

DeRuyter Reservoir Questions and Answers, 2015 CSLAP

Q1. What is the condition of our lake this year?

A1. Water quality conditions in DeRuyter Reservoir continue to show improvement- water clarity has increased for each of the last several years, due to lower algae levels. These same improvements were apparent in 2015.

Q2. Is there anything new that showed up in the testing this year?

A2. Chloride levels were typical of lakes with minor to moderate impacts from road salting, typical of other lakes in the region. Most of the recent trends observed in previous lake results were again apparent in 2015.

Q3. How does the condition of our lake this year compare with other lakes in the area?

A3. DeRuyter Reservoir has higher water clarity, and lower algae and nutrient levels, than most lakes in the area, and shoreline blooms are not commonly found. At times this higher clarity leads to higher aquatic plant (weed) coverage than in nearby lakes, although on average, plant coverage is similar in DeRuyter Reservoir than in other nearby lakes.

Q4. Are there any trends in our lake's condition?

A4. Algae levels have decreased over most of the last decade, resulting in increased water clarity readings. This may be due to less input of erodible materials, based on a decrease in conductivity over this period. The higher clarity may have triggered more growth of aquatic plants, which may have degraded recreational assessments of the lake.

Q5. Should we be concerned about the condition of our lake? Are we close to a tipping point?

A5. DeRuyter Reservoir appears to be improving. The lake may still exhibit problems with occasional shoreline blooms (although these have not recently been reported) and nuisance weeds, but any measures already taken to reduce nutrient loading to the lake should be continued.

Q6. Are any actions indicated, based on the trends and this year's results?

A6. Individual stewardship activities such as pumping your septic system, growing a buffer of native plants next to the water bodies, and reducing erosion from shoreline properties and runoff into the lake are needed to maintain water quality by reducing nutrient and sediment loading to the lake. Visiting boats should be inspected to reduce the risk of new invasive species, since nearby lakes harbor several invasive plants not presently found in the lake.

Lake Use				
	PWL	Average Year	2015	Primary issue
Potable Water	□	□	□	Not applicable
Swimming	□	●	▲	High nutrients
Recreation	◆	●	▲	High nutrients
Aquatic Life	□	▲	▲	Road Salt
Aesthetics	□	●	◆	Poor perception
Habitat	▲	▲	●	Invasive plants
Fish Consumption	□	□	□	

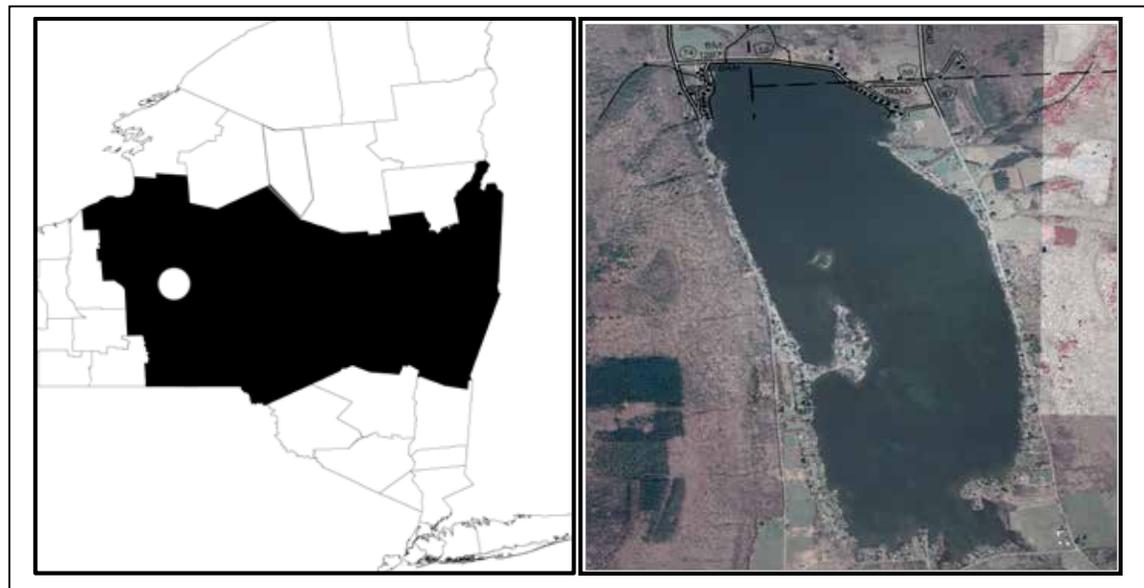
● Supported / Good
▲ Threatened / Fair
◆ Stressed / Poor
■ Impaired
 Not Known

CSLAP 2015 Lake Water Quality Summary: DeRuyter Reservoir

General Lake Information

Location	Town of DeRuyter
County	Madison
Basin	Seneca/Oneida/Oswego Rivers
Size	225.3 hectares (556.5 acres)
Lake Origins	Augmented by 68ft by 1600ft earthen dam (1863)
Watershed Area	1,011 hectares (2,497 acres)
Retention Time	3.3 years
Mean Depth	7.2 meters
Sounding Depth	16 meters
Public Access?	private
Major Tributaries	no named tribs
Lake Tributary To...	Limestone Creek to Chittenango Creek to Oneida Lake to Oneida River to Lake Ontario
WQ Classification	B (contact recreation = swimming)
Lake Outlet Latitude	42.827
Lake Outlet Longitude	-75.901
Sampling Years	1988-2010, 2012-2015
2015 Samplers	Jim Adsitt and Kathy Sherlock
Main Contact	Jim Adsitt

Lake Map



Background

DeRuyter Reservoir is a 557 acre, class B lake found in the Town of DeRuyter in Madison County, in central New York State. The lake was first sampled as part of CSLAP in 1987.

It is one of 12 CSLAP lakes among the more than 120 lakes and ponds found in Madison County, and one of 13 CSLAP lakes among the nearly 1000 lakes and ponds in the Seneca-Oneida-Oswego Rivers drainage basin.

Lake Uses

DeRuyter Reservoir is a Class B lake; this means that the best intended use for the lake is for contact recreation—swimming and bathing, non-contact recreation—boating and fishing; aesthetics and aquatic life. The lake is used by lake residents and invited guests for power boating and swimming, through residential shoreline access to the lake and a private launch. There is no public access to the lake.

DeRuyter Reservoir has been stocked by the NYSDEC- in recent years, 2.88 million 0.4-0.5 inch walleye have been stocked on a mostly annual basis. The DEC Bureau of Fisheries reports that the lake maintains a population of largemouth bass, walleye, black crappie, smallmouth bass, yellow perch, white sucker, chain pickerel, rock bass, and sunfish.

General statewide fishing regulations are applicable in DeRuyter Reservoir. However, trout fishing season is April 1st to October 15th; while there are no (minimum) size limits, daily takes are limited to five, with no more than two greater than 18 inches, and no more than five brook trout less than eight inches in size.

There are no lake-specific fish consumption advisories on DeRuyter Reservoir.

Historical Water Quality Data

CSLAP sampling was conducted on DeRuyter Reservoir from 1988 to 2010 and in 2012 to 2015. The CSLAP reports for each of the past several years can be found on the NYSFOLA website at <http://nysfola.mylaketown.com>. The most recent CSLAP report for DeRuyter Reservoir can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77861.html>.

DeRuyter Reservoir was sampled by the Conservation Department (the predecessor to the NYSDEC) as part of the Biological Survey of the Susquehanna River basin in 1934. This program was intended to evaluate water quality conditions as a biological inventory and as these conditions relate to fisheries management, so much of the information collected cannot be easily compared to the CSLAP dataset. The overall summary for DeRuyter Lake was as follows:

“DeRuyter Reservoir is maintained as a Barge Canal feeder. Most of its water comes from the upper part of the Tioughnioga Creek. A large part of the lake is less than 30 feet deep, a very small area having a maximum depth of 48 feet. There is a good supply of oxygen at all depths. Vegetation is scant. The reservoir has an average draw of 6 to 7 feet and can be drawn down 18 1/2 feet. It is reported that good fishing may be had here for small-mouthed bass, pike-perch, pickerel, bullheads and sunfish. There is fair fishing for yellow perch. Many fishermen visit the lake at all seasons. Forage fish and crayfish are plentiful. Many young small-mouthed bass were taken. Pike-perch and small-mouthed bass are recommended for stocking. More intensive fishing for sunfish would benefit the other species, especially the yellow perch.... Dense weed

beds form a conspicuous marginal zone around this small, relatively shallow lake with a muddy bottom. The predominant species include the pondweeds (Potamogeton amplifolius and P.natans) in great abundance, blunt-leafed pondweed, waterweed, large duckweed, mud plantain and waterlilies"

The limited monitoring did show that pH readings (= 8.1) were mostly comparable to those measured in contemporary monitoring programs, and that the lake was both thermally stratified and fully oxygenated in the bottom waters, but samples were only collected to a depth of about 22 feet. Oxygen deficits have been more common in recent years, when temperature and oxygen profiles have been established to a depth of greater than 50 feet. Data from the DEC fisheries surveys in 1995 are mostly comparable to the data measured through CSLAP. The thermocline was found at a depth of 9 meters; hypoxic conditions (D.O. below 4 ppm, corresponding to the state water quality standards) occurred at that depth, and anoxia (zero oxygen) conditions were found below a depth of 13 meters).

DeRuyter Reservoir was sampled as part of the DEC biomonitoring study in 2008. These data showed conditions comparable to those measured through CSLAP. The lake was thermally stratified below a depth of about eight meters, with decreasing dissolved oxygen levels below that depth. Hypoxia was measured below a depth of 12 meters, but anoxia did not occur. It is not known if the conditions measured in 1995 (in mid-August) or those from mid-July in 2008 were more representative of normal conditions in the lake. Chloride levels are typical of lakes with only minimal impacts from road salting operations.

Neither Limestone Creek nor the outlet of DeRuyter Reservoir has been monitored through the NYSDEC Rotating Intensive Basins (RIBS) program or the state stream macroinvertebrate monitoring program.

Lake Association and Management History

DeRuyter Reservoir is served by the Tioughnioga Lake Association. The lake association was formed in 1939 and is involved in a number of lake improvement and social activities, including:

- newsletter and web site
- education for goose control, dam repair and regulations, and water quality conditions in the lake
- dye testing

The lake association maintains a web site at <http://www.deruyterlakeassociation.org>.

Summary of 2015 CSLAP Sampling Results

Evaluation of 2015 Annual Results Relative to 1988-2014

The summer (mid-June through mid-September) average readings are compared to historical averages for all CSLAP sampling seasons in the "Lake Condition Summary" table, and are compared to individual historical CSLAP sampling seasons in the "Long Term Data Plots – DeRuyter Reservoir" section in Appendix C.

Evaluation of Eutrophication Indicators

Secchi disk transparency readings increased significantly in 2010, and have dropped slightly since then, although average readings over the last several years have consistently been higher

than the long-term average for the lake. This higher water clarity was in response to chlorophyll *a* readings that were also lower than normal over much of this period. It is not known if this is due to greater “predation” by zebra mussels or other factors, including a reduction of soluble nutrients. Phosphorus readings have not exhibited similar changes in the short- or long-term, although these readings were slightly higher than usual in 2015. While the samplers reported large numbers of Canada geese in 2015, water quality impacts were not apparent (although bacteria levels are not measured through CSLAP).

Lake productivity usually increases slightly during the summer (as manifested in decreasing water clarity and increasing algae levels, although nutrient levels increase only slightly) and decreases in the fall. These seasonal trends were not apparent in 2015, although water clarity dropped during the summer (except for an early August spike).

The lake can be characterized as *mesotrophic*, or moderately productive, based on water clarity, total phosphorus and chlorophyll *a* readings (all typical of *mesotrophic* lakes). The trophic state indices (TSI) evaluation suggests that each of these trophic indicators is “internally consistent”—each of these indicators is in the expected range given the readings of the other indicators. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels have at times been high enough to render the lake susceptible to taste and odor compounds or elevated DBP (disinfection by product) compounds that could affect the potability of the water, but much less so in recent years, and the lake is not classified for use for drinking water. Deepwater phosphorus and ammonia readings are similar to those measured at the lake surface, so no impacts are apparent for any “unofficial” deepwater intakes. Potable water conditions, at least as measurable through CSLAP, are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Limnological Indicators

pH readings were lower than normal in each of the last several sampling seasons, consistent with a decrease in algae levels over the same period. Water color readings have been higher since the change in labs in 2002, but this apparent increase did not cause a drop in water clarity. Conductivity readings have decreased slightly since the early 2000s, and were lower than normal in 2015, which might be indicative of reduced input of erodible material to the lake. This suggests that the drop in algae levels may have been due in part to the drop in conductivity. NO_x readings have dropped slightly since the mid 1990s, but were close to normal in 2015. Total nitrogen (TN) readings were also slightly higher than normal in 2015.

Chloride levels in the 2015 samples, collected for the first time through CSLAP and cited in Appendix A, ranged from 5 to 11 mg/l. These values fall within the “minor” to “moderate” road salt runoff levels cited by the New Hampshire DES. These readings are well below the state potable water quality standard of 250 mg/l and lower than the range of values found in most NYS lakes. These readings suggest a low likelihood of biological impacts from road salt. Additional data will help to determine if these represent normal readings for the lake.

Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Biological Condition

The fluoroprobe screening samples analyzed by SUNY ESF in the last several years showed both low overall algae levels and low levels of blue green algae, with a mix of algae species found in these samples. No shoreline blooms have been reported or sampled since algae bloom monitoring started in 2011.

Macrophyte surveys have been conducted through CSLAP and the 2008 biomonitoring survey of DeRuyter Reservoir. At least 11 aquatic plant species have been found, including at least one exotic plant species (*Myriophyllum spicatum*, Eurasian watermilfoil). The modified floristic quality index (FQI) for the lake indicates that the quality of the aquatic plant community is “fair”.

The results from the macroinvertebrate survey conducted in 2008 have (still) not yet been fully analyzed. The preliminary results indicate a small number of macroinvertebrate taxa and a low percentage of any single taxa (indicating high macroinvertebrate diversity), a low percentage of organisms associated with good water quality, but a lower tolerance for pollution than other surveyed lakes. These somewhat contradictory results indicate that a more detailed analysis of these results will be required before the benthic communities in the lake can be characterized.

The composition of the fish community is comprised of at least six warmwater fish species, and at least four coolwater fish species. This suggests that the lake can most likely be characterized as a coolwater fishery.

Zooplankton have not been evaluated through CSLAP in DeRuyter Reservoir. Two exotic animals- zebra mussels and banded mystery snail- have been reported in the lake.

Biological conditions in the lake are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Lake Perception

Recreational assessments were less favorable than normal in each of the last several CSLAP sampling seasons. These less favorable assessments have been in response to more extensive aquatic plant growth. This may be due to more extensive growth of invasive (exotic) plants or greater growth of all plants (reported for much of the last decade) due to clearer water and deeper penetration of sunlight to the lake bottom. Water quality assessments were close to normal in the last few years, despite higher water clarity and lower algae levels. Recreational assessments have degraded slightly since the mid-1990s. These assessments usually degrade slightly over the course of the summer, consistent with a seasonal increase in lake productivity. However, strong seasonal changes in lake perception were not reported in 2015. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

Water temperature readings in the summer index period were higher than normal in the last several years, and both air and water temperature readings have increased steadily since the late 1980s. These data suggest that this may be a manifestation of local climate change.

Evaluation of Algal Toxins

Algal toxin levels can vary significantly within blooms and from shoreline to lake, and the absence of toxins in a sample does not indicate safe swimming conditions. Historical phycocyanin readings have been below the levels indicating susceptibility for harmful algal blooms (HABs); this is consistent with the (more recent) fluoroprobe screening samples in the last few years showing low blue green algae levels. Open water toxin readings have been well below the levels associated with unsafe swimming conditions; no shoreline blooms have been reported in recent years.

Lake Condition Summary

Category	Indicator	Min	Overall Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	1.48	3.34	7.15	4.45	Mesotrophic	Higher Than Normal	Increasing Slightly
	Chlorophyll <i>a</i>	0.05	5.17	36.30	2.93	Mesotrophic	Within Normal Range	Decreasing Slightly
	Total Phosphorus	0.002	0.012	0.024	0.017	Mesotrophic	Higher than Normal	No Change
Potable Water Indicators	Hypolimnetic Ammonia	0.01	0.08	0.49	0.07	Close to Surface NH4 Readings	Within Normal Range	Not known
	Hypolimnetic Arsenic							Not known
	Hypolimnetic Iron							Not known
	Hypolimnetic Manganese							Not known
Limnological Indicators	Hypolimnetic Phosphorus	0.006	0.020	0.220	0.020	Close to Surface TP Readings	Within Normal Range	Not known
	Nitrate + Nitrite	0.00	0.02	0.15	0.02	Low NOx	Within Normal Range	No Change
	Ammonia	0.00	0.03	0.53	0.04	Low Ammonia	Within Normal Range	No Change
	Total Nitrogen	0.05	0.39	4.12	0.88	Low Total Nitrogen	Higher than Normal	No Change
	pH	6.36	7.84	8.60	7.52	Alkaline	Within Normal Range	No Change
	Specific Conductance	80	168	232	150	Intermediate Hardness	Lower Than Normal	Decreasing Slightly
	True Color	1	7	37	6	Uncolored	Within Normal Range	Increasing Slightly
	Calcium	17.2	23.7	26.7	17.9	Highly Susceptible to Zebra Mussels	Lower Than Normal	No Change
Lake Perception	WQ Assessment	1	2.3	5	2.4	Not Quite Crystal Clear	Within Normal Range	No Change
	Aquatic Plant Coverage	1	2.4	4	3.1	Subsurface Plant Growth	Greater Coverage than Normal	No Change
	Recreational Assessment	1	2.5	4	3.0	Excellent	Less Favorable than Normal	Slightly Degrading
Biological Condition	Phytoplankton					Open water-low blue green algae biomass	Not known	Not known
	Macrophytes					Fair quality of the aquatic plant community	Not known	Not known
	Zooplankton					Not measured through CSLAP	Not known	Not known
	Macroinvertebrates					Small number of taxa with high diversity; few associated with good water quality	Not known	Not known
	Fish					Coolwater fishery	Not known	Not known
	Invasive Species					Zebra mussels, Banded mystery snail, Eurasian watermilfoil	Not known	Not known
Local Climate Change	Air Temperature	1	23.0	33	25.4		Higher Than Normal	Increasing Slightly
	Water Temperature	11	22.1	29	23.8		Higher Than Normal	Increasing Significantly

Category	Indicator	Min	88-14 Avg	Max	2014 Avg	Classification	2014 Change?	Long-term Change?
Harmful Algal Blooms	Open Water Phycocyanin	0	5	19	5	No readings indicate high risk of BGA	Not known	Not known
	Open Water FP Chl.a	0	1	3	1	No readings indicate high algae levels	Not known	Not known
	Open Water FP BG Chl.a	0	0	2	0	No readings indicate high BGA levels	Not known	Not known
	Open Water Microcystis	<DL	0.2	0.8	<DL	Mostly undetectable open water MC-LR	Not known	Not known
	Open Water Anatoxin a	<DL	<DL	<DL	<DL	Open water Anatoxin-a consistently not detectable	Not known	Not known
	Shoreline Phycocyanin					No shoreline blooms sampled for PC	Not known	Not known
	Shoreline FP Chl.a					No shoreline blooms sampled for FP	Not known	Not known
	Shoreline FP BG Chl.a					No shoreline blooms sampled for FP	Not known	Not known
	Shoreline Microcystis					No shoreline bloom MC-LR data	Not known	Not known
	Shoreline Anatoxin a					No shoreline bloom anatoxin data	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

DeRuyter Reservoir is presently among the lakes listed on the 2009 Susquehanna River Basin Priority Waterbody List, with recreation listed as *stressed* due to excessive weed growth. The PWL listing for DeRuyter Reservoir is listed in Appendix B.

Potable Water (Drinking Water)

The CSLAP dataset at DeRuyter Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, is inadequate to evaluate the use of the lake for potable water, and the lake is not used for this purpose. The moderate algae levels may at times threaten any "unofficial" potable water use from the surface waters of the lake, although this threat has decreased with the drop in algae levels in recent years.

Public Bathing

The CSLAP dataset at DeRuyter Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that public bathing, if conducted at a public swimming beach, would be fully supported, although this use may be *threatened* at times by excessive nutrients. Additional information about bacterial levels is needed to evaluate the safety of the water for swimming.

Recreation (Swimming and Non-Contact Uses)

The CSLAP dataset on DeRuyter Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that recreational uses should be fully supported, although this use may be *threatened* by occasionally elevated nutrient levels and excessive weeds (particularly Eurasian watermilfoil). These conditions have been exacerbated in recent years with the increase in water clarity.

Aquatic Life

The CSLAP dataset on DeRuyter Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *threatened* by road salt runoff and by the presence of zebra mussels, banded mystery snail, and invasive plants, although additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics and Habitat

The CSLAP dataset on DeRuyter Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics and habitat may be *threatened* by excessive weeds, the latter by Eurasian watermilfoil.

Fish Consumption

There are no fish consumption advisories posted for DeRuyter Reservoir.

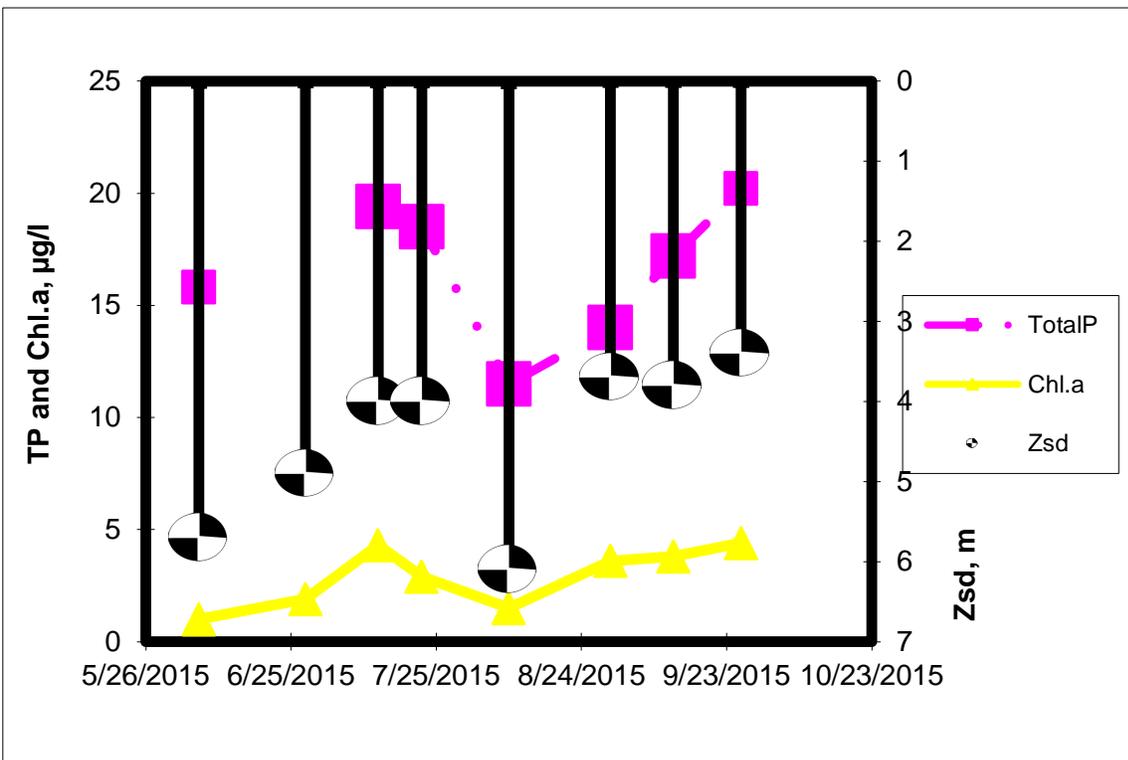
Additional Comments and Recommendations

Additional aquatic plant survey data may help to determine if the aquatic plant community is dominated by exotic plants, or if the occasional management of the nuisance weed problems in the lake has resulted in a shift to dominance by native plant species. The impact of zebra mussels should be more closely evaluated, given the significant drop in algae levels in the absence of a significant change in nutrient levels in the lake. Lake residents should also report any shoreline blooms, and residents and pets should avoid exposure to any surface scums or heavily discolored water.

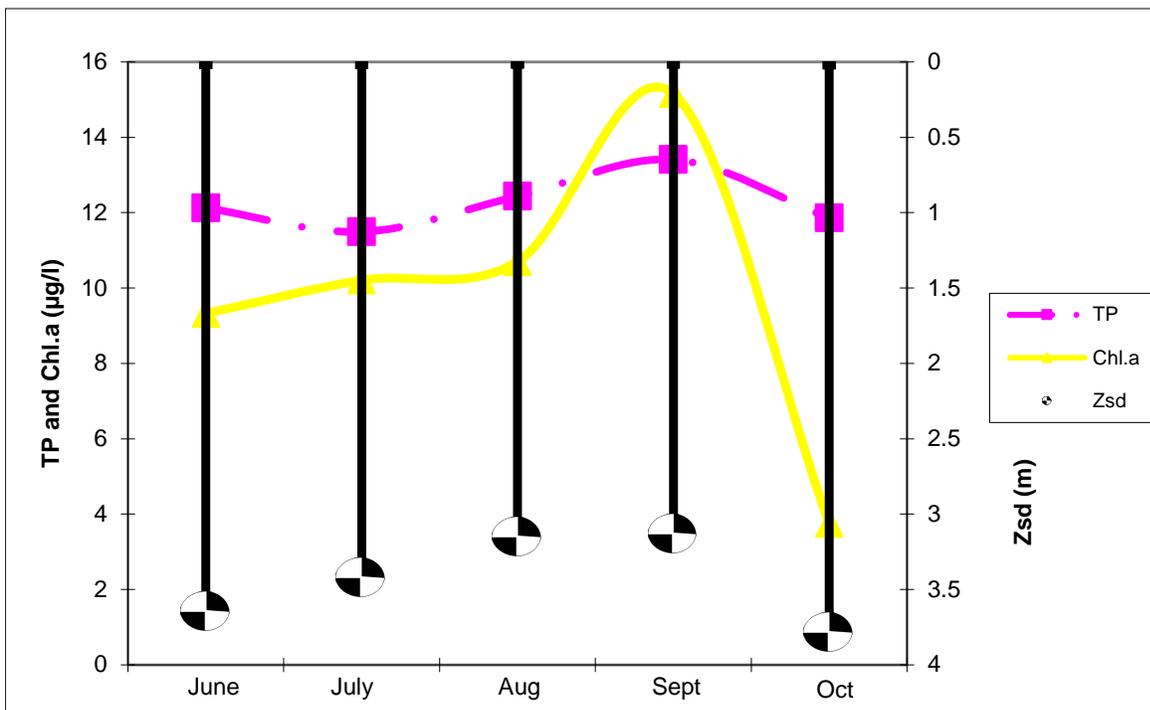
Aquatic Plant IDs-2015

None submitted for identification.

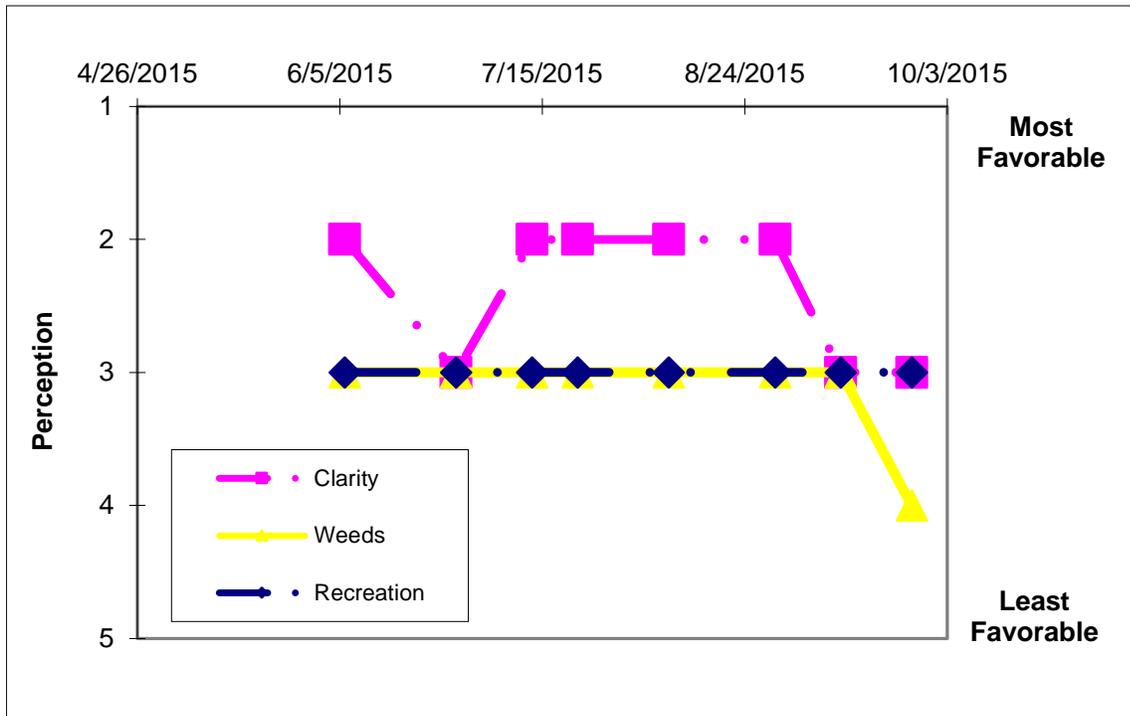
Time Series: Trophic Indicators, 2015



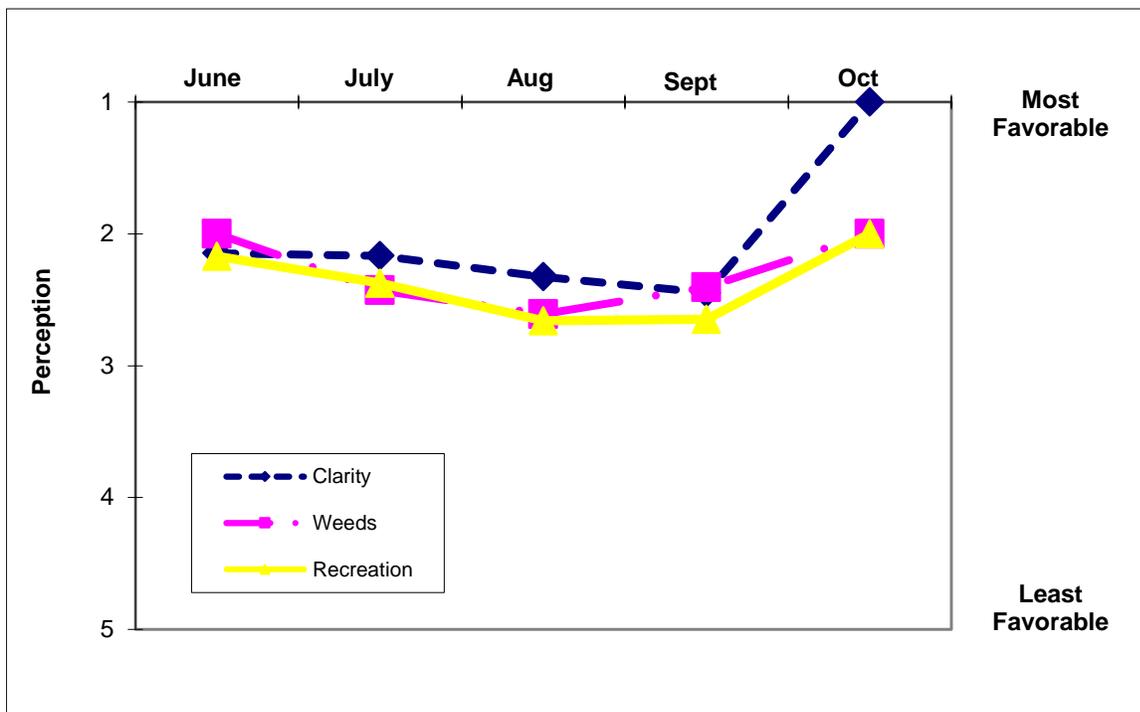
Time Series: Trophic Indicators, Typical Year (1988-2015)



Time Series: Lake Perception Indicators, 2015



Time Series: Lake Perception Indicators, Typical Year (1988-2015)



Appendix A- CSLAP Water Quality Sampling Results for DeRuyter Reservoir

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
40	DeRuyter R	6/18/1988	15.5	4.13	1.5	0.010	0.02				6	8.10	168		26.60	
40	DeRuyter R	6/25/1988	15.5	1.98	1.5	0.011	0.01				7	8.33	184		13.70	
40	DeRuyter R	7/2/1988	15.5	2.50	1.5	0.015	0.03				6	8.12	181		4.74	
40	DeRuyter R	7/9/1988	15.5	3.58	1.5	0.007	0.01				5	8.04	178		1.46	
40	DeRuyter R	7/17/1988	15.5	3.09	1.5	0.009	0.01				3	8.30	176		4.07	
40	DeRuyter R	7/24/1988	15.5	2.90	1.5		0.09				22	8.07	232		10.40	
40	DeRuyter R	7/30/1988	15.5	2.36	1.5	0.010	0.01				1	8.37	169		2.29	
40	DeRuyter R	8/7/1988	15.5	2.88	1.5	0.012	0.01				6	8.27	162		4.51	
40	DeRuyter R	8/13/1988	15.5	2.67	1.5	0.008	0.01				5	8.33	157		3.03	
40	DeRuyter R	8/21/1988	15.5	1.92	1.5	0.012					8	8.29	192		5.18	
40	DeRuyter R	8/28/1988	15.5	2.03	1.5	0.019	0.01				6	8.09	168		6.36	
40	DeRuyter R	9/5/1988	15.5	2.04	1.5	0.020	0.01				3	8.07	172		6.73	
40	DeRuyter R	9/10/1988	15.5	2.45	1.5	0.015	0.01				4	8.09	170		6.44	
40	DeRuyter R	9/18/1988	15.5	2.52	1.5	0.012	0.01				5	8.24	173		4.81	
40	DeRuyter R	9/25/1988	15.7	2.52	1.5	0.014	0.01				7	8.23	169		3.40	
40	DeRuyter R	6/25/1989	15.5	2.68	1.5	0.013	0.09				5	8.60	179		5.55	
40	DeRuyter R	7/1/1989	15.5	4.07	1.5	0.009	0.01				7	8.18	180		3.57	
40	DeRuyter R	7/8/1989	15.5	4.92	1.5	0.010					5	7.50	179		3.03	
40	DeRuyter R	7/15/1989	15.5	3.72	1.5	0.014	0.01				8	8.06	181		3.92	
40	DeRuyter R	7/23/1989	15.5	3.67	1.5	0.016	0.01				3	8.09	174		3.88	
40	DeRuyter R	7/30/1989	15.5	2.56	1.5	0.011	0.01				4	8.20	179		4.01	
40	DeRuyter R	8/7/1989	15.5	3.29	1.5	0.012	0.01				5	7.54	179		5.51	
40	DeRuyter R	8/13/1989	15.5	2.62	1.5	0.010	0.01				5	7.67	182		5.07	
40	DeRuyter R	8/19/1989	15.5	1.98	1.5	0.013					2	8.08	178		6.59	
40	DeRuyter R	8/27/1989	15.5	2.03	1.5	0.010	0.03				5	8.17	177		6.96	
40	DeRuyter R	9/2/1989	15.5	1.75	1.5	0.014					3	7.92	178		6.48	
40	DeRuyter R	9/12/1989	15.5	2.20	1.5	0.013	0.01				3	8.15	175		5.88	
40	DeRuyter R	9/17/1989	15.5	2.39	1.5	0.012					4	8.15	178		6.88	
40	DeRuyter R	9/24/1989	15.5	1.95	1.5	0.011	0.03				5	8.09	175			
40	DeRuyter R	10/9/1989	15.5	2.33	1.5		0.03				5	8.03	176		3.77	
40	DeRuyter R	6/24/1990	15.5	3.28	1.5	0.009	0.08				5	7.43	186		5.44	
40	DeRuyter R	7/8/1990	15.5	3.24	1.5	0.009	0.08				3	8.22	178		5.44	
40	DeRuyter R	7/22/1990	15.5	4.15	1.5	0.009	0.01				4				4.47	
40	DeRuyter R	8/2/1990	15.5	2.87	1.5	0.011					2	6.74	187		7.34	
40	DeRuyter R	8/20/1990	15.5	3.03	1.5	0.012	0.05				5	7.98	177		8.58	
40	DeRuyter R	9/3/1990	15.5	3.49	1.5	0.013	0.01				3	7.96	176		5.91	
40	DeRuyter R	9/16/1990	15.5	3.29	1.5	0.010	0.01				4	8.27	174		5.97	
40	DeRuyter R	9/30/1990	15.5	3.25	1.5	0.010					7	8.25	172		5.31	
40	DeRuyter R	6/23/1991	15.5	4.13	1.5	0.012	0.03				29	8.34			3.28	
40	DeRuyter R	6/30/1991	15.5	4.31	1.5	0.011					6	8.24	177		3.10	
40	DeRuyter R	7/14/1991	15.5	3.83	1.5	0.012	0.01				4	7.72	181		4.30	
40	DeRuyter R	7/28/1991	15.5	3.49	1.5	0.008					3	8.27	172		4.33	
40	DeRuyter R	8/11/1991	15.5	3.55	1.5	0.011	0.01				9	8.21	169		7.63	
40	DeRuyter R	8/25/1991	15.5	2.96	1.5	0.012					4	8.19	168		4.93	
40	DeRuyter R	9/22/1991	15.5	2.29	1.5	0.018	0.01				3	8.24	164		7.03	
40	DeRuyter R	10/13/1991	15.5	3.55	1.5	0.014					2	8.17	167		7.63	
40	DeRuyter R	6/6/1992	15.5	1.95	1.5	0.023	0.01				8	8.09	179		36.30	
40	DeRuyter R	6/21/1992	15.5	2.55	1.5	0.018	0.01				9	7.50	191		9.10	
40	DeRuyter R	6/21/1992	15.5		1.5	0.016	0.02				8	8.09	178			
40	DeRuyter R	7/4/1992	15.5	2.50	1.5	0.015					2	8.31	182		9.78	
40	DeRuyter R	7/19/1992	15.5	1.94	1.5	0.019	0.01				4	7.86	184		7.40	
40	DeRuyter R	8/2/1992	15.5	2.26	1.5	0.014					4	8.25	176		10.30	
40	DeRuyter R	8/16/1992	15.5	3.31	1.5	0.020	0.03				8	8.24	178		6.46	
40	DeRuyter R	8/30/1992	15.5	2.16	1.5	0.019					7	8.19	177		14.10	
40	DeRuyter R	9/13/1992	15.5	2.20	1.5	0.017	0.01				9	8.28	177		8.84	
40	DeRuyter R	6/19/1993	15.5	3.14	1.5	0.003	0.11				8	8.09	172		9.08	
40	DeRuyter R	7/5/1993	15.5	2.85	1.5	0.010	0.08				1	8.17	171		4.93	
40	DeRuyter R	7/18/1993	15.5	2.55	1.5	0.009	0.01				2	8.24	171		6.04	
40	DeRuyter R	7/31/1993	15.5	2.43	1.5	0.014	0.01				2	8.08	169		10.40	
40	DeRuyter R	8/15/1993	15.5	2.65	1.5	0.010	0.01				3	8.02	168		7.31	
40	DeRuyter R	8/29/1993	15.5	2.92	1.5	0.012	0.01				3	8.22	166		6.10	
40	DeRuyter R	9/12/1993	15.5	2.07	1.5	0.015	0.01				3	8.05	167		7.22	
40	DeRuyter R	9/26/1993	15.5	2.22	1.5	0.024	0.01				5	8.24	168		10.20	

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
40	DeRuyter R	6/5/1994	15.5	3.11	1.5	0.009	0.15				4	8.24	168		3.72	
40	DeRuyter R	6/19/1994	15.5	4.75	1.5	0.008	0.13				4	8.05	169		1.63	
40	DeRuyter R	7/3/1994	15.5	2.32	1.5	0.010	0.10				1	8.13	167		3.81	
40	DeRuyter R	7/17/1994	15.0	2.29	1.5	0.010	0.01				2	8.53	167		14.40	
40	DeRuyter R	7/31/1994	15.0	2.05	1.5	0.010	0.01				2	8.32	167		6.68	
40	DeRuyter R	8/14/1994	15.0	2.21	1.0	0.011	0.01				6	8.14	168		10.50	
40	DeRuyter R	8/28/1994	15.0	1.78	1.5	0.013	0.01				3	8.12	167		8.19	
40	DeRuyter R	9/11/1994	15.0	1.98	1.5	0.016	0.01				4	8.13	167		11.30	
40	DeRuyter R	6/18/1995	12.5	3.95	1.5	0.007	0.07				4	8.16	186		1.68	
40	DeRuyter R	7/3/1995	15.0	2.22	1.5	0.009	0.03				5	8.15	186		2.76	
40	DeRuyter R	7/16/1995	15.0	2.05	1.5	0.009	0.01				5	8.32	186		4.44	
40	DeRuyter R	7/30/1995	15.0	1.71	1.5	0.011	0.01				1	8.16	184		4.26	
40	DeRuyter R	8/13/1995	15.0	2.91	1.5	0.010					1	8.16	184		4.38	
40	DeRuyter R	8/27/1995	15.0	1.97	1.5	0.017					5	8.13	182		7.17	
40	DeRuyter R	9/10/1995	15.0	6.25	1.5	0.008					5	8.05	180		4.12	
40	DeRuyter R	9/24/1995	15.0	2.91	1.5	0.010					1	8.13	180		4.44	
40	DeRuyter R	6/16/1996	15.0	2.85	1.5	0.007	0.07				5	8.22	178		17.30	
40	DeRuyter R	6/30/1996	15.0	3.95	1.5	0.010	0.07				1	8.03	183		2.20	
40	DeRuyter R	7/14/1996	15.0	3.88	1.5											
40	DeRuyter R	7/28/1996	15.0	4.45	1.5	0.011	0.01				1	8.15	179		5.00	
40	DeRuyter R	8/11/1996	15.0	3.55	1.5	0.011	0.01				1	7.88	179		4.40	
40	DeRuyter R	8/25/1996	15.0	2.65	1.5	0.010	0.01				5	8.35	176		6.10	
40	DeRuyter R	9/8/1996	15.0	1.85	1.5	0.014	0.01				1	6.36	170		7.42	
40	DeRuyter R	9/22/1996	15.0	2.10	1.5	0.015	0.01				15	8.01	173		8.66	
40	DeRuyter R	6/22/1997	15.0	2.72	1.5	0.012	0.01				5	8.28	178		15.00	
40	DeRuyter R	7/6/1997	15.0	2.55	1.5	0.010	0.01				5	8.09	179		6.34	
40	DeRuyter R	7/20/1997	15.0	2.50	1.5	0.010	0.01				5	8.08	177		6.39	
40	DeRuyter R	8/2/1997	15.0	2.88	1.5	0.009	0.01				5	7.17	179		6.44	
40	DeRuyter R	8/17/1997	15.0	1.83	1.5	0.013	0.01				4	8.18	177		7.35	
40	DeRuyter R	9/2/1997	15.0	1.82	1.5	0.012	0.01				4	8.10	176		6.49	
40	DeRuyter R	9/14/1997	15.0	1.48	1.5	0.015	0.01				5	8.20	173		14.70	
40	DeRuyter R	9/27/1997	15.0	1.81	1.5	0.017	0.01				4	8.09	168		12.40	
40	DeRuyter R	6/3/1998	15.0	2.42	1.5	0.014	0.01				4	8.28	176		8.56	
40	DeRuyter R	6/14/1998	15.0	2.82	1.5	0.012	0.01				4	8.01	174		8.01	
40	DeRuyter R	6/28/1998	15.0	2.30	1.5		0.01				1	8.13	177		5.68	
40	DeRuyter R	7/12/1998	15.0	2.39	1.5		0.01				3	8.00	174		10.20	
40	DeRuyter R	7/26/1998	15.0	2.89	1.5						1	8.21	176		5.47	
40	DeRuyter R	8/9/1998	15.0	2.06	1.5		0.01				1	8.35	173		4.32	
40	DeRuyter R	8/23/1998	15.0	1.97	1.5						2	8.12	169		6.03	
40	DeRuyter R	9/13/1998	15.0	1.75	1.5	0.016					3	8.07	173		8.99	
40	DeRuyter R	6/13/1999	15.0	2.23	1.5	0.010	0.01				6	7.83	188		7.10	
40	DeRuyter R	6/27/1999	15.0	1.94	1.5	0.012	0.01				1	8.30	188		6.00	
40	DeRuyter R	7/11/1999	15.0	4.16	1.5	0.016	0.01				3	7.84	183		3.58	
40	DeRuyter R	7/25/1999	15.0	4.25	1.5	0.009	0.01				6	8.38	181		2.99	
40	DeRuyter R	8/8/1999	15.0	2.27	1.5	0.012	0.01				5	7.72	178		6.25	
40	DeRuyter R	8/24/1999		2.07	1.5	0.010	0.01				4	8.11	173		4.40	
40	DeRuyter R	9/5/1999	15.0	2.62	1.5	0.012	0.01				5	8.12	175		3.30	
40	DeRuyter R	9/19/1999	15.0	1.55	1.5	0.013	0.01				3	8.07	174		3.77	
40	DeRuyter R	6/3/2000	15.0	2.60	1.5	0.010	0.15				3	8.01	185		5.80	
40	DeRuyter R	6/19/2000	15.0	3.70	1.5	0.015	0.10				6	7.42	179		3.85	
40	DeRuyter R	7/2/2000	15.0	2.65	1.5	0.012	0.04				3	8.58	183		10.60	
40	DeRuyter R	7/16/2000	15.0	2.45	1.5	0.011	0.01				4	7.25	183		6.10	
40	DeRuyter R	7/30/2000	15.0	2.95	1.5	0.017	0.01				1	7.45	185		4.99	
40	DeRuyter R	8/13/2000	15.0	3.05	1.5	0.011	0.01				4	8.04	183		5.55	
40	DeRuyter R	8/28/2000	15.0	3.89	1.5	0.014	0.01				2	7.95	183		4.40	
40	DeRuyter R	9/10/2000	15.0	3.55	1.5		0.01				6	7.96	184		3.79	
40	DeRuyter R	6/17/2001	15.0	3.11	1.5	0.009	0.07				2	8.36	192		5.45	
40	DeRuyter R	7/2/2001	15.0	2.29	1.5	0.012	0.09				3	7.90	192		7.15	
40	DeRuyter R	7/15/2001	15.0	3.57	1.5	0.008	0.04				1	7.60	193		6.05	
40	DeRuyter R	7/29/2001	15.0	2.27	1.5	0.010	0.01				5	7.62	193		4.78	
40	DeRuyter R	8/12/2001	15.0	2.88	1.5	0.008	0.01				2	7.39	186		3.18	
40	DeRuyter R	8/26/2001		2.03	1.5	0.012	0.01				5	7.91	189		3.98	
40	DeRuyter R	9/9/2001	15.0	2.18	1.5	0.017	0.01				5	8.15	187		5.80	
40	DeRuyter R	9/23/2001	15.0	3.45	1.5	0.013	0.01				1	7.58	184		5.10	
40	DeRuyter R	06/02/02	15+	4.05	1.5	0.012	0.03	0.06	0.69	121.93	7	8.01	197		2.49	
40	DeRuyter R	06/16/02	15+	3.35	1.5	0.013	0.02	0.03	0.69	120.16	7	8.14	190		3.88	

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
40	DeRuyter R	06/30/02	15+	4.13	1.5	0.011	0.00	0.04	0.38	78.64	6	8.38	189		2.16	
40	DeRuyter R	07/14/02	15+	4.38	1.5	0.010	0.00	0.05	0.49	111.82	3	8.34	185			
40	DeRuyter R	07/29/02	15+	3.75	1.5	0.007	0.00	0.05	0.41	126.83	11	8.14	180		2.90	
40	DeRuyter R	08/11/02	15+	4.00	1.5	0.010	0.01	0.04	0.34	77.83	5	8.21	174			
40	DeRuyter R	08/25/02	15+	2.65	1.5	0.010	0.00	0.03	0.29	64.25	1	8.26	171			
40	DeRuyter R	09/13/02	15+	3.15	1.5	0.014	0.01	0.01	0.38	59.18	2	7.83	170		2.87	
40	DeRuyter R	6/2/2003	15.0	3.45		0.011	0.03	0.07	0.26	50.98	6	8.05	188	26.0	2.58	
40	DeRuyter R	6/15/2003	15.0	2.55	1.5	0.014	0.00	0.02	0.23	36.75	11	8.02	191		8.46	
40	DeRuyter R	6/29/2003	15.0	2.85	1.5	0.013	0.00	0.01	0.44	73.78	0	8.26	187		5.14	
40	DeRuyter R	7/14/2003	15.0	2.40		0.013	0.00	0.00	0.21	35.21	7	8.41	183		5.20	
40	DeRuyter R	7/28/2003	15.0	2.95		0.017	0.00	0.00	0.05	6.56	11	8.09	183	26.0	6.71	
40	DeRuyter R	8/10/2003	15.0	1.50	1.5	0.015	0.00	0.00	0.19	28.59	10	8.53	185			
40	DeRuyter R	8/25/2003	15.0	1.65	1.5	0.016	0.00	0.01	0.32	45.10	1	8.10	184		11.52	
40	DeRuyter R	9/7/2003	15.0	1.75	1.5	0.019	0.00	0.01	0.51	57.75	3	8.11	188		14.85	
40	DeRuyter R	6/13/2004	15+	3.90	1.5	0.009	0.10	0.03			16	6.63	176		0.05	
40	DeRuyter R	6/27/2004	15+	3.70	1.5	0.009	0.08	0.01	0.15	35.96	19	6.75	149		1.36	
40	DeRuyter R	7/11/2004		3.30	1.5	0.008	0.03	0.01	0.19	54.60		6.74			3.10	
40	DeRuyter R	7/25/2004	15+	4.00	1.5	0.013	0.02	0.01	0.11	19.13	9	7.31	173		0.84	
40	DeRuyter R	8/9/2004	15+	3.20	1.5	0.011	0.01	0.01	0.08	17.15	17	7.50	161	23.4	3.00	
40	DeRuyter R	8/22/2004	15+	2.90	1.5	0.010	0.02	0.01	0.35	76.51	37	7.52	167		2.90	
40	DeRuyter R	9/6/2004	15+	3.50	1.5	0.010	0.01	0.01	0.26	57.74	7	7.80	117		3.70	
40	DeRuyter R	9/26/2004	15+	4.50	1.5	0.008	0.01	0.01	0.71	203.91	0	7.58	103		1.42	
40	DeRuyter R	6/12/2005	15+	3.20	1.5	0.009	0.01	0.01	0.14	34.50	26	7.08	127	25.2	5.31	
40	DeRuyter R	6/26/2005	15+	3.17	1.5	0.007	0.01	0.01	0.19	57.79	12	7.94	176		10.70	
40	DeRuyter R	7/10/2005	15+	5.00	1.5	0.009	0.01	0.01	0.26	60.76	1	7.00	170		2.55	
40	DeRuyter R	7/24/2005	15+	4.19	1.5	0.006	0.01	0.01	0.15	54.69	10	7.69	160		2.53	
40	DeRuyter R	8/7/2005	15+	3.84	1.5	0.012	0.01	0.01	0.17	30.89	22	7.55	154	24.4	2.39	
40	DeRuyter R	8/21/2005	15+	2.27	1.5	0.010	0.04	0.01	0.33	71.49	18	7.48	153		2.65	
40	DeRuyter R	9/5/2005	15+	2.82	1.5	0.012	0.01	0.01	0.21	40.41	25	7.49	144		3.05	
40	DeRuyter R	9/18/2005	15+	2.58	1.5	0.002	0.01	0.01	0.09	116.43	5	7.82	156		3.91	
40	DeRuyter R	6/11/2006	15+	2.62	1.5	0.020	0.04	0.04	0.63	69.48	3	6.95	164	26.0	6.10	
40	DeRuyter R	6/27/2006	15+	2.21	1.5	0.021			0.51	54.66	31	7.23	118		3.75	
40	DeRuyter R	7/9/2006		3.68	1.5	0.011	0.01	0.01	0.51	107.48	13	7.51	166		4.21	
40	DeRuyter R	7/23/2006	15+	2.62	1.5	0.012	0.01	0.02	0.58	108.92	14	7.54	147		8.83	
40	DeRuyter R	8/6/2006	15+	2.01	1.5	0.013	0.04	0.01	0.63	105.03	2	7.35	138	23.7	5.68	
40	DeRuyter R	8/20/2006	15+	2.20	1.5	0.022	0.00	0.04	0.61	61.02	12	7.63	157		9.32	
40	DeRuyter R	9/4/2006	15+	1.97	1.5	0.018			0.55	67.98	14	7.26	133		12.62	
40	DeRuyter R	9/18/2006	15+	2.09	1.5	0.016	0.02	0.01	0.55	75.22	14	7.40	145		12.06	
40	DeRuyter R	7/8/2007	15+	3.38	1.5	0.013	0.12	0.02	0.50	83.32	13	7.8	161	25.1	3.72	
40	DeRuyter R	7/22/2007	15+	2.13	1.5	0.014	0.01	0.02	0.45	71.36	16	7.8	135		5.13	
40	DeRuyter R	8/5/2007	15+	4.13	1.5	0.011	0.00	0.05	0.59	116.56	20	7.5	170		2.23	
40	DeRuyter R	8/12/2007	15+	2.75	1.5	0.011	0.01	0.08	0.44	89.17	21	7.9	80		2.98	
40	DeRuyter R	8/26/2007	15+	3.15	1.5	0.013	0.00	0.01	0.50	85.37	1	8.0	156	26.7	4.82	
40	DeRuyter R	9/10/2007	15+	3.80	1.5	0.011	0.01	0.02	0.55	109.63	15	7.7	133		4.38	
40	DeRuyter R	10/7/2007	15+	4.15	1.5	0.010	0.01	0.01	0.54	122.83	20	7.4	165		1.82	
40	DeRuyter R	10/21/2007	15+	5.10	1.5	0.012	0.02	0.02	0.50	92.56	15	7.5	139		1.78	
40	DeRuyter R	6/9/2008	15+	3.75	1.5	0.009	0.03	0.02	0.28	67.33	10			23.1	1.66	
40	DeRuyter R	6/29/2008	15+	4.13	1.5	0.010	0.00	0.01	0.26	59.10	11	7.78	158		1.04	
40	DeRuyter R	7/13/2008	15+	4.55	1.5	0.007	0.15	0.11	0.29	91.48		7.48	129		1.11	
40	DeRuyter R	7/27/2008	15+	3.95	1.5	0.009	0.00	0.00	0.19	49.62	13	7.17	91		2.33	
40	DeRuyter R	8/9/2008	15+	3.20	1.5	0.008	0.01	0.00	0.16	45.50	15	7.40	121	19.1	1.81	
40	DeRuyter R	8/24/2008				0.008	0.00	0.01	0.21	62.90	14	7.90	116		1.23	
40	DeRuyter R	9/8/2008	15+	4.95	1.5	0.010	0.01	0.01	0.20	42.94	13	7.65	133		1.83	
40	DeRuyter R	9/20/2008	15+	4.88	1.5	0.011	0.01	0.01	0.15	30.18	14	7.39	139		1.67	
40	DeRuyter R	06/10/2009	15+	5.03	1.5	0.011	0.03	0.18	0.46	89.12	6	7.37	182	24.9	4.58	
40	DeRuyter R	06/28/2009	15+	5.06	1.5	0.018	0.05	0.12	0.39	47.52	10				6.91	
40	DeRuyter R	07/12/2009	15+	4.96	1.5	0.013	0.03	0.53	0.70	122.75	8	7.40	192		3.36	
40	DeRuyter R	08/03/2009	15+	5.52	1.5	0.017	0.04	0.12	0.35	47.20	12				1.98	
40	DeRuyter R	08/17/2009	15*	6.95	1.5	0.006	0.02	0.01	0.20	69.78	23	7.14	113	25.1	1.40	
40	DeRuyter R	08/30/2009	15+	5.39	1.5	0.010	0.01	0.02	0.19	42.44	13	7.17	139		1.50	
40	DeRuyter R	09/20/2009	15+	5.70	1.5	0.008	0.01	0.01	0.23	64.61	14	7.12	115		1.30	
40	DeRuyter R	6/21/2010	15+	5.45	1.5	0.010	0.02	0.02	0.86	183.48	4	7.42	183	26.6	1.80	
40	DeRuyter R	7/5/2010	15+	4.80	1.5	0.010	0.02	0.02	0.16	33.42	3	7.31	181		1.60	
40	DeRuyter R	7/18/2010	15+	5.83	1.5	0.009	0.01	0.02	0.36	89.98	12	7.24	174		1.70	
40	DeRuyter R	8/1/2010	15+	4.15	1.5	0.015	0.03	0.03	0.53	78.78	12	7.71	164		1.90	
40	DeRuyter R	8/16/2010	15+	4.65	1.5	0.009	0.01	0.01	0.27	64.34	9	7.93	160	23.5	1.90	

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
40	DeRuyter R	8/30/2010	15+	5.35	1.5	0.009	0.01	0.03	0.24	56.17	11	7.37	172		2.10	
40	DeRuyter R	9/13/2010	15+	5.25	1.5	0.010	0.01	0.03	0.22	50.65	7	7.40	182		1.40	
40	DeRuyter R	9/24/2010	15+	5.55	1.5	0.009	0.03	0.02	0.29	68.34	7	7.21	168		1.00	
40	DeRuyter R	6/11/2012	15+	4.45	1.5	0.012	0.01	0.01	0.23	44.00	17	7.19	144	25.4	1.80	
40	DeRuyter R	6/24/2012	15+	7.15	1.5	0.014	0.02	0.03	0.23	37.64	5	7.41	154		1.70	
40	DeRuyter R	7/8/2012	15+	4.33	1.5	0.011	0.01	0.02	0.24	48.48	12	7.29	154		2.10	
40	DeRuyter R	7/22/2012	15+	4.20	1.5	0.015	0.01	0.02	0.26	36.86	14	8.02	163		1.50	
40	DeRuyter R	8/6/2012	15+	4.85	1.5	0.014	0.01	0.01	0.22	34.01	8	7.92	149	23.3	2.30	
40	DeRuyter R	8/19/2012	15+	5.35	1.5	0.016	0.03	0.02	0.32	45.69	7	7.57	152		1.10	
40	DeRuyter R	9/3/2012	15+	4.15	1.5	0.014	0.01	0.02	0.27	43.51	6	7.35	154		1.20	
40	DeRuyter R	9/16/2012	15+	6.55	1.5	0.013	0.01	0.05	0.20	33.41	5	7.21	145		0.70	
40	DeRuyter R	6/9/2013	15.4	5.25	1.5	0.017	0.08	0.05	0.45	58.07	18	7.47	156		0.40	
40	DeRuyter R	6/23/2013	15+	4.70	1.5	0.016			0.38	52.53	12	7.81	163		2.30	
40	DeRuyter R	7/7/2013	15+	4.20	1.5	0.009	0.03	0.03	0.36	84.89	13	7.66	157		2.00	
40	DeRuyter R	7/21/2013	15+	4.55	1.5	0.017			0.32	40.60	12	7.63	159		2.20	
40	DeRuyter R	8/4/2013	15+	4.05	1.5	0.019	0.01	0.02	0.36	43.17	15	7.29	161		1.90	
40	DeRuyter R	8/18/2013	15+	3.25	1.5	0.018			0.31	38.96	14	7.39	162		4.20	
40	DeRuyter R	9/2/2013	15+	3.25	1.5	0.019	0.01	0.01	0.37	42.24	15	7.70	165		3.20	
40	DeRuyter R	9/15/2013	15+	3.55	1.5	0.011			0.38	73.38	23	7.64	165		1.80	
40	DeRuyter R	6/16/2014	15.0	5.75	1.5	0.010	0.08	0.06	0.44	93.08	6	7.50	163	23	2.30	
40	DeRuyter R	6/29/2014	15+	4.10	1.5	0.012			0.34	62.18	5	6.88	155		3.40	
40	DeRuyter R	7/6/2014	15+	6.75	1.5	0.009	0.03	0.04	0.33	78.17	4	7.48	161		1.70	
40	DeRuyter R	7/20/2014	15+	4.95	1.5	0.012			0.23	41.32		7.56	159		2.50	
40	DeRuyter R	8/3/2014	15+	4.25	1.5	0.014	0.02	0.04	0.34	54.19	2	7.66	157	21	2.20	
40	DeRuyter R	8/16/2014	15+	4.05	1.5	0.013			0.26	44.34	5	7.39	168		2.10	
40	DeRuyter R	9/1/2014	15+	4.95	1.5	0.013	0.02	0.03	0.23	39.50	7	7.30	147		1.00	
40	DeRuyter R	9/14/2014	15+	5.75	1.5	0.010			0.26	58.82	7	7.35	145		0.90	
40	DeRuyter R	6/28/2015	15.0	4.90	1.5				0.32		2	7.20	164		1.90	
40	DeRuyter R	7/13/2015	15.0	4.00	1.5	0.019	0.01	0.04	0.49	25.36	8	7.83	95		4.30	11.2
40	DeRuyter R	7/22/2015	15.0	4.00	1.5	0.019			0.31	16.54	7	7.13	164		2.90	
40	DeRuyter R	8/9/2015	15.0	6.10	1.5	0.012	0.01	0.03	0.39	33.83	7	8.46	176	17	1.50	
40	DeRuyter R	8/30/2015	15.0	3.70	1.5	0.014			0.47	33.79	6	7.20	155		3.60	
40	DeRuyter R	9/12/2015	12.0	3.80	1.5	0.017	0.01	0.03	4.12	239.77	7	7.09	135		3.80	5.0
40	DeRuyter R	9/26/2015	12.0	3.40	1.5	0.020			0.54	26.78	4	7.86	150		4.40	
40	DeRuyter R	6/28/2015	15.0	4.90	1.5				0.32		2	7.20	164		1.90	
40	DeRuyter R	7/18/1993	15.5	2.55	13.0	0.060										
40	DeRuyter R	7/31/1993	15.5		14.0	0.063										
40	DeRuyter R	8/29/1993	15.5		14.0	0.110										
40	DeRuyter R	9/26/1993	15.5		14.0	0.011										
40	DeRuyter R	6/19/1994	15.5		14.0	0.013										
40	DeRuyter R	7/17/1994	15.0		12.0	0.220										
40	DeRuyter R	9/11/1994	15.0		12.0	0.052										
40	DeRuyter R	6/18/1995			13	0.011										
40	DeRuyter R	7/16/1995			13	0.011										
40	DeRuyter R	8/13/1995				0.020										
40	DeRuyter R	8/27/1995			12	0.029										
40	DeRuyter R	9/24/1995			11	0.014										
40	DeRuyter R	6/16/1996				0.011										
40	DeRuyter R	7/28/1996			13.0	0.027										
40	DeRuyter R	8/25/1996			13.0	0.019										
40	DeRuyter R	9/22/1996				0.013										
40	DeRuyter R	6/22/1997			12.0	0.013										
40	DeRuyter R	7/20/1997			12.0	0.010										
40	DeRuyter R	9/2/1997				0.031										
40	DeRuyter R	9/27/1997				0.015										
40	DeRuyter R	6/3/1998			12.0	0.010										
40	DeRuyter R	7/12/1998				0.021										
40	DeRuyter R	8/9/1998				0.032										
40	DeRuyter R	9/13/1998	15.0		12.0	0.015										
40	DeRuyter R	06/02/02	15+		12.0	0.011	0.02	0.04	0.44	41.51						
40	DeRuyter R	06/16/02	15+		15.5	0.011	0.03	0.04	0.33	30.20						
40	DeRuyter R	06/30/02	15+		12.0	0.080	0.02	0.10	0.35	4.37						
40	DeRuyter R	07/14/02	15+		12.0	0.010	0.02	0.13	0.36	37.67						
40	DeRuyter R	07/29/02	15+		12.0	0.011	0.01	0.08	0.44	41.55						
40	DeRuyter R	08/11/02	15+		12.0	0.017	0.01	0.10	0.36	20.54						
40	DeRuyter R	08/25/02	15+		12.0	0.012	0.00	0.07	0.29	23.51						

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
40	DeRuyter R	09/13/02	15+		12.0	0.034	0.01	0.02	0.37	10.95						
40	DeRuyter R	6/2/2003	15+			0.012	0.04	0.07	0.23	19.39						
40	DeRuyter R	6/15/2003	15+			0.012	0.02	0.09	0.32	27.19						
40	DeRuyter R	6/29/2003	15+		12.0	0.016	0.02	0.11	0.38	24.08						
40	DeRuyter R	7/14/2003	15+			0.010	0.07	0.12	0.19	18.16						
40	DeRuyter R	7/28/2003	15+			0.028	0.00	0.18	0.05	1.84						
40	DeRuyter R	8/10/2003	15+		12.0	0.020	0.00	0.16	0.17	8.40						
40	DeRuyter R	8/25/2003	15+		12.0	0.044	0.00	0.26	0.33	7.55						
40	DeRuyter R	9/7/2003	15+		12.0	0.024	0.01	0.04	0.60	25.26						
40	DeRuyter R	6/13/2004	15+		12.0	0.012	0.10	0.03								
40	DeRuyter R	6/27/2004	15+		12.0	0.008	0.08	0.02	0.32	38.02						
40	DeRuyter R	7/11/2004			12.0	0.011	0.03	0.01	0.26	23.94						
40	DeRuyter R	7/25/2004	15+		12.0	0.014	0.01	0.01	0.31	21.86						
40	DeRuyter R	8/9/2004	15+		12.0	0.013	0.01	0.01	0.31	23.15						
40	DeRuyter R	8/22/2004	15+		12.0	0.014	0.02	0.01	0.31	22.06						
40	DeRuyter R	9/6/2004	15+		12.0	0.012	0.06	0.01	0.32	26.22						
40	DeRuyter R	9/26/2004	15+		12.0	0.009	0.02	0.01	0.42	48.99						
40	DeRuyter R	6/12/2005			12.0	0.009										
40	DeRuyter R	6/26/2005			12.0	0.007										
40	DeRuyter R	7/10/2005			12.0	0.008										
40	DeRuyter R	7/24/2005			13.0	0.008										
40	DeRuyter R	8/7/2005			13.0	0.014										
40	DeRuyter R	8/21/2005			13.0	0.017										
40	DeRuyter R	9/5/2005			13.0	0.008										
40	DeRuyter R	9/18/2005			13.0	0.011										
40	DeRuyter R	6/11/2006	15+		13.0	0.012										
40	DeRuyter R	6/27/2006	15+		11.0	0.013										
40	DeRuyter R	7/9/2006			13.0	0.010										
40	DeRuyter R	7/23/2006	15+		13.0	0.010										
40	DeRuyter R	8/6/2006	15+		12.0	0.011										
40	DeRuyter R	8/20/2006	15+		12.0	0.039										
40	DeRuyter R	9/4/2006	15+		12.0	0.040										
40	DeRuyter R	9/18/2006	15+		13.0	0.034										
40	DeRuyter R	7/8/2007	15+		12.0	0.013										
40	DeRuyter R	7/22/2007	15+		12.0	0.021										
40	DeRuyter R	8/5/2007	15+		13.0	0.006										
40	DeRuyter R	8/12/2007	15+		13.0	0.011										
40	DeRuyter R	8/26/2007	15+		12.0	0.014										
40	DeRuyter R	9/10/2007	15+		13.0	0.015										
40	DeRuyter R	10/7/2007	15+		13.0	0.011										
40	DeRuyter R	10/21/2007	15+		12.0	0.012										
40	DeRuyter R	6/9/2008	15+		13.0	0.011										
40	DeRuyter R	6/29/2008	15+		12.0	0.007										
40	DeRuyter R	7/13/2008	15+		10.0	0.014										
40	DeRuyter R	7/27/2008	15+		12.0	0.012										
40	DeRuyter R	8/9/2008	15+		12.0	0.014										
40	DeRuyter R	8/24/2008				0.013										
40	DeRuyter R	9/8/2008	15+		12.0	0.009										
40	DeRuyter R	9/20/2008	15+		12.0	0.014										
40	DeRuyter R	06/10/2009			13.0	0.011		0.14								
40	DeRuyter R	06/28/2009			13.0	0.016										
40	DeRuyter R	07/12/2009			12.0	0.011		0.37								
40	DeRuyter R	08/03/2009			13.0	0.010										
40	DeRuyter R	08/17/2009			13.0	0.012		0.01								
40	DeRuyter R	08/30/2009			13.0	0.030										
40	DeRuyter R	09/20/2009			13.0	0.009		0.01								
40	DeRuyter R	6/21/2010	15+		13.0	0.007		0.05								
40	DeRuyter R	7/18/2010	15+		13.0	0.010		0.06								
40	DeRuyter R	8/16/2010	15+		12.0	0.008		0.05								
40	DeRuyter R	9/13/2010	15+		13.0	0.011		0.03								
40	DeRuyter R	6/11/2012			13.0	0.013		0.03								
40	DeRuyter R	7/8/2012			14.0	0.008		0.09								
40	DeRuyter R	8/6/2012			13.0	0.013		0.04								
40	DeRuyter R	9/3/2012			13.0	0.012		0.03								
40	DeRuyter R	6/9/2013			14.0	0.013		0.06								
40	DeRuyter R	7/7/2013			14.0	0.017		0.11								

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
40	DeRuyter R	8/4/2013			13.0	0.051		0.49								
40	DeRuyter R	9/2/2013			12.0	0.013		0.01								
40	DeRuyter R	6/16/2014			12.0	0.012		0.07								
40	DeRuyter R	6/29/2014			12.0	0.018										
40	DeRuyter R	7/6/2014			11.0	0.013		0.07								
40	DeRuyter R	7/20/2014			12.0	0.041										
40	DeRuyter R	8/3/2014			12.0	0.017		0.05								
40	DeRuyter R	8/16/2014			12.0	0.028										
40	DeRuyter R	9/1/2014			12.0	0.013		0.01								
40	DeRuyter R	9/14/2014			12.0	0.015										
40	DeRuyter R	6/28/2015			12.0	0.021		0.05								
40	DeRuyter R	7/13/2015			12.0	0.024										
40	DeRuyter R	7/22/2015			12.0	0.034		0.12								
40	DeRuyter R	8/9/2015			12.0	0.021										
40	DeRuyter R	8/30/2015			12.0	0.014		0.04								
40	DeRuyter R	9/12/2015			12.0	0.006										
40	DeRuyter R	9/26/2015			11.9	0.017		0.06								
40	DeRuyter R	6/28/2015			11.9	0.022										

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB-form	Shore HAB
40	DeRuyter R	6/18/1988	epi	22	20															
40	DeRuyter R	6/25/1988	epi	24	22															
40	DeRuyter R	7/2/1988	epi	19	17															
40	DeRuyter R	7/9/1988	epi	33	24															
40	DeRuyter R	7/17/1988	epi	24	23															
40	DeRuyter R	7/24/1988	epi	20	24															
40	DeRuyter R	7/30/1988	epi	27	24															
40	DeRuyter R	8/7/1988	epi	28	24															
40	DeRuyter R	8/13/1988	epi	32	27															
40	DeRuyter R	8/21/1988	epi	16	20															
40	DeRuyter R	8/28/1988	epi	25	22															
40	DeRuyter R	9/5/1988	epi	10	16															
40	DeRuyter R	9/10/1988	epi	26	17															
40	DeRuyter R	9/18/1988	epi	23	18															
40	DeRuyter R	9/25/1988	epi	20	16															
40	DeRuyter R	6/25/1989	epi	26	22															
40	DeRuyter R	7/1/1989	epi	26	22															
40	DeRuyter R	7/8/1989	epi	22	22															
40	DeRuyter R	7/15/1989	epi	22	22															
40	DeRuyter R	7/23/1989	epi	25	23															
40	DeRuyter R	7/30/1989	epi	25	22															
40	DeRuyter R	8/7/1989	epi	27	24															
40	DeRuyter R	8/13/1989	epi	25	23															
40	DeRuyter R	8/19/1989	epi	24	22															
40	DeRuyter R	8/27/1989	epi	30	21															
40	DeRuyter R	9/2/1989	epi	18	19															
40	DeRuyter R	9/12/1989	epi	17	20															
40	DeRuyter R	9/17/1989	epi	14	17															
40	DeRuyter R	9/24/1989	epi	10	17															
40	DeRuyter R	10/9/1989	epi	6	11															
40	DeRuyter R	6/24/1990	epi	22	20															
40	DeRuyter R	7/8/1990	epi	23	20															
40	DeRuyter R	7/22/1990	epi	26	24															
40	DeRuyter R	8/2/1990	epi	19	21															
40	DeRuyter R	8/20/1990	epi	15	19															
40	DeRuyter R	9/3/1990	epi	17	21															
40	DeRuyter R	9/16/1990	epi	10	17															
40	DeRuyter R	9/30/1990	epi	16	15															
40	DeRuyter R	6/23/1991	epi	21	20															
40	DeRuyter R	6/30/1991	epi	18	21															
40	DeRuyter R	7/14/1991	epi	19	21															
40	DeRuyter R	7/28/1991	epi	25	24															

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QE	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB-form	Shore HAB
40	DeRuyter R	8/11/1991	epi	20	20																
40	DeRuyter R	8/25/1991	epi	23	21																
40	DeRuyter R	9/22/1991	epi	18	17																
40	DeRuyter R	10/13/1991	epi	7	12																
40	DeRuyter R	6/6/1992	epi	18	18	2	1	2	15												
40	DeRuyter R	6/21/1992	epi	9	17	2	3	2	5												
40	DeRuyter R	6/21/1992	epi	9	13																
40	DeRuyter R	7/4/1992	epi	26	18	2	2	2	6												
40	DeRuyter R	7/19/1992	epi	24	21	2	2	2	6												
40	DeRuyter R	8/2/1992	epi	23	20	2	3	2	6												
40	DeRuyter R	8/16/1992	epi	17	18	2	3	2	5												
40	DeRuyter R	8/30/1992	epi	18	19	3	3	3	35												
40	DeRuyter R	9/13/1992	epi	12	16	2	3	2	6												
40	DeRuyter R	6/19/1993	epi	18	19	3	3	3	35												
40	DeRuyter R	7/5/1993	epi	32	24	2	3	3	2												
40	DeRuyter R	7/18/1993	epi	31	24	2	3	2	2												
40	DeRuyter R	7/31/1993	epi	21	21	2	2	2	5												
40	DeRuyter R	8/15/1993	epi	28	23	2	3	3	2												
40	DeRuyter R	8/29/1993	epi	25	24	2	3	2	2												
40	DeRuyter R	9/12/1993	epi	18	20	2	3	3	12												
40	DeRuyter R	9/26/1993	epi	20	18	2	3	3	25												
40	DeRuyter R	6/5/1994	epi	23	19	2	1	2	5												
40	DeRuyter R	6/19/1994	epi	25	22	1	2	2													
40	DeRuyter R	7/3/1994	epi	26	23	3	1	2	1												
40	DeRuyter R	7/17/1994	epi	25	25	2	2	3													
40	DeRuyter R	7/31/1994	epi	28	25	2	2	2													
40	DeRuyter R	8/14/1994	epi	1	20	2	3	2	5												
40	DeRuyter R	8/28/1994	epi	24	21	3	1	2	5												
40	DeRuyter R	9/11/1994	epi	14	18	3	2	3	15												
40	DeRuyter R	6/18/1995	epi	30	21	2	2	1													
40	DeRuyter R	7/3/1995	epi	29	23	2	2	2													
40	DeRuyter R	7/16/1995	epi	24	25	3	2	3													
40	DeRuyter R	7/30/1995	epi	25	25		2	2													
40	DeRuyter R	8/13/1995	epi	24	20	2	2	2													
40	DeRuyter R	8/27/1995	epi	21	23	2	2	2													
40	DeRuyter R	9/10/1995	epi	10	19	2	2	3													
40	DeRuyter R	9/24/1995	epi	14	17	2	2	2													
40	DeRuyter R	6/16/1996	epi	25	23	2	1	1													
40	DeRuyter R	6/30/1996	epi	26	22	2	1	2													
40	DeRuyter R	7/14/1996	epi	29	23	2	2	1													
40	DeRuyter R	7/28/1996	epi	25	23	2	2	1													
40	DeRuyter R	8/11/1996	epi	24	23	2	2	1													
40	DeRuyter R	8/25/1996	epi	23	24																
40	DeRuyter R	9/8/1996	epi	22	23	3	2	3													
40	DeRuyter R	9/22/1996	epi	16	19	3	2	4													
40	DeRuyter R	6/22/1997	epi	28	24	2	1	1													
40	DeRuyter R	7/6/1997	epi	19	22	2	2	2													
40	DeRuyter R	7/20/1997	epi	19	23	2	2	1													
40	DeRuyter R	8/2/1997	epi	23	23	2	2	2													
40	DeRuyter R	8/17/1997	epi	18	22	2	2	2													
40	DeRuyter R	9/2/1997	epi	22	23	3	2	2													
40	DeRuyter R	9/14/1997	epi	23	19	3	2	2													
40	DeRuyter R	9/27/1997	epi	22	16	3	2	3													
40	DeRuyter R	6/3/1998	epi	11	18	3	2	3	15												
40	DeRuyter R	6/14/1998	epi	16	18	2	2	3	5												
40	DeRuyter R	6/28/1998	epi	26	24	2	2	2													
40	DeRuyter R	7/12/1998	epi	26	21	2	2	1													
40	DeRuyter R	7/26/1998	epi	25	24																
40	DeRuyter R	8/9/1998	epi	27	24	2	2	2													
40	DeRuyter R	8/23/1998	epi	23	23	3	2	3													
40	DeRuyter R	9/13/1998	epi	23	21																

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QE	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB-form	Shore HAB
40	DeRuyter R	6/13/1999	epi	28	23																
40	DeRuyter R	6/27/1999	epi	29	24	2	2	2													
40	DeRuyter R	7/11/1999	epi	22	23	1	2	2	6												
40	DeRuyter R	7/25/1999	epi	24	26	1	2	1													
40	DeRuyter R	8/8/1999	epi	20	23	2	2	3													
40	DeRuyter R	8/24/1999	epi	27	23	3	3	3													
40	DeRuyter R	9/5/1999	epi	26	23	2	2	2													
40	DeRuyter R	9/19/1999	epi	19	18	3	2	3													
40	DeRuyter R	6/3/2000	epi	23	18	3	1	3	5												
40	DeRuyter R	6/19/2000	epi	15	19	3	2	2													
40	DeRuyter R	7/2/2000	epi	28	22	3	3	3	2												
40	DeRuyter R	7/16/2000	epi	21	22	3	3	3	2												
40	DeRuyter R	7/30/2000	epi	21	23	2	3	3	2												
40	DeRuyter R	8/13/2000	epi	24	23	3	3	3	2												
40	DeRuyter R	8/28/2000	epi	25	24	3	3	3	2												
40	DeRuyter R	9/10/2000	epi	23	22	2	3	3	2												
40	DeRuyter R	6/17/2001	epi	26	23	2	2	2													
40	DeRuyter R	7/2/2001	epi	16	20	2	2	2													
40	DeRuyter R	7/15/2001	epi	25	21	2	2	2													
40	DeRuyter R	7/29/2001	epi	24	24	3	3	3													
40	DeRuyter R	8/12/2001	epi	28	27	2	3	3													
40	DeRuyter R	8/26/2001	epi	24	23	2	3	3													
40	DeRuyter R	9/9/2001	epi	29	23	2	3	2													
40	DeRuyter R	9/23/2001	epi	23	20	3	3	3													
40	DeRuyter R	06/02/02	epi	15	16	1	1	2													
40	DeRuyter R	06/16/02	epi	17	19	3	1	2													
40	DeRuyter R	06/30/02	epi	26	24	1	2	1													
40	DeRuyter R	07/14/02	epi	27	24	1	3	3	2												
40	DeRuyter R	07/29/02	epi	28	24	2	4	3	2												
40	DeRuyter R	08/11/02	epi	29	25	2	4	4	2												
40	DeRuyter R	08/25/02	epi	25	24																
40	DeRuyter R	09/13/02	epi	23	21	2	3	3	2												
40	DeRuyter R	6/2/2003	epi	18	16	3	1	2													
40	DeRuyter R	6/15/2003	epi	22	18	3	2	2													
40	DeRuyter R	6/29/2003	epi	24	23	3	2	2													
40	DeRuyter R	7/14/2003	epi	26	24	2	2	2													
40	DeRuyter R	7/28/2003	epi	22	24	2	2	2													
40	DeRuyter R	8/10/2003	epi	26	26	3	2	4	1												
40	DeRuyter R	8/25/2003	epi	26	25	4	2	3	12												
40	DeRuyter R	9/7/2003	epi	26	23	2	2	2													
40	DeRuyter R	6/13/2004	epi	25	21	1	1	1	2	0											
40	DeRuyter R	6/27/2004	epi	22	22	2	1	1	1	0											
40	DeRuyter R	7/11/2004	epi	26	26	2	2	2	0												
40	DeRuyter R	7/25/2004	epi	23	24	2	2	3	0												
40	DeRuyter R	8/9/2004	epi	28	24	2	2	2	0												
40	DeRuyter R	8/22/2004	epi	24	23	3	2	3	0												
40	DeRuyter R	9/6/2004	epi	23	24	2	2	2	0												
40	DeRuyter R	9/26/2004	epi	19	21	2	2	1	0												
40	DeRuyter R	6/12/2005	epi	30	26	2	2	2	0												
40	DeRuyter R	6/26/2005	epi	30	26	2	2	1	0												
40	DeRuyter R	7/10/2005	epi	27	25	1	2	2	2												
40	DeRuyter R	7/24/2005	epi	30	26	2	2	2	2												
40	DeRuyter R	8/7/2005	epi	31	27	2	3	3	0												
40	DeRuyter R	8/21/2005	epi	26	25	3	3	3	2												
40	DeRuyter R	9/5/2005	epi	22	24	3	3	3	2												
40	DeRuyter R	9/18/2005	epi	25	23	3	2	3	2												
40	DeRuyter R	6/11/2006	epi	12	16	3	1	3	15												
40	DeRuyter R	6/27/2006	epi	28	24	3	2	3	1												
40	DeRuyter R	7/9/2006	epi	27	24	3	2	2	2												
40	DeRuyter R	7/23/2006	epi	26	25	3	2	3	2												
40	DeRuyter R	8/6/2006	epi	27	26	3	2	3	2												

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40	DeRuyter R	8/20/2006	epi	25	25	3	2	3	1												
40	DeRuyter R	9/4/2006	epi	17	20	3	2	3	5												
40	DeRuyter R	9/18/2006	epi	25	21	5			3												
40	DeRuyter R	7/8/2007	epi	29	23	2	2	2	0												
40	DeRuyter R	7/22/2007	epi	26	27	2	2	2	0												
40	DeRuyter R	8/5/2007	epi	28	27	2	2	2	0												
40	DeRuyter R	8/12/2007	epi	30	27	2	2	2	0												
40	DeRuyter R	8/26/2007	epi	26	24	2	2	3	0												
40	DeRuyter R	9/10/2007	epi	20	23	2	1	3	0												
40	DeRuyter R	10/7/2007	epi	21	20	1	2	2	2												
40	DeRuyter R	10/21/2007	epi	20	18																
40	DeRuyter R	6/9/2008	epi	33	25	2	2	3	0												
40	DeRuyter R	6/29/2008	epi	27	24	1	2	3	2												
40	DeRuyter R	7/13/2008	epi	25	24	1	3	3	2												
40	DeRuyter R	7/27/2008	epi	24	25	3	3	3	2												
40	DeRuyter R	8/9/2008	epi	23	24	3	3	3	2												
40	DeRuyter R	9/8/2008	epi	19	22	2	2	3	2												
40	DeRuyter R	9/20/2008	epi	22	20	2	2	2	2												
40	DeRuyter R	06/10/2009	epi	24	22	2	2	2													
40	DeRuyter R	06/28/2009	epi	27	23	2	2	2													
40	DeRuyter R	07/12/2009	epi	20	23	2	2	2													
40	DeRuyter R	08/03/2009	epi	27	24	2	3	3	2												
40	DeRuyter R	08/17/2009	epi	28	27	1	3	2	2												
40	DeRuyter R	08/30/2009	epi	19	23	2	3	3	2												
40	DeRuyter R	09/20/2009	epi	23	20	2	3	2	2												
40	DeRuyter R	6/21/2010	epi	24	23	2	2	2	0	4	0										
40	DeRuyter R	7/5/2010	epi	30	25	3	3	3	2	7	7										
40	DeRuyter R	7/18/2010	epi	24	27	2	3	3	2												
40	DeRuyter R	8/1/2010	epi	27	25	2	4	3	2												
40	DeRuyter R	8/16/2010	epi	27	25	2	3	3	2												
40	DeRuyter R	8/30/2010	epi	27	23					4	S										
40	DeRuyter R	9/13/2010	epi	18	20	1	3	3	2												
40	DeRuyter R	9/24/2010	epi	22	19	2	3	3	2												
40	DeRuyter R	6/11/2012	epi	27	24	2	3	3	0	5	5	10.10	0.10	<0.30	<0.417		0.99	0.72	F		
40	DeRuyter R	6/24/2012	epi	25	24	1	3	2	2			-0.20	0.30	<0.30	<0.428		0.59	0.23	I		
40	DeRuyter R	7/8/2012	epi	28	27	2	4	3	2	0	0	2.20	0.30	<0.30	<0.423		0.98	0.37	I		
40	DeRuyter R	7/22/2012	epi	30	27	3	3	3	2	0	0	2.90	0.20	<0.30	<0.585		0.92	0.00	I		
40	DeRuyter R	8/6/2012	epi	22	26	2	3	3	28	0	0	2.20	0.20	<0.30	<0.330		2.49	1.34	I		
40	DeRuyter R	8/19/2012	epi	26	24	2	2	2	2	0	0	9.40	0.20	<0.30	<0.223		3.20	1.49	I		
40	DeRuyter R	9/3/2012	epi	25	25	3	2	3	2	0	0	1.90	0.20	<0.30	<0.580		2.60	1.51	I		
40	DeRuyter R	9/16/2012	epi	19	22	1	2	2	2	0		1.40	0.10	0.51	<3.299		1.01	0.56	I		
40	DeRuyter R	6/9/2013	epi	23	19	2	3	2	2	0	0	2.10	0.40	<0.30	<0.420		0.10	0.00	I	I	
40	DeRuyter R	6/23/2013	epi	33	26	2	4	3	28	0	0	2.50	1.20	<0.30	<0.370		0.50	0.00	I	I	
40	DeRuyter R	7/7/2013	epi	30	29	3	3	4	1	0	0	1.40	0.80	<0.30	<0.510		1.10	0.10	H	I	
40	DeRuyter R	7/21/2013	epi	30	27	2	3					11.70	1.00	<0.30	<0.910		1.90	0.60	I	I	
40	DeRuyter R	8/4/2013	epi	22	23	2	3		8			3.60	0.70	0.44	<0.390		1.10	0.00	I	I	
40	DeRuyter R	8/18/2013	epi	22	23	3	3		2	47	0	7.50	2.50	<0.30	<0.390		1.90	0.10	F	F	
40	DeRuyter R	9/2/2013	epi	22	25	3	2	3	2	0	0	8.50	1.60	<0.30	<1.100		1.40	0.30	I	I	
40	DeRuyter R	9/15/2013	epi	18	20	3	2	2	8	0	0	2.40	0.90	<0.30	<0.100		0.40	0.00	I	I	
40	DeRuyter R	6/16/2014	epi	28	23	2	3	2	8			1.80	0.10	<0.53	<0.08	<0.002	0.20	0.00	i		
40	DeRuyter R	6/29/2014	epi	31	26	3	4	3	2	4	0	2.70	0.40	<1.60	<0.48	<0.002	1.50	0.00	f	f	
40	DeRuyter R	7/6/2014	epi	24	25	3	3	3	2			1.70	0.10	<0.62	<0.03	<0.002	0.20	0.00	i	i	
40	DeRuyter R	7/20/2014	epi	29	25	3	3	3	8	0	0	2.20	0.20	<0.39	<0.03	<0.001	0.40	0.00	i	i	
40	DeRuyter R	8/3/2014	epi	30	27	2	3	3	28	0	0	4.90	0.20	<0.33	<0.01	<0.002	0.80	0.00	i	i	
40	DeRuyter R	8/16/2014	epi	23	23	3	3	3	28	0	0			<0.35	<0.03	<0.001	0.50	0.00	i	i	
40	DeRuyter R	9/1/2014	epi	24	24	2	3	3	28	0	0	6.00	0.10	<0.29	<0.14	<0.002	1.10	0.80	i	i	
40	DeRuyter R	9/14/2014	epi	13	19	2	3	3	28			0.80	0.10	<0.24	<0.03	<0.001	0.10	0.00	i	i	
40	DeRuyter R	6/6/2015	epi	20	20	2	3	3	268	0	0	5.40	0.20	<0.77	<0.126	<1.739	0.30	0.00	I	I	
40	DeRuyter R	6/28/2015	epi	16	21	3	3	3	28	0	4	4.60	0.30	<0.65	<0.007	<0.040	0.40	0.00	I	I	
40	DeRuyter R	7/13/2015	epi	31	26	2	3	3	268	0	0	2.00	0.20	<1.01	<0.003	<0.011	0.90	0.00	I	I	
40	DeRuyter R	7/22/2015	epi	25	24	2	3	3	28	0	0	4.40	0.30	<0.36	<0.003	<0.018	1.10	0.00	I	I	

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40	DeRuyter R	8/9/2015	epi	33	26	2	3	3	28	0	0		7.30	0.50	<0.18	<0.002	<0.009	0.80	0.40	I	I
40	DeRuyter R	8/30/2015	epi	29	26	2	3	3	28	0	0				<0.49	<0.003	<0.014	0.90	0.00	F	I
40	DeRuyter R	9/12/2015	epi	23	24	3	3	3	28	0	0		4.50	0.20	<0.27	<0.009	<0.022	1.90	0.70	F	I
40	DeRuyter R	9/26/2015	epi	26	23	3	4	3	28	0	0		7.80	0.50	<0.30	<0.007	<0.035	2.60	1.30	F	I
40	DeRuyter R	7/18/1993	hypo	31	20																
40	DeRuyter R	7/31/1993	hypo	21	16																
40	DeRuyter R	9/26/1993	hypo	20	17																
40	DeRuyter R	6/19/1994	hypo	25	19																
40	DeRuyter R	7/17/1994	hypo		19																
40	DeRuyter R	9/11/1994	hypo		18																
40	DeRuyter R	6/18/1995	hypo		19																
40	DeRuyter R	7/16/1995	hypo	24	20																
40	DeRuyter R	8/27/1995	hypo	21	21																
40	DeRuyter R	9/24/1995	hypo		17																
40	DeRuyter R	7/28/1996	hypo		20																
40	DeRuyter R	8/25/1996	hypo		22																
40	DeRuyter R	6/22/1997	hypo		15																
40	DeRuyter R	7/20/1997	hypo	19	16																
40	DeRuyter R	6/3/1998	hypo		14	3	2	3	15												
40	DeRuyter R	9/13/1998	hypo	23	20																
40	DeRuyter R	06/02/02	hypo		13																
40	DeRuyter R	06/16/02	hypo		16																
40	DeRuyter R	06/30/02	hypo		18																
40	DeRuyter R	07/14/02	hypo		18																
40	DeRuyter R	07/29/02	hypo		18																
40	DeRuyter R	08/11/02	hypo		19																
40	DeRuyter R	08/25/02	hypo		21																
40	DeRuyter R	09/13/02	hypo		21																
40	DeRuyter R	6/2/2003	hypo		15																
40	DeRuyter R	6/15/2003	hypo		16																
40	DeRuyter R	6/29/2003	hypo		19																
40	DeRuyter R	7/14/2003	hypo		19																
40	DeRuyter R	7/28/2003	hypo		19																
40	DeRuyter R	8/10/2003	hypo		22																
40	DeRuyter R	8/25/2003	hypo		20																
40	DeRuyter R	9/7/2003	hypo		22																
40	DeRuyter R	6/13/2004	hypo		21																
40	DeRuyter R	6/27/2004	hypo		21																
40	DeRuyter R	7/11/2004	hypo		24																
40	DeRuyter R	7/25/2004	hypo		22																
40	DeRuyter R	8/9/2004	hypo		23																
40	DeRuyter R	8/22/2004	hypo		21																
40	DeRuyter R	9/6/2004	hypo		22																
40	DeRuyter R	9/26/2004	hypo		20																
40	DeRuyter R	6/12/2005	hypo		20																
40	DeRuyter R	6/26/2005	hypo		18																
40	DeRuyter R	7/10/2005	hypo		20																
40	DeRuyter R	7/24/2005	hypo		19																
40	DeRuyter R	8/7/2005	hypo		19																
40	DeRuyter R	8/21/2005	hypo		18																
40	DeRuyter R	9/5/2005	hypo		20																
40	DeRuyter R	9/18/2005	hypo		22																
40	DeRuyter R	6/11/2006	hypo		15																
40	DeRuyter R	6/27/2006	hypo		24																
40	DeRuyter R	7/9/2006	hypo		18																
40	DeRuyter R	7/23/2006	hypo		18																
40	DeRuyter R	8/6/2006	hypo		19																
40	DeRuyter R	8/20/2006	hypo		19																
40	DeRuyter R	9/4/2006	hypo		19																
40	DeRuyter R	9/18/2006	hypo		20																
40	DeRuyter R	7/8/2007	hypo		19																

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40	DeRuyter R	7/22/2007	hypo		20																
40	DeRuyter R	8/5/2007	hypo		22																
40	DeRuyter R	8/12/2007	hypo		22																
40	DeRuyter R	8/26/2007	hypo		22																
40	DeRuyter R	9/10/2007	hypo		23																
40	DeRuyter R	10/7/2007	hypo		19																
40	DeRuyter R	10/21/2007	hypo		17																
40	DeRuyter R	6/9/2008	hypo		18																
40	DeRuyter R	6/29/2008	hypo		19																
40	DeRuyter R	7/13/2008	hypo		23																
40	DeRuyter R	7/27/2008	hypo		18																
40	DeRuyter R	8/9/2008	hypo		18																
40	DeRuyter R	9/8/2008	hypo		21																
40	DeRuyter R	9/20/2008	hypo		20																
40	DeRuyter R	06/10/2009	hypo		19																
40	DeRuyter R	06/28/2009	hypo		21																
40	DeRuyter R	07/12/2009	hypo		22																
40	DeRuyter R	08/03/2009	hypo		22																
40	DeRuyter R	08/17/2009	hypo		24																
40	DeRuyter R	08/30/2009	hypo		23																
40	DeRuyter R	09/20/2009	hypo		20																
40	DeRuyter R	6/21/2010	hypo		17																
40	DeRuyter R	7/18/2010	hypo		21																
40	DeRuyter R	8/16/2010	hypo		24																
40	DeRuyter R	9/13/2010	hypo		20																
40	DeRuyter R	6/11/2012	hypo		18																
40	DeRuyter R	7/8/2012	hypo		19																
40	DeRuyter R	8/6/2012	hypo		22																
40	DeRuyter R	9/3/2012	hypo		24																
40	DeRuyter R	6/9/2013	hypo		17																
40	DeRuyter R	7/7/2013	hypo		22																
40	DeRuyter R	8/4/2013	hypo		19																
40	DeRuyter R	9/2/2013	hypo		23																
40	DeRuyter R	6/16/2014	hypo		19																
40	DeRuyter R	6/29/2014	hypo		22																
40	DeRuyter R	7/6/2014	hypo		24																
40	DeRuyter R	7/20/2014	hypo		21																
40	DeRuyter R	8/3/2014	hypo		24																
40	DeRuyter R	8/16/2014	hypo		21																
40	DeRuyter R	9/1/2014	hypo		23																
40	DeRuyter R	9/14/2014	hypo		19																
40	DeRuyter R	6/6/2015	hypo		15																
40	DeRuyter R	6/28/2015	hypo		20																
40	DeRuyter R	7/13/2015	hypo		22																
40	DeRuyter R	7/22/2015	hypo		20																
40	DeRuyter R	8/9/2015	hypo		18																
40	DeRuyter R	8/30/2015	hypo		24																
40	DeRuyter R	9/12/2015	hypo		21																
40	DeRuyter R	9/26/2015	hypo		21																

Legend Information

<i>Indicator</i>	<i>Description</i>	<i>Detection Limit</i>	<i>Standard (S) / Criteria (C)</i>
General Information			
Lnum	lake number (unique to CSLAP)		
Lname	name of lake (as it appears in the Gazetteer of NYS Lakes)		
Date	sampling date		
Field Parameters			
Zbot	lake depth at sampling point, meters (m)		
Zsd	Secchi disk transparency or clarity	0.1m	1.2m (C)
Zsamp	water sample depth (m) (epi = epilimnion or surface; bot = bottom)	0.1m	none
Tair	air temperature (C)	-10C	none
TH20	water temperature (C)	-10C	none
Laboratory Parameters			
Tot.P	total phosphorus (mg/l)	0.003 mg/l	0.020 mg/l (C)
NOx	nitrate + nitrite (mg/l)	0.01 mg/l	10 mg/l NO3 (S), 2 mg/l NO2 (S)
NH4	total ammonia (mg/l)	0.01 mg/l	2 mg/l NH4 (S)
TN	total nitrogen (mg/l)	0.01 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
pH	powers of hydrogen (S.U., standard pH units)	0.1 S.U.	6.5, 8.5 S.U. (S)
Cond25	specific conductance, corrected to 25C (umho/cm)	1 umho/cm	none
Ca, Cl	calcium, chloride (mg/l)	1 mg/l	none
Chl.a	chlorophyll a (ug/l)	0.01 ug/l	none
Fe	iron (mg/l)	0.1 mg/l	1.0 mg/l (S)
Mn	manganese (mg/l)	0.01 mg/l	0.3 mg/l (S)
As	arsenic (ug/l)	1 ug/l	10 ug/l (S)
AQ-PC	Phycocyanin (aquafior) (unitless)	1 unit	none
AQ-Chl	Chlorophyll a (aquafior) (ug/l)	1 ug/l	none
MC-LR	Microcystis-LR (ug/l)	0.01 ug/l	1 ug/l potable (C) 20 ug/l swimming (C)
Ana	Anatoxin-a (ug/l)	variable	none
Cyl	Cylindrospermopsin (ug/l)	0.1 ug/l	none
FP-Chl, FP-BG	Fluoroprobe total chlorophyll, fluoroprobe blue-green chlorophyll (ug/l)	0.1 ug/l	none
Lake Assessment			
QA	water quality assessment; 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels		
QB	aquatic plant assessment; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage		
QC	recreational assessment; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable		
QD	reasons for recreational assessment; 1 = poor water clarity, 2 = excessive weeds, 3 = too much algae, 4 = lake looks bad, 5 = poor weather, 6 = litter/surface debris, 7 = too many lake users, 8 = other		
QF, QG	Health and safety issues today (QF) and past week (QG); 0 = none, 1 = taste/odor, 2 = GI illness humans/animals, 3 = swimmers itch, 4 = algae blooms, 5 = dead fish, 6 = unusual animals, 7 = other		
HAB form, Shore HAB	HAB evaluation; A = spilled paint, B = pea soup, C = streaks, D = green dots, E = bubbling scum, F = green/brown tint, G = duckweed, H = other, I = no bloom		

Appendix B- Priority Waterbody Listing for DeRuyter Reservoir

DeRuyter Reservoir (0602-0086)

MinorImpacts

Waterbody Location Information

Revised: 07/07/2009

Water Index No:	SR- 44-14-59-34-P56	Drain Basin:	Susquehanna River
Hydro Unit Code:	02050102/080	Str Class:	B
Waterbody Type:	Lake(R) (Mesotrophic)	Reg/County:	7/Onondaga Co. (34)
Waterbody Size:	554.2 Acres	Quad Map:	DE RUYTER (J-17-4)
Seg Description:	entire lake		

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Recreation	Stressed	Suspected

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (excessive weed growth)
Suspected: NUTRIENTS (phosphorus)
Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: - - -
Possible: AGRICULTURE

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:	4c->n/a	

Further Details

Overview

Recreational uses (swimming, fishing, boating) in DeRuyter Reservoir are thought to experience minor impacts due to algal and aquatic weed growth in the lake.

Water Quality Sampling

DeRuyter Reservoir has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1992 and continuing through 2006. An Interpretive Summary report of the findings of this sampling was published in 2007. These data indicate that the lake continues to be best characterized as mesotrophic, or moderately productive. Conditions in 2005 suggested lower productivity (mesoligotrophic), but that assessment may have been driven by favorable weather conditions. Phosphorus levels in the lake are typically below the state guidance values indicating impacted/stressed recreational uses, though they were somewhat higher in 2006. Corresponding transparency measurements exceed the recommended minimum for swimming beaches. Measurements of pH typically fall within the state water quality range of 6.5 to 8.5. The lake water is weakly to moderately colored. (DEC/DOW, BWAM/CSLAP, February 2007)

Recreational Assessment

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. This assessment indicates recreational suitability of the lake to be favorable. The recreational suitability of the lake is described most frequently as "excellent" to "slightly" impacted. The lake itself is most often described as "not quite crystal clear" or having "definite algal greenness," an assessment that is consistent measured water quality characteristics. Assessments have noted that aquatic plants occasionally grow to the lake surface but not densely. Aquatic plants are dominated by a mix of native and non-native (Eurasian milfoil) species. Although surface weed coverage is occasionally noted, "excessive weed growth" is not frequently identified as impacting recreational uses. (DEC/DOW, BWAM/CSLAP, February 2007)

Lake Uses

This lake waterbody is designated class B, suitable for use as a Public bathing beach and for general recreation and aquatic life support, but not for drinking water supply. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess potable water supply and public bathing use is generally the responsibility of state and/or local health departments.

Section 303d Listing

DeRuyter Reservoir was delisted from the NYS Section 303(d) List of Impaired Waters during the development of the 2008 List. The lake was included on Part 3a of the List as a Water Requiring Verification of Impairment, however updated assessment of the lake suggested that the suspected impacts to water quality and uses are not sufficient to warrant continued listing. (DEC/DOW, BWAM/WQAS, June 2009)

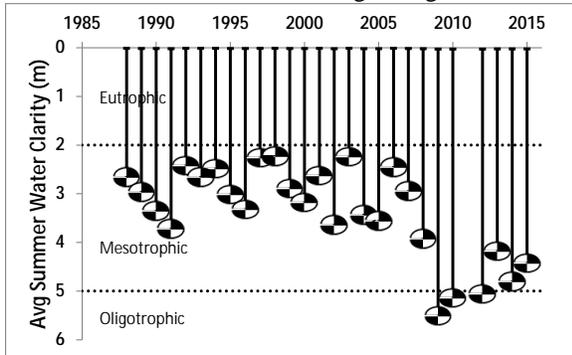
Segment Description

This segment includes the total area of the entire lake.

Appendix C- Long Term Trends: DeRuyter Reservoir

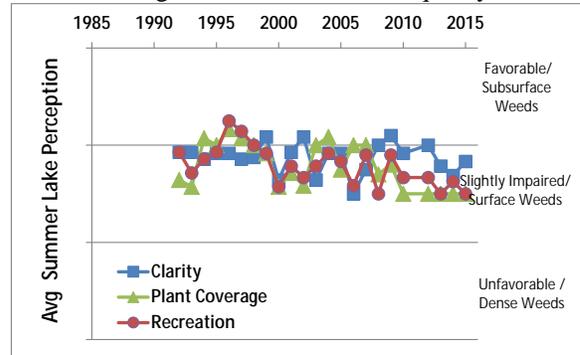
Long Term Trends: Water Clarity

- Higher clarity since 2009 due to zebras?
- Most readings typical of *mesoligotrophic* lakes, consistent with algae; higher than TP



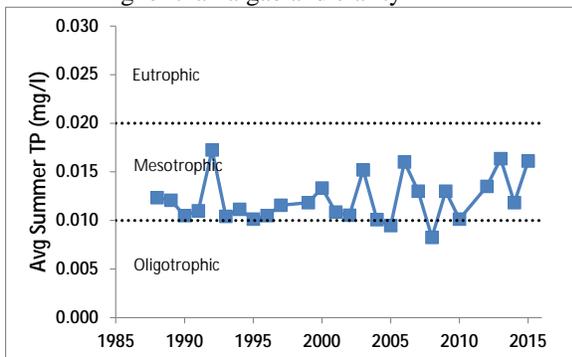
Long Term Trends: Lake Perception

- ↓ recreational assessments; ↑ weeds
- Recreational perception now more linked to changes in weeds than water quality



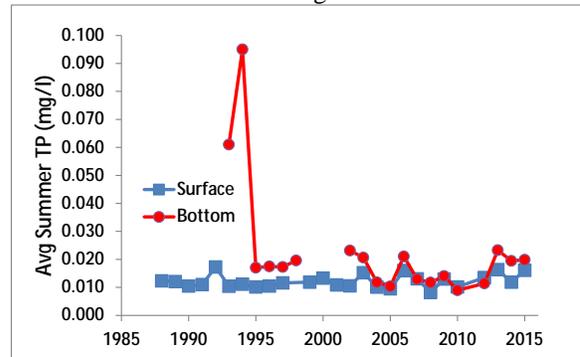
Long Term Trends: Phosphorus

- Lack of TP trends may also point to zebras
- Most readings typical of *mesotrophic* lakes, higher than algae and clarity



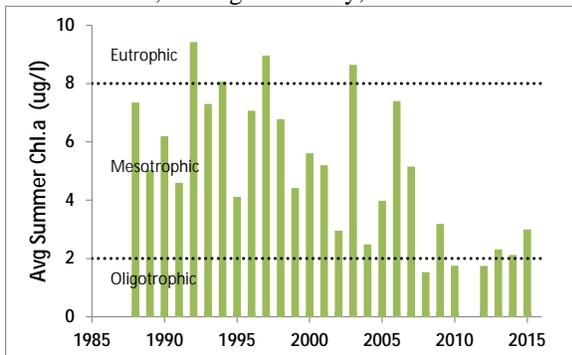
Long Term Trends: Bottom Phosphorus

- Most bottom TP levels close to surface TP
- Bottom TP suggests little nutrient loading to surface levels during late summer



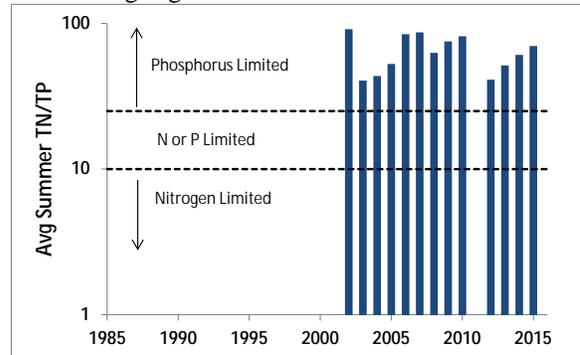
Long Term Trends: Chlorophyll a

- Decreasing since early 2000s due to zebras?
- Most readings typical of *mesoligotrophic* lakes, in range of clarity; lower than TP



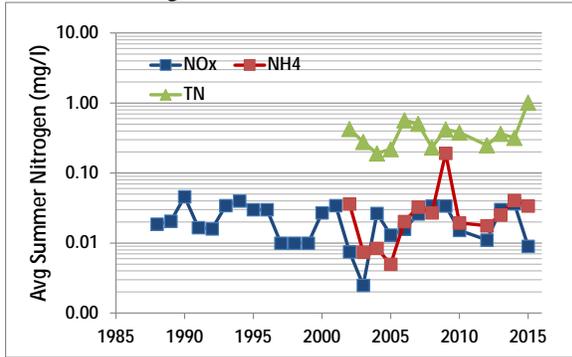
Long Term Trends: N:P Ratio

- No trends apparent
- Most readings indicate phosphorus limits algae growth



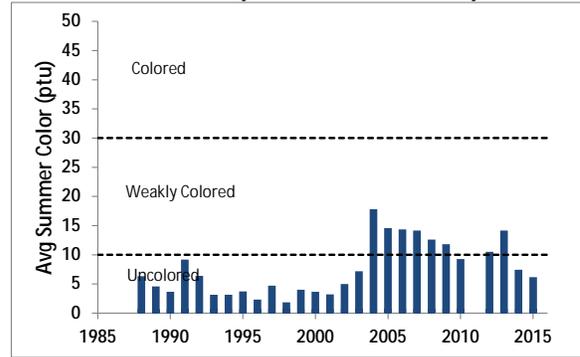
Long Term Trends: Nitrogen

- No trends apparent; slight increase in NO_x?
- Generally low TN, NO_x, and ammonia readings



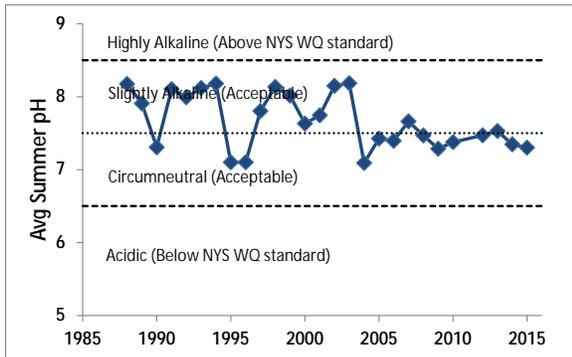
Long Term Trends: Color

- ↑ color after 2000s/lab change, but recent ↓
- Most readings typical of *weakly colored* lakes w/likely little effect on clarity



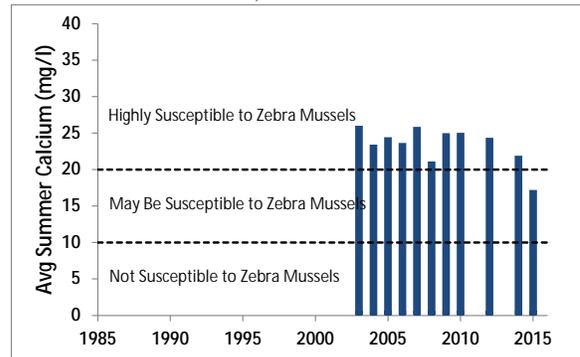
Long Term Trends: pH

- Lower pH since early 00s
- Most readings typical of *slightly alkaline to circumneutral* lakes



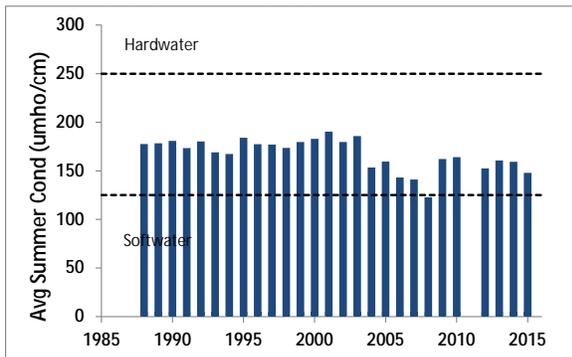
Long Term Trends: Calcium

- Slight apparent ↓ in calcium since early 00s
- Most readings indicate high susceptibility to zebra mussels, which are found in lake



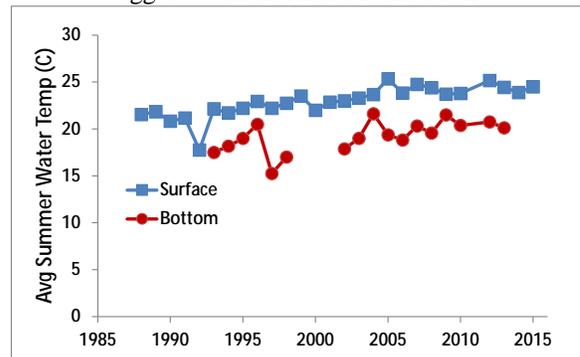
Long Term Trends: Conductivity

- Decreasing since mid-2000s
- Most readings typical of lakes with *intermediate hardness*



Long Term Trends: Water Temperature

- Steady ↑ surface/bottom T since early 1990s
- (Only) slightly colder bottom temperatures suggest weak thermal stratification



Appendix D: Algae Testing Results from SUNY ESF Study

Most algae are harmless, naturally present, and an important part of the food web. However excessive algae growth can cause health, recreational, and aesthetic problems. Some algae can produce toxins that can be harmful to people and animals. High quantities of these algae are called harmful algal blooms (HABs). CSLAP lakes have been sampled for a variety of HAB indicators since 2008. This was completed on selected lakes as part of a NYS DOH study from 2008-2010. In 2011, enhanced sampling on all CSLAP lakes was initiated through an EPA-funded project that has continued through the current sampling season. This study has evaluated a number of HAB indicators as follows:

- Algae types - blue green, green, diatoms, and "other"
- Algae densities
- Microscopic analysis of bloom samples
- Algal toxin analysis

Some of these results are reported in other portions of these reports. This appendix the seasonal change in blue green algae, other algae types, and the primary algal toxin (microcystin-LR, a liver toxin). Analysis was completed on open water samples and, for some lakes, shoreline samples that were collected when visual evidence of blooms were apparent. Results are compared to the DEC criteria of 25-30 ug/l blue green chlorophyll a and 20 ug/l microcystin-LR (based on the World Health Organization (WHO) threshold for unsafe swimming conditions) and the WHO provisional criteria for long-term protection of treated water supplies (= 1 ug/l microcystin-LR). The data for algae types are drawn from a high end fluorometer used by SUNY ESF. While these results are useful for timely approximation of lake conditions, they are not as accurate as the total chlorophyll results measured as a regular part of CSLAP since 1986 in all open water samples. Therefore these results are used judiciously in the assessment of sampled waterbodies.

Two separate samples are evaluated. A sample is taken at the CSLAP sample point at the deepest point of the lake at every sample session. In addition, shoreline samples can be taken when a bloom is visible. It should be noted that shoreline conditions can vary significantly over time and from one location to another. The shoreline bloom sampling results summarized below are not collected as routinely as open water samples, and therefore represent snapshots in time. It is assumed that sampling results showing high blue green algae and/or toxin levels indicate that algae blooms may be common and/or widespread on these lakes. However, the absence of elevated blue green algae and toxin levels does not assure the lack of shoreline blooms on these lakes. Elevated open water readings may indicate a higher likelihood of shoreline blooms, but in some lakes, these shoreline blooms have not been (well) documented.

The results from these samples are summarized within the CSLAP report for the lake.



Figure D1:
2013 Open Water Total and BGA Chl.a

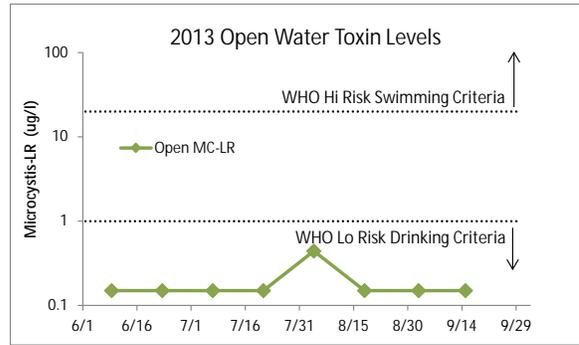


Figure D2:
2013 Open Water Microcystin-LR



Figure D3:
2013 Shoreline Total and BGA Chl.a

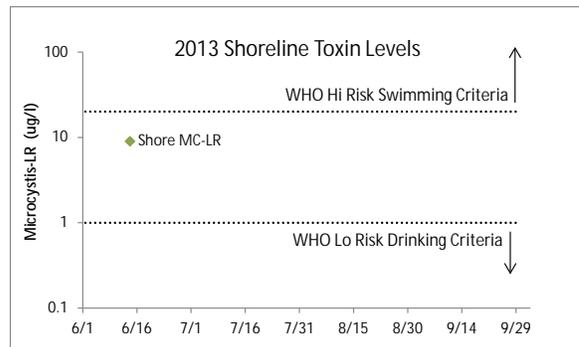


Figure D4:
2013 Shoreline Microcystin-LR

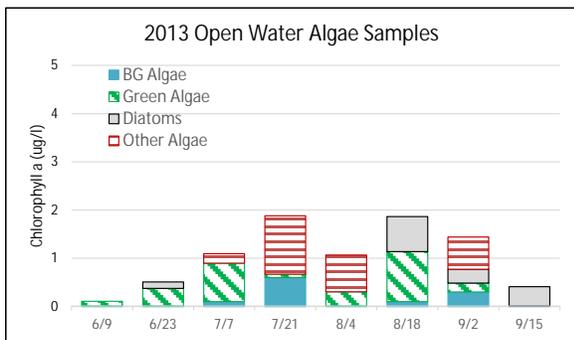


Figure D5:
2013 Open Water Algae Types

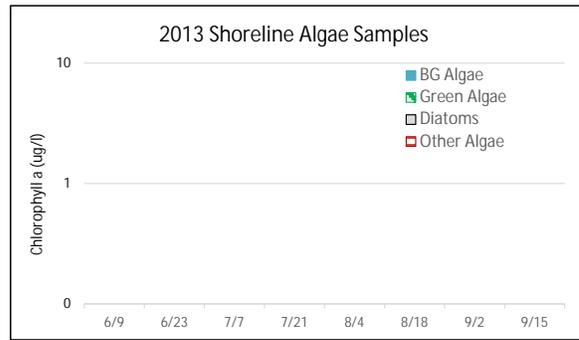


Figure D6:
2013 Shoreline Algae Types

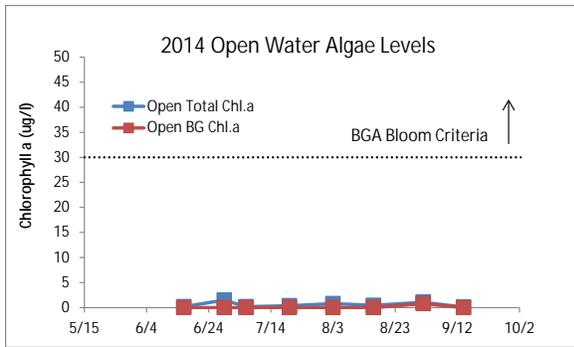


Figure D7:
2014 Open Water Total and BGA Chl.a

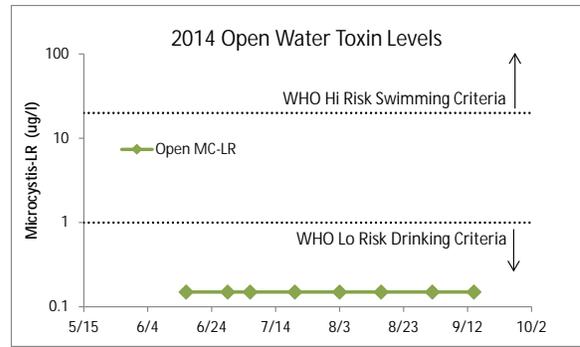


Figure D8:
2014 Open Water Microcystin-LR

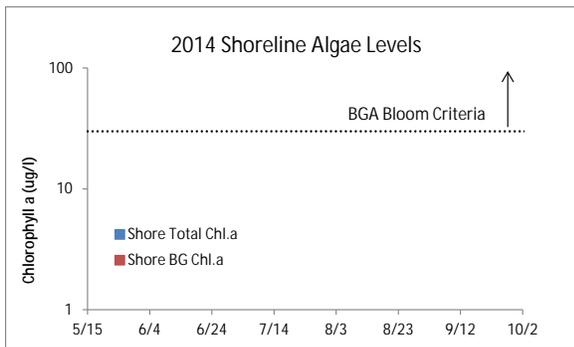


Figure D9:
2014 Shoreline Total and BGA Chl.a

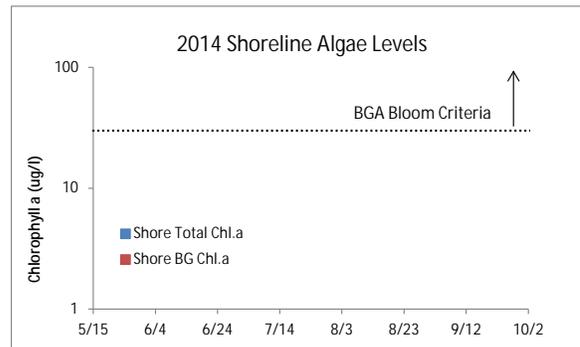


Figure D10:
2014 Shoreline Microcystin-LR

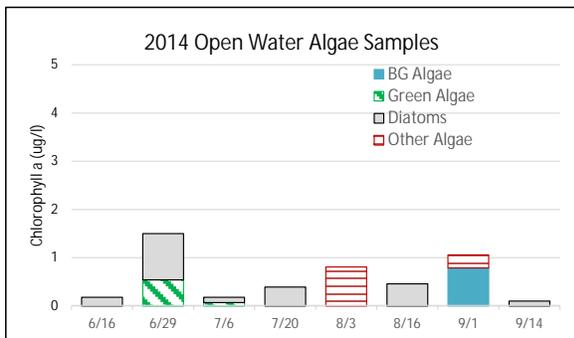


Figure D11:
2014 Open Water Algae Types

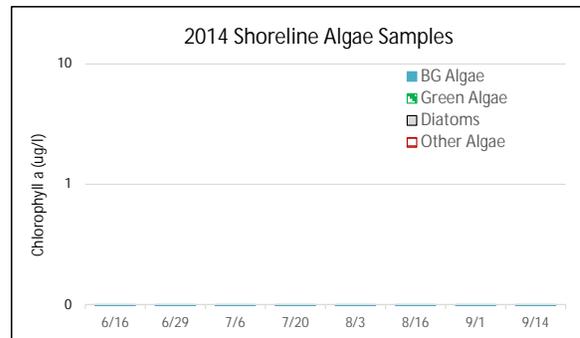


Figure D12:
2014 Shoreline Algae Types

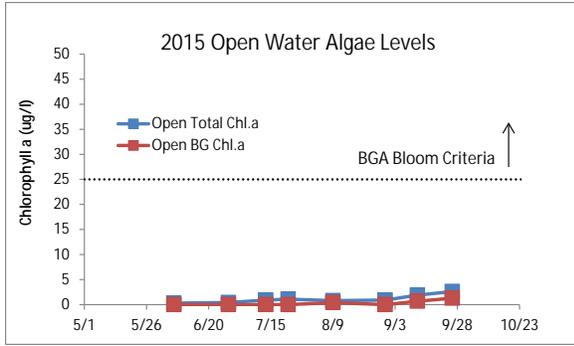


Figure D13:
2015 Open Water Total and BGA Chl.a

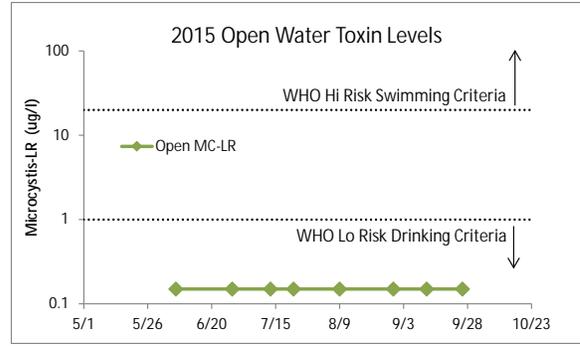


Figure D14:
2015 Open Water Microcystin-LR



Figure D15:
2015 Shoreline Total and BGA Chl.a

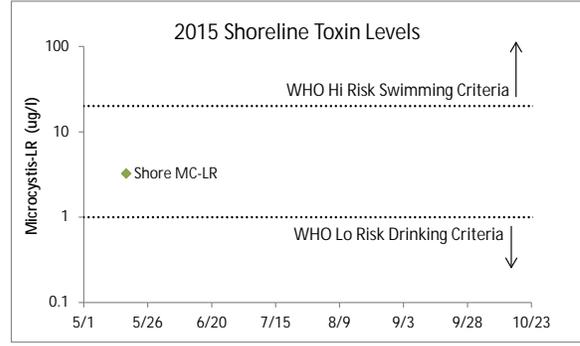


Figure D16:
2015 Shoreline Microcystin-LR

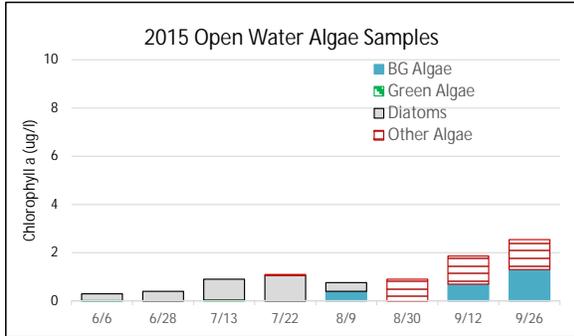


Figure D17:
2015 Open Water Algae Types

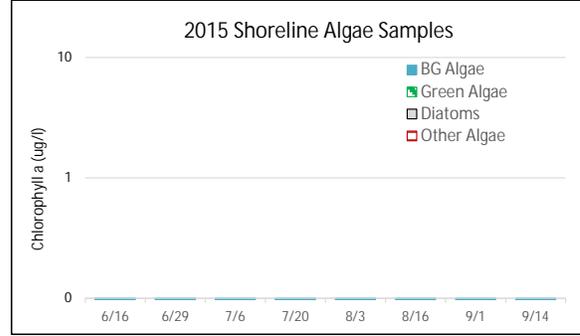


Figure D18:
2015 Shoreline Algae Types

Appendix E: AIS Species in Madison County

The table below shows the invasive aquatic plants and animals that have been documented in Madison 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 – Madison County			
Waterbody	Kingdom	Common name	Scientific name
Bradley Brook Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Bradley Brook Reservoir	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Cazenovia Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Cazenovia Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Cazenovia Lake	Plant	Starry stonewort	<i>Nitellopsis obtusa</i>
Cazenovia Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Cazenovia Lake	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
Craine Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
DeRuyter Reservoir	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
DeRuyter Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
DeRuyter Reservoir	Plant	Banded mystery snail	<i>Viviparus georgianus</i>
Earlville Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Eaton Brook Reservoir	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Eaton Reservoir	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Eaton Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Eaton Reservoir	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Gorton Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Hatch Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Hatch Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Hatch Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lake Moraine	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lake Moraine	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lebanon Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lebanon Reservoir	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>

Waterbody	Kingdom	Common name	Scientific name
Leland Pond	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Leland Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Leland Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lower Leland Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lower Leland Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Madison Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Mud Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Mud Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Oneida Lake	Plant	Water chestnut	<i>Trapa natans</i>
Stoney Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Tuscarora Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Tuscarora Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Tuscarora Lake	Plant	Brittle naiad	<i>Najas minor</i>
Tuscarora Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Unadilla River near Leonardsville	Animal	Asian Clam	<i>Corbicula fluminea</i>
Upper Leland Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Upper Leland Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>

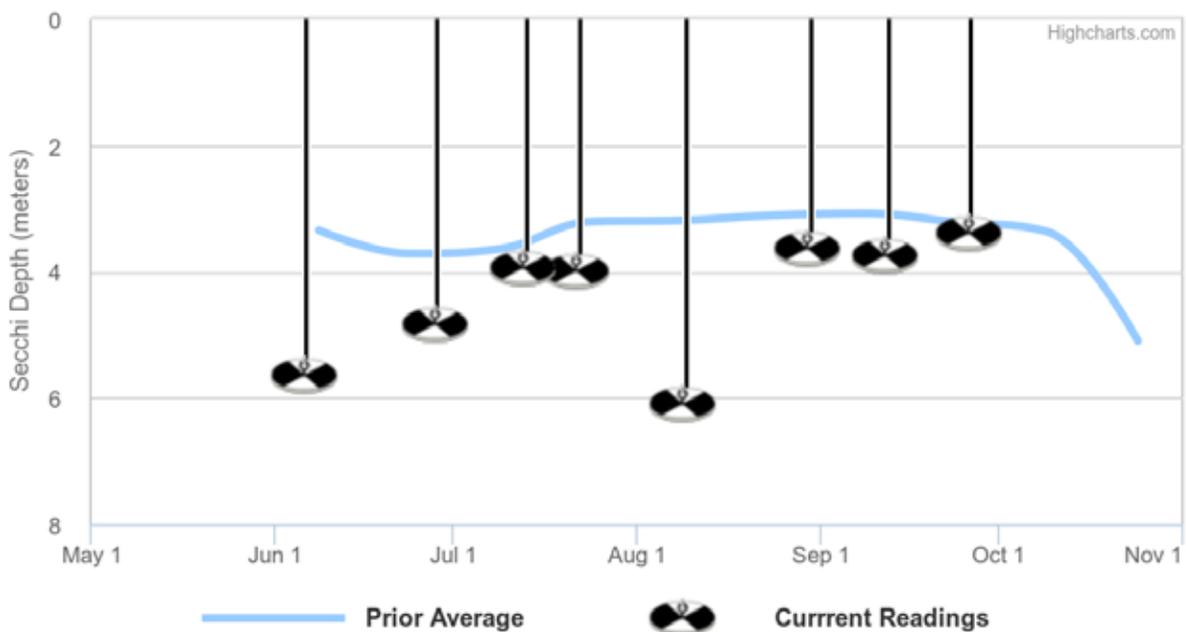
Appendix F: Current Year vs. Prior Averages for DeRuyter Reservoir

Current Year Water Temperatures vs. Prior Average



This year's shallow water sample temperatures are tending to be higher than normal when compared to the average of readings collected from 1988 to 2014. This year's deep water sample temperatures are about the same as the average of readings collected from 1993 to 2014.

Current Year Secchi Readings vs. Prior Average



This year's session Secchi readings are tending to be higher than normal when compared to the average of readings collected from 1988 to 2014

Appendix G: Watershed and Land Use Map for DeRuyter Reservoir

This watershed and land use map was developed using USGS StreamStats and ESRI ArcGIS using the 2006 land use satellite imagery. The actual watershed map and present land uses within this watershed may be slightly different due to the age of the underlying data and some limits to the use of these tools in some geographic regions and under varying flow conditions. However, these maps are intended to show the approximate extent of the lake drainage basin and the major land uses found within the boundaries of the basin.

