
INQUIRY #: 2963214.1
YEAR: 1995
= 750'
N


INQUIRY #: 2963214.1
YEAR: 2006
= 604'
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APPENDIX B
HABITAT EVALUATION FOR THREATENED AND ENDANGERED SPECIES AT THE SOUTHERN OCEAN LANDFILL

Herpetological Associates, Inc. - Environmental Consultants - Plant and Wildlife Specialists -

Phone: 732-833-8600, Fax: 732-928-9257, E-mail: mmccort@herpetologicalassociates.com
575 Toms River Road (Route 571), Jackson, New Jersey 08527

January 10, 2010

Christopher J. Warren
Associate
Alaimo Group
200 High Street
Mt. Holly, NJ 08060

Re: Habitat evaluation for threatened and endangered species at the Ocean Township Landfill property Block 7, Lot 1 and Block 6, Lot 4.01 in the Township of Ocean, Ocean County, New Jersey. HA File Number-2010.15.

Dear Mr. Warren:

On October 25, 2010, Herpetological Associates, Inc. (HA) conducted a threatened and endangered (T&E) species habitat evaluation on the Southern Ocean Landfill property, Block 7, Lot 1 and Block 6, Lot 4.01 in the Township of Ocean, Ocean County, New Jersey (**Figures 1 and 2**). HA's Senior Botanist Ted Gordon and Herpetologist/Wildlife Ecologist Matthew McCort performed a habitat evaluation that included all areas of the landfill property that will be a part of the proposed solar project.

HABITAT EVALUATION

Our evaluation was directed at habitats for T&E wildlife that are on the official State list (N.J.A.C. 7:5C-1.1 et seq.; N.J.A.C. 7:7E-3.38-3.39).

How Habitats are Evaluated

HA has three criteria for judging the value of the existing conditions and available habitat for T&E species. These are:

1. Structure of Available Habitat: Both the biotic and abiotic components are considered. Vegetative types and communities, hydrological conditions, topography, soil characteristics, and surrounding terrestrial habitat are used to evaluate the study area. These are good indicators for the possible occurrence of rare plants and wildlife within a particular study area (Zappalorti and Johnson, 1982, and Burger and Zappalorti, 1986 and 1991).

2. Physical Evidence: Historic T&E species records are pertinent. Many animal species often select specific habitat types for breeding and egg deposition. These locations are recognizable by trained observers (Zappalorti and Johnson, 1982 and Hulmes and Zappalorti, 1981).

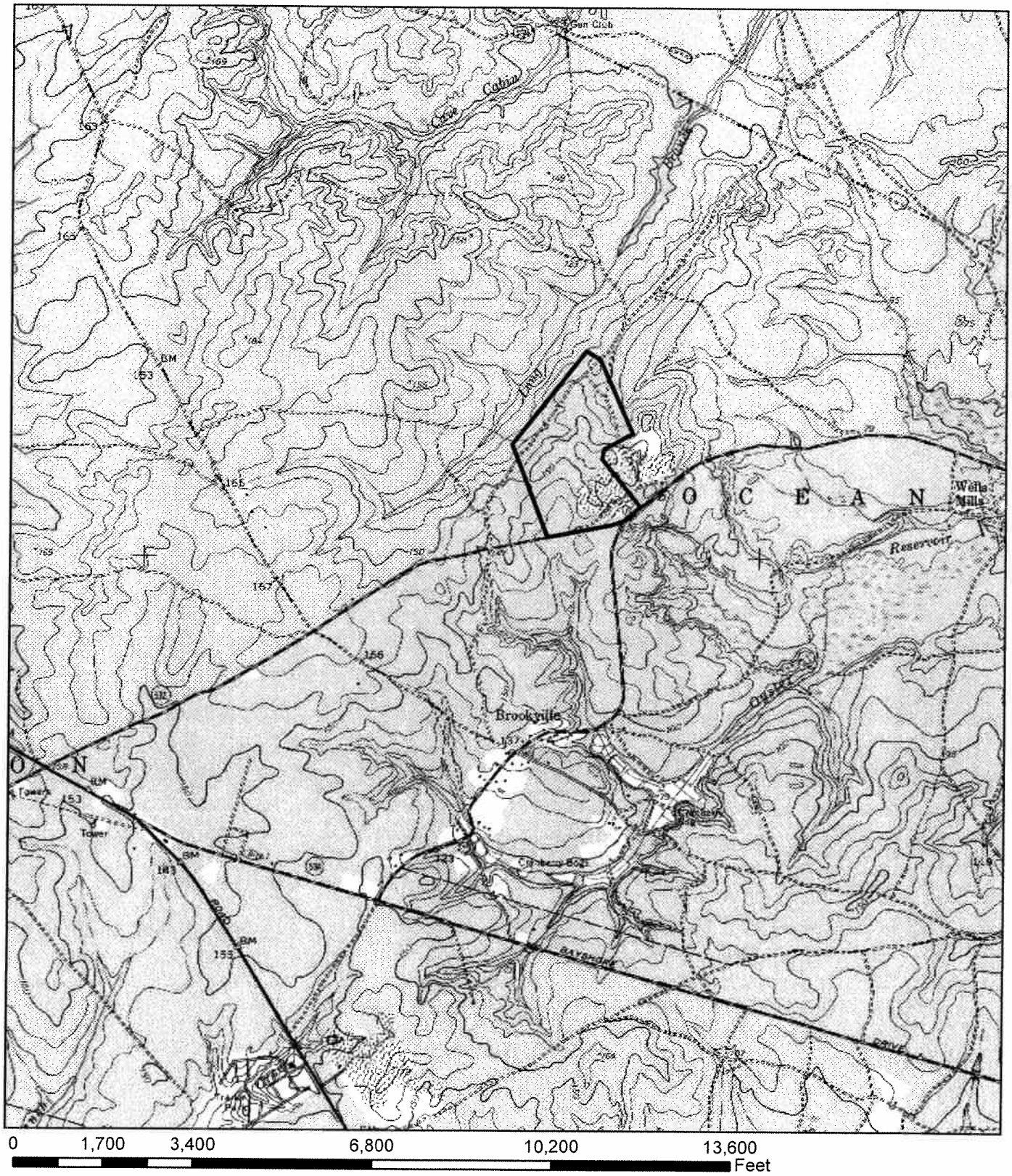

Figure 1. The location of the Southern Ocean County Landfill in the Brookville area of Ocean Township, Ocean County, New Jersey.
Source Imagery: USGS Topographic Quadrangle "Brookville"
Herpetological Associates, Inc. 2010.

Figure 2. The location of the Southern Ocean County Landfill in the Brookville area of Ocean Township, Ocean County, New Jersey.
Source Imagery: 2007 NJDEP Color Orthophotography
Herpetological Associates, Inc. 2010.

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3. Habitat Comparisons: In order to make comparisons on the suitability of the habitat for T&E species between the subject property and confirmed habitat elsewhere in Ocean County, HA used habitat structure and vegetation types as indicators to judge the existing conditions. Dominant plant communities, soil type, forest type, wetland type and elevation allow a trained observer to determine the potential for the presence of rare species on a property. Our rationale for evaluating a subject property is modified from the New Jersey Audubon Society's land ranking system (Kane et al, 1992).

RESULTS

On October 25, 2010, HA's senior botanist, Ted Gordon, conducted a full-day survey of upland flats and slopes of the landfill to determine their potential as suitable habitat for rare, threatened, and endangered species. To insure adequate site coverage, multiple parallel line transects were covered on foot at approximately 10 yard intervals. Concurrently, Herpetologist/Wildlife Ecologist Matthew McCort performed a T&E wildlife habitat evaluation that included all areas of the landfill property. A list of avian species observed was recorded and is presented in **Appendix I**, while a list of all botanical species observed is presented in **Appendix II**.

HABITAT DESCRIPTION

This site consists of approximately 80 acres of open, canopy-free land associated with two main landfills that have both been closed/capped for several years (**Figures 2 and 3**). An examination of the accompanying plant list (**Appendix II**) reveals a composition of species remarkably different from the typical pine barrens flora that once prevailed here and continues to exist beyond the fenced periphery of the landfill. Soil amendments (neutralizing the acidic pH) and the deliberate planting of a fast-growing groundcover to prevent erosion have transformed what was once a pine-oak-heath community to a community resembling weedy inner-city lots. Not a single member of the heath family was observed, while members of the composite (*Asteraceae)* and grass (*Poaceae)* families have become dominant. Especially aggressive were Chinese bush clover (*Lespedeza cuneata*), spotted knapweed (*Centaurea maculosa* (=*C. biebersteinii*)), common mugwort (*Artemisia vulgaris*), yarrow (*Achillea millefolium*), switch grass (*Panicum virgatum*), common reed (*Phragmites australis*) (in a couple of places), and various species of crab grasses. The exotic ground cover was generally too dense to enable native herbs, not to mention rare species, to gain a foothold.

Much of the land associated with the landfill tops, slopes, and periphery is generally functioning as grassland habitat (**Figures 4 and 5**). The forest bordering the landfill property is dominated by pitch pine (*Pinus rigida*) and is typical of the type of pine forest habitat present in the general vicinity in Ocean Township (**Figures 2, 6, and 7**). The landfill areas are dominated by mugwort, deer tongue (*Panicum clandestinum*), switchgrass (*Panicum virgatum*), and African love grass (*Eragrostis sp.*) (**Figure 3**).

NORTHERN PINE SNAKE HABITAT EVALUATION

While foraging habitat for northern pine snakes is present on the landfill property, in the surrounding forested habitat, and in Ocean Township in general, potential critical habitat for northern pine snakes does not appear to be present on the Southern Ocean Landfill property. In HA's professional

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opinion, typical (traditional) pine snake nesting habitat does not occur on any portion of the tops or slopes of the landfills on this site. Pine snakes typically nest in open, canopy-free, habitat that is characterized by well-drained, loamy soils and an assemblage of vegetative species specific to this habitat type. This vegetative community typically consists of the following species: pennsylvanica sedge (*Carex pensylvanica*), golden heather (*Hudsonia ericoides*), Pine Barrens sandwort (*Arenaria caroliniana*), broom-sedge (*Andropogon virginicus*), switchgrass, broom beardgrass (*Andropogon scoparius*), and lowbush blueberry (*Vaccinium vacillans*) (Burger and Zappalorti, 1986 and 1991). It is possible that gravid female pine snakes could opportunistically use a mammal burrow found somewhere on the landfill to lay their eggs. These atypical but well documented nest sites could possible occur on the landfill property if other suitable nesting habitats do not occur in the general vicinity.

Based on the capped nature of the landfills and the hydrological conditions of the site in general, it is HA's opinion that pine snake hibernacula are unlikely to be present on the Southern Ocean Landfill property. Pine snakes typically spend the winter months hibernating in upland habitats where they use small mammal burrows, abandoned large mammal burrows, and stump holes as entrance points to their underground hibernacula. While these features could occur, they were not specifically observed on the landfill property.

GRASSLAND BIRD HABITAT EVALUATION

New Jersey's threatened and endangered grassland bird species, such as savannah sparrow, grasshopper sparrow, and bobolink inhabit open grassy meadow/field habitat. Essential to these habitats are the grass species that provide vegetative cover while growing far enough apart to maintain some open bare soil patches (depending on the species). Such habitat is often created by farmers as they leave individual fields fallow or plant crops such as hay. Some capped landfills can provide breeding habitat for grassland bird species.

Grasshopper Sparrow (*Ammodramus savvannarum*) (State Status: Threatened)

Grasshopper sparrows generally prefer moderately open grassland and prairie habitat with patchy bare ground (Vickery, 1996). They inhabit well-drained native and farmed grasslands in the eastern United States. This species favors larger fields over smaller more fragmented sites. The minimum field size is 30 to 100 hectares (74 to 247 acres) (Vickery, 1996). The Southern Ocean Landfill property is at the lower limit, in terms of size, for nesting grasshopper sparrows. Grasshopper sparrows were once found in much smaller natural clearings in the early 1900's when they were much more common. Although this site does not meet the general size requirements necessary in order to serve as ideal grasshopper sparrow nesting habitat, the possibility that nesting grasshopper sparrows could inhabit the site does exist. This property should be surveyed for breeding grasshopper sparrows.

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Savannah Sparrow (*Passerculus sandwichensis*) (State Status: Threatened)

Savannah sparrow, a species that is a bit more of a habitat generalist than grasshopper sparrow, occupies grassy meadows, cultivated fields, lightly grazed pastures, roadsides, coastal grasslands, sedge bogs, edge of salt marshes, and tundra during the breeding season (Wheelwright and Rising, 1993). Dense, grassy ground vegetation is generally preferred. Hay fields are generally suitable as nesting habitat for the savannah sparrow. Based on the vegetative structure present, potential nesting habitat for savannah sparrows exists within the landfill property; several species of grasses and forbs appear to be providing suitable habitat structure. This property should be surveyed for breeding savannah sparrows.

Bobolink (*Dolichonyx oryzivorus*) (State Status: Threatened)

Bobolink prefers hay fields and meadows comprised of a mixture of grasses and broad leaved forbs (Martin and Gavin, 1995). Breeding bird densities are generally higher in older hayfields that have not been plowed or reseeded in $\geq$ 8 years (Bollinger and Gavin, 1992). In addition, densities are twice as high in fields $\geq$ 30 hectares (74 acres) than in fields $\leq$ 10 hectares (25 acres). Therefore this site does not meet the general size requirements necessary in order to serve as bobolink nesting habitat. Although this site does not meet the general size requirements necessary in order to serve as ideal bobolink nesting habitat, the possibility that nesting bobolink could inhabit the site does exist. This property should be surveyed for breeding bobolink.

Vesper Sparrow (*Pooecetes gramineus*) (State Status: Endangered)

Vesper sparrows prefer habitats that consist of dry, open fields with short, sparse, and patchy herbaceous vegetation; habitats with areas of bare ground and low shrubs or tall forb cover are also preferred (Jones and Cornely. 2002.). Although this site does not meet the general size requirements necessary in order to serve as ideal grasshopper sparrow nesting habitat, the possibility that nesting grassland sparrows could inhabit the site does exist. This property should be surveyed for breeding grassland birds.

All avian species observed during the October 25, 2010 habitat evaluation are presented in **Appendix I.**

BOTANICAL HABITAT EVALUATION

While no Pinelands-listed rare species were observed, a single State Heritage Program-listed species was recorded: Pine Barren Foxglove, *Agalinis fasciculata* (=*Agalinis virgata*; *A. purpurea* var. *racemulosa*), a G5, S3 species. Five flowering specimens of this member of the figwort family were scattered near vegetation-choked debris piles in a low-lying, moist-to-wet, undeveloped portion within the northwest sector the landfill. A small patch of this area contained a clayey, sparsely-vegetated substrate judged to be suitable habitat for sustaining Knieskern's Beaked Rush. However, a careful search for this endangered sedge proved negative.

Based on our search and habitat evaluation, it is HA's opinion that potential for discovering additional rare or T&E species on the target area of the landfill is extremely remote.

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SUMMARY

HA was retained by the Alaimo Group to conduct a T&E species habitat evaluation on the Southern Ocean Landfill property in the Township of Ocean, Ocean County, New Jersey. This survey was conducted to demonstrate that the proposed solar panel installation project will not have an irreversible adverse impact on any species of T&E plants or wildlife.

While potential foraging habitat exists on site, it is HA's professional opinion that there is no northern pine snake critical habitat on the subject property based on the unsuitable soil and vegetative characteristics on the landfills. While not ideal for all T&E grassland bird species, potential breeding habitat is present for grassland birds, especially grasshopper sparrow. Surveys should be conducted for grassland birds at the appropriate time of the year (the April/May through July breeding season). If it is determined that the project site could support the life cycle of any threatened or endangered bird species, an assessment would need to be conducted regarding the effect that the solar arrays would have on this habitat.

There is no potential habitat present for rare, threatened, or endangered botanical species. The exotic ground cover was generally too dense to enable rare species to gain a foothold.

Sincerely,

Matthew R. McCort
Regional Manager/Herpetologist
Herpetological Associates, Inc.

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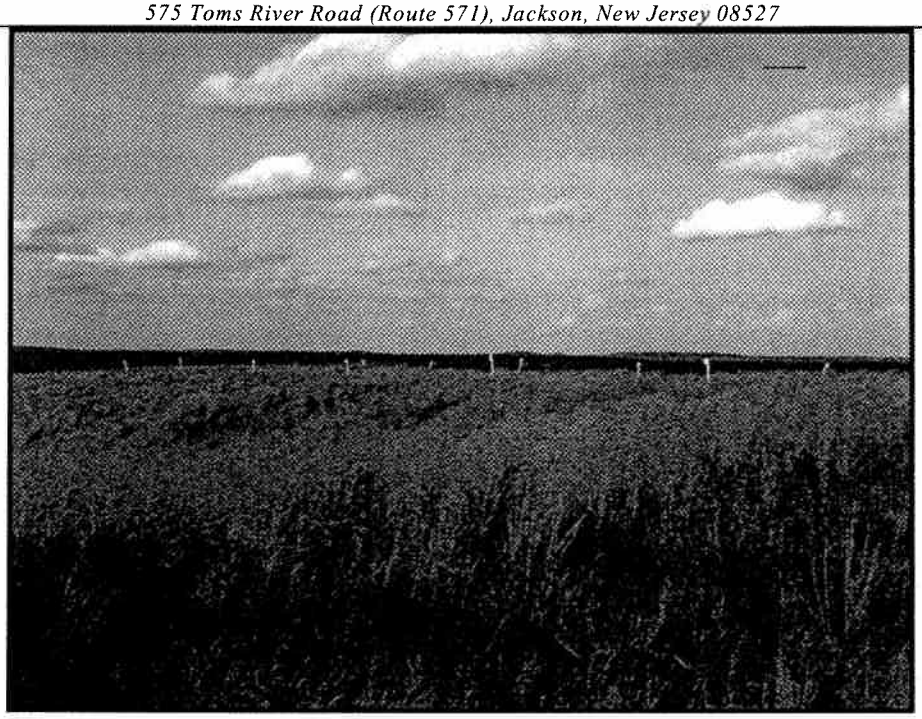

Figure 3. Photo of the flat top of the capped landfill. Most of the capped landfills areas on site appear very similar to this. Photo: Matthew P. McCort, Herpetological Associates, Inc.

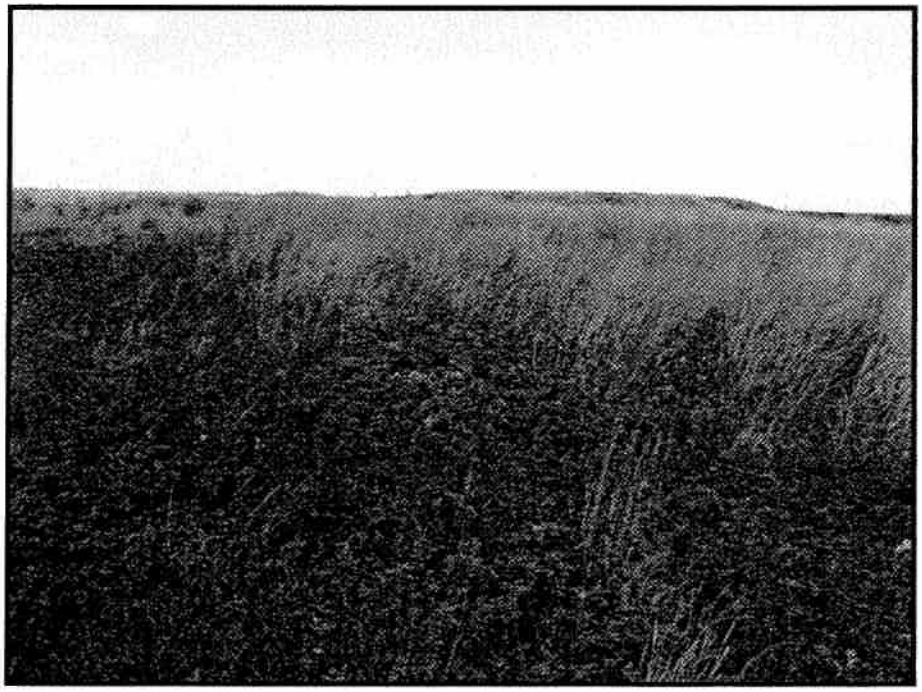

Figure 4. Photo of typical grassland habitat present on the Ocean County landfill property. Common mugwort, which is widespread on site, can bee seen in the foreground of this photo. Photo: Matthew P. McCort, Herpetological Associates, Inc.

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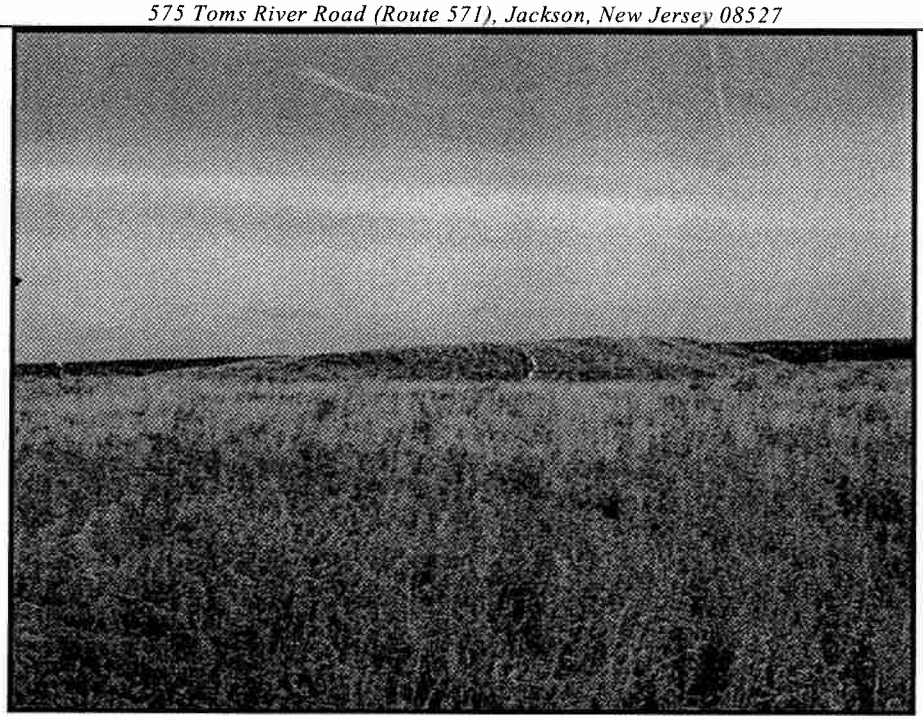

Figure 5. Substantial grassland habitat is present on the landfill property. While not completely naturally vegetated, these areas have the potential to provide nesting habitat for grassland bird species. Photo: Matthew P. McCort, Herpetological Associates, Inc. 2010.

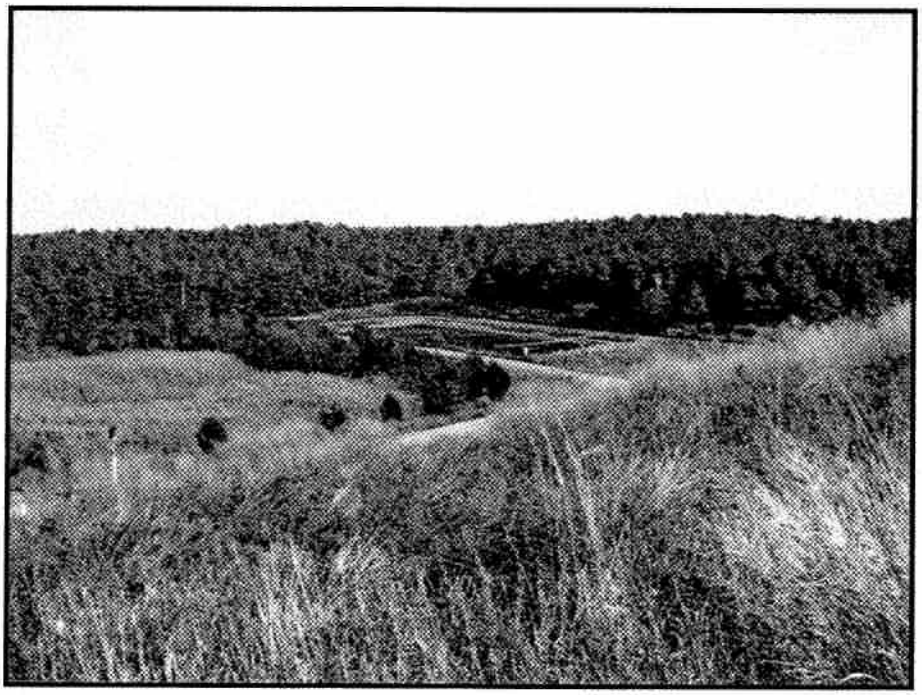

Figure 6. The landfill property is bordered by pitch pine dominated pine/oak forest. Photo: Matthew P. McCort, Herpetological Associates, Inc. 2010.

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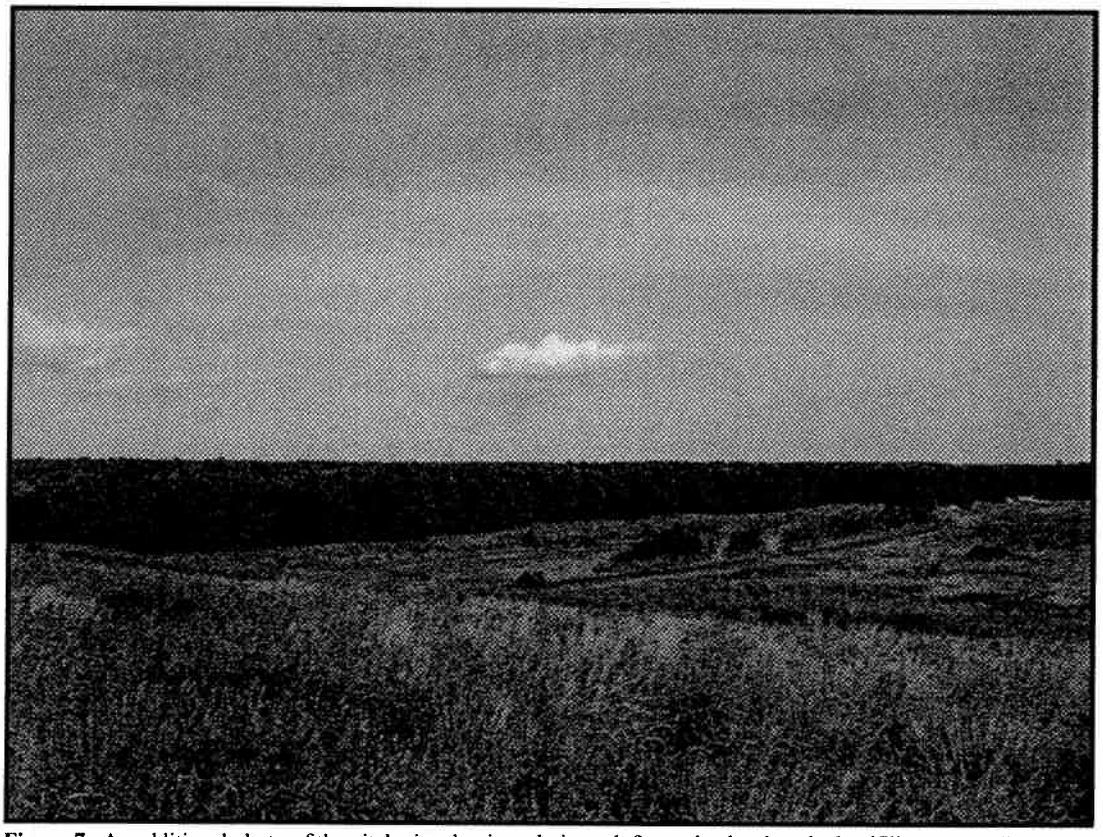

Figure 7. An additional photo of the pitch pine dominated pine oak forest that borders the landfill property. Photo: Matthew P. McCort, Herpetological Associates, Inc. 2010.

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APPENDICES

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APPENDIX I

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Appendix I. Bird species observed on the Ocean Township Landfill property on October 25, 2010.

Common Name	Scientific Name
double-crested cormorant	*Phalacrocorax auritus*
great blue heron (SC)	*Ardea herodias*
mallard	*Anas platyrhynchos*
turkey vulture	*Cathartes aura*
northern harrier (E)	*Circus cyaneus*
sharp-shinned hawk	*Accipiter striatus*
Cooper's hawk (T)	*Accipiter cooperii*
red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
merlin	*Falco columbarius*
peregrine falcon (E)	*Falco peregrinus*
northern flicker	*Colaptes auratus*
blue jay	*Cyanocitta cristata*
American crow	*Corvus brachyrhyncos*
tree swallow	*Tachycineta bicolor*
ruby-crowned kinglet	*Regulus calendula*
eastern bluebird	*Sialia sialis*
gray catbird	*Dumetella carolinensis*
yellow-rumped warbler	*Dendroica coronata*
savannah sparrow (T)	*Passerculus sandwichensis*
song sparrow	*Melospiza melodia*
swamp sparrow	*Melospiza georgiana*
dark-eyed junco	*Junco hyemalis*
American goldfinch	*Carduelis tristis*

NJ State Status Designations: "E" = Endangered, "T" = Threatened, "SC" = Species of Special Concern

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APPENDIX II

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Appendix II: Plant Species Survey List: Southern Ocean County Landfill

(Nomenclature essentially follows Gleason & Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*, Second Edition. The New York Botanical Garden.)

Anacardiaceae Sumac Family
Toxicodendron radicans Poison Ivy

Apiaceae Carrot Family
Daucus carota Queen Anne's-Lace

Asteraceae Aster Family
Achillea millefolium Yarrow
Ambrosia artemisiifolia Common Ragweed
Artemisia vulgaris Common Mugwort
Aster viminius (=Symphyotrichum lateriflorum var. lateriflorum) Small White Aster
Baccharis halimifolia Groundsel-Bush
Centaurea maculosa (=C. biebersteinii) Spotted Knapweed
Chondrilla juncea Skeleton Weed
Cichorium intybus Chicory
Cirsium arvense Canada Thistle
Cirsium horridulum Yellow Thistle
Cirsium vulgare Bull Thistle
Conyza canadensis Horseweed
Erechtites hieracifolia Pilewort or Fireweed
Erigeron annuus Daisy Fleabane
Eupatorium hyssopifolium Hyssop-Leaved Boneset
Eupatorium serotinum Late-Flowering Boneset
Gaillardia pulchella Indian Blanket
Gnaphalium obtusifolium (=Pseudognaphalium o.) Sweet Everlasting
Hypochoeris radicata Cat's Ear
Iva frutescens Marsh Elder
Rudbeckia hirta var. pulcherima (=R. serotina) Black-eyed Susan
Solidago rugosa Rough-Stemmed Goldenrod
Taraxacum officinale Common Dandelion

Bignoniaceae Trumpet-Creeper Family
Paulownia tomentosa Empress Tree

Brassicaceae Mustard Family
Lepidium campestre Field Pepper Grass

Celastraceae Staff-TreeFamily
Celastrus orbiculatus Asiatic Bittersweet

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Cupressaceae Cypress Family
Juniperus virginiana Red Cedar

Cyperaceae Sedge Family
Cyperus microiria (= C. amuricus) an e. Asian sp.
Cyperus strigosus False Nutsedge
Scirpus cyperinus Cottongrass Bulrush or Common Woolgrass
Scirpus pungens (=Schoenoplectus p.) Common Threesquare

Fabaceae Pea Family
Lespedeza capitata Brown-Headed Bush-Clover
Lespedeza cuneata Chinese Bush-Clover
Trifolium arvense Rabbit-Foot Clover

Juncaceae Rush Family
Juncus biflorus Grass-Leaved Rush
Juncus dichotomus Forked Rush
Juncus effusus Soft Rush
Juncus scirpoides Needle-Pod Rush

Lamiaceae Mint Family
Prunella vulgaris Self-Heal
Trichostema dichotomum Blue Curls

Myricaceae Bayberry Family
Comptonia peregrina Sweet Fern
Morella pensylvanica (=Myrica p.) Northern Bayberry

Onagraceae Evening-Primrose Family
Epilobium coloratum Purple-Leaf Willowherb
Oenothera biennis Evening Primrose

Phytolaccaceae Pokeweed Family
Phytolacca americana Pokeweed

Plantaginaceae Plantain Family
Plantago aristata Large-Bract Plantain
Plantago lanceolata English Plantain
Plantago major Great Plantain

Poaceae Grass Family
Agrostis perennans Upland Bent Grass
Andropogon virginicus var. virginicus Virginia Beard Grass
Aristida longespica Slender Triple-Awned Grass
Digitaria filiformis Slender Crab-Grass
Digitaria ischaemum Smooth Crab-Grass

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Digitaria sanguinalis Northern Crab-Grass
Echinochloa muricata Barnyard Grass
Eragrostis capillaris Lacegrass
Eragrostis curvula African Lovegrass
Eragrostis spectabilis Purple Lovegrass
Panicum clandestinum (=Dichanthelium c.) Deer-Tongue
Panicum scoparium (=Dichanthelium s.) Velvet Panic Grass
Panicum virgatum var. virgatum Switch Grass
Paspalum sataceum Slender Crown Grass
Phragmites australis Common Reed
Schizachyrium scoparium var.scoparium Little Bluestem
Setaria faberi Faber's Foxtail or Bristle Grass
Setaria geniculata Knotroot Foxtail
Tridens flavus var. flavus Tall Redtop

Polygonaceae Buckwheat Family
Polygonum aviculare Yard Knotweed

Rubiaceae Madder Family
Diodia teres Rough Buttonweed

Scrophulariaceae Figwort Family
Agalinis fasciculata (=A.virgata; A. purpurea var. racemulosa) Pine Barren Foxglove (S3)
Verbascum thapsus Great or Common Mullein

Solanaceae Nightshade Family
Solanum carolinense Horse Nettle

Typhaceae Cat-Tail Family
Typha angustifolia Narrow-Leaved Cat-Tail