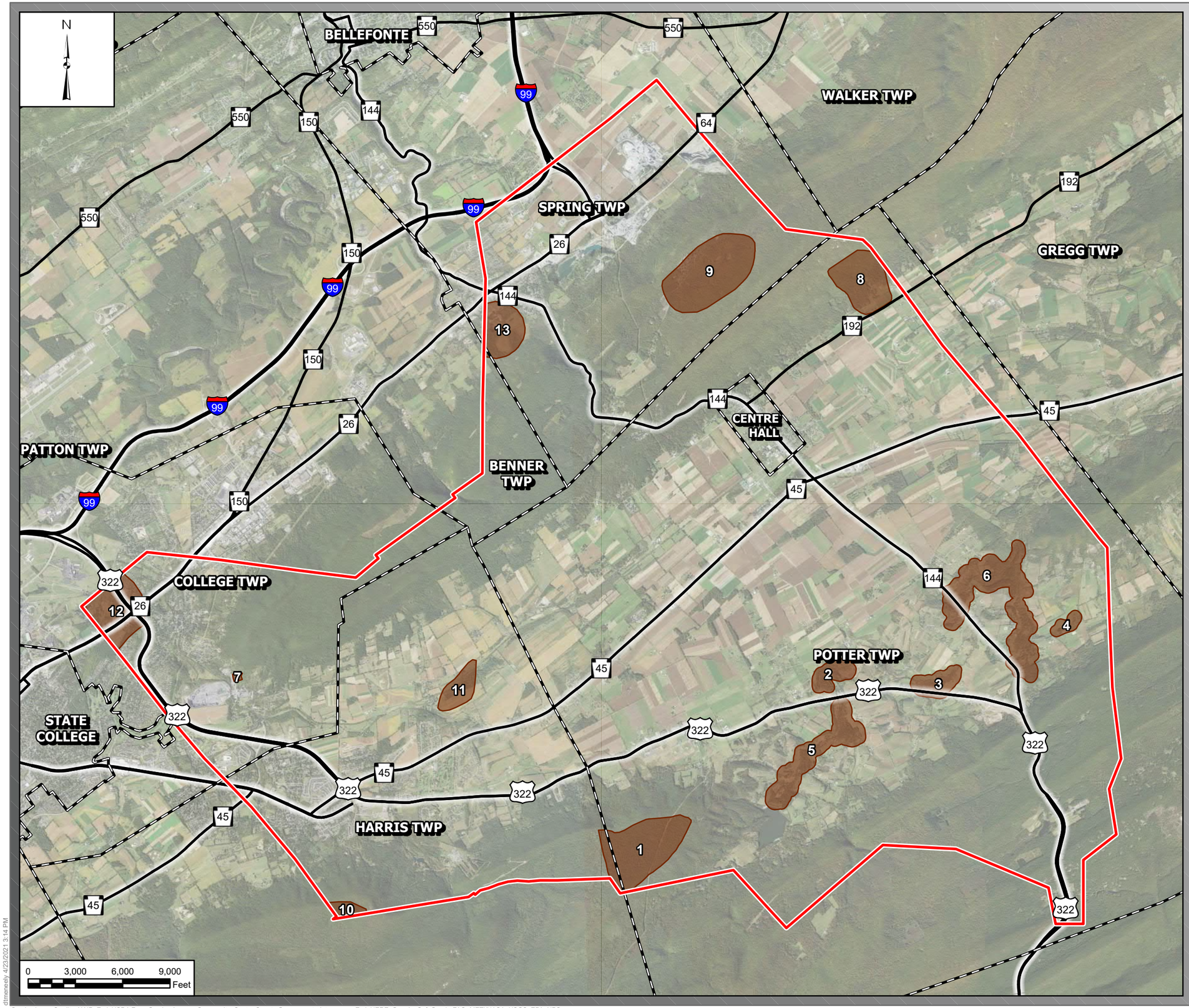

LEGEND

- PEL Study Area
- Municipal Boundaries
- 1 — Pennsylvania Natural Heritage Core Habitat (with Map ID)

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State College Area Connector PEL Study

PENNSYLVANIA NATURAL HERITAGE CORE HABITAT

CENTRE HALL BOROUGH, BENNER, COLLEGE, HARRIS, POTTER, AND SPRING TOWNSHIPS
CENTRE COUNTY, PENNSYLVANIA

Figure 9	1 Inch = 6,000 Feet

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Service Layer Credits: NAIP: Esri, USDA Farm Service Agency, Community: Centre County Government, data.pa.gov, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

APPENDIX A: REFERENCES

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https://www.dot.state.pa.us/public/Bureaus/design/PUB13M/Chapters/Chap20.pdf

GIS Data Sources

Layer Name	Figure	Source	Date
Forested/Wooded Habitat (Woods)	Figure 2: Forested/Wooded Habitat	MTGIS	2017
State Forest	Figure 3: State Forest Land Habitat	PASDA/DCNR	2017/2021
Old Growth Forest	Figure 4: Old Growth Forest Habitat	MTGIS Script	2017
Productive Agriculture Land	Figure 5: Productive Agricultural Land	MTGIS Script/ then Updated by S&L	2017/2021
Industrial Mineral Mining Operations	Figure 6: Quarry and Mineral Mining Operations	PASDA/PADEP	2021
Industrial Minerals Mine Permits (Industrial Mineral Mining Operations)		PASDA/PADEP	2016
Quarries		KMZ Review	2021 by S&L GIS
Karst Geologic Areas	Figure 7: Karst Geologic Areas	DCNR	5/12/2020
Important Bird Areas	Figure 8: Important Bird Areas	PASDA/Natural Lands Trust	2010
Natural Heritage Inventory	Figure 9: Pennsylvania Natural Heritage Core Habitat	MTGIS	2004