Summary Report
Aquatic Plant Mapping and Potential NYSDEC Article 24 Jurisdiction
Tillson lake – Minnewaska State Park Preserve
Town of Gardiner, New York

November 2018

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Table of Contents

List of Figures

Appendices

1.0 Introduction and Site Description

Quenzer Environmental LLC has been retained by Friends of Tillson Lake, Inc. to assess the potential for NYSDEC Article 24 Freshwater wetland jurisdiction at Tillson Lake. The primary focus of this investigation was to locate submerged and floating aquatic vegetation in Tillson Lake and determine if there is enough wetland acreage (in addition to mapped wetland contiguous to the lake) to qualify as an Article 24 Freshwater wetland. This summary report presents the methodology, data and findings of this assessment.

Tillson Lake is part of the Minnewaska State Park Preserve and is located in Town of Gardiner, Ulster County, New York. Figure 1 shows the lake location and general area of the site.

Tillson Lake is a shallow, 24± acre man-made lake within the relatively undeveloped preserve. The primary water source for the lake is the Palmaghatt Kill and tributaries which are impounded by a dam at the eastern end of the lake.

2.0 NYSDEC Mapping Criteria and Methodology

The New York State Freshwater Wetland law defines wetlands which are subject to Article 24 Jurisdiction, as presented in Appendix C (24-0107 Definitions). Unless the wetlands are of "Unusual or Local Significance", as defined in the law, they must be at least 12.4 acres in size to meet Article 24 jurisdiction.

Article 24 specifically identifies types of wetland vegetation and species, such as those relative to aquatic conditions that would be found in a lake or pond. As per 24-0107, these include:

> "(4) rooted, floating-leaved vegetation; including, among others, water-lily (Nymphaea odorata), water shield (Brasenia schreberi), and spatterdock (Nuphar spp.);
>
> (5) free-floating vegetation; including, among others, duckweed (Lemna spp.), big duckweed (Spirodela polyrhiza), and watermeal (Wolffia spp.);
>
> (8) submergent vegetation; including, among others, pondweeds (Potamogeton spp.), naiads (Najas spp.), bladderworts (Utricularia spp.), wild celery (Vallisneria americana), coontail (Ceratophyllum demersum), water milfoils (Myriophyllum spp.), muskgrass (Chara spp.), stonewort (Nitella spp.), water weeds (Elodea spp.), and water smartweed (Polygonum admphibium);"

The NYS Freshwater Wetlands Delineation Manual (July 1995) presents further guidance, as indicated by the following:

> "Under the Act, wetlands are defined as lands and submerged lands commonly known as swamps, sloughs, bogs and flats which support wetland vegetation. Wetland vegetation is categorized into wetland trees, wetland shrubs and wet

> meadow vegetation that... "depend on permanent or seasonal flooding [wetland hydrology] or sufficiently water-logged soils [hydric soils] to give them a competitive advantage over other [vegetation]." Emergent, rooted floating-leaved, free-floating, submergent and bog mat plants that ordinarily grow in standing water are also categorized as wetland vegetation under Article 24. Additionally, the law describes three instances where wetland vegetation is absent from a wetland area: 1) permanently wet conditions which contain dead upland vegetation; 2) areas substantially enclosed by wetlands; and 3) the waters which overlie any wetland area [§24-0107(1)]."

A number of resources were reviewed prior to conducting field surveys on the lake to determine potential NYSDEC jurisdiction. The purpose was to note wetlands that had been previously mapped in the lake vicinity and to help determine the extent of aquatic plant coverage. These resources include the following:

- March 1, 2017 Letter from Palisades Interstate Park Commission to NYSDEC – "Request for Pre-application Meeting for Tillson Lake Dam Breach Project"
- NYSDEC Environmental Mapper
- NYSDEC Freshwater Wetland map
- National Wetland Inventory (NWI) mapping
- USGS Topographic maps
- NYS GIS Clearinghouse Ortho-imagery
- OnX Map Ortho-imagery

The Palisades Interstate Park Commission (PIPC) had their consultants (AECOM) delineate the wetlands adjacent to the lake in the spring of 2016. This is based on the information in the March 1, 2017 submittal to NYSDEC "Request for Pre-application Meeting for the Tillson Lake Dam Breach Project" referenced above. AECOM mapped 3.75 acres of Palustrine wetland contiguous to the lake, as shown on the attached "Wetland Map Overview" prepared by AECOM (Figure 2).

While there are no NYSDEC wetlands mapped on or contiguous to the lake (Figure 6), the NWI Map (Figure 5) shows the western area of the lake mapped as freshwater emergent wetland.

Aerial Imagery is often used to determine the presence and approximate extent of aquatic plants in shallow lakes and ponds. Floating and emergent aquatic vegetation typically show characteristic aerial image signatures. A review of available aerial imagery of the lake did not result in signatures that would indicate extensive aquatic plant coverage, further necessitating the need for field evaluation.

A visual survey of the lake was conducted via kayak on September 7, 2018 to observe the presence/absence of aquatic beds including emergent, floating and submergent species (Lacustrine wetlands). Inclement weather at the time of the survey precluded photographing conditions or conducting extensive sampling.

An additional survey of the lake for aquatic vegetation was conducted on October 19th under more favorable weather conditions. Unfortunately, the period between the 1st visual survey in September and later survey in October was extremely wet with numerous storm events. These storms produced turbid water conditions that were not conducive to visual inspection for floating and submerged aquatics.

The October 19th survey utilized a vegetation "rake" to sample submerged vegetation at various locations in the lake. The rake would be lowered overboard from a kayak and dragged along for a short distance before being hauled up to examine impinged aquatic plants. The sample locations were located using a DeLorme PN-60 hand-held GPS unit. Sample species were noted along with sample station, water depth and water clarity measured with a secchi disc. The attached data sheets present this information (Appendix B). In addition, photographs of each sample were taken for documentation, as shown in Figure 3 and attached as Appendix A.

3.0 Findings Summary

As noted, the Palisades Interstate Park Commission (PIPC) had their consultants (AECOM) delineate the Palustrine wetlands adjacent to the lake in the spring of 2016. A cursory review of some of the wetland flagging on September 7, 2018 indicates that AECOM accurately defined the wetland limits adjacent to the lake. AECOM mapped 3.75 acres of wetland contiguous to the lake, as shown on the attached "Wetland Map Overview" prepared by AECOM (Figure 2).

However, the delineation was conducted in the spring of 2016 when it would have been impossible to observe the extensive contiguous expanse of submergent and floating aquatic plant beds (Lacustrine wetlands) that are easily observable during summer months. The extensive presence of aquatic beds (primarily submergent – milfoil (Myriophyllum sp.) and floating pond weeds (*Potamogeton* spp.) were observed over a large area of the lake during the September 7, 2018 survey. The National Wetland Inventory Map (attached) shows the entire western half of the lake (~12.7± acres of the 24.8± acres) mapped as emergent wetland. In addition to the NWI mapped wetlands, floating/submergent plants were observed all along the southern shore up to the dam, as well as along the northern shoreline to a considerable distance out in the lake.

The inclement weather in September and early October (along with scheduling conflicts) prevented additional survey of the lake for aquatic vegetation until October 19th. Even at this late date when most aquatic plants die off, aquatic plants were visible in the water column and also detected by sampling with a rake. The primary species noted were milfoil and stonewort (*Chara* sp.) with lesser quantities of pondweeds. Most of the plants observed/sampled were in relatively poor condition, as expected due to the time of year. Nonetheless, this helped substantiate observations of September 7th. A map showing the Extent of Observed Aquatic Plants (Figure 4) is attached noting areas where aquatic plants were observed (~18 acres) and also where they were not observed or had very sparse distribution (~6 acres). This map is based on GPS waypoints and tracks from the September 7th visual survey and the October 19th aquatic plant sampling survey.

The shallow depths (<6-8 feet) over most of the lake, along with mucky bottom substrate, contribute to the extensive presence of aquatic vegetation. Given these observations, along with the NWI mapping and wetland delineation conducted for PIPC, the cumulative contiguous wetland appears to be over 21± acres (18± acres Lacustrine plus 3.75± acres Palustrine wetlands). Since the contiguous wetland acreage exceeds the 12.4 minimum acre threshold for Article 24 jurisdiction, NYSDEC should include it as a state-regulated wetland and add it to the official Freshwater Wetland Maps.

In terms of potential NYSDEC Classification, the wetland and lake contain four or more Class II characteristics that make it eligible for Class I designation. These characteristics are stated in NYSDEC Regulation Part 664.5B (6 CRR-NY 664.5NY-CRR), attached as Appendix C, and include the following:

1. (2) "It contains two or more wetland structural groups (664.6[b][1]);"
2. (4) It is associated with permanent open water outside the wetland (664.6[b][4]);
3. (5) It is adjacent or contiguous to streams classified C(t) or higher under article 15 of the Environmental Conservation Law (664.6[b][5]);
4. (17) It is within a publicly owned recreation area (664.6[e][4]).

It should also be recognized that the wetlands and entire lake are subject to federal jurisdiction under Section 404 of the Clean Water Act as "Waters of the U.S." These include wetlands, intermittent streams, natural drainage courses, lakes and ponds.

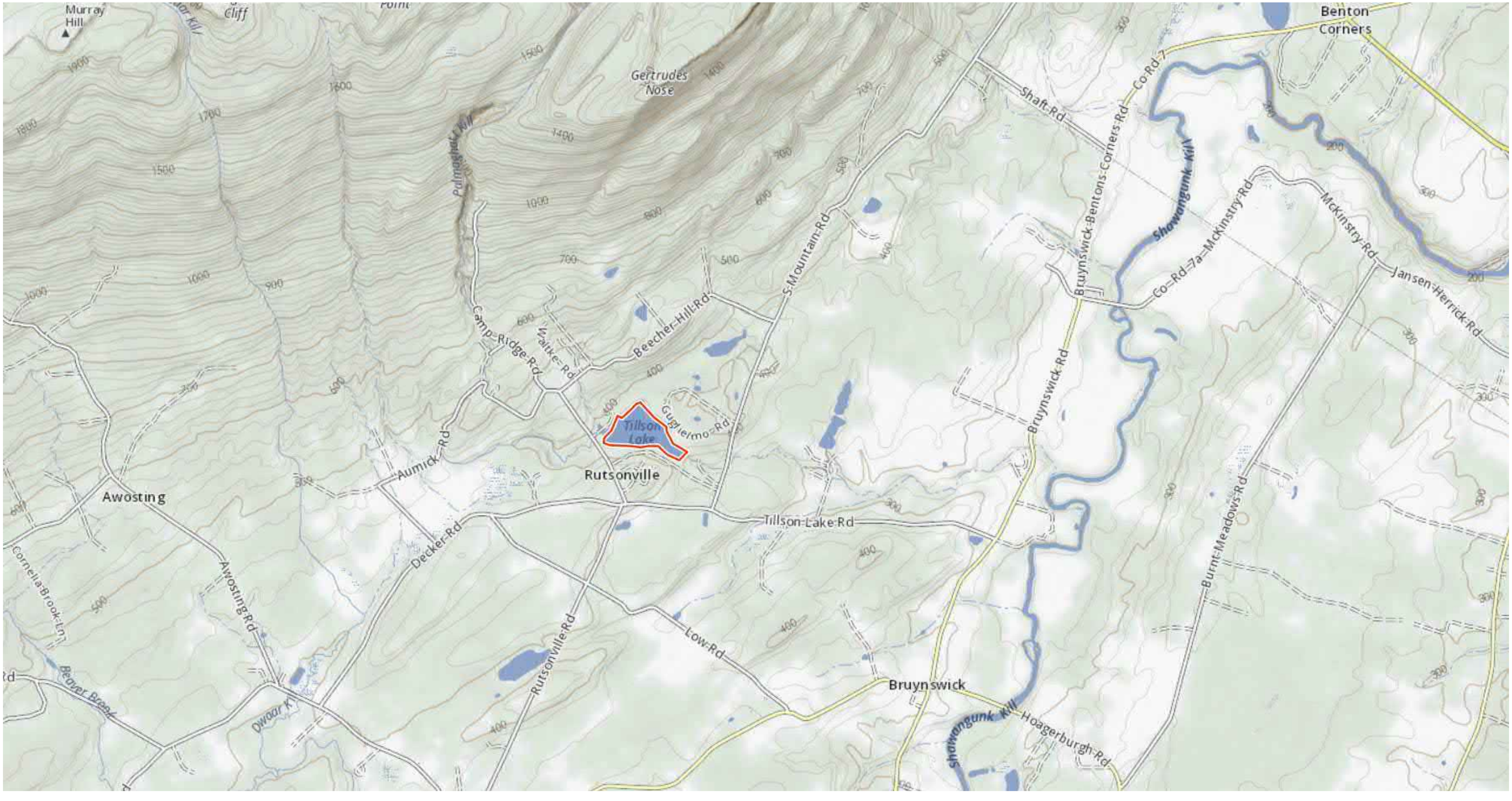
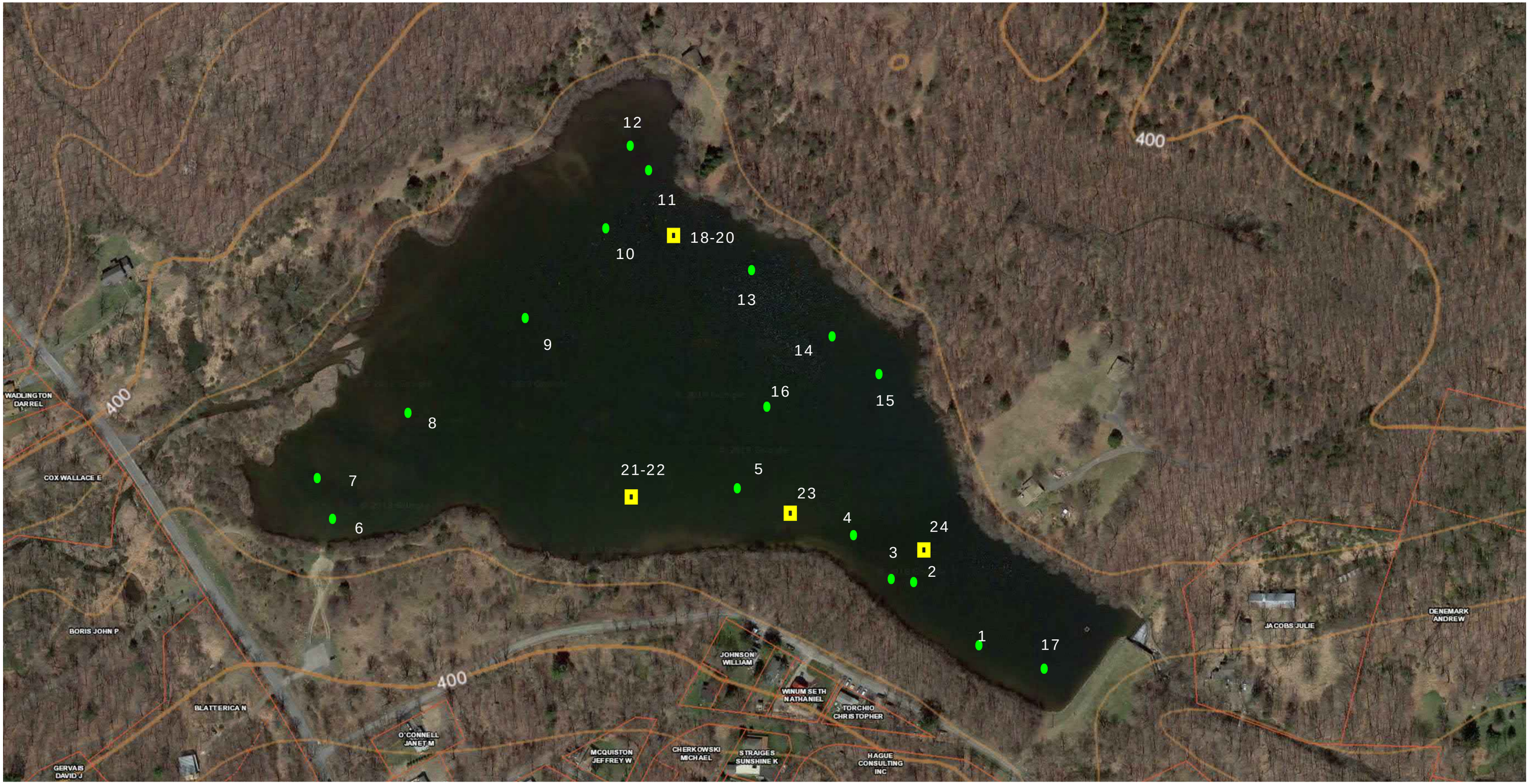


Figure 1 - Site Location

Figure 2 - Wetland Map Overview (AECOM)



Sample Station and Photo

Photo Only

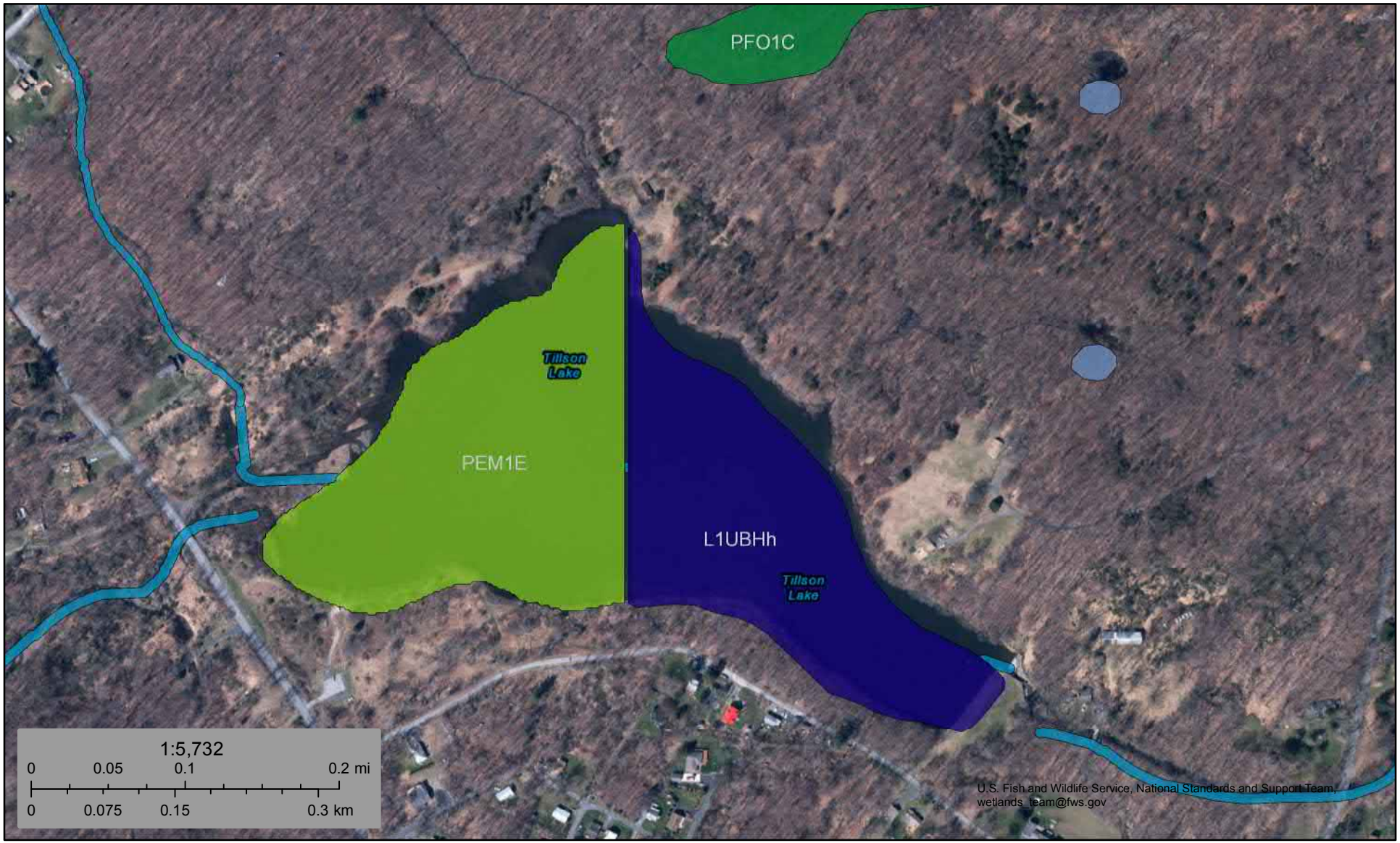
Figure 3 - Aquatic Plant Mapping Sample Station and Photo Locations

Quenzer Environmental LLC

Figure 4 - Tillson Lake Aquatic Plant Mapping (2018)

U.S. Fish and Wildlife Service
National Wetlands Inventory

Figure 5
Tilson Lake NWI Map



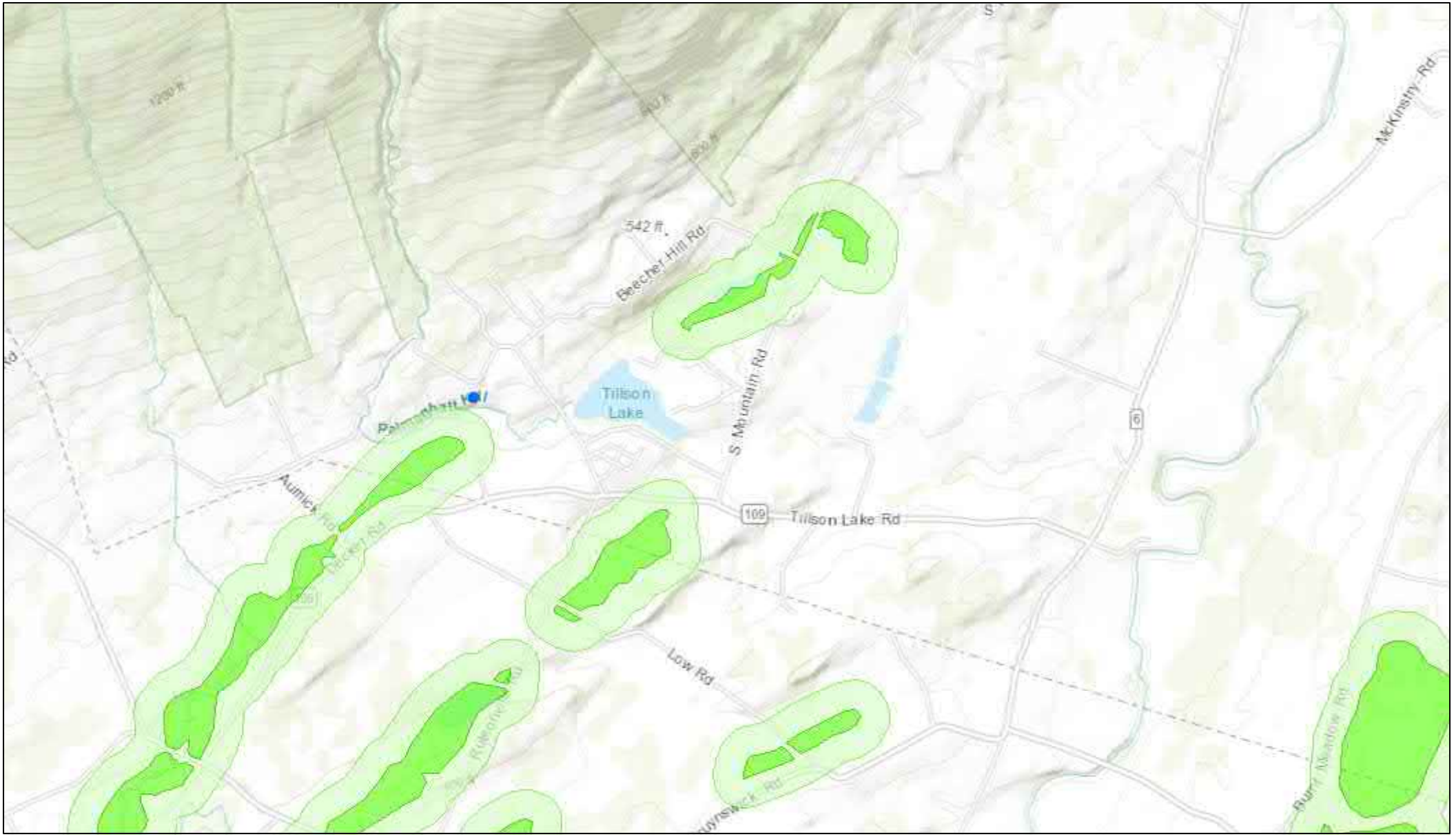
September 9, 2018

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Figure 6 - NYSDEC Wetlands



November 16, 2018

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NYS Department of Environmental Conservation
Not a legal document

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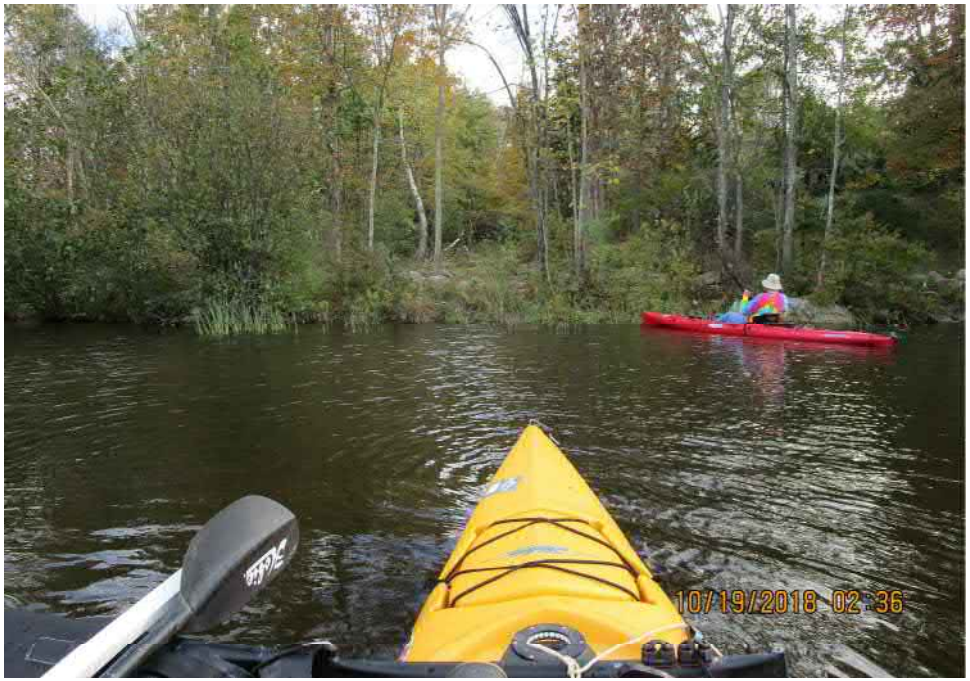

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Appendix B

Tilson Lake Aquatic Plant Mapping – October 19, 2018

Sample Point# (GPS location)	Water depth (feet)	Water Clarity Secchi Disk (ft)	Aquatic plants present (Y/No)	Aquatic plants species
		Overall clarity was "murky"		Overall condition was deteriorating
1	6.5	3	Y	Sparse milfoil
2	6	3	Y	Chara – dredge Potamogeton sp
3	6	3	Y	Myriophyllum
4	8	3	Y	Myriophyllum – dredge
5	8	3	Y	Chara – dredge
6	3	Bottom <3	Y	Myriophyllum – continuous bed
7	4	3	Y	Myriophyllum – bed
8	4	3	Y	Chara – dredge Elodea sp
9	7	3	Y	Chara – dredge
10	7	3	Y	Myriophyllum – dredge

Tilson Lake Aquatic Plant Mapping - October 19, 2018

Sample Point# (GPS location)	Water depth	Water Clarity Secchi Disk (ft)	Aquatic plants present (Y/No)	Aquatic plants species
11	4	3	Y	Potamogeton
12	2.5	bottom	Y	Myriophyllum – dense beds
13	8	3	Y	Myriophyllum – dredge
14	8	3.5	Y	Myriophyllum – dredge, Chara
15	7	3.5	Y	Myriophyllum – dredge
16	8	3.5	Y	Chara - dredge
17	6	3.5	Y	Myriophyllum – to middle of lake
18				
19				
20				

Appendix A - 24-0107. Definitions

1. "Freshwater wetlands" means lands and waters of the state as shown on the freshwater wetlands map which contain any or all of the following:
(a) lands and submerged lands commonly called marshes, swamps, sloughs, bogs, and flats supporting aquatic or semi-aquatic vegetation of the following types:

(1) wetland trees, which depend upon seasonal or permanent flooding or sufficiently water-logged soils to give them a competitive advantage over other trees; including, among others, red maple (Acer rubrum), willows (Salix spp.), black spruce (Picea mariana); swamp white oak (Quercus bicolor), red ash (Fraxinus pennsylvanica), black ash (Fraxinus nigra), silver maple (Acer saccharinum), American elm (Ulmus americana), and Larch (Larix laricina);

(2) wetland shrubs, which depend upon seasonal or permanent flooding or sufficiently water-logged soils to give them a competitive advantage over other shrubs; including, among others, alder (Alnus spp.), buttonbush (Cephalanthus occidentalis), bog rosemary (Andromeda glaucophylla), dogwoods (Cornus spp.), and leatherleaf (Chamaedaphne calyculata);

(3) emergent vegetation, including, among others, cattails (Typha spp.), pickerelweed (Pontederia cordata), bulrushes (Scirpus spp.), arrow arum (Peltandra virginica), arrowheads (Sagittaria spp.), reed (Phragmites communis), wildrice (Zizania aquatica), bur-reeds (Sparganium spp.), purple loosestrife (Lythrum salicaria), swamp loosestrife (Decodon verticillatus), and water plantain (Alisma plantago-aquatica);

(4) rooted, floating-leaved vegetation; including, among others, water-lily (Nymphaea odorata), water shield (Brasenia schreberi), and spatterdock (Nuphar spp.);

(5) free-floating vegetation; including, among others, duckweed (Lemna spp.), big duckweed (Spirodela polyrhiza), and watermeal (Wolffia spp.);

(6) wet meadow vegetation, which depends upon seasonal or permanent flooding or sufficiently water-logged soils to give it a competitive advantage over other open land vegetation; including, among others, sedges (Carex spp.), rushes (Juncus spp.), cattails (Typha spp.), rice cut-grass (Leersia oryzoides), reed canary grass (Phalaris arundinacea), swamp loosestrife (Decodon verticillatus), and ,,pikerush (Eleocharis spp.);

(7) bog mat vegetation; including, among others, sphagnum mosses (Sphagnum spp.), bog rosemary (Andromeda glaucophylla), leatherleaf (Chamaedaphne calyculata), pitcher plant (Sarracenia purpurea), and cranberries (Vaccinium macrocarpon and V. oxycoccos);

(8) submergent vegetation; including, among others, pondweeds (Potamogeton spp.), naiads (Najas spp.), bladderworts (Utricularia spp.), wild celery (Vallisneria americana), coontail (Ceratophyllum demersum), water milfoils (Myriophyllum spp.), muskgrass (Chara spp.), stonewort (Nitella spp.), water weeds (Elodea spp.), and water smartweed (Polygonum admphibium);

(b) lands and submerged lands containing remnants of any vegetation that is not aquatic or semi-aquatic that has died because of wet conditions over a sufficiently long period, provided that such wet conditions do not exceed a maximum seasonal water depth of six feet and provided further that such conditions can be expected to persist indefinitely, barring human intervention;

(c) lands and waters substantially enclosed by aquatic or semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation; and

(d) the waters overlying the areas set forth in (a) and (b) and the lands underlying 8.

6 CRR-NY 664.5
NY-CRR

OFFICIAL COMPILATION OF CODES, RULES AND REGULATIONS OF THE STATE OF NEW YORK
TITLE 6. DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CHAPTER X. DIVISION OF WATER RESOURCES
SUBCHAPTER A. GENERAL
ARTICLE 1. MISCELLANEOUS RULES
PART 664. FRESHWATER WETLANDS MAPS AND CLASSIFICATION

6 CRR-NY 664.5
6 CRR-NY 664.5

664.5 Classification system.

Not all wetlands supply equally the benefits explained in section 664.3(b) of this Part. The degree to which wetlands supply benefits depends upon many factors, including: their vegetative cover, their ecological associations, their special features, their hydrological and pollution control features, and their distribution and location; and these may vary considerably from wetland to wetland. Because of this variation, the act requires the commissioner to classify wetlands in a way that recognizes that not all wetlands are of equal value. This section establishes four ranked regulatory classes of wetlands, depending upon the degree of benefits supplied. The benefits cited in section 24-0105(7) of the act are translated into discernible wetland characteristics, and these characteristics are used to classify wetlands. Section 664.6 of this Part describes each characteristic in some detail and discusses the benefits supplied by a wetland when it contains that characteristic.

(a) Class I wetlands.

A wetland shall be a class I wetland if it has any of the following seven enumerated characteristics:

Ecological Associations

(1) It is a classic kettlehole bog (664.6[b][2]);*

Special Features

(2) It is resident habitat of an endangered or threatened animal species (664.6[c][2] and [4]);

(3) It contains an endangered or threatened plant species (664.6[c][4]);

(4) It supports an animal species in abundance or diversity unusual for the State or for the major region of the State in which it is found (664.6[c][1] and [6]);

Hydrological and Pollution Control Features

(5) It is tributary to a body of water which could subject a substantially developed area to significant damage from flooding or from additional flooding should the wetland be modified, filled or drained (664.6[d][1]);

(6) It is adjacent or contiguous to a reservoir or other body of water that is used primarily for public water supply, or it is hydraulically connected to an aquifer which is used for public water supply (664.6[d][2],[3] and [4]); or

Other

(7) It contains four or more of the enumerated class II characteristics. The department may, however, determine that some of the characteristics are duplicative of each other, therefore do not indicate enhanced benefits, and so do not warrant class I classification. Each species to which paragraphs (b)(6)-(8) of this section apply shall be considered a separate class II characteristic for this purpose.

(b) Class II wetlands.

A wetland shall be a class II wetland if it has any of the following 17 enumerated characteristics:

Cover Type

(1) It is an emergent marsh in which purple loosestrife and/or reed (phragmites) constitutes less than two thirds of the cover type (664.6[a][2]);*

Ecological Associations

(2) It contains two or more wetland structural groups (664.6[b][1]);

(3) It is contiguous to a tidal wetland (664.6[b][3]);

(4) It is associated with permanent open water outside the wetland (664.6[b][4]);

(5) It is adjacent or contiguous to streams classified C(t) or higher under article 15 of the Environmental Conservation Law (664.6[b][5]);

Special Features

(6) It is traditional migration habitat of an endangered or threatened animal species (664.6[c][3] and [4]);

(7) It is resident habitat of an animal species vulnerable in the State (664.6 [c][2] and [5]);

(8) It contains a plant species vulnerable in the State (664.6[c][5]);

(9) It supports an animal species in abundance or diversity unusual for the county in which it is found (664.6[c][7]);

(10) It has demonstrable archaeological or paleontological significance as a wetland (664.6[c][8]);

(11) It contains, is part of, owes its existence to, or is ecologically associated with, an unusual geological feature which is an excellent representation of its type (664.6[c][9]);

Hydrological and Pollution Control Features

(12) It is tributary to a body of water which could subject a lightly developed area, an area used for growing crops for harvest, or an area planned for development by a local planning authority, to significant damage from flooding or from additional flooding should the wetland be modified, filled or drained (664.6[d][1]);

(13) It is hydraulically connected to an aquifer which has been identified by a government agency as a potentially useful water supply (664.6[d][4]);

(14) It acts in a tertiary treatment capacity for a sewage disposal system (664.6[d][3]);

Distribution and Location

(15) It is within an urbanized area (664.6[e][1]);

(16) It is one of the three largest wetlands within a city, town, or New York City borough (664.6[e][3]); or

(17) It is within a publicly owned recreation area (664.6[e][4]).

(c) Class III wetlands.

A wetland shall be a class III wetland if it has any of the following 15 enumerated characteristics:

Cover Types

(1) It is an emergent marsh in which purple loosestrife and/or reed (phragmites) constitutes two thirds or more of the cover type (664.6[a][2]); *

(2) It is a deciduous swamp (664.6[a][3]);

(3) It is a shrub swamp (664.6[a][5]);

(4) It consists of floating and/or submergent vegetation (664.6[a][6]);

(5) It consists of wetland open water (664.6[a][7]);

Ecological Associations

(6) It contains an island with an area or height above the wetland adequate to provide one or more of the benefits described in section 664.6(b)(6) of this Part;

Special Features

(7) It has a total alkalinity of at least 50 parts per million (664.6[c][10]);

(8) It is adjacent to fertile upland (664.6[c][11]); *

(9) It is resident habitat of an animal species vulnerable in the major region of the State in which it is found, or it is traditional migration habitat of an animal species vulnerable in the State or in the major region of the State in which it is found (664.6[c][1]-[3] and [5]);

(10) It contains a plant species vulnerable in the major region of the State in which it is found (664.6[c][1] and [5]);

Hydrological and Pollution Control Features

(11) It is part of a surface water system with permanent open water and it receives significant pollution of a type amenable to amelioration by wetlands (664.6[d][3]);

Distribution and Location

(12) It is visible from an interstate highway, a parkway, a designated scenic highway or a passenger railroad, and serves a valuable aesthetic or open space function (664.6[e][2]);

(13) It is one of the three largest wetlands of the same cover type within a town (664.6[e][3]);

(14) It is in a town in which wetland acreage is less than one percent of the total acreage (664.6[e][3]); or

(15) It is on publicly owned land that is open to the public (664.6[e][5]).

(d) Class IV wetlands.

A wetland shall be a class IV wetland if it does not have any of the characteristics listed as criteria for class I, II or III wetlands. Class IV wetlands will include wet meadows (664.6[a][1]) * and coniferous swamps (664.6[a][4]) which lack other characteristics justifying a higher classification.

RESEARCH REFERENCES AND PRACTICE AIDS:

107 NY Jur 2d, Water § 272.

Footnotes

* The reference in parentheses after each characteristic is to the description of that characteristic and its associated benefits in section 664.6 of this Part.

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6 CRR-NY 664.5
Current through July 31, 2018

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