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List of Acronyms and Abbreviations – Section 3

CEA	Critical Environmental Area
CVE	Cricket Valley Energy Center, LLC
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
dbh	diameter at breast height
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
former Rasco parcel	the 57-acre land south of the Project Development Area now optioned by CVE and formerly utilized by RASCO Materials LLC
gpd	gallons per day
gpm	gallons per minute
HSI	Habitat Suitability Index
msl	above mean sea level
NO	nitrogen oxide
NO_2	nitrogen dioxide
NYCRR	Official Compilation of Codes, Rules and Regulations of the State of New York
NYSDEC	New York State Department of Environmental Conservation
NYSNHP	New York State Natural Heritage Program
PFBC	Pennsylvania Fish and Boat Commission
Project	the Cricket Valley Energy Project
Project Development Area	The 57-acre portion of the 193.5-acre Property proposed for development
Property	The 193.5-acre property optioned by CVE
RASCO	RASCO Materials, LLC
remote Laydown Site	38.8-acre construction worker parking and laydown site located approximately 2.5 miles north of the Property
SEQRA	State Environmental Quality Review Act
SMP	Stormwater Management Plan

SWPPP	Stormwater Pollution Prevention Plan
TES	Terrestrial Environmental Specialists, Inc.
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

3. NATURAL RESOURCES

This section provides, for natural resource-related issues, a description of Project refinements since the Draft Environmental Impact Statement (DEIS) was filed, followed by a brief summary of impacts and proposed mitigation. Topics addressed in this section for the DEIS included wetland resources, vegetative communities, wildlife habitat, protected species, and regulatory mitigation and compliance. Comments received on the DEIS associated with natural resource issues are provided in Section 3.3, along with responses and references to sections where additional information is provided for some topics.

3.1 Project Refinements Since the DEIS

No change in the Project footprint is proposed. However, since the DEIS was filed, Cricket Valley Energy, LLC (CVE) has obtained an option to purchase approximately 57 additional acres to the south of the Project Development Area (Figure 3-1). This adjacent parcel, formerly the location of the RASCO Materials facility (the former Rasco parcel), had not previously been available. With the addition of this parcel, CVE has the opportunity to clean up a broader area of the Property and also to accommodate the majority of the temporary construction worker parking and laydown proximate to the Project Development Area. This will greatly reduce the amount of environmental impact related to construction worker travel from the remote Laydown Site. CVE will still plan to use the remote Laydown Site at some level, but the extent and duration of its use will be reduced. The addition of the former Rasco parcel to the Project will further mitigate impacts identified in the DEIS by improving environmental conditions at the former Rasco parcel and adding visual and noise buffer for the Project.

This additional area has been evaluated both for its wetland potential and wildlife habitat characteristics, and potential impacts are addressed in this Final Environmental Impact Statement (FEIS). Figure 3-2 illustrates the concept for temporary construction use of the former Rasco parcel. The area proposed for temporary use (approximately 13 acres) has historically been disturbed through placement of materials and debris. Of the 13-acre area, approximately 5 acres is currently developed (previously used by RASCO Materials), approximately 6 acres is comprised of waste pile material (with some shrubby and small diameter overgrowth), and approximately 2 acres contain small diameter trees. Existing grades have been generally used to minimize the need for grading or other disturbance. Site clean-up and stabilization will occur prior to this temporary use, and stormwater management features will be included in the design to protect wetland resources and species habitat. Following completion of construction, the gravel parking surfaces will be removed and the area will be covered with topsoil and planted with herbaceous vegetation

for stabilization; no permanent Project operational uses are proposed in this area. The balance of the former Rasco parcel (approximately 44 acres) will remain undisturbed by the Project, as is the case for the 79 acres west of the Metro-North railroad track.

A freshwater wetlands minor action permit was issued on December 6, 2011 to allow for site investigation, the results of which are detailed in Section 2 of the FEIS. Work associated with this investigation generally occurred within upland and the 100-foot Adjacent Area of state-jurisdictional wetlands in order to characterize waste pile materials historically deposited up to the wetland edge, with some limited sediment sampling and waste area investigating in and near wetlands.

No significant change to the wetland impacts and mitigation previously presented in the DEIS is proposed for the Project Development Area or remote Laydown Site, although an additional 0.03 acre of fill is proposed to Wetland F (newly delineated as a part of the former Rasco parcel, a federal but not state-jurisdictional wetland). This does not appreciably change impacts of Project construction and associated restoration activities to jurisdictional wetlands as reflected in Section 3.3 of the DEIS. The amount of work proposed within the Adjacent Area has increased in order to address site clean-up and allow for temporary construction uses; some clarification and refinement of the mitigation plan is provided in the FEIS to address these Project refinements as well.

With the acquisition of the former Rasco parcel, CVE has the opportunity to provide for a significant amount of the necessary construction worker parking and laydown on-site. This temporary use will require some modification to an approximately 13-acre portion of the former Rasco parcel in tandem with clean-up and restoration activities. Within an approximately 2-acre forested area of the former Rasco parcel, relatively small diameter trees (less than 3-inch diameters at breast height [dbh]) will be cleared; one non-jurisdictional wetland (Wetland B) also will be filled with gravel. Removal of this vegetation will not have a material effect on vegetative buffering of the Property or significant habitat, and restoration of these temporary impact areas will include re-vegetation and monitoring in accordance with New York State Department of Environmental Conservation (NYSDEC) permit requirements, providing a net benefit to species.

An updated summary of potential Project impacts to natural resources is provided below.

3.2 Summary of Project Impacts and Proposed Mitigation Measures

The Project has been designed to be compatible with the Project Development Area's environmental resources and surrounding land uses. The 57-acre Project Development Area has been limited to the portion of the 193.5-acre Property that has largely been altered due to past industrial uses. The entire 79-acre portion of the Property west of the railroad track will remain undisturbed during Project construction and operation. An approximately 13-acre portion of the former Rasco parcel will require disturbance associated with site clean-up; this area is also proposed to be used as temporary construction laydown and parking during the construction period (Figure 3-2). Following this temporary use, this portion of the Property will be stabilized and replanted. No permanent Project use is proposed on this portion of the Property following completion of construction.

To the greatest extent possible, Project design has incorporated the following goals:

- Avoidance of jurisdictional wetland impacts and NYSDEC-jurisdictional wetland Adjacent Area impacts;
- Use of the existing developed footprint;
- Minimal clearing of forested areas;
- Avoidance of substantial earth movement; and
- Consideration of the needs of functional equipment orientation to facilitate construction and operations in an efficient and safe manner posing the least potential adverse impact.

Based on discussions with NYSDEC, Project design improvements included:

- Shifting the Project footprint, reducing building size, and relocating buildings to avoid wetland impacts;
- Reducing slopes near wetland areas to minimize grading effects;
- Reconfiguring the stormwater detention basin; and
- Incorporating bioretention facilities to control stormwater runoff to a rate equal to or less than pre-development site conditions.

Due to careful Project design and the reuse of a formerly developed industrial site, there will be minimal impacts to natural resources. The Project will conform to the minimum "no net loss" of regulated wetland policy, and, in fact, there will be an increase in the quality of wetland and Adjacent Area through a wetland restoration and replication plan. Approximately 0.28 acre of formerly degraded wetland area (of which 0.08 acre is located in NYSDEC- or United States Army Corps of Engineers [USACE]-jurisdictional wetlands) and 0.8 acre of NYSDEC-jurisdictional Adjacent Area will be permanently lost and 1.5 acres of non-jurisdictional forested wetland will be converted into maintained shrub/scrub wetland, to accommodate the new overhead utility lines connecting the Project to the existing transmission line located north of the Project Development Area. To compensate for the permanent loss and temporary disturbance within jurisdictional wetlands, the Project will restore 0.6 acre of previously degraded wetland and 2.4 acres of Adjacent Area, and create 0.08 acre of new wetland. In addition, approximately 1.8 acres of Adjacent Area between the proposed limits of construction and Wetland 2 will be selectively planted with tree and shrub species to increase the density of vegetation, further protecting Wetland 2.

The wetland restoration and replication plan presented in the DEIS has been augmented to address the full Project Property with details of planned use and restoration of the former Rasco parcel (Appendix 3-A). Incorporating both wetland creation and Adjacent Area planting, this plan will improve the quality of wetlands and habitat areas throughout the site, increasing the potential for wildlife usage by a variety of species indigenous to the Swamp River Critical Environmental Area (CEA) located west of the Metro-North railroad track.

The need for permanent conversion of upland vegetated areas has been minimized by the Project layout and design, which takes advantage of the previously disturbed industrial footprint to the extent possible as well as the Property's proximity to existing natural gas and electric corridors. As addressed in the DEIS, approximately 4.8 acres of forested habitat is proposed to be cleared permanently, while an additional 2 acres of forested habitat is proposed to be cleared during the construction effort and restored to scrub/shrub habitat or bioretention habitat, resulting in increased habitat diversity. Work within these construction areas will utilize best management practices (for example, construction mats) to limit disturbance, and these areas will be restored, stabilized and revegetated upon completion of construction. A permanent buffer of undisturbed forested land will be maintained to the south and east of the Project Development Area. All existing vegetation to the west of the railroad track (approximately 79 acres) will remain in place and undisturbed.

As discussed in the DEIS, no significant wildlife habitat areas will be lost as a result of the Project (particularly because the majority of the Project footprint is currently developed) and

no rare, threatened, or endangered species will be displaced from the Project Development Area. Bird, mammal, reptile and amphibian species that could potentially occur on or in the vicinity of the Property are generally mobile and likely only to use portions of the Project Development Area for limited habitat requirements. A significant amount of higher quality habitat is located nearby, including elsewhere on the Property and within the Swamp River CEA west of the railroad track. Once the Project is operational, it is anticipated that wildlife will return to undeveloped portions of the Project Development Area.

The DEIS also evaluated a remote Laydown Site that is proposed for temporary use during the construction period. Because the former Rasco parcel has been added to the Property, use of the remote Laydown Site may be less intensive than previously proposed. However, the FEIS assumes that the entire remote Laydown Site may be used to allow for the most efficient use of temporary workspace to facilitate Project construction. Natural resource impact associated with this use is limited, as no wetland intrusion will occur and the existing site is in active agricultural use.

3.3 Responses to Comments on the DEIS

Table 3-1 provides a summary of comments received relative to natural resources, and provides a response or guides the reader to the location of the response within this section.

Table 3-1 Response to Comments Regarding Natural Resources			
Author	**Comment**	**Comment Number**	**Response**
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	We understand that the U.S. Army Corps of Engineers is involved through authorizations under Section 404 of the Clean Water Act. Federal agencies have responsibilities under Section 7(a)(2) of the ESA *[Endangered Species Act]* to consult with the Service regarding projects that may adversely affect Federally-listed species or "critical habitat," and confer with the Service regarding projects that may adversely affect Federally-proposed species or proposed "critical habitat."	14-1	In addition to CVE's direct consultation with the United States Fish and Wildlife Service (USFWS) and NYSDEC's Division of Fish and Wildlife Natural Heritage Program to identify potential species issues for the Project, the USACE has also engaged in consultation with USFWS as a part of its nationwide permit review process. The USACE is coordinating its review of the Project with the USFWS pursuant to Section 7(a) (2) of the ESA.
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	In our September 21, 2009, letter, we agreed that no suitable habitat was found within the property limits, and stated that the focus of an effects analysis should be indirect effects to bog turtles and habitat in wetland DP-22. The effects analysis (one paragraph) provided on page 3-29 is insufficient. For example, additional information should be provided on the	14-2	Additional detail with regard to habitat proximity is addressed in Section 3.3.2.1, while the potential for indirect effects is addressed in Section 3.3.3.1. Based on the information provided in those sections, as well as inclusion of additional measures designed to minimize and/or avoid a taking, direct and indirect effect to bog turtles is not anticipated to occur from direct takings, habitat loss or degradation, fragmentation or interruption of dispersal routes. Following completion of construction and site clean-up, habitat creation and land preservation activities will

Table 3-1 Response to Comments Regarding Natural Resources			
Author	**Comment**	**Comment Number**	**Response**
	proximity of proposed activities to bog turtle habitat. Depending on the proximity, protective fencing and preconstruction turtle surveys by permitted biologists may be needed.		provide a net benefit to the species.
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	A summary of the groundwater withdrawal information provided in Section 5 should be provided in this section with a rationale for the conclusion that "withdrawals will not have an appreciable effect on the hydrology of onsite or offsite wetlands, or the Swamp River."	14-3	A summary of groundwater studies is outlined in Section 3.3.3.1.1 as a part of the discussion on the potential for indirect effects.
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	The same recommendation applies to the stormwater management plan. A summary is needed regarding how that will avoid changes in surface water quality or quantity to offsite wetlands.	14-4	Section 3.3.3.1.2 includes a summary of the stormwater management plan as an important context for consideration of potential indirect effects.
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	We previously provided ARCADIS with a list (although not exhaustive) of potential impacts to bog turtles to consider in our July 20, 2009, letter, and expected to see an analysis addressing these items.	14-5	A more detailed treatment of the potential for impacts to bog turtles, including additional measures designed to minimize and/or avoid a taking, is provided in Section 3.3.3.1.

Table 3-1 Response to Comments Regarding Natural Resources			
Author	**Comment**	**Comment Number**	**Response**
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	The project sponsor should obtain current location information for this species from the NYSDEC. This section does not address any potential indirect effects to New England cottontail from habitat impacts.	14-6	Field surveys were completed for the former Rasco parcel and at the remote Laydown site (Section 3.3.2.3). Surveys of the Project Development Area were previously reported in the DEIS. Potential indirect effects associated with the New England cottontail for these areas are discussed in Section 3.3.3.2.
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	As stated in our September 21, 2009, letter, without any additional site-specific bat studies, it is reasonable to assume that Indiana bats are using the project area given its location and natural features of the site. Therefore, similar to the bog turtle, the next step is to determine the potential impacts to this species. We provided comments and recommendations on what to consider in this analysis in our letter and our comments were not addressed in the DEIS.	14-7	Additional field surveys were completed for the Project Development Area, as well as the former Rasco parcel and at the remote Laydown Site, as documented in Section 3.3.2.4. A discussion of potential impact to Indiana bats following the USFWS' recommendation is provided in Section 3.3.3.3.
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	Page 3-37 [*of the DEIS*] accurately states that ARCADIS coordinated with the Service regarding this site in July 2010. On August 5, 2010, the Service sent ARCADIS our standard FAX with	14-8	Information regarding potential issues and impacts associated with the Indiana bat at the areas to be disturbed for the Project, including the remote Laydown Site are addressed in Section 3.3.3.3.

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Author	**Comment**	**Comment Number**	**Response**
	directions to use our website for county-based species lists. The DEIS addresses several species that may occur at the site. However, for some reason, the Indiana bat was not addressed. This will need to be completed.		
David Stilwell, United States Department of the Interior, Fish and Wildlife	The final sentence [*of DEIS Section 3.2.6.2.2*] states that "while portions of the Laydown Site are bordered by perennial emergent wetlands, these habitat were dominated by vegetated overstories or invasive species, and are not considered to be suitable habitat for the bog turtle." Please note that many (if not most or all) bog turtle sites have invasive species to various degrees. If any of the wetlands may be impacted (directly or indirectly) by work at the Laydown Site, Phase I bog turtle surveys should be conducted by a qualified bog turtle surveyor.	14-9	Phase I bog turtle surveys have been completed for the remote Laydown Site and the former Rasco parcel, and a greater than 300-foot buffer maintained around potentially suitable bog turtle habitat. The results of the survey are provided in Section 3.3.2.1 and Appendix 3-B.

Table 3-1 Response to Comments Regarding Natural Resources			
Author	**Comment**	**Comment Number**	**Response**
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	Similar to the project site, the project sponsor should obtain current location information for this species from the NYSDEC. This section [*Section 3.2.6.2.3 of the DEIS]* does not address any potential indirect effects to New England cottontail from habitat impacts.	14-10	The New England cottontail is known to occur approximately 2.3 miles to the east of the Project Development Area and 3 miles southeast of the remote Laydown Site. Field surveys were completed for the former Rasco parcel and at the remote Laydown Site, as outlined in Section 3.3.2.3 of the FEIS. Potential indirect and indirect impacts to New England cottontail are discussed in Section 3.3.3.2 of the FEIS.
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	As discussed above, the DEIS lacks a real analysis of potential impacts to Federally-listed or candidate species at this time. Page 3-48 states that "seasonal restrictions on clearing will be imposed to avoid potential impact to Indiana bat habitat," As you are aware, seasonal restrictions on clearing are intended to avoid direct impacts to the bats themselves. Clearing the trees may be an impact to habitat (and therefore result in indirect effects to Indiana bats); however, we consider the amount of habitat and the landscape context in which the clearing is conducted.	14-11	Please refer to response to previous comments on protected species as well as Section 3.4 of the DEIS. With respect to the amount of habitat to be cleared and the landscape context in which the clearing is conducted, CVE has made significant efforts to select a Project location, layout and design that minimize unnecessary impacts to both protected and non-protected species habitat. Various layout alternatives for the main CVE Project Development Area, as well as the former Rasco parcel laydown/parking site, have been evaluated to select the most practicable and least damaging Project alternative. With respect to the Indiana bat, as further discussed in Section 3.3.3.3, vegetation clearing proposed in the Project Development Area is insignificant given the footprint of the Project. Activities proposed within the former Rasco parcel are generally limited to locations where prior disturbance has occurred, and the tree clearing proposed does not represent significant habitat impairment for the Indiana bat. Impacts on the remote Laydown Site are temporary and insignificant in

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	We have the same comments on the Bog turtle analysis on page 3-38 as we provided for Section 3.2.5.1.7.		nature. The temporary use of the remote Laydown Site, which is presently an active agricultural field, will not involve tree clearing other than in a small area adjacent to Route 22 to provide access. The remote Laydown Site will be restored to its current use upon completion of construction. The potential for direct and indirect impacts to bog turtles have also been minimized by avoiding direct disturbance of potentially suitable habitat, maintaining appropriate buffers where possible, and addressing hydrologic and water quality concerns. Areas that are disturbed on the Project Development Area will be replanted and restored including wetlands and wetlands buffer; other areas will be given the opportunity to revegetate through natural recruitment following stabilization and/or use of temporary species planted/seeded. Bioretention basins will collect and treat all stormwater runoff and there will be no direct discharge to area wetlands or surface waters. Groundwater use will not affect on-site or off-site hydrology and especially, off-site bog turtle habitat. Additional information is provided in Section 3.3.3.1. As to the landscape context of impacts, the Project Development Area is adjacent to the Great Swamp and Swamp River; all of the property west of the railroad track (79 acres) will remain in its current state, with existing ecosystems preserved. The Project Development Area has a long history of disturbance and the surrounding environment shows

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			signs of ecological stress. The Project's landscape context is a disturbed industrial area with an active high speed rail line to the west, a main north-south state road to the east, a high voltage electric transmission easement to the north, and a former petroleum contaminated soil recycling property to the south. None of the habitat features within areas to be cleared on the site are unique within this context; better quality and quantity habitat can be found in abundance in the surrounding landscape. Lastly, areas of industrial fill and contamination on the Project Development Area and former Rasco parcel will be addressed; the extent to which these materials have adversely affected protected or non-protected species on or off the site is unknown. However, restoration of the site will certainly benefit the broader landscape context within which the facility will be located. The overall indirect effect on protected species will be positive with the Project in place.
David Stilwell, United States Department of the Interior, Fish and Wildlife Service	As a reminder, 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 the project sponsor check our website every 90 days from the date of this letter to ensure that the listed species presence/absence information	14-12	CVE has continued to monitor the website on a regular basis. Information on the Service's website as of 7/5/2012 lists the following species for Dutchess County: bog turtle (*Glyptemys muhlenbergii*), Threatened status; Indiana bat (*Myotis sodalis*), Endangered status; New England cottontail (*Sylvilagus transitionalis*), Candidate status; and dwarf wedgemussel (*Alasmidonta heterodon*), Endangered status. Each of these species has been addressed, with the exception of the dwarf wedgemussel. Because no work is proposed in water bodies, and the 1993 Dwarf Wedgemussel Recovery Plan indicates this water-based species has populations in Ulster, Sullivan and Orange counties

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	for the proposed project is current.		the listed water species has not been studied.
Michael Purcell, Pawling Resident	The project site is located in the valley bottom of a NYSDEC Important Biodiversity Area. Migratory birds should be monitored for impacts related to plume velocities and stack heights, the Great Swamp Critical Environmental Area and NYS Wetland DP-22 are noted for supporting species of birds that are breeding, rare and of species special concern in New York State.	19-7	Migratory bird collisions with stacks or interactions with plumes are rare events and do not have an appreciable impact on bird migration or populations. In addition, CVE has reviewed and evaluated USFWS guidance on towers, which – although not directly applicable to this type of facility – provides conceptual information illustrating ways in which the Project design minimizes potential effect to migratory birds. For example, CVE has clustered the three stacks together which will minimize the potential for bird strikes as they migrate in broad fronts through the area. In most weather conditions, avian avoidance behavior tends to be very strong; CVE is also working with the Federal Aviation Administration (FAA) to minimize navigation lighting requirements to the extent possible to provide for safety while reducing the possibility of inadvertently attracting birds under inclement weather conditions. The full discussion can be found in Section 3.3.4 of the FEIS.
Mark Chipkin, Pawling Resident	It was unclear as to whether bog turtles and rattlesnakes are on this site and how they would be protected.	25-10	An update of the bog turtle and rattlesnake surveys with additional data is discussed in Section 3.3.2 to reflect the increase in site size. No rattlesnake dens are located on the site, although snakes may traverse the area. No development is proposed within potentially suitable bog turtle habitat, and no bog turtles were found in follow-up surveys.
Mike Purcell, Pawling Resident	…the Great Swamp has an almost daily occurrence of fog rising from the wetlands in the dawn hours. The fog rises above the elevation of the 2	27-2	As discussed in Section 4.3.4, because the exhaust plume is very buoyant due to its temperature, it will quickly rise above any fog in the area (even fog above stack height). The presence of thermal inversions and ground fog was adequately represented in the

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	stacks that Cricket Valley is proposing…The presence of this naturally recurring phenomena of the Great Swamp Critical Environmental Area has not been addressed in the Cricket Valley Energy Documents and poses significant adverse impacts to water resources and the calcarious wetland ecology of the Harlem Valley. Calcareous wetlands are dependent on low NO_x volumes to maintain the fragile ecosystems that are common here and rare statewide.		meteorological data used in the modeling analyses. The DEIS also included analyses of impacts of Project emissions on sensitive vegetation and soils as well as contributions to acid deposition and ambient concentrations of nitrogen dioxide (NO_2). The analyses concluded that the Project's impacts would not have a significant impact on sensitive natural resources. Note that three stacks, not two, are associated with the proposed Project.
Tamara Wade, Wingdale Resident	Will there be an ongoing disruption of habitat in the wetland and do we stand to further contaminate it?	31-11	As noted in Section 3.3.1 of the DEIS, a total of only 0.28 acre of wetland (of which 0.08 acre is located in NYSDEC- or USACE-jurisdictional wetlands) and 0.8 acre of Adjacent Area will be permanently lost and 1.5 acres of non-jurisdictional forested wetland will be converted into maintained shrub/scrub wetland, to accommodate the new overhead utility lines. In addition to site clean-up, which will improve site conditions, CVE will restore 0.6 acre of previously degraded wetland and 2.4 acres of Adjacent Area, and create 0.08 acre of new wetland. By removing existing industrial debris currently located in and around wetland areas on the site, restoring previously degraded wetlands and improving upland areas adjacent to wetlands, these habitat areas will be greatly improved by the Project. In

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			addition, approximately 1.8 acres of Adjacent Area between the proposed limits of construction and Wetland 2 will be selectively planted with trees and shrub species to increase the density of vegetation. Bioretention basin outlets will be stabilized and planted with native grasses and ground cover plants. A box culvert design consisting of erosion control matting seeded with a conservation mix and planted with shrubs transitioning to a naturally designed revetment consisting of logs and rootwads (tree trunk with roots attached) to be secured with boulders will also be installed.
Graham Trelstad, AKRF	Page 10 states that, "Approximately 4.8 acres of forested habitat will be cleared permanently as part of project construction. Approximately 6.3 acres of forested habitat will be altered permanently and converted to scrub/shrub or bioretention pond habitat, resulting in a greater diversity of habitat." The use of the phrase "greater diversity of habitat" implies a beneficial change to the project site and seeks to minimize the impact of the loss of 11.1 acres of forested habitat. However, the conversion of forested land to	32-4	A significant benefit of this Project with regard to habitat is the ability of the Project to utilize previously developed and disturbed land, while restoring degraded land and preserving a significant amount of higher quality habitat (approximately 79 acres proximate to the Swamp River plus approximately 44 acres of the former Rasco parcel). Some clearing and conversion of vegetation is proposed, as detailed in Section 3.3.2 of the DEIS. In addition to the clearing identified in the DEIS, the clean-up and temporary construction use of 13 acres of the of the former Rasco parcel includes clearing of approximately 2 forested acres. The specific areas of clearing were identified so that impact could be considered. The impact of changes to habitat type varies by species. For certain species, for example, the New England cottontail, conversion of forest to scrub/shrub is a considerable benefit. For other species, more wooded habitat may be more beneficial. However, the

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	scrub/shrub or bioretention pond habitat is not necessarily better. It is simply a change that may or may not have an environmental impact. The DEIS should identify whether the loss of this forested habitat is considered an impact.		discussion of a "greater diversity of habitat" and the potential beneficial change associated with that refers to the fact that creation of "edge" between different habitat types affords species with good habitat diversity that can benefit a number of species.
Graham Trelstad, AKRF	As mitigation for potential natural resource impacts of the proposed project, continued monitoring of the Great Swamp water quality should be considered. In particular, the Great Swamp should be monitored for potential acid rain and [*nitrogen oxide*] NO_x impacts.	32-14	Protection of the Swamp River and the Great Swamp CEA has been a priority throughout design of the Project, including through careful study of the potential impact of water use. Impacts to water quality from stormwater runoff were thoroughly addressed in Section 5.6.4 of the DEIS, while acid rain and nitrogen oxide impacts were addressed in Section 4.5.7 of the DEIS. In addition, the Project will restore previously impacted wetlands that currently drain to the Swamp River and remediate upland areas adjacent to them. Further, the Project has committed to preservation of the 79-acre portion of the Property west of the railroad track which abuts the Swamp River. Given the lack of impact potential of the Project, the benefit to the Swamp River CEA resulting from site remediation and restoration, and the preservation of wetland areas currently bordering the Swamp River, an overall benefit to the Great Swamp is anticipated to result from the Project. Continuous emissions monitoring of the Project will confirm compliance

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			with proposed emissions levels. Additionally, CVE has committed to install a stream gauging station downstream of the Project on the Swamp River to monitor flow. During public meetings with local residents and local environmental groups, attendees concluded that the Route 22 bridge, where a United States Geological Survey (USGS) stream gauging station had been previously sited, would be the most advantageous location for gauging to occur.
Graham Trelstad, AKRF	Page 4-10, Section 4.1.2.4 – The discussion of endangered species should reference the Natural Resources chapter.	32-20	See FEIS Section 4.3.1.4 – Regulatory Updates and Discussion (Miscellaneous Regulatory Updates), where discussion of the Endangered Species Act regarding air quality issues and a cross-reference to Section 3 – Natural Resources are included. Section 4.1.2.4 of the DEIS also references Appendix 4-A of the DEIS that provides copies of the relevant correspondence.
T. Michael Twomey, Entergy	…The DEIS reports that the piezometers showed "no observable impact to the monitored water levels due to the pumping test…" To the contrary, the Site Water Budget Report included in the DEIS states that "the proposed project withdraws groundwater from aquifers which otherwise naturally support baseflow entering the Swamp River" and notes the pump test shows that, because the	33-2	As discussed in Section 5.3.2 of the FEIS and confirmed by the wetland monitoring described in DEIS Section 5.4.4.2, alteration of the wetlands is not anticipated due to Project water use. Section 5.3.2 explains that groundwater level fluctuations observed during the pump tests were determined to be independent of the pump tests, indicating that the Project's proposed water use, even at the elevated rates of the pump tests, would not have a significant adverse impact on groundwater. Additional information summarizing the pump test is provided in Section 3.3.3.1 of the FEIS. The testing referenced in Comment 33-2 refers to the 72-hour long-term pump test discussed in DEIS Section 5.4.4.4 (and Section 3.3.3.1

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	primary water source (Well 4) "draws water from such deep portions of the aquifer, there is a considerable delay, measured at least in days and likely measured in weeks, between when a peak pumping rate begins and when associated flow reductions could begin to reduce aquifer outflow rates entering the Swamp River."…Thus, the Water Budget Report acknowledges that there is indeed a measurable, though delayed, impact of pumping from the Project's primary water well in the deep bedrock aquifer and indicates that the tests performed likely do not indicate the true extent of groundwater impact. As a result, the withdrawal of 15 million gallons per year from the Swamp River groundwater recharge area could potentially adversely affect the Great Swamp and the Swamp River, particularly during the dry summer season, when the plant could be withdrawing up to 87,000 gallons per day from the watershed. Such a loss of		of the FEIS). Although the Project's supply wells are not public water supply wells, the New York State Pumping Test Guidelines (Appendix 10 Technical and Operational Guidance Series 3.2.1) for public water supply wells were used as the standard. Based upon these guidelines, a pump test protocol was developed and the test was conducted for 72 hours, after aquifer stabilization, to obtain a meaningful, measurable response. The test charts for the wetland test points located in Wetlands 4 and 5, namely PZ5a/ PZ5b Surface and PZ6 Shallow/PZ6 Surface, can be found in DEIS Appendix 5-E, Figures 35 and 36, and are included in the FEIS as Figure 5-3. Review of the test chart for "PZ6 Shallow/PZ6 Surface" shows no hydraulic influence that can be attributed to the pumping test. The other chart ("PZ5a/PZ5b Surface"), however, shows a water level decline in both points starting about 24 hours after the start of the first 72-hour pumping test on Well 4. The total recorded water level decline is about 0.1 foot over the duration of the first 72-hour test period and an additional 0.1 foot for the second 72-hour set of tests. A cursory review of this chart without considering the Site Water Budget Report (DEIS Appendix 5-C) and the combined relationship of both to the Swamp River, might lead to an impression of a connection between the pumping tests and groundwater level. However, when the pumping tests and Site Water Budget Report are viewed together, it is clear that this is not the case, as discussed in FEIS Section 5.3.2.

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	water input could reduce the flow of the Swamp River and adversely affect the Group Swamp and its riparian habitats.		The Site Water Budget Report (DEIS Appendix 5-C) documented that the aquifer formation near the Project site supports a significant share of groundwater discharging naturally into the Swamp River. The discharge quantity was shown to be significantly greater than the quantity of water consumed by the proposed Project such that the Project impact is judged to be minimal to stream or wetland environments. This is also consistent with the Site Water Budget Report which documented that the aquifer formation near the Property supports a significant share of groundwater discharging naturally into the Swamp River. The discharge quantity was shown to be significantly greater than the quantity of water consumed by the proposed Project. Project impacts on the local hydrogeologic environment are therefore judged to be insignificant, and the Project will have no impact on site wetland ecological viability, just as the Well Pump Test recorded no measureable impacts in the test piezometers.
T. Michael Twomey, Entergy	In particular, the reduced water flow could adversely impact Wetlands 4 and 5, which, as noted, are within the Great Swamp. According to the Site Water Budget Report, the pumping test revealed a similar delayed effect on the Wetlands 4 and 5 located to the west of the railroad tracks. These 45 acres of	33-3	Alteration of the wetlands is not anticipated as a result of Project water use, as discussed in FEIS Sections 3.3.3.1 and 5.3.2. As summarized in the Site Water Budget Report (DEIS Appendix 5-C), groundwater volumes entering the riparian corridor (e.g., Swamp River and associated wetlands) near the Project site exceed the Project's proposed maximum water demand even during drought periods, ensuring that Wetlands 4 and 5 should not suffer a loss of available groundwater. The variations in water level noted by the commenter do

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	wetlands also could be permanently damaged or lost by the reduction in groundwater recharge caused by the plant's operation...Although no actual digging, filling, excavating, grading or dredging will occur in these wetlands, a loss of water input which could change the functions and values of the wetland constitutes a direct impact which must be considered in the SEQRA review process.		not correlate to the testing periods and did not meaningfully dewater the wetlands, so the relationship is neither significant to wetland functions nor related to pumping of the Project water well.
T. Michael Twomey, Entergy	In addition, Wetlands 4 and 5, if connected to a navigable water way (*i.e.,* waters of the United States), would be subject to federal regulation under Section 404 of the Clean Water Act ("CWA") (33 U.S.C. § 1344) and the federal "no net loss" of wetlands policy.[3] These wetlands were not included in the United States Army Corps of Engineers ("USACE") jurisdictional review of the Project's wetlands, reportedly because no project work is proposed in this area… Nonetheless, Wetlands 4 and 5 assuredly would fall	33-4	It is agreed that Wetlands 4 and 5 would be considered jurisdictional under Section 404 of the Clean Water Act. As discussed in Sections 3.3.3.1 and 5.3.2 of the FEIS, alteration of the wetlands is not anticipated due to Project water use, confirmed by the wetland monitoring described in DEIS Section 5.4.4.2, DEIS Appendix 5-E, and discussed further below in Section 5.3.2. Even if that were not the case, Section 404 of the Clean Water Act regulates the discharge of fill to waters of the U.S., including jurisdictional wetlands, not alteration of wetland hydrology from groundwater withdrawals. No such activity is planned within Wetlands 4 and 5 and, therefore, no permit is required.

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	under federal jurisdiction as they are directly adjacent to the Swamp River, a navigable water way. The DEIS concedes as much in acknowledging that Wetland 2 is subject to USACE jurisdiction because it is hydrologically connected to Wetlands 4 and 5. Because these wetlands might be adversely impacted *(i.e.,* permanently altered or lost) due to the Project's withdrawal of water, they are subject to federal permitting under CWA § 404. As such, any wetlands mitigation plan for the Project to satisfy the federal no-net-loss policy must include potential impacts to these two wetlands. These deficiencies should be adequately considered and remedied.		
T. Michael Twomey, Entergy	Based on its assertion that the groundwater withdrawals will have no effect on the Great Swamp, or the Swamp River, the DEIS also concludes that potential indirect impacts on the bog turtle will be	33-5	Additional discussion of the potential for indirect impact to the bog turtle is provided in Section 3.3.3.1 of the FEIS. No direct or indirect impact to this species is anticipated. In addition to CVE's direct consultation with the USFWS and NYSDEC's Division of Fish and Wildlife Natural Heritage Program to

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	insignificant. *See* DEIS, p. 5-1. However, as discussed above, the DEIS's assertion that the groundwater withdrawals will have no impact on Wetlands 4 and 5 west of the railroad track has not been clearly demonstrated. The reduction of water flowing into the Great Swamp could destroy important habitat for the bog turtle, necessitating appropriate action under the federal and/or state Endangered Species Acts. Therefore, FWS must be informed of the Project's potential to impact the Great Swamp and a full consultation pursuant to Section 7 of the Endangered Species Act must be undertaken to ascertain the impacts on the bog turtle.		identify potential species issues for the Project, the USACE has also engaged in consultation with USFWS as a part of its nationwide permit review process. The USACE is coordinating its review of the Project with the USFWS pursuant to Section 7(a) (2) of the ESA. Additional detail with regard to habitat proximity is addressed in Section 3.3.2.1, while the potential for indirect effects is addressed in Section 3.3.3.1. Based on the information provided in those sections, as well as inclusion of additional measures designed to minimize and/or avoid taking, it has been determined that the potential for direct and indirect effect to bog turtles will not occur from direct takings, habitat loss or degradation, fragmentation or interruption of dispersal routes. Following completion of construction and site clean-up, habitat creation and land preservation activities will provide a net benefit to the species.
T. Michael Twomey, Entergy	At the Project site, a survey of both the bog turtle and timber rattlesnake was conducted during a three-day period in June 2009. Cumulatively, observation occurred for only a few hours in each of the five wetland	33-17	Surveys were conducted by USFWS-recognized qualified biologists using protocols consistent with accepted and state-of-the-practice ecological standards. Survey information has also been reviewed by both USFWS and NYSDEC, whose comments have been considered in Project refinements and mitigation approaches. Note that additional surveys have been conducted, as outlined in Section 3.3.2, that

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	areas identified on the Project site. The laydown area was surveyed on only one day, December 9, 2010. Considering the presence of suitable habitat surrounding the area and the potential for the Project Site and laydown to serve as a travel corridor for the bog turtle and the timber rattlesnake, a more thorough survey should be conducted, over a more extended time frame, to determine whether either species uses the Project Site as a travel corridor.		continue to confirm the area's characteristics.
T. Michael Twomey, Entergy	… the Applicant has failed to conduct any mist netting to determine the presence of the Indiana bat on the Project site. The Project should not move forward until the Applicant has conducted the recommended mist netting. Potential impacts on the endangered Indiana bat cannot be fully evaluated until the presence of the Indiana bat is determined.	33-18	No mist netting is planned for the Project (see the September 21, 2009 correspondence from USFWS provided in 4-A of the DEIS which concurs that mist netting was not warranted). No suitable roost trees will be removed from the site within the summer roosting season. Additional field surveys were completed for the Project Development Area, as well as also completed for the former Rasco parcel and at the Laydown Site. No significant potential for direct or indirect effect to the Indiana bat – which could be present in the general area – is anticipated, as is addressed further in Section 3.3.3.3 of the FEIS.

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T. Michael Twomey, Entergy	As discussed above regarding potential impacts to bog turtle habitat in the Great Swamp, the DEIS inappropriately limits the analysis of impacts to protected species by failing to analyze impacts from habitat modification of the surrounding area. Both New York and federal law protect the habitat of protected species and consider certain modifications to habitat to be a "taking," that is either prohibited outright or, at a minimum, requires mitigation. The bog turtle, timber rattlesnake, New England cottontail, and Indiana bat have all been observed in the vicinity of the Project. *See* DEIS, sect. 3.2.5. The DEIS must include a more detailed analysis of potential impacts to protected species from habitat modification of the surrounding area.	33-19	Section 3.2.4 of the DEIS evaluated general habitat characteristics of the Property, and Section 3.2.5 of the DEIS considered a range of potential protected species, including discussion of surveys conducted for the timber rattlesnake and bog turtle, as well as habitat evaluations for the New England cottontail and Indiana bat. The potential for impact to species was addressed in Section 3.3.3 of the DEIS. Additional field surveys have been completed to include the former Rasco parcel and at the Laydown Site, as addressed in Section 3.3.2 of the FEIS. Additional discussion of potential direct and indirect species effect is provided in Section 3.3.3 of the FEIS.

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T. Michael Twomey, Entergy	…the available Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Maps…indicate that a portion of the Property, located east of the railroad where construction is proposed, is in fact located within the Floodplain Overlay District…Thus, compensatory flood areas may be required to prevent adverse effects on nearby property owners. Town of Dover Code §81-12, and applicable construction standards must be adhered to protect the construction from flood damage.	33-23	The Town of Dover Town Board approved a revised Federal Emergency Management Act (FEMA) floodplain map in April 2012 (provided in Appendix 3-C of the FEIS); the adjusted floodplain overlay district does not extend east of the Metro-North railroad track. Work within state-regulated wetlands is limited to Wetland 2, where only a very small finger of marginal wetland will be altered; this will be fully replaced, resulting in no net loss. In fact, the clean-up of previously developed portions of the Property is expected to contribute to safeguarding the quality of the state-regulated wetlands associated with the Swamp River. No flood storage volume will be compromised by the Project and therefore no compensatory flood storage would be required nor would special flood damage protection be required for Project design.
James Utter, Friends of the Great Swamp	One of the major groups of pollutants is the nitrogen oxides. These are converted into nitric acid when dissolved in water droplets and further acidify precipitation which then reduces buffering capacity of soils and changes other soil processes. Nitrogen oxides also reach the soil surface in other ways and produces nitrogen enrichment which	34-6	In accordance with the New York State Acid Deposition Control Act, a "Source Specific Acidic Deposition Impacts" analysis was conducted to provide quantification of the Project's contribution to the New York State total deposition of sulfates and nitrates at 18 defined receptors in New York State, New England, and Canada. The DEIS also included analyses of impacts of Project emissions on sensitive vegetation and soils as well as contributions to acid deposition and ambient concentrations of NO_2. The analyses concluded that the Project would not have a significant impact on sensitive natural resources. Local impacts from acid precipitation formed due to the Project are

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	has been shown to change soil chemistry and have significant effects on soil ecosystems. The calcareous systems of the Great Swamp and the Swamp River are especially vulnerable to acidification and nitrogen enrichment; the greatest impact is likely to be seen in the calcareous fens, home to many of our rare species.		highly unlikely because the processes that convert SO_2 and NO_x gases into their acid counterparts can take several days. During this time, the pollutants would have traveled hundreds of miles from the original source. Thus, the emissions from the Project would have little or no contribution to the acidity of the precipitation that falls on the surrounding area, therefore the impacts would be negligible. In addition, the Project will directly offset 115 percent of its NO_x emissions, and it will further reduce regional NO_x emissions by displacing the operation of existing less efficient generation. This will help reduce regional nitrogen and nitric acid deposition. See also Section 4.3.4.2 – Additional Impact Analysis (Acid and Nitrogen Deposition).
James Utter, Friends of the Great Swamp	Given the nature of the proposed site, a past industrial operation that has left the land with hazardous waste, the planned remediation and partial restoration of the unbuilt land, are expected to improve this habitat, while no known rare species are located on the development site. Potential negative effects to the ecology, wildlife and rare species would result from indirect impacts, specifically on changes in the	34-9	We agree that the Project has great potential to improve site conditions and adjacent habitat. Additional information regarding potential indirect effects to species is provided in Section 3.3.3 of the FEIS.

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	hydrology and pollution levels as addressed above. Since the system includes at least one federally listed species, the significance of such indirect effects cannot be understated.		
Sibyll Gilbert, Oblong Land Conservancy	The height of the proposed stacks remains an issue. As you know, The Great Swamp has been recognized as a flyway for migrating birds. Our populations of neo-tropical migrating birds has been estimated to be in decline at the rate of about 7% each year. That is unsustainable. Many of our once common species are headed for extinction, and within a few short years. The Great Swamp is also officially recognized as an "Important Bird Area in New York State (IBA). That said, I attach a copy of "Tower Recommendations and Guidelines," proposed by the Fish and Wildlife Coordination Act. The stack proposed by CVE exceeds the 199 foot above	36-3	Stack height has been carefully selected for the Project to be the minimum necessary for the dispersion of emissions. Migratory bird collisions with stacks or interactions with plumes are rare events and do not have an appreciable impact on bird migration or populations. In addition, CVE has reviewed and evaluated the USFWS guidance on towers, which – although not directly applicable to this type of facility – provides conceptual information illustrating ways in which the Project design minimizes potential effect to migratory birds. For example, CVE has clustered the three stacks together which will minimize the potential for bird strikes as they migrate in broad fronts through the area. In most weather conditions, avian avoidance behavior tends to be very strong. CVE is also working with the FAA to minimize navigation lighting requirements to the extent possible to provide for safety while reducing the possibility of inadvertently attracting birds under inclement weather conditions. The full discussion can be found in Section 3.3.4 of the FEIS.

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	ground level rule, and would have the same impact as communications transmission towers.		
Ryan Courtien, Town Supervisor, Town of Dover	ES-10: Further explain how a bioretention pond is a habitat.	37-8	Habitat may be natural or created, as species tend to take advantage of any potential location with suitable (or even marginal) characteristics. The primary bioretention pond will be located within the Project's fenced area, while other, smaller bioretention areas will be located outside of Project fencing for greater accessibility. Bio-retention systems are made of several layers, including a gravel bed at the base (incorporating a perforated drain system to remove excess water), a layer of porous soil, a layer of mulch, and a top layer planted with native vegetation. Bio-retention areas temporarily store runoff and drain within 48 hours. Design of the system follows low impact guidance (Low Impact Development Center, Inc. 1999 – 2008) intended to result in a stormwater management system that incorporates vegetation that not only provides for nutrient uptake, but also habitat for birds and butterflies. Each bioretention cell is intended to support the hydrologic cycle, nonpoint pollutant treatment, resource conservation, habitat creation, nutrient cycles, soil chemistry, horticulture, landscape architecture and ecology, thereby exhibiting a multitude of potential benefits (Winogradoff and Coffman, 1999).

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Ryan Courtien, Town Supervisor, Town of Dover	3-3: Is there any belief that a take or taking of an endangered or threatened species will occur?	37-78	Based upon the characteristics of the site habitat and the Project, it is not expected that a taking would occur of an endangered or threatened species. Detailed information on direct and indirect impacts to endangered or threatened species is included as Section 3.3.3.
Ryan Courtien, Town Supervisor, Town of Dover	3-3: Property sits in relative isolation? Relative to what?	37-79	The site is characterized in Section 3.2.1 of the DEIS as in "relative isolation, with vegetation and topography that provide a natural buffer for visual and aesthetic impacts." The intent of the descriptor was to indicate that the site is separated from other developed land uses by vegetation, distance and topography.
Cristina Bleakley, Dover Resident	How the Great Swamp is going to be affected by this plant? Was the study made by Cricket Valley a true reading of how our resources will be affected and what is the long time effect?	40-3	The importance of the Great Swamp, the Swamp River and the Harlem Valley watershed to the community is acknowledged. Since its first Town Meeting in April 2009, and with input from community residents and members of local environmental groups, CVE has made considerable efforts to re-engineer the Project to minimize water use and to eliminate process wastewater discharge, including the addition of a Zero Liquid Discharge system to internally recycle water, and a rooftop rainwater capture system to supplement the water supply. Through these efforts, the Project will be one of the most water-efficient power plants in the region. To ensure that the town's drinking water supply will not be affected, a long-term pump test program was developed and approved by the NYSDEC (see Section 5.4.4 of the DEIS for a detailed discussion of the pump test and approved protocol). This pump test was designed to monitor neighboring wells, adjacent wetlands, and the Swamp River to

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			ensure the Project's water consumption would have no adverse impact. As discussed in Section 5.4.4.5 of the DEIS, the Project's main well can be operated indefinitely at its design rate, and when tested at the Project's projected maximum water needs (120 gallons per minute [gpm]), it did not produce any discernible effects on any of the monitored off-site private wells, nor any of the on-site wetlands. Additionally, CVE has committed to install a stream gauging station downstream of the Project on the Swamp River to monitor flow. During public meetings with local residents and local environmental groups, attendees concluded that the Route 22 bridge, where a USGS stream gauging station had been previously sited, would be the most advantageous location for gauging to occur.
Jim Utter, Friends of the Great Swamp	My concern is rooted in what the impacts are, potentially, to the swamp, to the natural system, which relates to the water quality, quantity, wildlife, plants, things like that…I personally am glad to see something happen to that site because it has been occupied by a series of very bad polluters over the last several decades. There is a legacy of pollutants that are still seeping out into the Swamp River and the Great Swamp. So, from that	T2-30	We agree that the Project has great potential to improve site conditions and adjacent habitat. Construction of the Project will incorporate site clean-up measures that will improve environmental conditions at the site, including potential habitat value. Additional information regarding potential indirect effects to species is provided in Section 3.3.3 of the FEIS.

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	perspective, I'm glad to see something is being talked about that would help clean this up and mitigate a little bit.		
Mark Chipkin, Pawling Resident	…Being the person who is in charge of -- with our committee, taking care of the plants and animals in Pawling and, of course, in parts of Wingdale, on the res -- on the 1,000-acre reserve, when they talked about the possibility of Bog turtles and rattlesnakes, I'm a fan of rattlesnakes unlike some people, and I think that it's really important because if you disturb just one area in a den with rattlesnakes, that's their main point, for instance, and once that's gone, you can't move them, they don't move like that…	T3-12	An update of the bog turtle and rattlesnake surveys, including gathering additional data, is discussed in Section 3.3.2 of the FEIS to reflect the increase in site size. No rattlesnake dens are located on the site, although snakes may traverse the area. No direct impact to potentially suitable bog turtle habitat is proposed.
Chris Wood, Pawling Resident, Oblong Land Conservancy	…The Harlem Valley is really a special place and it provides a number of unique habitats and we'd like to see that as many steps be taken as possible so as to ensure that they're conserved.	T3-16	The Project will contribute to the preservation of Harlem Valley habitat by limiting permanent development to previously disturbed areas to a very significant extent, and acquiring additional acreage (approximately 79 acres west of the railroad track and approximately 44 acres of the former Rasco parcel) where no development is proposed. CVE hopes to enter into an agreement for the long-term preservation of the 79-acre portion of the Property so that it is preserved as habitat.

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Chris Wood, Pawling Resident, Oblong Land Conservancy	…We are very pleased to note that within the proposal there is this notion to preserve some 74 acres in the sensitive area adjacent to the Swamp River and, of course, this includes our Carruth Preserve…We've got proposals to upgrade some of the degrading wetlands, which is also a very useful use of the proposal.	T3-20	The Project includes careful siting to utilize previously disturbed areas to the greatest extent possible, as well as site and wetland restoration, and has no plans to develop much of the site, most notably those areas west of the Metro-North rail line (approximately 79 acres). CVE hopes to enter into an agreement for the long-term preservation of this undeveloped property. An additional 44 acres of the former Rasco parcel is not proposed for any Project use or activity.
Mike Purcell, Pawling Resident	…I don't know how many structures [studies?] Cricket Valley's done in the field here, and there's probably plenty they could do by monitoring water and air, you can maybe get some baseline studies to see…what's out there, because…the Harlem Valley's a real special place…You've got more wildlife here than anywhere else in New York State almost, species-wise, you've got all kinds of birds, fish, turtles, whatever you want, animals; they're all out there.	T3-39	CVE has undertaken numerous studies at the site in consultation with federal and state agencies, including formal species habitat surveys. An update of the bog turtle and rattlesnake surveys, including gathering additional data, is discussed in Section 3.3.2 of the FEIS to reflect the increase in site size. Most significantly, Project activities have been designed to predominantly occur on land that has been previously altered. In this way, the undeveloped habitat in the area can remain undisturbed and retain its use by native species.

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Manna Jo Green, Rosendale Resident, Environmental Director for Hudson River Sloop Clearwater	Oh, one other thing somebody mentioned, septic system, you know, from a large facility, and I'd like to encourage the use of an advanced wetland system…basically, it's using plants to process wastewater, and that cuts down on the consumption of chemicals and it cuts down on the use of energy, so the more we can cut down on the use of energy, the better.	T3-64	Consistent with New York State Department of Health requirements, a septic system will be used for sanitary waste disposal. Based upon a review of Dutchess County soil mapping, anticipated wastewater quantities (500 gpd), and previous soil borings, it is recommended that on-site sanitary waste be treated through a preliminary subsurface treatment using a fill pad based upon Dutchess County Department of Health standards. Additives such as stimulators or enhancers (e.g., chemicals) are not required in a properly designed and maintained system. The plant will have periodic monitoring and maintenance as required to ensure the septic system is operating per design standards. No additional wastewater treatment is required or proposed. The Project will utilize natural plantings to filter stormwater through the use of bio-retention ponds, which incorporate many of the pollutant removal mechanisms of a forested ecosystem. The Project's stormwater management plan currently incorporates three of these bioretention areas as discussed in DEIS Section 5.6.3.

3.3.1 Existing Conditions

Existing conditions relative to natural resources were described in detail in Section 3.2 of the DEIS. Since the DEIS was filed, the 57-acre former Rasco parcel has been added to the Property and additional detail was collected regarding the wetland resources associated with the 38.8-acre remote Laydown Site located approximately 2.5 miles north of the Property. The ecological context of the Property as represented in Section 3.2.1 of the DEIS does not change with the addition of the former Rasco parcel. However, details regarding the specific characteristics of that additional land have been investigated. The following sections provide updated natural resources information.

3.3.1.1 Natural Resource Characteristics – Former Rasco Parcel

An updated cover type map of the Property, reflecting inclusion of the former Rasco parcel is provided in Figure 3-3. The former Rasco parcel is a 57-acre parcel immediately south of the Project Development Area and situated between the Metro-North track to the west and Route 22 to the east. Abandoned buildings and fill piles are located in the northern part of the parcel; additional miscellaneous fill and debris piles are scattered about in the northeast portion of the parcel. The fill piles are located within and/or adjacent to interior site wetlands and between sloping terrain to the east. The cover type on the parcel can be described as predominantly closed-canopy successional forest with a mix of upland deciduous species on higher elevations with both mixed and pure stands of eastern red cedar (*Juniperus virginiana*) abundant throughout. Below approximately elevation 440 feet above mean sea level (msl), pockets of wetlands exist that are characterized as palustrine broad-leaved deciduous with a more open canopy as well as sub-canopy. The Swamp River and Great Swamp are located within 100 feet of the parcel's western boundary.

Small patches of open thicket and dense herbaceous ground cover occur in the north-northwest portion of the parcel within and adjacent to areas disturbed by past fillings of construction and operations debris. Additional areas of forest understory shrub thicket occur on the higher elevations of the parcel. Further, patches of understory shrub thicket-shrub occur within and adjacent to interior parcel wetlands. Habitat described as pine barrens, old field, or old orchard was not observed on the parcel.

3.3.1.2 Rasco Parcel Wetlands

Wetland delineation on the former Rasco parcel was completed in September 2011. A total of six wetlands were delineated for agency review (Figure 3-4). Appendix 3-D includes photographs of each wetland area. Following completion of a survey of flagged wetland

boundaries, a site visit was completed with the NYSDEC on November 14, 2011 and with the USACE on January 5, 2012 to confirm the boundaries and confirm the jurisdictional status. A formal jurisdiction determination was received from NYSDEC on December 14, 2011; the formal jurisdiction determination from USACE was issued on April 11, 2012. The following sections provide descriptions of each wetland area, as well as its regulatory status.

3.3.1.2.1 Wetland A (Flagged US Wetland Boundary Wetland 5)

Wetland A is approximately 0.67 acre and is a forested wetland. The wetland is located in a depression that may have been the result of an old excavation or the placement of fill piles. Wetland A is dominated by eastern red cedar and red maple (*Acer rubrum*) but also contains multiflora rose (*Rosa multiflora*), arrowwood (*Viburnum dentatum*), shrubby cinquefoil (*Potentilla fruticosa*), sensitive fern (*Onoclea sensibilis*), marsh fern (*Thelypteris palustris*), poison ivy (*Toxicodendron radicans*), and grass-of-Parnassus (*Parnassia glauca*). Although this is a forested wetland, the trees are 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 during the site visits; 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.

From a regulatory standpoint, Wetland A is an isolated wetland, not hydrologically connected to the Swamp River or a larger wetlands complex. As such, NYSDEC and USACE have determined that it is not state or federally jurisdictional.

3.3.1.2.2 Wetland B (Flagged US Wetland Boundary Wetland 7)

Wetland B is approximately 0.18 acre. 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. 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.

NYSDEC and USACE have determined that this isolated wetland feature is not jurisdictional.

3.3.1.2.3 Wetland C (Flagged US Wetland Boundary Wetland 6)

Wetland C is approximately 0.01 acre and is a small wet area within a larger upland forest setting. 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.

NYSDEC and USACE have determined that this isolated wetland feature is not jurisdictional.

3.3.1.2.4 Wetland D (Flagged US Wetland Boundary 8)

Wetland D is approximately 6.08 acres. This wetland was characterized as a young forested wetland but contained areas with relatively dense herbaceous vegetation. Wetland D was comparatively drier in the higher elevation portions and wetter in the lower elevation portions near the Metro-North railroad track, where water was deeper and more pooled. The drier, eastern portion was more wooded and was dominated by red maple and alder (*Alnus rugosa*), and also contained marsh fern, sensitive fern, horsetail (*Equisetum* sp.), and asters (*Aster* spp.). 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. Dominant species in the western, wetter portion were lake sedge (*Carex lacustris*), tussock sedge (*Carex stricta*), 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.

NYSDEC has determined that Wetland D is state-jurisdictional, connected hydrologically to the wetlands surrounding the Swamp River; a 100-foot wetland Adjacent Area will also be associated with this wetland. The USACE has also asserted jurisdiction over this wetland as a federal resource.

3.3.1.2.5 Wetland E (Flagged US Wetland Boundary Wetland 9)

Wetland E is approximately 0.05 acre and is a small forested wetland in a larger upland forest setting. This wetland contained eastern red cedar, red maple, alder, sensitive fern, Christmas fern (*Polystichum acrostichoides*), and sedges (*Carex sps*.). The soils were not mucky, and there were no springs, seeps, or rivulets.

NYSDEC and USACE have determined that this isolated wetland feature is not jurisdictional.

3.3.1.2.6 Wetland F (Flagged US Wetland Boundary Wetland 4)

Wetland F is approximately 0.36 acre and contained both emergent and scrub-shrub vegetation cover types. 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 (*Solidago sp*.). A few stems of shrubby cinquefoil were observed in the shrubby area. 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.

NYSDEC has determined that this isolated wetland feature is not state-jurisdictional. However, the USACE has asserted jurisdiction over this wetland, based upon its connectivity (through human-made drainage systems) to the federally jurisdictional intermittent stream located proximate to the railroad track.

3.3.1.2.7 Summary of Wetland Resources

Table 3-2 summarizes the jurisdictional resources within the approximately 57-acre Project Development Area and the approximately 57-acre former Rasco parcel.

Table 3-2 Jurisdictional Wetland Summary

Wetland Resource	State Jurisdictional?	Federally Jurisdictional?	Wetland Jurisdictional Area (Acres)
1	No	No	--
2	Yes	Yes	8.68
3A	No	No	--
3B	No	Yes	0.41
Drainage Swale	No	Yes	0.04
A (US 5)	No	No	--
B (US 6)	No	No	--
C (US 7)	No	No	--
D (US 8)	Yes	Yes	6.08
E (US 9)	No	No	--
F (US 4)	No	Yes	0.36

Wetlands 4 and 5 are located west of the railroad track; this area is within the Property but not within the Project Development Area. Note that state-jurisdictional Adjacent Area (100 feet from the wetland boundary) surrounds each state-jurisdictional wetland resource (Wetlands 2, D, 4 and 5), as shown on Figure 3-4.

3.3.1.3 Laydown Site Wetlands

The remote Laydown Site, located approximately 2.5 miles north of the Project Development Area, does not contain jurisdictional wetland areas, as described in Section 3.3.4 of the DEIS. In order to provide additional detail, wetland delineation for off-site resources adjacent to the Laydown Site was completed on September 27 – 28 and October 3, 2011 (Figure 3-5). Based upon mapping review, NYSDEC determined that wetlands in that location would not be state-jurisdictional due to their lack of size and lack of connectivity to jurisdictional waters. A site visit was held with the USACE on January 5, 2012 to confirm the boundaries and confirm federal jurisdictional status, with a formal jurisdiction determination issued on April 11, 2012.

3.3.1.3.1 Laydown Site – Wetland LS-A/Stream Complex

A portion of a stream complex occurs immediately south of the remote Laydown Site. The stream begins in the adjacent hillside west of the Laydown Site, across Route 22 and becomes a tributary to the Swamp River. Open field and scrub-shrub vegetation such as multiflora rose, willow (*Salix sp*.), 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 (*Castor canadensis*) dams. A few areas of emergent wetland vegetation associated with the stream were noted.

Wetland LS-A is approximately 9.9 acres and consists of a man-made ditch and a woodland pool that is surrounded by active agricultural land. The ditch flows into an adjacent 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 shrubs. There was approximately 18 inches of standing water in the ditch. Water depth in the pool ranged from approximately 10 to 20 inches.

The USACE has asserted jurisdiction over this wetland, based upon its location below the headwaters (two unnamed tributaries west of Route 22) perennial flow on-site and surface connectivity to the federally jurisdictional Swamp River located off-site to the east of Old Route 22.

3.3.1.3.2 Remote Laydown Site – Wetland LS-B

Wetland LS-B is approximately 1 acre and also consists of a man-made ditch and a woodland pool that is bordered by active agricultural land and Old Route 22. Surface flow continues through a connected ditch formed by a rock wall that discharges into Wetland LS-A. The ditch is bordered by willow, alder, red maple and black walnut (*Juglans nigra*). There was approximately 3 inches of standing water in the ditch during the site visit. Water depth in the pool ranged from approximately 3 to 6 inches.

The USACE has asserted jurisdiction over this wetland, based upon its location below the headwaters (flow originates off-site west of Route 22), perennial flow on-site, and surface connectivity to Wetland LS-A, which flows to the federally jurisdictional Swamp River located off-site to the east of Old Route 22.

3.3.2 Updated Species Studies

With the addition of the former Rasco parcel to the Property, there was a need to consider habitat potential for several specific species (bog turtle [*Glyptemys muhlenbergii*], timber rattlesnake [*Crotalus horridus*], New England cottontail [*Sylvilagus transitionalis*], and Indiana bat [*Myotis sodalis*]) specific to that parcel. In addition, through comments on the DEIS, additional documentation was requested for the remote Laydown Site with regard to the potential for bog turtle, New England cottontail, and Indiana bat habitat. Additional surveys have been completed to characterize habitat suitability, as outlined for each species below.

3.3.2.1 Additional Bog Turtle Habitat Suitability Assessment

Section 3.2.5.1.7 and Appendix 3-C of the DEIS provided information documenting a survey for suitable bog turtle habitat within the Project Development Area that indicated potentially suitable habitat for bog turtles did not exist in that area. Additional Phase 1 bog turtle surveys were completed by Terrestrial Environmental Specialists, Inc. (TES) for the former Rasco parcel and for the Laydown Site to determine whether potential habitat could exist in those locations that would need to be considered. The TES report is provided in Appendix 3-B, and summarized for each area in the sections below. Based upon the results of the Phase 1 survey, a Phase 2 bog turtle survey was completed for selected locations within

the former Rasco parcel. The Phase 2 report is also provided in Appendix 3-B and is discussed in Section 3.3.2.1.3.

3.3.2.1.1 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. Such wetland habitats 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., sedges) or moss [S*phagnum* spp.] covered hummocks. A diversity of microhabitats within these wetlands provides areas that the turtles require for basking, foraging, nesting, and hibernation.

The 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, which was designated under a federal recovery plan for the bog turtle. 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, New York State Natural Heritage Program [NYSNHP] 2009a, Gibbs *et al*. 2007, USFWS 2001).

3.3.2.1.2 Survey Methods

The additional Phase 1 bog turtle surveys for the former Rasco parcel and remote Laydown Site were conducted on September 28, 2011 by two USFWS-recognized qualified biologists (see Appendix 3-B).

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 and rushes (*Juncus* spp.), and a variety of shrubs including willows, dogwood (*Cornus* spp.), and alder. Species commonly occurring in fens, such as yellow sedge (*Carex flava*), grass-of-Parnassus, and shrubby cinquefoil, 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, tussock sedge, jewelweed, skunk cabbage (*Symplocarpus foetidus*), poison sumac, and red maple. 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 2006a).

The study area for the Phase 1 survey at the former Rasco parcel was approximately 65 acres (encompassing some areas that overlapped with the Project Development Area). The study area for the Laydown Site was approximately 44 acres (encompassing off-site wetland areas). Wetlands on the former Rasco parcel and adjacent to the Laydown Site 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 (see Appendix 3-B).

3.3.2.1.3 Former Rasco Parcel

The former Rasco parcel, as evaluated for the Phase 1 bog turtle survey, consists of approximately 65 acres of primarily mixed upland forest. 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.

Six wetlands were identified within the former Rasco parcel study area boundaries, totaling approximately 7.35 acres. Each of the six wetlands is described in Section 3.3.1.2. Four of the wetlands (Wetlands B, C, E and F) did not have characteristics representing suitable bog turtle habitat.

Two of the wetlands (Wetlands A and D) were recommended for additional consideration in order to determine their habitat usage (Figure 3-4). Wetland A contained fen indicator species, has marginally suitable soils, and hydrology was considered marginally suitable. A portion of Wetland D (in its western portion and approximately 3 acres in size) contained characteristics of suitable bog turtle habitat, primarily vegetation and hydrology.

A Phase 2 bog turtle survey (Appendix 3-B) was conducted by TES in April, May and June 2012, in order to determine the potential presence of bog turtles within the marginal habitat present in Wetlands A and D. Prior to conducting the surveys, TES obtained an Endangered/Threatened Species License from NYSDEC. Each acre of suitable habitat within the survey area was searched for a minimum of four person-hours during each survey. The surveys included both visual encounter survey and muddling/probing techniques. Qualified surveyors first conducted semi-rapid walks through the survey area while visually scanning for turtles basking on herbaceous vegetation or on the ground. This was followed by 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.

No bog turtles were confirmed to be present during the Phase 2 survey. Therefore, based on standard survey methodology and observed marginal habitat characteristics, no areas within the former Rasco parcel were determined to be considered bog turtle habitat.

3.3.2.1.4 Remote Laydown Site

Due to its proximity to the remote Laydown Site, a portion of a stream complex adjacent to the site (Wetland LS-A) was examined, along with a broader wetland area associated with the stream. Although one additional wetland was delineated in proximity to the Laydown Site (Wetland LS-B), proposed activities will be greater than 300 feet from the wetland; therefore, this small off-site wetland was not surveyed. The remote Laydown Site is currently an active agricultural field, planted in corn at the time of the survey. Based upon Phase 1 survey results, none of the wetland surveyed was considered to represent suitable bog turtle habitat.

3.3.2.2 Additional Timber Rattlesnake Habitat Suitability Assessment

Timber rattlesnake surveys were previously completed for the Project Development Area and the Laydown Site, as reported in Sections 3.2.5.1.6 and 3.2.6.2.1 of the DEIS. A timber rattlesnake habitat suitability assessment for the former Rasco parcel was performed on September 20, 2011.

3.3.2.2.1 Natural History

Timber rattlesnake is listed as a threatened species in New York State. NYSDEC indicates that four den sites are known to occur within 1.5 to 2 miles of the Property on mountainous areas to the west. No dens have been identified within the Project Development Area, as discussed in Section 3.2.5 of the DEIS. Timber rattlesnakes are large-bodied venomous pit vipers measuring from 3 to 5 feet long with cryptic body colorations that allow them to easily blend into the background. The range of the timber rattlesnake extends from southern New Hampshire south through the Appalachian Mountains to northern Georgia and west to southwestern Wisconsin and northeastern Texas. Timber rattlesnakes were at one time widely distributed in most mountainous and hilly regions of New York State. They are now found in isolated populations in southeastern New York State, the Southern Tier and in the peripheral eastern Adirondacks (NYSDEC 2011a).

In the Northeast, timber rattlesnakes are active from about mid-April through mid-October. They prefer upland forested areas where they forage for small mammals. Forage sites can also include open fields, riparian areas, and forested wetlands (NYSNHP 2009b). Den sites are found within talus and/or scree slopes, rocky ledges, outcrops, and boulder fields generally with southerly exposures that contain the entrances to over-wintering dens. Dens are usually near rocky crevices, cracks or other features that provide access to underground chambers to which the snakes return yearly for hibernation. These den sites generally have rocky habitat containing a semi-open canopy; suitable rocks close to the den site are used by gravid females for gestation as well as basking. Dens are often located in obscure habitats which may appear on the surface no different from other locations in a particular area. Although dens are mostly located in and around rocky habitat, they are usually not in excessively large rocky outcrops (PFBC 2010). Timber rattlesnakes begin emerging from their dens in mid to late April. Adult males may travel up to 3 to 5 miles away from the den before returning in the fall, unlike non-gravid females, which move approximately 1 to 3 miles from the den, and gravid females, which stay close to the den. Gestation sites are areas where gravid female rattlesnakes congregate for several months (June through September) for gestating young and birthing. Gestation rocks are usually large, flat slabs greater than or equal to 4 feet by 6 feet in size with direct solar exposure (5 to 7 hours/day) but in the vicinity of available shade (PFBC 2010). Timber rattlesnakes begin migrating towards their den sites in September and enter their dens for winter dormancy in late September through October.

3.3.2.2.2 Survey Methods

The habitat suitability assessment of the parcel was completed by establishing two north-south oriented transects (approximately 2,300 feet by 200 feet) across the parcel, designated as RTR1 and RTR2 (Figure 3-6). Transect RTR1 was situated to capture the

higher elevations on-site with the greatest concentration of exposed rock features; transect RTR2 was similarly located but along the western/southwestern-facing slope of the parcel, also with exposed rock features (e.g., ledge). Transects were situated to reflect the various habitat types (e.g., mixed forested uplands, rocky outcrops, surface boulders, slopes, and wetlands transition zones), canopy/sub-canopy features, elevations and solar exposures (see representative photographs in Appendix 3-E). Within and adjacent to each transect, the area was investigated for the presence of rock outcrops, rocky ledges, talus, and surface boulders that would represent potential den sites, as well as sites that would be suitable basking and gestation areas. Areas were also evaluated for their potential to provide foraging habitat as well as transient habitat between potential den sites and foraging areas. Each assessment transect comprised an area of approximately 10.5 acres. The range of cover types reflected by the two transects includes:

- Mixed, well drained deciduous forested uplands on elevated terrain with a closed to semi-closed canopy and sub canopy over areas of isolated free-standing boulders, exposed bedrock and ledge; the southern limit of the transects included a recently-formed 3 foot by 2 foot stone wall.
- Mixed, well drained mixed forested uplands on sloping terrain with a partial west to southwest exposure and closed to semi-closed canopy over areas of exposed ledge and rocky outcrops with cracks and crevices, an old interior stone wall, and a large free-standing boulder approximately 10 to 15 feet long by 5 to 8 feet wide.
- Adjacent to the western limit of RTR2, deciduous forest and shrub wetlands with areas of standing water, hummocks and emergent vegetation and an open to semi-open canopy and sub-canopy.

Features of the surrounding area as well as presence/absence of suitable den sites, basking and gestation areas, and foraging areas within and adjacent to the assessment transects were recorded on field data forms; one habitat suitability assessment form was completed for each approximately 10.5-acre transect (assessment forms are provided in Appendix 3-E). Characteristics of preferred timber rattlesnake habitat as reflected on the forms included:

- Presence of well drained forested areas on higher terrain with high/open canopy;
- Presence of talus/scree slopes, or boulder fields;
- Presence of exposed rocky outcrops or rocky ledges with fissures, cracks, openings to potential den sites on sloping terrain;
- Presence of openings beneath large tree roots or beneath fallen rock partially covered with soil on sloping terrain;
- Potential den or basking areas with a southerly exposure and an open to semi-open canopy; or

- Presence of potential primary foraging habitat that is forested under a closed canopy or secondary habitat that is riparian or forested wetlands.

3.3.2.2.3 Habitat Suitability Assessment

No potentially suitable over-wintering timber rattlesnake den sites were located on the former Rasco parcel. No talus/scree rock slopes or boulder fields are present on the parcel. Habitat along both transects lack sufficient solar exposure (> 5 hours/day) to be suitable as either den or gestation sites. Isolated flat boulders and exposed ledge occur along both transects but they are covered in vegetation (e.g., vine, low herbaceous plants, moss, ferns) and beneath a closed to semi-closed forest canopy with limited solar exposure. A stone wall along the former Rasco parcel's southern boundary is stacked and fashioned for aesthetic purposes and does not represent suitable den, basking, or gestation habitat; portions of old stone walls occur in spots along transect RTR2 but they are stacked and shaded.

As is the case for the entire Property, areas of upland forest on the site may, however, provide suitable foraging habitat and timber rattlesnakes could traverse the parcel during the active season. Foraging opportunities may be limited, as the former Rasco parcel is situated between the Metro-North track and Route 22. These highly active transportation corridors could limit the accessibility/mobility of snakes that may range from den sites located 1 to 4 miles northwest of the former Rasco parcel. No timber rattlesnakes were observed during the field survey (a period when timber rattlesnakes would be expected to be active and beginning to migrate towards their winter dens).

3.3.2.3 Additional New England Cottontail Habitat Suitability Assessment

The New England cottontail suitability assessment for the former Rasco parcel was performed on September 19 and 20, 2011. Characteristics of the remote Laydown Site were also assessed for New England cottontail habitat suitability.

3.3.2.3.1 Natural History

The New England cottontail is known to occur within 4 miles of the Property (USFWS 2009). Recent information from the NYSDEC indicates that there is a known New England cottontail location approximately 2.3 miles to the east of the Property and approximately 3 miles southeast from the remote Laydown Site. The New England cottontail is a candidate species being considered by the USFWS for addition to the Federal List of Endangered and Threatened species. Candidate species are those that the USFWS maintains sufficient data to support a conclusion that the species faces serious biological vulnerability and threat to support issuance of a proposal to eventually list the species. Candidate species such as the New England cottontail do not receive substantive or procedural protection

under the Endangered Species Act. The agency does encourage cooperation with other federal and state agencies such as NYSDEC and recommends consideration of the species in the project planning process (USFWS 2009). In New York State, the New England cottontail is listed as a state species of special concern (that is, a species that warrants attention and consideration but does not currently justifying listing as either threatened or endangered).

The New England cottontail is a medium to large-sized cottontail rabbit that may reach 2.2 pounds in weight. It is the only native cottontail east of the Hudson River. Records from 1994 through 1995 for this species indicate distribution in Putnam, Dutchess and Columbia counties; the NYSDEC includes wildlife management units in Westchester and Rensselaer counties as part of its hunter inventory survey to assess distribution of the species in the Hudson-Harlem valley area (NYSDEC 2011b). New England cottontail are nearly indistinguishable in the field from eastern cottontails and can be reliably identified only by genetic testing (e.g., fecal pellets) or by examining specific skull characteristics. Food includes forbs, grasses, and leaves in summer; in winter, bark, shoots and twigs. Unlike eastern cottontail, New England cottontail will eat conifer needles. The New England cottontail does not burrow, but uses holes dug by other animals for refuge from predators (Hudsonia 2008).

New England cottontail are considered habitat specialists; namely, they are dependent upon early successional habitat, frequently described as thickets (USFWS 2010a). However, shrublands, shrub swamps, high-elevation ridges and plateaus with pin-oak (*Quercus palustris*) barrens or a mosaic of dense ferns, thicket cover and open patches away from developed areas are also associated with the species (Hudsonia 2008). The home range of New England cottontails varies from 0.5 to 1.7 acres; they have a close affinity for micro-habitats (thickets) containing over 20,000 stem cover units/acre (approximately 46 stems in a 10 x 10 foot square area) and are reluctant to venture from the dense cover provided by these stands (USFWS 2010a). They are very vulnerable to predation and, therefore, prefer these patches to be large as they are reluctant to travel very far from cover. To sustain a population of New England cottontails, the habitat must be sufficiently large to provide year-round food and cover. Within small patches, insufficient food resources cause them to venture from cover more frequently, increasing their susceptibility to predation, especially during winter. Habitat blocks of at least 25 acres in size and close to additional patches are required for this species to survive (Arbuthnot 2008).

Factors contributing to the decline of the species within its range include habitat fragmentation and degradation, succession of thicket and old-field habitat to forest, decline

in stem density as the habitat matures, predation, and competition with eastern cottontail. Browsing by increased white-tailed deer (*Odocoilues virginianus*) populations and woodland patches dominated by non-native, invasive plant species such as multiflora rose, honeysuckle, Russian olive (*Elaeagnus angustifolia*) and Asiatic bittersweet (*Celastrus orbiculatus*) have also been included as some of the contributing factors for the species decline (USFWS 2010a).

3.3.2.3.2 Survey Methods

The habitat suitability assessment of the former Rasco parcel and remote Laydown Site for New England cottontail was completed by direct observation during the course of wetlands delineation and other protected species surveys on the parcel. Specific plots or transects were not established nor were stem counts per unit area or acre conducted; however, sufficient observation of cover characteristics was completed for a thorough understanding of habitat potential. During the course of the habitat suitability assessment, the presence or absence of suitable habitat was noted as described above, and the quality considered.

3.3.2.3.3 Habitat Suitability Assessment – Former Rasco Parcel

The range of cover types found on the former Rasco parcel includes:

- Mixed, well drained deciduous forested uplands on elevated terrain with a closed to semi-closed canopy and sub canopy; areas within the sub-canopy contain patches of deciduous shrub thicket including Tartarian honeysuckle (*Lonicera tatarica*), Japanese barberry, and various woody vines such as common greenbriar (*Smilax rotundifolia*) and Virginia creeper (*Parthenocissus quinquifolia*).

- Mixed, well drained forested uplands on sloping terrain with a partial west to southwest exposure and closed to semi-closed canopy over areas of exposed ledge and rocky outcrops; areas within the sub-canopy contain patches of deciduous shrub thicket as described above.

- Deciduous forest and shrub wetlands with areas of standing water, hummocks and emergent vegetation and an open to semi-open canopy and sub-canopy.

Areas of marginally suitable habitat for the New England cottontail are found on the former Rasco parcel. A single cottontail was observed in an area of dense forest shrub understory but could not be positively confirmed as an eastern cottontail or a New England cottontail. Classic and preferred early successional habitat was not observed within the parcel (e.g., idle or abandoned field, old orchard, recently generating shrub-forest cover, or

large thickets of native vegetation). Secondary or marginal shrub/thicket habitat, however, does exist in small patches beneath areas of mixed forest cover; also, habitat exists within on-site deciduous forest wetlands, some of which contain areas of dense shrub cover as well as the transition zone between forested areas and pockets of previous ground disturbance and fill. Given the small and fragmented nature of shrub-thicket habitat on the site, the habitat quality is considered degraded and less than ideal to support a sustaining population of New England cottontail. Nonetheless, given the tolerance of the species for a variety of habitat conditions outside the ideal range and the presence of New England cottontail within Dutchess County and the surrounding counties, it is reasonable to assume that New England cottontail rabbits could use portions of the former Rasco parcel as year-round habitat.

3.3.2.3.4 Habitat Suitability – Laydown Site

Records from 1994-1995 for this species indicate distribution in Putnam, Dutchess and Columbia counties; the NYSDEC includes wildlife management units in Westchester and Rensselaer counties as part of its hunter inventory survey to assess distribution of the species in the Hudson-Harlem valley area (NYSDEC 2011b). The NYSNHP has a single record from 1968 of New England cottontail on a site approximately 500 feet west of the remote Laydown Site.

New England cottontails are habitat specialists requiring early successional cover type with high stem density for food and cover. Typically referred to as thickets, these areas represent preferred habitat for the species. The remote Laydown Site is active agricultural field planted in corn and does not represent habitat for cottontail. Habitat to the south of the remote Laydown Site is fragmented and varies, consisting of an east/west riparian wetlands corridor, old-field and pasture, linear tree/shrub/thicket rows, and mixed successional hardwood forest. All of these off-site areas contain patches of dense shrub, brush and vine otherwise described as thicket and offer suitable habitat for New England cottontail.

3.3.2.4 Indiana Bat Habitat Suitability Assessment

An Indiana bat habitat suitability assessment for the former Rasco parcel, Project Development Area, and remote Laydown Site was performed on September 19, 21, 27, and 28, 2011.

3.3.2.4.1 Natural History

The Indiana bat is a medium-sized member of the genus *Myotis* ranging from approximately 41 to 49 millimeters (1.6 to 1.8 inches) in length and weighing from 6 to 9 grams (0.2 to 0.3 ounces). The Indiana bat is a monotypic species that is known to occur in much of the

eastern half of the United States. Large hibernating populations are known to exist in Indiana, Kentucky, and Missouri; however, smaller populations and individual records are also known from Alabama, Arkansas, Connecticut, Florida, Georgia, Illinois, Iowa, Maryland, Massachusetts, Michigan, Mississippi, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin (USFWS 1983). The Indiana bat was first federally listed on March 11, 1967 and classified as an endangered species in 1973. The NYSDEC reports that knowledge of its distribution in New York State is limited to known wintering locations (hibernacula) around caves and mines in which they hibernate. The NYSDEC reports eight known hibernacula in Albany, Essex, Warren, Jefferson, Onondaga and Ulster counties. Indiana bats are known to extend well beyond these counties during the summer roost season as individuals disperse from the hibernacula to breed, raise young and forage. In the spring of 2002 through 2006, the NYSDEC tracked female Indiana bats from their hibernacula in Essex, Ulster, Jefferson and Onondaga counties to their spring roosts up to approximately 40 miles away. The former Rasco parcel, Project Development Area, and remote Laydown Site are within 40 miles of Ulster County, New York.

During the summer, Indiana bats utilize two types of roosting habitat, primary roost sites and alternate roost sites. Primary roosts are typically treed areas that can be heated by the sun, such as within or along riparian corridors, at the edges of wetlands, or openings at the edges of forests. Alternate roost sites are also located in forests and are used when temperatures are above normal or when it is raining (USFWS 1999). Females emerge from hibernation first, generally in late March or early April, followed by the males. Although most hibernating colonies leave the hibernacula by late April, some males may spend the summer in the vicinity of the hibernaculum. Some males may roost in caves during the summer, and recent data indicate that loose bark or cavities in trees (some trees as small as 3 to 5 inches dbh) also provide suitable roosting habitat. Males have been known to roost alone or in small groups, usually near female roosts.

Indiana bat maternity sites generally consist of one to several primary maternity roost trees (i.e., trees used repeatedly by relatively high numbers of bats in the maternity colony during the maternity season) and varying numbers of alternate roost trees (i.e., those trees used by smaller numbers of bats through the course of the maternity season). Suitability characteristics of roost trees and overall habitat, although generally consistent, varies somewhat, albeit slightly, from state to state within the Indiana bat's range in the central and eastern United States. The field criteria used to assess Indiana bat habitat suitability and quality at the proposed Project Development Area, the adjoining former Rasco parcel, and the remote Laydown Site considered a range of known Indiana bat roosting habitat characteristics.

Primary Indiana bat roost trees that have been studied range in size from approximately 12 to 30 inches dbh (Romme et al. 1995). Studies have shown that adults in maternity colonies may use as few as two, to as many as 33, alternate roosts (Humphrey et al. 1977; Gardner et al. 1991a; Gardner and Gardner 1992; Callahan 1993; Romme et al. 1995). Alternate roost trees tend to be large, mature trees, from approximately 7 to 32 inches dbh (Romme et al. 1995). Snags (i.e., dead trees with exfoliating bark) exposed to direct solar radiation were found to be used most frequently by Indiana bats as summer roosts, followed by snags not fully exposed to solar radiation and live trees not fully exposed (Callahan 1993).

The NYSDEC New York Field Office has characterized suitable potential summer roosting habitat as trees (either dead, dying, or alive) or snags that are greater than or equal to 5 inches dbh with exfoliating bark; or containing cracks or crevices that could be potentially used by Indiana bats as a roost. Preferred tree characteristics for maternity colonies, however, also include trees greater than or equal to 9 inches dbh with overall structure of the tree (e.g., bark type, degree of exfoliation, presence of large dead limbs, presence of cracks/crevices/cavities) more important as a potential roost tree than a particular species of tree or habitat type (USFWS 2006). Further, data indicate that females are more habitat specific than males (i.e., preference for larger dbh trees and trees with greater solar exposure) given requirements for gestation and rearing of young. Roost areas warmed by direct solar exposure for extended periods are, therefore, preferred over those in shaded areas (USFWS 2006).

Guidance from the USFWS, Northeast New Jersey Field Office (2008) indicates similar characteristics of Indiana bat summer roosting habitat. This office indicates that potential summer habitat for Indiana bats features at least 16 suitable roost trees per acre. The density of suitable roost trees per acre is reported with some variability in the literature, ranging from as few as five trees/acre to as many as 30 trees/acre (Farmer et al. 2002). Overall, tree characteristics such as loose or shaggy bark, crevices, and hollows are more important than the species of tree. According to the USFWS, suitable roost trees include any of the following:

- Live shagbark hickory trees (*Carya ovata*) over 9 inches dbh;
- Lightning-struck trees over 9 inches dbh;
- Dead, dying, or damaged trees of any species over 9 inches dbh with at least 10 percent exfoliating bark;
- Den trees (those with small roosting cavities), broken trees, or stumps over 9 inches dbh and over 9 feet in height; and
- Live trees of any species over 26 inches dbh.

Trees as small as 5 inches dbh have been used as maternity roosts and trees as small as 3 inches dbh have been used by roosting males. A study by Gardner and Gardner (1992) indicated that 75 percent of roost trees were upland deciduous species while 25 percent were riparian species. Species used as roost trees/roost sites include, but are not exclusive to:

- Red maple
- Silver maple (*Acer saccharinum)**
- Sugar maple (*Acer saccharum)**
- Yellow birch (*Betula alleghaniensis)*
- Gray birch (*Betula populifolia)*
- Bitternut hickory (*Carya cordiformis)*
- Sweet pignut hickory, also known as red hickory (*Carya ovalis)**
- Shagbark hickory*
- White ash (*Fraxinus americana)*
- Green ash (*Fraxinus pennsylvanica)**
- White pine (*Pinus strobes)*
- Eastern cottonwood (*Populus deltoids)**
- White oak (*Quercus alba)**
- Pin oak
- Northern red oak (*Quercus rubra)*
- Post oak (*Quercus stellata)*
- American elm (*Ulmus americana)**
- Slippery elm (*Ulmus rubra)*

* preferred roost tree species

These species are likely to develop the loose, exfoliating bark as they age and die that is preferred by Indiana bats as roosting sites. Large tree specimens (greater than or equal to 26 dbh), even in a live state, may display bark characteristics such as plating, curling and deep furrowing which create suitable spaces and crevices for roosting Indiana bats to reside.

In southern Indiana where the USFWS Habitat Suitability Index (HSI) model (Romme et al. 1995) was developed, optimal Indiana bat roosting habitat consists of areas that are located within 1 kilometer (0.6 mile) of open water and that contain at least 30 percent forest cover which meets the following requirements:

- Roosting habitat consisting of overstory canopy cover of 60 to 80 percent;
- Overstory trees with an average dbh of 15.7 inches at a density of at least 16 or more trees per acre;
- Snags with a dbh of at least 8.7 inches at a density of at least 6 snags per acre;
- Understory cover (i.e., from 2 meters above the forest floor to the bottom of the overstory canopy) of 35 percent or less; and
- Foraging habitat consisting of overstory canopy cover of 50 to 70 percent, with 35 percent or less of the understory trees in the 2 to 5 inch dbh size class (Romme et al.1995).

Females are known to exhibit relatively strong loyalty to summer roosting and foraging habitat and will return to them year after year provided suitable conditions remain. Indiana bats are known to occupy distinct home ranges during the summer (Gardner et al. 1990) with average home range sizes varying from approximately 70 acres (juvenile males) to over 500 acres (post-lactating adult females). Roosts occupied by individuals ranged from approximately 0.3 mile to over 1.5 miles from preferred foraging habitat, but are generally within 1 to 1.5 miles of water (e.g., stream, lake, pond, natural or manmade water-filled depressions). The NYSDEC New York Field Office (2006) describes preferred foraging habitat for Indiana bat as streams, associated floodplain forests, and impounded water bodies up to 2 to 5 miles away from upland roosts. In addition, Indiana bats also forage within the canopy of upland forests, over clearings with early successional vegetation (e.g., old fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures (USFWS 1999). Within forested areas, mid-story cover is an important aspect of Indiana bat foraging habitat, as bats need to avoid collisions while maneuvering to catch insects on the wing. Relatively open mid-story canopy (<40% of trees in 2 to 5 inches dbh) (Romme et al. 1995) is also an important feature reported of high quality Indiana bat foraging habitat. Finally, connectivity of the foraging area to the roosting area is also an important feature, as Indiana bats have been shown to use natural as well as man-made travel corridors in moving between these areas.

Although the ideal configuration and mix of habitat features (i.e., high suitability) of a summer roosting colony's or individual bat's home range is somewhat variable, the fundamental roosting habitat requirements are quite consistent; both the proximity (i.e., distance between foraging areas and roosting areas) and density (e.g., high number of large dbh trees with exfoliating bark and direct solar exposure) of preferred habitat features are necessary for a site to support either individual summer roosting bats or colonies. For the areas examined as part of this habitat suitability assessment, the extent to which a sample plot or site exhibited a higher number (i.e., prevalence of summer roosting habitat suitability characteristics) of habitat suitability features, the greater the potential exists for it to serve as summer roosting or foraging habitat for Indiana bats.

3.3.2.4.2 Survey Methods

The habitat suitability assessment of the former Rasco parcel was completed by establishing 11 sample plots (RP1 through RP-11) across the site (Figure 3-6). Sample plots were situated to reflect the various habitat types (e.g., uplands, wetlands, and transition zones), canopy/sub-canopy features, elevations and solar exposures found in areas adjoining the individual plots as well as throughout the site. Each sample plot comprised a circular assessment area of approximately 1.04 acres. The range of cover types reflected by the 11 sample plots includes:

- Mixed, well drained deciduous forested uplands on elevated terrain with a closed to semi-closed canopy and sub canopy (RP1, RP4, RP7, and RP10; plot RP10 overlapping an isolated interior wetland and adjacent to an overgrown haul road which had historically served as an entrance road to the former Rasco parcel);
- Mixed, well drained forested uplands on sloping terrain with a partial west to southwest exposure and closed to semi-closed canopy (RP2, RP5, RP8, and RP11; plot RP11 overlaps an active fill area and is adjacent to an isolated interior wetland); and
- Deciduous forest and shrub wetlands with areas of standing water, hummocks and emergent vegetation and an open to semi-open canopy and sub-canopy (RP3 and RP6; both adjacent to active Metro-North tracks and within 100 feet of the Swamp River).

Features of the surrounding area as well as presence/absence of suitable roost trees and roost habitat within the sample plot were recorded on field data forms; one habitat suitability assessment form was completed for each approximately 1.04-acre sample plot. Characteristics of preferred summer roosting habitat recorded on the forms included:

- Developed features of the site and surrounding area;
- Presence of linear features such as hedge rows, roads, tracks and easements that could serve as corridors;
- Presence of streams, wetlands, open water areas;
- Solar exposure and canopy closure;
- Presence of live shagbark hickory greater than or equal to 9 inches dbh;
- Lightning struck trees greater than or equal to 9 inches dbh;
- Dead or damaged trees of any species greater than or equal to 9 inches dbh with from 10 to 25 percent exfoliating bark;
- Trees with broken limbs, large snags/stumps greater than or equal to 9 inches dbh and over 9 feet in height;
- Small trees with the above characteristics from 3 to 5 inches dbh;
- Live trees of any species greater than or equal to 26 inches dbh;

- Presence of tree species considered suitable or preferred roost trees;
- Percentage of sample plot/surrounding area that is forested;
- Presence of overarching canopy or sub-canopy within approximately 6 feet (2 meters) of suitable trees;
- Presence of at least 16 suitable roost trees per/acre; and
- Representativeness of sample plot to the surrounding area.

The area of the Project Development Area examined for Indiana bat habitat consisted of the lands north of the former Rasco parcel, east of the Metro-North track and west of Route 22. Within this approximately 57 acre parcel, the limited vegetated areas to be either permanently developed or subject to clearing (or subsequent revegetation) were examined for Indiana bat habitat. Sample plots were placed in these areas and, to the extent possible, located to reflect the diversity, suitability and quality of habitat not only in the sample plot but also adjoining areas. A total of 6 circular sample plots (MSP1 through MSP6) of approximately 1.04 acres each were established and examined in the same manner as for the former Rasco parcel (Figure 3-6). Given the highly developed and disturbed nature of the proposed Project Development Area, the forest habitat is more varied than the former Rasco parcel. The range of cover types reflected by the 6 sample plots includes:

- Disturbed and developed mixed, successional forested uplands with bordering wetlands (MSP4, MSP5, and MSP6) with a canopy and sub-canopy ranging from open to semi-open; and
- Undeveloped secondary mixed, successional forested uplands adjacent to forest clearings, interior wetlands and utility easements (MSP1, MSP2, and MSP3) with canopy and sub-canopy ranging from closed to semi-closed.

Indiana bat habitat suitability features within each sample plot were recorded on the same data forms used for the former Rasco parcel.

The area of the remote Laydown Site examined for Indiana bat habitat consisted of lands east of Route 22, west of Old State Route 22 and Sherman Hill Road, and north of Lees Lane. Developed features within the study area included an abandoned farm house, an occupied single family home, an active barn/grain silo, and an active utility building. The area around the farmhouse/barn complex is mowed and maintained with scattered large diameter (>26 inches dbh) sugar maples; a perennial stream flows through a small forested/shrub wetland along Old State Route 22 and under a driveway prior to discharging to a shrub/emergent wetland approximately 500 feet to the south. Active agricultural fields planted in corn stretch from the east-west riparian wetlands system north to the junction of Route 22 and Old State Route 22. South of the riparian wetlands system and farmhouse/barn complex is a mixture of emergent/shrub wetlands and

abandoned/overgrown pasture; dispersed around the perimeter of these areas are narrow tree/shrub/thicket rows. Lastly, a mixed upland forest of approximately 35 acres is located in the southwest quadrant of the study area just north of Lees Lane and between Route 22 and Sherman Hill Road. At its closest point, the Tenmile River is located approximately 1,000 feet east of the remote Laydown Site.

Given the open and fragmented nature of the remote Laydown Site, a variant of the methods employed at the former Rasco parcel and the Project Development Area was used. Larger sample plots were established to reflect the various habitat types, canopy/sub-canopy features, elevations and solar exposures found throughout the Laydown Site study area, and all habitat suitability features within a sample area recorded (Figure 3-7). Sample plots in the vicinity of the remote Laydown Site included:

- MIB1 – An assessment area of approximately 16 acres consisting of the farmhouse/barn complex and the western reach of the riparian wetlands corridor which bisects the site. The cover type within MIB1 includes mowed lawn around the farmhouse/barn complex, palustrine forested and shrub wetlands south of the farmhouse/barn complex, and areas of overgrown and abandoned field.
- MIB2 – An assessment area of approximately 6 acres characterized by the presence of a narrow tree/shrub/thicket row, a depressional forested wetland, and the central reach of the riparian wetlands corridor. Active corn fields border the sample area along its northern perimeter. The cover type within MIB2 is primarily mixed deciduous tree/shrub row and vine thickets encompassing a palustrine broad-leaved deciduous (red maple) wetlands pocket and abutting cornfield.
- MIB3 – An assessment area of approximately 46 acres consisting of abandoned agricultural fields and pasture with tree/shrub/thicket rows forming surrounding borders.
- MIB4 – A linear assessment area of approximately 9 acres consisting of a narrow 3,600 foot by 100 foot tree/shrub/thicket corridor located between Route 22 and active agricultural fields.
- MIB5A and MIB5B – Both sample plots are located within the only intact forested expanse on the site. Given the forested area's rectangular profile, two 1,400 foot by 200 foot linear sample corridors of approximately 6.5 acres each were established along a general north-south line. All habitat suitability features within a sample corridor were recorded on the same form. Sample plot (corridor) MIB5A was established approximately 300 feet east of Route 22 and proceeded along slightly sloping terrain through mixed forested uplands with a closed to semi-closed canopy and sub-canopy. Sample plot (corridor) MIB5B was established approximately 400 feet to the east of MIB5A along slightly higher terrain that sloped gradually from south to north through mixed forested uplands also with a

closed to semi-closed canopy and sub-canopy. The southern portion of plot MIB5B nearest the property line has a more semi-open canopy and open sub-canopy.

3.3.2.4.3 Habitat Suitability Assessment

The habitat suitability for each of the three areas surveyed is discussed below. Supporting data sheets are provided in Appendix 3-F.

3.3.2.4.3.1 Project Development Area

The Project Development Area has a long history of disturbance, habitat eradication, and fragmentation resulting in a subsequent loss in overall ecological value over time. Abandoned buildings, cleared areas, and fill piles characterize the central core of the site. Remaining vegetated (forested) areas on site are best described as successional red cedar woodland and mixed successional southern hardwood forest.

Some of these vegetated areas on the site will be disturbed for permanent development, siting of bioretention basins, or for clearing with subsequent, non-forested revegetation and/or restoration. The six habitat suitability sample plots for Indiana bat were placed in areas where clearing of deciduous tree cover would occur. Larger expanses of eastern red cedar are found elsewhere within the Project Development Area either in pure stands or mixed beneath a deciduous overstory.

The estimated percent forest cover varied among and within sample plots; generally ranging from 10 to 20 percent (with an open to semi-open canopy and sub-canopy) in wetland transitions zones to 60 to 100 percent (with a closed to semi-closed canopy and sub-canopy) in upland areas. Forest cover of <5 percent also occurs in areas that overlap abandoned parking/process areas and fill areas. Given the more fragmented nature of tree and shrub areas in some of the sample plots and the higher percentage of "edge," solar exposure along edges throughout the day ranges from direct (> 6 hours/day) to partial (4 – 6 hours/day). Elevations in the sample plot areas range from approximately 430 feet msl to 470 feet msl.

Easements and corridors found proximate to the Project Development Area include an active road (Route 22) and a high-speed railroad track, which frame the east and west boundaries; an electric transmission corridor is found to the north and east of the sample plots; an abandoned utility easement that is mostly overgrown is found just north of the Project Development Area main entrance road off Route 22. The Project Development Area has large open areas and interior wetlands that could serve as corridors between on-

site vegetated areas and the Swamp River, wetlands and floodplains west of the Metro North track; the site is about 1,000 feet away from the Swamp River's open water.

Given the presence of one or more suitable habitat features within some of the sample plots, combined with the recorded presence of Indiana bat within the Dutchess County and the Dover Plains area, it is reasonable to assume that Indiana bats could potentially use some forested areas within the Project Development Area, although the limited amount of clearing proposed will not appreciably reduce habitat availability.

3.3.2.4.3.2 Former Rasco Parcel

Except for abandoned buildings and fill piles concentrated in the northwestern quadrant of the former Rasco parcel, this approximately 57-acre parcel is predominantly an undeveloped, mixed successional forest. Large expanses of eastern red cedar are found either in pure stands or mixed beneath a deciduous overstory.

The habitat characteristics found on the former Rasco parcel are not unique in any way compared to the surrounding area. The number of preferred roost trees with suitable characteristics on the site is limited and the overall density of suitable/preferred trees is <16 trees per acre. The habitat suitability characteristics of the areas surveyed are low, indicating a relatively low probability or expectation that they are used by Indiana bats for summer roosting and especially as a maternity colony site. Areas of more open canopy and sub-canopy, however, such as sample plots within and/or adjacent to wetlands along the parcel's western border, have slightly greater potential to be used as alternate roosting as well as foraging sites.

Given the presence of one or more suitable habitat features within some of the sample plots, combined with the recorded presence of Indiana bat within the Dutchess County and the Dover area, it is reasonable to assume that Indiana bats could potentially use some forested areas on the former Rasco parcel (e.g., interior site wetlands with suitable roost trees) for summer roosting as well as foraging.

3.3.2.4.3.3 Remote Laydown Site

The area surveyed surrounding the remote Laydown Site consists of: active agricultural fields, associated active and abandoned farm buildings, abandoned fields and pasture, interspersed tree/shrub/thicket rows, interior site wetlands and associated riparian corridors, and undeveloped mixed successional hardwood forest. Although undeveloped except for the area around the abandoned farmhouse/barn complex, potential habitat (and vegetative cover types) for Indiana bat on and in the vicinity of the remote Laydown Site is fragmented

and consistent with the surrounding area (i.e., mixed forested uplands and vegetated corridors interspersed among active and inactive farmland).

The estimated percent cover on the site ranges from <5 percent to 10 to 20 percent (with an open canopy and sub-canopy) over most of the area north of the east-west on-site riparian wetlands corridor. Areas within linear tree/shrub/thicket rows range from 60 to 100 percent cover (with a semi-closed canopy and sub-canopy; edges bordering active and abandoned field have an open canopy and sub-canopy and direct to partial solar exposure). Abandoned fields and pasture to the south of the riparian wetlands corridor range from 0 to <5 percent cover. Mixed forest with 60 to 100 percent cover (with a closed to semi-closed canopy and sub-canopy; an area of approximately 1 to 3 acres just north of Lees Lane has a more open to semi-open canopy and sub-canopy ranging from 20 to 60 percent allowing partial solar exposure during the day) is located in the forested area in the southwest part of the study area. Elevations across the site range from 360 feet msl to 550 feet msl; the highest elevations encountered in the southeast corner of the mixed successional hardwood forest.

Easements do not penetrate the study area although it is bounded by several roads; linear tree/shrub/thicket rows do exist along the Route 22 corridor as well as along the interior riparian wetlands corridor of the site. The riparian wetlands corridor could serve to link forested area in the southern portion of the site to the Tenmile River corridor which is approximately 1,000 feet east.

The number of preferred roost trees with suitable characteristics within the study area varies with the habitat. Sample Plot MIB1 (approximately 16 acres) around the barn/farmhouse complex has a high concentration of large (17 in total > 26 inches dbh) trees (mostly sugar maple), some with desirable characteristics such as flared bark, cracks, and cavities. These trees are exposed to direct solar radiation and in close proximity to interior site riparian wetlands and the Tenmile River and floodplain.

Numerous large specimen sugar maples occur along Old Route 22; therefore, trees on the remote Laydown Site are not unique to the area. Sample Plot MIB2 (approximately 6 acres) displays some trees with preferred/suitable characteristics (e.g., > 9 inches dbh trees with exfoliating bark, broken limbs with direct to partial exposure) and are also in close proximity to interior riparian wetlands and the Tenmile River.

Sample Plots MIB3 and MIB4 (approximately 46 acres and 9 acres, respectively) lack preferred/suitable characteristics and are not considered representative of potential roosting or foraging habitat. Sample Plots (corridors) MIB5A and MIB5B are generally not

considered suitable/preferred roosting or foraging habitat given the high forest canopy and sub-canopy cover which limits the solar exposure of trees with suitable/preferred characteristics located there as well as creates unfavorable foraging opportunities within the canopy. However, on the highest terrain in the southern portion of each corridor north of Lees Lane is a 1 – 3 acre area with a high concentration of large diameter (>9 inches dbh) shagbark hickory and pignut hickory – trees with suitable characteristics such as cracks, crevices and exfoliating bark – as well as large to very large >26 dbh trees (e.g., sugar maple, white oak, shagbark hickory, and pignut hickory) with various preferred physical characteristics. Solar exposure of suitable/preferred trees in this area is partial (4 – 6 hours/day) at best and, therefore, may not be sufficient to create ideal conditions for maternity roosting. There is a potential, however, for this area to serve as alternate roosting habitat.

The habitat suitability of the remote Laydown Site is low overall, indicating a relatively low probability or expectation that areas there are used by Indiana bats for summer roosting and especially, as a maternity colony site. Areas of more open canopy and sub-canopy, within and/or adjacent to the interior riparian wetlands corridor, have slightly greater potential to be used as alternate roosting as well as foraging sites. A 1- to 3-acre area at the southern portion of the forested tract has the highest concentration of suitable habitat characteristics found on the overall site indicating a slightly higher probability or expectation that this area could be used by Indiana bats for summer roosting and foraging.

3.3.2.4.3.4 Summary

None of the areas surveyed represent high quality primary or alternate roosting locations or locations that would support a maternity colony; the concentration of habitat suitability features in the sample plots examined is relatively low and not unique compared to surrounding forested areas in the Town of Dover and Dutchess County. However, given the presence of one or more suitable habitat features within some of the plots, combined with the recorded presence of Indiana bat within Dutchess County and proximate to the Dover area, it is possible that Indiana bats could use areas on the sites for summer roosting as well as foraging. Overall, the habitat suitability characteristics of the areas surveyed are low, however, indicating a relatively low probability or expectation that they are used or occupied by Indiana bats for summer roosting and especially as a maternity habitat.

3.3.3 Potential for Direct and Indirect Effect to Species

3.3.3.1 Bog Turtles

No potential bog turtle habitat will be directly altered, nor is work proposed within 300 feet of identified bog turtle habitat, and therefore, no direct impact to bog turtle habitat will result, as outlined in Sections 3.2.5.1.7 and 3.3.3 of the DEIS. Although bog turtles were not determined to be present, based on Phase 2 bog turtle surveys, potential areas of bog turtle habitat also have been avoided by activities at the former Rasco parcel and precautionary measures will be implemented.

Section 3.2.5.1.7 of the DEIS concluded that indirect impacts to bog turtle habitat will be insignificant. Additional details from other sections of the DEIS are provided here for a more comprehensive discussion of the rationale supporting the insignificant impact to bog turtle habitat. The potential for indirect impacts to habitat can be placed into the two categories mentioned by USFWS in its July 19, 2011 comment letter:

- Potential off-site hydrological effects to the Swamp River and wetlands resulting from pumping of on-site groundwater; and

- Potential off-site water quality and quantity effects to the Swamp River and wetlands resulting from the capture, storage and release of on-site stormwater.

In addition to these potential considerations for indirect affect, the alterations proposed to a portion of the former Rasco parcel, including temporary construction parking use and site restoration activities, are also addressed in this section.

3.3.3.1.1 Potential Indirect Effects – Use of Groundwater

As discussed in detail in Section 5 of the DEIS, proposed groundwater withdrawals will have an insignificant effect on hydrology of the Swamp River as well as off-site wetlands. Because no change in hydrology is anticipated to result, potential bog turtle habitat also would be unaffected. Details of the supporting analysis are provided in Section 5.4.4.2 of the DEIS and are summarized below.

A detailed hydrogeologic evaluation was conducted in July 2010. This detailed investigation, as well as past studies, concluded that the Swamp River basin is a groundwater discharge regime; namely, that groundwater flows into the Swamp River and wetlands and in essence makes the system a “gaining stream.” Analyses cited in the DEIS have concluded that up to 53 percent of flow to the Swamp River during average years

comes from the underlying aquifer, and that a significant increase in flow in the Swamp River occurs along the stretch of river passing the Project Development Area to the west. Gauging studies have concluded that there is a robust base flow from the aquifer to the Swamp River and wetlands near the Property. Further, the description of geologic features provided in Section 5 of the DEIS states that the bedrock formation underlying the site is a type of carbonate rock that has a tendency to form solution cavities, with overlying materials made up of glacial till. The presence of such permeable deposits would indicate an increased ability of the underlying bedrock aquifer to be recharged from the surrounding hillier terrain.

Section 5.4 of the DEIS discusses the Project Water Demand which is divided into Process and Domestic demand. The facility has been designed with state-of-the-art technology to minimize water use and maximize conservation, reuse and recycling. As a combined cycle facility, the demand for water is far reduced from conventional steam-electric generating facilities. Including air cooling and the use of a Zero Liquid Discharge system and water recycling into the design reduces water demand still further. Domestic water demand includes the intermittent use of facilities such as sinks, toilets, and showers for approximately 28 staff and visitors on a given day. The maximum daily average water demand for the facility for both Process and Domestic use is calculated to range from 87,508 gallons per day (gpd) during summer to 21,300 gpd during winter. The requirement for greater volumes of water during the summer is primarily due to the need for the turbines' inlet evaporative cooling (requiring 66,404 gpd of water), which does not occur in winter. On an annual basis, average summer and winter period demand ranges from 59.9 gpm to 13.4 gpm, respectively.

The facility will not withdraw water from the Swamp River, but will utilize deep bedrock wells. In order to evaluate the capacity of the groundwater system on the site to fulfill facility process and domestic water needs on an annual basis, as well as assess the impact groundwater pumping would have on the existing aquifer, surrounding wells, the Swamp River, and wetlands (inclusive of bog turtle habitat), six pumping test wells were installed on the site and surficial groundwater piezometers installed in the surrounding area, including off-site wetlands (Figure 3-8 of the FEIS; Appendix 5-F and Figure 5-5 of the DEIS). The six bedrock wells were installed at depths ranging from 630 feet to 1,109 feet. Of the six wells, four showed the potential to yield sufficient water and were subjected to detailed testing. Pump tests on these wells were conducted to assess the capacity of the wells to supply a continuous summer demand of 60 gpm, and a short-term supply of 120 gpm. An important aspect of the pump test design was to determine whether the extraction of up to 120 gpm from the bedrock aquifer would have an adverse impact on the existing aquifer,

private wells (up to 2,500 feet away), wetlands within and adjacent to the Project site, and the Swamp River.

Pump tests were done in two phases: an on-site wetland and Swamp River monitoring pump test, followed by an aquifer stress pump test that considered on-site and off-site wells. Piezometers equipped with automatic data loggers were placed near the Swamp River and adjacent wetlands. This monitoring showed no observable impact to the monitored water levels during the pumping test. In addition, aquifer stress pump test monitoring of the wells in excess of one month showed no observable effect that could be explained solely as a result of the pump test, as observed groundwater level drawdown and recovery periods and rates in the four monitoring wells showed no correlation with the pumping test. This is explained more fully in FEIS Section 5.3.2.

Water budget calculations indicate that the groundwater regime in and around the Property is fully capable of supporting facility demands under average and drought conditions. Further, monitoring demonstrated that pumping of groundwater would not generate permanent off-site drawdown impacts of any type. This would include the Swamp River and off-site wetlands, including habitats potentially supporting bog turtles. This information supports the conclusion in the DEIS that potential indirect impacts to bog turtles and associated off-site potential habitat resulting from groundwater pumping will be insignificant.

3.3.3.1.2 Potential Indirect Effects – Stormwater Management

The USFWS also commented on the need for an expanded discussion of potential indirect impacts to bog turtle from the proposed stormwater management. A detailed Stormwater Management Plan (SMP) following New York State guidelines has been developed for the Project with the overarching goals of minimizing and mitigating off-site impacts to surface water quality and quantity. Additional detail is provided below.

As described in detail in Section 5.6.3 of the DEIS, the stormwater management plan and design of control basins have been developed in accordance with New York State Stormwater Design Manual guidelines. These guidelines have, as their central intent, management of the quality and quantity of on-site generated run-off to avoid or minimize adverse impacts to off-site receiving waters including critical habitats.

First and foremost, the facility will not discharge process wastewater and no off-site discharge will occur from a point source conducting industrial operations.

The post-development stormwater runoff will be collected from graveled areas, roads, miscellaneous structures and parking lots. Stormwater generated within the Project

footprint will be controlled by three bioretention basins and one proposed stormwater management basin (refer to Appendix 5-A of the DEIS). These basins are situated to capture and treat stormwater prior to reaching jurisdictional wetlands. Jurisdictional wetlands currently receive uncontrolled runoff from the Project Development Area, much of which includes abandoned industrial development and portions of which contain potentially contaminated soils, sediments and fill piles. In addition, runoff most likely enters this system from Route 22.

As a part of the Project construction effort, areas of industrial debris and contamination will be capped or removed, which will improve overall water quality to this system. Combined with future stormwater controls as part of the facility development plan, water quality associated with potential bog turtle habitat off-site should be improved.

It has been widely documented that the initial surge of stormwater during a rain event (i.e., the first flush) usually contains the greatest mass and concentration of runoff pollutants. Thus, the stormwater facilities proposed on-site are designed to capture and treat the initial flush of water from every storm, mitigating the potential for adverse offsite water quality impacts. In particular, the bioretention basins are designed with specific features to treat stormwater such as plunge pools to capture sediment and solids, and a stormwater basin with natural soils to facilitate pollutant removal via adsorption, filtration, volatilization, and biological decomposition. Each of these physical, chemical and biological processes play an important role in the removal from runoff of pollutants such as heavy metals, petroleum hydrocarbons, fertilizers, pesticides and herbicides. In addition, the basins are designed to provide quantity controls by attenuating stormwater runoff and releasing runoff to off-site locations at a rate equal to or less than that which existed prior to development of the site; the peak rate of runoff from the site will not be increased. Given the control, collection and treatment measures proposed on-site, potential indirect impacts to bog turtle and associated off-site habitat resulting from stormwater runoff discharge will be insignificant.

In addition, CVE's mitigation plan includes some wetland creation and enhancement, as well as replanting within portions of the 100-foot Adjacent Area surrounding NYSDEC-jurisdictional wetland resources. This will provide further runoff control, erosion prevention and pollutant uptake.

Another benefit to the bog turtle species will be that the 79-acre property west of the Metro North track and adjacent to the Swamp River and wetlands will not be developed; rather, CVE has proposed to place these lands (as shown on Figure 3-1, west of the railroad tracks) into a conservation easement which will provide additional buffer between site activities and potential off-site bog turtle habitat.

3.3.3.1.3 Potential Indirect Effects – Proposed Activity at the Former Rasco Parcel

Portions of the former Rasco parcel include deposits of waste materials (shown generally in Figure 3-3) that will be addressed as a part of the CVE Project. In order to implement site restoration activities and facilitate Project construction, these disturbed portions of the former Rasco parcel are proposed for temporary use as construction worker parking and laydown facilities, as illustrated in Figures 3-9 and 3-10. The potential bog turtle habitat in Wetland A and portions of Wetland D have been avoided as a precautionary measure. Phase 2 bog turtle surveys, however, have not indicated the species' presence in these marginal habitat areas. Nevertheless, best management practices will be incorporated to provide protection and benefit to those species that may utilize the work area and its vicinity.

Approximately 44 acres of the 57-acre former Rasco parcel will not be altered by the Project, resulting in no potential impact to species. The balance of the former Rasco parcel will be used for temporary construction worker parking. Of this approximately 13-acre portion of the parcel, approximately 5 acres is previously developed, approximately 6 acres is comprised of waste material depositions, and approximately 2 acres consists of forested land. Following construction, it will be restored and revegetated and existing waste material depositions will be removed or capped. A detailed stormwater management plan for the temporary parking use will be developed (a plan is provided in Appendix 5-B of the FEIS), incorporating vegetated swales and detention basins that will capture first flush pollutants and meter the release of stormwater to the adjacent wetlands to rates equal to or less than current levels. Therefore, as is the case for the Project Development Area, indirect impacts to wetland habitat will be insignificant. Further, site remediation activities and site restoration following construction will result in a net benefit to this habitat area by removing potential sources of contamination and improving upland habitat. Additional details on wetland restoration and improvement are discussed in Section 3.3.5 of the FEIS.

Although no bog turtles were found in follow-up surveys in the marginal habitat adjacent to the former Rasco parcel work area, precautionary measures will be incorporated into Project development activities. Current plans for the temporary parking areas include the use of temporary fencing that would be installed for the purpose of preventing turtles and other animals from gaining access to gravel surfaces and avoiding contact with vehicles. Periodic inspections of fencing for tears, holes, detached sections etc., would be conducted between April and October to overlap seasonal periods in which turtles are active and out of hibernation (NYSDEC 2011c). In addition, fencing would also be inspected prior to April to ensure timely repairs are made before turtles emerge from hibernation. In the unanticipated event vegetative maintenance were required in the vicinity, only mechanical

means of control would be used. Any use of chemicals (i.e., herbicides, fertilizers etc.) would not be permitted for this purpose.

Signage will be posted that includes a caution, instructions, and on-site contact information in the event a turtle is encountered during construction. In the event a turtle is encountered within the parking area, the on-site construction manager will consult with appropriate professionals to identify the species, and if it is a bog turtle, contact the NYSDEC Region 3 Wildlife Office (845-256-3098) for further actions and/or recommendations on how to facilitate movement of the specimen safely to beyond the limits of the parking area.

3.3.3.2 New England Cottontail

3.3.3.2.1 Potential Direct and Indirect Effects – Project Property

The potential for direct effect to the New England cottontail associated with the Project at the Property is limited. At the Project Development Area, the majority of the proposed Project footprint is within area historically developed and used for past industrial businesses. Although large areas of preferred thicket habitat are limited on the Project Development Area, the potential does exist for New England cottontail to use the site.

Within the former Rasco parcel, where clean-up activities and temporary construction parking and laydown will require some clearing and disturbance over the three-year construction period, no large areas of preferred thicket habitat exist. Therefore, although cottontails could travel through the portion of the former Rasco parcel where Project-related activities are proposed, no significant impact to the species or its habitat is expected. Following construction, the disturbed portions of the former Rasco parcel will be stabilized, revegetated and allowed to return to a natural state.

A potential direct effect to the species during construction consists of displacement onto adjoining properties and/or areas within the Property that will not be developed or disturbed. In fact, the most suitable New England cottontail habitat occurs just to the north-northeast of the Project Development Area, within and adjacent to the existing electric transmission corridor. This area includes shrub and thicket forest edges suitable for New England cottontail habitat. Although two new H-frame transmission structures will be placed within the corridor for the Project, the small footprint of this alteration will represent a minimal direct habitat impact; as is currently the case, tall vegetation will be controlled within the easement, facilitating continued shrub habitat. In addition, approximately 5 acres of shrub/scrub habitat suitable for the New England cottontail will be created by the electrical corridor proposed to extend from the Project switchyard to the existing transmission easement.

Direct and indirect effects to the species throughout its range includes: habitat fragmentation and degradation; succession of thicket and old-field habitat to forest and a decline in stem density as the habitat matures; predation; and competition with the eastern cottontail. Predation and competition with the eastern cottontail will not be significantly influenced by the Project in any way that can be reasonably predicted or managed.

Habitat fragmentation and degradation associated with the Project is not anticipated to be significant. First, the habitat within the Project Development Area and the portions of the former Rasco parcel proposed for temporary disturbance is severely degraded and already fragmented as a result of decades of past industrial manufacturing activity. Second, typical old-field successional habitat is absent, and areas of thicket that do remain are small and patchy in nature, unable to support a population of rabbits. The successional habitat found most commonly on the Property is of the mixed successional eastern red cedar woodland type with a stem density typically too low to provide adequate cover and food for this species. By focusing Project-related activities on areas of the Property that have already been cleared and altered, the limited additional areas of clearing proposed within the Project Development Area will not provide further fragmentation. Following the temporary use of the portion of the former Rasco parcel to be used for construction laydown and then restored, low-growing vegetation would be expected to colonize that area, providing for improved cover suitable for the New England cottontail.

As noted above, certain areas associated with the Project (e.g., the electric transmission line corridors) will be actively managed to prevent succession to forest. For this reason, these areas will remain appropriate habitat for New England cottontail. In addition, as part of site remediation activities and construction, wetlands and wetlands Adjacent Area will be restored and enhanced by creating early-successional habitat. Approximately 1 acre of wetland Adjacent Area will be restored and replanted with low-growing vegetation; an additional 1.8 acres of Adjacent Area will be selectively replanted, creating additional early successional habitat with higher stem density. The Project will also convert 8.5 acres of forested or disturbed communities to open shrub/scrub and meadow which should create habitat opportunities for New England cottontail.

Another positive indirect effect on the species associated with the Project is the plan for degraded areas of the site to be reclaimed and remediated to remove contamination from past industrial activities. Following completion of construction, transient species use of the area would be expected to return to an improved habitat, where former waste piles and other debris have been removed. Potential direct and indirect impacts to this species should, therefore, be less than significant.

3.3.3.2.2 Potential Direct and Indirect Effect – Remote Laydown Site

Use of a small area of active corn field for temporary laydown of equipment and parking does not contribute to potential direct or indirect effects to the New England cottontail. Habitat fragmentation and degradation will not occur, as the mix (e.g., residential-farm, agricultural, old field, forest, etc.) of habitat type and current fragmentation patterns will not change; no permanent development is proposed on the remote Laydown Site and it will be restored to its agricultural use. With the exception of small clearing necessary for access off Route 22, vegetation clearing will be avoided. Areas of old-field successional habitat to the south will remain intact and no activities are proposed there. The Project's use of the remote Laydown Site will also neither increase nor decrease predator-prey relationships beyond what cottontails are already experiencing, nor will the Project increase or decrease competition with eastern cottontail in any way that can be reasonably predicted and managed. Potential direct and indirect impacts to this species due to Project uses of the remote Laydown Site should, therefore, be less than significant.

3.3.3.3 Indiana Bat

Given the scattered and limited roosting habitat in the small areas to be cleared on the Project Development Area, the suitability of summer roosting habitat for Indiana Bats on the site is low. The USFWS concluded in a letter dated September 21, 2009 that features of the habitat, including current developed features, and proposed limited tree-clearing for the Project did not warrant mist-netting to assess impacts to Indiana bats. However, Section 3.2.5.3.2 of the DEIS acknowledges the potential that Indiana bats may use the wetlands and riparian corridor along the Swamp River for roosting and foraging. Given this potential use of nearby habitat, that could mean Indiana bats are proximate to the Project; additional acreage has now been included in the Property (the former Rasco parcel. For these reasons, a more detailed consideration of the potential for direct and indirect impact to Indiana bats and their habitat is provided in the following sections.

3.3.3.3.1 Potential Direct Effect

To avoid potential direct impacts to Indiana bat that may use trees in areas to be cleared during the summer roosting season (generally considered as early June through late September), CVE has committed (as per NYSDEC recommendation) that no clearing of potential roost trees would occur from April 1 through September 30.

The remote Laydown Site will not involve any significant tree clearing, as it is currently in active agricultural use; only a small area of trees along Route 22 the width of the proposed access driveway will be cleared for this temporary use.

At the Property (both the Project Development Area and the former Rasco parcel), the areas to be cleared do not provide high quality alternate or maternity roosting habitat. Total clearing proposed with the Project Development Area includes a permanent loss of 4.8 acres of forested habitat and the permanent conversion of 6.3 acres of forested habitat to scrub/shrub or bioretention pond habitat. Within the former Rasco parcel, approximately 13 acres will be disturbed to allow for surface debris clean-up activities and temporary parking use during the three-year construction period. Within the areas proposed to be disturbed at the Property, there are:

- Very few live or dead shagbark hickory trees with dbh of 9 inches or greater;
- Very few live trees with a dbh of 26 inches or greater;
- Very limited number of trees of any diameter or condition (exfoliating bark) considered preferred roosting species (red maple, sugar maple, shagbark hickory, white oak);
- Very few areas where even marginally suitable trees have sufficient solar exposure (open canopy and sub canopy) to be attractive to especially roosting females; and
- Habitat characteristics that are not unique or preferred in any way and that can be found in great abundance in the surrounding area.

As none of the areas to be cleared represent preferred, unique or significant summer roosting features, seasonal cutting of trees outside of the summer roosting season is anticipated to be sufficient to avoid direct impacts to the species should individuals be present. Most importantly, none of the areas to be cleared represents habitat that would be considered desirable maternity roost sites that returning colonies of bats might expect to reoccupy in a subsequent season to rear young. Lastly, none of the areas to be cleared represent unique or important foraging areas for Indiana bat. The USFWS similarly concluded in its September 21, 2009 comments – regarding proposed clearing in the Project Development Area – that "*it appears tree removal associated with the project is unlikely to result in direct effects to Indiana bats.*"

3.3.3.3.2 Potential Indirect Effect – Project Property

As stated in the USFWS letter dated September 21, 2009, both direct and indirect impacts to Indiana bat should be considered. The letter states, "*For example, indirect effects may result from the loss and/or fragmentation of roosting or foraging habitat.*"

As described in the DEIS, the Property (including the former Rasco parcel) has a long history of disturbance, habitat eradication, and fragmentation resulting in a subsequent loss over time in overall ecological value. Abandoned buildings, cleared areas, and fill piles characterize the central core of the site. Remaining vegetated (forested) areas on site are best described as successional red cedar woodland and mixed successional southern hardwood forest with a closed to semi-closed canopy and sub-canopy. High quality or critical summer roosting and foraging habitat for Indiana bat is absent in the areas to be cleared; potential habitat on and off the Property will not be further fragmented or degraded as a result of the Project.

Indiana bat roosts can range from approximately 0.3 mile to over 1.5 miles from preferred foraging habitat, but are generally within 1 to 1.5 miles of water. The NYSDEC New York Field Office (2006) describes preferred foraging habitat for Indiana bat as streams, associated floodplain forests, and impounded water bodies up to 2 to 5 miles away from upland roosts. Connectivity of the foraging area to the roosting area has been shown to be an important habitat feature as Indiana bats can use natural as well as man-made travel corridors in moving between these areas.

Roost areas have not been identified within the Project Development Area or the temporary disturbance area within the former Rasco parcel. The Property is in close proximity to the Swamp River and associated floodplains. Natural or manmade easements or corridors potentially serving as connectors between foraging and roosting areas do not penetrate the Project Development Area. An electric transmission corridor is found to the north and east of the development site and will remain with the Project in place. All proposed tree clearing is in portions of the Property contiguous to areas of existing disturbance and development. Thus, indirect impacts to Indiana bats resulting from further habitat fragmentation or loss will not occur. In addition, the Project will include preservation of a 79-acre portion of the Property west of the railroad track, as well as the restoration of the former Rasco parcel. Once the temporary construction use of a portion of the former Rasco parcel is completed, no further Project use of that parcel is proposed. In this way, potential habitat areas – particularly those contiguous with the Swamp River – will benefit.

The USFWS offered recommended conservation measures to further reduce or avoid indirect impacts to Indiana bats that may use the surrounding area for roosting or foraging. CVE's approach to addressing each recommendation is outlined below:

- *"Tree removal should occur between October 1 and March 31 to avoid direct impacts to Indiana bats associated with tree clearing.*" CVE will restrict tree clearing to the timeframe recommended by USFWS, which is also consistent with NYSDEC's recommendation, in order to avoid and minimize impacts to Indiana bats.

- "*Bright orange fencing/flagging should clearly demarcate trees to be protected compared to those to be cut prior to the initiation of any construction activities at the site."* CVE does not anticipate that any trees exist within the areas of proposed clearing that should be earmarked for protection. However, construction fencing will be used to demarcate the limits of clearing and, prior to clearing activities, a tree survey will be conducted to confirm no such trees exist within the area that should be protected. Should trees with appropriate characteristics be identified (e.g., larger trees that are dead/dying with exfoliating bark that are at least 9 inches dbh; lightning struck/split trees and/or trees with cavities or crevices along trunk or larger branches; trees with preferred characteristics that have direct solar exposure; potential roost trees that are unimpeded by vines or small branches in the sub-canopy; trees that are tall relative to surrounding trees especially near forest edges or along openings to potential forage areas), consideration will be given as to whether they can be avoided.
- "*To minimize effects from lighting in the area, we recommend limiting the number of lights, including motion sensors and timers, directing the lights towards the ground and buildings, and including shields to direct light downwards. We discourage the use of lighting and chemicals in/around storage detention basins.*" Section 6.2 of the DEIS describes lighting proposed for the facility. For security and safety purposes, the facility will require the type of minimum lighting described by the USFWS during normal operations. Low-impact, downward-facing lights will be selected to minimize lighting impacts. Indiana bats can be attracted to even small open water areas and ponds to forage. Proposed facility bioretention basins will be fenced for security purposes and not illuminated. Pesticides and herbicides will not be used in and around storage/treatment basins. Other chemical storage will be within appropriate storage areas with secondary containment. All vegetative management at the basins will be done mechanically either by mowing or manual clearing of larger shrubs. Periodic clearing of aquatic vegetation and removal of accumulated sediment from the basins will be done by dewatering the basin and excavating with conventional

equipment such as a back-hoe. These intended maintenance basins practices will avoid potential direct and indirect impacts to Indiana bats that may forage in the area.

- "*Finally, we recommend placing a conservation easement on property west of the railroad tracks.*" CVE has proposed to leave all property west of the railroad track (79 acres) in its natural state through incorporation of a conservation easement. In addition, the former Rasco parcel, following use of a portion of this area during the construction period, is not planned for any future Project use.

3.3.3.3.3 Potential Indirect Effect – Remote Laydown Site

As described in Section 3.3.2.5.3.3, the number and quality of potential roost trees on property surrounding the remote Laydown Site varies with the habitat. The area to be used during the construction period is open agricultural field, with only a very small area along Route 22 proposed to be cleared as an access point. The area does not represent suitable summer roosting habitat. Indirect effect potential will also be minimized by:

- Avoiding and minimizing habitat modification or fragmentation;
- Clearly demarcating the work area;
- Restricting the limited proposed tree clearing to the period from October 1 through March 31; and
- Restoration and return of the site to its original use as active agricultural property following its temporary construction use for parking and laydown.

3.3.3.4 Conclusion

CVE has selected Project locations (both for permanent and temporary proposed uses) that have limited habitat value, and has incorporated measures into the Project design and proposed implementation that will further minimize the potential for direct or indirect species impact. Various layout alternatives have been evaluated to select the most practicable and least damaging Project alternative. Vegetation clearing within the Property is insignificant given the footprint of the Project. Where temporary disturbance is proposed for site restoration and/or construction parking and laydown use, it is limited and adjacent to other cleared areas, and disturbed areas will be returned to their existing use.

Areas that are disturbed on the Project Development Area will be replanted and restored including wetlands and NYSDEC-jurisdictional wetland Adjacent Area; other areas will be allowed to revegetate naturally. Bioretention basins will collect and treat all stormwater

runoff and there will be no direct discharge to area wetlands or surface waters. Groundwater use will not affect on-site or off-site hydrology, including potential bog turtle habitat.

The Project Development Area has a long history of disturbance and the surrounding environment shows signs of ecological stress. The landscape context is a disturbed industrial one with an active high speed rail line to the west, a main north-south state road to the east, and a high voltage electric transmission easement to the north. Acquisition of the former Rasco parcel to the south provides for beneficial restoration of this historically industrial area as well. None of the habitat features within areas to be cleared on the site is unique within this context; better quality and quantity habitat can be found in abundance in the surrounding landscape, including within the Property. Areas of industrial fill and contamination on the Property will be addressed, improving site conditions and providing a benefit to species potentially utilizing the area. Careful siting and design, restoration of site conditions, and preservation of land within the Property that is adjacent to the Swamp River, will provide an overall benefit to species as a result of the Project.

3.3.4 USFWS Tower Site Recommendations and Guidance

The Oblong Conservancy provided USFWS guidance on towers as a part of its comments relative to the Project's potential effect on migratory birds. Although not intended specifically for power plant stacks (in fact, they are intended for communication towers, such as cell phone towers), CVE has evaluated the recommendations presented in the section below.

Recommendation 1 – Any company/applicant/license proposing to construction a new communications tower should co-locate the communications equipment on an existing communication tower or other structure (e.g., billboard, water tower, or building mount). Depending on tower load factors, from 6 to 10 providers may co-locate on an existing tower.

The Project stacks must be structurally independent from other features and from one another in order to properly function. However, the three stacks have been co-located, which is an element of Recommendation 1. While not proposed as a part of the Project, CVE would be willing to consider the co-location of communications equipment on these structures.

Recommendation 2 – If co-location is not feasible and a new tower or towers are to be constructed, communications service providers should construct towers no more than 199 feet above ground level, using construction techniques which do not require guy wires…Such towers should be unlighted if Federal Aviation Administration regulations permit.

The 199-foot height is associated with FAA thresholds, and could indicate a structure height that would not require safety lighting for air navigation. The Project stacks have been carefully designed to be at as low an elevation as possible, given the air dispersion requirements of the Project. At 282.5 feet, they require review for aviation safety by the FAA, and have been required to install FAA lighting. No guy wires will be associated with the stacks.

Recommendation 3 – If constructing multiple towers, providers should consider the cumulative impacts of all of the towers to migratory birds and threatened and endangered species as well as the impacts of each individual tower.

Consideration of the three co-located stacks is reflected in impact discussions provided in Section 3.3.2.

Recommendation 4 – If at all possible, new towers should be sited within existing "antenna farms" (clusters of towers). Towers should not be sited in or near wetlands, other known bird concentrations (e.g., State or Federal refuges, staging areas, rookeries), in known minatory or daily movement flyways, or in habitat of threatened or endangered species. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.

The three stacks will be co-located. As such, although they are located proximate to wetlands and the general area is prone to frequent morning fog, the single obstacle does not represent a significant threat to migrating birds which do so over a broad front.

Recommendation 5 – If taller (>199 feet AGE) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white (preferable) or red strobe lights should be used at night, and these should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. The use of solid red or pulsating red warning lights at night should be avoided. Current research indicates that solid or pulsating (beacon) red lights attract night-migrating birds at a much higher rate than white strobe lights. Red strobe lights have not yet been studied.

CVE is coordinating with the FAA to incorporate the minimum amount of lighting with the least impact to avian species that meets FAA's safety objectives.

Recommendation 6 – Tower designs using guy wires for support…should have daytime visual markers on the wires to prevent collisions…

No guy wires will be associated with the stacks.

Recommendation 7 – Towers and appendant facilities should be sited, designed and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint." However, a larger tower footprint is preferable to the use of guy wires in construction. Road access and fencing should be minimized to reduce or prevent habitat fragmentation and disturbance, and to reduce above ground obstacles to birds in flight.

The proposed stacks, and the entire Project footprint, have been sited to take advantage of a previously developed area. Therefore, habitat loss associated with the stacks has been avoided and, as previously noted, no guy wires will be incorporated into the stack design. Road access and fencing is also largely within the previously developed area, retaining the great majority of natural area for species movement, including birds in flight.

Recommendation 8 – If significant numbers of breeding, feeding, or roosting birds are known to habitually use the proposed tower construction area, the tower should be relocated to a site with minimal or no impact to migratory birds. If this is not an option, seasonal restrictions on construction may be advisable in order to avoid disturbance during periods of high bird activity.

Although breeding, feeding and roosting birds are present in the area, the location of the proposed stacks is currently and has historically been disturbed by industrial activity. A surplus of higher value habitat is found throughout the area.

Recommendation 9 – In order to reduce the number of towers needed in the future, providers should design new towers structurally and electrically to accommodate the applicant/licensee's antennas and comparable antennas for at least two additional users (minimum of three users for each tower structure), unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.

The design of the proposed stacks does not preclude potential future use for incorporating communication or other features associated other users. CVE is open to discussing such potential future uses.

Recommendation 10 – Security lighting for on-ground facilities and equipment should be down-shielded to keep light within the boundaries of the site.

Project lighting will be down-shielded to keep light within the boundaries of the site.

Recommendation 11 – If a tower is constructed or proposed for construction, Service personnel or researchers from the Communication Tower Working Group should be allowed access to the site to evaluate bird use, conduct dead-bird searches, to place net catchments below the towers but above the ground, and to place radar, Global Positioning System, infrared, thermal imagery, and acoustical monitoring equipment as necessary to assess and verify bird movements and to gain information on the impacts of various tower sizes, configurations, and lighting systems.

The Project's stacks will be located within a fenced and secure area, given the security requirements for the safe and efficient operation of power plant facilities. The limited proposed transmission towers (the interconnection to the existing transmission line north of the Project Development Area) are not anticipated to pose a significant risk that would warrant such detailed post-construction survey measures. CVE, however, expects to continue to work closely with federal, state and local agencies and entities to document compliance with permit conditions and to continue its good-neighbor approach to improving land conditions in the vicinity of the Project.

Recommendation 12 – Towers no longer in use or determined to be obsolete should be removed within 12 months of cessation of use.

The Project is intended to provide for clean and efficient energy generation for at least its 30-year life. Should the facility cease operation, CVE will coordinate with the local community regarding its disposition.

3.3.5 Summary of Proposed Wetland Impacts and Mitigation

Avoidance of impact to wetlands has been an important focus of the Project site selection and design. Where wetland impact was unavoidable, it has been minimized to the greatest extent possible. Impacts associated with the Project Development Area and remote Laydown Site remain unchanged from those reflected in Section 3.3 of the DEIS, with the exception of approximately 0.03 acre of additional impact associated with newly delineated Wetland F (extending from the former Rasco parcel). Total wetland impacts associated with the Project Development Area are, therefore, 0.08 acres of combined federal and state jurisdictional wetlands; some associated state Adjacent Area will also be affected by certain

activities, including clean-up of historic waste materials as addressed in detail in Section 2 of the FEIS.

No new wetland impact is associated with the temporary use of the former Rasco parcel. However, the need to address former deposits of waste on the parcel and the temporary use for construction worker parking and laydown will involve work within state wetland Adjacent Area. No wetland impact is proposed at the remote Laydown Site.

Tables 3-3 and 3-4 summarize the jurisdictional wetland impacts and Adjacent Area impacts, respectively, proposed in association with the Project.

Table 3-3 Summary of Jurisdictional Wetland Impacts

Jurisdictional Wetland Resource	Jurisdictional Status	Temporary Wetland Alteration (acres)	Permanent Wetland Alteration (acres)
Wetland 2	Federal and State	0.6	0.05
Drainage Swale (Intermittent Stream)	Federal	0.001	0.003 (rip rap within stream)
Wetland F	Federal	--	0.03
Total		***0.601***	***0.083***

Table 3-4 Summary of Adjacent Area Impacts

NYSDEC-Regulated Resource	Temporary Adjacent Area Alteration	Permanent Adjacent Area Alteration
Adjacent Area to Wetland 2	1.0	0.8
Adjacent Area to Wetland D	1.4	

To compensate for both the future permanent loss of approximately 0.08 acre of regulated freshwater wetlands (all of which is within federal jurisdiction and 0.05 acre of which is state jurisdictional), and work proposed within Adjacent Area, wetland restoration/creation and Adjacent Area restoration has been proposed as compensatory mitigation. Wetland restoration/creation is proposed in association with Wetland 2 (W2-A), as reflected in the Wetland Restoration Creation Plan provided in Appendix 3-E of the DEIS.

The dominant vegetative cover-type within Area W2-A is characterized by sparsely distributed and stunted common reed (*P. australis)*. Open water habitat is currently limited in Wetland W2 given the expanse of this species. Open water provides expanded opportunities for other wildlife species and wetland functions not now afforded within

Wetland W2. The designed open water area will be allowed to naturally re-vegetate as based on existing hydrogeologic conditions within Wetland 2. It is anticipated this zone will be submerged at depths ranging from 0.5 foot to 3 feet for the majority of the growing season. In time, the shallow depth of this wetland will encourage rooted, floating and emergent growth. A relatively narrow 0.05-acre emergent zone will be uniformly created to border the above submerged areas to compensate for the loss of regulated wetlands.

Restoring 1.0 acre of NYSDEC regulated Adjacent Area in this vicinity includes re-planting of predominantly shrub/tree species within this 100-foot limit. In addition to this regulated acre, a bordering 0.3-acre upland area contiguous to this NYSDEC regulated Adjacent Area will also be planted with shrub/tree species. Other NYSDEC regulated Adjacent Area proximate to the limit of Project disturbance totaling 1.8 acres will be targeted for selective re-planting to either mitigate unanticipated impacts resulting from site construction or to introduce new specimens to increase vegetative density (and thus wetlands protection) in areas of relative open canopy.

Project features that lie both within and beyond regulated NYSDEC regulated Adjacent Area include bioretention basin outlets and a box culvert. Bioretention basin outlets will be planted with native grasses and ground cover plants while the box culvert is designed to consist of herbaceous plants and shrubs transitioning to a naturally designed revetment consisting of logs and rootwads (tree trunk with roots attached) to be secured with boulders.

Appendix 3-A provides detailed drawings illustrating the proposed temporary use of the former Rasco parcel, and the location of restoration and enhancement measures proposed following Project construction. Through consultation with NYSDEC, best management practices have been incorporated to protect wetland resources throughout the clean-up and temporary use. For example, the temporary stormwater management system directs flows away from the wetlands and through extended channels prior to discharge, allowing for greater residence time to improve water quality. Once the temporary work area is no longer needed, the plans in Appendix 3-A provide restoration, planting and seeding specifications. The former Rasco parcel will not be used for the Project once it is operational.

3.4 Conclusions

The Project represents a significant opportunity to bring energy generation and economic development to the local community on a site zoned for this purpose and in a manner that can primarily utilize an existing developed footprint. Studies have been done to identify wetland resources and characterize potential habitat and species presence. Wetland impacts have been avoided and minimized, and no protected species habitat is anticipated

to be significantly adversely impacted. Moreover, construction of the Project will incorporate site clean-up measures that will improve environmental conditions at the site, including potential habitat value. A significant portion of the Property will not be developed or will be restored following temporary use. For these reasons, the Project results in a significant net benefit to natural resources.

3.5 References

Arbuthnot, M. 2008. A landowner's guide to New England cottontail habitat management. Environmental Defense Fund. 36 p.

Beans, Bruce E. and Niles, Larry. 2003. Endangered and Threatened Wildlife of New Jersey.

Callahan, 1993 Callahan, E. V., III. 1993. Indiana Bat Summer Habitat Requirements. Master of Science Thesis. Univ. of MO. Columbia.

Center for Reptile and Amphibian Conservation and Management, 2004. "Wood Turtle." Available at http://herpcenter.ipfw.edu/outreach/accounts/reptiles/turtles/wood_turtle/WoodTurtleFactSheet.pdf. 4/2010

Cornell Lab of Ornithology, 2009. "All About Birds – Cooper's Hawk." Available at http://www.allaboutbirds.org/guide/Coopers_Hawk/id 4/2010

Edinger, G. J., D. J. Evans, S. Gebauer, T. G. Howard, D. M. Hunt and A. M. Olivero. 2002. *Ecological Communities of New York State, Second Edition*, A revised and expanded edition of Carol Reschke's *Ecological Communities of New York State.* Edinger, Gregory J; Evans, D. J.; Gebauer, Shane; Howard, Timothy, G.; Hunt, David M.; and Olivero, Adele M (editors). New York State Department of Environmental Conservation, Department of Natural Heritage Program.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual.* Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Environmental Defense Fund. November 19, 2008. http://apps.edf.org/documents/8828_New-England-Cottontail-Guide.pdf

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

Farmer, A.H., B.S. Cade, and D.F. Stauffer. 2002. Evaluation of a habitat suitability index model. In: A. Kurta and J. Kennedy (eds.). A Symposium on the Indiana Bat: Biology and Management of an Endangered Species, Lexington, Kentucky, March 29 - April 1, 2001. Austin, TX: Bat Conservation International. p. 172-179.

Gardner et al. 1991a. Gardner, J.E., J.D. Garner, and J.E. Hofmann. 1991. Summer roost selection and roosting behavior *Myotis sodalis* (Indiana bat) in Illinois. Unpublished report, Illinois Natural History Survey, Champaign, Illinois.

Garner, James D.; Gardner, James E. 1992. Determination of summer distribution and habitat utilization of the Indiana bat (Myotis sodalis) in Illinois. Illinois Department of Conservation, Illinois Natural History Survey. Final Report: Project E-3.

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.

Gifford, S., M. Klemens, and A. Olivero, 1997. "Conserving the Great Swamp's Biodiversity." Available at http://frogs-ny.org/Biodiversity.shtml 4/2010

Hudsonia, 2008. Hudsonia Harlem Valley Biodiversity Manual Supplement. New England cottontail (*Sylvilagus transitionalis*) NHP G4 S1S2, NYSDEC SC.

Humphrey et al. 1977. Humphrey, S.R., A.R. Richter, and J.B. Cope. 1977. Summer habitat and ecology of the endangered Indiana bat (*Myotis sodalis*). Journal of Mammalogy 58:334-346.

Low Impact Development Center, Inc. 1999 – 2008. LID Urban Design – Bioretention. Accessed at http://www.lid-stormwater.net/bio benefits.htm.

McGowan, Kevin J., and Corwin, Kimberly, 2008. The Second Atlas of Breeding Birds in New York State. Breeding Bird Atlas Database. Accessed information of blocks 6161A, and 6161C: April 12, 2010.

National Audubon Society, 2010. Important Bird Areas in the U.S. Available at http://www.audubon.org/bird/iba 04/2010

The New York Botanical Garden. "The Flora of Ice Pond Conservation Area." http://www.nybg.org/files/scientists/datha/IcePond/Index.html 8/2010

NYSDEC, 2011a. Timber Rattlesnake Fact Sheet. http://www.dec.ny.gov/animals/7147.html.

NYSDEC. 2011b. New England Cottontail Survey. http://www.dec.ny.gov/animals/67017.html

NYSDEC. 2011. Indiana Bat Fact Sheet http://www.dec.ny.gov/animals/6972.html

NYSDEC. 2011c. Bog Turtle Fact Sheet. http://www.dec.ny.gov/animals/7164.html

NYSDEC, 2010a. On-line listing of conservation status. Accessed 4/2010.

NYSDEC, 1999. The New York State Amphibian and Reptile Atlas Project. Accessed on-line April 12, 2010.

NYSDEC, 1995. Freshwater Wetlands Delineation Manual. July, 1995.

NYSDEC, 1993. Freshwater Wetlands Regulation Guidelines on Compensatory Mitigation. Available at http://www.dec.ny.gov/docs/wildlife_pdf/wetlmit.pdf

NYSNHP, 2009a. NYSNHP Conservation Guide – Bog Turtle. Albany, NY. http://www.acris.nynhp.org/guide.php?id=7507. Accessed July 2009.

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

NYSNHP, 2009c. Online Conservation Guide for *Sylvilagus transitionalis*. Available at: http://www.acris.nynhp.org/guide.php. 4/2011.

Pinelands Nursery and Supply. http://www.pinelandsnursery.com/ 8/2010.

Pennsylvania Fish & Boat Commission (PFBC), Division of Environmental Services, Natural Diversity Section. 2010. Guidelines for Timber Rattlesnake Habitat Creation. http://www.armgroup.net/pdfs/Habitat-Creation-for-Timber-Rattlesnakes.pdf. Revised 3-5-2010.

Programmatic Consultation between USFWS, FHA, Ohio DOT. September 1, 2006. Biological Assessment for the Federally Endangered Indiana Bat (*Myotis sodalis*).

Romme et al. 1995. Romme, R.C., K. Tyrell, and V. Brack, Jr. 1995. Literature summary and habitat suitability index model: components of summer habitats for the Indiana bat (Myotis sodalis). Unpublished report, Indiana Department of Natural Resources, Bloomington, Indiana.

Tartar, A.; University of Georgia. "Eastern Hognose Snake." Available at http://www.uga.edu/srelherp/snakes/hetpla.htm 4/2010

TES, 2009. Phase I Bog Turtle Survey and Timber Rattlesnake Habitat Assessment, Cricket Valley Energy Project Site, Town of Dover, Dutchess County, NY, Sarah L Shute. Phoenix, AZ.

Tiner, Ralph. "Phragmites: Controlling the All Too Common Reed." Massachusetts Wetland Restoration Technical Notes. Wetlands Restoration & Banking Program Massachusetts Executive Office of Environmental Affairs Technical Note Number 1 April 1995. Available at: http://www.massaudubon.org/saltmarsh/restoration.php 8/2010

USACE, 2009. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-09-19. Vicksburg, MS; U.S. Army Engineer Research and Development Center.

USFWS, 1999. U.S. Fish and Wildlife Service, 1999. Agency Draft Indiana Bat (*Myotis sodalis*) Revised Recovery Plan. Fort Snelling, MN: U.S. Department of the Interior, Fish and Wildlife Service, Region 3. 53p.

USFWS, 1983. U.S. Fish and Wildlife Service. 1983. Recovery Plan for the Indiana Bat. Twin Cities, MN.

USFWS, 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population Recovery Plan. Hadley, MA. 103 pp.

USFWS, 2006a. 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.

USFWS, 2009. July 20, 2009 correspondence from USFWS David A. Stilwell to Mr. Lynn Gresock.

USFWS, 2010a. New England Cottontail *Sylvilagus transitionalis* Fact Sheet. http://www.fws.gov/northeast/indepth/rabbit/pdf/NECottontailfactsheet062011.pdf. September 2010.

USFWS. Revised January 2007. Indiana Bat Summer Life History Information for Michigan. http://www.fws.gov/midwest/Endangered/section7/s7process/mammals/inba/inbaMlifehist.pdf

USFWS. July 2004. Indiana Bat Factsheet – Northeastern U.S. http://www.fws.gov/northeast/pdf/indianabat.fs.pdf

USFWS. Revised 12/17/2008. Characteristics of Indiana Bat Summer Habitat. http://www.fws.gov/northeast/njfieldoffice/pdf/IbatSummerHab.pdf

USFWS. March 2010. USFWS Species Narratives: Biology and Threats of Federally Listed Species in New Jersey. http://www.fws.gov/northeast/njfieldoffice/pdf/IbatSummerHab.pdf

USFWS. August 2006. New England Cottontail *Sylvilagus transitionalis* Fact Sheet. http://www.fws.gov/northeast/pdf/necotton.fs.pdf

USFWS. July 2006. New York Field Office. Indiana Bat Project Review Fact Sheet http://www.fws.gov/northeast/nyfo/es/Ibat%20fact%20Sheet%20Sept%202010%20final.pdf

Utter, J.M. 2001. "Birds of the Great Swamp." Friends of the Great Swamp Newsletter 1(2):1,4,7.

Winogradoff, D.A. and L.S. Coffman, 1999. Bioretention water quality performance data and design modifications. Proceedings of the 26th Annual Water Resources Planning and Management Conference ASCE, June 6 – 9, Tempe, Arizona.