Appendix D – Professional Qualifications

SARAH L. SHUTE

Assistant Environmental Scientist

Education & Certifications

M.P.S. Conservation Biology/2008; B.S. Environmental and Forest Biology/2002
State University of New York College of Environmental Science and Forestry

U.S. Fish and Wildlife Service Qualified Bog Turtle Surveyor for Hudson/Housatonic and Prairie Peninsula/Lake Plain Recovery Units

Professional Employment History

Terrestrial Environmental Specialists, Inc. Phoenix, NY 2008-present
Research Foundation of the State University of New York (SUNY) 2006-2007
New York State Department of Environmental Conservation, Hudson River Estuary Program 2005-2006
New York State Department of Environmental Conservation, Bureau of Wildlife 2004-2005

Expertise and Experience

Ms. Shute has over seven years of experience in the field of natural resource and wildlife management, with a focus on amphibians and reptiles. Ms. Shute has been involved in wildlife studies throughout New York State. Her specific expertise includes conducting Phase 1 and Phase 2 bog turtle surveys as well as general wildlife and endangered species surveys. Ms. Shute's technical experience also includes the following:

- Turtle and Small Mammal Trapping
- Breeding and Migratory Bird Surveys
- Radio Telemetry and Tracking Studies
- Vegetation and Habitat Mapping
- ArcGIS Database Creation, Mapping, and Data Analysis

Representative Project Experience

- Conducted a two-year research project on bog turtle and spotted turtle habitat use and home range at a site in Putnam County.
- Completed Phase 1 bog turtle surveys in Dutchess, Orange, Sullivan, Oswego, Wayne, and Westchester Counties, NY.
- Managed Phase 2 bog turtle surveys in Sullivan County, NY.
- Conducted informal bog turtle habitat assessments in Dutchess, Orange, Putnam, Sullivan, Ulster, Westchester Jefferson, Oswego, Wayne Counties, NY and Berkshire County, MA.
- Participated in informal bog turtle searches in Dutchess and Putnam Counties, NY and Berkshire County, MA.
- Independently located bog turtles at three separate occupied locations.
- Prepared Phase 1 and Phase 2 bog turtle reports.
- Managed turtle trapping projects in Dutchess, Putnam, and Jefferson Counties, NY.
- Completed a desktop analysis and field review for preliminary bog turtle habitat assessments in Jefferson and Oswego Counties, NY.
- Performed endangered species habitat assessments for bald eagle, Blanding's turtle, timber rattlesnake, Indiana bat, northern cricket frog in Sullivan, Orange, Dutchess, Wayne, and Westchester Counties, NY.
- Participated in a timber rattlesnake tracking study and visits to known den sites in Ulster and Dutchess Counties, NY.
- Conducted general wildlife surveys in Greene, Delaware, Sullivan, Orange, Onondaga, and Jefferson Counties, NY.
- Prepared natural resources inventory reports and vegetation/land-use cover type maps.

PHILIP R. RIZZA

Assistant Environmental Scientist

Education & Certifications

B.S. Environmental Biology/2005
A.S. Environmental Biology/2003
Fundamentals of AutoCAD Certification/2006

Expertise and Experience

Mr. Rizza has over 6 years' active experience in wetland study. His specific expertise includes wetland and terrestrial studies during his college career and over 3 years' experience in active wetland delineation projects. Mr. Rizza has been involved in wetland studies throughout New York. He also has project experience in the following technical areas.

- Endangered Species Surveys
- Reptile and Amphibian Surveys
- Botanical Assessments and Vegetation/Habitat Mapping
- Aerial Photograph Interpretation
- AutoCAD Drawing Creation, Modification, and Interpretation
- Garmin & ProMark GPS Navigation and Point Mapping
- ArcView GIS Mapping and Database Creation

Representative Project Experience

- Phase 1 bog turtle habitat surveys conducted throughout NY.
- Completed extensive Phase 2 bog turtle surveys on several sites in Sullivan county.
- Independently located bog turtles in the Hudson/Housatonic Recovery Unit.
- Conducted turtle trapping studies in Dutchess and Jefferson Counties, NY.
- Timber rattlesnake survey conducted in Deerpark, NY.
- General amphibian and reptile surveys performed throughout NY including the Towns of Highmount and Windham.
- Attended a two day Reptile and Amphibian Survey Methods workshop which included timber rattlesnake and bog turtle survey training and discussion.
- Indiana bat roost tree assessments throughout NY, including Orange, Oswego, and Wayne counties.
- Performed endangered species habitat assessments for bald eagle, Blanding's turtle, timber rattlesnake, Indiana bat, northern cricket frog in Sullivan, Orange, Dutchess, and Wayne Counties, NY.
- Vegetation and wildlife surveys conducted throughout NY.
- Wetland delineations throughout NY including: Malta, Warsaw, Prattsburg, Owego, LeRay, Saugerties, and other towns.
- Prepared natural resources inventory reports and vegetation/land-use cover type maps.

Terrestrial Environmental Specialists, inc.
23 COUNTY ROUTE 6, SUITE A, PHOENIX, NY 13135
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December 29, 2010

Mr. Frederick M. Sellars
Vice President
ARCADIS U.S., Inc.
Two Executive Drive, Suite 303
Chelmsford, MA, 01824

Re: Timber Rattlesnake Habitat Assessment, Cricket Valley Energy Laydown Site,
Town of Dover, Dutchess County, NY
TES File No. 3487A

Dear Mr. Sellars:

As requested by ARCADIS, Terrestrial Environmental Specialists, Inc. (TES) conducted a habitat assessment for timber rattlesnake (*Crotalus horridus*) at a site in the Town of Dover, Dutchess County, New York. The site is approximately 30 acres in size and is located east of State Route 22 and west of Old Route 22/Old Post Road (Figure 1). A laydown area, to be used for construction worker parking and materials/equipment storage for the Cricket Valley Energy Project, is proposed for the site. Access to the laydown area will be via Route 22.

Timber rattlesnake is listed as threatened in New York State. The New York State Department of Environmental Conservation (NYSDEC) indicated that four timber rattlesnake den sites are known to occur within one-half mile of the proposed laydown site. These den sites are located on the mountainous areas west of the site.

Timber Rattlesnake Ecology

The timber rattlesnake is a pit viper that uses the heat sensing pits on its face to detect prey, primarily small rodents such as mice, chipmunks, and gray squirrels. Timber rattlesnakes spend about half of the year (October – April) in underground hibernacula (dens). Den sites typically occur on steep, south-facing slopes with rock outcrops, ledges, or talus surrounded by deciduous or mixed forest, where fissures or crevices in the ground allow access to these winter retreats. Upon emergence, rattlesnakes require basking areas, usually at or near the den site. These open rocky areas also serve as gestating sites for gravid (pregnant) females. During the active season, timber rattlesnakes will travel approximately 1.0 to 2.5 miles or more from their den sites in search of prey. Males and non-gravid females typically forage in well-drained deciduous or mixed forests with high canopy cover, and little surface vegetation; however, timber rattlesnakes can also be found in open fields, riparian areas, and forested wetlands during the active season. Transient habitat consists of more open forests with clearings and rocky terrain and is generally within approximately 700 feet of the den site. Transient habitat provides

basking areas and shelter between den sites and summer foraging areas (Brown 1993, Gibbs *et al.* 2007, NYNHP 2009).

Methods

Prior to conducting the habitat assessment, Mr. Stephen Tomasik, Project Manager with the NYSDEC Division of Environmental Permits, provided information to ARCADIS on the locations of the known timber rattlesnake den sites in proximity to the proposed laydown site. TES contacted Ms. Lisa Masi, Endangered Species Biologist, in NYSDEC's Region 3, to discuss the proposed habitat assessment.

The field review was conducted on December 9, 2010. There was little to no snow cover at the time of the assessment. The site was investigated for the presence of rock outcrops, ledges, and talus that would represent potentially suitable den sites, as well as basking and gestating areas. All areas on and adjacent to the site were evaluated for their potential to provide suitable foraging habitat, as well as transient habitat and travel corridors.

The entire site was walked. Observations of lands adjacent to the site were made from within the site boundaries. During that time, vegetation and landscape characteristics of the site were noted, and photographs were taken. Representative photographs of the site follow Figure 2 of this report.

Results

The proposed laydown site is relatively flat (approximately 380-400 feet above mean sea level) and is predominantly an active agricultural field planted in hay and corn. These agricultural lands extend north of the site. A narrow drainage ditch and relatively small wooded wetland occur in the south-central portion of the site. A residential area and farm occur east of the site. The southern boundary is bordered by a hedgerow consisting of trees and shrubs. A narrow stream occurs south of the site. Successional fields, shrublands, and wooded areas also were noted south of the site. A wooded hedgerow along Route 22 forms the western boundary of the site. Vegetation and land-use cover types on the site, as well as photograph locations, are shown on Figure 2.

Route 22 is located immediately west of the site. This two-lane road was noted as relatively busy during the site visit by TES, with cars, trucks, and tractor trailers using the road. An active Metro-North railway runs parallel to Route 22. One train passed through the area during the three-hour site visit by TES. Both Route 22 and the Metro-North railway are located between the known den locations and the site.

The site is flat and does not contain any steep rocky outcrops or talus that would represent a suitable den site. No areas of upland deciduous or mixed forest, the preferred habitat of timber rattlesnake, occur within the site boundaries.

Discussion

No potentially suitable dens occur in the study area. Therefore, this area would not provide overwintering habitat for timber rattlesnakes. Timber rattlesnakes typically forage in well-drained, deciduous and mixed upland forests surrounding the den site. The majority of the site consists of agricultural fields; thereby reducing the potential of the study area as suitable foraging and transient habitat.

The suitability of the site is further reduced by the position of Route 22 and the Metro North railway between the den sites and the proposed laydown area. Route 22 is considered a major road by the NYSDOT (L. Masi, pers. comm.) and may impede movement of timber rattlesnakes toward the proposed laydown area.

Lands east of the den site, including the proposed laydown area, are comparatively more developed than the lands west of the den sites, which are primarily forested. Timber rattlesnakes from these den sites may be more likely to use the forested areas to the west for foraging.

Although the site was not considered to be optimum timber rattlesnake foraging habitat, because the site is within the dispersal distance from known den locations in the area, it is possible that timber rattlesnakes could be found on the site during the active season (April through October).

Potential mitigation measures for avoiding or limiting potential impacts to timber rattlesnakes could include educating construction crews on timber rattlesnake identification and providing contact information for the DEC Region 3 Wildlife Office or a nuisance timber rattlesnake responder in the area; and using silt fencing along the western boundary of the site to form a temporary barrier to snakes potentially entering the site. Cloth mesh fencing should be used. Silt fencing that is reinforced by wire or nylon mesh should not be used at this site as snakes may become entangled in the netting.

Summary

TES was contracted by ARCADIS to conduct a timber rattlesnake habitat assessment on an approximately 30-acre site in the Town of Dover, Dutchess County, New York. The site is located east of State Route 22 and west of Old Route 22/Old Post Road. A laydown area for the Cricket Valley Energy project, to be used for construction worker parking and materials/equipment storage, is proposed for the site.

The NYSDEC indicated that four known timber rattlesnake den sites occur within one-half mile of the site. These dens are located in a steep, rocky area west of the site.

The site is predominately an agricultural field and is bordered by wooded hedgerows along the southern and western boundaries. A residential area and farm occur east of the site. A major road, State Route 22, and an active Metro North railway occur between the known den locations and the proposed laydown area.

No denning or basking/gestating habitat occurs on the site. The preferred summer foraging habitat of timber rattlesnakes, upland deciduous or mixed forests, does not occur on the site. Abundant more suitable foraging habitat occurs in the area west of the documented den sites. Therefore, the site is not considered to represent critical foraging habitat for timber rattlesnake. However, because the known den sites are within the distance traveled by timber rattlesnakes, and because they are known to use a variety of habitat types throughout the active season, there is potential for the occurrence of timber rattlesnakes within the proposed laydown area during April through October. Possible mitigation measures include educating construction crews on timber rattlesnake identification and procedures for notifying the appropriate responders; and installation of temporary barriers using appropriate silt fencing material.

If you have any questions regarding this timber rattlesnake habitat assessment, please feel free to contact me or Donald Coogan, Jr. at 315-695-7228.

Sincerely,
Terrestrial Environmental Specialists, Inc.

Sarah L. Shute
Assistant Environmental Scientist

Attachments

References

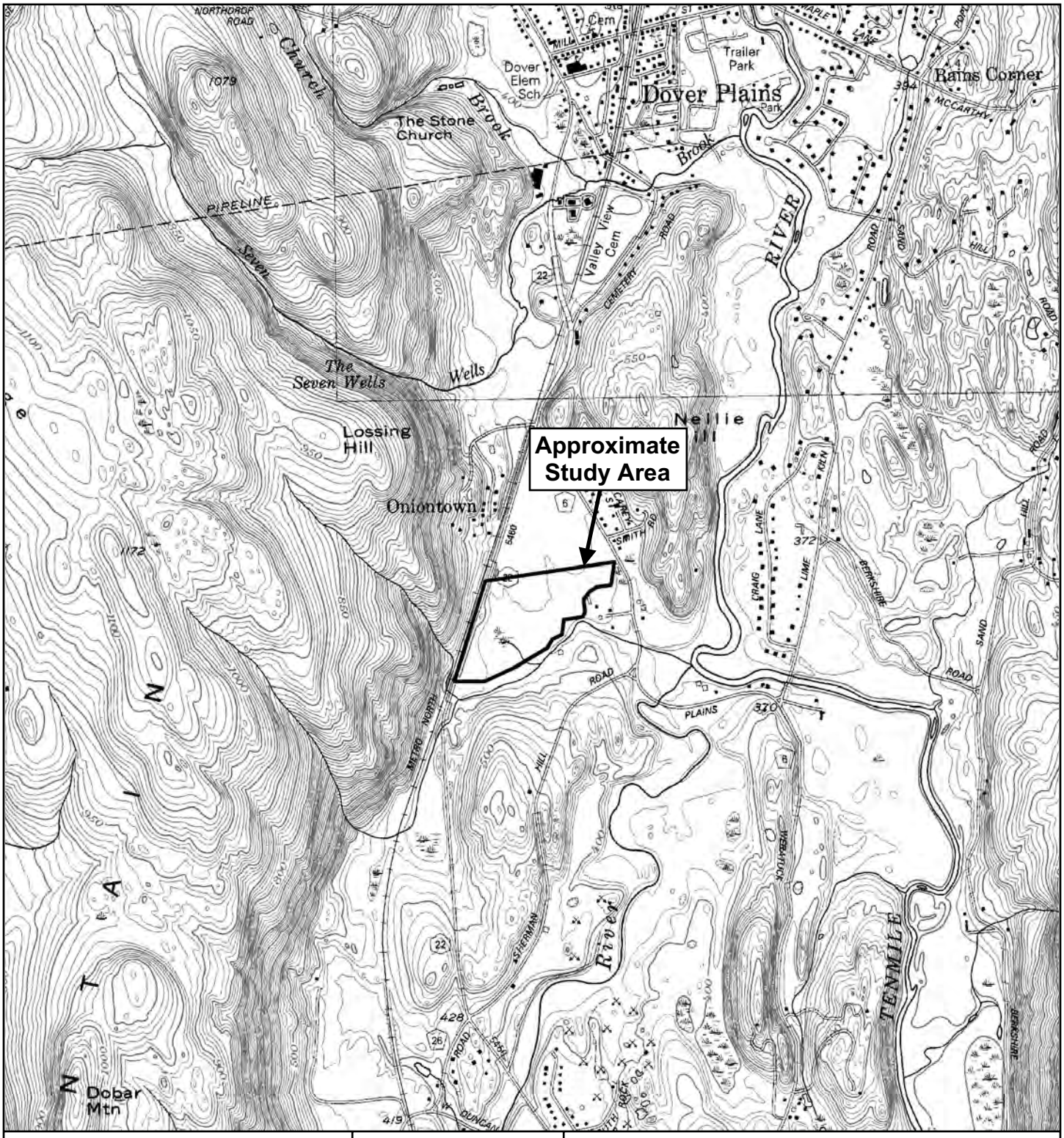
Brown, W. S. 1993. Biology, status, and management of the timber rattlesnake (*Crotalus horridus*): A guide for conservation. SSAR Herp. Circ. No. 22. vi + 78 pp.

Gibbs, J. P., A.R. Breisch, P.K. Ducey, G. Johnson, J.L. Behler, and R.C. Bothner. 2007. The Amphibians and Reptiles of New York State. Oxford University Press, New York, NY.

Masi, L. Personal Communication, December 7, 2010. Bureau of Wildlife. New York State Department of Environmental Conservation, Region 3. New Paltz, NY.

New York Natural Heritage Program. 2009. NYNHP Conservation Guide – Timber Rattlesnake. Albany, NY. http://www.acris.nynhp.org/report.php?id=7536. Accessed December 2010.

Figures



QUADRANGLE LOCATION

0' 1000' 2000'

SCALE 1" = 2000'

NORTH

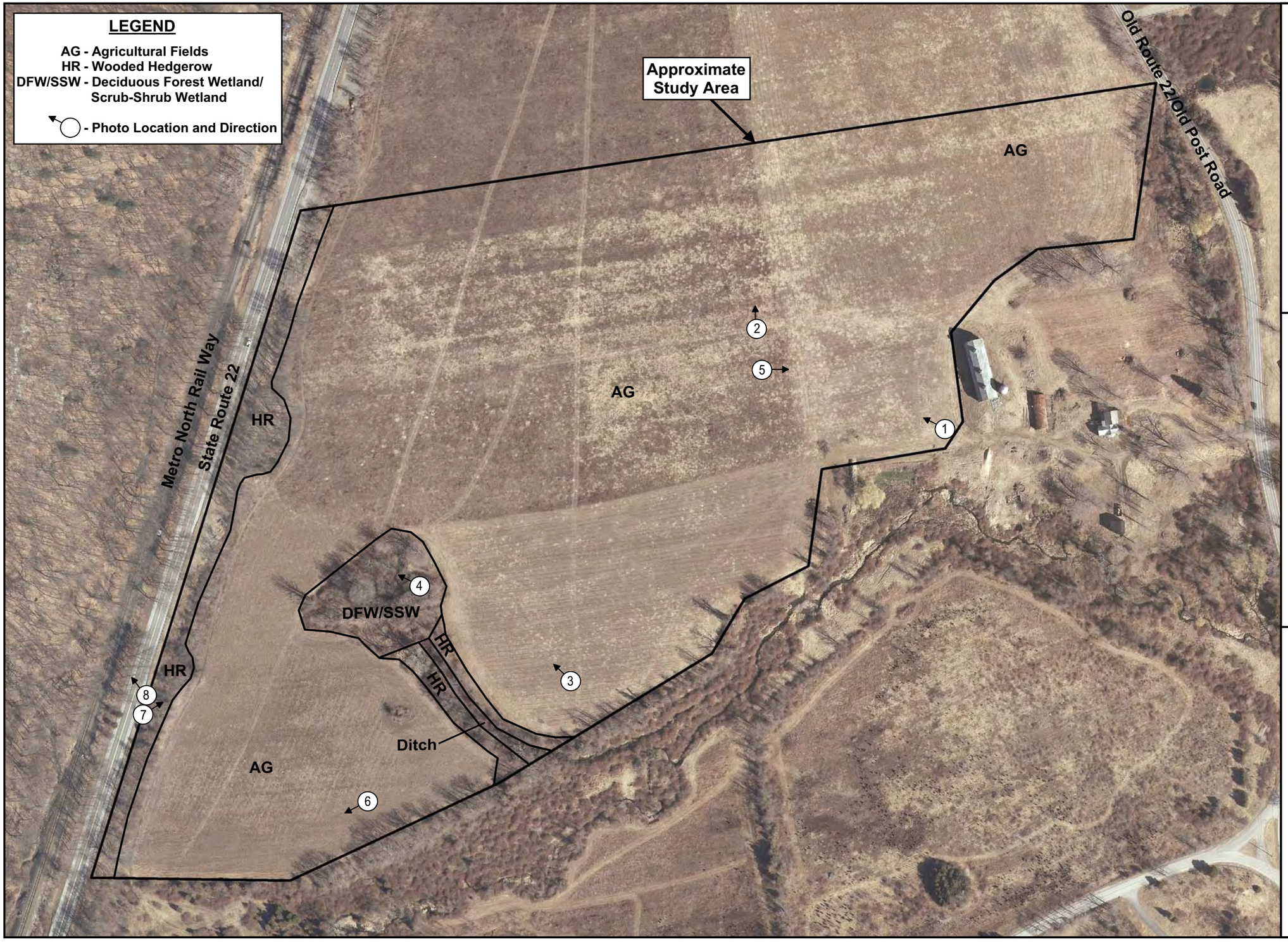
Figure 1. Site Location

NYS DOT Topographic Map

Dover Plains Quadrangle
1989

Prepared by TERRESTRIAL ENVIRONMENTAL SPECIALISTS, Inc.

TES file: ARC-3487A/3487Afig1.dsf\12-23-10



NORTH

0' 100' 200'

APPROXIMATE SCALE IN FEET

Aerial Photograph obtained from NYS GIS Clearinghouse 2009

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 2.

Vegetation Cover and Land Use Map with Photograph Locations

Proposed Cricket Valley Energy Laydown Site

TES File: ARC-3487A\3487A-aerial-200-Photo.dsf\12-28-10

Photographs

Photo 1. Overview of site

Photo 2. Hayfields

Photo 3. Corn fields

Photo 4. Small wooded wetland

Photo 5. House and barn east of site

Photo 6. Hedgerow along southern boundary of site

Photo 7. Hedgerow along western boundary of site

Photo 8. State Route 22 west of site

Professional Qualifications

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New York State Department of Environmental Conservation, Hudson River Estuary Program/2005-2006
New York State Department of Environmental Conservation, Bureau of Wildlife/2004-2005
National Park Service, Canaveral National Seashore, Resource Management/2003

Expertise and Experience

Ms. Shute has over eight years of experience in the field of natural resource and wildlife management, with a focus on amphibians and reptiles. Ms. Shute has been involved in wildlife studies throughout New York State. Her specific expertise includes conducting Phase 1 and Phase 2 bog turtle surveys as well as general wildlife and endangered species surveys. Ms. Shute's technical experience also includes the following:

- Trapping, Radio Telemetry, and Tracking Studies
- Vegetation and Habitat Mapping
- ArcGIS Database Creation, Mapping, and Data Analysis

Timber Rattlesnake Experience

- Conducted timber rattlesnake habitat assessments at sites in Dutchess, Sullivan, and Washington Counties.
- Participated in a timber rattlesnake tracking study and den site visits in Ulster and Dutchess Counties.
- Attended numerous presentations on timber rattlesnake ecology and conservation at the 2004 and 2006 Northeast Natural History Conferences.
- Conducted numerous general wildlife and endangered species surveys and habitat assessments throughout New York State.

PHILIP R. RIZZA

Assistant Environmental Scientist

Education & Certifications

B.S. Environmental Biology/2005
State University of New York College of Environmental Science and Forestry

A.S. Environmental Biology/2003
State University of New York Ulster County Community College

Fundamentals of AutoCAD Certification/2006

Expertise and Experience

Mr. Rizza has over five years of professional experience in the field of environmental science. His specific expertise includes wetland and terrestrial studies, including wetland delineation, vegetation and wildlife surveys, and endangered species surveys and habitat assessments. Mr. Rizza also has project experience in the following technical areas.

- Vegetation and Habitat Mapping
- Aerial Photograph Interpretation
- GPS Navigation and Point Mapping
- AutoCAD Drawing Creation, Modification, and Interpretation
- ArcGIS Mapping

Timber Rattlesnake Experience

- Conducted timber rattlesnake habitat assessments and surveys at sites in Dutchess, Orange, Sullivan, and Washington Counties.
- Attended Reptile and Amphibian Survey Methods workshop (Hudsonia, Ltd.), which included a discussion of timber rattlesnake habitat and survey techniques.
- Conducted numerous general wildlife and endangered species surveys and habitat assessments throughout New York State.