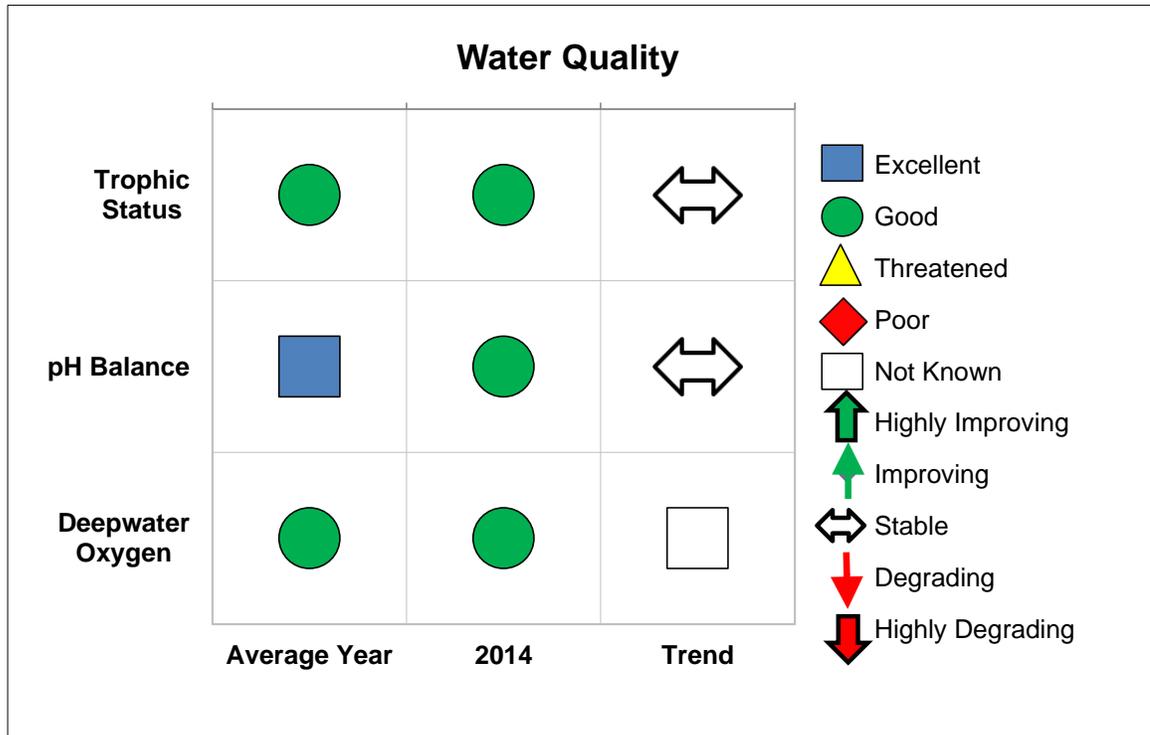




## 2014 DeRuyter Reservoir Scorecard Citizens Statewide Lake Assessment Program

### Water Quality Assessment

Water quality assessments are based on data collected from the deepest part of the lake every other week, for 15 weeks, from late spring through early fall. The data is used to evaluate a number of lake conditions, including algae growth (productivity or trophic status), pH and deepwater dissolved oxygen levels. There is not enough data to identify a trend in the deepwater oxygen levels for any CSLAP lake.



\*All years of CSLAP data collection for the lake except those for which data was not available.

### The following data is collected and analyzed to determine the water quality score.

| Water quality characteristic | Score  | Description of characteristic   | What it means   |
|------------------------------|--|---|---|
| Trophic Status               | Total Phosphorus (TP)                                      | TP is measured because it is an important nutrient that often controls the growth of algae and rooted plants.   | Too much phosphorus can harm aquatic life, water supplies, and recreational uses by causing excessive algae growth.   |
|                              | Chlorophyll <i>a</i>                                       | Chlorophyll <i>a</i> is measured to estimate the amount of algae in a lake.   | The amount of chlorophyll <i>a</i> is usually closely related to the amount of phosphorus and can affect water clarity.   |
|                              | Secchi Disk  | This is a device to measure how far down into the water you can see.  | Water clarity is a strong indicator of the public's opinion of lake conditions.   |
| pH Balance                   | pH   | Water pH is measured to determine its acidity or alkalinity.  | Values between 6 and 9 support most types of plant and animal life.   |
|                              | Conductivity   | Conductivity is measured to estimate the amount of dissolved and suspended solids in water, including salts and organic material.                         | High conductivity values may be related to geology or land use practices and can indicate susceptibility to changes in pH.  |
| Deepwater Dissolved Oxygen   | Phosphorus, ammonia, nitrite, iron, manganese, and arsenic | Dissolved oxygen (DO) is not measured directly, but can be inferred from the levels of certain chemicals in water samples collected near the lake bottom. | Dissolved oxygen is critical for the ecological balance of lakes. Low DO in bottom waters can affect the survival of fish and lake organisms and cause chemical changes in lakes. |

## 2014 DeRuyter Reservoir Scorecard Citizens Statewide Lake Assessment Program

The water quality scores for each water quality characteristic are determined by the following:

| Water quality characteristic | Score      | Criteria Score Elements  | How Criteria Are Used to Determine Score  |
|------------------------------|------------|--|---|
| Trophic Status               | Excellent  | Average value for each trophic indicator (water clarity, chlorophyll <i>a</i> , total phosphorus) assigned score of 3 if oligotrophic <sup>+</sup> , 2 if mesotrophic <sup>+</sup> , 1 if eutrophic <sup>+</sup> | Trophic score = 8 or 9 (two of three trophic indicators = oligotrophic, other is mesotrophic) |
|                              | Good       |  | Trophic score = 6 or 7 (at least two trophic indicators = mesotrophic or "higher")            |
|                              | Threatened |  | Trophic score = 4 or 5 (at least one trophic indicator = mesotrophic or "higher")             |
|                              | Poor       |  | Trophic score = 3 (all trophic indicators = "eutrophic")                                      |
| pH Balance                   | Excellent  | Average pH is evaluated against state water quality standards (should be above 6.5 and below 8.5) and average conductivity evaluated to determine if low buffering capacity against future pH change             | pH between 7.5 and 8.5  |
|                              | Good       |  | pH between 7 and 7.5  |
|                              | Threatened |  | pH above 8.5, pH between 6.5 and 7, or conductivity < 50 ug/l                                 |
|                              | Poor       |  | pH < 6.5  |
| Deepwater Dissolved Oxygen   | Excellent  | Deepwater ammonia and phosphorus levels are compared to surface readings, and assigned a score of 3 if bottom readings are >10x surface readings and a score of 2 if bottom readings are >5x surface readings    | Actual DO data indicating fully oxygenated conditions in stratified lakes to lake bottom      |
|                              | Good       |  | All shallow lakes assumed to be good absent data; deepwater scores = 1                        |
|                              | Threatened |  | Deepwater NH3 score + Deepwater TP score >3 or actual DO data indicating hypoxic conditions   |
|                              | Poor       |  | Deepwater NH3 score = 3 or actual DO data indicating anoxic conditions                        |
|                              | Not known  |  | No deepwater O <sub>2</sub> or indicator data in stratified lake                              |

+ trophic designations-  
 oligotrophic = water clarity > 5 m, chlorophyll *a* < 2 ug/l, total phosphorus < 10 ug/l  
 mesotrophic = water clarity 2-5 m, chlorophyll *a* 2-8 ug/l, total phosphorus = 10-20 ug/l  
 eutrophic = water clarity < 2 m, chlorophyll *a* > 8 ug/l, total phosphorus > 20 ug/l

The water quality trends for each water quality characteristic and measure of lake perception are determined by the following:

- Highly Improving: linear regression correlation coefficient ( $R^2$ ) > 0.5 and p value < 0.01, with trend toward higher "score"
- Improving:  $R^2$  > 0.33 and p value < 0.05, or  $R^2$  > 0.5 and p value < 0.05, or  $R^2$  > 0.33 and p value < 0.01, with trend toward higher "score"
- Stable: neither linear regression nor p value in statistically significant ranges as defined above
- Degrading:  $R^2$  > 0.33 and p value < 0.05, or  $R^2$  > 0.5 and p value < 0.05, or  $R^2$  > 0.33 and p value < 0.01, with trend toward lower "score"
- Highly Degrading:  $R^2$  > 0.5 and p value < 0.01, with trend toward lower "score"

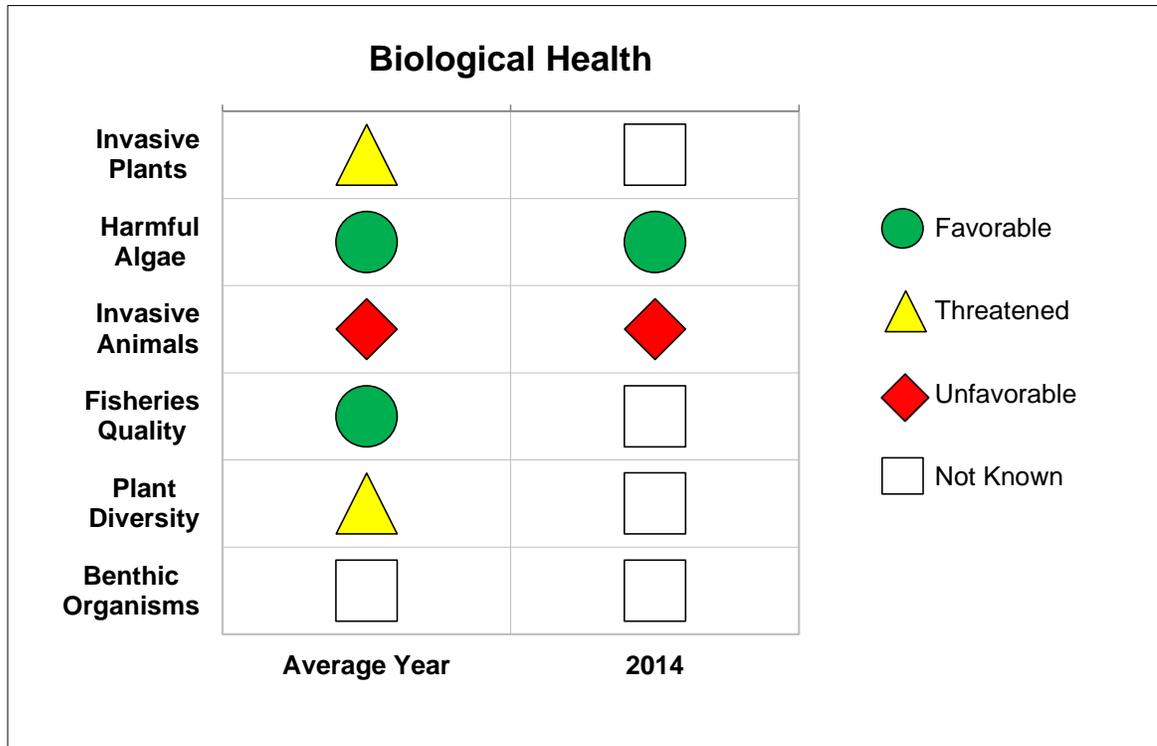
## 2014 DeRuyter Reservoir Scorecard

### Citizens Statewide Lake Assessment Program

#### Biological Health

Biological health of lakes can be evaluated in a number of ways. For CSLAP lakes, biological health evaluations are based on the presence of invasive plants, the type and number of blue-green harmful algal blooms, the presence of invasive animals (zebra mussels, spiny waterflea, etc.), the types of fish, aquatic plant diversity, and the number of pollution sensitive aquatic insects.

Biotic indices have been developed to evaluate a few biological health characteristics. Biotic indices are used to compare the biological community of the lake being sampled to the biological community of a known high-quality lake. (Data to support biological health assessments is not available for all CSLAP lakes.)



\* All years of CSLAP data collection for the lake except those for which data was not available.

## 2014 DeRuyter Reservoir Scorecard

### Citizens Statewide Lake Assessment Program

The following information is used to determine biological health scores.

| Biological Health Characteristic | Description of characteristic   | What it means  |
|----------------------------------|---|--|
| Invasive Plants                  | CSLAP volunteers survey lakes for nuisance, non-native plants (water chestnut, Eurasian water milfoil, etc.).   | Abundant invasive plants can crowd out native and protected plants, create quality problems, and interfere with recreation. "Unfavorable" means at least one invasive plant species has been found. "Threatened" lakes are geographically close to an "infected" lake, or have water quality conditions that put them at higher risk for species invasion.           |
| Harmful Algae                    | DEC and other biologists screen water samples for blue-green algae cell pigments and also test them for algal toxins.   | Harmful algae can reduce oxygen levels and may cause harm to people recreating on the lake. "Unfavorable" means algal toxin readings are unsafe for water recreation; "threatened" means readings are approaching unsafe for water recreation.   |
| Invasive Animals                 | DEC and other biologists survey lakes for nuisance, non-native animals (zebra mussels, spiny water flea, etc.).   | Abundant invasive animals can harm native plant and animal species, influence the likelihood of algal blooms, and interfere with recreation. "Unfavorable" means at least one invasive animal has been found. "Threatened" lakes are geographically close to an "infected" lake, or have water quality conditions that put them at higher risk for species invasion. |
| Fisheries Quality                | DEC and other fisheries biologists measure the length and weight of various species in a lake's fish community and conduct other measures of the health of the fisheries community. | Better fisheries quality indicates the lake has sufficient food resources and habitat to support its fish community. Several "biotic indices" are used to evaluate fish community quality.   |
| Plant Diversity                  | CSLAP volunteers, academic researchers and consultants survey lakes for the number and types of aquatic plants.   | Higher plant diversity indicates a more natural environment and helps prevent invasive species from taking over a lake. "Floristic quality indices" are used to evaluate plant communities.  |
| Benthic Organisms                | DEC and other biologists count and identify the types of bottom living (benthic) aquatic insects in a lake.   | More pollution sensitive (intolerant) aquatic insects in a lake usually indicate good water quality and suitable habitat. "Biotic indices" are used to evaluate benthic communities.   |

## 2014 DeRuyter Reservoir Scorecard Citizens Statewide Lake Assessment Program

The biological health scores for each biological health characteristic are determined by the following:

| Water quality characteristic | Score       | Criteria Score Elements   | How Criteria Are Used to Determine Score  |
|------------------------------|-------------|---|---|
| Invasive Plants              | Favorable   | Aquatic plant surveys are conducted by CSLAP volunteers or by other organizations; invasive plants identified by plant expert   | No evidence of invasive/exotic aquatic plants   |
|                              | Threatened  |   | Invasive plants found in nearby (<10 miles away) lakes or public launch is found on lake  |
|                              | Unfavorable |   | Invasive/exotic aquatic plants found in lake  |
|                              | Not Known   |   | No aquatic plant surveys in lake (this year)  |
| Harmful Algae                | Favorable   | Harmful algae bloom (HAB) sampling conducted in open water and along shoreline; total algae, algae species, phycocyanin (blue green pigment) and algal toxins analyzed in samples   | All data show algae, phycocyanin and toxin levels below DEC bloom criteria <sup>+</sup>   |
|                              | Threatened  |   | Fluoroprobe or toxin levels exceed DEC threatened <sup>#</sup> criteria; phycocyanin levels exceed DEC bloom criteria, or visual evidence of blooms |
|                              | Unfavorable |   | Fluoroprobe or toxin levels exceed DEC bloom criteria in open water or shoreline  |
|                              | Not Known   |   | No HAB data available for lake  |
| Invasive Animals             | Favorable   | Invasive animal (primarily zebra or quagga mussel) surveys are conducted on limited basis in CSLAP lakes; other AIS animals reported through iMapInvasives  | No reports of invasive/exotic aquatic animals and no clear threats exist  |
|                              | Threatened  |   | Invasive animals found in nearby (<25 miles away) waterbodies AND public launch is found on lake, or calcium levels > 20 mg/l                       |
|                              | Unfavorable |   | Invasive/exotic aquatic animals found in lake   |
|                              | Not Known   |   | No information to evaluate presence of exotic animals   |
| Fisheries Quality            | Favorable   | New York does not (yet) have a fish index for biotic integrity (IBI); for lakes with fishery survey data, Minnesota Fish IBI is used to evaluate fisheries quality  | Fish IBI > 60 (= "good" and "excellent")  |
|                              | Threatened  |   | Fish IBI between 40 and 60 (= "fair")   |
|                              | Unfavorable |   | Fish IBI < 40 (= "poor")  |
|                              | Not Known   |   | No fisheries data   |
| Plant Diversity              | Favorable   | New York has not yet developed a floristic quality index (FQI); for lakes with detailed plant survey data, a modified version of the Wisconsin FQI and Florida aquatic plant designations are used for evaluating aquatic floristic quality | mFQI > 5 (= "good" quality), based on # genera  |
|                              | Threatened  |   | mFQI = 3-8 (= "fair" quality), based on # genera  |
|                              | Unfavorable |   | mFQI < 3 (= "poor" quality), based on # genera  |
|                              | Not Known   |   | Insufficient plant survey data to evaluate  |
| Benthic Organisms            | Favorable   | New York has not yet developed a macroinvertebrate IBI; for lakes with detailed macroinvertebrate survey data, Vermont IBI is used to evaluate benthic organism quality   | IBI > 10-15 (based on # genera)   |
|                              | Threatened  |   | IBI between 8 and 15 (based on # genera)  |
|                              | Unfavorable |   | IBI < 8   |
|                              | Not Known   |   | Insufficient macroinvertebrate data to evaluate benthic organisms quality   |

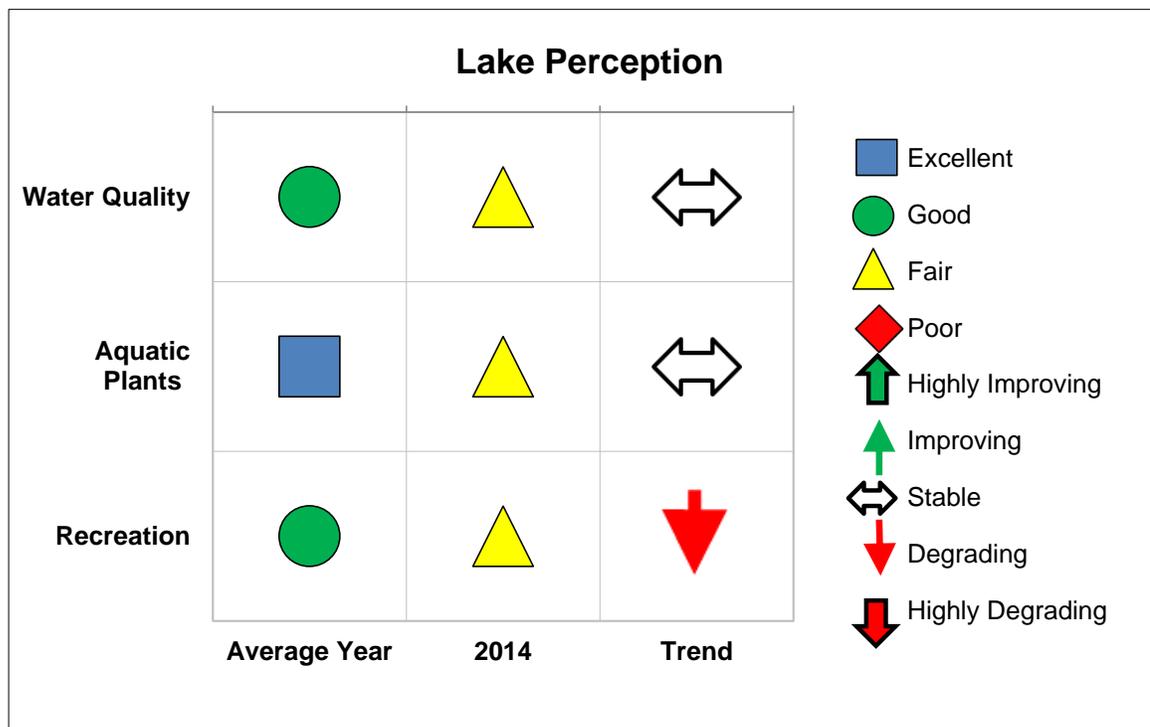
- + DEC bloom criteria- fluoroprobe blue green algae chlorophyll a = 30 ug/l  
 phycocyanin = 200 units  
 algal toxins- microcystin-LR = 20 ug/l ("high toxins") along shoreline, = 10 ug/l in open water
- + DEC threatened criteria- fluoroprobe blue green algae chlorophyll a = 10 ug/l  
 algal toxins- microcystin-LR = 4 ug/l along shoreline or in open water

## 2014 DeRuyter Reservoir Scorecard Citizens Statewide Lake Assessment Program

### Lake Perception

Lake perception scores are based on the visual observations of CSLAP volunteers who answer questions on the Field Observation Form ([http://www.dec.ny.gov/docs/water\\_pdf/cslapsamobs.pdf](http://www.dec.ny.gov/docs/water_pdf/cslapsamobs.pdf)) completed during sampling. The questions ask the volunteer to determine their perceptions of how clear the water looks, the abundance of aquatic plants, conditions affecting current recreational use, and the overall recreational quality of the lake.

Visual observations are very closely connected to measured water quality conditions. This information is helpful to lake managers in deciding on nutrient criteria, or the amount of nutrients that can flow into a lake without compromising its water quality. For New York State lakes, perception data collected by CSLAP volunteers is critical to the development of nutrient criteria (defining "how much is too much") and has been consistently collected by CSLAP volunteers since 1992.



\* All years of CSLAP data collection for the lake except those for which data was not available.

### The following information is used to determine the lake perception scores.

| Lake Perception Characteristic | Description of characteristic   | What it means  |
|--------------------------------|---|--|
| Water Quality                  | Asks the user: How clear does the water look today?   | Clearer water usually indicates lower nutrient levels.   |
| Aquatic Plants                 | Asks the user: How abundant are aquatic plants where people are boating and swimming today?                                   | Lower abundances of aquatic plants usually provide proper ecological balance and are less likely to contribute to recreational use problems, although the absence of plants can also lead to lake problems. Lakes with the most favorable assessments have some plants, but not too many plants. |
| Recreation                     | Asks the user: What is your opinion of the recreational quality of the lake? What factors affect your perception of the lake? | Users' perceptions are associated with water quality conditions and aquatic plant coverage. Positive responses usually indicate good water quality and little to no surface plant coverage. Negative responses are usually associated with poor water quality and/or invasive plants.            |

## 2014 DeRuyter Reservoir Scorecard Citizens Statewide Lake Assessment Program

The lake perception scores for each lake perception characteristic are determined by the following:

| Lake perception characteristic | Score     | Criteria Score Elements  | How Criteria Are Used to Determine Score   |
|--------------------------------|-----------|--|--|
| Water Quality                  | Excellent | Water quality perception is evaluated on a 5 point scale during each CSLAP sampling session, ranging from "crystal clear" (=1) to "severely high algae levels" (=5); average values are computed                                       | Average value < 1.5                        |
|                                | Good      |  | Average value >1.5 and <2.5                |
|                                | Fair      |  | Average value >2.5 and <3.5                |
|                                | Poor      |  | Average value >3.5                         |
| Aquatic Plants                 | Excellent | Aquatic plant coverage is evaluated on a 5 point scale during each CSLAP sampling session, ranging from "not visible at lake surface" (=1) to "plants densely cover surface except in deepest areas" (=5); average values are computed | Average value >2 and <2.5                  |
|                                | Good      |  | Average value >1.5 and < 2 OR > 2.5 and <3 |
|                                | Fair      |  | Average value >3 and <3.5 OR <1.5          |
|                                | Poor      |  | Average value > 3.5                        |
| Recreation                     | Excellent | Recreational conditions are evaluated on a 5 point scale during each CSLAP sampling session, ranging from "beautiful...could not be nicer" (=1) to "lake not usable" (=5); average values are computed                                 | Average value < 1.5                        |
|                                | Good      |  | Average value >1.5 and <2.5                |
|                                | Fair      |  | Average value >2.5 and <3.5                |
|                                | Poor      |  | Average value >3.5                         |

+ lake assessments-

**water quality** = 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels

**aquatic plants** = 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage

**recreation** = 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable

The water quality trends for each water quality characteristic and measure of lake perception are determined by the following:

- Highly Improving: linear regression correlation coefficient ( $R^2$ ) > 0.5 and p value < 0.01, with trend toward higher "score"
- Improving:  $R^2$  > 0.33 and p value < 0.05, or  $R^2$  > 0.5 and p value < 0.05, or  $R^2$  > 0.33 and p value < 0.01, with trend toward higher "score"
- Stable: neither linear regression nor p value in statistically significant ranges as defined above
- Degrading:  $R^2$  > 0.33 and p value < 0.05, or  $R^2$  > 0.5 and p value < 0.05, or  $R^2$  > 0.33 and p value < 0.01, with trend toward lower "score"
- Highly Degrading:  $R^2$  > 0.5 and p value < 0.01, with trend toward lower "score"

## 2014 DeRuyter Reservoir Scorecard Citizens Statewide Lake Assessment Program

### Lake Uses

Lake uses are defined as the best uses for a lake (drinking water, swimming, etc.) as determined by several factors. Lake uses are identified using CSLAP water quality, lake perception and biological assessment information to evaluate where a lake fits in the state Water Quality Standards and Classification system (see overview below).

Each lake use is scored based on the following assessment categories, using assessment methodology (<http://www.dec.ny.gov/chemical/23846.html>) established by DEC to evaluate impacts to lake uses:

- **Supported**- no evidence of impacts to lake use;
- **Threatened**- no evidence of impacts to lake use, but some factor threatens this use (for example, changing water quality, conditions that are nearing impact levels, land-use changes, etc.);
- **Stressed**- occasional or slight impacts to lake use;
- **Impaired**- frequent or persistent conditions limit or restrict lake use; and
- **Precluded**- conditions prevent lake use. This category is uncommon in NYS (and CSLAP) lakes and is not included in the legend for most lake-use scorecard assessments.

| <b>Lake Use</b>          |   |   |   |                      |
|--------------------------|---|---|---|----------------------|
|                          |   |   |   |                      |
| <b>Potable Water</b>     |    |    |    | Not applicable       |
| <b>Swimming</b>          |    |    |    | No impacts           |
| <b>Boating / Fishing</b> |   |   |   | Invasive plants      |
| <b>Aquatic Life</b>      |  |  |  | No impacts           |
| <b>Aesthetics</b>        |  |  |  | Algae levels         |
| <b>Fish Consumption</b>  |  |  |  | Not applicable       |
|                          | <b>PWL</b>  | <b>Average Year</b>   | <b>2014</b>   | <b>Primary issue</b> |

 Supported  
 Threatened  
 Stressed  
 Impaired  
 Not Known

\* All years of CSLAP data collection for the lake except those for which data was not available.

**Overview of the typical water quality classification and their best uses.** For more information visit [www.dec.ny.gov/regs/4592.html#15990](http://www.dec.ny.gov/regs/4592.html#15990)

| Best use | Other uses  | Water Quality Classification |
|----------|---|------------------------------|
| Drinking | Swimming, fishing, and fish, shellfish and wildlife reproduction and survival | Class AA & A                 |
| Swimming | Fishing, and fish, shellfish and wildlife reproduction and survival           | Class B                      |
| Fishing  | Swimming, and fish, shellfish and wildlife reproduction and survival          | Class C                      |
| Fishing  | Swimming, and fish, shellfish, and wildlife survival                          | Class D                      |

## 2014 DeRuyter Reservoir Scorecard Citizens Statewide Lake Assessment Program

The following information is used to determine the condition of lake uses.

| Lake Use         | Description of characteristic   | How this relates to CSLAP   |
|------------------|---|---|
| Potable Water    | The lake is used for drinking water. Only Class AA and A lakes have been approved for this use.   | CSLAP data is not intended to assess the condition of potable water. Other state and local monitoring programs better address this use. However, some CSLAP parameters—chlorophyll <i>a</i> , ammonia, arsenic, iron, manganese, algal toxins—indicate potential impacts to potability.   |
| Swimming         | The lake is used for swimming and contact recreation. Even though some lakes are not classified for this use, all CSLAP lakes should support this use consistent with the federal goal to make all lakes “swimmable.”             | Several CSLAP sampling indicators—water clarity, chlorophyll <i>a</i> , algal toxins, lake perception—can be used to assess swimming conditions.  |
| Boating/Fishing  | The lake is used for boating, fishing and non-contact recreation. Even though some lakes are not classified for this use, all CSLAP lakes should support this use, consistent with the federal goal to make all lakes “fishable.” | Non-contact recreation is evaluated using the lake perception data (visual observations) and aquatic plant surveys.   |
| Aquatic Life     | The lake is used by aquatic life. This is not an official “use” designated by New York State, but water quality standards and other criteria are adopted to protect aquatic life.   | Aquatic life impacts can be evaluated by a number of CSLAP indicators, including pH, dissolved oxygen, and the presence of invasive species.  |
| Aesthetics       | The lake is used for visual enjoyment or the visual beauty of the lake. This is not an official “use” designated by New York State, but water quality standards and other criteria are adopted to protect aesthetics.             | Lake aesthetics can be impacted by a number of factors, including algal blooms, nuisance weeds, or simply reports that “the lake looks bad,” all of which are evaluated in CSLAP.   |
| Fish Consumption | The lake is used for consumption of fish. All lakes are assumed to support this use unless otherwise indicated.   | CSLAP does not collect data or information to evaluate fish consumption. All CSLAP lakes are evaluated against the New York State Department of Health: Health Advice on Eating Fish You Catch ( <a href="http://www.health.ny.gov/environmental/outdoors/fish/health_advisories/">http://www.health.ny.gov/environmental/outdoors/fish/health_advisories/</a> ). |

For many CSLAP lakes, some of the lakes designated uses have previously been evaluated; a summary of these assessments can be found on the DEC Priority Waterbody List (PWL) developed for each of the 17 major drainage basins in the state. These can be found at <http://www.dec.ny.gov/chemical/23846.html>. For some lakes, these are derived from historical assessments of CSLAP or other water quality data, while for others, no PWL assessments are yet available. The “rules” for these assessments are cited in the state Consolidated Assessment and Listing Methodology (CALM) (<http://www.dec.ny.gov/chemical/23846.html>) have changed several times over the last decade, and the CALM document continues to be updated as new assessment tools are evaluated and adopted. The first column of the scorecard reflects the most recent PWL assessment, if available, for each CSLAP waterbody. Non CSLAP data, including “institutional” data (treated water data, bacterial data, consumer confidence report (CCR) summaries, and need for enhanced treatment) may be used for PWL assessments, but are not summarized here.

## 2014 DeRuyter Reservoir Scorecard Citizens Statewide Lake Assessment Program

The lake use scores for each lake use characteristic are determined by the following:

| Lake Use            | Score      | Criteria Score Elements   | How Criteria Are Used to Determine Score  |
|---------------------|------------|---|---|
| Potable Water       | Supported  | Surface water chlorophyll a and HABs data, and deepwater metals data are used to evaluate potable water use.<br><br>Waterbodies not classified as potable water supplies cited as "not known"   | No evidence of any criteria violations (see below)  |
|                     | Threatened |   | Avg hypolimnetic NH <sub>4</sub> > 1, Fe > 0.5, As > 0.3, or Mn >1; avg open water MC-LR > 0.5  |
|                     | Stressed   |   | avg hypolimnetic NH <sub>4</sub> > 2, Fe > 1 or Mn >1; avg open water MC-LR > 1,  |
|                     | Impaired   |   | Avg chl.a > proposed NNC,, or hypolimnetic arsenic > 10 ug/l  |
|                     | Not known  |   | No chlorophyll or deepwater nutrient data   |
| Swimming            | Supported  | Surface water chlorophyll a and HABs data, and lake perception data are used to evaluate potable water use.<br><br>Swimming assessments included here reference only "contact recreation" in the PWL; "public bathing" is evaluated with bacteria and DOH beach data and is not included here | No evidence of any criteria violations (see below)  |
|                     | Threatened |   | Avg TP > proposed NNC; >25% slightly impaired frequency recreation AND > 10% poor clarity triggering slight impairment                        |
|                     | Stressed   |   | >10% Chl.a samples > proposed NNC; or >10% water clarity readings < proposed NNC; or single shoreline bloom MC-LR > 20; or open BG Chl > 30   |
|                     | Impaired   |   | Avg chl.a > proposed NNC; or open MC-LR > 20 ug/l or avg water clarity < proposed NNC; or multiple shoreline MC-LR > 20 and shore BG Chl > 30 |
|                     | Not known  |   | No chlorophyll, clarity, HAB or perception data   |
| Boating/<br>Fishing | Supported  | Aquatic plant coverage, as assessed via lake perception surveys, and present of AIS plants used to evaluate boating. Fishing evaluated by pH and conductivity (latter used to calculate morphoedaphic index, or MDI)  | No evidence of any criteria violations (see below)  |
|                     | Threatened |   | >25% frequency of "dense surface weeds", or presence of AIS plants, or avg pH < 6.5, or MDI < 5   |
|                     | Stressed   |   | >50% frequency of recreational impacts from "excessive weeds" or MDI < 1  |
|                     | Impaired   |   | Impaired listings are not possible under present CALM methodology   |
|                     | Not known  |   | No aquatic plant, perception, pH or conductivity data   |
| Aquatic Life        | Supported  | pH, (inferred) dissolved oxygen, and the presence of AIS species are used to evaluate aquatic life  | No evidence of any criteria violations (see below)  |
|                     | Threatened |   | DO (in 'Biological Health' scorecard) = "fair", or pH < 7 or > 8.5, or AIS plants OR animals present  |
|                     | Stressed   |   | DO (in 'Biological Health' scorecard) = "poor"; or pH < 6.5, or AIS plants AND animals present  |
|                     | Impaired   |   | DO (in 'Biological Health' scorecard) = "poor" in salmonid fishery  |
|                     | Not known  |   | No pH, DO, or AIS information available   |

## 2014 DeRuyter Reservoir Scorecard Citizens Statewide Lake Assessment Program

| Lake Use         | Score      | Criteria Score Elements  | How Criteria Are Used to Determine Score  |
|------------------|------------|--|---|
| Aesthetics       | Supported  | Aesthetics are evaluated through perception surveys and the presence of HABs and AIS species. "Aesthetics" is not recognized by EPA as a designated use, so it is evaluated as a "condition" | No evidence of any criteria violations (see below)  |
|                  | Threatened |  | Max Chl.a > 30 ug/l, OR 1 occurrence of open water or shoreline bloom OR >50% frequency of recreational impacts from "excessive weeds" OR presence of AIS plant species |
|                  | Stressed   |  | "Lake looks bad" cited >25% frequency in question 4 of perception survey; > 1 occurrence/yr of open water or shoreline bloom  |
|                  | Impaired   |  | Impaired listings are not possible under present CALM methodology   |
|                  | Not known  |  | No perception, HAB or AIS information   |
| Fish Consumption | Supported  | Fish consumption is not evaluated through CSLAP- PWL listings are based on whether a waterbody is cited on the DOH Health Advice for Consumption of  | No evidence of any criteria violations (see below)  |
|                  | Threatened |  | 'Harmful algae' listing of "unfavorable" on 'Biological Condition' scorecard  |
|                  | Stressed   |  | Fish tissue data indicates measurable level of contaminants but no listing on DOH Health Advice on Eating Sports Fish and Game  |
|                  | Impaired   |  | Waterbody cited on DOH Health Advice on Eating Sports Fish and Game   |
|                  | Not known  |  | No fish tissue data   |

+ proposed NNC (numeric nutrient criteria): for potable water: Class AA lakes: chlorophyll a = 4 ug/l; for Class A lakes = 6 ug/l;  
proposed NNC (numeric nutrient criteria) for swimming: chlorophyll a = 10 ug/l (all classes); water clarity = 1.2 meters (= 4 feet), TP = 20 ug/l

### Summary

The information displayed in the scorecard is intended to give a quick and comprehensive overview of the results from CSLAP assessments and lake data collected by DEC, academics and private consultants.

CSLAP scorecards summarize information related to water quality, lake perception, biological condition and lake uses. The data and other information collected through CSLAP, or other sources, contribute to the evaluation of lake uses.

This information is the basis for the water quality assessments conducted as part of DEC's waterbody inventory. More comprehensive summaries of CSLAP data are included in individual lake reports and regional and statewide CSLAP data summaries. To fully understand CSLAP lakes, those interested should review the information found in scorecards, individual lake summaries, and regional and statewide CSLAP reports.

CSLAP individual lake reports can be found on the Water Reports by County page of DEC's website (<http://www.dec.ny.gov/lands/77821.html>). Historical reports and regional lake reports are available on the New York State Federation of Lake Associations website (<http://nysfola.mylaketown.com/>).

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### Citizens Statewide Lake Assessment Program

#### More information about CSLAP and NYS Lakes

Many resources are available to lake associations and citizens interested in lake management and ecology on DEC's website, including:

- Information about CSLAP history, sampling activities, forms, and lake association resources are available on DEC's Citizens Statewide Lake Assessment Program web page (<http://www.dec.ny.gov/chemical/81576.html>).
- Measured water quality variable fact sheets ([http://www.dec.ny.gov/docs/water\\_pdf/cslaplpara.pdf](http://www.dec.ny.gov/docs/water_pdf/cslaplpara.pdf))
- Lake management publication, *Diet for a Small Lake* (<http://www.dec.ny.gov/chemical/82123.html>)
- DEC Google Maps and Earth data, including CSLAP Lakes (<http://www.dec.ny.gov/pubs/42978.html>)
- Boating in NYS (<http://www.dec.ny.gov/outdoor/349.html>)
- Fishing in NYS (<http://www.dec.ny.gov/outdoor/fishing.html>)
- Freshwater Fishes of NY (<http://www.dec.ny.gov/animals/269.html>)
- Lake Contour Maps (<http://www.dec.ny.gov/outdoor/9920.html>)
- NYS Watersheds, Lakes and Rivers (<http://www.dec.ny.gov/lands/26561.html>)
- Fish Health Advisories (<http://www.dec.ny.gov/outdoor/7736.html>)
- Routine Statewide Monitoring Program (water quality monitoring programs) (<http://www.dec.ny.gov/chemical/23848.html>)
- Common Aquatic Invasive Species of NY (<http://www.dec.ny.gov/animals/50272.html>)