
**Attachment 31 to PLA-6219
Ecology III, Inc. November 1994.
Wetland Evaluation South of the
Susquehanna Steam Electric Station
Intake Structure**

(NRC Document Request 77)

**WETLAND EVALUATION
SOUTH OF THE
SUSQUEHANNA STEAM ELECTRIC STATION
INTAKE STRUCTURE**

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For

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WETLAND EVALUATION SOUTH OF THE SUSQUEHANNA STEAM ELECTRIC STATION INTAKE STRUCTURE

An evaluation for the presence and approximate location of wetlands was conducted south of the Susquehanna Steam Electric Station (Susquehanna SES) Intake Structure. The area evaluated is located from the intake structure access road and the intake, south between the former Erie-Lackawanna Railroad and the Susquehanna River to the wetlands cottage. Much of this is part of the Wetlands Nature Area. The immediately adjacent property to the north was evaluated in 1991 (Montgomery 1991), and a general wetlands map of the Susquehanna SES site was prepared in 1990 (Montgomery 1990). Field work for this report was done from 8 through 29 September 1994.

Wetlands on the Susquehanna SES site were classified according to Cowardin, et al. (1979). The following types of wetland occur on the site (Montgomery 1990):

- (1) Palustrine forested wetlands are nontidal wetlands dominated by woody vegetation that is 6 m (20 ft) tall or taller.

- (2) Palustrine scrub-shrub wetlands are nontidal wetlands dominated by woody vegetation less than 6 m tall, including young trees, true shrubs, and trees or shrubs stunted because of environmental conditions.

- (3) Emergent perennial palustrine wetlands are nontidal wetlands less than 8 ha (20 acres) in area dominated by erect rooted herbaceous aquatic plants. Emergent wetlands may also occur in the riverine (wetlands contained within a channel created by moving water) or lacustrine (wetlands situation in a natural or dammed depression greater than 8 ha in total area) systems.

Much of the area of this report is wetlands (Map 1), including the field south of the intake access road (emergent perennial wetland), the marsh bordering the canal (emergent perennial) and adjacent swamp forest (forested palustrine), brushy woodland on both sides of the canal (scrub-shrub and forested palustrine), large marsh on both sides of the canal including some open water (emergent perennial), swampy woods to the east and west of this large marsh (forested palustrine), and marsh extending south of the wetlands cottage (emergent perennial). Upland areas occur along the railroad on the west side of the area surveyed, along the Susquehanna River from a small ditch south of the intake structure to the cottage, and a large field south of the ditch and east of the wetland bordering the canal (Map 1).

Forested palustrine wetlands are dominated by trees, including pin oak, red maple, green ash, river birch, and American elm. The understory consists of saplings of these species and shrubs of northern spicebush, arrowwood, and poison ivy. Herbs include Virginia knotweed, skunk cabbage, sensitive fern, cinnamon fern, spinulose wood fern,

spreading bentgrass, rice cutgrass, and Nepal microstegium. Wetland status of species is given in Table 1.

Scrub-shrub palustrine wetlands are dominated by saplings of green ash and river birch, with dense understory of speckled alder, silky dogwood, gray dogwood, and broad-leaf meadow-sweet. Herbs include wrinkle-leaf goldenrod, Virginia knotweed, sensitive fern, Nepal microstegium, and wood-reed (Table 1).

Emergent perennial palustrine wetlands are dominated by herbs: common cattail, purple loosestrife, spotted touch-me-not, arrow-leaved tearthumb, sensitive fern, soft rush, wool grass, sedges, rice cutgrass, and reed canary grass. Areas of open water occur, especially along the canal, dominated by duckweed and water-meal with clumps of grasses or sedges.

Soils in these wetlands are mapped as Holly silt loam, with some areas of Pope soils (U. S. Department of Agriculture 1981). These are both floodplain soils. Holly is listed as a hydric (wetland) soil by the U. S. Department of Agriculture (1987); Pope is not listed as a hydric soil, but it may have hydric inclusions. Soil tests in wetland areas indicated saturated and gleyed soils, 10YR 4/1-4/2 or 5/2 to 5GY 4/1, with bright chroma mottles.

The boundaries of the wetlands described above and shown on Map 1 are approximate since a formal delineation was not made. Delineation, in accordance with the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989), includes surveying and marking

the wetland boundaries. This procedure should be carried out before any construction near areas mapped as wetlands.

Areas not mapped as wetlands are upland. This includes upland forest along the Erie-Lackawanna Railroad south of the intake access road. This forest is dominated by northern red oak, white oak, red maple, gray dogwood, arrowwood, mayapple, hay-scented fern, Canada goldenrod, and Virginia knotweed. Open fields occur south of this forest and between the drainage ditch south of the intake and the open marsh and swamp forest. Dominants are Canada goldenrod, wrinkle-leaf goldenrod, teasel, orchard grass, perennial ryegrass, autumn bentgrass, wire-stem Muhly, and crown vetch. Floodplain hardwood forest occurs along the river bank from the drainage ditch to the wetlands cottage. Dominants include black maple, northern red oak, American beech, basswood, New York fern, interrupted fern, northern lady fern, white wood aster, Virginia knotweed, and Nepal microstegium.

Soils in these uplands are mapped as Pope soils, a well-drained floodplain soil type, with small areas mapped as Holly silt loam (U. S. Department of Agriculture 1981). Soil tests indicated non-hydric soils, 10YR 4/3-4/4 or 5/4, lacking mottles or other hydric soil features.

Permits from the U. S. Army Corps of Engineers and the Pennsylvania Department of Environmental Resources are required to fill, drain, or encroach upon wetland areas. Before any project is planned on or near areas designated as wetlands, a formal wetland delineation should be made to define exact wetland boundary and determine if a permit is required.

References

- Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U. S. Fish and Wildlife Service, Washington, DC.
- Federal Interagency Committee for Wetland Delineation. 1989. Federal manual for identifying and delineating jurisdictional wetlands. Cooperative Technical Publication. U. S. Army Corps of Engineers, U. S. Environmental Protection Agency, U. S. Fish and Wildlife Service, and U. S. D. A. Soil Conservation Service, Washington, DC.
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- Reed, P. B. 1988. National list of plant species that occur in wetlands: Pennsylvania. National Wetlands Inventory, U. S. Fish and Wildlife Service, St. Petersburg, FL.
- U. S. Department of Agriculture. 1981. Soil survey of Luzerne County, Pennsylvania. Soil Conservation Service.
- U. S. Department of Agriculture. 1987. Hydric soils of the United States. Soil Conservation Service.

Table 1

Plant species (common and scientific names) used in the wetland evaluation south of the Susquehanna SES Intake Structure.

Common Name	Scientific Name	Wetland Status*
Red maple	<i>Acer rubrum</i>	Fac
Spreading bentgrass	<i>Agrostis stolonifera</i>	Facw
Speckled alder	<i>Alnus rugosa</i>	Facw
River birch	<i>Betula nigra</i>	Facw
Sedge	<i>Carex</i> sp.	Facw-Obl
Wood-reedgrass	<i>Cinna arundinacea</i>	Facw
Silky dogwood	<i>Cornus amomum</i>	Facw
Gray dogwood	<i>Cornus racemosa</i>	Fac
Spinulose wood fern	<i>Dryopteris carthusiana</i>	Fac
Nepal microstegium	<i>Eulalia viminea</i>	Fac
Green ash	<i>Fraxinus pennsylvanica</i>	Facw
Spotted touch-me-not	<i>Impatiens capensis</i>	Facw
Soft rush	<i>Juncus effusus</i>	Facw
Rice cutgrass	<i>Leersia oryzoides</i>	Obl
Duckweed	<i>Lemna minor</i>	Obl
Northern spicebush	<i>Lindera benzoin</i>	Facw
Purple loosestrife	<i>Lythrum salicaria</i>	Facw
Sensitive fern	<i>Onoclea sensibilis</i>	Facw
Cinnamon fern	<i>Osmunda cinnamomea</i>	Facw
Reed canary grass	<i>Phalaris arundinacea</i>	Facw
Arrow-leaved tearthumb	<i>Polygonum sagittatum</i>	Obl
Virginia knotweed	<i>Polygonum virginianum</i>	Fac
Pin oak	<i>Quercus palustris</i>	Facw
Poison ivy	<i>Rhus radicans</i>	Fac

Table 1 (continued)

Common Name	Scientific Name	Wetland Status*
Wool grass	<i>Scirpus cyperinus</i>	Facw
Wrinkle-leaf goldenrod	<i>Solidago rugosa</i>	Fac
Broad-leaf meadow-sweet	<i>Spiraea latifolia</i>	Fac
Skunk cabbage	<i>Symplocarpus foetidus</i>	Obl
Common cattail	<i>Typha latifolia</i>	Obl
American Elm	<i>Ulmus americana</i>	Facw
Arrowwood	<i>Viburnum dentatum</i>	Fac
Water-meal	<i>Wolffia columbiana</i>	Obl

* Classification according to U. S. Fish and Wildlife Service (Reed 1988).

Obl = Obligate wetland species (almost always occur in wetlands)

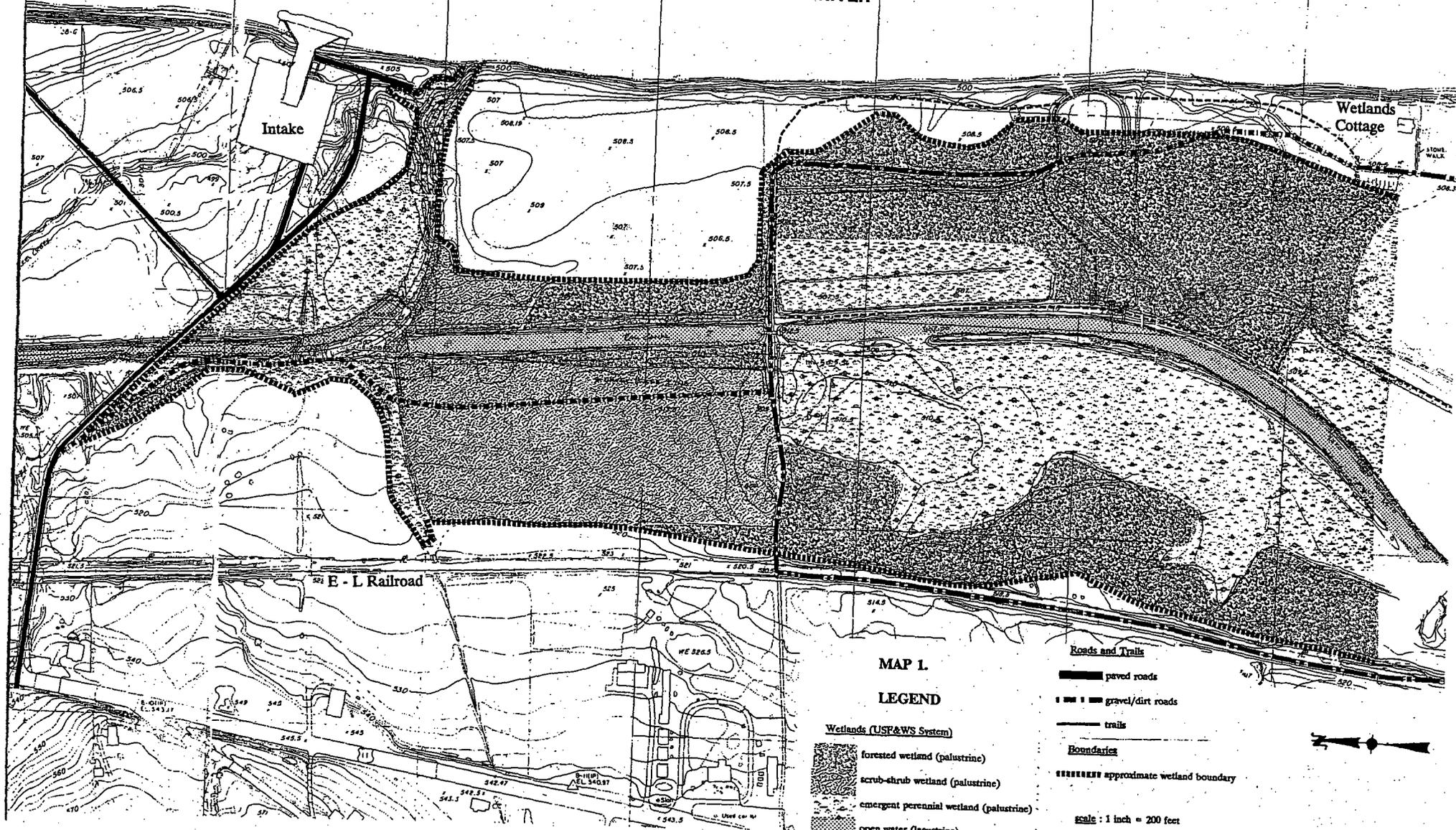
Facw = Facultative wetland species (usually occur in wetlands)

Fac = Facultative species (equally likely to occur in wetlands or nonwetlands)

Facu = Facultative upland species (usually occur in uplands)

Upl = Upland species (not listed in wetland inventory)

SUSQUEHANNA RIVER



MAP 1.

LEGEND

- Wetlands (USF&WS System)**
- forested wetland (palustrine)
 - scrub-shrub wetland (palustrine)
 - emergent perennial wetland (palustrine)
 - open water (lacustrine)

- Roads and Trails**
- paved roads
 - gravel/dirt roads
 - trails

- Boundaries**
- approximate wetland boundary

Scale: 1 inch = 200 feet



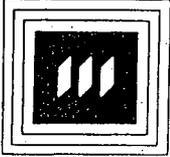
**Attachment 32 to PLA-6219
Ecology III, Inc. July 14, 1992.
Wetland Evaluation Near Susquehanna SES
Diffuser Pipe**

(NRC Document Request 78)



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14 July 1992

J. S. Fields (A9-3)

SUSQUEHANNA STEAM ELECTRIC STATION

CCN-741326

FILE R9-3

EIPL-681

WETLAND EVALUATION NEAR SUSQUEHANNA SES DIFFUSER PIPE

An evaluation for the presence of wetlands was made on the west shore of the Susquehanna River opposite the Susquehanna Steam Electric Station diffuser pipe on 14 July 1992. The area evaluated extended from the end of the existing intake structure road south approximately one-fourth mile. The purpose of this evaluation was feasibility of placing a road for removal of sediment from the diffuser pipe.

Most of the area surveyed is upland flood plain with second-growth forest or open field. Vegetation includes silver maple, river birch, American sycamore, and black locust (small trees and saplings), with Canada goldenrod, dame's rocket, and garlic mustard. Soils are sandy, 10YR 4/3, lacking mottles or other hydric soil features. Fields are dominated by poison hemlock, Canada goldenrod, crown vetch, and reed canary grass. Soils are similar to forest soils.

A small stream crosses the area just south of the end of the intake access road. Wetland borders this stream below the steep banks. Vegetation includes reed canary grass, great water dock, black willow, and teasel. Soils are very dark gray, 7.5YR 3/0, with bright chroma mottles, 7.5YR 3/4, and oxidized root channels.

Permits from the U.S. Army Corps of Engineers and Pennsylvania Department of Environmental Resources would be necessary to encroach or cross this wetland area. A delineation of the exact wetland boundary was not made at this time; however, this should be completed if construction is anticipated near the wetlands.

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/msh

c: SRMS File (A6-2)
EIPL File