Appendix 3-B: Bog Turtle Surveys

Phase 1 Bog Turtle Survey – Remote Laydown Site and Former Rasco Parcel

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December 29, 2011

Ms. Cindy J. Markowitz
Project Manager
ARCADIS U.S., Inc.
Two Executive Drive, Suite 303
Chelmsford, MA 01824

Re: Phase 1 Bog Turtle Survey, Cricket Valley Energy Project,
Laydown Site and Rasco Parcel, Town of Dover, Dutchess County, New York
TES File No. 3487B

Dear Ms. Markowitz:

As requested by ARCADIS, Terrestrial Environmental Specialists, Inc. (TES) conducted Phase 1 bog turtle (*Glyptemys muhlenbergii*) surveys at two locations associated with the Cricket Valley Energy (CVE) Project. The areas under examination are referred to as the Laydown Site and the Rasco Parcel, both in the Town of Dover, Dutchess County, New York. The Laydown Site is located east of State Route 22 and west of Old Route 22/Old Post Road (Figure 1), approximately 2.5 miles north of the CVE Property. The Rasco Parcel is located west of State Route 22 and east of the Metro-North railway (Figure 2), adjacent to the CVE Property. Temporary laydown areas, to be used for construction worker parking and materials/equipment storage for the CVE Project, are proposed for these sites.

In 2009, TES performed a Phase 1 bog turtle survey on the CVE Property, which is immediately north of the Rasco Parcel. At that time, the U.S. Fish and Wildlife Service (USFWS), the New York Natural Heritage Program (NYNHP), and the New York State Department of Environmental Conservation (NYSDEC) indicated the presence of bog turtles "on or in very close proximity" to the CVE Property. Suitable habitat for bog turtles was not found on that site.

More specific information on this bog turtle occurrence, provided by the NYSDEC, indicated that one bog turtle was found dead on the Metro-North Railroad tracks, north of the Rasco Parcel. This record is from June 2008 and is associated with three nearby (0.4 miles to 0.7 miles) fen communities.

The Phase 1 bog turtle surveys at the Laydown Site and the Rasco Parcel were conducted on September 28, 2011. This report provides a description of these efforts, the results of the surveys, as well as a brief overview of the habitat requirements for bog turtles. Figures 1 through 5 are included after the text of this report. Response letters from the USFWS and the

NYNHP (relative to the CVE Property), representative photographs of wetland areas included in the assessments, and habitat evaluation forms are provided as Appendices A, B, and C, respectively.

Bog Turtle Natural History

The bog turtle is a small and elusive semi-aquatic turtle that spends much of its life underground or hidden in vegetation. Bog turtles have specialized habitat requirements that include a mix of wet and dry areas, deep mucky soils, low-growing vegetation, and open canopy. These wetlands are typically fed by springs or seeps. Other indicators of bog turtle habitat are shallow, slow-moving rivulets and tussock-forming herbaceous vegetation (e.g. *Carex stricta*) or moss (*Sphagnum* spp.) covered hummocks. A diversity of microhabitats within these wetlands provides areas that the turtles require for basking, foraging, nesting, and hibernation.

Bog turtle is federally-listed as threatened and in New York State is listed as endangered. In New York, the bog turtle range occurs in two separate regions: the Hudson Valley Region and the Lake Plain Region along the southern and eastern shores of Lake Ontario. The majority of bog turtle populations occur in the Hudson Valley, which is part of the Hudson/Housatonic Recovery Unit. Dutchess County is within the Hudson/Housatonic Recovery Unit for bog turtles. Many of the bog turtle populations in this Recovery Unit occur in calcareous fens, which are fed by groundwater percolating through glacial deposits. Other habitats occupied by bog turtles in the Hudson Valley are wet meadows, sedge meadows, and red maple swamps (Ernst and Lovich 2009, NYNHP 2009, Gibbs *et al*. 2007, USFWS 2001).

Methods

The Phase 1 bog turtle surveys were conducted on September 28, 2011 by two TES biologists, Ms. Sarah Shute, a USFWS-recognized qualified Phase 1 and Phase 2 bog turtle surveyor in the Hudson/Housatonic Recovery Unit and Mr. Philip Rizza, a USFWS-recognized qualified Phase 2 bog turtle surveyor in the Prairie Peninsula/Lake Plain Recovery Unit (Appendix D).

A Phase 1 bog turtle survey is an evaluation of the wetlands on a site for their potential as suitable bog turtle habitat. The survey is completed by assessing the presence and suitability of three key habitat criteria: vegetation, soils, and hydrology. Suitable vegetation includes herbaceous species, particularly sedges (*Carex* spp.) and rushes (*Juncus* spp.), and a variety of shrubs including willows (*Salix* spp.), dogwood (*Cornus* spp.), and alder (*Alnus* spp.). Species commonly occurring in fens, such as yellow sedge (*Carex flava*), grass-of-Parnassus (*Parnassia glauca*), and shrubby cinquefoil (*Potentilla fruticosa*), are other good indicators of suitable vegetation. Other plant species often found in bog turtle habitat include, but are not limited to sphagnum moss, sensitive fern (*Onoclea sensibilis*), tussock sedge (*Carex stricta*), jewelweed (*Impatiens* spp.), skunk cabbage (*Symplocarpus foetidus*), poison sumac (*Toxicodendron vernix*), and red maple (*Acer rubrum*). Suitable soils are generically described as mucky. The term “mucky” does not refer to a technical soil type, rather mucky soils are described as soft and

penetrable (to a depth of at least 3 to 5 inches). Pockets of deeper mucky soils, usually associated with a woody root mass or hummock, serve as overwintering locations. Suitable hydrology is identified by the presence of springs or seeps, year-round saturated soils, and shallow surface water, particularly slow-moving rivulets; although, the wetland can be interspersed with both wet and dry pockets. Suitable soils and hydrology are considered to be the primary determinants of suitable bog turtle habitat (USFWS 2006).

The study area for the Laydown Site was approximately 43.72 acres (Figure 3). The boundary of this area was determined by the proposed project footprint. The study area for the Phase 1 survey at the Rasco Parcel was approximately 64.94 acres (Figure 4). The study area boundary was based on parcel boundaries and landscape features (e.g., railroad tracks). Wetlands on the Laydown Site and Rasco Parcel study areas were delineated by ARCADIS prior to the Phase 1 survey. Wetland sketches prepared by ARCADIS and flagged boundaries were used to locate the wetlands in the field.

During the Phase 1 surveys, observations of vegetation, soils, and hydrology were made in each of the wetlands within the study area boundaries. Where appropriate, observations of wetlands visible or accessible from the study area were made and recorded. Habitat evaluation forms for Phase 1 bog turtle surveys were developed by the USFWS in conjunction with the Pennsylvania Fish and Boat Commission (PFBC). One habitat evaluation form was completed for each wetland, and representative photographs were taken.

esults

One wetland was identified within the Laydown Site study area, totaling 1.55 acres (Figure 3). Due to its proximity to this study area, a portion of a wetland/stream complex adjacent to the site was also examined. Six wetlands were identified within the Rasco Parcel study area boundaries, totaling approximately 7.18 acres (Figure 4).

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The proposed Laydown Site study area is approximately 43.72 acres and is an active agricultural field currently planted in corn. A residential area and farm occur east of the site, and a wooded hedgerow along Route 22 forms the western boundary. One wetland occurs within the study area, and a wetland/stream complex occurs south of the study area (Figure 3). A laydown area, to be used for construction worker parking and materials/equipment storage for the CVE Project, is proposed for the site.

- Wetland A

Wetland A is approximately 1.55 acres and consists of a man-made ditch and a woodland pool that is surrounded by active agricultural land (Photo 1). The ditch flows off-site into an adjacent wetland/stream complex. The ditch is bordered by cottonwood (*Populus deltoides*), black cherry (*Prunus serotina*), and red maple trees and also contains relatively dense willow,

common buckthorn (*Rhanmus cathartica*) and multiflora rose (*Rosa multiflora*) shrubs. There was approximately 18 inches of standing water in the ditch. Water depth in the pool ranged from approximately 10-20 inches. Wetland A does not represent suitable bog turtle habitat.

- Adjacent Wetland/Stream Complex

A portion of a wetland/stream complex occurs immediately south of the Laydown Site (Photos 2 and 3). The stream begins in the adjacent hillside across State Route 22 and becomes a tributary to the Swamp River. Open field and scrub-shrub vegetation such as multiflora rose, willow, goldenrods, and asters were the dominant species in the uplands bordering the stream. Jewelweed (*Impatiens capensis*), tearthumb (*Polygonum sagitattum*), and purple loosestrife (*Lythrum salicaria*) were dominant in the stream portion of the wetland. Portions of the stream were only a few inches deep, and other portions were approximately 10 to 20 inches deep. These deeper portions were affiliated with beaver dams. A few areas of emergent wetland vegetation associated with the stream were noted. The portion of this stream system adjacent to the Laydown Site study area boundary was not considered to represent suitable bog turtle habitat.

as o ar el

The Rasco Parcel is approximately 64.94 acres and consists of primarily mixed upland forest. The site is immediately south of the abandoned industrial facility at the CVE Property and is bordered on the west by the active Metro-North Railway (Figure 4). Piles of debris and old excavations are evidence of disturbance to the soils and hydrology of some of the wetlands on the site. The railroad track also has an influence on the hydrology of the site. A temporary laydown area, to be used for construction worker parking and materials/equipment storage for the CVE Project, is proposed for a portion of the site.

- Wetland A

Wetland A is approximately 0.67 acre and is a forested wetland (Photo 4). The wetland is located in a depression that may have been the result of an old excavation or the past placement of fill piles. Wetland A was dominated by eastern red cedar (*Juniperus virginiana*) and red maple but also contained multiflora rose, arrowwood (*Viburnum dentatum*), shrubby cinquefoil, sensitive fern, marsh fern (*Thelypteris palustris*), poison ivy (*Toxicodendron radicans*), and grass-of-Parnassus. Although this is a forested wetland, the trees were relatively young, and the canopy was relatively open. There were no tussocks or hummocks, but there was microtopography that created small pools and pockets of water. Soils in this wetland were saturated, however, it is unlikely that they would be saturated year-round. There were few areas within this wetland that were mucky. These areas were quite small and were no more than a few inches deep. Old piles of fill and debris along the upper edges of this wetland are evidence of the past disturbance to the hydrology of this wetland. Water appeared to be seeping through the sloped edges of this wetland; however, it was not clear if this was a natural seepage or the result of past disturbance to the surrounding landscape. Surface water was present but in shallow pockets and pools, ranging from 2 to 6 inches in depth.

Because this wetland contained fen indicator species and because the soils and hydrology were considered marginally suitable, Wetland A was considered to be potentially suitable for bog turtles (Figure 5).

- Wetland B

Wetland B is approximately 0.18 acres. This wetland appears to have formed as a result of a past excavation that subsequently filled with water. The wetland was surrounded by shrubs and trees growing on the old fill material (Photo 5). The only plant species growing in the wetland was common reed (*Phragmites australis*). The soils were not mucky. The water in this wetland was pooled and was approximately 12 to 24 inches deep. Wetland B does not represent suitable bog turtle habitat.

- Wetland C

Wetland C is approximately 0.01 acres and is a small wet area within a larger upland forest setting (Photo 6). Plant species noted in this wetland include ash saplings (*Fraxinus* sp.), silky dogwood (*Cornus amomum*), honeysuckle (*Lonicera* sp.), and poison ivy. The soils were not mucky, and there were no springs, seeps, or rivulets. Wetland C does not represent suitable bog turtle habitat.

- Wetland D

Wetland D is approximately 5.92 acres. This wetland was characterized as a young forested wetland but contained areas with relatively dense herbaceous vegetation (Photos 7, 8, and 9). Wetland D was comparatively drier in the higher elevation portions and wetter in the lower elevation portions near the railroad tracks, where water was deeper and more pooled. The drier, eastern portion was more wooded and was dominated by red maple, alder, and also contained marsh fern, sensitive fern, horsetail (*Equisetum* sp.), and asters (*Aster* spp.). Shrubby cinquefoil and poison sumac were also found in this portion of the wetland. These two plant species are indicative of calcareous wetlands and are often found in wetlands inhabited by bog turtles. Dominant species in the western, wetter portion were lake sedge (*Carex lacustris*), tussock sedge, common reed, and red maple. Soils in much of this wetland were saturated, however, few areas were mucky. A spring was observed in the southwestern portion of Wetland D. Several small rivulets were associated with this spring. Saturated soils and surface water are likely to remain in portions of this wetland near the base of the spring and near the railroad track but are not expected to remain saturated year-round in other portions of the wetland. Most areas of standing water were approximately 10 to 12 inches deep. Overall, a portion of this wetland was considered to have characteristics of suitable bog turtle habitat, primarily vegetation and hydrology. This area was approximately 2.9 acres in size and was located mostly in the western portion of Wetland D (Figure 5).

- Wetland E

Wetland E is approximately 0.05 acres and is a small forested wetland in a larger upland forest setting (Photo 10). This wetland contained eastern red cedar, red maple, alder, sensitive fern, Christmas fern (*Polystichum acrostichoides*), and sedges. The soils were not mucky, and there were no springs, seeps, or rivulets. Wetland E does not represent suitable bog turtle habitat.

- Wetland F

Wetland F is approximately 0.35 acres and contained both emergent and scrub-shrub vegetation cover types (Photos 11 and 12). The lower portion of Wetland F is a ditch dominated by common reed, and the upper portion of Wetland F is dominated by Japanese barberry (*Berberis thunbergii*), honeysuckle, alder, and goldenrod. A few stems of shrubby cinquefoil were observed in the shrubby area; however the overall vegetative character was not representative of bog turtle habitat. Soils were saturated in portions of the wetland but not mucky. There was standing water in the ditch portion of this wetland. Although not observed, the source of water in this wetland appears to be from seeps out of a cedar-dominated hillside. No springs were observed, and no rivulets were present in this wetland. Overall, Wetland F was not considered to represent suitable bog turtle habitat.

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The wooded wetland and the associated drainage ditch (Wetland A) within the Laydown Site study area are not suitable habitats for bog turtles. Additionally, the areas of the adjacent wetland/stream complex that were investigated were not considered to represent potentially suitable bog turtle habitat. These areas did not contain the appropriate vegetation, soils, and hydrology. Therefore, a Phase 2 bog turtle survey would not be warranted for these areas within Laydown Site study area.

Two areas on the Rasco Parcel were considered to represent potentially suitable bog turtle habitat. These areas include all of Wetland A (0.67 acre) and a portion of Wetland D (approximately 2.9 acres) (Figure 5). These areas were mostly wooded, although the majority of trees were relatively young, allowing for a partially open canopy. Several plant species commonly occurring in fens and in bog turtle habitats (e.g., poison sumac, shrubby cinquefoil, grass-of-Parnassus) were present. The soils were not particularly mucky in either of these wetlands. There were microtopography and hydrology features in both of these wetlands that were considered indicative of bog turtle habitat. Wetland A appeared to have seeps, and a spring was observed in Wetland D. Based on the observed habitat features, as well as the proximity of documented occurrences of bog turtles to the site, it is our recommendation that a Phase 2 survey for bog turtles be conducted in these portions of the Rasco Parcel.

If it is determined that bog turtles occur on the site, certain mitigation measures should be implemented to avoid or minimize potential impacts to bog turtles. The primary concerns

regarding development or construction in proximity to bog turtle wetlands would be maintaining wetland hydrology and habitat quality and to minimize fragmentation of potential travel corridors (USFWS 2001). The Rasco Parcel is proposed to be used as a temporary laydown site for construction materials and for vehicle parking. These types of activities are not expected to have a significant adverse effect on wetland hydrology. The adjacent CVE Property, where most of the project-related activities would be occurring, is an existing facility with cleared land and structures. Therefore, it is not expected that using the northern portion of the Rasco Parcel as a temporary laydown area would further fragment the habitat for bog turtles possibly occurring in this area. Other potential measures for avoiding or minimizing wetland water and habitat quality and any potential direct impacts to bog turtles include maintaining a buffer to the extent possible, the use of silt fencing and/or temporary restrictive barriers as well as hiring an on-site bog turtle monitor.

If it is determined that bog turtles occur on the site, a 300-foot buffer should be maintained to the greatest extent practical around bog turtle-occupied wetlands and those hydrologically connected to bog turtle-occupied wetlands. Where a 300-foot buffer cannot be maintained, silt fencing should be installed around wetland boundaries to prevent erosion and sediments from entering the wetlands and to form a temporary restrictive barrier to turtles potentially entering the work area. Cloth mesh fencing should be used. Coarse mesh backing or silt fencing that is reinforced by wire or nylon mesh should be avoided. Silt fencing should be inspected daily and repaired as necessary. Any excavations should be back-filled on the same day, or gently sloping ramps should be installed to allow turtles or other animals to climb out. Equipment operators and construction crews should be educated on bog turtle identification and relocation procedures. Workers should be instructed to look for turtles under vehicles and construction equipment before and during operation. Additionally, a bog turtle monitor could be present on the site to educate work crews; to inspect and maintain silt fencing and/or temporary restrictive barriers; to perform reconnaissance surveys within the work area and relocate turtles if necessary; and to coordinate with the NYSDEC Region 3 Wildlife Office as necessary. A bog turtle monitor should be a qualified, licensed individual who is knowledgeable of bog turtle identification, ecology, and relocation procedures. The monitor should be on the site during relevant construction activities that occur between April 1 to October 15, however, the specific requirements of the bog turtle monitor would be determined by the NYSDEC and/or the USFWS.

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TES was contracted by ARCADIS to conduct Phase 1 bog turtle surveys at two sites affiliated with the CVE Project. Both sites are located along State Route 22 in the Town of Dover, Dutchess County, New York. The Rasco Parcel is located south of an existing industrial facility referred to as the CVE Property, where TES conducted a Phase 1 bog turtle survey in 2009. Bog turtles have been documented in the vicinity of these sites.

The Phase 1 surveys were conducted September 28, 2011. Wetlands on the sites were delineated by ARCADIS prior to the Phase 1 surveys. One wetland occurs within the Laydown

Site study area. This wetland was investigated along with a wetland/stream complex adjacent to the border of the site. These areas did not have the appropriate vegetation, soils, or hydrology found in bog turtle habitats. Therefore, a Phase 2 survey would not be necessary for these areas within the Laydown Site study area. Six wetlands were investigated on the Rasco Parcel. Two areas, Wetland A and a portion of Wetland D, were considered to be potentially suitable bog turtle habitat. A Phase 2 survey is recommended for these areas.

If it is determined that bog turtles occur on the site, a number of mitigation measures can be implemented to avoid or minimize potential impacts to bog turtles. These include maintaining a 300-foot buffer around occupied wetlands to the extent possible, using silt fencing and/or temporary restrictive barriers, educating work crews, and using an on-site bog turtle monitor.

If you have any questions regarding these Phase 1 bog turtle surveys, please feel free to contact us or Don Coogan, Jr. at 315-695-7228.

Sincerely,
Terrestrial iro e tal e ialists

Sarah L. Shute
Assistant Environmental Scientist

Philip R. Rizza
Assistant Environmental Scientist

Attachments

e ere es

Ernst, C.H. and J. E. Lovich. 2009. Turtles of the United States and Canada. 2nd Edition. The Johns Hopkins University Press. Baltimore, MD.

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.

New York Natural Heritage Program (NYNHP). 2009. NYNHP Conservation Guide – Bog Turtle. Albany, NY. http://www.acris.nynhp.org/guide.php?id=7507. Accessed July 2009.

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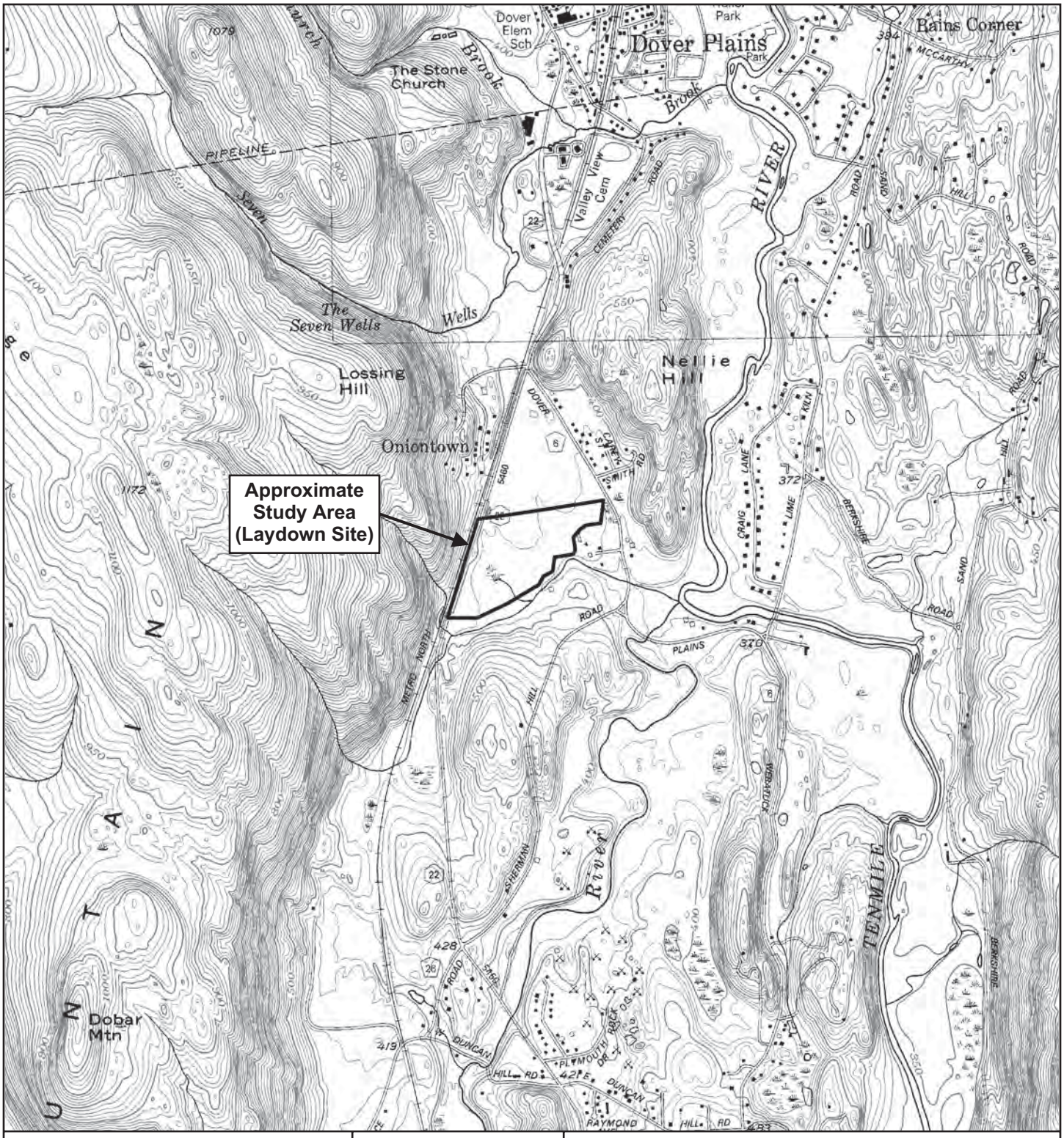
U.S. Fish and Wildlife Service (USFWS). 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population Recovery Plan. Hadley, MA. 103 pp.

U.S. Fish and Wildlife Service (USFWS). 2006. Guidelines for Bog Turtle Surveys. A revision to the Bog Turtle (*Clemmys muhlenbergii*), Northern Population Recovery Plan (dated May 15, 2001). http://www.fws.gov/northeast/nyfo/es/btsurvey.pdf. Accessed July 2009.

Figures



0 1000' 2000'

SCALE 1" = 2000'

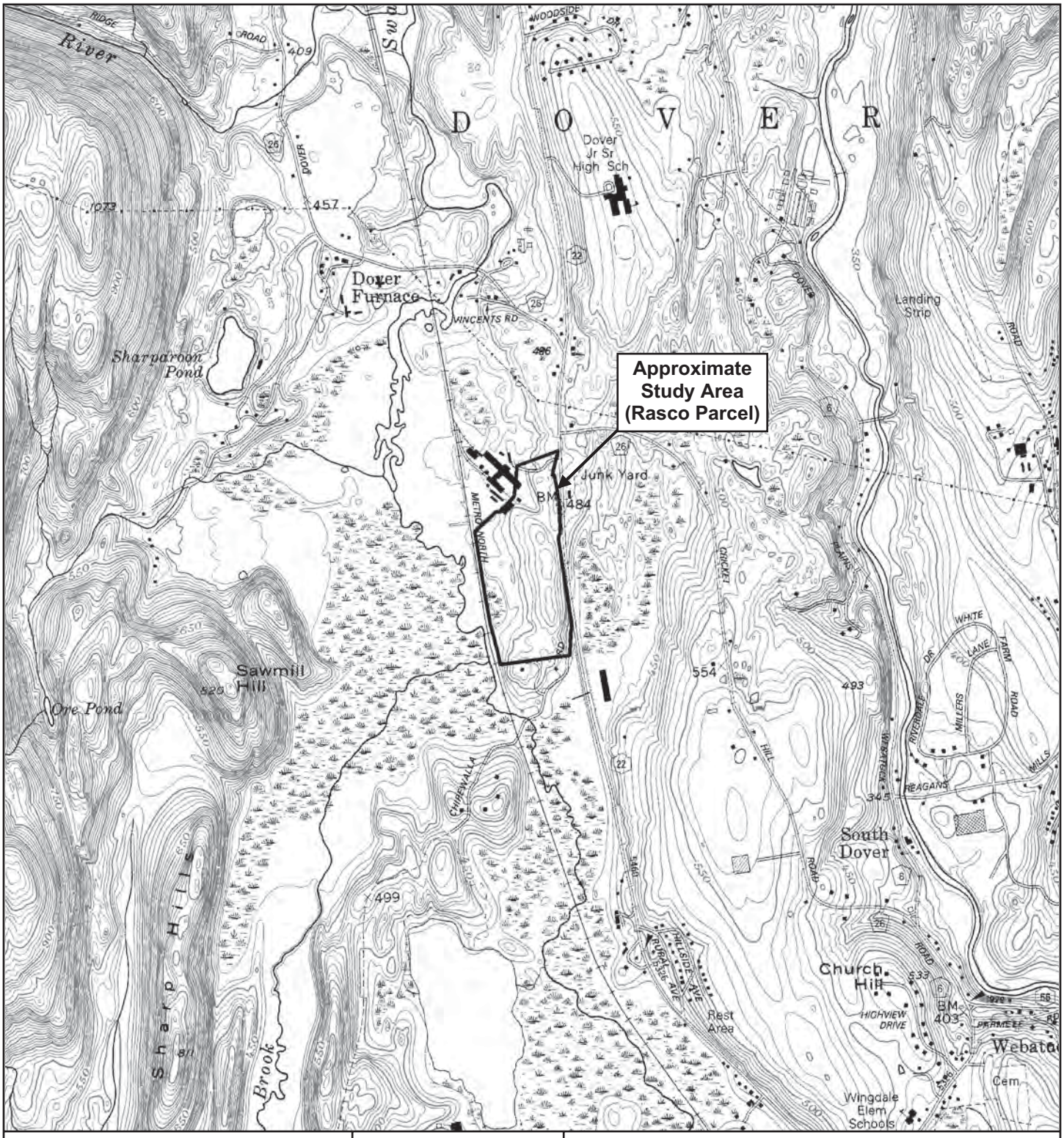
NORTH

Figure 1. Study Area Location - Laydown Site

NYS DOT Topographic Map
Dover Plains Quadrangle
1989

Prepared by TERRESTRIAL ENVIRONMENTAL SPECIALISTS, Inc.

TES file: ARC-3487B/3487B-dot-laydown.dsf\12-13-11



0 1000' 2000'

SCALE 1" = 2000'

NORTH

Figure 2. Study Area Location - Racso Parcel

NYS DOT Topographic Map
Dover Plains Quadrangle
1989

Prepared by TERRESTRIAL ENVIRONMENTAL SPECIALISTS, Inc.

TES file: ARC-3487B/3487B-dot-Rasco.dsf\12-13-11

NORTH

0' 100' 200'

APPROXIMATE SCALE IN FEET

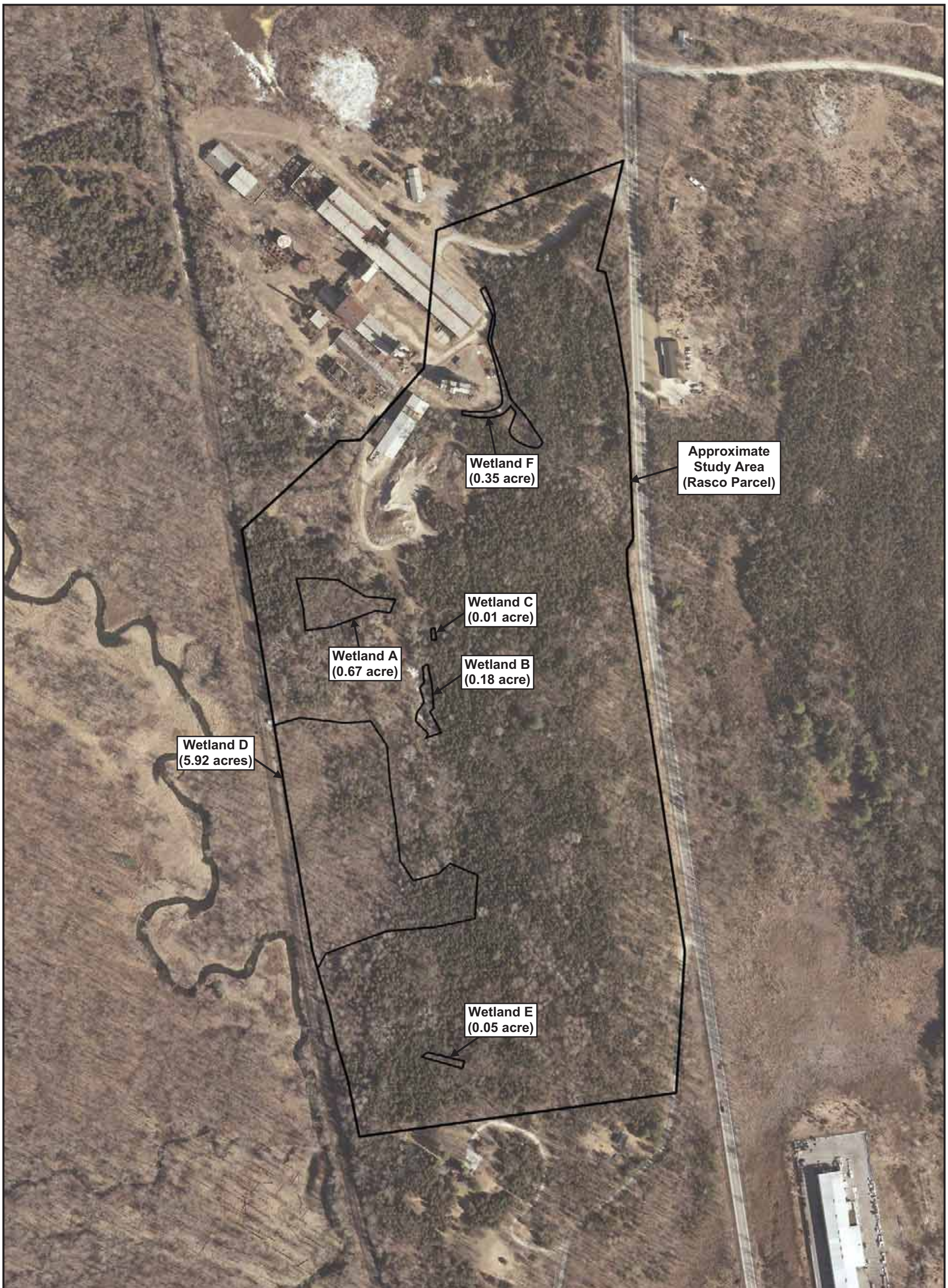
Aerial Photograph obtained from NYS GIS Clearinghouse 2009

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 3.

Aerial Photograph of Laydown Study Area

TES File: ARC-3487B\3487B-aerial-laydown-wet.dsf\12-23-11



NORTH

0 150' 300'

APPROXIMATE SCALE IN FEET

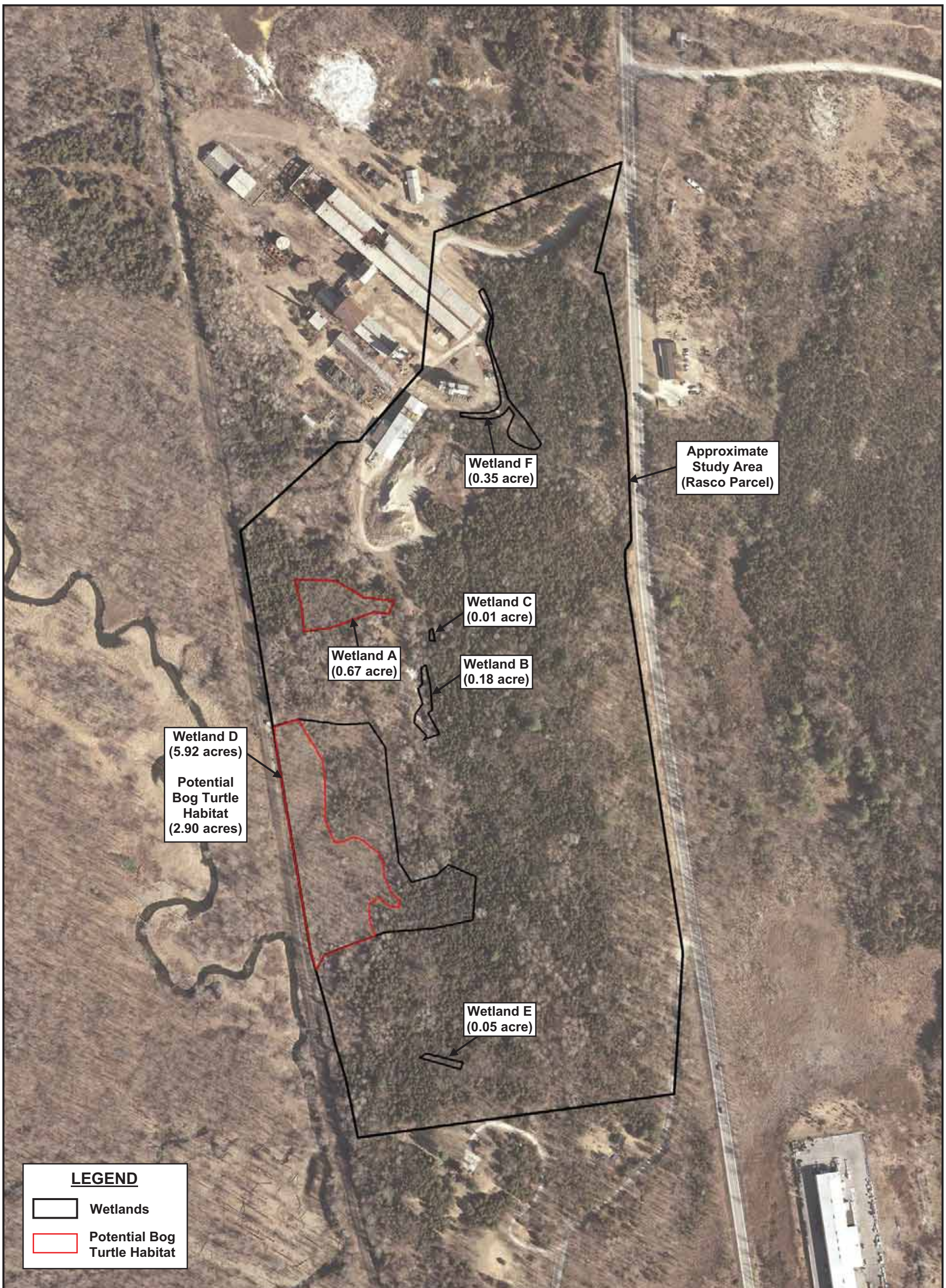
Aerial Photograph obtained from NYS GIS Clearinghouse 2009

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 4.

Aerial Photograph of Study Area with Wetland Boundaries

TES File: ARC-3487B\3487B-aerial-rasco-wet.dsf\12-13-11



NORTH

0 150' 300'

APPROXIMATE SCALE IN FEET

Aerial Photograph obtained
from NYS GIS Clearinghouse
2009

Figure Prepared by
Terrestrial Environmental
Specialists, Inc.

Figure 5.

Aerial Photograph of Study Area with Wetland Boundaries and Potential Bog Turtle Habitat

TES File: ARC-3487B\3487B-aerial-rasco-bt.dsf\12-13-11

Appendix A – Correspondence

ARCADIS
Infrastructure, environment, buildings

ARCADIS
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Massachusetts 01824
Tel 978.937.9999
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www.arcadis-us.com

U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045-9349
Attn: Robyn Niver

Subject:
Advanced Power NA - Cricket Valley Site

Date:
June 2, 2009

Contact:
Lynn Gresock

Phone:
978.937.9999, ext. 320

Email:
lynn.gresock@arcadis-us.com

Our ref:
CO001447

Dear Ms. Niver:

The purpose of this letter is to request a determination from the U.S. Fish and Wildlife Service (USFWS) regarding the potential for the presence of threatened/endangered wildlife species or significant habitat on the 131.6-acre area shown on the attached Figure 1 in Dover, Dutchess County, New York. As can be seen on Figure 1, the site is bounded on the east by Route 22, and the Swamp River flows through the site's westernmost extent. An active railroad line also extends through the site in a north-south direction. The area east of the railroad tracks includes dilapidated structures that would be removed as part of project development at this previously developed industrial site. The proposed development area will focus on the portion of the site east of the railroad tracks, although some related activities could occur to the west.

Consistent with the current USFWS protocol for evaluating the potential presence of protected species on a site, we have reviewed the information presented on your website for Dutchess County and found the bog turtle and Indiana bat listed as present in the County. As we discussed, a meeting last week with the New York State Department of Environmental Conservation (NYSDEC) identified that proximate bog turtle records indicated the need for a Phase 1 survey. We understand that Indiana bat records exist to the south of the site. The project goal is to avoid substantial tree clearing to the greatest extent possible, which should minimize the potential for this species impact.

We would appreciate your input regarding the need for species review and look forward to working with you at this site. If you have any questions or require additional information, please do not hesitate to contact me. Thank you in advance for your assistance.

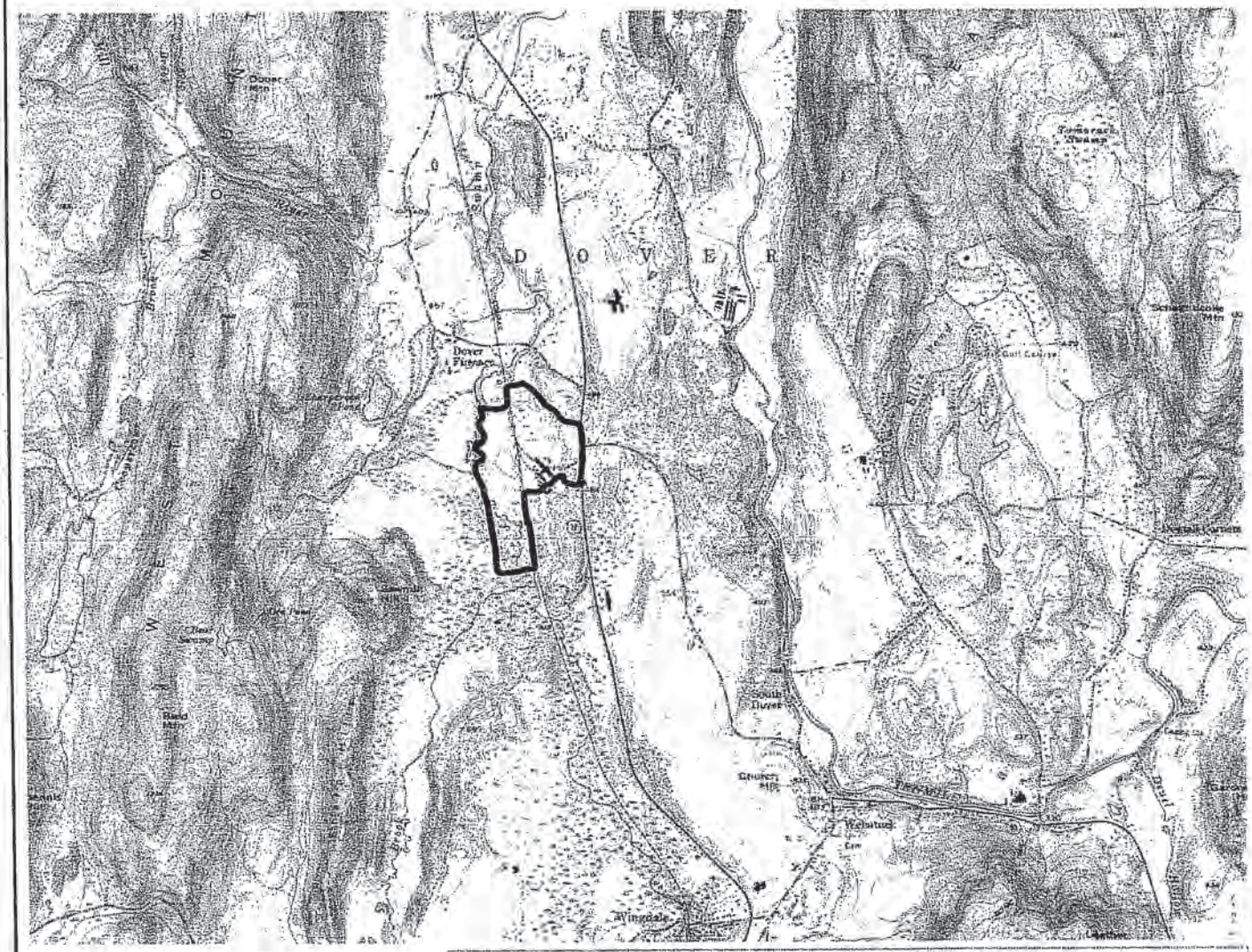
Sincerely,

ARCADIS

Lynn Gresock

Lynn Gresock
Environmental Consultant

Copies: C. Hogan, NYSDEC; J.Ahrens, Advanced Power



Source: USGS Dover Plains Quadrangle; 7.5 Minute Series (Topographic); Revised 1958.

CRICKET VALLEY SITE - DOVER, NY

ADVANCED POWER NA

SITE LOCATION MAP

ARCADIS

Infrastructure, environment, buildings

FIGURE

1

Figure 1 - Site Location.xlsm
6/2/2009

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

July 20, 2009

Mr. Lynn Gresock
Associate Vice President
ARCADIS
Two Executive Drive, Suite 303
Chelmsford, MA 01824

Dear Mr. Gresock:

This is in response to your June 2, 2009, letter regarding the proposed 131.6-acre Cricket Valley Site in the Town of Dover, Dutchess County, New York. The following comments are provided pursuant to the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This response does not preclude additional U.S. Fish and Wildlife Service (Service) comments under other legislation.

Given our understanding of the project site, it appears that the Federally-listed threatened and State-listed endangered bog turtle (*Glypemys [=Clemmys] muhlenbergii*) occurs within and around the vicinity of the project area. Therefore, efforts must be made to avoid direct and indirect effects to the wetlands within and offsite of the proposed project area.

At this time, the Service has no information regarding the plans for the site. However, adverse impacts associated with residential and commercial development could include, but are not limited to, fragmentation of habitat and alterations to bog turtle dispersal routes; introduction of contaminated surface water runoff into the wetland from pesticides, herbicides, fertilizers, road deicers, etc.; alteration of wetland hydrology; introduction of nutrients from septic systems; introduction of yard and other waste materials into wetlands; introduction of people, pets, and recreational vehicles into wetlands; and death/injury of bog turtles that wander onto lawns and roads. Generally, the larger the upland buffer, the lower the risk of many of these potential adverse affects. However, some of the effects may not be adequately addressed by buffers. The Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan (U.S. Fish and Wildlife Service 2001) (Appendix A - Bog Turtle Conservation Zones) includes recommendations for minimum buffers for various activities. You can find this document at http://nyfo.fws.gov/es/btconszone.pdf. Please note that the Service generally recommends a minimum of a 300-foot buffer around wetlands with known or likely bog turtle populations. The Recovery Plan recommends avoiding many activities within this area including development, delineation of lot lines, herbicide application, and pesticide or fertilizer application.

In addition to the bog turtle, there is potential for the Federally- and State-listed endangered Indiana bat (*Myotis sodalis*) to occur within the proposed project area. Two males were captured approximately 2 miles from the project area and there is likely a maternity colony approximately

5 miles from the site. The Service recommends that the applicant conduct mist netting between May 15 and August 15. The Service's current mist-netting guidelines are available on our website.* Should any Indiana bats be captured during mist-netting activities, a radio-transmitter should be attached to the bat and the bat should be tracked to determine whether there is roosting, foraging, and/or maternity habitat present within the proposed project area. We encourage the applicant to coordinate with the Service to develop the proposed survey and tracking scope of work. This type of information can greatly assist the Service and any involved Federal agencies with a full analysis of the effects of the proposed activity. We recommend that the applicant provide the requested information to the Service to determine whether additional conservation measures may be needed to avoid or minimize adverse effects to Indiana bats.

In addition, the New England cottontail (*Sylvilagus transitionalis*) is known to occur within 4 miles of the proposed project. The New England cottontail is a candidate species which is being considered by the Service for addition to the Federal List of Endangered and Threatened Wildlife and Plants. Candidate species are species for which the Service has on file sufficient information on the biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Candidate species do not receive substantive or procedural protection under the ESA; however, the Service does encourage Federal agencies and other appropriate parties to consider these species in the project planning process.

Should the New England cottontail be proposed for listing as endangered or threatened prior to completion of this project, conference procedures pursuant to Section 7(a)(4) of the ESA may be necessary if your project involves Federal authorizations. Should this species be listed prior to completion of the project, further coordination or consultation pursuant to the ESA will be required to evaluate potential adverse effects of project implementation on the New England cottontail or its habitat, and to determine if formal consultation is necessary. Please visit our website for more information on New England cottontail.

The most recent compilation of Federally-listed and proposed endangered and threatened species in New York is available for your information. Until the proposed project is complete, we recommend that you check our website every 90 days from the date of this letter to ensure that listed species presence/absence information for the proposed project is current.

As stated above, the Indiana bat and bog turtle are listed as endangered by the State of New York. The New England cottontail is a New York State Species of Special Concern. Any additional information regarding the project and its potential to impact listed species should be coordinated with both this office and with the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC contact for the Endangered Species Program is Mr. Peter Nye, Endangered Species Unit, 625 Broadway, Albany, NY 12233 (telephone: [518] 402-8859).

In summary, we have concerns about potential impacts to Federally-listed species from the proposed project. We recommend additional coordination among the appropriate consulting firms, the NYSDEC, any involved Federal agencies, the applicant, and the Service regarding these potential impacts.

Thank you for your time. If you require additional information please contact Robyn Niver at (607) 753-9334. Future correspondence with us on this project should reference project file 90453.

Sincerely,

David A. Stilwell
Field Supervisor

*Additional information referred to above may be found on our website at: http://www.fws.gov/northeast/nyfo/es/section7.htm

References:

U.S. Fish and Wildlife Service. 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan. Hadley, Massachusetts. 103 pp.

cc: NYSDEC, New Paltz, NY (Attn: L. Masi/A. Ciesluk)
NYSDEC, Albany, NY (Endangered Species; Attn: P. Nye)
COE, New York, NY (Attn: B. Orzel)

ARCADIS

Infrastructure, environment, buildings

ARCADIS
Two Executive Drive
Suite 303
Chelmsford
Massachusetts 01824
Tel 978.937.9999
Fax 978.937.7555
www.arcadis-us.com

Jean Pietrusiak
NYSDEC-DFWMR
NYS Natural Heritage Program - Information Services
625 Broadway, 5th Floor
Albany, NY 12233-4757

Subject:
Advanced Power NA - Cricket Valley Site

Date:
June 2, 2009

Contact:
Lynn Gresock

Phone:
978.937.9999, ext. 320

Email:
lynn.gresock@arcadis-us.com

Our ref:
CO001447

Dear Ms. Pietrusiak:

The purpose of this letter is to formally request current information from the New York State Natural Heritage Program (NYSNHP) - Information Services regarding the presence of threatened/endangered plant and animal species or significant habitat within the 131.6-acre area shown on the attached Figure 1 in Dover, Dutchess County, New York. As can be seen on Figure 1, the site is bounded on the east by Route 22, and the Swamp River flows through the site's westernmost extent. An active railroad line also extends through the site in a north-south direction. The area east of the railroad tracks and includes dilapidated structures that would be removed as part of project development at this previously developed industrial site. The proposed development area will focus on the portion of the site east of the railroad tracks, although some related activities could occur to the west.

During a meeting with the New York State Department of Conservation (NYSDEC) on 5/27/09 in the New Paltz office, we were informed that two species of interest at the site (bog turtle and timber rattlesnake) would require additional review. We would appreciate your input regarding the need for additional species review. If you have any questions or require additional information, please do not hesitate to contact me. Thank you in advance for your assistance.

Sincerely,

ARCADIS

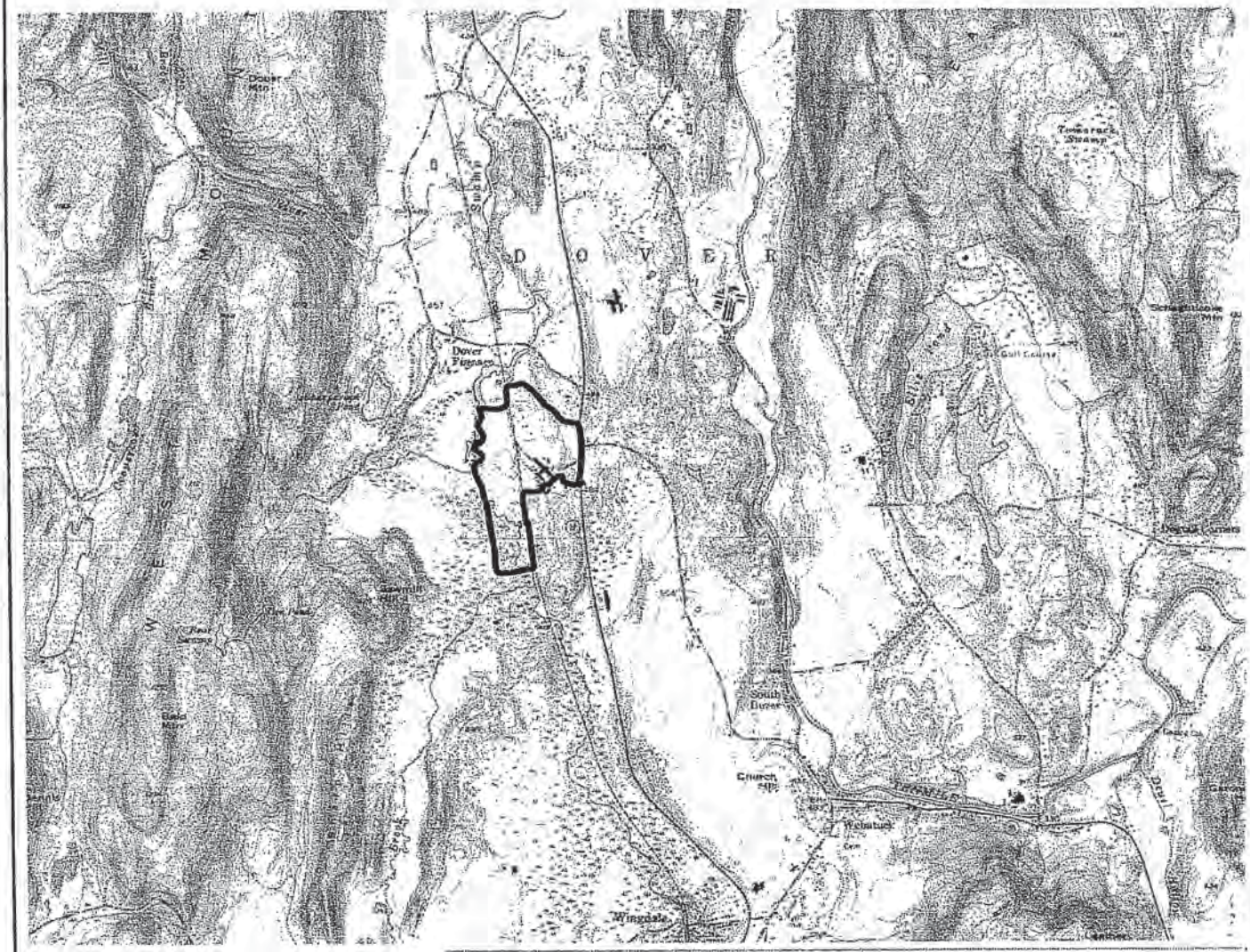
Lynn Gresock

Lynn Gresock
Environmental Consultant

Copies: C. Hogan, NYSDEC; J.Ahrens, Advanced Power

Imagine the result

g:\energy projects\advanced power\cricket valley\agency correspondence\nysdecnhp review_dover.doc



Source: USGS Dover Plains Quadrangle; 7.5 Minute Series (Topographic); Revised 1958.

CRICKET VALLEY SITE - DOVER, NY

ADVANCED POWER NA

SITE LOCATION MAP

ARCADIS

Infrastructure, environment, buildings

FIGURE

1

Figure 1 - Site Location.xlsm
6/2/2009

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, Albany, New York 12233-4757
Phone: (518) 402-8935 • **FAX:** (518) 402-8925
www.dec.state.ny.us

Alexander B. Grannis
Commissioner

June 19, 2009

Lynn Gresock
ARCADIS
2 Executive Drive, Suite 303
Chelmsford, MA 01824

Dear Ms. Gresock:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the proposed Advanced Power NA - Cricket Valley Site - 131 acres, area as indicated on the map you provided, located in the Town of Dover, Dutchess County.

Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. The information contained in this report is considered sensitive and should not be released to the public without permission from the New York Natural Heritage Program.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environment impact assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,
Tara Salerno
Tara Salerno, Information Services
New York Natural Heritage Program

Enc.
cc: Reg. 3, Fisheries Mgr.

Natural Heritage Report on Rare Species

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor,
Albany, NY 12233-4757
(518) 402-8935

~This report contains **SENSITIVE** information that should not be released to the public without permission from the NY Natural Heritage Program.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~We do not provide maps for species most vulnerable to disturbance.

Natural Heritage Report on Rare Species and Ecological Communities

REPTILES

Glyptemys muhlenbergii ***(formerly Clemmys muhlenbergii)***

Office Use

Bog Turtle

NY Legal Status: Endangered

NYS Rank: S2 - Imperiled

11465

Federal Listing: Threatened

Global Rank: G3 - Vulnerable

USFWS

County: Dutchess

Town: Dover

ESU

Location: **The documented location is on or in very close proximity to the project site.**

Please note that animals can move 1 mile or more from documented locations. For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.

1 Records Processed

More detailed information about many of the rare and listed animals in New York, including biology, identification, habitat, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.acris.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, and from NYSDEC at http://www.dec.ny.gov/animals/7494.html.

Appendix B – Photographs

Photo 1. Wetland A - Laydown Site

Photo 2. Stream - Laydown Site

Photo 3. Stream - Laydown Site

Photo 4. Wetland A - Rasco Parcel

Photo 5. Wetland B

Photo 6. Wetland C

Photo 7. Wetland D

Photo 8. Wetland D

Photo 9. Wetland D

Photo 10. Wetland E

Photo 11. Wetland F

Photo 12. Wetland F

Appendix C – Phase 1 Bog Turtle Survey Habitat Evaluation Forms

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Cricket Valley Energy – Laydown Site

Project type: Industrial Development

Applicant/Landowner Name: Advanced Power NA

County: Dutchess Quad: Dover Plains Township/Municipality: Dover

PNDI # N/A Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 43.72 (study area) **Does the Phase 1 survey include all wetlands in the action area?** ☐ Y ☐ N[3]

WETLAND ID: A **PHOTOS TAKEN:** ☒ Yes ☐ No (30-31) **WETLAND SIZE:** 1.55 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 41° 43.076' Long -73° 35.019'

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 9/29/11 Time In: 3:25 Time Out: _____

Last precipitation: ☒ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☒ some of it – _____ acres or 75 % of the wetland appears to be located off-site (the stream portion is off-site)

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☒ part of it (75 % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☒ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☒Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐Y ☐ N ☒ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

ag field and residential structures, DFU, Rt. 22, RR tracks

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM ____ ☐ PSS ____ ☒ PFO 100 ☐ POW ____

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

fill from farm activity around edges

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

(ag fields surrounding wetland)

PEM/PSS → stream complex adjacent to site

Project Name Cricket Valley Energy – Laydown Site *Wetland* A *(con't)*

Hydrology

☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely ? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☒ Unknown
☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☒ larger pools/ponds (12" deep) – 10 – 20"
☐ Y ☒ N Evidence of flooding? If yes, describe indicators ___

Soils Mapping Unit (optional): CuA, Pg
Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ___ to ___"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☐ YES ☒ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ___ to ___"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☒ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☒ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☒ royal fern
Additional dominant species: ditch has cottonwood, willow, + rose shrubby with black cherry on edges

Herptiles
Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? ___
Other herptiles ☐ observed ☐ previously observed: ___

Additional Comments/Observations: (use additional sheets if necessary)
red maple vernal pool WA 10-20" deep w/ attached drainage ditch flowing into stream complex; in an ag setting

INVESTIGATOR'S OPINION

☐ YES ☒ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Sarah L. Shute — Sarah L. Shute — 9/29/11
Investigator's Name (print) — Investigator's Signature — Date

Contact info: TES, Inc. 23 County Route 6, Suite A, Phoenix, NY 13135
(315) 695-7228

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06.01.2006)

Project/Property Name: Cricket Valley Energy – Laydown Site

Project type: Industrial Development

Applicant/Landowner Name: Advanced Power NA

County: Dutchess Quad: Dover Plains Township/Municipality: Dover

PNDI # N/A Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 43.72 (study area) **Does the Phase 1 survey include all wetlands in the action area?** ☐ **Y** ☐ **N**[3]

WETLAND ID: A* off-site portions **PHOTOS TAKEN:** ☒ **Yes** ☐ **No** **WETLAND SIZE:** _____ **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 41° 43.021' Long -73° 34.929'

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 9/29/11 Time In: 3:25 Time Out: _____

Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☒ some of it – _____ acres or 75 % of the wetland appears to be located off-site *

this datasheet is for the off-site portions

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)? *

☐ none of it ☐ all of it ☒ part of it (75 % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☒ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☒Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐Y ☐ N ☒ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Ag fields, open fields, hedgerows, DFU, SSU, Rt. 22, RR tracks

WETLAND CHARACTERISTICS Stream complex w/ some

Wetland type(s) present and % cover: ☒ PEM ____ ☐ PSS ____ ☐ PFO ____ ☒ POW PEMveg

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

ditching and beaver activity (roads)

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

*off-site portion

Project Name Cricket Valley Energy - Laydown Site *Wetland* A *(con't)*

Hydrology

☒ Y ☐ N Springs or seeps ☒ visible or ☐ likely "pseudo seeps"? Watercress present? ☐ Yes ☐ No

☐ Y ☒ N Spring houses in or adjacent to wetland?

☒ Y ☐ N Saturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown

☒ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (___" deep) 1-3
☐ rivulets (___" deep) ☒ larger pools/ponds (___" deep) 10-20

☐ Y ☒ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): Pg, Wy
Field observations confirm mapped type? ☐ YES ☐ NO ☒ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☒ YES ☐ NO	How much of it (PEM) is **mucky**? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 2 to 8 "	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☒ 3-5" ☒ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☐ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ___ to ___"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☒ sedges ☒ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☒ sensitive fern ☐ rice cutgrass ☒ tearthumb ☐ reed canary grass ☐ *Phragmites* ☒ purple loosestrife
☐ alder ☐ dogwood ☒ red maple ☒ willow ☐ poison sumac ☒ multiflora rose ☐ _____
Additional dominant species: _____

Herptiles
Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? _____
Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)
a stream complex w/ some emergent veg on the high spots, stream affected by beaver activity; ag field in north side and OF (asters, goldenrods) SSU/OF on south side

INVESTIGATOR'S OPINION

☐ YES ☒ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Sarah L. Shute — Sarah L. Shute — 9/29/11
Investigator's Name (print) — Investigator's Signature — Date

Contact info: TES, Inc. 23 County Route 6, Suite A, Phoenix, NY 13135
(315) 695-7228

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Cricket Valley Energy – Rasco Parcel

Project type: Industrial Development

Applicant/Landowner Name: Advanced Power NA

County: Dutchess Quad: Dover Plains Township/Municipality: Dover

PNDI # N/A Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 64.94 (Study area) **Does the Phase 1 survey include all wetlands in the action area?** ☐ Y ☐ N[3]

WETLAND ID: A **PHOTOS TAKEN:** ☒ Yes ☐ No 7-8 **WETLAND SIZE:** 0.67 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 41° 40.373' Long -73° 34.824'

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 9/29/11 Time In: 11:39 Time Out: 2:42

Last precipitation: ☒ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

N/A ☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

N/A ☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☒Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐Y ☐ N ☒ Unknown

(* No potential habitat on original CVE site north of Rasco Parcel)

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

forested upland, cedar dominated

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM ____ ☐ PSS ____ ☒ PFO 100 ☐ POW ____

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

seems like it was excavated or filled around edges

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name Cricket valley energy - Rasco Parcel *Wetland* A *(con't)*

Hydrology

☒ Y ☐ N natural - ? Springs or seeps ☐ visible or ☒ likely ? Watercress present? ☐ Yes ☐ No

☐ Y ☒ N Spring houses in or adjacent to wetland?

☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☒ Unlikely ☐ Unknown

☒ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (2-6" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)

☐ Y ☒ N Evidence of flooding? If yes, describe indicators_____

Soils Mapping Unit (optional): SmB

Field observations confirm mapped type? ☐ YES ☐ NO ☒ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☐ YES ☐ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ___ to ___"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☐ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☒ YES ☐ NO	How much of it is **mucky**? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 1 to 3"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☒ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☒ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☒ red maple ☐ willow ☐ poison sumac ☒ multiflora rose ☒ arrowwood
Additional dominant species: violet, cedar, marsh fern, PF, ☒ grass of parasus

Herptiles

Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? ____

Other herptiles ☒ observed ☐ previously observed: pickerel frogs

Additional Comments/Observations: (use additional sheets if necessary)

open canopy wetland w/ sedges for indicators, not much microtopography, no hummocks or rivulets, adjacent pockets of sedge for winter; mucky soils limited

INVESTIGATOR'S OPINION

☐ YES ☐ NO ☒ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☐ NO ☒ UNSURE The soils criterion[8] for bog turtle habitat is met.
☒ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☒ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Sarah L. Shute — Sarah L. Shute — 9/29/11

Investigator's Name (print) — Investigator's Signature — Date

Contact info: TES, Inc 23 County Route 6, Suite A, Phoenix, NY 13135
(315) 695-7228

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Cricket Valley Energy – Rasco Parcel

Project type: Industrial Development

Applicant/Landowner Name: Advanced Power NA

County: Dutchess Quad: Dover Plains Township/Municipality: Dover

PNDI # N/A Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 64.94 (study area) **Does the Phase 1 survey include all wetlands in the action area?** ☐ Y ☐ N[3]

WETLAND ID: B **PHOTOS TAKEN:** ☒ Yes ☐ No (10-12) **WETLAND SIZE:** 0.18 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 41° 40.321' Long -73° 34.759'

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 9/29/11 Time In: 11:39 Time Out: 2:42

Last precipitation: ☒ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☒Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐Y ☐ N ☒ Unknown

(* no potential habitat identified on original CVE site north of Rasco parcel)

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

cedar forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM ____ ☐ PSS ____ ☒ PFO ____ ☐ POW ____ not really trees in wet area just adjacent

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

fill all around

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name Cricket Valley Energy – Rasco Parcel *Wetland* B *(con't)*

Hydrology

☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely ? Watercress present? ☐ Yes ☐ No

☐ Y ☒ N Spring houses in or adjacent to wetland?

☒ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☒ Unknown

☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☒ larger pools/ponds (___" deep) 12-24"

☒ Y ☐ N Evidence of flooding? If yes, describe indicators flooded, dug area

Soils Mapping Unit (optional): SmB
Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ____ to ____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☐ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ____ to ____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☒ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ ____
Additional dominant species: ____

Herptiles
Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? ____
Other herptiles ☐ observed ☐ previously observed: ____

Additional Comments/Observations: (use additional sheets if necessary)
appears to be a dug out area that now holds pools of standing water, lots of boulders 12"-24"

INVESTIGATOR'S OPINION

☐ YES ☒ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Sarah L. Shute — Sarah L. Shute — 9/29/11
Investigator's Name (print) — Investigator's Signature — Date

Contact info: TES, Inc. 23 County Route 6, Suite A, Phoenix, NY 13135
(315) 695-7228

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Cricket Valley Energy – Rasio Parcel

Project type: Industrial Development

Applicant/Landowner Name: Advanced Power NA

County: Dutchess Quad: Dover Plains Township/Municipality: Dover

PNDI # N/A Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 64.94 (study area) **Does the Phase 1 survey include all wetlands in the action area?** ☐ Y ☐ N[3] ?

WETLAND ID: C **PHOTOS TAKEN:** ☒ Yes ☐ No **WETLAND SIZE:** 0.01 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 41° 40.356' Long -73° 34.754'

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 9/29/11 Time In: 11:39 Time Out: 2:42

Last precipitation: ☒ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☒ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☒ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☒ Unknown

(* no potential habitat identified on original CVE site N of Rasio parcel)

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

forest

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☐ PEM ____ ☒ PSS 100 ☐ PFO ____ ☐ POW ____

☐ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name Cricket Valley Energy - Rasco Parcel *Wetland* C *(con't)*

Hydrology

☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely ? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☒ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☒ Y ☐ N Evidence of flooding? If yes, describe indicators (puddle)/"vernal pool"

Soils Mapping Unit (optional): FcC
Field observations confirm mapped type? ☐ YES ☐ NO ☒ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ___ to ___"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☐ YES ☒ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ___ to ___"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☒ dogwood (silky) ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ ___
Additional dominant species: PI, honeysuck., ash

Herptiles
Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? ___
Other herptiles ☐ observed ☐ previously observed: ___

Additional Comments/Observations: (use additional sheets if necessary)
not even a vernal pool, just a wet depression/puddle

INVESTIGATOR'S OPINION

☐ YES ☒ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Sarah L Shute — Sarah L Shute — 7/29/11
Investigator's Name (print) — Investigator's Signature — Date

Contact info: TES, Inc 23 County Route 6, Suite A, Phoenix, NY 13135
(315) 695-7228

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Cricket Valley Energy - Rasco Parcel

Project type: Industrial Development

Applicant/Landowner Name: Advanced Power NA

County: Dutchess Quad: Dover Plains Township/Municipality: Dover

PNDI # N/A Potential conflict with USFWS species? ❑ Y ❑ N

ACTION AREA[2]

Action area size: 64.94 (Study area) **Does the Phase 1 survey include all wetlands in the action area?** ❑ Y ❑ N[3]

WETLAND ID: D **PHOTOS TAKEN:** ☒ Yes ❑ No 13-29 **WETLAND SIZE:** 5.92 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

❑ < 0.1 acre ❑ 0.1-0.5 acre ❑ >0.5 to <1 acre ❑ 1-2 acres ❑ 2-4 acres ❑ 5+ acres ❑ 10+ acres

WETLAND LOCATION: Lat 41° 40.256' Long -73° 34.816'

(approximate center of wetland) GPS Datum (check one): ❑ NAD 27 ☑ NAD 83 ❑ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 9/29/11 Time In: 11:39 Time Out: 2:42

Last precipitation: ☒ < 24 hours ❑ 1-7 days ❑ > 1 week ❑ unknown Drought conditions? ❑Y ☒ N ❑ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

❑ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

❑ none of it ❑ all of it ❑ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

❑ all of it ❑ part of it (at least _____ acres) ❑ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☒ Y ❑ N ❑ Unknown

If yes, *could* they be potential bog turtle habitat? ❑ Y ❑ N ☒ Unknown

(* no potential habitat identified on adjacent CVE site)

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

cedar forest, RR, + DFW

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ❑ PEM ____ ❑ PSS ____ ☒ PFO 100 (young) ❑ POW ____

☒ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

RR backing up water

❑ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name Cricket Valley Energy - Rosio Parcel *Wetland* D *(con't)*

Hydrology

☒ Y ☐ N Springs or seeps ☒ visible or ☐ likely ? Watercress present? ☐ Yes ☐ No

☐ Y ☒ N Spring houses in or adjacent to wetland?

☒ Y ☐ N Saturated soils present? If yes, year-round? ☒ Likely (in some areas) ☐ Unlikely ☐ Unknown

☒ Y ☐ N Water visible on surface? Check all that apply: ☒ small puddles/depressions (1 " deep)
☒ rivulets (2 " deep) ☒ larger pools/ponds (10 " deep)

☐ Y ☒ N Evidence of flooding? If yes, describe indicators_____

Soils Mapping Unit (optional): Wy, SmB
Field observations confirm mapped type? ☐ YES ☐ NO ☒ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☒ YES ☐ NO	How much of it (PEM) is **mucky**? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ____ to ____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☒ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☐ YES ☒ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☒ YES ☐ NO	How much of it is **mucky**? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 1 to 3 "	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☒ sedges ☒ rushes ☒ skunk cabbage ☐ cattail ☒ sweet flag ☐ jewelweed ☐ sphagnum moss
☒ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☒ *Phragmites* ☐ purple loosestrife
☒ alder ☐ dogwood ☒ red maple ☐ willow ☒ poison sumac ☐ multiflora rose ☒ shrubby cinquefoil
Additional dominant species: calico aster, C. laevustris, GR, marsh fern, equisetum

Herptiles
Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? ____
Other herptiles ☐ observed ☐ previously observed: pick. frog, toad

Additional Comments/Observations: (use additional sheets if necessary)
DFW impounded by RR, some tussocks, most standing water 10" deep, ~~on~~ rivulets by spring only, non-mucky, young wooded area of successional wetland near D11

INVESTIGATOR'S OPINION

☒ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☐ NO ☒ UNSURE The soils criterion[8] for bog turtle habitat is met.
☒ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Sarah L Shute — Sarah L Shute — 9/29/11
Investigator's Name (print) — Investigator's Signature — Date

Contact info: TES, Inc 23 County Route 6, Suite A, Phoenix, NY 13135
(315) 695-7228

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Cricket Valley Energy - Rasco Parcel

Project type: Industrial Development

Applicant/Landowner Name: Advanced Power NA

County: Dutchess Quad: Dover Plains Township/Municipality: Dover

PNDI # N/A Potential conflict with USFWS species? ❑ Y ❑ N

ACTION AREA[2]

Action area size: 64.94 (Study area) **Does the Phase 1 survey include all wetlands in the action area?** ❑ Y ❑ N[3] # 28 + 29

WETLAND ID: E **PHOTOS TAKEN:** ☒ Yes ❑ No **WETLAND SIZE:** 0.05 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

❑ < 0.1 acre ❑ 0.1-0.5 acre ❑ >0.5 to <1 acre ❑ 1-2 acres ❑ 2-4 acres ❑ 5+ acres ❑ 10+ acres

WETLAND LOCATION: Lat 41° 40.139' Long -73° 34.751'

(approximate center of wetland) GPS Datum (check one): ❑ NAD 27 ❑ NAD 83 ❑ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 9/28/11 Time In: 11:39 Time Out: 2:42

Last precipitation: ☒ < 24 hours ❑ 1-7 days ❑ > 1 week ❑ unknown Drought conditions? ❑ Y ☒ N ❑ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

❑ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

❑ none of it ❑ all of it ❑ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

❑ all of it ❑ part of it (at least _____ acres) ❑ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☒ Y ❑ N ❑ Unknown

If yes, *could* they be potential bog turtle habitat? ❑ Y ❑ N ☒ Unknown

(no potential habitat identified on adjacent CVE site)

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

DFU

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ❑ PEM ____ ❑ PSS ____ ☒ PFO 100 ❑ POW ____

❑ Y ☒ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

❑ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name Cricket Valley Energy – Rosco Parcel *Wetland* E *(con't)*

Hydrology

☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely ? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators_____

Soils Mapping Unit (optional): FcC
Field observations confirm mapped type? ☐ YES ☐ NO ☒ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ____ to ____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☐ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it is **mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ____ to ____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☒ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☒ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☒ alder ☐ dogwood ☒ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____
Additional dominant species: cedar, Christmas fern, alder

Herptiles
Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? _____
Other herptiles ☐ observed ☐ previously observed: _____

Additional Comments/Observations: (use additional sheets if necessary)
drain? in a cedar forest

INVESTIGATOR'S OPINION

☐ YES ☒ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Sarah L. Shute — Sarah L. Shute — 9/29/11
Investigator's Name (print) — Investigator's Signature — Date

Contact info: TES, Inc. 23 County Route 6, Suite A, Phoenix, NY 13135
(315) 695-7228

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Cricket Valley Energy - Rasco Parcel

Project type: Industrial Development

Applicant/Landowner Name: Advanced Power NA

County: Putnam Quad: Dover Plains Township/Municipality: Dover

PNDI # N/A Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 64.94 (study area) **Does the Phase 1 survey include all wetlands in the action area?** ☐ Y ☐ N[3]

(phrag) 1-4; 5-6 - SSW/scrpy area

WETLAND ID: F **PHOTOS TAKEN:** ☒ Yes ☐ No **WETLAND SIZE:** 0.35 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 41° 40.474' Long -73° 34.702'

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☒ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: ~~10/13/9~~ 9/28/11 Time In: 11:39 Time Out: 2:42

Last precipitation: ☒ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐Y ☒N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☒ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☒Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐Y ☐ N ☒ Unknown

(* No potential habitat identified on original CVE site North of Rasco)

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

old industry, Phrag ditch at toe of slope

WETLAND CHARACTERISTICS

Sometrees, but not PFO

Wetland type(s) present and % cover: ☒ PEM 90 ☒ PSS 10 ☐ PFO ____ ☐ POW ____

☒ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

ditch around industrial pad

☐ Y ☒ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Project Name Cricket Valley Energy - Rosco Parcel *Wetland* F *(con't)*

Hydrology

☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely ? Watercress present? ☐ Yes ☐ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☒ Y ☐ N Saturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown
☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☒ larger pools/ponds (___" deep) ditch
☒ Y ☐ N Evidence of flooding? If yes, describe indicators it's a ditch

Soils Mapping Unit (optional): FcD, GlB
Field observations confirm mapped type? ☐ YES ☐ NO ☒ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ____ to ____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☐ YES ☒ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☒ NO	How much of it is **mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ____ to ____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☒ *Phragmites* ☐ purple loosestrife
☒ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ shrubby cinquefoil (some) a few stems
Additional dominant species: aspen along the edges
Japanese barberry, honeysuckle, goldenrod

Herptiles
Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? ____
Other herptiles ☐ observed ☐ previously observed: ____

Additional Comments/Observations: (use additional sheets if necessary)
mostly Phrag. ditch, source seems to be a seep out of cedar hillside, small section in woods, not very wet (jap. barberry, gr. honeysuckle, alder

INVESTIGATOR'S OPINION
☐ YES ☐ NO ☒ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Sarah Shute — Sarah J. Shute — 9/29/11
Investigator's Name (print) — Investigator's Signature — Date

Contact info: TES, Inc 23 County Route 6, Suite A, Phoenix, NY 13135
(315) 695-7228

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 nearly ten 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

Relevant 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.
- Independently located bog turtles at three separate occupied locations.
- Conducted site visits at occupied bog turtle sites in Columbia, Dutchess, Oswego, and Seneca, Counties, NY and Berkshire County, MA.
- Conducted site visits at occupied bog turtle sites in Berkshire County, MA.
- Completed Phase 1 bog turtle surveys in Dutchess, Orange, Sullivan, Oneida, Oswego, Wayne, and Westchester Counties, NY.
- Supervised Phase 2 bog turtle surveys in Sullivan County, NY.
- Assisted in agency and university-sponsored bog turtle research projects in Columbia, Dutchess, and Putnam Counties, NY and Berkshire County, MA.
- Performed Phase 1 Bog Turtle Surveys along approximately 13 miles of highway right-of-way in Otsego County, NY.
- Performed Phase 1 Bog Turtle Surveys for a New York State utility on approximately 42 miles of electric transmission line right-of-way in Oswego County and Oneida Counties, NY
- Completed a desktop analysis and field review for preliminary bog turtle habitat assessments in Jefferson and Oswego Counties, NY.
- Prepared Phase 1 and Phase 2 bog turtle reports.

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 Community College

U.S. Fish and Wildlife Service-Recognized Qualified Bog Turtle Surveyor for the Prairie Peninsula/Lake Plain Recovery Unit

Expertise and Experience

Mr. Rizza has over 6 years' active experience in wetland and terrestrial studies. Mr. Rizza has been involved in been involved in plant and wildlife studies throughout New York State. His technical experience also includes the following:

- Endangered Species and General Wildlife Surveys
- Botanical Assessments and Vegetation/Habitat Mapping
- ArcGIS Mapping and Database Creation
- AutoCAD Drawing Creation
- Aerial Photograph Interpretation
- Garmin & ProMark GPS Navigation and Point Mapping

Relevant Project Experience

- Independently located bog turtles in Dutchess County, NY.
- Completed Phase 1 bog turtle surveys in Dutchess, Orange, Sullivan, Oneida, and Oswego Counties, NY.
- Completed extensive Phase 2 bog turtle surveys on several sites in Dutchess and Sullivan Counties.
- Independently located bog turtles at three separate occupied locations.
- Assisted in agency and university-sponsored bog turtle research projects in Columbia and Dutchess Counties, NY.
- Conducted site visits at occupied bog turtle sites in Columbia, Dutchess, Oswego, and Seneca Counties, NY.
- Performed Phase 1 Bog Turtle Surveys along approximately 13 miles of highway right-of-way in Otsego County, NY.
- Performed Phase 1 Bog Turtle Surveys for a New York State utility on approximately 42 miles of electric transmission line right-of-way in Oswego County and Oneida Counties, NY.
- Completed a desktop analysis and field review for preliminary bog turtle habitat assessments in Jefferson and Oswego Counties, NY.
- Prepared Phase 1 and Phase 2 bog turtle reports.

Phase 2 Bog Turtle Survey – Former Rasco Parcel

Terrestrial Environmental Specialists, inc.
23 COUNTY ROUTE 6, SUITE A, PHOENIX, NY 13135
(315) 695-7228 FAX (315) 695-3277 E-MAIL: tesinc@tesenvironmental.com

June 27, 2012

Ms. Lynn Gresock
Associate Vice President
ARCADIS U.S., Inc.
Two Executive Drive, Suite 303
Chelmsford, MA, 01824

Re: Phase 2 Bog Turtle Survey Results - Former Rasco Parcel
Cricket Valley Energy Project Site, Town of Dover, Dutchess County, NY
TES File No. 3487B

Dear Ms. Gresock:

As requested by ARCADIS, Terrestrial Environmental Specialists, Inc. (TES) conducted Phase 2 bog turtle (*Glyptemys muhlenbergii*) surveys at the former Rasco Parcel. This site is located west of State Route 22 and east of an active Metro-North railway line in the Town of Dover, Dutchess County, New York (Figure 1) and is associated with the Cricket Valley Energy project (CVE). The former Rasco Parcel is the southern portion of an existing industrial facility upon which the CVE project is proposed and would be used as a temporary parking and laydown area during construction. The U.S. Fish and Wildlife Service (USFWS), the New York Natural Heritage Program (NYNHP), and the New York State Department of Environmental Conservation (NYSDEC) have indicated that bog turtles have been documented in proximity to this area.

TES conducted a Phase 1 bog turtle survey at the former Rasco Parcel on September 28, 2011. During that survey, two wetland areas were considered to represent marginally potential suitable bog turtle habitat. These areas included portions of Wetland A and Wetland D (Figure 2). Based on the observed habitat features, as well as the proximity of documented occurrences of bog turtles to the site, TES recommended that a Phase 2 survey for bog turtles be conducted in these portions of the site. A detailed description of the Phase 1 survey conducted by TES at the former Rasco Parcel is provided in the report submitted to ARCADIS on December 29, 2011.

TES performed the Phase 2 bog turtle surveys at the former Rasco parcel during April, May, and June, 2012. Survey protocols utilized the USFWS Guidelines for Bog Turtle Surveys (USFWS 2001, USFWS 2006). This report provides a description of these efforts and the results of the surveys.

Study Area Description

The former Rasco Parcel is immediately south of and a part of an abandoned industrial facility where the CVE project is proposed. The parcel is bordered on the east by State Route 22 and on the west by an active Metro-North railway line. The former Rasco Parcel consists of primarily mixed upland forest (Figure 2).

- Wetland A

Wetland A was surveyed at approximately 0.67 acre and is a forested wetland that is located in an 8-10ft depression that may have been the result of an old excavation or the past placement of fill piles. This area was dominated by eastern red cedar (*Juniperus virginiana*) and red maple (*Acer rubrum*) but also contained multiflora rose (*Rosa multiflora*), arrowwood (*Viburnum dentatum*), shrubby cinquefoil (*Potentilla fruticosa*), grass-of-Parnassus (*Parnassia glauca*), sensitive fern (*Onoclea sensibilis*), marsh fern (*Thelypteris palustris*), and poison ivy (*Toxicodendron radicans*). Some of these plant species are indicative of potential bog turtle habitat. Although this area was forested, the trees were relatively young, and the canopy was relatively open. There were no tussocks or hummocks, but there was microtopography that created small pools and pockets of water early in the season. There were few areas within this wetland that were mucky. These areas were quite small and were no more than a few inches deep and were dried up by the end of the survey period. Because a portion of this wetland contained fen indicator species and because the soils and hydrology were considered marginally suitable, approximately 0.50 acre of Wetland A was considered to be potentially suitable for bog turtles (Figure 2).

- Wetland D

Wetland D was surveyed at approximately 5.92 acres and was characterized as a young forested wetland with areas of relatively dense herbaceous vegetation. Wetland D was comparatively drier in the higher elevation portions and wetter in the lower elevation portions near the railroad tracks, where water was deeper and more pooled. The drier, eastern portion was more wooded and was dominated by red maple and alder (*Alnus* sp.). This area of Wetland D also contained skunk cabbage (*Symplocarpus foetidus*), marsh fern, sensitive fern, and field horsetail (*Equisetum arvense*). Shrubby cinquefoil and poison sumac (*Toxicodendron vernix*) were also found in this portion of the wetland. These two plant species are indicative of calcareous wetlands and are often found in wetlands inhabited by bog turtles. Dominant species in the western, wetter portion were lake sedge (*Carex lacustris*), common reed (*Phragmites australis*), and red maple. Soils in much of this wetland were saturated, however, few areas were mucky. Several springs were observed in the southwestern portion of Wetland D. Rivulets were associated with these springs. Saturated soils and surface water remained near the bases of the springs and near the railroad track throughout the study period. Overall, a portion of this wetland was considered to have characteristics of suitable bog turtle habitat, primarily vegetation and hydrology. This area was approximately 2.32 acres in size and was located mostly in the western portion of Wetland D (Figure 2).

Methods

Prior to conducting the surveys, TES obtained an Endangered/Threatened Species License (Scientific #284) from the New York State Department of Environmental Conservation (NYSDEC).

The Phase 2 bog turtle surveys were conducted by two TES biologists during each visit. The surveys were led by Ms. Sarah Shute, a USFWS-recognized qualified Phase 1 and Phase 2 bog turtle surveyor in the Hudson/Housatonic Recovery Unit. Mr. Philip Rizza, a USFWS-recognized

qualified Phase 1 bog turtle surveyor in the Hudson/Housatonic Recovery Unit; Ms. Megan Caves, Assistant Environmental Scientist; and Mr. Adam Robedee, Environmental Technician, assisted with the surveys. Survey protocols utilized the USFWS Guidelines for Bog Turtle Surveys (USFWS 2001, USFWS 2006).

Four surveys were conducted between April 15 and June 15, 2012, with two of the surveys occurring in May. The four surveys at the former Rasco Parcel were conducted on the following dates in 2012: (1) April 26 and 27; (2) May 7 and 8; (3) May 22; and (4) June 7 and 8. Surveys were conducted when ambient air temperatures were at or above 55° Fahrenheit (or 65 ° Fahrenheit during and after rain), except when weather conditions changed when surveys were in process.

Phase 2 survey efforts focused on those portions of Wetlands A and D that were considered potentially suitable and contained the appropriate soils, hydrology, and vegetation criteria (designated survey areas) (Figure 2). The extent of the survey area was preliminarily delineated by TES during the Phase 1 survey and subsequently refined during the first visit of the Phase 2 survey. Searches were performed in approximately 0.50 acre of Wetland A and approximately 2.32 acres of Wetland D (Figure 2). A minimum of four person-hours per acre of suitable habitat (designated survey area) was searched during each survey.

The surveys included both visual encounter survey and muddling/probing techniques. Surveyors first conducted semi-rapid walks through the designated survey area while visually scanning for turtles basking on herbaceous vegetation or on the ground. This was followed by surveyors walking more slowly and carefully, overturning vegetation and probing mucky pockets and shallow pools with a metal pole or by hand to detect buried turtles.

Results

A total of 8 person hours were spent searching for bog turtles in the designated survey area in Wetland A, and 40 person-hours were spent in the designated survey area in Wetland D. No bog turtles were observed in these areas or anywhere at the former Rasco Parcel during the Phase 2 efforts.

Date	Surveyors	Designated Survey Area	Person-Hours Surveyed	Weather (°F)	Turtles Found
4/26/12	S. Shute, P. Rizza	A	2	Overcast, 52°- 62°	None
4/26/12	S. Shute, P. Rizza	D	6	Overcast, 52°- 62°	None
4/27/12	S. Shute, P. Rizza	D	5	Mostly cloudy, 44°	None
5/7/12	S. Shute, P. Rizza	D	4	Overcast, 68°- 63°	None
5/8/12	S. Shute, P. Rizza	D	5	Light rain, 57°- 59°	None
5/8/12	S. Shute, P. Rizza	A	2	Light rain, 57°- 59°	None
5/22/12	S. Shute, M. Caves	A	2	Overcast, 71°- 68°	None
5/22/12	S. Shute, M. Caves	D	10	Overcast, 71°- 68°	None
6/7/12	S. Shute, A. Robedee	A	2	Sunny, partly cloudy 72°	None
6/7/12	S. Shute, A. Robedee	D	8	Sunny, partly cloudy 72°	None
6/8/12	S. Shute, A. Robedee	D	2	Overcast, 56°	None

Discussion

Although it was determined that areas of potentially suitable habitat for bog turtles occurred at the former Rasco Parcel, they were considered to be marginally suitable. These areas were mostly wooded, limiting the amount of sunlight reaching the ground. There were few areas of hummocky or tussocky vegetation that bog turtles would use for basking and nesting. The soils in these areas were not particularly mucky. Areas that were mucky were quite small and were no more than a few inches deep. Wetland A appeared to have seeps. However, this area was completely dry at the time of the June survey. Wetland D contained several springs that created rivulets and provided shallow surface water throughout the survey period. However, the vegetation and soil conditions in Wetland D limited its suitability for bog turtles.

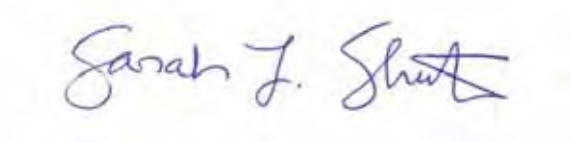
Summary

TES was contracted by ARCADIS to conduct Phase 2 bog turtle surveys at the former Rasco Parcel which is affiliated with the Cricket Valley Energy Project. The site is located between State Route 22 and the Metro-North railway line in the Town of Dover, Dutchess County, New York. The former Rasco Parcel is the southern portion of an existing industrial facility upon which the CVE project is proposed and would be used as a temporary parking and laydown area during construction. The USFWS, the NYNHP, and the NYSDEC have indicated that bog turtles have been documented in proximity to this area.

A Phase 1 survey was conducted at the former Rasco Parcel on September 28, 2011. At that time, two areas within Wetlands A and D were considered to contain marginally potential habitat for bog turtles. As a result, Phase 2 surveys were conducted on the site by TES. Surveys were conducted during four visits to the site between April and June, 2012. Survey protocols utilized USFWS guidelines. No bog turtles were found on the site during the Phase 2 bog turtle surveys. Based on the results of these surveys and the marginal quality of the habitat on the site, it is unlikely that bog turtles occur on the site.

If you have any questions regarding these Phase 2 bog turtle surveys, please feel free to contact me or Don Coogan, Jr. at 315-695-7228.

Sincerely,
TERRESTRIAL ENVIRONMENTAL SPECIALISTS, INC.



Sarah L. Shute
Assistant Environmental Scientist

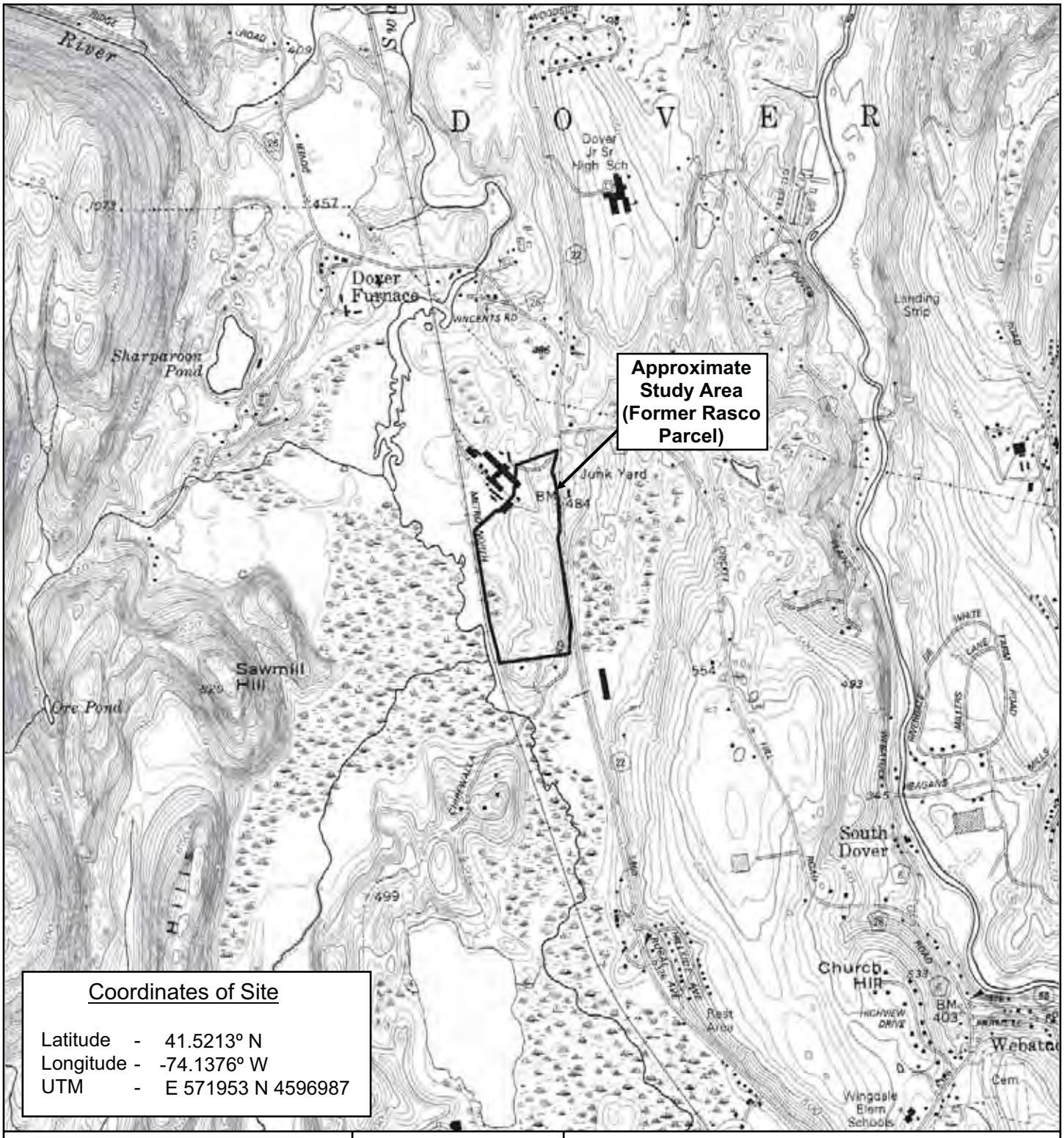
Attachments

References

U.S. Fish and Wildlife Service (USFWS). 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population Recovery Plan. Hadley, MA. 103 pp.

U.S. Fish and Wildlife Service (USFWS). 2006. Guidelines for Bog Turtle Surveys. A revision to the Bog Turtle (*Clemmys muhlenbergii*), Northern Population Recovery Plan (dated May 15, 2001). http://www.fws.gov/northeast/nyfo/es/btsurvey.pdf. Accessed June 2012.

Figures



0 1000' 2000'

SCALE 1" = 2000'

NORTH

Figure 1. Study Area Location - Former Racso Parcel

NYS DOT Topographic Map
Dover Plains Quadrangle
1989

Prepared by TERRESTRIAL ENVIRONMENTAL SPECIALISTS, Inc.

TES file: ARC-3487B/3487Bfig1.cdr/6-27-12

NORTH

0 150' 300'

APPROXIMATE SCALE IN FEET

Aerial Photograph obtained
from NYS GIS Clearinghouse
2009

Figure Prepared by
Terrestrial Environmental
Specialists, Inc.

Figure 2.

Aerial Photograph of Study Area with Wetland Boundaries and Designated Survey Areas

TES File: ARC-3487B\3487B-aerial-rasco-bt.cdr\6-27-12

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 nearly ten 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

Relevant 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.
- Independently located bog turtles at three separate occupied locations.
- Conducted site visits at occupied bog turtle sites in Columbia, Dutchess, Oswego, and Seneca, Counties, NY and Berkshire County, MA.
- Conducted site visits at occupied bog turtle sites in Berkshire County, MA.
- Completed Phase 1 bog turtle surveys in Dutchess, Orange, Sullivan, Oneida, Oswego, Wayne, and Westchester Counties, NY.
- Supervised Phase 2 bog turtle surveys in Sullivan County, NY.
- Assisted in agency and university-sponsored bog turtle research projects in Columbia, Dutchess, and Putnam Counties, NY and Berkshire County, MA.
- Performed Phase 1 Bog Turtle Surveys along approximately 13 miles of highway right-of-way in Otsego County, NY.
- Performed Phase 1 Bog Turtle Surveys for a New York State utility on approximately 42 miles of electric transmission line right-of-way in Oswego County and Oneida Counties, NY
- Completed a desktop analysis and field review for preliminary bog turtle habitat assessments in Jefferson and Oswego Counties, NY.
- Prepared Phase 1 and Phase 2 bog turtle reports.

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 Community College

U.S. Fish and Wildlife Service-Recognized Qualified Bog Turtle Surveyor for the Prairie Peninsula/Lake Plain Recovery Unit

Expertise and Experience

Mr. Rizza has over 6 years' active experience in wetland and terrestrial studies. Mr. Rizza has been involved in been involved in plant and wildlife studies throughout New York State. His technical experience also includes the following:

- Endangered Species and General Wildlife Surveys
- Botanical Assessments and Vegetation/Habitat Mapping
- ArcGIS Mapping and Database Creation
- AutoCAD Drawing Creation
- Aerial Photograph Interpretation
- Garmin & ProMark GPS Navigation and Point Mapping

Relevant Project Experience

- Independently located bog turtles in Dutchess County, NY.
- Completed Phase 1 bog turtle surveys in Dutchess, Orange, Sullivan, Oneida, and Oswego Counties, NY.
- Completed extensive Phase 2 bog turtle surveys on several sites in Dutchess and Sullivan Counties.
- Independently located bog turtles at three separate occupied locations.
- Assisted in agency and university-sponsored bog turtle research projects in Columbia and Dutchess Counties, NY.
- Conducted site visits at occupied bog turtle sites in Columbia, Dutchess, Oswego, and Seneca Counties, NY.
- Performed Phase 1 Bog Turtle Surveys along approximately 13 miles of highway right-of-way in Otsego County, NY.
- Performed Phase 1 Bog Turtle Surveys for a New York State utility on approximately 42 miles of electric transmission line right-of-way in Oswego County and Oneida Counties, NY.
- Completed a desktop analysis and field review for preliminary bog turtle habitat assessments in Jefferson and Oswego Counties, NY.
- Prepared Phase 1 and Phase 2 bog turtle reports.

MEGAN CAVES

Environmental Technician

Education & Certifications

A.A.S. Environmental Conservation
A.A.S. Horticulture

Expertise and Experience

Ms. Caves has over four years' active experience in the environmental field with primary experience in wetland studies. She also has project experience in the following technical areas.

- Endangered and Threatened Animal and Plant Species Surveys
- Botanical Assessments and Vegetation/Habitat Mapping

Representative Project Experience

- Performed Phase 1 bog turtle surveys in Sullivan and Wayne Counties, New York.
- Participated in Phase 2 bog turtle surveys in Sullivan County, New York.
- Participated in a bog turtle habitat assessment in Oswego County, New York.
- Conducted Blanding's turtle habitat assessments in Dutchess County, New York.
- Conducted Blanding's turtle trapping surveys in Dutchess County, New York.
- Assisted with turtle trapping in Jefferson County, New York.
- Performed an acoustic bat survey that targeted migratory bat species affected by wind turbines in Elmira New York in conjunction with the NYSDEC.
- Conducted an Indiana bat summer roosting habitat assessment on an industrial site in Onondaga County, New York.
- Conducted Indiana bat summer roosting habitat assessments on several sites in Wayne County, New York.
- Conducted northern cricket frog surveys in Orange County, New York.
- Conducted northern cricket frog surveys in Dutchess County, New York.
- Participated in a tree survey calculating diameter at breast height and species for a large parcel in Canandaigua, New York.
- Performed bald eagle monitoring for a site in central New York.
- Assisted with endangered/threatened plant species surveys in Waterloo, New York.
- Participated in short-eared owl surveys located in western New York.
- Communicate with the New York Natural Heritage Program on a regular basis.
- Participated in monitoring of wells on a site located in Clay, New York.
- Performed electrofishing surveys in Sullivan and Erie Counties, New York.
- Planted aquatic vegetation to enhance created wetlands in Monroe and Onondaga Counties, New York.
- Performed vegetation inventory for an industrial site in Jefferson County, New York.
- Performed wetland surveys for a variety of commercial and residential sites in New York.
- Prepared wetland delineation, impact analysis, and vegetation and wildlife reports for numerous projects throughout New York.

ADAM J. ROBEDEE
Environmental Technician

Education

B.S. Forest Ecosystems Science
State University of New York College of Environmental Science and Forestry 2009

Professional Employment History

Terrestrial Environmental Specialists, Inc. - Phoenix, NY 2011-Present
SUNY Research Foundation - Syracuse, NY 2006-2008, 2010
New York City Department of Parks and Recreation - New York, NY 2009-2010
New York State Department of Environmental Conservation – Altmar, NY Summer 2008

Expertise and Experience

Mr. Robedee has over 3 years of active experience in the environmental field. His specific expertise includes field data collection for a variety of environmental projects across New York State. He has technical project experience in the areas of wetland delineation, wetland mitigation monitoring, amphibian and reptile trapping studies, endangered species assessments, and forestry. Mr. Robedee is also experienced with GIS mapping and analysis and GPS field data collection.

- **Wetland Delineation and Report Preparation**
  Mr. Robedee has assisted with many projects that require delineation of state and federal wetlands, as well as the preparation of the supporting reports. He has been involved with many types of projects including residential, commercial, and industrial projects.

- **Threatened and Endangered Species**
  Mr. Robedee has performed habitat assessments, field searches, and trapping studies for rare, threatened, or endangered plant and wildlife species. He communicates frequently with the New York Natural Heritage Program.

- **Mitigation and Monitoring**
  Mr. Robedee has assisted with the planning and implementation of wetland mitigation areas. He has performed construction monitoring and post construction monitoring for created wetlands and habitat restoration areas.

- **Geographic Information Systems and Computer Graphics**
  Mr. Robedee is experienced with ArcGIS mapping and analysis. He has experience utilizing GIS, CAD, and graphics software to create maps and figures for reports and for use in the field. He has collected and assembled data from GPS units as well as geospatial information from government, internet, and other sources.

Project Experience

- Performed reptile and amphibian trapping and anuran call surveys for a study related to the restoration of Onondaga Lake in Syracuse, NY.
- Conducted Blanding's turtle trapping surveys in Dutchess County, NY.
- Performed radio telemetry tracking for a Blanding's turtle study in Dutchess County, NY.
- Participated in timber rattle snake surveys in Warren County, NY.
- Conducted Indiana bat summer roosting habitat assessments in Onondaga County, NY, and Greene County, NY.
- Assisted with mist net trapping for an Indiana bat study in Onondaga County, NY.
- Performed an endangered/threatened plant survey in Onondaga County, NY.
- Assisted with wetland delineations in Rensselaer County and Albany County, NY.
- Performed wetland mapping along a proposed pipeline right-of-way in Onondaga County, NY.