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WIGGIN AND DANA

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VIA MESSENGER

December 14, 2006

Robert Mercier
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Petition 784** - Petition of Plainfield Renewable Energy LLC for a Declaratory Ruling that No Certificate of Environmental Compatibility and Public Need Is Required for the Construction, Maintenance, and Operation of a 37.5 MW Wood Biomass Staged Gasification Generating Project in Plainfield, Connecticut

Dear Robert:

I enclose for your information a copy of Plainfield Renewable Energy's December 8, 2006 correspondence to the Connecticut Department of Environmental Protection regarding Plainfield's site surveys and habitat assessments of (i) the proposed facility site; and (ii) the proposed water intake and discharge locations.

Please do not hesitate to contact me should you have any questions.

Very truly yours,



Bruce L. McDermott

cc: Robert Golden, Carmody & Torrance (without enclosure)

Enclosure

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Anchor Engineering Services, Inc.



Civil Engineering • Environmental Consulting • Construction Management • Land Surveying

December 8, 2006

Ms. Julie Victoria, Wildlife Biologist
Franklin Swamp Wildlife Management Area
Department of Environmental Protection
391 Route 32
Franklin, Connecticut 06254

Re: Proposed PRE Biomass Power Plant Site
Proposed Water Intake / Discharge Location
Plainfield & Canterbury, Connecticut

Dear Ms. Victoria:

In April 2006, we contacted the DEP Bureau of Natural Resources concerning a proposed biomass gasification power plant to be developed by our client, Plainfield Renewable Energy, LLC. (PRE). The proposed facility site was at the former Gallup's Quarry Superfund site near the intersection of Route 12 (Norwich Road) and Mill Brook Road (formerly Tarbox Road) in Plainfield, Connecticut. In September, 2006, we contacted the DEP Bureau of Natural Resources concerning the proposed water intake and discharge locations for the proposed PRE facility, which are located approximately 2½ miles to the west off of Packer Road in Canterbury, Connecticut, on the Quinebaug River. At that time, we also requested information about the proposed water line route between the two sites. A map showing the two sites and the proposed water line route is attached.

At the PRE site in Plainfield, you noted that the Eastern Spadefoot Toad, the Blue-Spotted Salamander, and the Savannah Sparrow occur in the vicinity of the proposed PRE power plant site. You also noted that the Eastern Spadefoot Toad and the Savannah Sparrow also occur in the vicinity of the proposed PRE water intake/discharge site in Canterbury.

PRE commissioned an ecologist/biologist, Mr. Jeffrey Park of Kleinschmidt USA in Essex, Connecticut, to perform site surveys and habitat assessments of both sites as well as the proposed water line route between the two sites. Mr. Park obtained additional information on other potential species populations along the route from research of DEP files and data generated during the construction of the large Lowe's distribution facility on Mill Brook Road in Plainfield. Mr. Park has issued two reports:

- *Rare, Threatened, and Endangered Species Survey for a Proposed 37.5 MW Biomass Facility (Facility Siting), August 2006.*
- *Rare, Threatened, and Endangered Species Survey for a Proposed 37.5 MW Biomass Facility (Cooling Water Intake Structure and Pipeline), December 2006.*

A copy of each report is attached for your review. The first report has been included in the solid waste permit application package submitted to the DEP in August 2006. Both reports and an Aquatic Ecology report will be submitted with the water diversion permit application package later this month.

The *Facility Siting* report concludes (on pages 40 and 41) that:

- “habitat for the Savannah Sparrow is not present on the site given the absence of large expanses of grassland habitats. As such, impacts to this species will not occur”; and
- “Given the lack of significant impact of the proposed activities on the potentially suitable habitats for amphibians encountered on the site and the absence of observed individuals and breeding activity, it can be stated with some confidence that neither direct nor indirect impacts to eastern spadefoot toad and blue spotted salamander individuals, populations, and associated habitats will occur”.

The *Cooling Water Intake Structure and Pipeline* report concludes (on page 21) that:

- “Based upon the fact that the cooling water pipeline will be constructed entirely within the disturbed environment of the shoulder of the road, and that all impacts to plant communities associated with the installation of the pipeline will be temporary in nature, adverse impacts to the rare, threatened, and endangered species and associated habitats identified in this report will not occur”;
- “...the eastern spadefoot toad exhibits a high degree of habitat specificity. Specifically, the limiting abiotic factor for eastern Spadefoot toad has been asserted to be soil type, whereby soft, sandy soils are the preferred substrate. When found in conjunction with the more ephemeral vernal pool habitat types, these properties collectively form suitable habitat for this species. In this regard, neither sandy substrate types nor suitable breeding areas for the species, e.g., extremely short lived vernal pools are present on the site”; and
- “Although the savannah sparrow is a grassland generalist and is typically found in a variety of grassland habitats ranging from heathland to farmland of varying patch size, this habitat type was not encountered on the site. Consequently, adverse impacts to the savannah sparrow will not occur”.

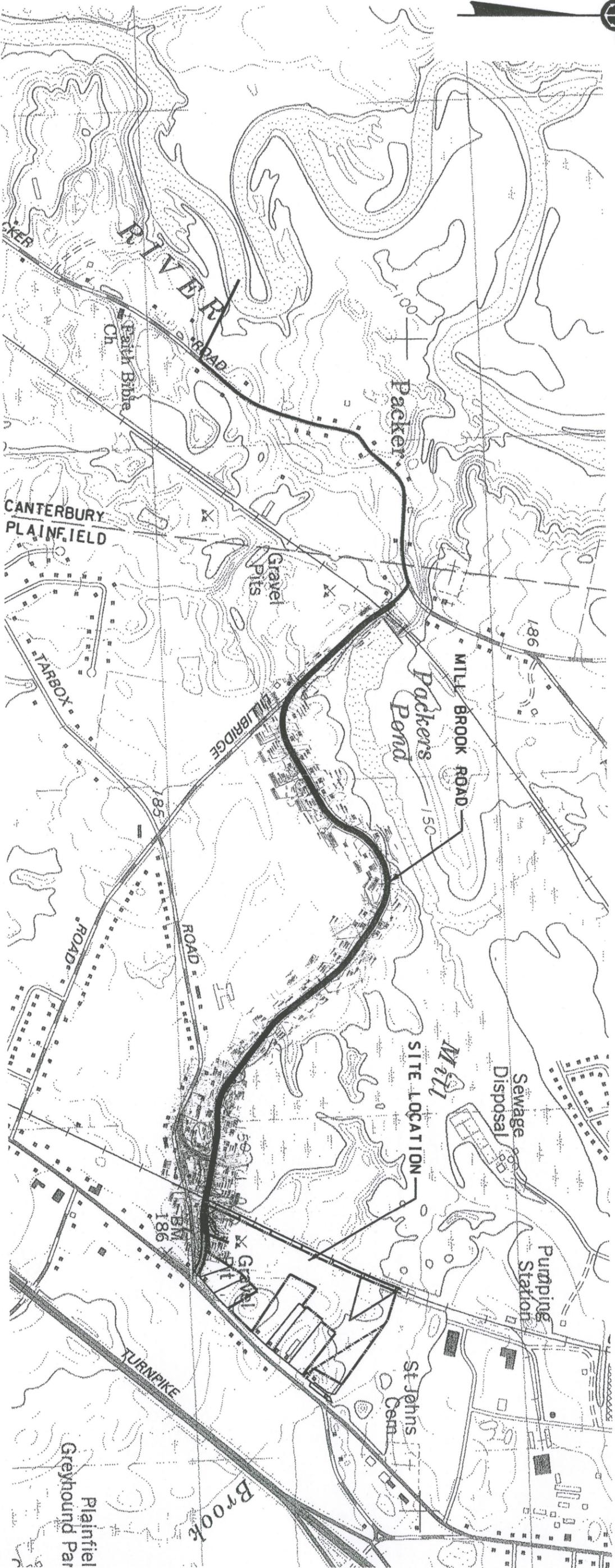
If you have any questions or comments concerning this information, please call me at (860) 633-8770.

Sincerely,



D. Scott Atkin, LEP
Vice President

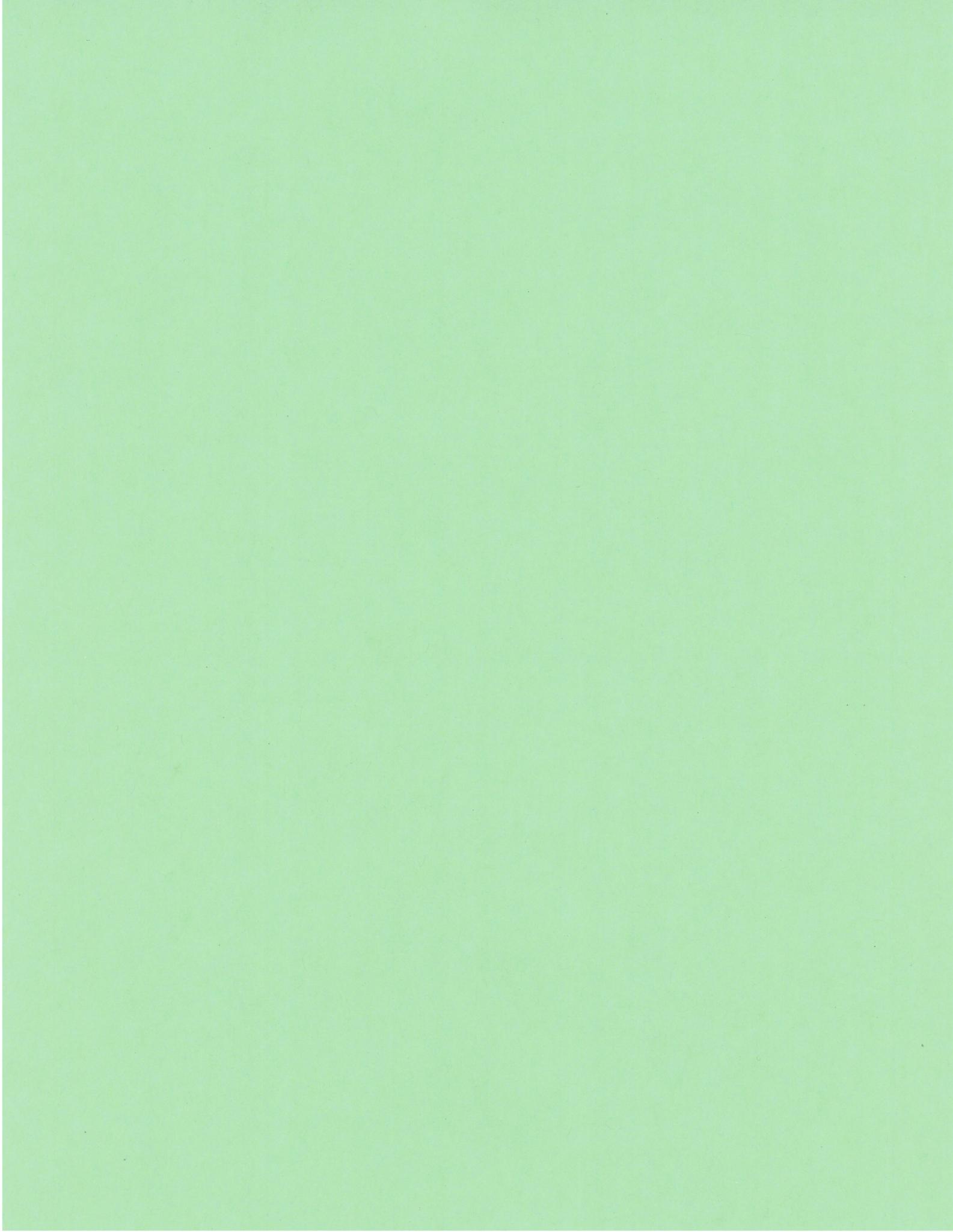
cc: Dawn McKay; DEP- Wildlife
Robert Mercier; CT Siting Council
Jeffrey Park; Kleinschmidt (letter only)
Dan Donovan; PRE (letter only)
Jon Pomerleau; PRE (letter only)
Bruce McDermott, Esq.; Wiggin & Dana, LLP



SCALE: 1" = 1000'

*projects\952\01\design.dgn

		Anchor Engineering Services, Inc. 75 Nutmeg Lane Glastonbury, CT 06033 TEL (860) 633-8770 FAX (860) 633-5971	
PROJ. ENGINEER PROJ. MANAGER OFFICE REVIEW	KRG DSA DSA	PROPOSED WATER EASEMENT ROUTE PREPARED FOR	
REVISIONS 11/02/06		PLAINFIELD RENEWABLE ENERGY, LLC. PLAINFIELD & CANTERBURY CONNECTICUT	
PROJECT 952-01	DATE 07/19/06	FIGURE 18	



**ENVIRONMENTAL REPORT -
TERRESTRIAL ECOLOGY**

FOR A

**PROPOSED 37.5MW BIOMASS FACILITY
(Facility Siting)**

Prepared for:

PLAINFIELD RENEWABLE ENERGY, LLC

AUGUST 2006

Prepared by:

Kleinschmidt
Energy & Water Resource Consultants

**ENVIRONMENTAL REPORT -
TERRESTRIAL ECOLOGY**

FOR A

PROPOSED 37.5MW BIOMASS FACILITY

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ENVIRONMENTAL REPORT - TERRESTRIAL ECOLOGY

FOR A

PROPOSED 37.5MW BIOMASS FACILITY

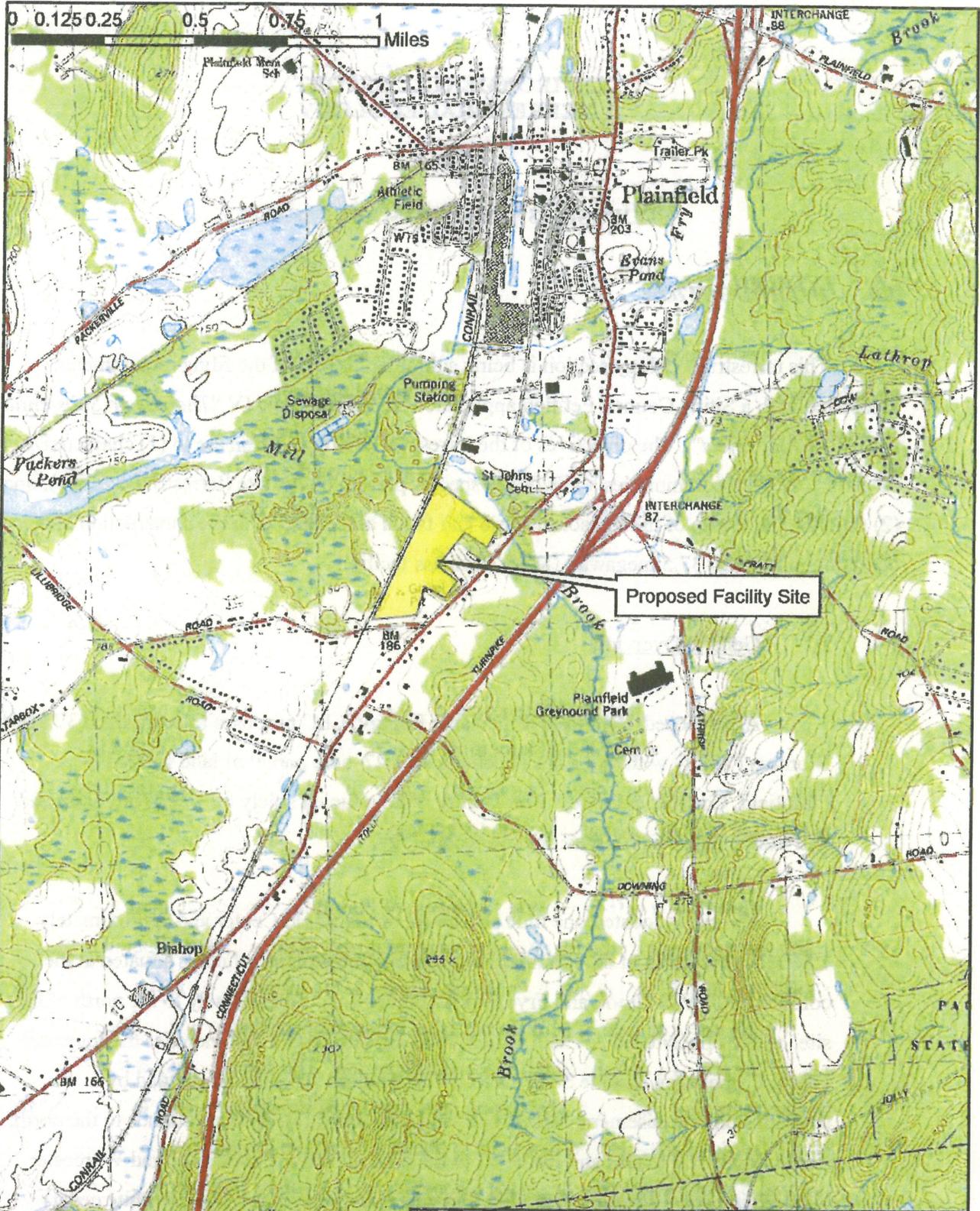
1.0 INTRODUCTION

This terrestrial ecology section is being submitted as part of the filing requirements associated with a Siting Council Petition application including Topic IV “*There is no Substantial Environmental Effect*”. The objectives of the terrestrial ecology section are to (1) characterize the nature of plant communities and wildlife species present on the site (terrestrial ecology); and (2) describe the nature of the impacts to flora and fauna associated with the construction and operation of the new 37.5 megawatt (MW) Biomass facility.

1.1 General Overview

As proposed, Plainfield Renewable Energy, LLC proposes to construct a 37.5MW Biomass Facility with attendant structures on a 27-acre parcel of land located in Plainfield, Connecticut (site). The facility will be fueled solely by wood (biomass) and will utilize fluidized bed gasification technology.

The site is located one mile southwest of Plainfield Center and approximately 1,800 feet southeast of the Plainfield sewage treatment plant, which is situated at the confluence of Mill Brook and Frye Brook (Figure 1-1). Immediately to the north of the site, on the opposite side of Mill Brook, is an industrial park that includes the Intermark Fabric Corporation and the Safety Kleen Corporation. The site is bounded by a transmission line easement, Mill Brook, and associated floodplain wetlands to the north; single family residences and Route 12 to the east; an active Providence and Worcester railroad line and a severely degraded *Chamaecyparis thyoides* (Atlantic white cedar) swamp to the west; and single family residences to the south.



	Scale: AS SHOWN	Plainfield Renewable Energy, LLC Plainfield, CT	Page 1 of 1
	Project No: 1440-001	Plainfield Renewable Energy Proposed Facility Site	
	Filename: Plainfield_Site_1-1	Site Locus Map	1-1
	Drawn By: KPN	 33 Pratt St. Suite 201 Essex, CT 06426 Telephone: (860) 767 3069 Fax: (860) 767 3097 www.kleinschmidt-usa.com	
Date Drawn: 05-31-2006			

Although presently vacant, the site was known as Gallup's Quarry during its active period, and functioned as a sand and gravel operation that has long since been abandoned. In 1977, unlicensed waste disposal occurred at the site, and following a series of investigations was listed as a National Priority List (NPL) site in 1989 by the U.S. Environmental Protection Agency (USEPA). The compounds of concern include volatile organic compounds (VOCs), semi-volatile organic compounds (sVOCs), and three metals. Extensive contamination of the groundwater has occurred and the discharge of contaminated groundwater into Mill Brook was first observed during the spring and fall of 1978. Active remedial efforts including the removal of buried drums and contaminated soil occurred in 1977-1978 under the direction of the CTDEP. Presently, the remedial treatment of the compounds of concern at the Gallup's Quarry Superfund site is occurring via natural attenuation.

In the time that has elapsed since cessation of mining activities in the late 1970s (at which time the site was largely denuded), a wide range of early successional, disturbance – tolerant plant communities have established on the site that are characteristic of soil types that are acidic and possess low macronutrient levels. The following sections discuss the methodology used to characterize these habitat types and associated suites of wildlife. In addition, construction and operation related impacts to plant communities, wildlife (including rare, threatened, and endangered species), and mitigation options are also discussed.

2.0 *METHODS*

2.1 Vegetation

The assessment of on-site terrestrial ecology and impacts associated with construction and operation of the facility consists of the following components:

- A characterization of the species composition of each community based on reconnaissance surveys;
- A delineation of the vegetative communities or cover types present on the basis of field observations, including the identification and delineation of any unusual habitats or natural communities, such as vernal pools, which could support listed species or species of special concern;
- Documentation of the composition of these communities through the use of representative sample plots;
- A screening-level assessment of impacts to sensitive plants associated with air emissions in accordance with the thresholds established in the USEPA document "A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals" (USEPA, 1980); and
- Identification and evaluation of reasonable mitigation measures regarding the vegetation impacts identified.

The formal boundary determination of on-site federal and state jurisdictional wetlands was previously conducted by others. As such, this section provides the following information regarding wetland plant communities:

- A description of the vegetative and hydrologic characteristics of all federal wetlands and state wetlands identified;
- A survey or coordinate map of the location of all federal wetland and state-regulated wetland boundaries identified above; and
- An identification and evaluation of reasonable mitigation measures to mitigate wetland impacts.

2.1.1 Plant Community Sampling

Plant communities encountered on the site were sampled within 29, randomly located 10 meter (m) radial plots on May 2, 2006. In sum, a total of 9,110.6 m² (2.25 acres) were sampled. Plots were situated within each plant community/cover type so as to be representative of general conditions. Within each plot, tree, shrub, herb, fern, lichen, and moss species present in the plot were identified to the level of species where possible. Each plant species encountered in the plot, in addition to non-vegetated cover, i.e. bare sand, standing water etc., were assigned an estimated percent cover. Raw data for all sample plots are presented within Appendix A and photographs of each community are presented in Appendix B.

In addition to this current survey, the U.S. Fish and Wildlife Service (USFWS) conducted an informal plant community survey in 1993. Where applicable, the results of the 1993 study have been included in this report.

2.1.2 Data Analysis

For each plant community sampled, the following four descriptive metrics are reported:

1. Species richness;

2. Relative Dominance(D_R); where $D_R = 100 * \frac{\left(\sum_{i=1}^n PC_{species} \right) / A_{TOTAL}}{\sum_{i=1}^n D_{species}}$; and

$PC_{species}$ = summed percent cover for species x in plots 1... n ;

A_{total} = total area sampled

$D_{species}$ = summed dominance for species 1... n

3. Relative Frequency (F_R); where $F_R = 100 * \frac{\left(\sum_{i=1}^n n_{species} \right) / N_{TOTAL}}{\sum_{i=1}^n F_{species}}$; and

$n_{species}$ = number of plots 1...n in which species x occurs;

N_{total} = total number of plots sampled;

$F_{species}$ = summed frequency for species 1...n

4. An Importance Value (IV_{ave}) calculated as the arithmetic mean of D_R and F_R . This metric identifies those plant species that are essentially most important, i.e. most dominant and occur most frequently within the given community.

2.2 Wildlife

The site was surveyed for potentially suitable habitat for the three species by a Kleinschmidt Associates (Kleinschmidt) ecologist on May 2 and May 10, 2006. The field activities were geared towards characterizing habitat composition, identifying habitat types, and assessing their potential to support the three species, either directly or indirectly. The survey was conducted during two, 8-hour periods under cool and overcast conditions. Light rain was encountered during both survey periods.

In addition to this current survey, the U.S. Fish and Wildlife Service (USFWS) conducted an informal wildlife survey in 1993. This report incorporates the 1993 USFWS survey results along with the following site-specific information regarding wildlife and associated habitat as they occur upon the project site:

- A characterization of wildlife including mammals, birds, amphibians, and reptiles that occur on or within the vicinity of the project site based on spring reconnaissance surveys and supplemented by available data, including an identification and delineation of any unusual habitats or natural communities which could support listed species or species of special concern;

- A list of the species of mammals, birds, amphibians, and reptiles reasonably likely to occur on, or within the vicinity of the project site based on site observations and supplemented by publicly available sources;
- An analysis of the impact of operation on the wildlife (including listed rare species or species of special concern, that have been identified by resource agencies as potentially occurring on the site), wildlife habitats, and wildlife travel corridors; and
- An identification and evaluation of reasonable mitigation measures regarding wildlife impacts identified.

2.2.1 General Wildlife Survey

Wildlife observations were made concurrently with the characterization of habitat types over the course of a single day on May 2. It is worth noting that species not observed on the site but that may actually be present, may have been missed due to the timing of the survey.

Within each plant community sampled, wildlife habitat attributes were noted, e.g. snags, and observed wildlife species were identified to the level of species. As an added measure, published accounts of species occurrences by habitat type described in DeGraaf & Rudis (1986) were used to generate master taxa lists by habitat type. In addition to the direct observation of individual species, indirect evidence of wildlife presence, e.g. scat, tracks, vocalizations, burrows were also recorded.

2.2.2 Rare, Threatened, and Endangered Species

In response to the proposed activities on the site, the State of Connecticut Department of Environmental Protection (CTDEP) (Bureau of Natural Resources – Wildlife) was contacted regarding the presence of rare, threatened, and endangered species that could potentially be impacted. Based upon correspondence received from the CTDEP (Franklin Swamp Wildlife Management Area – Julie Victoria) on April 11, 2006 (Appendix C) it was

determined that the proposed activities could potentially impact three species, including the blue-spotted salamander (*Ambystoma laterale*) (Threatened); the eastern spadefoot toad (*Scaphiopus holbrooki*) (Endangered); and the savannah sparrow (*Passerculus sandwichensis*) (Special Concern). With respect to the presence/absence of rare, threatened, and endangered species on the project site, the USFWS conducted a survey of the 29-acre property in 1993. The results of their study indicated that no federally or state listed rare, threatened, or endangered species are present.

It is worth noting that two of the three species were observed within the vicinity of the proposed project. Specifically, at a nearby 200+ acre site on Tarbox Road (upon which the Lowe's distribution facility was constructed), two state-listed species of amphibians were observed including the Endangered spadefoot toad (*Scaphiopus holbrookii*) and the threatened pure diploid blue-spotted salamander (*Ambystoma laterale*). In addition, five state-listed avian species were observed, including the endangered vesper sparrow (*Pooecetes gramineus*); the grasshopper sparrow (*Ammodramus savannarum*); the threatened Cooper's hawk (*Accipiter cooperi*); and two species of special concern, the red shouldered hawk (*Buteo lineatus*); and Savannah sparrow (*Passerculus sandwichensis*). In addition to these species, the state-listed species of special concern, eastern ribbon snake (*Thamnophis sauritus*) was also observed.

The Natural Diversity electronic database was consulted and GIS data layers were downloaded from the CTDEP website in order to obtain Estimated Natural Diversity Database (NDDDB) habitat polygons. Based upon the information provided by the NDDDB layers (June, 2006), mapped estimated habitat does occur on the site (Appendix C). The following section summarizes the autecology of the three species, i.e. the relationship of the given organism with its environment.

Ambystoma laterale

Suitable habitat for the blue spotted salamander includes *Acer rubrum* (red

maple) swamps situated along stream borders, with approximately 90 – 100% canopy cover. It is worth noting that this species will also utilize other wetland types that are in close proximity. Mating takes place in early spring and individual egg masses may contain from 1-30 eggs that are scattered throughout the pool.

Scaphiophus holbrooki

Preferred habitats for the Eastern spadefoot toad include sandy or loose (friable) sandy soils found in farmlands, meadows, forests, and dunes and the breeding period for this species initiates in April or May during heavy precipitation events and continues until August (Tynning, 1990). A female will typically lay 1,000 to 2,500 eggs at a time in masses of 6 to 110 in irregular strings near or in vegetation within temporary pools (Tynning, 1990). Breeding pools can include “classic” vernal pools or more ephemeral pools formed in low-lying areas following heavy rain events.

This species is, however, rarely observed outside of the breeding period and is nocturnal. As such, the presence/absence of this species is typically documented in the field solely through evidence of breeding activity and vocalizations within suitable habitat (Tynning, 1990). With respect to the vocalization, it is characterized by an explosive grunt, is low-pitched, maintained for a short duration, and repeated at short intervals. Based upon tape-recorded vocalizations of the eastern spadefoot toad, the call is comprised of a series of guttural “*wahnk*” sounds.

The eastern spadefoot toad possesses an elongated, sickle-shaped “spade” on each hind foot, which is used for digging. Two poorly defined yellowish lines running down the back are usually present. When compared to the true toads (*Bufo*) spadefoots are soft bodied and have smoother skin. Perhaps the most distinctive feature however, is the presence of vertical pupils, whereas those of the true toads are horizontal. Furthermore, the eastern spadefoot toad lacks paratoid glands, which are typically present on the sides of the head in bufonid toads.

Passerculus sandwichensis

The savannah sparrow is a grassland generalist and is typically found in a variety of grassland habitats, ranging from heathland to farmland. Unlike many grassland birds, savannah sparrows use fields of all ages. Although each pair has a territory size of one to two acres, they require relatively large areas of open space (20 to 40 acres in size) for breeding habitat.

Rare, Threatened, and Endangered Species Survey Methods

The site was surveyed for potentially suitable habitat for the three species by a Kleinschmidt Associates (Kleinschmidt) ecologist on May 2 and May 10, 2006. A resume for the surveyor is provided in Appendix D. It is worth noting that the May 10 vernal pool survey was conducted within the large isolated wetland within the southern portion of the site and appropriate sections of the large *Acer rubrum* swamp in an attempt to characterize the presence/absence of both *Ambystoma laterale* and *Scaphiophus h. holbrookii*, in addition to breeding activity.

The vernal pool survey consisted of sampling with an aquatic kick net and stirring up the substrate. Each sample was examined primarily for blue spotted salamander and eastern spadefoot toad larvae, but all aquatic invertebrates observed in the sample were identified. Those larvae and aquatic insects that were not readily identifiable in the field were examined under a light microscope. In addition to the identification of individuals, egg masses were searched for as evidence of breeding activity.

Meander surveys for the savannah sparrow were conducted in appropriate habitat on the site, where the potential for the occurrence was deemed low to moderate. In that this is another species that is rarely observed, the survey largely involved the identification of the savannah sparrow through vocalizations.

It is worth noting that species not observed on the site but that may actually be present, may have been missed due to the timing of the survey.

3.0 RESULTS

3.1 Plant Communities

The site supports a total of seven plant community cover types that are characteristic of disturbed, low nutrient soil conditions (Table 3-1; Figure 3-1). The seven plant communities observed include (1) an *Acer rubrum* (red maple) forested wetland; (2) a sand barren community; (3) an early successional hardwood stand; (4) a stand of *Pinus rigida* (pitch pine) (5) a forested *Quercus alba* - *Q. ilicifolia* (white oak-scrub oak) stand; (6) early successional shrub and herb communities; and (7) small and isolated scrub-shrub wetlands. Of the cover types, the early successional hardwood and the forested white oak-scrub oak stand types are co-dominant, and followed closely by the early successional grass/shrub community.

Table 3-1. Summary of plant communities observed on the site.

PLANT COMMUNITY	TOTAL AREA (Acres)	RELATIVE AREA (%)
1. <i>Acer rubrum</i> forested wetland	2.03	7.23
2. Sand Barren	3.12	11.11
3. Early Successional Hardwood Stand	6.75	24.04
4. <i>Pinus rigida</i> Stand	2.25	8.01
5. Forested <i>Quercus alba</i> - <i>Q. ilicifolia</i> stand	6.87	24.47
6. Early Successional grass/shrub	6.36	22.65
7. Isolated Wetlands	0.7	2.49
TOTAL	28.08	100

3.1.1 Plant Community 1 (red maple forested wetland)

Within the red maple forested wetland community *Symplocarpus foetidus* (skunk cabbage) is the most dominant species, which is followed closely by *Acer rubrum* (red maple) (Table 3-2). Other dominant species include *Vaccinium corymbosum* (highbush blueberry), *Carex stricta* (tussock sedge), and *Clethra alnifolia* (sweet pepperbush). Collectively, these species account for the top five most dominant species in this community type. Total observed species richness within the red maple swamp community is 29, which includes three tree species, nine shrub species, 13 herb species, and four species of moss.

Table 3-2. Ranked IV_{ave} values for the red maple forested wetland community.

SCIENTIFIC NAME	COMMON NAME	D_R	F_R	IV_{ave}
<i>Symplocarpus foetidus</i>	Skunk cabbage	23.32	9.86	16.59
<i>Acer rubrum</i>	Red maple	14.58	9.86	12.22
<i>Vaccinium corymbosum</i>	Highbush blueberry	9.04	8.45	8.74
<i>Carex stricta</i>	Tussock sedge	7.93	7.04	7.49
<i>Clethra alnifolia</i>	Sweet pepperbush	7.87	5.63	6.75
<i>Osmunda cinnamomea</i>	Cinnamon fern	7.58	5.63	6.61
<i>Sphagnum magellanicum</i>	Sphagnum moss	7.87	4.23	6.05
STANDING WATER	NA	8.75	2.82	5.78
<i>Rhododendron viscosum</i>	Swamp azalea	3.21	5.63	4.42
<i>Amelanchier canadensis</i>	serviceberry	2.04	4.23	3.13
<i>Rubus hispidus</i>	Swamp dewberry	0.64	4.23	2.43
<i>Alnus rugosa</i>	Speckled alder	0.87	2.82	1.85
<i>Polytrichum commune</i>	Polytrichum moss	0.87	2.82	1.85
<i>Anemone quinquefolia</i>	Wood anemone	0.58	2.82	1.70
<i>Viola sp.</i>	violet	0.35	2.82	1.58
<i>Cephalanthus occidentalis</i>	buttonbush	0.87	1.41	1.14
<i>Ilex verticillata</i>	winterberry	0.58	1.41	1.00
<i>Lycopodium complanatum</i>	Lycopodium moss	0.58	1.41	1.00
<i>Quercus alba</i>	White oak	0.58	1.41	1.00
<i>Quercus bicolor</i>	Swamp white oak	0.58	1.41	1.00
<i>Impatiens capensis</i>	Spotted touch me not	0.29	1.41	0.85
<i>Maianthemum canadense</i>	Canada mayflower	0.29	1.41	0.85
<i>Spiraea tomentosa</i>	steeplebush	0.29	1.41	0.85
<i>Aster</i>	Lance leaved aster	0.06	1.41	0.73
<i>Galium palustre</i>	Swamp bedstraw	0.06	1.41	0.73
<i>Iris versicolor</i>	Blue flag	0.06	1.41	0.73
<i>Lycopodiella inundata</i>	Bog clubmoss	0.06	1.41	0.73
<i>Thalictrum thalictroides</i>	Rue anemone	0.06	1.41	0.73
<i>Veratrum viride</i>	False hellebore	0.06	1.41	0.73
<i>Viburnum recognitum</i>	Northern arrowwood	0.06	1.41	0.73

The swamp itself is fairly large and those portions that occur on the property are predominantly forested with scrub-shrub inclusions, while those portions that occur in the transmission line easement are predominately scrub-shrub communities. To the north of the transmission line corridor, the plant community abruptly shifts to that of a forested wetland dominated by red maple. The forested wetland can be characterized as a floodplain forest associated with Mill Brook.

Standing water was present in offsite portions of the wetland to a depth of approximately 1.5 feet. Water lilies were present in these sections, which is

indicative of the permanence of the standing water. Soils in the swamp consist of a well decomposed (histic) peaty muck.

3.1.2 Plant Community 2 (Sand Barren)

The xeric sand barren community type occurs primarily within that portion of the site that is presently designated an Environmental Land Use Restriction Area (ELURA). In large part, this community is dominated by expanses of bare sand, with scattered plant species characteristic of low nutrient soil conditions and full light environments. ATV use is especially heavy in this community type and a series of deeply rutted trails lace throughout.

Although bare sand is the most important component of this community type, *Betula populifolia* (grey birch) is the most dominant plant species (Table 3-3). Other dominant species include the moss *Polytrichum commune*, (haircap moss) the warm-season grass *Schizachyrium scoparium* (little bluestem), the shrub species *Quercus ilicifolia* (scrub oak), and the upland sedge *Carex pennsylvanica* (Pennsylvania sedge). As observed in the field, these species occur in isolated patches that have developed in swales and undisturbed areas outside of the heaviest ATV traffic.

Table 3-3. Ranked IV_{ave} values for the sand barren community.

SCIENTIFIC NAME	COMMON NAME	D_R	F_R	IV_{ave}
BARE SAND	NA	36.92	15.38	26.15
<i>Betula populifolia</i>	Grey birch	16.92	15.38	16.15
<i>Polytrichum commune</i>	haircap moss	15.38	7.69	11.54
<i>Schizachyrium scoparium</i>	Little bluestem	7.69	15.38	11.54
<i>Quercus ilicifolia</i>	Scrub oak	9.23	7.69	8.46
<i>Carex pennsylvanica</i>	Pennsylvania sedge	4.62	7.69	6.15
<i>Pinus rigida</i>	Pitch pine	3.08	7.69	5.38
<i>Populus tremuloides</i>	Quaking aspen	3.08	7.69	5.38
<i>Cladonia cristatella</i>	British soldiers (lichen)	1.54	7.69	4.62
<i>Usnea sp.</i>	lichen	1.54	7.69	4.62

Total observed species richness is nine, which includes three tree species, two species of grass, a single shrub species, a single moss species, and two lichen species.