Orange and Rockland Utilities, Inc.

Line 28 Transmission Project

Appendix D

Timber Rattlesnake Survey Report

1200 Wall Street West
2nd Floor
Lyndhurst, NJ 07071

201.933.5541 PHONE
201.933.5601 FAX

www.TRCsolutions.com

February 10, 2009

Ms. Lisa Masi
N.Y. State Dept. of Environmental Conservation
Wildlife Department
21 South Putt Corners Road
New Paltz, NY 12561-1696

Re: Orange and Rockland Utilities, Inc.
Timber Rattlesnake Survey
Line 28 Transmission Project
Orange and Rockland Counties, NY

Dear Ms. Masi,

As you may recall from our recent discussion, Orange and Rockland Utilities, Inc. ("Orange and Rockland" or "ORU") is planning to add a second circuit ("Transmission Line 28") in the open position on certain existing transmission towers located between Orange and Rockland's existing Ramapo 345 kV electric substation, located in the Town of Ramapo in Rockland County, New York, and its planned Sugarloaf Substation, to be located on the south side of Sugarloaf Mountain Road near the existing ORU 69 kV Sugarloaf Substation in the Town of Chester, Orange County, New York.

As a follow up to our telephone discussion on January 23, 2009 regarding the NYSDEC's January 5, 2009 comments on the Timber Rattlesnake Survey report submitted for the project, this letter is to confirm that ORU will implement the following NYSDEC recommendations during project construction activities:

- According to your letter dated January 5, 2009, you requested that the following two areas be monitored on a daily basis during construction activities:

    1. beginning at the Ramapo Substation and traveling north for approximately 1.5 miles along the project's existing transmission right-of-way (ROW); and

    2. beginning approximately two miles west of Route 87 at South Gate Road in Tuxedo, NY and traveling north for approximately 6 ¼ miles along the existing ROW.

  The above locations are illustrated in attached Figure 1.

- Timber Rattlesnake monitoring will take place during construction activities at the above-mentioned locations between May 1st and September 15th.

- Timber Rattlesnake monitoring will be completed by a New York State certified snake handler.

We believe that these action items sufficiently address your concerns and/or recommendations. Hence, as discussed during our January 5th teleconference, ORU will implement these action items and commence construction later this year without further consultation with the New York State Department of Environmental Conservation (NYSDEC). If you have any further questions or comments please feel free to contact me at (978) 656-3615 or Kevin Maher, TRC's Project Manager for this project, at (201) 933-5541 ext. 108.

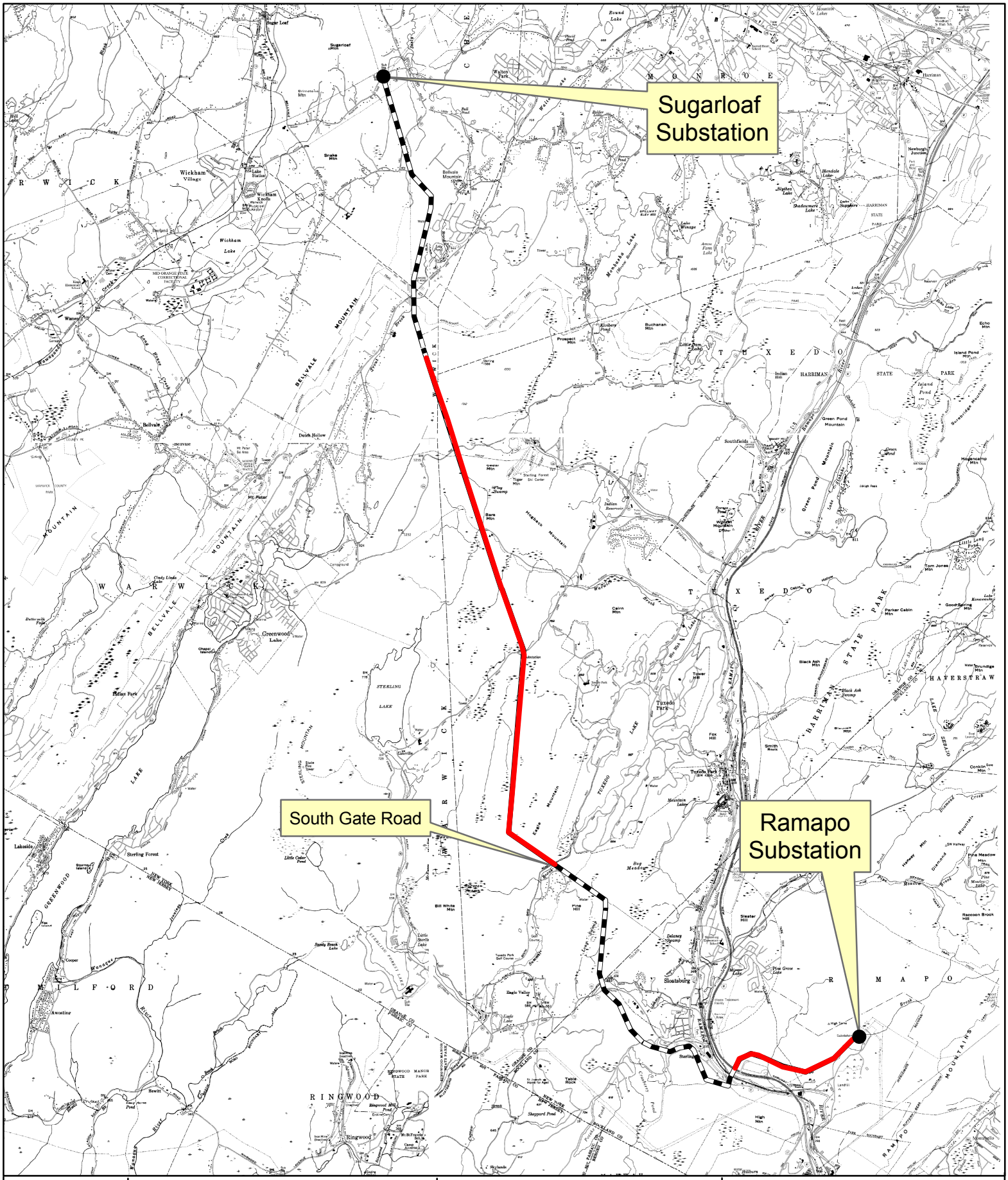
Sincerely,

Colin P. Duncan, CPSS, PWS
Senior Soil and Wetland Scientist

Cc:

J. Koza, ORU
K. Kruger, ORU
G, Keeble, ORU
K. Maher, TRC
M. Wellins, TRC
A. Gismondi, TRC

Enclosure



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Timber Rattlesnake Monitoring Areas
Line 28 Right-of-Way

USGS DRG Quadrangels: Warwick, Monroe, Sloatsburg, Greenwood Lake

TRC
1200 Wall Street West
Lyndhurst, NJ 07071

Orange and Rockland Utilities, Inc.
Line 28 Transmission Project

Figure 1: Timber Rattlesnake Monitoring Areas

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources, Region 3
Bureau of Wildlife
21 South Putt Corners Road, New Paltz, New York 12561-1620
Phone: (845) 256-3094 • **FAX:** (845) 255-4659
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

January 5, 2009

Mr. Colin P. Duncan
TRC Environmental Corporation
1200 Wall Street West
2nd Floor
Lyndhurst, NJ 07071

RE: Orange and Rockland Utilities, Inc.
Timber Rattlesnake Survey
Line 28 Transmission Project
Orange and Rockland Counties, NY

Dear Mr. Duncan,

After reviewing the Timber Rattlesnake Survey for the Line 28 Transmission Project I would recommend expanding the area and time frames of monitoring Timber Rattlesnakes for this project. Although no snakes or new den sites were found in the October survey, use of the areas of the right of way during other times of the year can not be ruled out.

In addition to the 13 areas identified as potentially suitable habitat and the recommended buffer of 300ft on either side of these areas, rattlesnakes could potentially be using other areas of the power line right of way as transient habitat as well as summer habitat.

Two areas of concern are approximately the first 1.5 miles of the right of way starting at the Ramapo substation and then a 6.3 mile section starting two miles west of I-87. The recommended timing of monitoring in these locations is between May 1st and September 15th because of the close proximity of dens sites. Even still the potential exists for snakes to be found out side of these areas. It may be wise to monitor the entire length of the right of way to prevent take.

Please contact me if you have any questions.

Respectfully,

Lisa Masi
Wildlife Biologist

cc: T. Kerpez
S. Joule

1200 Wall Street West
2nd Floor
Lyndhurst, NJ 07071

201.933.5541 PHONE
201.933.5601 FAX

www.TRCsolutions.com

December 10, 2008

Ms. Lisa Masi
N.Y. State Dept. of Environmental Conservation
Wildlife Department
21 South Putt Corners Road
New Paltz, NY 12561-1696

Re: Orange and Rockland Utilities, Inc.
Timber Rattlesnake Survey
Line 28 Transmission Project
Orange and Rockland Counties, NY

Dear Ms. Masi,

As you may recall from our December 3, 2008 teleconference, Orange and Rockland Utilities, Inc. ("Orange and Rockland" or "ORU") is planning to add a second circuit ("Transmission Line 28") in the open position on certain existing transmission towers located between Orange and Rockland's existing Ramapo 345 kV electric substation, located in the Town of Ramapo in Rockland County, New York, and its planned Sugarloaf Substation, to be located on the south side of Sugarloaf Mountain Road near the existing ORU 69 kV Sugarloaf Substation in the Town of Chester, Orange County, New York.

Due to the presence of known hibernacula and associated habitat of state-listed timber rattlesnake (*Crotalus horridus*) in the project vicinity, this report is being submitted to identify potential habitats within the project right-of-way and address avoidance of potential construction impacts. As a result of our investigation, we have identified several areas containing good or excellent potential habitat for activities such as foraging and basking. No new potential den sites have been identified within the right-of-way or proposed work areas. As described in the report, in order to minimize the potential for impacts directly to animals could be occupying the construction area in key habitats, we have recommended both seasonal limitations for construction access activities, and for biological field staff to monitor construction access during likely periods of rattlesnake movement.

During our December 3rd teleconference, you requested that Orange and Rockland submit the Timber Rattlesnake Survey Report prepared by TRC for Line 28 Transmission Project to the Department for review and concurrence with the report's recommendations. Accordingly, a copy of the report is enclosed for your review.

Should you have any questions regarding the enclosed report, please do not hesitate to contact me directly at (978) 656-3615 or Kevin Maher, TRC's Project Manager for this project, at (201) 933-5541 ext. 108.

Sincerely,

Colin P. Duncan, CPSS, PWS
Senior Soil and Wetland Scientist

Enclosure

Cc: J. Koza, ORU
G. Keeble, ORU
K. Kruger, ORU
K. Maher, TRC
A. Gismondi, TRC
M. Wellins, TRC
S. Heim, TRC

TIMBER RATTLESNAKE SURVEY

Line 28 Transmission Project
Orange and Rockland Counties, New York

Prepared for:

Orange and Rockland Utilities, Inc.

Prepared by:

TRC Environmental Corporation
1200 Wall Street West
Lyndhurst, New Jersey 07071

December 2008

TABLE OF CONTENTS

1.0 Introduction

This report presents the results of a timber rattlesnake (*Crotalus horridus*) survey conducted within the existing 15-mile long electrical transmission right-of-way located in Orange and Rockland Counties, New York. The survey was conducted in support of planned activities associated with Orange and Rockland Utilities, Inc.'s (ORU) planned addition of a second circuit (Transmission Line 28) to the existing, 16-mile 345 kV Transmission Line 77 between the Ramapo Substation in the Town of Ramapo in Rockland County, New York and a new substation to be constructed on the south side of Sugarloaf Mountain Road near the existing ORU Sugarloaf Substation in the Town of Chester, Orange County, New York (see Figure 1). Transmission Line 77 traverses the Towns of Ramapo, Tuxedo, Warwick, and Chester on the existing utility right-of-way ("ROW"), which was the subject of the subject field survey investigation. The environmental assessment prepared for the installation includes information regarding impacts to threatened and endangered species which includes the timber rattlesnake; therefore a survey of potential habitat along the Project's right-of-way was completed.

2.0 Project Overview

ORU plans to add a second circuit (Transmission Line 28) to the existing, 16-mile 345 kV Transmission Line 77 between the Ramapo Substation in the Town of Ramapo in Rockland County, New York and a new substation to be constructed on the south side of Sugarloaf Mountain Road near the existing ORU Sugarloaf Substation in the Town of Chester, Orange County, New York. Transmission Line 77 traverses the Towns of Ramapo, Tuxedo, Warwick, and Chester on an existing utility right-of-way ("ROW"). Transmission Line 77 occupies the west side of the existing double-circuit towers. The east side of the towers is currently vacant. Figure 1 depicts the location of the existing Orange and Rockland Line 77 (and planned Line 28) transmission right-of-way (i.e., the "Project Right of Way").

Blooming Grove
Kiryas Joel
Central Valley
Goose Pond Mountain State Park
Monroe
Proposed Sugarloaf Substation
Walton Park
Chester
Woodbury
Harriman
Monroe
Wickham Village
Sugar Loaf School
Appalachian Trail
Sterling Forest State Park
Greenwood Lake Middle School
Sterling Forest Ski Center
Warwick
Greenwood Lake
Sterling Forest and Harriman State Park
Tuxedo
Tuxedo Park School
Tuxedo Park
Haverstraw
Sterling Forest State Park
Dater Mountian Nature Park
Eleanor Burlingham Memorial Park
Tuxedo Park Golf Course
Sloatsburg
Sloatsburg Senior Center
Sloatsburg Public Library
Sloat House
Ramapo
Ramapo Substation
Sloatsburg Community Fields
H. Pierson Mapes/ Flat Rock Park
Hillburn
Montebello
Hillburn Parkland
Suffern

Proposed Line 28
Substations
1 Mile Radius
Visual_Resources
Appalachian Trail
Parks
Village Boundaries
Town/City Boundaries
County Boundaries

N

0 0.5 1 1.5 2 Miles

Base Map: NYS DOT High Resolution Orthoimagery 2004

ORANGE & ROCKLAND UTILITIES, INC.
LINE 28 TRANSMISSION PROJECT
ORANGE AND ROCKLAND COUNTIES
NEW YORK

SITE LOCATION MAP

TRC
1200 WALL STREET WEST
LYNDHURST, NJ 07071

FIGURE 1

DECEMBER 2008

R:\Projects\GIS_2008\154119_Orange_Rockland\MXD\154119_O&R_Line77_site_location.mxd

The addition of Transmission Line 28 to the existing Transmission Line 77 transmission structures will not require the establishment of additional ROW. Transmission Line 77 was originally constructed and approved as a double circuit facility, with the intention that a second 345 kV circuit would be strung when needed, so as to avoid the environmental impact and costs of a complete new facility. Planned Transmission Line 28 installation will be conducted using conventional utility line maintenance vehicles working from existing access roads along the existing ROW. Accordingly, no significant grading, excavation, or ground disturbance is anticipated in support of the installation of the new transmission line. Ground disturbance will be limited to that caused by the movement of construction vehicles and foot traffic along the right-of-way. Areas of limited vegetation clearing will be required within the existing ROW, where adjacent vegetation has encroached, in support of the installation of the transmission line and to ensure its safe and reliable operation. Aside from the removal of danger trees in accordance with the removal requirements set by the New York State Public Service Commission in ORU's approved Right-of-Way Vegetative Management Plan, no vegetation clearing will be required outside of the existing ROW.

Installation of the proposed transmission line will not affect existing man-made structures. No significant permanent changes in topography will result from installation of the transmission line.

3.0 Timber Rattlesnake Habitat Characteristics

The timber rattlesnake is a State-listed threatened species which is documented by the NYSDEC Natural Heritage Program at up to 16 different locations situated within 1.5 miles of the Project right-of-way. Up two twelve of the locations are within the town of Ramapo; three locations are recorded in the town of Tuxedo; and one location within the town of Warwick. Timber rattlesnakes generally inhabit mountainous or hilly deciduous or mixed deciduous-coniferous upland forests with rocky outcroppings, steep ledges, and rock slides[1]. Their den sites (hibernacula) are located in rocky areas where underground

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

crevices provide overwintering retreats below the frost line. Timber rattlesnakes hibernate in communal den sites along with other snakes such as northern copperhead and black rat snakes. In New York, these den sites are typically situated on a rocky, sparsely to moderately wooded, steep slope that faces southeast to southwest. These areas are also used for basking, ecdysis (i.e., skin shedding), gestating and birthing. Areas for foraging generally include forested areas surrounding the den site (approximately within 1.5 miles).

4.0 Survey Methods

The plant communities within the Project's existing transmission right-of-way were initially characterized by TRC Environmental Corporation (TRC) with a combination of field surveys (January 15, 16, 17 and February 18, 19, and 20, 2007) and a review of current information. The body of current information included aerial photos, Natural Resources Conservation Service (NRCS) soil survey maps, U.S. Geological Survey maps, and NWI/NYSDEC wetland maps. Based on the results of this initial characterization, the only potential habitat for the timber rattlesnake present within the Project area included the easternmost portion of the transmission line from Ramapo Sub station to the New York State Thruway and the ROW portion between Lakes Road and South Gate Road in the Town of Tuxedo. This area generally consists of hilly to mountainous terrain which would potentially provide habitat for these species.

A timber rattlesnake habitat survey was subsequently conducted by TRC during the week of October 13, 2008 for the entire reach of the Project's existing transmission right-of-way between Ramapo Station and the Sugarloaf Substation. The survey was conducted by Duane Choquette (Ecologist), Michael Waterhouse (Wetland Scientist/Ecologist), Margaret Taras (Environmental Scientist), and Matthew Tozer (Environmental Scientist) of TRC. Weather conditions present during the survey were suitable – sunny, cloud-free skies with temperatures in the mid-seventies (degrees Fahrenheit). Skies were cloudy throughout the first day of the survey; however temperatures remained in the mid seventies.

The survey focused on identifying potential timber rattlesnake habitat and locating individuals within the right-of-way, or areas in close proximity to the right-of-way.

5.0 Survey Results

No individual timber rattlesnakes, nor evidence for colonies, were observed during the survey. In total, 13 areas ("RS2" through "RS 14") of potentially suitable habitat were identified within or in the immediate vicinity of the Project's existing transmission right-of-way. The 13 potential habitat areas are illustrated on the Aerial Photographs provided in Appendix A. Of these 13 potentially habitat areas identified, only four (4) areas were considered good or excellent potentially suitable habitat for the timber rattlesnake. The remaining areas were rated as unsuitable or marginal.

Included in Appendices B and C are Datasheets and Representative Photographs, respectively, for all habitats found along the right-of-way, including those habitats that are rated as unsuitable or marginal. Generally, the existing access roads within the Project's transmission ROW do not transect the identified habitat areas; therefore, the proposed work activities should have no effects on this State-listed endangered species. Habitats that were rated as good or excellent potential are described below.

Habitat RS-4 is a southwest facing mountain peak with exposed bedrock and fractured boulders piles approximately 400 feet north of Long Meadow Road in the Town of Tuxedo. The exposed bedrock also has large cracks and fissures. The slope is 40 percent with 40 percent rocky ground cover that receives 50 percent direct sunlight. Rock outcrops and ledges are present accompanied by a boulder field and talus slope. Leaf litter is present and approximately 0-5 inches in depth. Dominant vegetative species occurring in Habitat RS-4 include *Quercus rubra* (red oak), *Quercus prinus* (chestnut oak), *Juniperus virginiana* (eastern red cedar), *Vaccinium angustifolium* (lowbush blueberry), *Betula alleghaniensis* (yellow birch), *Tsuga canadensis* (eastern hemlock), *Rhus typhina* (staghorn sumac), *Solidago spp.* (goldenrod), *Vaccinium spp*. (huckleberry), *Smilax spp*. (greenbrier), *Rubus spp*. (berry), *Fescue spp*. (tufted grass) and *Panicum virgatum* (switchgrass). Herpetofauna species were not observed during the site visit.

Signs of small mammals observed at Habitat RS-4 included small trails at the feet of boulders and half eaten nuts. Observed species consisted of the *Tamias striatus* (chipmunk). Signs of other wildlife include *Ursus americanus* (black bear) scat and *Odocoileus virginianus* (white-tailed deer) droppings. Habitat RS-4 is of good potential for denning/hibernacula, feeding/foraging, and basking. The southwest aspect of the slope and ledges provide areas for basking. The boulder piles with large cracks and crevices provide a good denning and hibernating area preferred by the timber rattlesnake. Conditions that support feeding and foraging behavior are also present in the talus slope where leaf litter occurs at a depth of 0-5 inches.

Habitat RS-8 is located approximately 2800 feet northwest of the Project's existing ROW's crossing of South Gate Road in the town of Tuxedo. Habitat RS-8 is a south southwest facing steep rock face followed by large boulders. Habitat RS-8 has 35 percent rocky ground cover of which 65 percent receives direct sunlight. Large round boulders and exposed bedrock form boulder fields. The boulder field areas have mostly shrubby vegetation cover type. Vegetation within Habitat RS-8 includes *Quercus rubra* (red oak), *Betula lenta* (sweet birch), *Acer rubrum* (red maple), *Hamamelis virginiana* (witch hazel), *Cornus spp.* (dogwoods), *Vaccinium corymbosum* (highbush blueberry), *Lonicera japonica* (Japanese honeysuckle), *Solidago spp*. (goldenrods), *Thelypteris noveboracensis* (New York fern), and *Dichanthelium clandestinum* (deer tongue). No signs of herpetofauna were observed however, *Tamias striatus* (chipmunks) were abundant. Habitat RS-8 is of good potential for feeding/foraging due to the abundance of small mammals and also for basking on the boulders.

Habitat RS-9 is located in the same general area as RS-8, approximately 600 feet northwest of the ROW's crossing of South Gate Road. Habitat RS-9 is a cliff face with many boulders adjacent to a small stream that faces south southeast. The slope is 45 to 60 percent with 80 percent rocky ground cover that receives 60 percent direct sunlight. Rocks are angular, round and flat with ledges and talus slopes/boulder fields present. Habitat RS-9 also has 2-3 inches of leaf little present. Dominant vegetative species include *Carya glabra* (pignut hickory), *Acer rubrum* (red maple), *Hamamelis virginiana*

(witch hazel), *Berberis thunbergii* (Japanese barberry), *Parthenocissus quinquefolia* (Virginia creeper), *Polystichum acrostichoides* (Christmas fern) and *Agrostis alba* (redtop). No herpetofauna species were observed during the survey. *Tamias striatus* (chipmunks) were heard. Habitat RS-9 is of good potential for denning/hiberacula, feeding/foraging and basking. Rock ledges and boulders provide good areas for the timber rattlesnake to bask as well as den because of the many cracks and crevices formed by the boulders. The talus slope and leaf little provide good habitat for foraging.

Habitat RS-13 is located approximately 2,300 feet south east of ORU's existing Ramapo Substation. Habitat RS-13 is generally a south facing fractured bedrock out-cropping with a steep cliff face of 85 percent slope. There is 75 percent rocky ground cover with 100 percent direct sunlight. Dominant vegetative species include *Acer saccharum* (sugar maple), *Quercus rubra* (red oak), *Fagus grandifolia* (American beech), *Rosa multiflora* (multiflora rose), *Schizachyrium scoparium* (little blue stem), and *Solidago spp.* (goldenrod). The habitat is of good potential for activities such as basking for the timber rattlesnake due to the southern aspect of the slope as well as various fractures and ledges formed by the exposed bedrock.

In general, the southern portion of the right-of-way to the east of the NYS Thruway is orientated in an east-west direction traversing the northeast-trending belts of hilly and mountainous terrain. One area of the right-of-way in this section contain potentially suitable habitat with rocky slopes that are orientated to the south and south southwest that the timber rattlesnake prefers. All other habitats of good or excellent potential occur within the southern half of the Line 28 existing transmission right-of-way in the area generally bounded by Long Meadow Road to the north and South Gate Road to the south. Other habitats surveyed along and adjacent to the right-of-way that were of unsuitable or marginal potential generally lacked the south or southwest facing aspect of the slope, had slopes that were too steep, lacked ledges or areas necessary for basking, lacked crevices, fissures, or talus slope necessary for denning and hibernacula or did not have leaf litter or wooded areas for foraging. As the existing transmission right-of-way is maintained in an early successional vegetation stage, foraging habitat is more likely to

include the open deciduous forests adjacent to the right-of-way than the right-of-way itself.

6.0 Recommendations

Since the four areas rated as good or excellent potential habitat discussed in Section 5.0 have a high likelihood of providing timber rattlesnake habitat, electrical installation activities, including vehicular access and conductor stringing activities, within the general vicinity (i.e., 300 feet) of these sites should be avoided in early fall as timber rattlesnakes still present within their foraging habitat may be returning to this site with the onset of cooler weather. Upon emerging from the den the snakes are lethargic and little feeding occurs in early spring. However, mating does occur in spring and fall and males are especially active at this time in their pursuit of females. Vehicles could be driven within these areas during the early fall provided a "spotter" was present and walked in front of the vehicle to ensure that snakes were not present within the path of the vehicle. If a snake is encountered, the vehicles should stop their progress until the snake clears itself of the right-of-way by its own action.