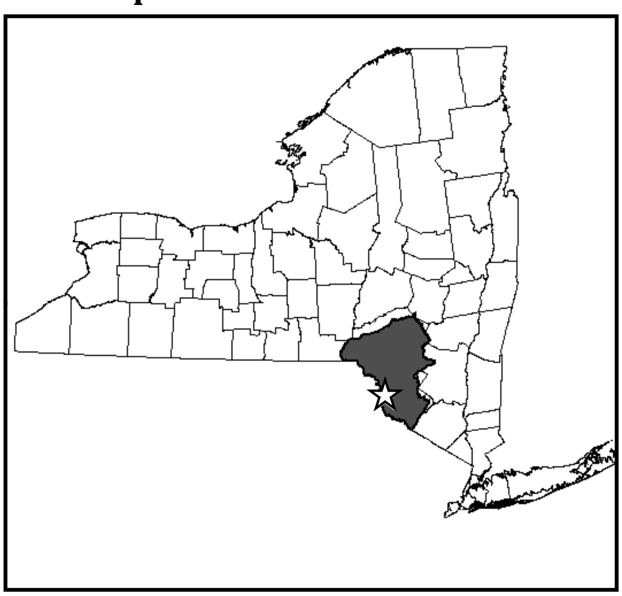
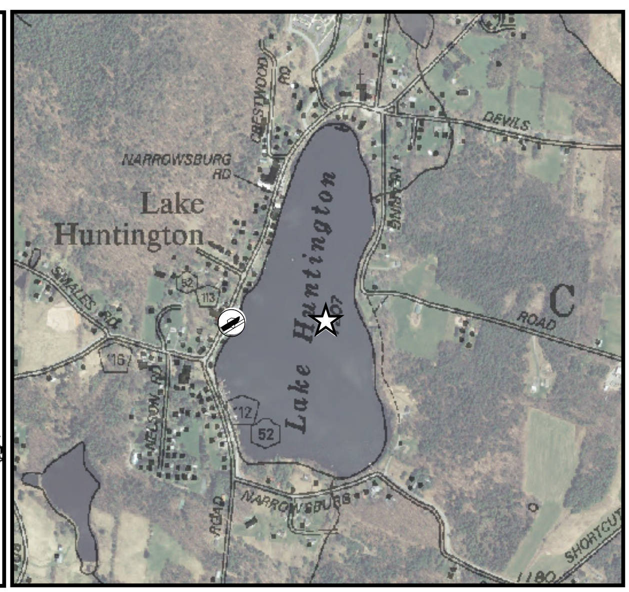
LCI 2015 Lake Water Quality Summary:
Lake Huntington

General Lake Information

Location	Town of Cocheton
County	Sullivan
Basin	Delaware River
Size	32 hectares (80 acres)
Lake Origins	Natural
Watershed Area	80 hectares (198 acres)
Max. Sounding Depth	13.5 meters
Public Access?	DEC Concrete ramp with parking for 5 cars and trailers
Major Tributaries	no named tributaries
Lake Tributary To…	Tributary of Tenmile River to Tenmile River to Delaware River
WQ Classification	B(T): primary and secondary contact recreation and fishing. These waters shall be suitable for fish, shellfish and wildlife propagation and survival, including the survival of trout.
Sampling Site Latitude	41.68304
Sampling Site Longitude	-74.959
DEC DOW Sampling Dates	6/10, 7/15, 8/13 & 9/9/2015 (Historic samples taken in 1983, 1988 & 2000)
DEC Contact	David J. Newman Division of Water, Lake Monitoring and Assessment Section New York State Department of Environmental Conservation 625 Broadway, 4th Floor, Albany, NY 12233-3502

Lake Map





Background
Lake Huntington is an 80 acre, class B(T) lake in the Town of Cocheton in western Sullivan County. The lake was included in a US Environmental Protection Agency (US EPA) study in 1972 (see Appendix VII. for reference) and as part of the Lake Classification and Inventory (LCI) program in 1983, 1988 and 2000.

Based on these data the lake was assessed as having *minor impacts* related to elevated nutrients (phosphorus) and low summer dissolved oxygen levels in the bottom waters of the lake (see Appendix II. for the 2002 Waterbody Inventory/Priority Waterbodies List (WI/PWL) Factsheet for Lake Huntington). In the fall of 2014 the Department of Environmental Conservation Division of Water (DEC DOW) received a report with photographs of a widespread algal bloom occurring on Lake Huntington. Based on the assessment of *minor impacts*, the occurrence of an algal bloom in 2014 and the lack of recent water quality data (within the last 10 years), Lake Huntington was included in the 2015 LCI intensive (monthly sampling) of the Delaware River Basin.

Lake Uses
Lake Huntington is a Class B(T) lake; this classification means that the best intended use for the lake is for contact recreation—public swimming and bathing, non-contact recreation—boating and fishing; aesthetics and aquatic life. The (T) classification means that the lake is also designated for trout survival. There are no public swimming beaches on the lake; however, it is likely that people do swim from boats and/or private docks. There is a DEC managed hard surface boat ramp with parking for 5 vehicles and trailers on the western side of the lake.

Lake Huntington is stocked with 1,800 brown trout every spring. The lake also offers anglers a variety of warm water fish species to target. Based on the most recent DEC fisheries survey (2006) the fish species that were present in the lake include: brown trout (stocked, but none observed during survey), alewife, white sucker, smallmouth, largemouth and rock bass, pumpkinseed sunfish, bluegill, yellow perch, brown bullhead, golden shiner, black crappie and American eel. (see Appendix III for an abstract of the most recent DEC fisheries survey).

General statewide fishing regulations are applicable in Lake Huntington. In addition, trout of any size can be taken year round, including by ice fishing, with a daily limit of 5 trout.

There are currently no lake-specific fish consumption advisories on Lake Huntington; however, the New York State Department of Health does publish general advice for eating sportfish and game, this can be found at
http://www.health.ny.gov/environmental/outdoors/fish/health_advisories/.

Management History
No records exist for permitted lake management activities for Lake Huntington.

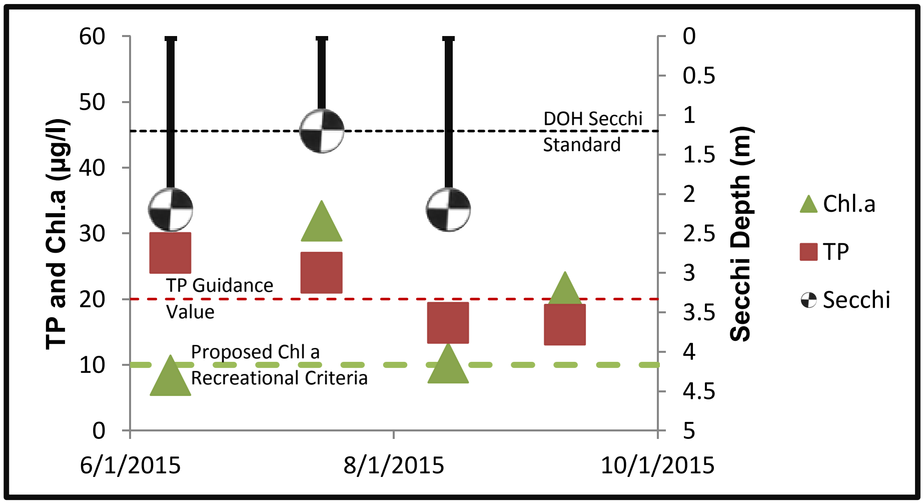
Summary of 2015 LCI Sampling Results

Evaluation of Eutrophication Indicators
Lake Huntington can be characterized as *eutrophic*, or moderately to highly productive. The average water clarity reading for the samples taken in 2015 (TSI = 51, typical of *eutrophic*

waterbodies) was in the expected range given the total phosphorus reading (TSI = 48, typical of *mesoeutrophic* waterbodies) and clearer than expected give the chlorophyll *a* reading (TSI = 58, typical of *eutrophic* waterbodies). These data indicate that baseline nutrients may support algal blooms in the lake.

Phosphorus readings showed a slight decline over the sampling season, changing from high to moderate. Algae levels were moderate in June, but showed a shift to high readings in July, resulting in a drop in water clarity. Both algae levels and water clarity returned to moderate levels in August and algae levels again were high in September. These readings were consistent with user perception surveys (conducted by DEC staff) which indicated high algal greenness in July and September and slight algal greenness in June and August. (see Figure 1.)

Figure 1. Time Series Trophic Indicators



Lake Huntington exhibits thermal stratification, in which depth zones (warm water on top, cold water on the bottom during the summer) are established, as in most NYS lakes greater than 6 meters deep. The thermocline was generally in 4 to 5 meter range during the entire summer. Anoxic (lack of oxygen) conditions were observed in waters below 5 meters of depth throughout the summer. Similar profiles were observed in 2000 (see Figures 2 & 3 below).

Figure 2. Temperature & Dissolved Oxygen Depth Profiles 2000

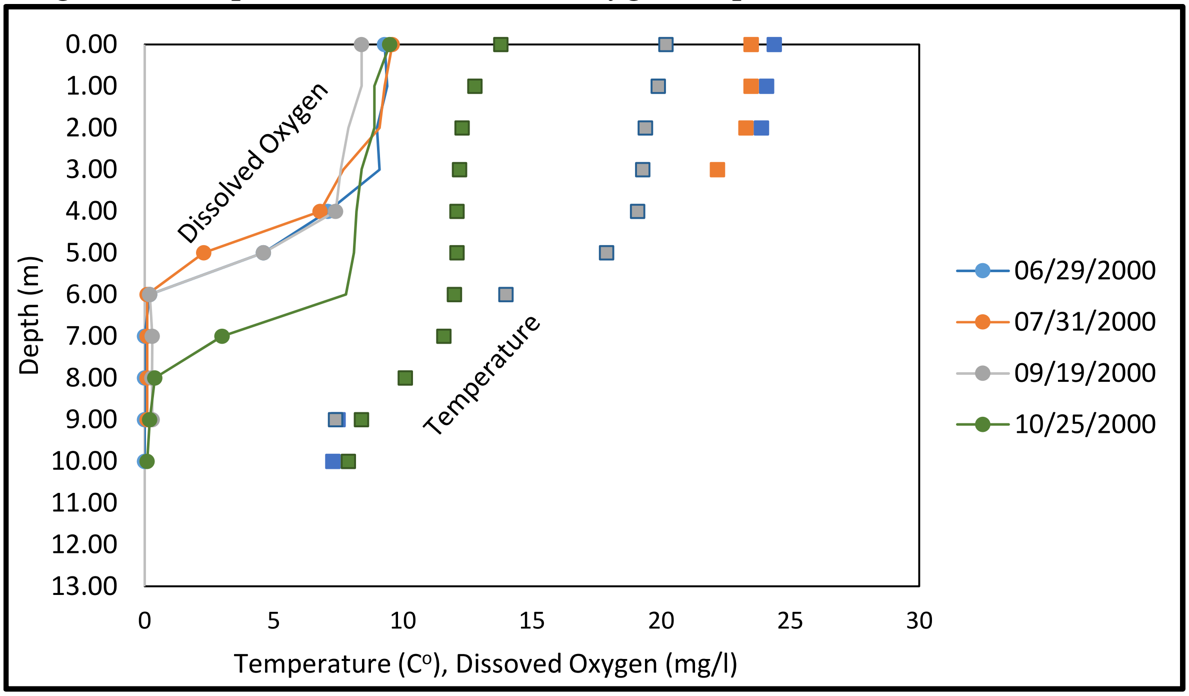
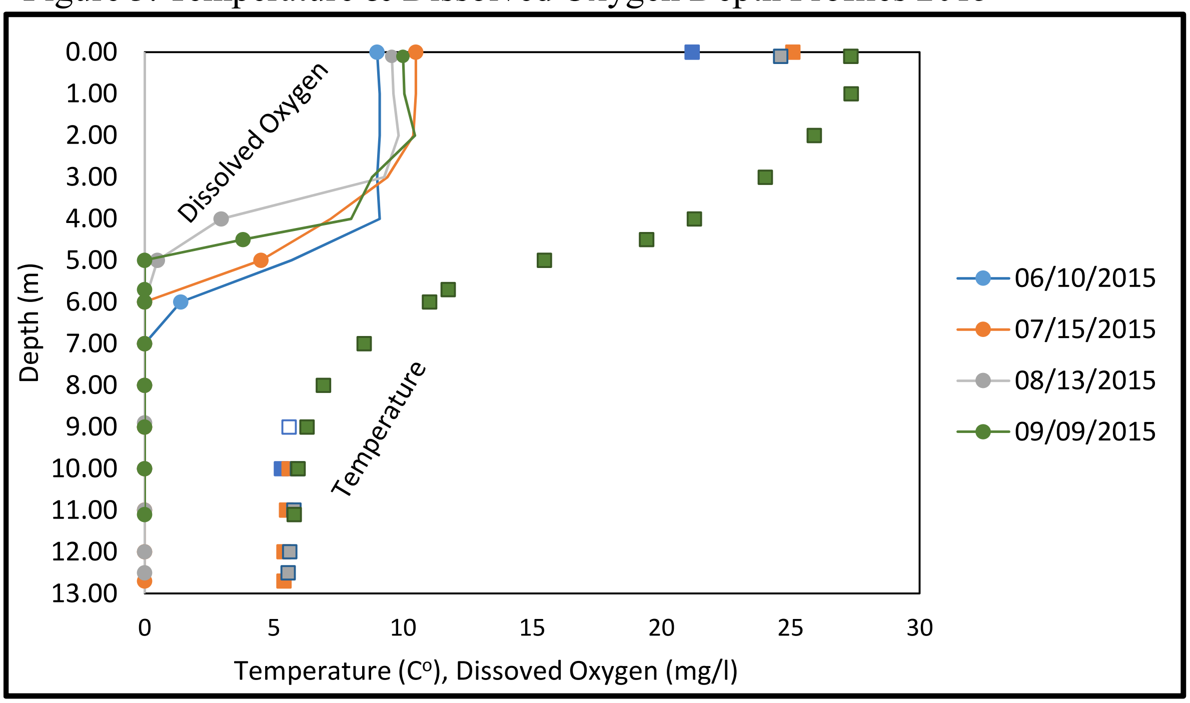
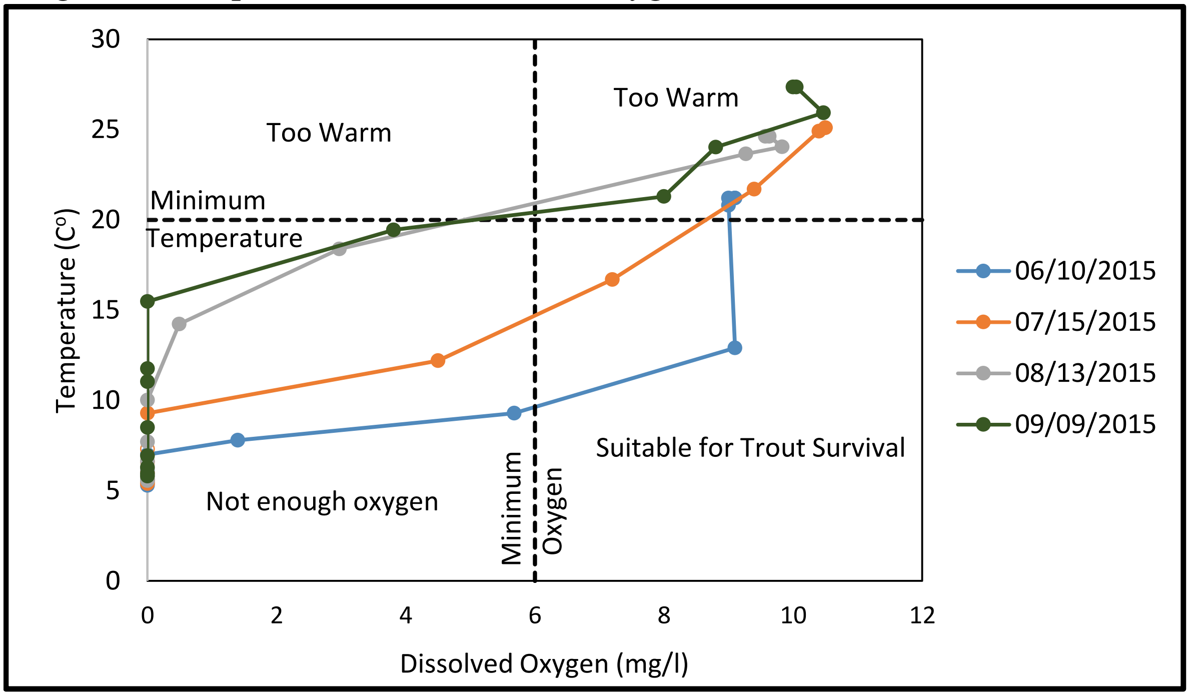


Figure 3. Temperature & Dissolved Oxygen Depth Profiles 2015



The temperature and dissolved oxygen data plots in Figure 4 show only a narrow band of cold oxygen rich water in June and July. By mid-August these areas have been lost, leaving no areas of the water column (“refugia”) suitable for trout survival (see Figure 4).

Figure 4. Temperature Vs. Dissolved Oxygen Trout Survival Chart



Algae Bloom Information

In the fall of 2014 a widespread algae bloom was reported to be occurring at Lake Huntington. Descriptions and pictures of the lake were consistent with a blue green algae bloom. The Town Supervisor indicated that late season algal blooms typically occur on the lake, but they are typically short lived, while this 2014 bloom had been observed for about six weeks. Due to the potential of blue green algae blooms producing toxins, samples of the bloom were submitted to the SUNY College of Environmental Science and Forestry (ESF) for analysis. The results from samples collected on 10/3/2014 confirm the presence of a blue green algae bloom, based on highly elevated blue green chlorophyll a levels (ranging from appx 40 to > 1850 ug/l, which are above the DEC bloom criteria of 25-30 ug/l) and a microscopic analysis showing a mix of blue green algae species ("unicellular blue green, with *Anabaena* and *Woronichinia*" in the most intensive bloom samples, and "*Anabaena*, very little *Woronichinia*, and very few dead or dying *Microcystis* colonies" in the least dense portions of the bloom). *Anabaena*, *Woronichinia* and *Microcystis* are all blue green algal species capable of producing toxins. Toxin levels from these samples were all below the laboratory's detection limit. DEC Region 3 fisheries staff conducted an investigation of the lake the week following the sample collection, and indicated that the bloom had subsided.

In 2015 open water samples from two dates were sent to ESF for analysis. Both samples had low levels of blue green algae and the toxin levels were below the laboratory's detection limit.

The late season algae blooms that have been observed at Lake Huntington may be a result of lake turnover/de-stratification allowing dissolved phosphorus released from bottom sediments to be transported up into the photic zone of the lake, where it becomes available to fuel primary production (in the form of algae) in the lake. Sampling with an increased frequency into the fall could help pinpoint lake turnover and document a corresponding increase in phosphorus in the surface waters of the lake. However, this is consistent with highly elevated deepwater phosphorus readings measured in 2000 and 2015.

Evaluation of 2015 Results Relative to Historic Data

Comparing the 2015 data to both the 2000 LCI data and the 1972 EPA data shows:

- Surface Alkalinity: Increase over time
- Water Clarity: No change compared to 2000 but a decrease compared to the 1972 data
- Surface Ammonia: Highest values in 1972 with an increase between 2000 and 2015, but not as high as those values seen in 1972
- Surface Nitrite-Nitrate: Values in 2015 were lower than those seen in 1972 (no data from 2000)
- Surface Phosphorus: Highest values in 1972 with similar to slight decrease between 2000 and 2015.
- Deepwater Phosphorus: Much higher in 2015 as compared to 1972 for both total and dissolved phosphorus as well as the relative percent of dissolved as compared to total.
- Dissolved Oxygen: The summer anoxic zone increased in area and duration between 2000 and 2015.

Evaluation of Watershed and Phosphorus Loads

A desktop analysis was completed to look at land cover within the Lake Huntington watershed. This analysis was done with information from both 2001 and 2011. The watershed from both time periods was mostly forested with developed areas around the shoreline of the lake. The 2011 analysis shows a decrease in forest and an increase in developed lands, this was mostly associated with the Sullivan West High School Campus to the north of the lake, which was constructed between 2002 and 2003. (see Appendix IV)

The area within each land cover class in the Lake Huntington watershed, from 2011, were used in a model to estimate phosphorus loads to the lake. This model also incorporates estimated loads related to on-site wastewater treatment (private septic systems). Another component of the model is point source discharges; however there are no permitted point source discharges within the Lake Huntington watershed. Finally, an analysis of internal phosphorus loading was conducted.

Internal phosphorus loading occurs when sediment bound phosphorus is released into the overlying water column. This is generally a result of anoxic conditions found at the sediment water interface. The data from Lake Huntington shows that phosphorus concentrations increase in the bottom water throughout the summer, indicative of internal phosphorus loading (Nurnberg 2009). As water temperatures cool in the fall, there is a breakdown in stratification between the surface and bottom water layers and the lake “turns over” or mixes. When this occurs the phosphorus that built-up in the bottom waters, over the summer, is brought to the surface. This phosphorus pulse is available, if temperature and light conditions are appropriate, to fuel primary production in the form of algae, and to provide a long-term increase in surface phosphorus readings. This mixing may help explain the fall algae blooms that have occurred in Lake Huntington.

The results of the phosphorus loading model (Appendix V) show that internal loading and those loads associated with developed lands contribute the highest proportion of phosphorus to Lake Huntington. When developing water quality management strategies these findings should be taken into consideration.

Evaluation of Lake Condition Impacts to Lake Uses

Lake Huntington is presently among the lakes listed on the Delaware River drainage basin Priority Waterbody List (PWL) as *minor impacts*. Evaluation of the data collected through the LCI program against the Assessment Methodology (DEC DOW 2015) suggest the lake falls into the *impaired* category.

Potable Water (Drinking Water)

The LCI dataset for Lake Huntington, including water chemistry data, physical measurements, and perception data, is inadequate to evaluate the use of the lake for potable water use, and the lake is not classified for this purpose. Algae levels in the lake are above the potable water supply source use criteria and indicate an elevated risk for the production of disinfection byproducts. Bottom water intakes would be impacted by elevated iron and manganese levels, both of which can cause taste and odor problems. In addition, elevated levels of ammonia were found in the bottom waters of the lake. Each of these factors would affect "unofficial" use of the lake for potable water.

Public Bathing

The LCI dataset for Lake Huntington, including water chemistry data, physical measurements, and perception data, suggests that public bathing may be *stressed* due to an impaired recreational assessment. It is noted that no public swimming beaches exist on Lake Huntington. Additional information about pathogen/bacterial levels is needed to fully evaluate the safety of the water for swimming. The public is advised to exercise caution when swimming outside of a designated public swimming beaches.

Recreation (Swimming and Non-Contact Uses)

The LCI dataset on Lake Huntington, including water chemistry data, physical measurements, and perception data, suggest that contact recreation- swimming (outside of public bathing beaches), non-contact recreation, and other recreational uses is *impaired* by excessive algae (as measured by chlorophyll a) in association with elevated phosphorus levels. The average chlorophyll a level, as well as 2 of the 4 individual measurements, was above the proposed recreational criteria. The corresponding phosphorus levels were similarly above the established New York State guidance value. In addition, blue green algal blooms have been documented to occur in the lake and these blooms may further impact recreational use of the waterbody.

Aquatic Life

The LCI dataset on Lake Huntington, including water chemistry data, physical measurements, and perception data, suggest that aquatic life, specifically trout and other cold water species, is *impaired* by hypolimnetic anoxia throughout the summer. By mid-August, there are no portions of the water column that are sufficiently cold and oxygen rich for trout survival. This is consistent with the spring 2006 fisheries survey not observing any trout in the lake. As stated in the fisheries survey abstract, conducting a gillnet survey targeted at (NYS stocked) brown trout would be needed to fully evaluate trout relative survival and growth.

Aesthetics and Habitat

The aesthetic condition of Lake Huntington based on LCI water chemistry data, physical measurements, and perception data is evaluated as fair to poor. Specific observations leading to this evaluation are the occurrence of algal blooms, the growth of filamentous algae at the lake's surface, and high nutrient levels. There are no known impacts to habitat; no invasive plants have been observed.

Fish Consumption
There are no fish consumption advisories posted for Lake Huntington. A small number of small and largemouth bass were collected by NYS DEC Bureau of Fisheries in 2003 for tissue mercury analysis. No fish consumption advisories were issued based on these data.

Aquatic Plant IDs-2015

Potamogeton robbinsii (Robbins' pondweed)
Nuphar sp. (yellow waterlily)
Ceratophyllum demersum (coontail)
Filamentous Algae

(Appendix VI. list invasive species found in Sullivan County waterbodies)

Appendix I. 2015 Data Summary

Surface Samples

	UNITS	N	MIN	AVG	MAX	Scientific Classification	Regulatory Comments
SECCHI	meters	3	1.2	1.87	2.2	Eutrophic	No readings violate DOH guidance value
TSI-Secchi			57.4	51.0	48.6	Eutrophic	No pertinent water quality standards
TP	mg/l	4	0.0161	0.0209	0.027	Eutrophic	50% of readings violate water quality standards
TSI-TP			44.2	48.0	51.6	Mesotrophic	No pertinent water quality standards
TSP	mg/l	4	0.0064	0.0074	0.0087	High % soluble Phosphorus	No pertinent water quality standards
NOx	mg/l	4	ND	0.0048*	0.006	Low nitrate	No readings violate water quality standards
NH4	mg/l	4	ND	0.0066*	0.0125	Low ammonia	No readings violate water quality standards
TKN	mg/l	4	0.58	0.68	0.78	Intermediate organic nitrogen	No pertinent water quality standards
TN/TP	mg/l		47.67	76.94	107.40	Phosphorus Limited	No pertinent water quality standards
CHLA	ug/l	4	8.42	17.93	31.9	Eutrophic	50% of readings above proposed numeric nutrient criteria
TSI-CHLA			51.5	58.9	64.6	Eutrophic	No pertinent water quality standards
Alkalinity	mg/l	4	22.7	24.83	26.3	Poorly Buffered	No pertinent water quality standards
TCOLOR	ptu	4	16	19	25	Weakly Colored	No pertinent water quality standards
TOC	mg/l	4	4.5	5.425	6.3		No pertinent water quality standards

* Non-detect (ND) values were set to half the detection limit for calculating the average

Bottom Samples Summary

	UNITS	N	MIN	AVG	MAX	Scientific Classification	Regulatory Comments
TP-bottom	mg/l	4	0.221	0.2553	0.305		No pertinent water quality standards
TSP-bottom	mg/l	4	0.16	0.2023	0.235	High % soluble phosphorus	No pertinent water quality standards
NOx-bottom	mg/l	4	0.0047	0.0138	0.0173	No evidence of DO depletion	No readings violate water quality standards
NH4-bottom	mg/l	4	1.38	1.855	2.42	Evidence of DO depletion	25% of readings violate DOH guidelines
TKN-bottom	mg/l	4	1.98	2.36	3.01		No pertinent water quality standards
TCOLOR-bottom	ptu	4	17	52	95	Highly Colored	No pertinent water quality standards
TOC-bottom	mg/l	4	5	5.7	6.9		No pertinent water quality standards
Ca-bottom	mg/l	1	10.9	10.9	10.9	Minimally Supports Zebra Mussels	No pertinent water quality standards
Fe-bottom	mg/l	1	2.99	2.99	2.99	Taste or odor likely	100% of readings violate class 'A' water quality standards
Mn-bottom	mg/l	1	2.97	2.97	2.97	Taste or odor likely	100% of readings violate class 'A' water quality standards
As-bottom	mg/l	1	< RL	< RL	< RL		No readings violate water quality standards

< RL analyte was detected but was between the laboratory detection and reporting limit.

Legend Information

Indicator	*Description*	*Detection Limit*	*Standard (S) / Criteria (C)*
Field Parameters			
SECCHI	Secchi disk transparency or water clarity	0.1m	1.2m (C)
Laboratory Parameters			
TP	total phosphorus (mg/l)	0.003 mg/l	0.020 mg/l (C)
TSP	Dissolved/soluble phosphorus (mg/l)	0.003 mg/l	
NOx	nitrate + nitrite (mg/l)	0.002 mg/l	10 mg/l NO3 (S), 2 mg/l NO2 (S)
NH4	total ammonia (mg/l)	0.001 mg/l	2 mg/l NH4 (S)
TKN	total kjeldahl nitrogen (organic nitrogen and ammonia) (mg/l)	0.10 mg/l	none
TN/TP	nitrogen to phosphorus (molar) ratio, = (TKN + NOx)*2.2/TP		none
TCOLOR	true (filtered) color (ptu, platinum color units)	1 ptu	none
CHLA	chlorophyll a (ug/l)	0.04 ug/l	10-15 ug/l* (C)
Alkalinity	alkalinity (as calcium carbonate) (mg/l)	2.0 mg/l	
TOC	total organic carbon (mg/l)	1.0 mg/l	1.0 mg/l (S)
Ca	calcium (mg/l)	1.0 mg/l	
Fe	iron (mg/l)	0.1 mg/l	0.3 mg/l (S)
Mn	manganese (mg/l)	0.01 mg/l	0.3 mg/l (S)
As	arsenic (ug/l)	1.0 ug/l	10 ug/l (S)
Trophic State Index#			
TSI-Secchi	Trophic State Index calculated from Secchi, = 60 – 14.41*ln(Secchi)		
TSI-TP	Trophic State Index calculated from TP, = 14.42*ln(TP*1000) + 4.15		
TSI-CHLA#	Trophic State Index calculated from CHLA, = 9.81*ln(CHLA) + 30.6		

*Specific criteria have yet to be established but a value in the range of 10-15 ug/l is under consideration as part of DEC's Numeric Nutrient Criteria development.

Tropic State Index formulas are based on relationships discussed in Carlson's 1977 paper entitled *A Trophic State Index for Lakes* (Limnological Oceanography 22:361-9) additional discussion of these can be found in Charter 4 of *Diet for a Small Lake* (NYSFOLA 2009).

Appendix II: Lake Huntington Waterbody Inventory/Priority Waterbody List Factsheet

Lake Huntington (1401-0008) MinorImpacts

Waterbody Location Information

Revised: 07/10/02

Water Index No:	D-37- 8-P216	**Drain Basin:**	Delaware River
Hydro Unit Code:	02040101/170 **Str Class:** B(T)		Upper Delaware River
Waterbody Type:	Lake	**Reg/County:**	3/Sullivan Co. (53)
Waterbody Size:	83.3 Acres (Eutrophic)	**Quad Map:**	LAKE HUNTINGTON (O-21-1)
Seg Description:	entire lake		

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	**Severity**	**Problem Documentation**
Recreation	Stressed	Known

Type of Pollutant(s)
Known: D.O./OXYGEN DEMAND, NUTRIENTS (phosphorus)
Suspected: - - -
Possible: - - -

Source(s) of Pollutant(s)
Known: - - -
Suspected: UNKNOWN SOURCE
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 3 (Cause Identified, Source Unknown)
Lead Agency/Office: ext/WQCC **Resolution Potential:** Medium
TMDL/303d Status: (TMDL Not Required (No Impairment))

Further Details

Recreational uses in Huntington Lake are considered stressed by elevated nutrient and algal levels and reduced water clarity. Lower dissolved oxygen also affects portions of the lake.

Huntington Lake was included in the 2000 Lake Classification and Inventory monitoring effort. Results of this study found elevated nutrient and (blue-green) algae levels, low water clarity, and low hypolimnetic dissolved oxygen readings. D.O. levels were not in compliance with standards below a depth of 5 meters, and phosphorus levels exceed the recreational guidance value. Aquatic plant (weed) growth was noted, but does not appear to restrict lake uses, including boating. Significant pH fluctuations were also noted. (DEC/DOW, BWM/Lake Services, August 2000)

Impacts from a municipal sewer overflow (near the port office) during storm events has been addressed. Much of the sewer line was replaced, eliminating overflows as routine events but still occurring during heavier storms. Complaints to the regional office regarding weed growth and algae have been increasing. The USEPA National Eutrophication Survey classified the reservoir a eutrophic back in 1970s. (DEC/DOW, Region 3, April 2001)

Appendix III: New York State DEC Bureau of Fisheries Biological Survey Abstract: Lake Huntington 2006

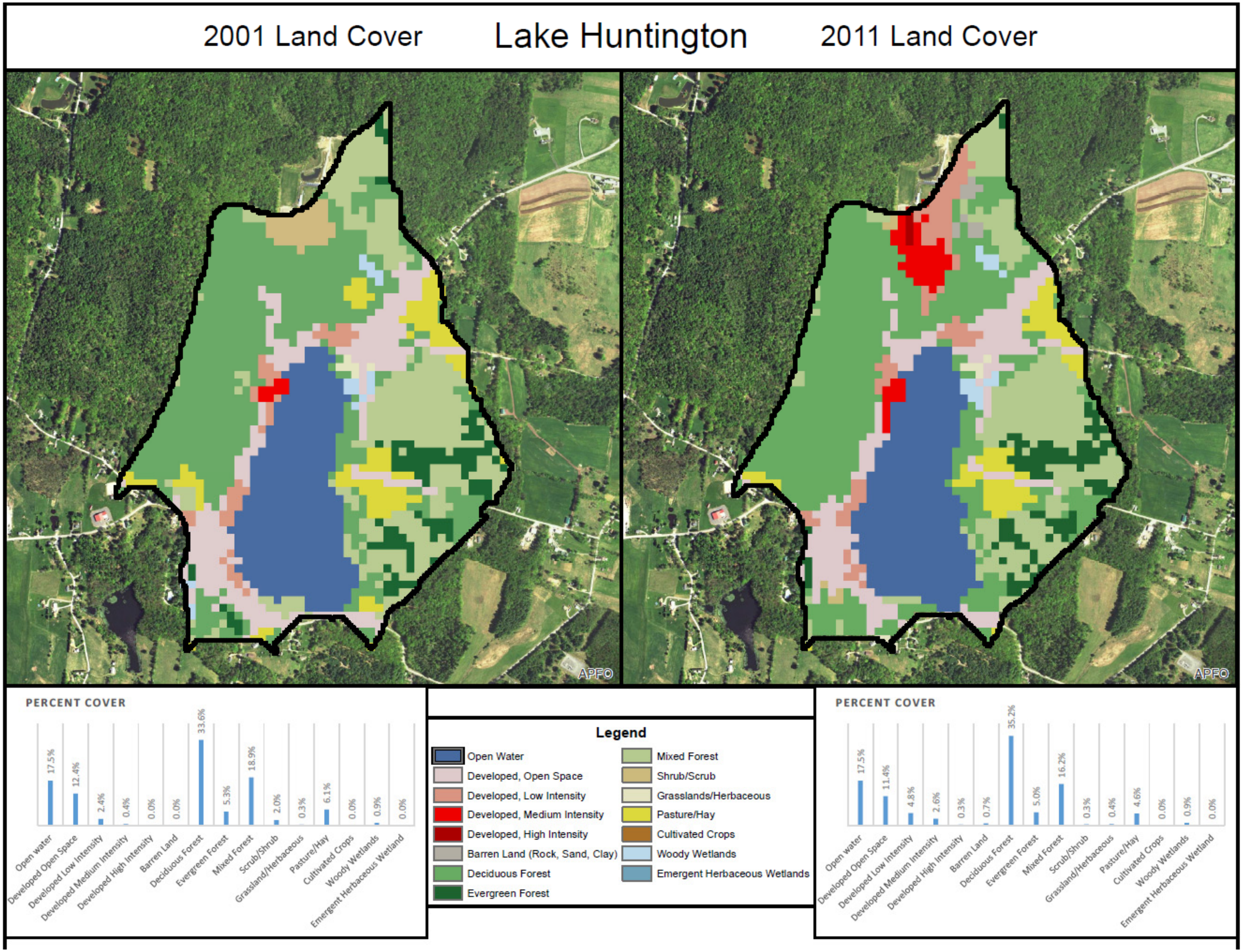
Lake Huntington was electrofished on the evening of May 31, 2006 following the Centrarchid Sampling Plan protocol with the objective of updating the general fisheries data on this lake, which was last electrofished in 1984. The entire shoreline was sampled, with a total of 0.36 hr electrofishing expended collecting all species, and an additional 0.65 hr electrofishing time expended collecting gamefish. The number and duration of the "random" (all fish collected) subsamples was reduced from the specified four 15 minute samples because of the generally high catch rate this boat exhibits, along with the relatively short length of shoreline here.

The species composition documented during this survey is substantially unchanged from that of the 1984 electrofishing survey, with the exception of chain pickerel, golden shiner, white sucker, fallfish, alewife, and rainbow trout not being documented in 2006. The first five of these species were collected in very low numbers in 1984, and may simply have been missed in the 2006 sampling. Rainbow trout were stocked by New York State in the 1980's, and have since been replaced by brown trout. Smallmouth bass were not documented in 1984, but were collected in 2006.

Proportional Stock Density (PSD) and Relative Stock Density (RSD) parameters generally indicated a balanced predator/prey relationship, with the dominant predator (largemouth bass) exhibiting a PSD of 48, and the dominant panfish (pumpkinseed) exhibiting a PSD of 84. The largemouth bass RSD(p) was 11. Largemouth bass relative weights (all sizes) were just under 95%. Interestingly, the overall relative weight of the collected smallmouth bass was only 83.5%, likely indicating a forage problem with this population. Electrofishing catch/effort data for both larger (>10") and smaller (<10") large and smallmouth bass, respectively, were all "high" according to Bureau of fisheries standards.

Based on these data, no further management actions are immediately warranted at Lake Huntington to attempt to modify these population parameters. Angling for largemouth and smallmouth bass should be quite good, with no evidence of recruitment problems. It would be valuable to also conduct a gillnet survey targeted at (NYS stocked) brown trout which are also present in the lake, to assess their relative survival and growth.

Figure IV. Lake Huntington Watershed Land Cover through Time



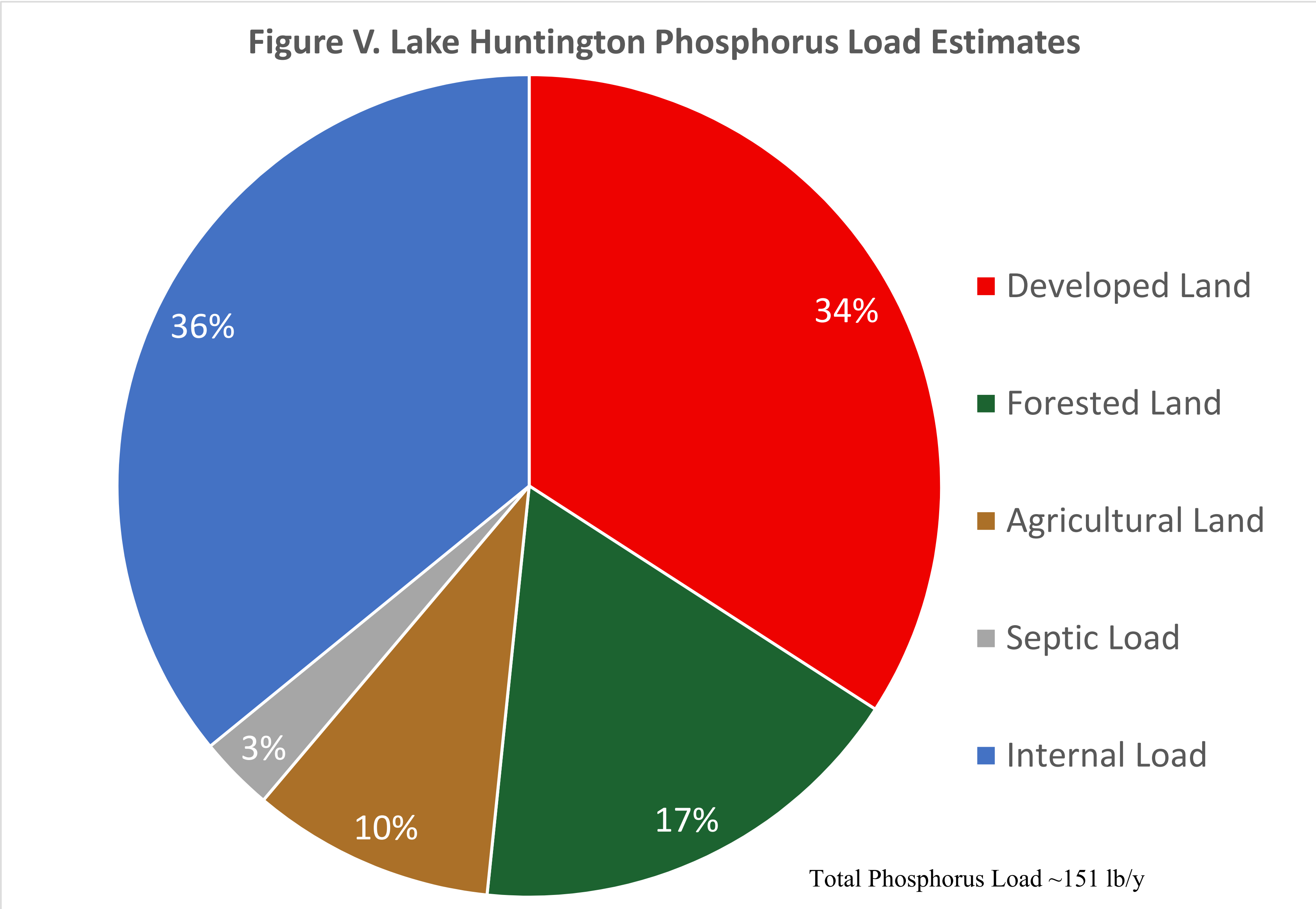


Figure V. Lake Huntington Phosphorus Load Estimates
34%
17%
10%
3%
36%
Developed Land
Forested Land
Agricultural Land
Septic Load
Internal Load
Total Phosphorus Load ~151 lb/y

Appendix VI: Aquatic Invasive Species in Sullivan County

The table below shows the invasive aquatic plants and animals that have been documented in Sullivan County, as cited in either the iMapInvasives database (http://www.imapinvasives.org/) or in the NYSDEC Division of Water database. These databases may include some, but not all, non-native plants or animals that have not been identified as "Prohibited and Regulated Invasive Species" in New York state regulations (6 NYCRR Part 575; http://www.dec.ny.gov/docs/lands_forests_pdf/islist.pdf).

This list is not complete, but instead represents only those species that have been reported and verified within the county. If any additional aquatic invasive species (AIS) are known or suspected in these or other waterbodies in the county, this information should be reported through iMap invasives or by contacting NYSDEC at dowinfo@dec.ny.gov.

Aquatic Invasive Species - Sullivan County			
Waterbody	**Kingdom**	**Common name**	**Scientific name**
Basherkill South	Plant	European frogbit	*Hydrocharis morsus-ranae*
Beaverman Lake	Plant	European frogbit	*Hydrocharis morsus-ranae*
Black Lake	Plant	Water chestnut	*Trapa natans*
Cliff Lake	Plant	Fanwort	*Cabomba caroliniana*
Kiamesha Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Martin Lake	Plant	Fanwort	*Cabomba caroliniana*
Morningside Lake	Plant	Water chestnut	*Trapa natans*
Morningside Lake	Plant	Curly leafed pondweed	*Potamogeton crispus*
Pleasure Lake	Plant	Water chestnut	*Trapa natans*
Sackett Lake	Plant	Curly leafed pondweed	*Potamogeton crispus*
Saint Josephs Lake	Plant	Floating primrose willow	*Ludwigia peploides ssp. glabrescens*
Silver Lake	Plant	Curly leafed pondweed	*Potamogeton crispus*
Silver Lake	Plant	Water chestnut	*Trapa natans*
Swan Lake	Plant	Curly leafed pondweed	*Potamogeton crispus*
Swan Lake	Plant	Water chestnut	*Trapa natans*
Swinging Bridge Reservoir	Animal	Common carp	*Cyprinus carpio*
Swinging Bridge Reservoir	Animal	Green sunfish	*Lepomis cyanellus*
Waneta Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*

Appendix VII: Literature Cited

Carlson, R. E. 1977. A Trophic State Index for Lakes. Limnology and Oceanography. 22:361-9.

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