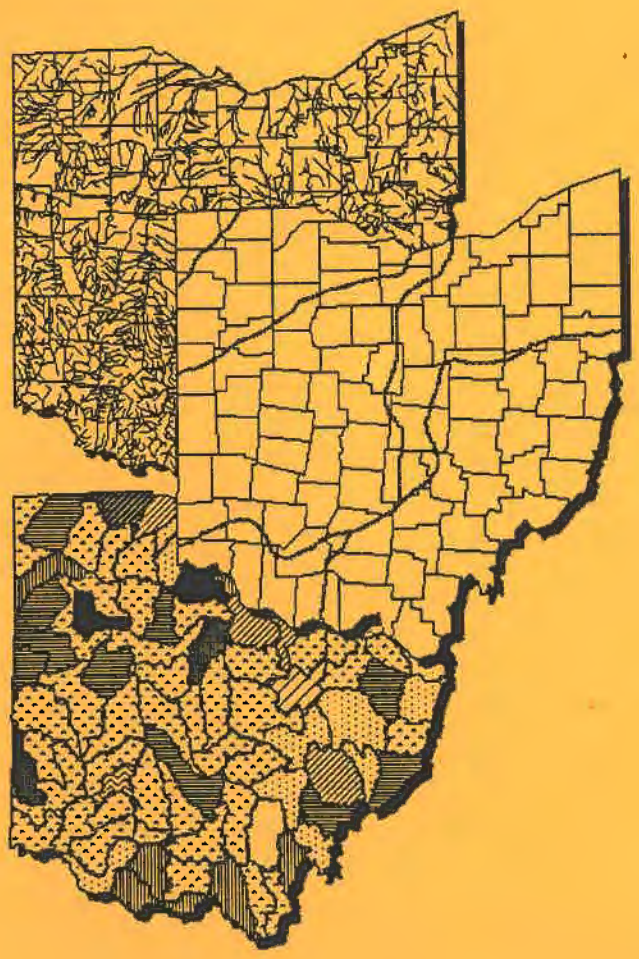
State of Ohio
Environmental Protection Agency

Ecological Assessment Section
Division of Water Quality
Planning & Assessment

1990

# Ohio Water Resource Inventory

## Volume III:
## Ohio's Lakes, Ponds, and Reservoirs



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# I. Narrative Summary

## A. Introduction

Section 305(b) of the Clean Water Act (CWA) requires each state to report on the water quality of its lakes/ponds/reservoirs that are classified under State Water Quality Standards. In addition, Section 314 of the Act (Clean Lakes Program) requires each state to report on various aspects of lake condition including trophic state, impaired/threatened uses, impact from toxic chemicals, and status and trends of water quality. This report is submitted to fulfill these requirements and revises the Ohio EPA 1988 305(b) report (1988a). This report also revises the Ohio Lake Condition Index (Davic and DeShon, 1989). The Ohio Lake Condition Index (LCI) was developed by the Ohio EPA for the 1988 305(b) reporting cycle, and is used in this report: 1) to determine if Ohio's public lakes are meeting the fishable and swimmable CWA goals and meeting designated uses under Ohio Water Quality Standards(1988b), and 2) to document temporal changes in the status and trends of overall lake water quality in Ohio. An explanation of the 1990 revisions to the Ohio LCI is provided as Appendix A.

All lake data used to generate the 1990 305(b) report are stored on computer diskettes that are available from the Ohio EPA, Division of Water Quality Planning and Assessment, 1800 Watermark Drive, Columbus, Ohio 43266-0149.

## B. Inventory of Ohio's Publicly Owned Lakes

According to information provided by the Ohio Department of Natural Resources, there are approximately 50,000 lakes in Ohio with a total surface area of about 200,000 acres (ODNR, unpubl.). About 2200 of these lakes are 5 acres or greater with a total surface area of 134,000 acres (ODNR, 1980). These 2,200 lakes include both public and private lakes. In the 1988 305(b) report, 417 of these greater than 5 acre lakes were identified by the Ohio EPA as being publicly owned. They represent 117,361 acres of the total estimated 200,000 acres of lakes in Ohio (59%).

Publicly owned lakes are defined as those lakes/ponds/reservoirs, including upground reservoirs, which are 5 acres or greater in surface area and where public access to the water is owned by a public entity (i.e., federal, state, county, or municipal government agencies; park districts; conservation districts), or those lakes that are regulated by the Ohio EPA as a primary or secondary public drinking water supply. For the purposes of the CWA Section 314 program, "Significant Public Lakes" are defined as those public lakes that are freely open to the public for recreation. These lakes are eligible for possible funding under the Section 314 Clean Lakes Program, which is administered in Ohio by the Ohio EPA, Division of Water Quality Planning and Assessment. Stream impoundments not locally recognized as lakes (low head dams, locks), are classified under impounded stream segments for the purposes of the 305(b) report. An inventory of Ohio's wetlands, which often include open water, is being developed by the Ohio Department of Natural Resources and should be available by 1992. A list of Ohio's 417 publicly

owned lakes is provided in Appendix B of this report. It is anticipated that this list of 417 public lakes will be expanded in the 1992 305(b) update to include lakes less than 5 acres in surface area.

Two-hundred fifty six (61%) of Ohio's 417 publicly owned lakes are dammed impoundments, 76 (18%) are upground reservoirs, and 27 (6.5%) are natural glacial lakes (Figure 1). The remainder are dug-out or of unknown origin. Public ownership includes the State of Ohio/Ohio Department of Natural Resources (122 lakes-46,123 acres), the Army Corps of Engineers and other federal agencies (39 lakes-46,984 acres) and numerous local government agencies, parks, and conservation districts (257 lakes-24,254 acres).

Three lakes in Ohio are over 5,000 acres in surface area: Grand Lake St. Marys, Auglaize County (12,700 acres); Mosquito Creek Reservoir, Trumbull County (7,850 acres), and Indian Lake, Logan County (5,104 acres). An additional 27 lakes, all publicly owned, range between 1,000 and 5,000 acres.

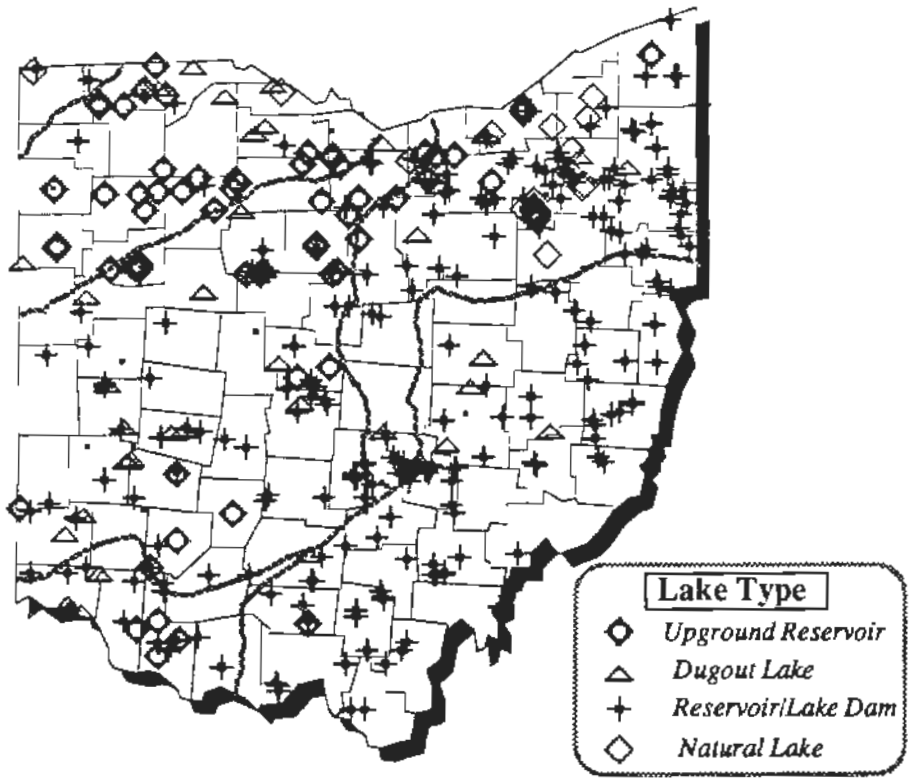


*Figure 1. Location and types of the publicly owned lakes in Ohio by ecoregion; dots indicate data not available.*

## C. Water Quality Assessment Process

Lakes were assessed using information from a number of sources including: (1) the 1982 305(b) report (Youger, 1982), (2) the 1988 305(b) report (Ohio EPA 1988), (3) data collected in 1989 by the Ohio EPA under a Section 314 Lake Water Quality Assessment grant, (4) Secchi disk data collected in 1988 and 1989 by volunteers in the regional planning area of the Northeast Ohio Four County Regional Planning and Development Organization (NEFCO, 1990), (5) data from Ohio's 1988 and 1989 Section 319 Nonpoint Source Assessment Reports (Ohio EPA, 1988c, 1990), and (6) data collected by other sources (U.S. Geological Survey, Army Corps of Engineers, U.S. Soil Conservation Service, university studies, etc.). One data set that has not been compiled is information collected by public drinking water supplies on raw intake water quality. Expanded information should be available for the 1992 305(b) reporting cycle as a result of new monitoring requirements under the Clean Drinking Water Act.

Passage of the 1987 amendments to the Clean Water Act required each State to expand assessment of lake water quality to include an identification of public lakes that have violations of water quality standards and criteria, attain designated uses, attain CWA goals, or are threatened or impaired by point and nonpoint sources of pollution. In order to comply with these new federal mandates, the Ohio EPA developed a multiparameter data reduction scheme called the Ohio Lake Condition Index (LCI). The Ohio LCI was first used in the 1988 305(b) report to assess the overall health or condition of Ohio's 417 publicly owned lakes.

Since the 1988 305(b) report, new data have been collected to allow a reassessment of 77 (18%) of Ohio's 417 publicly owned lakes, which represent 51,803 acres (44.1%) of the total 117,361 acres of public lakes in Ohio. New data were used to update the Ohio LCI assessment of individual lakes and to revise Ohio's method of trophic classification.

## D. 1990 Revisions to Trophic Classification

One of the requirements of the 305(b) process is for States to "classify according to trophic state" their publicly owned lakes. No guidance has been given on a standardized methodology to use. In general, the oligotrophic to hypereutrophic series relates to the primary productivity or "fertility" of a lake. This in turn depends on nutrients received from the watershed, geological age, and lake depth. Lake eutrophication (i.e. the process of increasing primary production and decreasing lake depth) is a complex process and attempts to define it have a long history (see literature review in Reckhow and Chapra, 1983).

In the 1982 305(b) report, Trophic State Index (TSI) points (Carlson, 1977) were used to classify Ohio's lakes by trophic state. TSI values derived from summer chlorophyll-a, spring total phosphorus, and summer Secchi disk depths were summed to arrive at a final trophic state value. However, because Secchi depth readings may be a poor indicator of nutrient enrichment in Ohio's lakes due to non-algal turbidity, the use of Secchi data was eliminated from the trophic state assessment process for the 1990 305(b) reporting cycle. Summer Secchi depth TSI values can be useful if compared against summer chlorophyll-a TSI values. A higher TSI based on Secchi depth may indicate non-algal turbidity and possible light limitation of algal growth. In the volunteer Secchi disk program conducted in 1989 by NEFCO, it was found that over 50% of observations on water color for 55 lakes reported brown or green-brown water. Brown water caused by silt would tend to inflate TSI estimations based on Secchi depth. A list of public lakes with summer Secchi depth TSI values exceeding summer chlorophyll-a TSI values by 7 or more TSI points is given in Table 1. These lakes should be investigated for potential light limitation of algal growth.

Table 1. List of lakes that have summer Secchi depth TSI values 7 or more points greater than summer chlorophyll-a TSI values. See Appendix C for dates sampled.

| Lake | County | Summer TSI | | TSI Difference |
|---|---|---|---|---|
| | | Chl-a | Secchi | |
| Acton Lake | Butler | 60 | 70 | 10 |
| Adams Lake | Adams | 52 | 64 | 12 |
| Baldwin Lake | Cuyahoga | 54 | 93 | 39 |
| Beach City Lake | Tuscarawas | 60 | 83 | 23 |
| Clark Lake | Clark | 39 | 49 | 10 |
| Delaware Lake | Delaware | 44 | 71 | 27 |
| Hargus Lake | Pickaway | 43 | 52 | 9 |
| Harrison Lake | Fulton | 62 | 69 | 7 |
| Hillsboro Reservoir | Highland | 53 | 63 | 10 |
| Hinckley Lake | Medina | 64 | 77 | 13 |
| Hoover Reservoir | Franklin | 51 | 66 | 15 |
| Indian Lake | Logan | 73 | 80 | 7 |
| Lake Park | Mahoning | 63 | 76 | 13 |
| Mt. Gilead Lake #2 | Morrow | 40 | 91 | 51 |
| O'Shaughnessy Reservoir | Delaware | 43 | 71 | 28 |
| Rush Run Lake | Preble | 48 | 60 | 12 |
| Snyder Park Lake | Clark | 59 | 67 | 8 |
| Veto Lake | Washington | 57 | 71 | 14 |
| Wallace Lake | Cuyahoga | 43 | 50 | 7 |

Lakes were considered assessed for the 1990 trophic classification if approved data were available for summer chlorophyll-a (July, August, September) or spring total phosphorus (April, May, June). Carlson (1977) recommends that summer chlorophyll-a may be the best indicator of trophic state and that phosphorus may not be a good indicator in non-phosphorus limited lakes. He also recommends that consideration be given to using spring total phosphorus over summer total phosphorus to determine annual trophic state given a choice between the two types of data. Following these suggestions, the average summer chlorophyll-a TSI or the average spring total phosphorus TSI was reported as the Final TSI for any given year. When both sets of data were available, the average of these data was reported as the annual Final TSI. It was believed that use of both summer chlorophyll-a and spring total phosphorus would tend to lessen errors in trophic state determination due to the very small sample sizes that are available for most of Ohio's lakes. For example, a single chlorophyll-a sample taken during a rare bloom of algae could overestimate trophic state. Likewise, a single phosphorus sample could overestimate trophic state if most of the phosphorus is unavailable (e.g. bound to suspended soil). An

index based on biologically available orthophosphorus would help eliminate this problem, but such data are not widely available for Ohio's lakes.

For the 1988 305(b) report, lakes with a spring total phosphorus concentration between 24 - 75 ug/l and a summer chlorophyll-a concentration between 6 - 40 ug/l were judged to be eutrophic. For the 1990 revision, raw data were converted into TSI values and the following corresponding TSI ranges were used to determine trophic state: mesotrophic (TSI points<48), eutrophic (TSI points $\geq$48,$\leq$66), and hypereutrophic (TSI points>66). No lakes in Ohio meet the TSI requirements for oligotrophic conditions. Final trophic classifications for 143 assessed Ohio lakes are provided in Appendix C. The data are discussed in Section II(A).

It is important to note that the above trophic classification scheme only measures nutrient presence in the water column and does not consider the contribution of nutrients potentially available in the sediment and/or in macrophyte biomass. Ideally, a comprehensive trophic classification protocol would include these other sources of nutrients. Walker (1979) has suggested the use of hypolimnetic oxygen depletion as another parameter to consider in an analysis of lake trophic state. As more monitored data become available, modifications to the above trophic classification may occur in future revisions to the 305(b) report. Regional trophic classification by lake type and ecoregion (see literature review by Heiskary, 1989) will also be considered.

A second revision to the 1990 trophic classification process was an attempt to determine nutrient enrichment trends using Carlson's TSI concept. Where data were available for two time periods separated by at least 3 years, a TSI trend was determined. An increase or decrease in trend was determined by a change in 5 or more TSI points. Due to the logarithmic nature of the TSI scale, each increase of 10 TSI points equates to a 100% increase in total phosphorus concentration (e.g., 40 TSI points = 12 ug/l total phosphorus; 50 TSI points = 24 ug/l total phosphorus). Thus, a change of 5 TSI points or more would suggest at least a 50% increase or decrease in nutrient enrichment between two time periods. Sufficient data were available to determine enrichment trends for 21 of Ohio's 417 public lakes. These data are discussed in Section II(A) and summarized in Appendix C.

## E. Monitored vs Evaluated Data

Federal EPA guidance for the 305(b) report requires each state to distinguish between "monitored" and "evaluated" data used to assess the water quality of lakes. In general, monitored data are considered to be quantitative, and data collection follows established quality assurance methods. Evaluated data are more subjective and based on best professional judgement. Questionnaire data would be an example of commonly used evaluated data. Federal guidance also requires that historical monitored data (i.e. over five years old) be considered evaluated for the 305(b) report process. However, adherence to the five year rule suggested by the USEPA was deemed to be overly restrictive for Ohio due to a general lack of recent monitored data. For the 1990 305(b) update, monitored lake data included all data collected by Ohio EPA, or other approved sources, from 1973 to 1989. Evaluated data included responses to a

questionnaire distributed by the Ohio EPA in 1987 for the State's nonpoint assessment, and responses to a lake questionnaire distributed in 1989 as part of Ohio's Lake Water Quality Assessment surveys (Appendix G). As more recent monitored data are collected, it is anticipated that data over ten years old will be considered as evaluated data in future 305(b) reports.

## F. Historical Lake Monitoring

In general, there is a lack of comprehensive monitored data for lakes in Ohio. Twenty-one (21) lakes were sampled in the early 1970s as part of the National Eutrophication Survey (see literature summary in the 1982 305(b) report). Prior to the 1970s, lake surveys were generally restricted to university research or unpublished data collected by various local government agencies.

The first major survey of Ohio's lakes was the cooperative lake monitoring program between the Ohio EPA and the U.S. Geological Survey from 1975 to 1980. Eighty five (85) lakes were sampled to provide baseline data for selected chemical, physical, and biological parameters. The results of this program were published in three volumes (Tobin and Youger, 1977,1987; Angelo and Youger, 1985), and also summarized in the Ohio EPA 1982 305(b) report (Youger, 1982). Also conducted in the 1970s were Clean Lakes Program Phase I Diagnostic and Feasibility studies on two Summit County lakes (Summit Lake and Meadow Brook Lake); however, complete Phase I reports were not finalized and Phase II Implementation applications were not submitted.

Between 1980 and 1981, the Ohio EPA sampled 26 lakes as part of a Section 314 Clean Lakes Assessment Grant. These data are summarized in the 1982 305(b) report. Between 1982 and 1989 a small number of lakes were sampled during comprehensive water quality surveys of major river basins. In 1989, Ohio EPA received a Section 314 Lake Water Quality Assessment grant to sample an additional 50 lakes in 1989 and 1990. Data from the 1989 surveys are included in this report. The 1990 survey data will be included in the 1992 305(b) update.

Since 1987, three Clean Lakes Program Phase I projects have been coordinated by the Ohio EPA (Winton Woods Lake, Hamilton County; Indian Lake, Logan County; and Sippo Lake, Stark County). For Winton Woods Lake and Indian Lake, Phase I reports have been finalized and applications made for Phase II grants. The Sippo Lake Phase I project is in progress. Phase I projects in Ohio have been among the most comprehensive lake and watershed surveys conducted in the State, pooling resources from numerous local, state, and federal government agencies, lake consultants, and universities.

Lake data from other sources include the Army Corps of Engineers which has built 28 dams in Ohio and conducts water quality and sedimentation surveys. Other sedimentation surveys have been conducted by the U.S. Soil Conservation Service (SCS) and the Ohio Department of Natural Resources, Division of Water. Results of all sedimentation surveys in Ohio up to 1975 have been summarized by the U.S. Department of Agriculture (USDA, 1975). During the summer of 1988, the SCS conducted detailed

sedimentation surveys of 47 lakes in Ohio. Data from these surveys were used to update the appropriate LCI parameters for each lake.

In 1988, the Northeast Ohio Four County Regional Planning and Development Organization (NEFCO) developed a volunteer Secchi disk monitoring program for both public and private lakes in a four county area of northeast Ohio. This was the first volunteer lake monitoring program for Ohio and included data collected by 42 volunteers on 55 lakes in 1989. Data collected for public lakes in 1988 and 1989 are summarized in Appendix C.

### G. Lake Pollution Control Procedures

All public and private lakes, except upground reservoirs, are designated as Exceptional Warmwater Habitat in Ohio's Water Quality Standards-Chapter 3745 of the Ohio Administrative Code. Publicly owned lakes are also designated State Resource Waters. All State Resource Waters are protected as potential public water supplies (PWS). In addition, the Ohio EPA Antidegradation Policy applies to State Resource Waters such that present ambient water quality and uses shall be maintained and protected without exception. All lakes have, at a minimum, a primary contact recreational use designation (PCR).

In addition to Water Quality Standards, the Ohio EPA has a States Lakes Policy which is used to establish effluent limitations for new or expanding point source discharges to lakes and reservoirs, and to prevent degradation of these multi-use waters. The most recent revision of the Ohio EPA State Lakes Policy is provided in Appendix D.

The Ohio EPA and county game wardens respond to citizen complaints of spills and fish kills in both public and private lakes in Ohio. Use of chemicals in public lakes to control aquatic plants requires prior approval of the Ohio EPA and the Ohio Department of Agriculture.

## II. Clean Lakes Program 305(b) Report Requirements

U.S. EPA Region V guidance requests that each State identify "significant" publicly owned lakes that would be eligible for Section 314 Clean Lakes Program funding. For the purposes of this report, significant lakes are those publicly owned lakes greater than 5 acres which are freely open to the public for recreation (boating, fishing, swimming). This definition excludes those privately owned lakes that are open to the public for a fee and those publicly owned lakes used exclusively as water supply sources. Ohio's 305 significant publicly owned lakes are highlighted in Appendix B.

The Clean Water Act requires each State to provide the following information:

(A) *Provide an identification of all publicly owned lakes, classified according to trophic condition, and if possible by water quality trend.*

Ohio has 417 publicly owned lakes greater than 5 acres surface area which were identified by the Ohio EPA for the 1988 305(b) reporting cycle. For the 1990 305(b) revision, data were available to assess the trophic condition of 143 of Ohio's 417 publicly owned lakes (Figure 2). A summary of Ohio's lake trophic classification is provided in Appendix C. Of these 143 lakes, 18 had insufficient data (i.e. only Secchi depth data or phosphorus and chlorophyll data collected outside the required time periods), 57 had pre-1980 monitored data, and 68 had post-1980 monitored data. Of the 125 lakes with sufficient data, 30 (24%) were mesotrophic (Final TSI points < 48); 69 (55%) were eutrophic (Final TSI points ≥48,≤66); and 26 (21%) were hypereutrophic (Final TSI points >66).

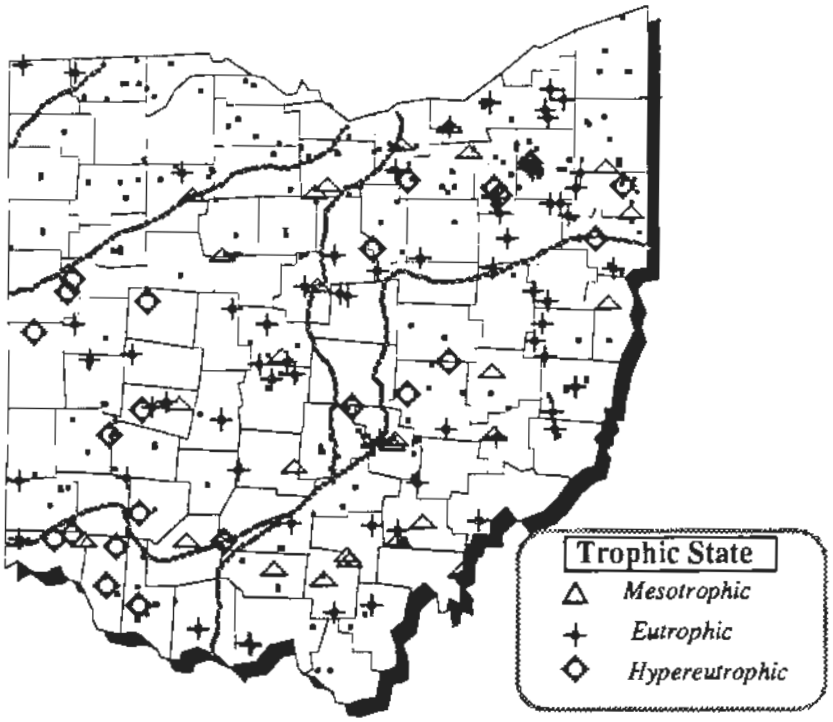


*Figure 2. Trophic state of Ohio's publicly owned lakes by ecoregion, small points indicate insufficient data.*

Much variability existed in trophic classification using spring total phosphorus and summer chlorophyll-a TSI values. Using spring total phosphorus TSI values alone, 36 (35%) of 103 monitored lakes were judged to be mesotrophic and 27 (26%) were judged to be hypereutrophic. Conversely, using only summer chlorophyll-a TSI values, 16 (14%) of 113 monitored lakes were judged to be mesotrophic and 44 (39%) were classified hypereutrophic. Caution must be used in the interpretation of these data due to very small sample size. For most lakes, trophic condition was determined based on 1 or 2 data points. Also, Carlson's TSI regression models were developed with summer phosphorus concentrations, but spring phosphorus is used to determine trophic state in this report. The high degree of variability in trophic classification between the use of spring total phosphorus and summer chlorophyll-a needs further investigation.

Sufficient long-term (over three years) TSI data were available to estimate enrichment trends for 21 of Ohio's 417 publicly owned lakes (Appendix C). Based on changes in Final TSI values, 4 of 21 lakes showed an increasing enrichment trend (+5 or more TSI points); 4 lakes showed no change; and 13 lakes

showed a decreasing enrichment trend (- 5 or more TSI points). Until a much larger database is available, and until federal guidance is provided on appropriate methods for determining "trends in trophic condition", not much weight should be given to the observation that 13 of 21 lakes appear to have decreased levels of nutrients in the water column. However, such a trend of decreased nutrient enrichment would not be unexpected due to efforts to decrease point source loadings of phosphorus from major NPDES dischargers through Ohio's State Lakes Policy.

(B) *Provide a list of publicly owned lakes for which uses are known to be impaired, do not meet water quality standards, or require implementation of control programs to maintain compliance with applicable standards.*

Many of Ohio's lakes have multiple uses and may show partial use support or impairment for one use but not for another. For this report, each lake was assessed for all possible uses, whether or not those uses are currently being realized. The Ohio LCI was used to determine use support and CWA goal attainment for Ohio's 417 publicly owned lakes. Separate assessments were made for the fishable and swimmable CWA goals, and the Aquatic Life (EWH) and Public Water Supply (PWS) use designations.

The Ohio LCI assessment process provides four levels of lake impairment for each designated use including: full use (no or minimal impact), full use but threatened (slight impairment based on best professional judgement), partial use (moderate impairment based on the presence of threatened LCI parameters), and impaired use (presence of violations of Ohio Water Quality Standards and/or other criteria). Lakes judged to be impaired for a designated use by the Ohio LCI assessment process are listed in Table 2. Partial use support lakes judged to be impacted or potentially impaired due to the presence of 7 or more threatened LCI parameters are listed in Table 3. Impairment of a use does not necessarily mean that a lake cannot be used for that use, nor that a public health hazard exists. Impaired lakes, and potentially impaired lakes, represent high priority lakes in need of more intensive study to determine the severity of the problem, to identify problem causes and sources, and to develop possible restoration alternatives (i.e. Phase I Diagnostic and Feasibility projects). The most significant problems with Ohio's lakes and those causing considerable non-support of beneficial uses continue to be volume loss due to sedimentation, aesthetics, nuisance growths of macrophytes, and organic and nutrient enrichment. Turbidity, as determined by Secchi disk transparency, is also a concern in numerous lakes and is probably a reflection of the other problem parameters.

Major and moderate sources of non-support are primarily nonpoint in origin and affect over 22,000 acres of those Ohio Lakes assessed. Agricultural nonpoint sources are by far having the greatest influence with major and moderate effects in over 11, 000 acres. Other nonpoint sources with moderate magnitude impacts include urban runoff (7,978 acres) and septic tanks (6,624 acres). Point sources (all categories) have moderate impacts on greater than 9,000 acres of Ohio Lakes (see Tables 4-3 and 4-5 in section V). The total assessed acreage is less than reported in the 1988 305(b) report because we are now using the LCI and the questionaire associated with it (see Appendix A) as the basis for generating all our future assessments. Thus, we will have a consistent and rigorous database for identifying trends and for detecting changes in water quality due to implementation of source controls.

Table 2. List of lakes with impaired uses as judged by the Ohio LCI assessment process.

| Lake | County | Impaired Uses[1] | Impaired LCI Parameters[2] | Threatened LCI Parameters[2] |
|---|---|---|---|---|
| Baldwin Lake | Cuyahoga | SWIM | IBI, V | SD, A, P |
| Essington Lake | Perry | PWS, EWH | M, PPM | NP |
| Findley Lake | Lorain | SWIM | A | SD, IBI, NM, NP, P, V |
| Harrison Lake | Fulton | PWS, EWH | PPM | SD, NM, A, NP PPO, P, N, V |
| Hinckley Lake | Medina | FISH | IBI | SD, A, P, V |
| Indian Lake | Logan | SWIM | A | SD, IBI, NM, NP, P, N, V |
| Lake Aquilla | Geauga | SWIM | IBI, NM, A | P, V |
| Lake Hope | Vinton | PWS, EWH | M | SD, NM, NP, PPM, P, V |
| Lake Park | Mahoning | PWS, EWH | NP | SD, P |
| Long Lake [3] | Summit | SWIM | | SD, A, P, N, V, S |
| Madison Lake | Madison | SWIM, PWS | V | SD, NM, A, P, N, S |
| Newport Lake | Mahoning | SWIM | B | SD, A, PPM, P, N, V |
| Sippo Lake | Stark | SWIM, PWS | NM, V | A, NP, P |
| Spring Valley Lake | Warren | SWIM | IBI, NM, A | NP, PPO, P, N |
| Swift Run Lake | Miami | SWIM | NM | SD, NP, PPO, P, N, V |
| Tycoon Lake | Gallia | PWS, EWH | PPM | NM, P |
| Westville Lake | Columbiana | SWIM | A | NM, P, V, S |
| Winton Woods Lake | Hamilton | FISH, SWIM PWS | IBI, A, B | SD, NM, P, N, V |

[1] SWIM-CWA Swimmable Goal; FISH-CWA Fishable Goal; EWH-Exceptional Warmwater Habitat Aquatic Life Use; PWS-Public Water Supply Use.

[2] LCI abbreviations: IBI-Index of Biotic Integrity; NM- Nuisance growths of macrophytes; A-Aesthetics; NP-Non priority pollutants; PPO-Priority organics; PPM-Priority metals; P-Productivity (summer chlorophyll-a); N-Nutrients (spring total phosphorus); F-Fish tissue contamination; V-Volume loss due to sedimentation; B-Fecal coliform bacteria; M-Acid mine drainage; SD-Secchi disk transparency.

[3] Judged impaired due to >50% threatened LCI parameters used to determine the CWA swimmable goal.

Table 3. List of impacted or potentially impaired lakes as judged by the Ohio LCI assessment process. Lakes with 7 or more threatened LCI parameters are listed.

| Lake | County | Threatened LCI Parameters[1] |
|---|---|---|
| Acton Lake | Butler | SD, IBI, A, PPO, P, N, V |
| Charles Mill Lake | Ashland | SD, NM, A, NP, P, N, V |
| Clouse Pond | Perry | SD, NM, A, P, N, V, B |
| Deer Creek Lake | Pickaway | SD, A, NP, PPM, P, N, V |
| Dillon Reservoir | Muskingum | SD, NM, A, NP, P, N, V |
| East Fork Lake | Clermont | SD, NM, A, PPO, PPM, P, N, V |
| Lake Loramie | Shelby | SD, A, NP, PPO, P, N, V |
| Lake Rockwell | Portage | SD, NM, A, PPO, PPM, P, N, V |
| Meadow Brook Lake | Summit | SD, NM, A, P, N, V, B |
| Paint Creek Lake | Highland | SD, NM, A, PPO, P, N, V |
| Sharon Woods Lake | Hamilton | SD, NM, A, NP, P, N, V |
| Van Buren Lake | Hancock | SD, NM, NP, PPO, P, N, V |

[1] See Table 2 for definition of symbols.

(C) *Identify those lakes in which water quality has deteriorated as a result of high acidity that may be due to acid mine drainage.*

Two lakes were identified in the 1988 305(b) report as having impaired water quality due to acid mine drainage-Essington Lake, Perry County and Lake Hope, Vinton County. No additional data has been collected for these two lakes, nor have any other lakes been identified as acid mine impaired. A list of lakes potentially impacted by acid mine drainage was provided in the 1988 305(b) report. For the most part, lakes potentially affected by acid mine drainage are found only in the unglaciated Western Allegheny Plateau ecoregion of southeast Ohio where extensive resource extraction (coal mining) occurs.

(D) *Provide a general assessment of the status and trends of water quality in lakes, including the extent to which the use of lakes is impaired from point and nonpoint pollution, particularly with respect to toxic pollution.*

The Ohio LCI assessment process was used to summarize the status of lake condition in Ohio's 417 publicly owned lakes. The 1990 assessment of lake condition for 14 parameters, including toxic chemicals, is provided in Table 4. Table 5 presents the 1988 assessment for these same parameters. All parameters indicated an increase in the number and acres of lakes assessed in 1990 as compared to 1988. The most significant increase in available information was for the IBI, fish tissue, sediment contami-

Table 4. 1990 305(b) summary of Lake Condition Index (LCI) parameters for Ohio's 417 publicly owned lakes.

| | | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lakes Assessed | No. | 25 | 173 | 191 | 103 | 47 | 99 | 130 | 134 | 14 | 180 | 40 | 89 | 111 | 140 |
| | Acres | 26,802 | 100,437 | 102,497 | 88,926 | 39,078 | 92,087 | 86,868 | 103,306 | 27,614 | 102,751 | 33,524 | 90,733 | 91,952 | 103,055 |
| Not Assessed | No. | 392 | 244 | 226 | 314 | 370 | 318 | 287 | 283 | 403 | 237 | 377 | 328 | 306 | 277 |
| | Acres | 90,559 | 16,924 | 14,864 | 28,435 | 82,283 | 25,274 | 30,493 | 14,055 | 89,747 | 14,610 | 83,837 | 26,628 | 25,409 | 14,306 |
| Full Use monitored | No. | 0 | 0 | 37 | 74 | 5 | 75 | 16 | 36 | 12 | 12 | 34 | 78 | 109 | 26 |
| | Acres | 0 | 0 | 13,158 | 51,772 | 13,230 | 77,315 | 3,679 | 22,423 | 27,434 | 10,837 | 32,686 | 88,362 | 91,809 | 5,759 |
| Full Use evaluated | No. | 10 | 100 | 52 | 0 | 13 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 23 |
| | Acres | 17,007 | 70,839 | 21,472 | 0 | 8,117 | 0 | 0 | 0 | 0 | 13,880 | 0 | 0 | 0 | 13,456 |
| Partial Use monitored | No. | 0 | 1 | 45 | 24 | 0 | 21 | 0 | 0 | 2 | 29 | 6 | 8 | 0 | 58 |
| | Acres | 0 | 183 | 41,371 | 33,488 | 0 | 14,456 | 0 | 0 | 180 | 18,532 | 838 | 2,016 | 0 | 37,469 |
| Partial Use evaluated | No. | 10 | 68 | 51 | 3 | 29 | 0 | 17 | 31 | 0 | 113 | 0 | 1 | 0 | 33 |
| | Acres | 9,407 | 29,202 | 20,951 | 3,630 | 13,731 | 0 | 5,825 | 4343 | 0 | 59,276 | 0 | 67 | 0 | 46,371 |
| Impaired Use monitored | No. | 0 | 0 | 6 | 2 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 2 | 2 | 0 |
| | Acres | 0 | 0 | 5,545 | 36 | 0 | 316 | 0 | 0 | 0 | 194 | 0 | 288 | 143 | 0 |
| Impaired Use evaluated | No. | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| | Acres | 388 | 213 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Eutrophic monitored | No. | | | | | | | 53 | 40 | | | | | | |
| | Acres | | | | | | | 39,997 | 38,907 | | | | | | |
| Hypereutrophic monitored | No. | | | | | | | 44 | 27 | | | | | | |
| | Acres | | | | | | | 37,367 | 37,633 | | | | | | |

LCI parameter abbreviations: IBI = OhioEPA Index of Biotic Integrity, NM = Nuisance growths of macrophytes, A = Aesthetics, NP = Non-priority pollutants, PPO = Priority organics (toxics), PPM = Priority metals (toxics), P = Productivity (summer chlorophyll-a), N = Nutrients (spring total phosphorus), F = Fish tissue contamination, V = Volume loss due to sedimentation, B = Fecal coliform bacteria, M = Acid mine drainage.

Table 5. 1988 305(b) summary of Lake Condition Index (LCI) parameters for Ohio's 417 publicly owned lakes.

| | | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lakes | No. | 0 | 166 | 185 | 92 | 28 | 87 | 125 | 125 | 5 | 164 | 2 | 86 | 100 |
| Assessed | Acres | 0 | 99,895 | 101,971 | 88,153 | 9,471 | 91,226 | 86,399 | 102,029 | 545 | 99,012 | 180 | 89,995 | 91,179 |
| Not | No. | 417 | 251 | 232 | 325 | 389 | 330 | 292 | 292 | 412 | 253 | 415 | 331 | 317 |
| Assessed | Acres | 117,323 | 17,428 | 15,353 | 29,170 | 107,852 | 26,097 | 30,924 | 15,295 | 116,778 | 18,311 | 117,143 | 27,328 | 26,144 |
| Full Use | No. | 0 | 0 | 33 | 67 | 1 | 56 | 15 | 29 | 3 | 0 | 1 | 75 | 98 |
| monitored | Acres | 0 | 0 | 12,413 | 58,411 | 100 | 61,498 | 3,536 | 15,785 | 365 | 0 | 80 | 86,335 | 91,036 |
| Full Use | No. | | 92 | 51 | 0 | 0 | 0 | | | | 15 | | | |
| evaluated | Acres | | 60,110 | 19,352 | 0 | 0 | 0 | | | | 5,828 | | | |
| Partial Use | No. | 0 | 0 | 39 | 20 | 0 | 26 | | | 2 | 0 | 1 | 7 | 0 |
| monitored | Acres | 0 | 0 | 37,350 | 26,076 | 0 | 22,890 | | | 180 | 0 | 100 | 1,620 | 0 |
| Partial Use | No. | | 74 | 60 | 3 | 27 | 0 | 19 | 34 | | 149 | | 2 | |
| evaluated | Acres | | 39,785 | 27,662 | 3,630 | 9,731 | 0 | 5,901 | 4,509 | | 93,184 | | 1,752 | |
| Impaired | No. | 0 | 0 | 2 | 2 | 0 | 5 | | | 0 | 0 | 0 | 2 | 2 |
| monitored | Acres | 0 | 0 | 5,194 | 36 | 0 | 6,839 | | | 0 | 0 | 0 | 288 | 143 |
| Eutrophic | No. | | | | | | | 48 | 33 | | | | | |
| monitored | Acres | | | | | | | 32,681 | 40,289 | | | | | |
| Hypereutrophic | No. | | | | | | | 43 | 29 | | | | | |
| monitored | Acres | | | | | | | 44,282 | 41,446 | | | | | |

LCI parameter abbreviations: IBI = OhioEPA Index of Biotic Integrity, NM = Nuisance growths of macrophytes, A = Aesthetics, NP = Non-priority pollutants, PPO = Priority organics (toxics), PPM = Priority metals (toxics), P = Productivity (summer chlorophyll-a), N = Nutrients (spring total phosphorus), F = Fish tissue contamination, V = Volume loss due to sedimentation, B = Fecal coliform bacteria, M = Acid mine drainage.

nation, and volume loss parameters. These increases in data were primarily the result of the Ohio EPA Section 314 Lake Water Quality Assessment Grant and the 1988 SCS sedimentation survey. A significant number of lakes have not been assessed for most of the 14 Ohio LCI parameters. This represents a deficiency in the Ohio's water quality assessment process. In addition, much of the assessed data are evaluated rather than monitored data. Evaluated data are the only type of data used to assess two LCI parameters-IBI and nuisance growths of macrophytes. Both will need additional development before reliable, monitored data become a reality.

## III. Nonpoint Source Lake Assessment

Section 319 of the Clean Water Act requires each state to report the extent that nonpoint sources of pollution effect waters of the State. The Ohio EPA completed a nonpoint source assessment in 1988, which was updated in 1989 (Ohio EPA, 1988b,1990). As part of this NPS assessment process, a procedure was developed to "target" public lakes with potential nonpoint source pollution problems. This procedure uses 8 of the 14 Ohio LCI parameters as being indicative of nonpoint source pollution: 1) productivity based on summer chlorophyll-a, 2) nutrients based on spring total phosphorus, 3) volume loss due to sedimentation, 4) fecal coliform bacteria, 5) acid mine drainage, 6) aesthetics (fish kills, algae blooms, etc.), 7) priority pollutant metals, and 8) presence of nuisance macrophytes. A lake was targeted as being NPS impacted if four or more of these eight parameters indicate that full use (fu) was not being attained, regardless of whether the data was monitored or evaluated. A list of 69 NPS targeted lakes is provided in Appendix F. These lakes are associated with watersheds that have been given a high priority for nonpoint source implementation control measures. Additional details are given in the 1989 Nonpoint Source Assessement document.

## IV. Recommendations

Efforts since 1988 by the Ohio EPA and other agencies to assess the overall condition of Ohio's lakes should be continued and expanded. Additional data are needed on volume loss due to sedimentation, fish tissue and sediment contamination, and overall health of the biological resource (e.g. thru development of biocriteria or assessment criteria for fish, plankton, macrophytes, etc.). Besides continuing to obtain Section 314 Phase I and II grants for intensive monitoring of specific lakes, a state funded inland lake monitoring program needs to be initiated to collect baseline and long-term chemical, physical, and biological data for all of Ohio's 417 publicly owned lakes. More lakes need to be sampled more often to determine trends in resource condition. Resources directed to development of wetland monitoring procedures and assessment criteria should also be given a high priority. Finally, the volunteer citizen monitoring program established by NEFCO should be expanded statewide. Resources should be made available to include chlorophyll-a and total phosphorus measurements along with Secchi depth as the minimum monitoring components.

## V. REQUIRED 305(B) REPORT SUMMARY TABLES LAKES/PONDS/RESERVOIRS

This section of the report presents lake summary tables that are required by Section 305(b) of the Clean Water Act. The data for these tables were obtained from the Ohio LCI assessment process, 305(b) Waterbody System computer files, and Ohio's Section 319 Nonpoint Source Assessment. Data on sources and causes of pollution were obtained from monitored data and detailed responses to the 1989 Lake Water Quality Assessment Survey Questionaire only. The questionnaire has been revised for the 1990 sample season (Appendix G). The data set for causes and sources of pollution will be expanded for the 1992 305(b) report as more lake questionnaires are distributed throughout Ohio. The following 305(b) summary tables are presented:

| | |
|---|---|
| 1. Appendix B. | Atlas of Ohio's Lakes/Ponds/Reservoirs |
| 2. Appendix H. | Summary of Classified Uses |
| 3. Appendix I. | Designated Use Support (Ohio's 417 Publicly Owned Lakes) |
| 4. Appendix J. | Relative Assessment of Causes: Total Sizes of Lake Water Not Fully Supporting Uses/Total Size of Lake Water Affected by Toxics. |
| 5. Appendix K. | Relative Assessment of Sources: Total Sizes of Lake Water Not Fully Supporting Uses |

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# APPENDIX A

## 1990 Revisions to the Ohio Lake Condition Index (LCI) & Davic and DeShon (1989)

## APPENDIX A

### 1990 Revisions to the Ohio Lake Condition Index (LCI)

The Ohio Lake Condition Index (LCI) was developed by the Ohio EPA for the1988 3059b) reporting cycle. The assessment protocol was revised and published in 1989 (Davic and DeShon, 1989). Further revisions to the Ohio LCI process were subsequently made and are described below.

1. A 14th parameter, Secchi Disk Depth, has been added to the original 13 Ohio LCI parameters. This revision was deemed necessary due to the success of the volunteer Secchi disk monitoring program that was conducted in 1988 and 1989 by NEFCO in northeast Ohio. It is also anticipated that a statewide volunteer Secchi disk program for lakes will be recommended in Ohio's Nonpoint Source Monitoring Strategy.

The Secchi disk is a limnological tool used to measure water clarity. Because all of Ohio's historical Secchi depth measurements are with a standard black and white disk, only this type of data will be used in the Ohio LCI assessment process. Although there are no Ohio standards or criteria for Secchi depth, the State of Illinois uses a four (4) foot minimum transparency criterion based on Secchi depth as a recommendation for bathing beaches (Illinois EPA, 1988). Based on this criterion, the following subindex determinations for the Ohio LCI Secchi Disk Depth parameter were used:

| Raw Data | Condition |
|---|---|
| Greater than 4 foot depth | fu(m) |
| Less than 4 foot depth | t(m) |

Raw data are average summer (July, August, September) Secchi disk depths. All Secchi depth readings are considered to be monitored data. The Secchi Disk Depth parameter was added to the original list of six (6) parameters used in the Ohio LCI assessment process to determine achievement of the CWA swimmable goal.

2. A second revision to the Ohio LCI was the transformation of the Productivity (P) parameter (summer chlorophyll-a) and the Nutrient (N) parameter (spring total phosphorus) from concentrations into corresponding Carlson Trophic State Index (TSI) points. For both Productivity and Nutrient subindex determinations, the following TSI point ranges were used:

| Raw Data | Trophic State | Condition |
|---|---|---|
| TSI points <48 | Mesotrophic | fu(m) |
| TSI points ≥48,≤66 | Eutrophic | t-e(m) |
| TSI points >66 | Hypereutrophic | t-h(m) |

3. A third revision involved using questionnaire data collected during Ohio EPA's Lake Water Quality Assessement surveys so that evaluated data could be used to assess the Index of Biotic Integrity (IBI) parameter. The following two questions were asked:

a. Does the lake support a well balanced mix of sport and forage fish, or do a few species dominate (circle one)?

Insufficient data; Well Balanced Fishery;
Partially Balanced Fishery; Impaired Fishery

b. How would you rate the fishing in this lake?

Excellent; Good; Acceptable; Marginal; Very Poor

Responses to these questions were used to make an evaluated assessment of the game species fishery, and the data were used to determine achievement of the CWA fishable goal. Only monitored data using Ohio EPA approved lake IBI procedures can be used to determine attainment status of the EWH aquatic life use designation. A lake IBI will require the necessary developmental work before this parameter can be fully incorporated into the Ohio LCI assessment process.

4. A fourth revision of the Ohio LCI was to update assessment of the Aesthetic (A) parameter using responses to the 1989 lake questionnaire. To provide monitored data for aesthetics, the following question was asked:

On a scale of 1-10 (1=no problem, 10=extreme problem), please rank the following summer aesthetic conditions at this lake:

1. Algae blooms (pea green water)
   1-2-3-4-5-6-7-8-9-10
2. Floating algae scums
   1-2-3-4-5-6-7-8-9-10
3. Fish kills (more than 200 fish at a time)
   1-2-3-4-5-6-7-8-9-10
4. Odors
   1-2-3-4-5-6-7-8-9-10
5. Other (name)
   1-2-3-4-5-6-7-8-9-10

Responses to these questions were used to evaluate achievement of the CWA swimmable goal in the Ohio LCI assessment process.

5. A fifth and final revision to the LCI was the incorporation and use of Illinois lake sediment criteria (Kelly et al., 1984) in place of the older USEPA Lake Erie harbor criteria. Concentrations were judged against the highly elevated values reported for 273 individual lake sediment samples collected from 63 Illinois lakes. The following priority metals were used to determine subindex conditions:

| Raw Data | Criteria | Condition | |
|---|---|---|---|
| Arsenic | > 41 (mg/kg) | None over criteria = | fu(m) |
| Cadmium | > 2.6 | 1 over criteria = | t(m) |
| Chromium | > 38 | 2 over criteria = | i(m) |
| Copper | > 150 | | |
| Lead | > 150 | | |
| Mercury | > 0.40 | | |
| Zinc | > 250 | | |

LAKE AND RESERVOIR MANAGEMENT, 1989: 5(1): 1-8
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# The Ohio Lake Condition Index: A New Multiparameter Approach to Lake Classification

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## ABSTRACT

A new multiparameter lake assessment protocol, the Ohio Lake Condition Index (Ohio LCI), was developed by the State of Ohio to comply with the 305(b) guidelines in the Water Quality Act amendments of 1987. Thirteen in-lake parameters were assessed for each of Ohio's 417 publicly owned lakes. Both monitored data and evaluated information based on responses to a questionnaire were included in the assessment process. Raw data were transformed into subindex points for summation into a final numerical Lake Condition Index score. Sets of parameters were identified to determine whether or not designated uses and the goals of the Clean Water Act were being met. Applications of the Ohio Lake Condition Index are discussed, including using it to target lakes affected by nonpoint source pollution. The Lake Condition Index protocol can be modified to accommodate revisions to water quality standards and changes in a state's water quality management objectives for lakes. The authors question the appropriateness of reporting the status of lake condition based exclusively on the concept of trophic state.

## Introduction

The reauthorization of the Clean Water Act, as amended by the Water Quality Act of 1987, requires each state to expand assessments of water quality in lakes. To qualify for funds available through the Clean Lakes Program – Section 314 of the Act – each state is required to submit a biennial Lake Water Quality Assessment Report that includes: (1) a trophic state classification of publicly owned lakes; (2) a list of public lakes that are impaired or threatened, including those not meeting water quality standards; and (3) an assessment of the status and trends of lake water quality. In addition, federal guidance for the biennial Clean Water Act 305(b) Water Quality Inventory Report requires each state to assess the degree to which the fishable and swimmable goals of the Act are being obtained, and to determine if the designated lake uses (i.e., aquatic life, public drinking water supply) are being realized (U.S. Environ. Prot. Agency, 1987a, b).

Taken together, these expanded mandates of the 1987 Water Quality Act represent a significant departure from previous reporting cycles. Previously, states either provided a lake water quality data list and/or ranked the relative trophic state of lakes based on some aspect of the plant-nutrient eutrophication concept (i.e., Carlson's (1977) TSI, and its various modifications; see also reviews of Shapiro, 1979; Walker, 1984). Although trophic state indices are useful, a comprehensive evaluation of lake condition requires answers to questions not addressed by the eutrophication concept (e.g., priority pollutants, fish tissue contamination, biotic integrity, etc); thus, a multiparameter water quality assessment is required. Although a variety of multiparameter lake classification schemes have been proposed (Uttormark and Wall 1975; Porcella et al. 1979; Steinhart et al. 1982; Brezonik, 1984; Walker, 1984; Burden and Malone 1987), none simultaneously evaluated attainment of designated uses and the fishable and swimmable Clean Water Act goals. In this paper, a new multiparameter lake assessment protocol, the Ohio Lake Condition Index, is presented. The index was developed by the Ohio Environmental Protection Agency to comply with the new mandates of the 1987 Water Quality Act.

## The Ohio LCI Assessment Process

Preliminary development of the Lake Condition Index involved identifying 13 parameters judged to be necessary and sufficient to provide information about potential chemical, biological, physical, and aesthetic lake problems in Ohio. These parameters, listed in Table 1, were selected based on the following criteria: (1) federal emphasis on toxics, trophic state, and attainment of Clean Water Act goals for the 305(b) report; (2) parameters used in prior lake classification schemes; (3) existing water quality standards or criteria; and (4) management objectives for assessing lake water quality in Ohio. The concept of using an ecosystem approach to assess the condition of lakes was derived from the Great Lakes Nearshore Index (Steinhart et al. 1982), which was used to evaluate the overall condition of aquatic habitats along the shoreline of the Great Lakes (see also Schierow and Chesters, 1988).

**Table 1.—Parameters used to assess lake condition in the Ohio Lake Condition Index.**

| |
|---|
| Biological Conditions |
| IBI – Index of Biotic Integrity (Fish) |
| NM – Nuisance Growths of Macrophytes |
| B – Fecal Coliform Bacteria Contamination |
| P – Primary Productivity Based on Chlorophyll a |
| F – Fish Tissue Contamination |
| Chemical Conditions |
| NP – NonPriority Pollutants |
| PPO – Priority Organics (Toxics) |
| PPM – Priority Metals (Toxics) |
| S – Sediment Contamination |
| N – Nutrients Based on Spring Total Phosphorus |
| M – Acid Mine Drainage |
| Physical Conditions |
| V – Volume Loss Due to Sedimentation |
| Public Perception of Lake Condition |
| A – Aesthetics |

Ohio has about 2,200 lakes with a surface area of 2 ha (5 acres) or greater (Ohio Dep. Nat. Resour. 1980); of these 417 were identified as being publicly owned (Ohio Environ. Prot. Agency, 1988a). These 417 public lakes represented about 87 percent of the total 54,251 ha (134,000 acres) of lake surface area identified in the 1980 Ohio Department of Natural Resources (DNR) inventory. For the purposes of this paper, all natural lakes, reservoirs, impoundments, and ponds are referred to as "lakes."

Federal guidance for the 305(b) report requires only "monitored" (measured) data be used to assess attainment of designated uses (aquatic life, public water supply). Both monitored data and the more subjective "evaluated" information based on best professional judgment can be used to assess attainment of the fishable and swimmable Clean Water Act goals (U.S. Environ. Prot. Agency, 1987a, b). The water quality of about 125 lakes in Ohio was summarized in the Ohio EPA 305(b) report for 1982 (Youger, 1982). These data, plus additional information available from other sources, represented the "monitored" database for the Ohio Lake Condition Index. "Evaluated" information was obtained from responses to a lake questionnaire distributed in 1987 by the Ohio EPA Office of Planning as part of Ohio's Nonpoint Source Assessment for Section 319 of the 1987 Water Quality Act (Ohio Environ. Prot. Agency, 1988b).

The next step in developing the Lake Condition Index was combining the monitored and evaluated data to assess the condition of the 13 parameters (Table 1) for each of Ohio's 417 public lakes. Using the rationale and criteria described in Appendix A, each parameter was judged to either attain full use (f), threatened use (t), or impaired use (i) based on either monitored data (m) or best professional judgement (bpj).

These use conditions represented subindices for the Lake Condition Index parameters. For example, a lake with less than 25 percent of its shoreline affected by nuisance growths of macrophytes (NM) was judged full use attainment (f-m), between 25 percent and 50 percent affected was threatened (t-m), and greater than 50 percent was impaired (i-m). If the lake was not monitored for macrophyte coverage, but weeds were identified as a problem in the lake questionnaire, then a threatened condition based on best professional judgement (t-bpj) was recorded. If weeds were not identified as a problem in the questionnaire, a full use attainment (f-bpj) was entered.

Priority was always given to monitored data when both monitored and evaluated data were available. Maximum values were used to determine use conditions if more than one measurement was taken. It is important to note that the criteria in Appendix A are not absolute but are expected to change as state water quality standards and management objectives for lakes are modified.

Numerical values were next assigned to the subindex conditions as follows: 10 points for impaired status based on monitored data (i-m), 10 points for hypereutrophic condition for nutrients (N) and/or productivity (P) based on monitored data (t-h), 5 points for threatened status based on monitored data (t-m), 2 points for threatened status based on evaluated data (t-bpj), 1 point for full use status (f-m, f-bpj), and 0 points if the lake was not assessed for that parameter. The final Lake Condition Index score was

calculated as the sum of the subindex points, divided by the total number of parameters assessed. This resulted in a mean coefficient of lake condition with values ranging from 1 to 10 – 10 represented the highest level of overall lake impairment.

Because a single numerical value can be ambiguous in a multiparameter index with missing data (e.g.,130/13 yields a Lake Condition Index value of 10.0; 100/10 a value of 10.0; and 10/1 a value of 10.0), letters were appended to the final LCI score to identify impaired conditions and subscripts were added to identify the number of lake conditions not assessed. For example, 3.5/PPM/$_3$ identifies a lake with an overall LCI score of 3.5, priority metals concentration in the water at levels above water quality standards, and missing data for three lake conditions.

This approach to lake classification provides a method for ranking the relative condition of different lakes. More importantly, it quickly identifies the most serious lake impairments and data deficiencies that can later be incorporated into a state's water quality management plan. An example of Lake Condition Index calculation is given in Table 2.

The final step in the Lake Condition Index assessment process used the subindex information from the 13 parameters to determine if each public lake attained its designated uses and met the fishable and swimmable goals of the Clean Water Act. To make these determinations, different sets of Lake Condition Index parameters were used as shown in Table 1. The rationale and justification for selecting these specific sets of parameters were as follows:

**Fishable CWA Goal:** *index of biotic integrity (IBI), fish tissue contamination (F), acid mine drainage (M), and sediment contamination (S)*

Meeting the fishable Clean Water Act goal is defined for the purposes of the 305(b) report as: providing a level of water quality consistent with the goal of protection and propagation of a balanced population of shellfish, fish, and wildlife (U.S. Environ. Prot. Agency, 1987a, b). Fish advisories, consumption bans, fish abnormalities, and measures of biotic integrity are examples of parameters that can be used to determine attainment of the fishable Clean Water Act goal. Acid mine drainage and sediment contamination negatively affect the reproductive potential of aquatic life. Both monitored and evaluated data can be used to make a judgment about attainment of the fishable Clean Water Act goal.

**Swimmable CWA Goal:** *fecal coliform bacteria contamination (B), nuisance growths of macrophytes (NM), aesthetics (A), volume loss due to sedimentation (V), and sediment contamination (S)*

Meeting the swimmable CWA goal is defined as: providing a level of water quality that allows for recreational activities in and on the water (U.S. Environ. Prot. Agency, 1987a, b). Such activities are not limited to swimming but also include boating, fishing, and wading. Each of the five selected parameters directly affects the potential recreational use of a lake. Both monitored and evaluated data can be used to make a judgment about attainment of the swimmable goal.

**Aquatic Life Use Designation:** *nonpriority pollutants (NP), priority organics (PPO), priority metals (PPM), nutrients based on spring total phosphorus (N), index of biotic integrity (IBI), and acid mine drainage (M)*

The Ohio EPA has established water quality standards for the protection of aquatic life in surface waters (Chapter 3745-1 of the Ohio

**Table 2.—Example application of the Ohio Lake Condition Index: Harrison Lake, Fulton County, Ohio.**

| LCI PARAMETERS: | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
| SUBINDEX CONDITIONS: | | | | | | | | | | | | |
| na | t-bpj | t-bpj | t-m | t-bpj | i-m | t-e(m) | t-h(m) | na | t-bpj | na | f-m | f-m |
| SUBINDEX POINTS: | | | | | | | | | | | | |
| 0 | 2 | 2 | 5 | 2 | 10 | 5 | 10 | 0 | 2 | 0 | 1 | 1 |

LCI score = sum of subindex points/number of conditions assessed
= 40/10
= 4.0/PPM/$_3$

| | |
|---|---|
| na: | not assessed (0 subindex points) |
| t-bpj: | threatened condition based on evaluated data (2 subindex points) |
| t-m: | threatened condition based on monitored data (5 subindex points) |
| i-m: | impaired condition based on monitored data (10 subindex points) |
| f-m: | full use condition based on monitored data (1 subindex point) |
| t-e(m): | monitored eutrophic condition (5 subindex points) |
| t-h(m): | monitored hypereutrophic condition (10 subindex points) |

Administrative Code). Four of the selected Lake Condition Index parameters can be evaluated against water quality standards. The fish Index of Biotic Integrity has not yet been developed for Ohio's lakes. Only monitored data can be used to determine attainment of the aquatic life use designation.

**Public Water Supply Use Designation:** *nonpriority pollutants (NP), priority organics (PPO), priority metals (PPM), acid mine drainage (M), volume loss due to sedimentation (V), and primary productivity based on chlorophyll a (P)*

A public water supply is defined as that water that, with conventional treatment, will be suitable for human intake and meet federal regulations for drinking water (Chapter 3745-1-07 of the Ohio Administrative Code). Whether or not a lake is an acceptable source of drinking water is affected by a combination of chemical, physical, and biological attributes. An attempt was made to reduce correlations between parameters. Nutrients (N) were not included due to association with algal productivity (P). Chemical parameters were evaluated against aquatic life and drinking water quality standards. Only monitored data can be used to determine attainment of the public water supply use designation.

To ensure sufficient data were available, more than 50 percent of the appropriate Lake Condition Index parameters must have been assessed — using monitored and/or evaluated data in any given reporting category; this is referred to as the "50 percent rule." Thus, to determine attainment of the fishable Clean Water Act goal for any given lake, at least 3 of the 4 selected parameters (index of biotic integrity, fish tissue contamination, acid mine drainage, and sediment contamination) required assessment. Although subjective, the 50 percent rule ensured a majority of necessary lake conditions were assessed. Lakes not meeting the 50 percent rule were not assessed and added to the continuing assessment process in the State's water quality management plan. Where the 50 percent rule was met, information provided by subindex conditions determined use attainment as demonstrated by the data evaluation process in Figure 1. The evaluations were summed by number of lakes and surface area for inclusion in Ohio's 305(b) Lake Water Quality Inventory Report for 1988 (Table 3).

**Table 3.—Summary of lake data in Ohio's 1988 305(b) Water Quality Inventory Report. Data were derived from the Lake Condition Index process in Figure 1.**

| | CLEAN WATER ACT | | USE | |
|---|---|---|---|---|
| CATEGORY | FISHABLE | SWIMMABLE | PWS | EWH |
| Lakes Assessed: | | | | |
| Number | 0 | 169 | 89 | 90 |
| Acres | 0 | 100,259 | 86,307 | 90,771 |
| Use Support Unknown–Insufficient Data: | | | | |
| Number | 417 | 248 | 328 | 327 |
| Acres | 117,323 | 17,064 | 31,016 | 26,552 |
| Fully Supports Use: | | | | |
| Number | 0 | 7 | 1 | 15 |
| Acres | 0 | 2,759 | 140 | 5,203 |
| Supports Use But Threatened: | | | | |
| Number | 0 | 43 | 28 | 23 |
| Acres | 0 | 19,040 | 19,588 | 25,733 |
| Partially Supports Use: | | | | |
| Number | 0 | 113 | 52 | 44 |
| Acres | 0 | 72,865 | 58,826 | 50,988 |
| Does Not Support Use–Impaired: | | | | |
| Number | 0 | 6 | 8 | 8 |
| Acres | 0 | 5,595 | 7,753 | 8,847 |

PWS: Public Water Supply
EWH: Exceptional Warmwater Habitat

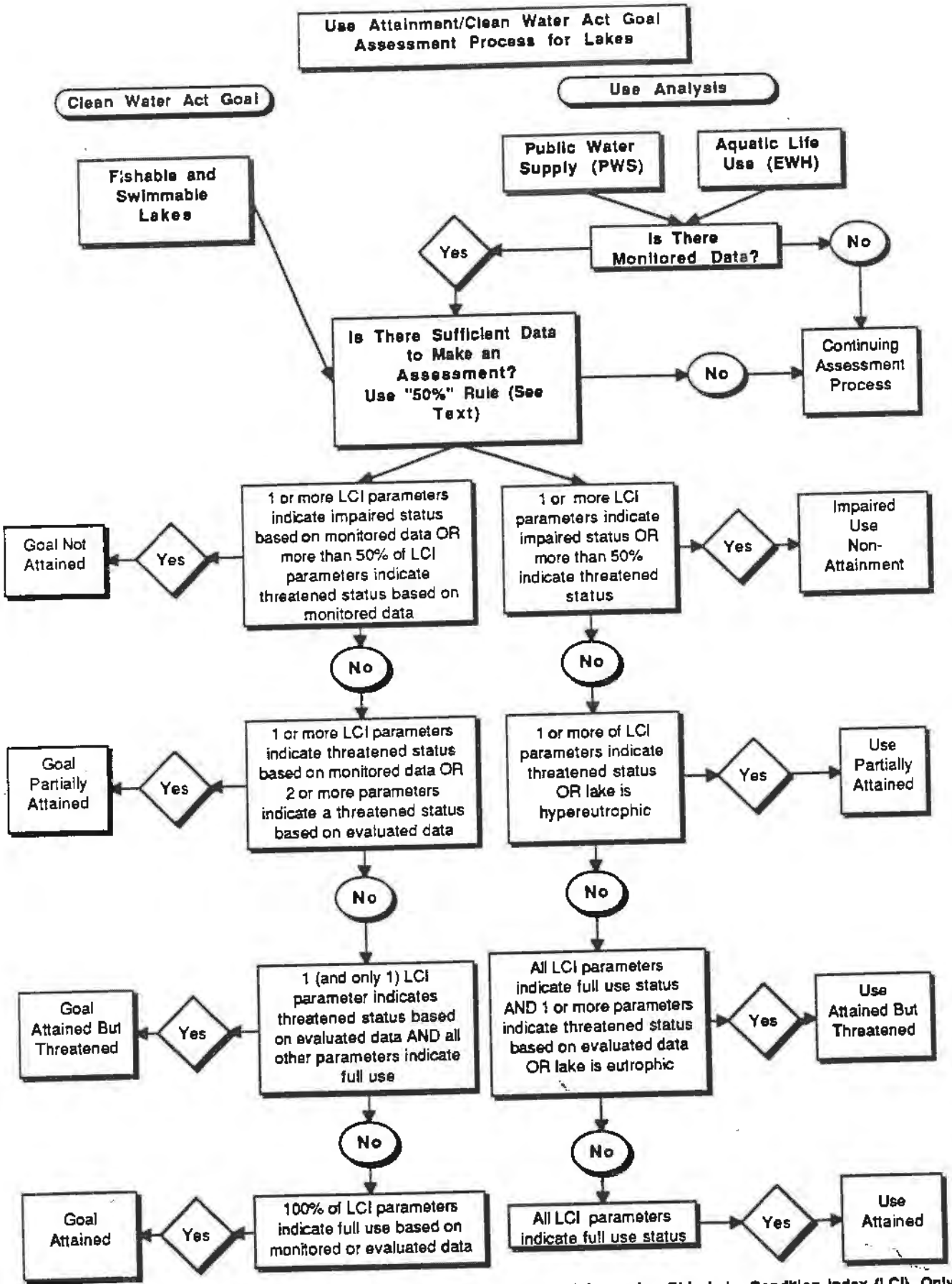


**Figure 1.—Use Attainment/Clean Water Act goal assessment process for lakes using Ohio Lake Condition Index (LCI). Only monitored data can be used to determine the 50 percent rule for Public Water Supply (PWS) and Exceptional Warmwater Habitat (EWH) uses.**

## Example Application of the Ohio LCI: Harrison Lake

Harrison Lake is a 39 ha (96 acres) impoundment located in Fulton County; it is owned by Ohio Department of Natural Resources. The lake is used primarily for recreation (fishing, boating) and as a water supply for a state park. It has a watershed area of 96 $k^2$ (37 $mi^2$). The lake dam was completed in 1941; excessive siltation required that it be drained and dredged in 1972.

The water quality of the lake was monitored by the Ohio EPA in 1975 and 1981 (Youger, 1982). Three individuals provided evaluated information in response to the lake questionnaire distributed by the Ohio EPA in 1987. Monitored data indicated Harrison Lake had hypereutrophic levels of spring total phosphorus — greater than 75 $\mu$g/L — and three heavy metal water quality standard violations. Responses from the questionnaire suggested the lake was being affected by pesticides, had excessive macrophyte growth, and was losing volume because of sedimentation. Agriculture, particularly livestock/feedlot problems and crop production, was identified as a suspected nonpoint source problem in the watershed. No significant point sources were identified. Threatened lake uses identified by respondents of the questionnaire were fishing, boating, and water supply.

Using the criteria from Appendix A, the conditions of the 13 Lake Condition Index parameters were determined for Harrison Lake as summarized in Table 2. Sufficient information was available to assess 10 of the 13 Lake Condition Index parameters using either monitored or evaluated data. No information was available to assess fish biotic integrity, fish tissue contamination, and sediment contamination. A final Lake Condition Index score of 4.0/$PPM_3$ was used to compare Harrison Lake to other lakes with similar degrees of assessment and identify types of impairment as well as data deficiencies to be addressed in future water quality monitoring at Harrison Lake.

The subindex conditions in Table 2 were used to determine if Harrison Lake was attaining designated uses and meeting the fishable and swimmable Clean Water Act goals. The 50 percent rule applied to the appropriate sets of Lake Condition Index parameters revealed sufficient data were available to assess attainment for aquatic life use, public water supply, and the swimmable CWA goal but not for the fishable Clean Water Act goal. Harrison Lake attained "partial use" for the swimmable Clean Water Act goal and "impaired use" for aquatic life and public water supply. This impaired status resulted from the presence of priority metals in the water at concentrations exceeding water quality standards. Information derived for Harrison Lake was summarized with data from other lakes for inclusion in Ohio's 305(b) report (Table 3). The Lake Condition Index assessment for Harrison Lake agreed with the perception of threatened lake uses identified in responses to the lake questionnaire.

## Discussion

From a state management perspective, the two primary reasons for collecting water quality data are (1) to allow judgments about whether or not water quality standards are being realized and (2) to evaluate attainment of the fishable and swimmable goals of the Clean Water Act. For inland lakes, these two objectives are often difficult to achieve because no standard method is available to make these determinations. The Ohio Lake Condition Index helps to fill this void.

The Ohio Lake Condition Index presents a number of advantages. Using both monitored and evaluated data increases the number of lakes that can be assessed. A single numerical value is generated for ranking the relative condition of lakes, either by lake type or ecoregion. An objective data evaluation process allows determinations to be made about attainment of Clean Water Act goals. Missing data for individual lakes can be flagged for inclusion in the state's continuing assessment process. Lake conditions are evaluated against water quality standards or recognized criteria. Finally, the Lake Condition Index has sufficient flexibility to meet changing lake management objectives and modifications to water quality standards and criteria.

In its present stage of development the Ohio Lake Condition Index does, however, have certain limitations. The relative ranking of lakes based on the Lake Condition Index mean coefficient is ambiguous when different numbers of missing parameters occur. A final Lake Condition Index ranking of 10.0 can result from a lake assessed for 13 parameters (130/13 = 10.0) or for 1 parameter (10/1 = 10.0). Additional investigation into the effects scaling factors may have on the distribution of relative rankings would be useful. Also, the relationships between degree of use impairment and the criteria levels selected in Appendix A are not well established for parameters such as macrophyte coverage, phosphorus, chlorophyll *a*, sediment and fish tissue contamination, and fish index of biotic integrity. Regional criteria based on correlating monitored water quality parameters with perceived lake conditions such as those recently developed for Minnesota (Heiskary et al. 1987) and Louisiana (Burden and Malone, 1987) would improve the applicability of the Ohio Lake Condition Index assessment on a regional basis.

The Lake Condition Index concept was recently used with Ohio's Nonpoint Source Assessment Report for Section 319 of the 1987 Water Quality Act (Ohio Environ. Prot. Agency, 1988b). Seven of the 13 Lake Condition Index parameters were selected as indicative of the effects nonpoint source pollution can have on lake condition (i.e., primary productivity based on chlorophyll *a*, nutrients based on total spring phosphorus, volume loss due to sedimentation, fish tissue contamination, aesthetics, acid mine drainage, and priority metals parameters). Lakes with information showing threatened or impaired condition for three or more of these seven parameters were targeted as potential nonpoint source impacted lakes. A total of 124 lakes greater than ha (20 acres) surface area were targeted in the Section 319 report.

Another potential application of the Lake Condition Index is to allow prioritizing of lakes for inclusion in the Clean Lakes Program, Section 314 of the 1987 Water Quality Act. The Ohio Lake Condition Index ranking could be combined with other priority factors to identify lakes that would benefit the most from a comprehensive Phase I diagnostic-feasibility study. Lakes with low Lake Condition Index scores that are currently meeting designated uses could be identified for watershed protection projects. Additional applications and modifications of the Ohio Lake Condition Index concept will be forthcoming as the index is integrated into the state's water quality management plan.

Prior lake classification schemes have for the most part been limited to the evaluation of trophic state. One notable exception is the Great Lakes Nearshore Index (Steinhart et al. 1982), which, like the Ohio Lake Condition Index, takes an ecosystem approach to evaluating the overall environmental quality of a lake. As discussed by Canfield and Jones (1984), while controlling eutrophication is a worthy goal, it is inappropriate to assume a eutrophic lake is a poor quality resource for all human uses. Burden and Malone (1987) report that many lakes examined in Louisiana were rated by local fisherman as having at least acceptable water quality although most would be classified as eutrophic. Conversely, reporting a nutrient-poor lake meets the goals of the Clean Water Act is inappropriate if it has contaminated fish tissue, toxic chemicals, or other problems not associated with trophic state. Clearly, a new generation of multiparameter lake classification schemes will be required if the level and quality of environmental policy and planning are to be expanded beyond the eutrophication concept. The Ohio Lake Condition Index is a useful step toward this objective.

**ACKNOWLEDGMENTS:** We thank Ed Rankin for his assistance in concept development and graphics support. The manuscript was improved by comments provided by Robert Carlson, Daniel Burden, Charles Webster, and an anonymous reviewer.

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# Appendix A

As part of the Ohio Lake Classification Index assessment process, raw data, either monitored or evaluated, were converted into the following subindex conditions: f(m) = full use based on monitored data; f(bpj) = full use based on best professional judgment; t(m) = threatened use based on monitored data; t(bpj) = threatened use based on best professional judgment; and i(m) = impaired use based on monitored data. Responses to a nonpoint source problem identification lake questionnaire represented the best professional judgment database for the 1988 Ohio Lake Condition Index assessment. Where monitored data existed based on the results of field measurements, the following criteria were used to determine subindex conditions. Where available, determinations were based on state water quality standards and criteria.

## I.—BIOLOGICAL EVALUATION OF LAKE CONDITION

**Index of Biotic Integrity-Fish (IBI)**

The Ohio Environmental Protection Agency developed an Index of Biotic Integrity to assess the overall condition of fish communities in streams and rivers. Although the index could be conceptually adapted to lake habitats, no lakes have been assessed using the Index of Biotic Integrity. The necessary developmental work will have to take place prior to any use of this index in the Ohio Lake Condition Index.

**Nuisance Growths of Macrophytes (NM)**

Based on potential impact on recreational boating.

| Raw Data | Condition |
|---|---|
| < 25% shoreline affected | f(m) |
| 25% to 50% shoreline affected | t(m) |
| > 50% shoreline affected | i(m) |

**Fecal Coliform Bacteria Contamination (B)**

Based on state water quality standards.

| Raw Data | Condition |
|---|---|
| < 200/100 mL | f(m) |
| Between 200–1000/100 mL | t(m) |
| > 1000/100 mL | i(m) |

**Primary Productivity Based on Chlorophyll a (P)**

Adapted from Carlson (1977).

| Raw Data | Trophic State | Condition |
|---|---|---|
| 0.3–2.0 µg/L | oligotrophic | f(m) |
| 2.0–6.0 | mesotrophic | f(m) |
| 6.0–40.0 | eutrophic | t-e(m) |
| >40.0 | hypereutrophic | th(m) |

**Fish Tissue Contamination (F)**

| Raw Data | Condition |
|---|---|
| No fish consumption advisory issued | f(m) |
| Fish advisory for bottom feeders | t(m) |
| Fish advisory for game species | i(m) |

## II.—CHEMICAL EVALUATION OF LAKE CONDITION

**Nonpriority Pollutants (NP)**

Based on state water quality standards.

| Raw Data | No. of WQS Violations | Condition |
|---|---|---|
| Any nonpriority metal | 0 | f(m) |
| pH (5.0–6.5) or > 9.5 | 1 | t(m) |
| TDS > 1500 mg/L | > 1 | i(m) |
| D.O. < 6.0 mg/L (surface) | | |

**Priority Organics (PPO) and Priority Metals (PPM)**

Based on the U.S. Environmental Protection Agency Federal Register list of 126 priority pollutants.

| No. Exceeding Chronic Criteria | Condition |
|---|---|
| 0 | f(m) |
| 1 | t(m) |
| > 1 | i(m) |

**Nutrients Based on Spring Total Phosphorus (N)**

Adapted from Carlson (1977).

| Raw Data | Trophic State | Condition |
|---|---|---|
| 3–9 µg/L | oligotrophic | f(m) |
| 9–24 | mesotrophic | f(m) |
| 24–75 | eutrophic | t-e(m) |
| > 75 | hypereutrophic | t-h(m) |

**Sediment Contamination (S)**

Based on federal criteria for sediment contamination.

| Raw Data | Condition |
|---|---|
| PCB's > 50 mg/kg | i(m) |
| EP toxic waste, Fed. Reg. | i(m) |
| Highly polluted based on Lake Erie harbor data | t(m) |
| None of the above | f(m) |

**Acid Mine Drainage (M)**

Adapted from Ohio Department of Natural Resources, Division of Mine Reclamation criteria.

| Raw Data | No. of Violations | Condition |
|---|---|---|
| pH < 5.0 | 0 | f(m) |
| TDS > 1500 mg/L | 1 | t(m) |
| Mn > 4.0 mg/L | > 1 | i(m) |
| Fe > 10.0 mg/L | | |
| $SO_4$ > 960 mg/L | | |

## III.—PHYSICAL EVALUATION OF LAKE CONDITION

**Volume Loss Due to Sedimentation (V)**

Based on an expected 40% reduction in useful life.

| Raw Data | Condition |
|---|---|
| < 10% volume loss | f(m) |
| 10%–40% loss | t(m) |
| > 40% loss | i(m) |

## IV.—PUBLIC PERCEPTION OF LAKE CONDITION

**Aesthetics (A)**

Based on public perception of overall lake condition.

| Raw Data | Frequency | Condition |
|---|---|---|
| Algae scums | 0 | f(m) |
| Fish kills | 1–2 | t(m) |
| Oil sheens | > 2 | i(m) |

# APPENDIX B

## Ohio's 417 Publicly Owned Lakes

Appendix B. List of Ohio's publicly owned lakes/reservoirs/ponds greater than 5 acres surface area.

| WBID[3] | Lake | County | Surface Area (acres) | Lake Uses[1] | Lake Type[2] |
|---|---|---|---|---|---|
| OH61 23- 48 | ACTON LAKE | Butler Co | 604.00 | WS R | DPI |
| OH48 13- 1 | ADAMS LAKE | Adams | 37.00 | R | DPI |
| OH88 1-369 | ALDER POND | Summit | 15.00 | | NL |
| OH78 4-336 | ALDRICH POND | Sandusky | 34.00 | R | DO |
| OH38 5-102 | ALUM CREEK LAKE | Delaware Co | 3387.00 | WS R FC | DPI |
| OH36 35-268 | AMANN RESERVOIR | Morrow | 24.00 | WS R | DPI |
| OH36 35-269 | AMICKS RESERVOIR | Morrow | 51.00 | WS R | UP |
| OH72 18-139 | ARCHBOLD RESERVOIR #1 | Fulton | 20.00 | WS R | UP |
| OH72 18-140 | ARCHBOLD RESERVOIR #2 | Fulton | 49.00 | WS R | UP |
| OH92 28- 16 | ASTABULA CO. METRO PARKS LAKE #1 | Ashtabula | 5.50 | | DPI |
| OH92 28- 17 | ASTABULA CO. METRO PARKS LAKE #2 | Ashtabula | 6.00 | | DPI |
| OH45 21-303 | ATOMIC ENERGY COMM. LAKE #1 | Pike | 13.80 | | DPI |
| OH45 21-304 | ATOMIC ENERGY COMM. LAKE #2 | Pike | 17.00 | | UP |
| OH81 18-344 | ATTICA RESERVOIR | Seneca | 5.20 | WS | UP |
| OH12 5-383 | ATWOOD RESERVOIR | Tuscarawas Co | 1540.00 | R FC | DPI |
| OH87 4- 88 | BALDWIN LAKE | Cuyahoga Co | 32.00 | WS R | DPI |
| OH90 19- 95 | BALDWIN RESERVOIR | Cuyahoga | 6.00 | WS | UP |
| OH82 1-337 | BALLVILLE DAM | Sandusky | 89.00 | WS | DPI |
| OH 7 36- 36 | BARNESVILLE RESERVOIR #1 | Belmont | 35.00 | WS | DPI |
| OH 7 36- 37 | BARNESVILLE RESERVOIR #2 | Belmont | 11.30 | WS | DPI |
| OH 7 44- 35 | BARNESVILLE RESERVOIR #3 | Belmont | 98.00 | WS R | DPI |
| OH13 1-384 | BEACH CITY LAKE | Tuscarawas | 420.00 | R | DPI |
| OH82 2-342 | BEAVER CREEK RESERVOIR | Seneca | 110.00 | WS R | UP |
| OH 2 5- 78 | BEAVER LAKE | Columbiana | 103.00 | WS | DPI |
| OH84 25-194 | BELLEVUE RESERVOIR #1,#2 | Huron | 14.20 | WS R | UP |
| OH84 25-193 | BELLEVUE RESERVOIR #3 | Huron | 14.00 | WS R | UP |
| OH83 3-192 | BELLEVUE RESERVOIR #4 | Huron | 31.00 | R | UP |
| OH84 12-201 | BELLEVUE RESERVOIR #5 | Huron | 87.00 | WS R | UP |
| OH 6 19- 30 | BELMONT LAKE | Belmont | 117.00 | R | DPI |
| OH84 24-110 | BERLIN HEIGHTS RESERVOIR | Erie | 5.00 | WS | DO |
| OH 1 24-307 | BERLIN RESERVOIR | Portage Co | 3590.00 | WS R FC | DPI |
| OH53 31- 60 | BETHEL RESERVOIR | Clermont | 5.50 | WS | UP |
| OH 7 24- 32 | BETHESDA RESERVOIR | Belmont | 13.00 | WS | DPI |
| OH52 4- 61 | BLANCHESTER RESERVOIR #1 | Clinton | 7.10 | WS | UP |
| OH52 4- 62 | BLANCHESTER RESERVOIR #2 | Clinton | 7.10 | WS | UP |
| OH52 4- 63 | BLANCHESTER RESERVOIR #3 | Clinton | 11.40 | WS | DPI |
| OH52 4- 64 | BLANCHESTER RESERVOIR #4 | Clinton | 11.40 | WS | UP |
| OH52 4- 65 | BLANCHESTER RESERVOIR #5 | Clinton | 17.90 | WS | UP |
| OH23 3-275 | BLUE ROCK STATE PARK LAKE | Muskingum | 18.00 | R | ? |
| OH88 8-313 | BRADY LAKE | Portage | 70.00 | R | NL |

Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH70 13- 4 | BRESLER RESERVOIR | Allen | 582.00 | WS R | UP |
| OH22 59-212 | BUCKEYE LAKE | Licking Co | 3136.00 | WS R FC | DPI |
| OH80 17- 83 | BUCYRUS RESERVOIR #1 | Crawford | 36.00 | WS R | DPI |
| OH80 17- 86 | BUCYRUS RESERVOIR #2 | Crawford | 31.00 | WS R | DPI |
| OH80 17- 87 | BUCYRUS RESERVOIR #4 | Crawford | 150.00 | WS | UP |
| OH 2 5-236 | BURGESS LAKE | Mahoning | 20.00 | WS | DPI |
| OH26 20- 23 | BURR OAK LAKE (T. JENKINS RESV.) | Athens | 664.00 | WS R FC | DPI |
| OH58 18- 55 | C. J. BROWN LAKE | Clark | 2120.00 | R FC | DPI |
| OH51 1-393 | CAESAR CREEK RESERVOIR | Warren | 2830.00 | WS R FC | DPI |
| OH 9 34-278 | CALDWELL LAKE | Noble | 51.00 | WS R FC | DPI |
| OH21 43-158 | CAMBRIDGE RESERVOIR | Guernsey | 26.00 | WS R | DPI |
| OH85 8-215 | CAMDEN RESERVOIR | Lorain | 9.00 | R | NL |
| OH56 2-261 | CARRIAGE HILL RESERVOIR | Montgomery | 14.10 | | ? |
| OH -149 | CARTER LAKE | Gallia | 7.00 | R | DPI |
| OH50 15-157 | CEDARVILLE COLLEGE LAKE | Greene | 6.00 | | DPI |
| OH50 15-155 | CEDARVILLE RESERVOIR | Greene | 5.00 | WS R | UP |
| OH84 19- 82 | CELERYVILLE RESERVOIR | Crawford | 75.00 | WS R | UP |
| OH16 21- 13 | CHARLES MILL LAKE | Ashland | 1350.00 | R FC | DPI |
| OH10 19-398 | CHIPPEWA CR. WATERSHED VII C | Wayne | 34.00 | FC | DPI |
| OH10 24-243 | CHIPPEWA CREEK STRUCTURE 2-A | Medina | 12.00 | FC | DPI |
| OH10 22-244 | CHIPPEWA CREEK STRUCTURE 3-A | Medina | 20.00 | FC | DPI |
| OH54 1-163 | CINCINNATI WATERWORKS LAKE #1 | Hamilton | 18.00 | R | DO |
| OH54 1-164 | CINCINNATI WATERWORKS LAKE #2 | Hamilton | 19.00 | R | DO |
| OH17 10- 14 | CINNAMON LAKE | Ashland | 131.00 | WS | DPI |
| OH17 23- 10 | CITY OF ASHLAND LAKE | Ashland | 6.00 | R | DO |
| OH58 1-258 | CITY OF DAYTON LAKE #1 | Montgomery | 10.00 | R | DO |
| OH 1 20-373 | CITY OF NEWTON FALLS LAKE | Trumbull | 12.50 | R | DO |
| OH76 20-404 | CITY OF PERRYSBURG LAKE | Wood | 6.50 | | DO |
| OH30 18-205 | CITY OF WELLSTON LAKE | Jackson | 11.00 | WS | DPI |
| OH58 17- 54 | CLARK LAKE | Clark | 100.00 | R | DPI |
| OH16 15-328 | CLEAR FORK RESERVOIR | Richland | 1010.00 | WS R | DPI |
| OH14 20-182 | CLENDENING LAKE | Harrison | 1800.00 | R FC | DPI |
| OH25 21-292 | CLOUSE POND | Perry | 41.00 | R C | DPI |
| OH87 5- 90 | COE LAKE | Cuyahoga | 23.00 | WS R | DO |
| OH61 30-322 | COLLEGE CORNER RESERVOIR | Preble | 5.00 | | UP |
| OH26 23-296 | CORNING RESERVOIR | Perry | 15.50 | WS R | DPI |
| OH52 11- 66 | COWAN LAKE | Clinton | 688.00 | R | DPI |
| OH23 44-263 | CROOKSVILLE LOWER RESERVOIR | Morgan | 7.50 | WS | DPI |
| OH23 45-286 | CROOKSVILLE RESERVOIR #3 | Perry | 15.00 | WS | DPI |
| OH23 44-264 | CROOKSVILLE UPPER RESERVOIR | Morgan | 5.00 | R | DPI |

Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH 1 14-311 | CRYSTAL LAKE | Portage | 25.00 | R | NL |
| OH23 2-270 | CUTLER LAKE | Muskingum | 18.20 | WS R | DPI |
| OH 1 29-349 | DALE WALBURN RESERVOIR | Stark Co | 670.00 | WS | DPI |
| OH57 24- 98 | DARKE WILDLIFE AREA LAKE | Darke | 21.00 | R | ? |
| OH41 16-297 | DEER CREEK CAMPGROUND LAKE | Pickaway | 8.00 | R C | DPI |
| OH41 15-298 | DEER CREEK LAKE | Pickaway | 1277.00 | R FC C | DPI |
| OH 1 24-348 | DEER CREEK RESERVOIR | Stark | 313.00 | WS R | DPI |
| OH -417 | DEFIANCE POWER DAM RESERVOIR | Defiance | 0.00 | | |
| OH36 1-103 | DELAWARE LAKE | Delaware | 1300.00 | R FC | DPI |
| OH37 15-107 | DELCO WATER COMPANY LAKE | Delaware | 6.00 | WS | UP |
| OH73 2-144 | DELTA POND | Fulton | 11.00 | R | DO |
| OH73 2-142 | DELTA RESERVOIR | Fulton | 39.00 | WS R | UP |
| OH73 2-145 | DELTA RESERVOIR #2 | Fulton | 50.00 | WS | ? |
| OH74 8-184 | DESHLER RESERVOIR | Henry | 23.00 | WS R | UP |
| OH22 5-272 | DILLON RESERVOIR | Muskingum Co | 1325.00 | R FC | DPI |
| OH27 49- 21 | DOW LAKE | Athens Co | 161.00 | R | DPI |
| OH88 18-152 | EAST BRANCH RESERVOIR | Geauga Co | 416.00 | WS | DPI |
| OH53 20- 58 | EAST FORK LAKE | Clermont | 2160.00 | WS R FC | DPI |
| OH 4 8- 72 | EAST PALESTINE RESERVOIR | Columbiana | 5.00 | WS R | DPI |
| OH10 33-359 | EAST RESERVOIR | Summit | 201.00 | R | NL |
| OH58 1-257 | EASTWOOD LAKE | Montgomery Co | 170.00 | R | DO |
| OH56 14-252 | ECHO LAKE | Miami | 14.50 | WS | DPI |
| OH62 32-162 | EDEN PARK POND | Hamilton | 6.00 | R | DO |
| OH56 14-254 | ERNST LAKE | Miami | 10.00 | WS | DO |
| OH23 45-285 | ESSINGTON LAKE | Perry | 16.00 | R C | DPI |
| OH 2 5-239 | EVANS LAKE | Mahoning | 566.00 | WS R | DPI |
| OH78 8-226 | EVERGREEN LAKE | Lucas | 8.50 | R | DPI |
| OH90 20- 94 | FAIRMOUNT RESERVOIR | Cuyahoga | 8.00 | WS | UP |
| OH43 48-188 | FALLSVILLE WILDLIFE AREA LAKE | Highland | 11.00 | R | ? |
| OH68 18- 5 | FERGUSON RESERVOIR | Allen | 305.00 | WS R | UP |
| OH66 13-170 | FINDLAY RESERVOIR #1 | Hancock | 186.00 | WS R | UP |
| OH66 13-171 | FINDLAY RESERVOIR #2 | Hancock | 650.00 | WS R | UP |
| OH86 16-217 | FINDLEY LAKE | Lorain Co | 83.00 | R | DPI |
| OH10 33-354 | FIRESTONE RESERVOIR | Summit | 83.00 | WS R | DPI |
| OH28 63-248 | FORKED RUN LAKE | Meigs | 104.00 | R | DPI |
| OH64 18- 29 | FORTY ACRE POND | Auglaize | 70.00 | R | DO |
| OH26 5- 27 | FOX LAKE STRUCTURE #6 | Athens | 47.00 | R FC | DPI |
| OH56 14-253 | FRANZ POND | Miami | 6.00 | WS | |
| OH 5 8-207 | FRIENDSHIP PARK LAKE | Jefferson | 85.00 | R | DPI |
| OH75 11-138 | FULTON POND | Fulton | 15.00 | R C | DO |
| OH49 48- 42 | GEORGETOWN VILLAGE RESERVOIR | Brown | 11.80 | WS | UP |

Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH 2 22-380 | GIRARD LAKE | Trumbull | 185.00 | WS R | DPI |
| OH86 8-221 | GRAFTON WATER SUPPLY LAKE | Lorain | 10.00 | WS | DPI |
| OH63 14- 28 | GRAND LAKE ST. MARYS | Auglaize | 12700.00 | R | DPI |
| OH91 29-375 | GRAND RIVER WILDLIFE AREA LAKE | Trumbull | 11.20 | R | DPI |
| OH49 55- 39 | GRANT LAKE | Brown | 181.00 | R | DPI |
| OH50 7-156 | GREENE CO. PARKS LAKE (FISH POND #2) | Greene | 5.00 | | DPI |
| OH25 26-112 | GREENFIELD LAKE (HUNTERS RUN #R-63) | Fairfield | 13.50 | R FC | DPI |
| OH85 14-191 | GREENWICH RESERVOIR | Huron | 6.50 | WS | DPI |
| OH 4 34- 74 | GUILFORD LAKE | Columbiana Co | 396.00 | R FC | DPI |
| OH44 17-203 | HAMMERTOWN LAKE (JACKSON CTY RESV.) | Jackson | 186.00 | WS R | DPI |
| OH41 40-299 | HARGUS LAKE | Pickaway | 130.00 | R C | DPI |
| OH72 29-141 | HARRISON LAKE | Fulton | 96.00 | R | DPI |
| OH22 59-213 | HEBRON FISH HATCHERY LAKE | Licking | 75.00 | C | DO |
| OH78 5-335 | HELENA LAKE | Sandusky | 15.00 | R | DO |
| OH 1 15-318 | HICKORY LAKE | Portage | 6.00 | R | DPI |
| OH 5 84- 75 | HIGHLANDTOWN LAKE | Columbiana | 170.00 | R | DPI |
| OH 5 85- 76 | HIGHLANDTOWN WILDLIFE AREA POND | Columbiana | 7.00 | R C | DPI |
| OH43 49-187 | HILLSBORO RESERVOIR | Highland Co | 22.00 | WS R | DPI |
| OH87 7-246 | HINCKLEY LAKE | Medina Co | 88.00 | R | DPI |
| OH44 30-189 | HOCKING HILLS RESERVOIR | Hocking | 21.00 | WS R | DPI |
| OH38 22-131 | HOOVER RESERVOIR | Franklin Co | 3000.00 | WS R | DPI |
| OH58 11- 56 | HOSTERMAN LAKE | Clark | 9.20 | R | DPI |
| OH -357 | HOWER LAKE | Summit | 23.00 | R | NL |
| OH25 27-116 | HRCD STRUCTURE 1 | Fairfield | 5.00 | FC | DPI |
| OH25 27-117 | HRCD STRUCTURE 2 | Fairfield | 8.90 | FC | DPI |
| OH25 26-114 | HRCD STRUCTURE 5 | Fairfield | 7.10 | FC | DPI |
| OH25 26-115 | HRCD STRUCTURE 8 | Fairfield | 7.50 | FC | DPI |
| OH25 27-118 | HRCD STRUCTURE R-21 | Fairfield | 5.30 | FC C | DPI |
| OH89 9-371 | HUDSON SPRINGS LAKE | Summit | 45.00 | R | DPI |
| OH73 26-100 | INDEPENDENCE DAM RESERVOIR | Defiance | 605.00 | R | DPI |
| OH53 50- 38 | INDIAN CR. WILDLIFE AREA PONDS | Brown | 56.00 | R | DPI |
| OH55 40-214 | INDIAN LAKE | Logan | 5104.00 | R | DPI |
| OH37 19-132 | J. GRIGGS RESERVOIR | Franklin | 385.00 | WS R | DPI |
| OH32 35-202 | JACKSON LAKE | Jackson Co | 243.00 | R | DPI |
| OH 5 56-206 | JEFFERSON LAKE | Jefferson | 25.00 | R | DPI |
| OH -416 | JISCO LAKE | Jackson | 0.00 | | |
| OH89 9-320 | KENT BOARD OF TRUSTEES LAKE | Portage | 10.00 | C? | DPI |
| OH79 1-406 | KILLDEER RESERVOIR | Wyandot | 253.00 | R | UP |
| OH80 12-407 | KILLDEER WILDLIFE POND #1 | Wyandot | 9.00 | R C? | DO |
| OH79 22-408 | KILLDEER WILDLIFE POND #2 | Wyandot | 45.00 | R C? | DPI |

Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH80 12-409 | KILLDEER WILDLIFE POND #3 | Wyandot | 9.00 | R C? | DPI |
| OH80 12-410 | KILLDEER WILDLIFE POND #4 | Wyandot | 8.00 | R C? | DPI |
| OH79 24-411 | KILLDEER WILDLIFE POND #5 | Wyandot | 18.00 | R C? | DO |
| OH80 12-412 | KILLDEER WILDLIFE POND #6 | Wyandot | 15.00 | R C? | DO |
| OH80 11-413 | KILLDEER WILDLIFE POND #7 | Wyandot | 225.00 | R C? | UP |
| OH80 11-414 | KILLDEER WILDLIFE POND #8 | Wyandot | 373.00 | R C? | DPI |
| OH80 11-415 | KILLDEER WILDLIFE POND #9 | Wyandot | 225.00 | R C? | UP |
| OH85 8-216 | KIPTON RESERVOIR | Lorain | 20.00 | WS R | DPI |
| OH56 40- 52 | KISER LAKE | Champaign Co | 380.00 | R | DPI |
| OH18 29-208 | KNOX LAKE | Knox | 474.00 | R | DPI |
| OH30 17-391 | LAKE ALMA | Vinton Co | 63.00 | WS R | DPI |
| OH10 28-351 | LAKE ANNA | Summit | 12.00 | | NL |
| OH88 16-151 | LAKE AQUILLA | Geauga Co | 27.00 | R | NL |
| OH45 62-330 | LAKE CALDWELL | Ross | 9.60 | R | DPI |
| OH 2 12-234 | LAKE COHASSET | Mahoning | 27.00 | R | DPI |
| OH77 8-177 | LAKE DAUGHTERY | Hancock | 12.00 | WS R | UP |
| OH88 11-315 | LAKE GEORGE | Portage | 12.00 | R | NL |
| OH 2 12-233 | LAKE GLACIER | Mahoning | 43.00 | R | DPI |
| OH 2 5-235 | LAKE HAMILTON | Mahoning | 104.00 | WS R | DPI |
| OH88 8-310 | LAKE HODGSON | Portage | 190.00 | WS R | DPI |
| OH30 56-390 | LAKE HOPE | Vinton Co | 127.00 | R | DPI |
| OH54 7-168 | LAKE ISABELLA | Hamilton | 23.00 | R | DO |
| OH - 96 | LAKE ISSAC | Cuyahoga | 11.00 | R | NL |
| OH44 15-204 | LAKE KATHARINE | Jackson | 42.00 | R | DPI |
| OH65 38-399 | LAKE LA SU AN | Williams | 134.00 | R | ? |
| OH77 8-176 | LAKE LAMBERJACK | Hancock | 45.00 | WS R | UP |
| OH65 39-400 | LAKE LAVERE | Williams | 11.10 | R | DPI |
| OH26 44-190 | LAKE LOGAN (HOCKING LAKE) | Hocking Co | 354.00 | R | DPI |
| OH56 32-345 | LAKE LORAMIE | Shelby Co | 785.00 | R | DPI |
| OH25 24-119 | LAKE LORETTA | Fairfield | 5.00 | | DPI |
| OH77 8-174 | LAKE LaCOMTE (FOSTORIA RES. #5) | Hancock | 128.00 | WS R | UP |
| OH87 15-240 | LAKE MEDINA | Medina | 109.00 | WS R | UP |
| OH 1 22-230 | LAKE MILTON | Mahoning Co | 1685.00 | WS R FC | DPI |
| OH77 8-175 | LAKE MOSIER | Hancock | 88.00 | WS R | UP |
| OH77 8-178 | LAKE MOTRAM | Hancock | 18.00 | WS R | UP |
| OH10 33-355 | LAKE NESMITH | Summit | 80.00 | WS R | NL/ |
| OH 1 30-231 | LAKE PARK | Mahoning | 20.00 | R | DPI |
| OH88 11-314 | LAKE PIPPEN | Portage Co | 143.00 | WS | NL |
| OH88 11-308 | LAKE ROCKWELL | Portage Co | 539.00 | WS | DPI |
| OH25 7-120 | LAKE ROMONA | Fairfield | 5.00 | | DPI |

Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH30 17-392 | LAKE RUPERT | Vinton Co | 325.00 | WS R | DPI |
| OH26 2- 22 | LAKE SNOWDEN (Structure #2) | Athens | 131.00 | WS R | DPI |
| OH45 62-331 | LAKE STEWART | Ross | 7.50 | R | DPI |
| OH65 39-401 | LAKE SUE | Williams | 10.50 | R | DPI |
| OH33 81-210 | LAKE VESUVIUS | Lawrence Co | 105.00 | R | DPI |
| OH45 34-302 | LAKE WHITE RESERVOIR | Pike Co | 337.00 | R | DPI |
| OH92 23- 19 | LAMPSON RESV. (JEFFERSON RESV.) | Ashtabula | 20.00 | WS R | UP |
| OH12 16- 51 | LEESVILLE LAKE | Carroll Co | 1000.00 | R FC | DPI |
| OH74 11-325 | LEIPSIC RESERVOIR | Putnam | 27.00 | R | UP |
| OH 2 22-379 | LIBERTY LAKE | Trumbull | 99.00 | WS R | DPI |
| OH68 17- 9 | LIMA RESERVOIR | Allen | 84.00 | WS R | UP |
| OH -382 | LIME KILN LAKE | Tuscarawas | 29.00 | R | DPI |
| OH41 28-229 | LONDON FISH HATCHERY LAKE | Madison | 7.00 | C | DPI |
| OH10 33-358 | LONG LAKE | Summit Co | 180.00 | WS R | NL |
| OH68 17- 6 | LOST CREEK RESERVOIR | Allen | 121.00 | WS R | UP |
| OH90 19- 92 | LOWER SHAKER LAKE | Cuyahoga | 16.70 | R | DPI |
| OH88 15-150 | LaDUE RESERVOIR | Geauga | 1500.00 | WS R | DPI |
| OH86 15-223 | LaGRANGE WATER WORKS LAKE | Lorain | 6.00 | WS | DO |
| OH41 30-228 | MADISON LAKE | Madison | 106.00 | R | DPI |
| OH36 15-267 | MAPLE GROVE LAKE | Morrow | 5.00 | WS R | DPI |
| OH - 26 | MARGARET CR. CONS. DIST. #1 | Athens | 0.00 | FC | DPI |
| OH26 2- 25 | MARGARET CR. CONS. DIST. #4 | Athens | 28.00 | FC | DPI |
| OH26 5- 24 | MARGARET CR. CONS. DIST. #5 | Athens | 8.30 | FC | DPI |
| OH23 22-274 | MAYSVILLE REG. WATER DIST. LAKE | Muskingum | 45.00 | WS R | DO |
| OH89 30-368 | MEADOWBROOK LAKE | Summit | 24.00 | R | DPI |
| OH 2 23-378 | MEANDER CREEK RESERVOIR | Trumbull | 2010.00 | WS C | DPI |
| OH75 23-143 | METAMORA RESERVOIR | Fulton | 7.00 | WS R | UP |
| OH68 17- 3 | METZGER RESERVOIR | Allen | 157.00 | WS R | UP |
| OH58 5-154 | MIAMI CONS. DIST. LAKE | Greene | 43.00 | R | DO |
| OH62 5-165 | MIAMI WHITEWATER LAKE | Hamilton | 85.00 | R | DPI |
| OH 1 14-309 | MICHAEL J. KIRWIN RESERVOIR | Portage | 2650.00 | WS R FC | DPI |
| OH37 9-133 | MILLER ANTRIM QUARRY | Franklin | 37.00 | R | DO |
| OH10 33-362 | MILLER LAKE | Summit | 28.00 | R | NL |
| OH88 4-312 | MOGADORE RESERVOIR | Portage | 900.00 | WS R | DPI |
| OH - 80 | MOHAWK LAKE | Coshocton | 0.00 | FC | DPI |
| OH17 8- 12 | MOHICANVILLE RESERVOIR | Ashland | 0.00 | FC | DPI |
| OH75 18-227 | MOLANDER PARK LAKE | Lucas | 20.00 | R | DO |
| OH 7 10-255 | MONROE LAKE | Monroe | 39.00 | R | DPI |
| OH 2 31-381 | MOSQUITO CREEK RESERVOIR | Trumbull Co | 7850.00 | WS R FC | DPI |
| OH48 43- 45 | MOUNT ORAB RESERVOIR #2 | Brown | 5.60 | WS | UP |

Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH36 16-266 | MT. GILEAD LAKE (LOWER) | Morrow | 11.00 | WS R | DPI |
| OH18 38-265 | MT. GILEAD LAKE (UPPER) | Morrow | 7.00 | R | DPI |
| OH10 33-365 | MUD LAKE | Summit | 85.00 | R | NL |
| OH15 1- 81 | MUDPORT BASIN | Coshocton | 9.00 | R | DO |
| OH20 22-271 | MUNROE BASIN | Muskingum | 17.00 | R | DO |
| OH88 8-319 | MUZZY LAKE | Portage | 82.00 | WS | NL |
| OH10 16-242 | MWCD STRUCTURE 7-C | Medina | 23.00 | FC | DPI |
| OH77 5-172 | McCOMB RESERVOIR #1 | Hancock | 6.00 | WS R | UP |
| OH67 1-173 | McCOMB RESERVOIR #2 | Hancock | 20.00 | WS R | UP |
| OH 2 9-238 | McKELVEY LAKE | Mahoning | 133.00 | WS R | DPI |
| OH65 35-402 | NETTLE LAKE | Williams | 94.00 | R | NL |
| OH21 36-273 | NEW CONCORD RESERVOIR | Muskingum | 9.60 | WS R | DPI |
| OH25 20-283 | NEW LEXINGTON RESERVOIR #1 New | Perry | 44.00 | WS FC | DPI |
| OH25 20-284 | NEW LEXINGTON RESERVOIR #2 Old | Perry | 27.00 | WS R | DPI |
| OH85 12-196 | NEW LONDON RESERVOIR | Huron | 221.00 | WS R | UP |
| OH52 11- 68 | NEW WILMINGTON RESERVOIR | Clinton | 54.00 | WS | UP |
| OH 2 12-232 | NEWPORT LAKE | Mahoning | 105.00 | R | DPI |
| OH10 12-360 | NIMISILA RESERVOIR | Summit | 825.00 | WS R | DPI |
| OH77 4-403 | NORTH BALTIMORE RESERVOIR | Wood | 29.00 | WS R | UP |
| OH18 27-209 | NORTH BRANCH KOKOSING RIVER LAKE | Knox | 154.00 | R FC | DPI |
| OH93 5- 18 | NORTH KINGSVILLE RESERVOIR | Ashtabula | 7.30 | | DPI |
| OH10 33-356 | NORTH RESERVOIR | Summit | 160.00 | R | NL |
| OH84 5-197 | NORWALK LOWER RESERVOIR | Huron | 31.00 | WS R | DPI |
| OH84 5-199 | NORWALK MEMORIAL RESERVOIR | Huron | 97.00 | WS R | DPI |
| OH84 5-198 | NORWALK UPPER RESERVOIR | Huron | 50.00 | WS R | DPI |
| OH37 25-101 | O'SHAUGHNESSY RESERVOIR | Delaware | 920.00 | WS R | DPI |
| OH25 17-124 | OAK THORPE RESERVOIR | Fairfield | 43.00 | R FC C | DPI |
| OH86 14-224 | OBERLIN OLD UPGROUND RESERVOIR | Lorain | 10.00 | WS | UP |
| OH86 16-218 | OBERLIN RESERVOIR | Lorain Co | 56.00 | WS R | UP |
| OH -262 | OHIO POWER REC. LAKES | Morgan | 2000.00 | R | DPI |
| OH58 16- 53 | OLD REID PARK LAKE | Clark | 15.00 | R | DO |
| OH60 34-259 | OPOSSUM CREEK LAKE #1 | Montgomery | 5.00 | R | DPI |
| OH60 34-260 | OPOSSUM CREEK LAKE #2 | Montgomery | 18.00 | R | DPI |
| OH37 10-135 | OSU GOLF COURSE LAKE | Franklin | 8.60 | | DPI |
| OH76 11-279 | OTTAWA NATIONAL WILDLIFE REFUGE LAKE | Ottawa | 8.00 | C | DO |
| OH67 6-324 | OTTAWA RESERVOIR | Putnam | 20.00 | WS | UP |
| OH72 6- 99 | OXBOW LAKE | Defiance | 40.00 | R | DPI |
| OH42 1-186 | PAINT CREEK LAKE | Highland | 1190.00 | WS R FC | DPI |
| OH88 5-366 | PARK LAKE | Summit | 13.00 | R | DPI |
| OH71 15-282 | PAULDING PONDS | Paulding | 6.00 | R | ? |

Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH71 15-281 | PAULDING RESERVOIR | Paulding | 67.00 | WS R | UP |
| OH23 31-291 | PERRY RECLAMATION POND | Perry | 6.00 | R | DPI |
| OH11 6-350 | PETROS LAKE | Stark | 12.00 | R | DO |
| OH14 33-181 | PIEDMONT LAKE | Harrison | 2310.00 | R FC | DPI |
| OH45 13-301 | PIKE LAKE RESERVOIR | Pike | 13.00 | R | DPI |
| OH33 56-211 | PINE CREEK STRUCTURE #8 | Lawrence | 8.80 | FC | DPI |
| OH 2 5-237 | PINE LAKE | Mahoning | 474.00 | R | DPI |
| OH 2 5-329 | PINE LAKE | Ross | 14.00 | | DPI |
| OH16 1- 11 | PLEASANT HILL LAKE | Ashland | 850.00 | R FC | DPI |
| OH47126-341 | POND LICK LAKE | Scioto | 5.40 | R | DPI |
| OH88 11-317 | PORTAGE CO. COMM. LAKE | Portage | 5.00 | | DO |
| OH36 35- 85 | POWERS RESERVOIR | Crawford | 29.00 | WS R | UP |
| OH88 13-153 | PUNDERSON LAKE | Geauga Co | 101.00 | | NL |
| OH 3 14- 15 | PYMATUNING RESERVOIR | Ashtabula | 3580.00 | WS R FC | DPI |
| OH83 11-334 | RACCOON CREEK RESERVOIR | Sandusky | 34.00 | WS R | UP |
| OH 1 7-316 | RAVENNA ORD. PLANT LAKE | Portage | 7.00 | | DPI |
| OH25 20-287 | RCCD STRUCTURE 1-B | Perry | 44.00 | R FC | DPI |
| OH25 21-294 | RCCD STRUCTURE 3-A | Perry | 13.00 | R FC | DPI |
| OH25 21-293 | RCCD STRUCTURE 3-B | Perry | 13.00 | R FC C | DPI |
| OH25 20-288 | RCCD STRUCTURE 4-C | Perry | 49.00 | R FC | DPI |
| OH25 20-125 | RCCD STRUCTURE 5-A | Fairfield | 20.00 | FC | DPI |
| OH25 21-126 | RCCD STRUCTURE 5-B | Fairfield | 12.10 | FC | DPI |
| OH25 21-127 | RCCD STRUCTURE 5-C | Fairfield | 13.00 | FC | DPI |
| OH25 16-121 | RCCD STRUCTURE 6-A | Fairfield | 302.00 | R FC | DPI |
| OH25 15-122 | RCCD STRUCTURE 7-A | Fairfield | 22.00 | R FC | DPI |
| OH25 15-113 | RCCD STRUCTURE 7-C | Fairfield | 43.00 | FC | DPI |
| OH25 15-123 | RCCD STRUCTURE 7-D | Fairfield | 15.00 | R FC | DPI |
| OH25 15-128 | RCCD STRUCTURE 7-E | Fairfield | 9.90 | FC | DPI |
| OH83 4-109 | RESTHAVEN WILDLIFE AREA PONDS | Erie | 200.00 | R C | DO |
| OH10 33-363 | REX LAKE | Summit | 48.00 | R | NL |
| OH35 30-386 | RICHWOOD PARK LAKE | Union | 16.00 | R | ? |
| OH80 20- 84 | RILEY RESERVOIR | Crawford | 28.00 | WS R | UP |
| OH31 51-148 | RIO GRANDE RESERVOIR | Gallia | 7.20 | WS | DPI |
| OH91 1- 20 | ROAMING ROCK LAKE | Ashtabula | 464.00 | WS | DPI |
| OH25 27-111 | ROCK MILL LAKE IX | Fairfield | 19.80 | R FC C | DPI |
| OH43 44-185 | ROCKY FORK LAKE | Highland Co | 2080.00 | R | ? |
| OH47127-340 | ROOSEVELT LAKE | Scioto | 16.00 | R | DPI |
| OH41 2-333 | ROSS LAKE | Ross | 140.00 | R | DPI |
| OH25 16-289 | RUSH CREEK LAKE | Perry | 300.00 | R FC | DPI |
| OH61 14-321 | RUSH RUN LAKE | Preble Co | 54.00 | R | DPI |

Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH47 45- 40 | RUSSELLVILLE RESERVOIR | Brown | 11.00 | WS | DPI |
| OH 4 35- 70 | SALEM RESERVOIR | Columbiana | 97.00 | WS R | DPI |
| OH21 19-159 | SALT FORK RESERVOIR | Guernsey | 2952.00 | WS R | DPI |
| OH34 26-179 | SAULIS BERRY PARK LAKE | Hardin | 50.00 | R | DO |
| OH68 17- 8 | SCHOONOVER LAKE | Allen | 22.00 | WS R | DO |
| OH38 4-134 | SCHROCK LAKE | Franklin | 12.00 | R C | DPI |
| OH60 19- 46 | SEBALD POND #1 | Butler | 5.50 | R | DPI |
| OH60 19- 47 | SEBALD POND #2 | Butler | 5.40 | R | DPI |
| OH21 46-160 | SENECAVILLE LAKE | Guernsey | 3550.00 | R FC | DPI |
| OH21 46-161 | SENECAVILLE NATIONAL FISH HATCHERY | Guernsey | 20.00 | | DO |
| OH54 26-395 | SHADOW LAKE | Warren | 6.00 | WS | ? |
| OH62 29-167 | SHARON WOODS LAKE | Hamilton | 38.00 | R | DPI |
| OH16 28-326 | SHELBY RESERVOIR #1 | Richland | 29.00 | WS R | UP |
| OH16 21-327 | SHELBY RESERVOIR #2 | Richland | 12.00 | WS R | UP |
| OH19 35-397 | SHREVE LAKE | Wayne Co | 56.00 | R | DPI |
| OH10 6-347 | SIPPO LAKE | Stark Co | 88.00 | R | NL |
| OH60 20- 50 | SMITH PARK LAKE | Butler | 7.00 | R | DO |
| OH91 6-372 | SNIDER DITCH LAKE | Trumbull | 245.00 | R | DPI |
| OH58 15- 57 | SNYDER PARK LAKE | Clark | 5.90 | R | DO |
| OH25 21-295 | SOMERSET RESERVOIR | Perry | 7.50 | WS C | DPI |
| OH33 10-338 | SOUTH WEBSTER RESERVOIR | Scioto | 5.50 | WS | DPI |
| OH 6 71-183 | SPARROW RESERVOIR | Harrison | 17.20 | WS | DPI |
| OH86 9-241 | SPENCER LAKE | Medina | 51.00 | R | DPI |
| OH86 9-247 | SPENCER RESERVOIR | Medina | 8.50 | WS | DPI |
| OH50 1-394 | SPRING VALLEY LAKE | Warren | 58.00 | R | ? |
| OH88 2-370 | SPRINGFIELD LAKE | Summit | 200.00 | R | NL |
| OH61 11- 49 | ST. CLAIR REC. AREA LAKE | Butler | 10.00 | R | DO |
| OH 6 5- 33 | ST. CLAIRSVILLE RESERVOIR #1 | Belmont | 10.00 | WS | DPI |
| OH 6 32- 34 | ST. CLAIRSVILLE RESERVOIR #2 | Belmont | 6.00 | WS | DPI |
| OH25 21-290 | ST. JOSEPH'S LAKE | Perry | 60.00 | R FC | DPI |
| OH53 53- 41 | ST. MARTIN RESERVOIR | Brown | 6.00 | WS | DPI |
| OH40 2-300 | STAGE'S POND | Pickaway | 30.00 | C | NL |
| OH66 14-343 | STATE OF OHIO LAKE | Seneca | 5.00 | | DO |
| OH91 14-374 | STATE OF OHIO LAKE (NO NAME) | Trumbull | 5.50 | C | DPI |
| OH91 14-376 | STATE OF OHIO LAKE (NO NAME) | Trumbull | 21.00 | C | DPI |
| OH91 14-377 | STATE OF OHIO LAKE (NO NAME) | Trumbull | 35.00 | C | DPI |
| OH53 8- 59 | STONELICK RESERVOIR | Clermont Co | 160.00 | R | DPI |
| OH10 33-352 | SUMMIT LAKE | Summit | 100.00 | WS R | NL |
| OH38 30-104 | SUNBURY RESERVOIR #1 | Delaware | 6.90 | WS | UP |
| OH38 30-108 | SUNBURY RESERVOIR #2 | Delaware | 18.80 | WS | UP |

Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH90 10-305 | SUNNY LAKE (HARMON'S POND) | Portage | 63.00 | R | NL |
| OH75 12-225 | SWANTON RESERVOIR | Lucas | 25.00 | WS | UP |
| OH56 19-251 | SWIFT RUN LAKE | Miami Co | 40.00 | WS R | DPI |
| OH14 2-180 | TAPPAN LAKE | Harrison | 2350.00 | R FC | DPI |
| OH56 39-346 | TAWAWA LAKE | Shelby | 8.00 | R | ? |
| OH38 20-130 | THOREAU POND (BLENDON WOODS) | Franklin | 10.70 | C | DPI |
| OH89 9-306 | TINKERS CREEK STATE PARK LAKE | Portage | 5.00 | | DPI |
| OH76 4-280 | TOUSSAINT CR. WILDLIFE AREA LAKE | Ottawa | 5.00 | R C | NL |
| OH47115-339 | TURKEY CREEK LAKE | Scioto | 51.00 | R | DPI |
| OH10 33-364 | TURKEYFOOT LAKE | Summit | 318.00 | R | NL |
| OH68 17- 7 | TWIN LAKES RESERVOIR | Allen | 26.00 | WS R | UP |
| OH31 49-147 | TYCOON LAKE | Gallia | 204.00 | R | DPI |
| OH80 9-405 | UPPER SANDUSKY RESERVOIR | Wyandot | 36.00 | WS R | DPI |
| OH90 19- 93 | UPPER SHAKER LAKE | Cuyahoga | 11.40 | R | DPI |
| OH88 11-245 | USA DEPT. LABOR LAKE | Medina | 7.00 | | DPI |
| OH89 21-353 | VA. KENDALL PARK LAKE | Summit | 14.00 | R | DPI |
| OH77 4-169 | VAN BUREN LAKE | Hancock | 53.00 | R | DPI |
| OH69 15-387 | VAN WERT RESERVOIR #1 | Van Wert | 60.00 | WS R | UP |
| OH69 15-388 | VAN WERT RESERVOIR #2 | Van Wert | 60.00 | WS R | UP |
| OH27 59-396 | VETO LAKE | Washington | 160.00 | R | DPI |
| OH14 44- 31 | VILLAGE OF BARNESVILLE LAKE | Belmont | 7.70 | R | DPI |
| OH52 4- 67 | VILLAGE OF BLANCHESTER LAKE | Clinton | 10.00 | WS | UP |
| OH70 2-323 | VILLAGE OF CONTINENTAL LAKE | Putnam | 5.00 | | UP |
| OH86 5-222 | VILLAGE OF GRAFTON LAKE | Lorain | 7.00 | WS | UP |
| OH56 10-249 | VILLAGE OF TIPP CITY LAKE #1 | Miami | 7.00 | R | DPI |
| OH56 10-250 | VILLAGE OF TIPP CITY LAKE #2 | Miami | 14.00 | R | DO |
| OH63 19- 97 | WABASH CONS. DIST. RESV. #1 | Darke Co | 57.00 | R FC | DPI |
| OH87 5- 89 | WALLACE LAKE | Cuyahoga Co | 15.80 | WS R | DPI |
| OH42 35-129 | WASHINGTON COURTHOUSE RESERVOIR | Fayette | 37.00 | WS R | UP |
| OH73 16-136 | WAUSEON RESERVOIR #1 | Fulton | 49.00 | WS R | UP |
| OH73 11-137 | WAUSEON RESERVOIR #2 | Fulton | 17.00 | WS R | UP |
| OH32 36-146 | WAYNE NAT. FOR. LAKE (CARTER LAKE) | Gallia | 7.00 | R | DPI |
| OH49 69- 44 | WAYNOKA RESERVOIR | Brown | 11.80 | WS | UP |
| OH49 69- 43 | WAYNOKA RETENTION DAM | Brown | 11.60 | WS | DPI |
| OH86 18-220 | WELLINGTON RESERVOIR (LOWER) | Lorain | 160.00 | WS | UP |
| OH86 18-219 | WELLINGTON RESERVOIR (UPPER) | Lorain | 21.00 | WS R | DPI |
| OH 5 84- 73 | WELLSVILLE RESERVOIR | Columbiana | 25.00 | WS R | DPI |
| OH10 33-361 | WEST RESERVOIR | Summit | 104.00 | R | NL |
| OH38 4-105 | WESTERVILLE RESERVOIR | Delaware | 53.00 | WS | DPI |
| OH 1 30- 71 | WESTVILLE LAKE | Columbiana | 90.00 | WS R FC | DPI |

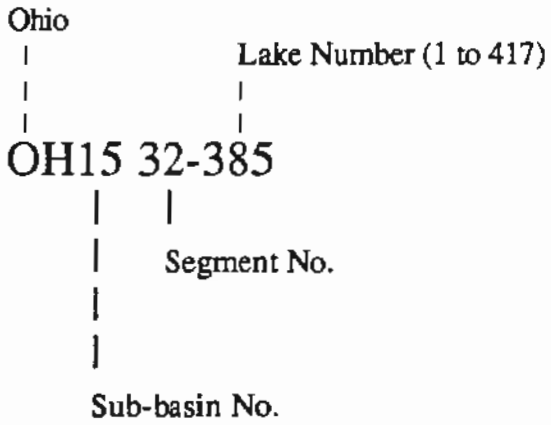
Appendix B. (continued).

| WBID | Lake | County | Surface Area (acres) | Lake Uses | Lake Type |
|---|---|---|---|---|---|
| OH35 12-106 | WHITE SULPHUR LAKE | Delaware | 39.00 | WS R | DO |
| OH84 18-195 | WILLARD CITY RESERVOIR | Huron | 200.00 | WS R | UP |
| OH84 19-200 | WILLARD MARSH AREA | Huron | 6.30 | R C | DPI |
| OH21 1- 79 | WILLS CREEK RESERVOIR | Coshocton | 900.00 | R FC | DPI |
| OH64 2-389 | WILLSHIRE QUARRY LAKE | Van Wert | 7.00 | WS | DO |
| OH52 13- 69 | WILMINGTON RESERVOIR | Clinton | 16.00 | WS | UP |
| OH48 30- 2 | WINCHESTER LAKE | Adams | 10.00 | R | DPI |
| OH62 26-166 | WINTON WOODS LAKE (W.FK.MILL CK.) | Hamilton | 183.00 | R FC | DPI |
| OH10 28-367 | WOLF CREEK RESERVOIR | Summit | 196.00 | WS | DPI |
| OH 9 35-277 | WOLF RUN RESERVOIR | Noble | 209.00 | WS R FC | DPI |
| OH89 2- 91 | WOODLAND HILLS PARK LAKE | Cuyahoga | 5.00 | R | UP |
| OH 7 5-256 | WOODSFIELD RESERVOIR | Monroe | 7.00 | WS R | DPI |
| OH41 2-332 | YOUCTANGEE PARK LAKE | Ross | 6.00 | R | DO |
| OH23 50-276 | ZANESVILLE STATE NURSERY LAKE | Muskingum | 10.00 | C | ? |
| OH11 30- 77 | ZEPPERNICK LAKE | Columbiana | 41.00 | R | DPI |
| OH15 32-385 | ZOAR LAKE WILDLIFE AREA | Tuscarawas | 28.00 | R | ? |

[1]Uses: R-Recreation, WS-Water Supply, FC-Flood Control, C-Conservation; All lakes are Exceptional Warmwater Habitat Aquatic Life Use.

[2]Lake Types: DPI-Dammed Waterbody, DO-Dugout Lake, UP-Upground Reservoir, NL-Natural Lake, ?-unknown or unclassified.

[3]Format of WBID:



# APPENDIX C

## Trophic State Classification For Selected Publicly Owned Lakes

Appendix C. Trophic state classification, TSI data, and trends in trophic state for publicly owned Ohio lakes greater than 5 acres.

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTON LAKE | Butler | L-1 | 21-Aug-89 | 60 | 70 | 65 | 60 | Eutrophic | Decreasing | 19.44 | 0.508 | 70 | OEPA 314 GRANT |
| ACTON LAKE | Butler | L-1 | 26-Apr-89 | | 67 | | | | (-18 TSI Pts) | | 0.610 | | OEPA 314 GRANT |
| ACTON LAKE | Butler | L-1 | 10-Aug-81 | 78 | 69 | 69 | 78 | Hypereutrophic | | 121.70 | 0.520 | 90 | OEPA 1982 305(B) |
| ACTON LAKE | Butler | L-1 | 09-Sep-75 | | 65 | 63 | 81 | Hypereutrophic | | | 0.710 | 60 | OEPA 1982 305(B) |
| ACTON LAKE | Butler | L-1 | 30-Apr-75 | | 89 | 81 | | | | | 0.130 | 210 | OEPA 1982 305(B) |
| ACTON LAKE | Butler | L-1 | 18-Aug-60 | | 70 | | | | | | 0.510 | | OEPA 1982 305(B) |
| ACTON LAKE | Butler | L-1 | 22-Apr-60 | | 53 | | | | | | 1.600 | | OEPA 1982 305(B) |
| ADAMS LAKE | Adams | L-1 | 18-Aug-80 | 52 | 64 | 57 | 57 | Eutrophic | | 9.30 | 0.760 | 40 | OEPA 1982 305(B) |
| ADAMS LAKE | Adams | L-1 | 01-May-80 | 51 | 76 | 63 | | | | 8.20 | 0.330 | 60 | OEPA 1982 305(B) |
| ALUM CREEK LAKE | Delaware | L-1 | 23-Aug-89 | | 50 | 39 | 44 | L1-Mesotrophic | L1-Decreasing | | 1.950 | 11 | OEPA 314 GRANT |
| ALUM CREEK LAKE | Delaware | L-1 | 03-May-89 | | 64 | 44 | | | (-9 TSI Pts) | | 0.750 | 16 | OEPA 314 GRANT |
| ALUM CREEK LAKE | Delaware | L-2 | 03-May-89 | | 65 | 63 | 63 | L2-Eutrophic | | | 0.700 | 60 | OEPA 314 GRANT |
| ALUM CREEK LAKE | Delaware | L-2 | 23-Aug-89 | | 50 | 36 | | | | | 2.020 | 9 | OEPA 314 GRANT |
| ALUM CREEK LAKE | Delaware | L-1 | 13-Apr-76 | | 46 | 53 | 53 | L2-Eutrophic | | | 2.600 | 30 | OEPA 1982 305(B) |
| ALUM CREEK LAKE | Delaware | L-1 | 27-Aug-76 | | 42 | 57 | | | | | 3.400 | 40 | OEPA 1982 305(B) |
| ATWOOD RESERVOIR | Tuscarawas | L-1 | 17-May-76 | | 57 | 53 | 53 | Eutrophic | | | 1.200 | 30 | OEPA 1982 305(B) |
| ATWOOD RESERVOIR | Tuscarawas | L-1 | 30-Aug-76 | | 61 | 57 | | | | | 0.910 | 40 | OEPA 1982 305(B) |
| ATWOOD RESERVOIR | Tuscarawas | L-1 | 30-Jul-73 | 51 | 57 | 47 | | | | 8.10 | 1.200 | 20 | OEPA 1982 305(B) |
| ATWOOD RESERVOIR | Tuscarawas | L-1 | 20-Apr-73 | 53 | 52 | 47 | | | | 10.30 | 1.700 | 20 | OEPA 1982 305(B) |
| BALDWIN LAKE | Cuyahoga | L-1 | 23-Aug-77 | 54 | 93 | 88 | 54 | Eutrophic | | 10.90 | 0.100 | 340 | OEPA 1982 305(B) |
| BARNESVILLE RES. #3 | Belmont | L-1 | 21-Aug-80 | 58 | 57 | 57 | 55 | Eutrophic | | 17.10 | 1.200 | 40 | OEPA 1982 305(B) |
| BARNESVILLE RES. #3 | Belmont | L-1 | 15-May-80 | 52 | 61 | 53 | | | | 8.50 | 0.960 | 30 | OEPA 1982 305(B) |
| BEACH CITY LAKE | Tuscarawas | L-1 | 20-Apr-73 | 45 | 77 | 69 | 64 | Eutrophic | | 4.30 | 0.300 | 90 | OEPA 1982 305(B) |
| BEACH CITY LAKE | Tuscarawas | L-1 | 30-Jul-73 | 60 | 83 | 85 | | | | 19.40 | 0.200 | 280 | OEPA 1982 305(B) |
| BELMONT LAKE | Belmont | L-1 | 08-May-80 | 57 | 59 | 47 | 58 | Eutrophic | | 15.40 | 1.100 | 20 | OEPA 1982 305(B) |
| BELMONT LAKE | Belmont | L-1 | 07-Aug-80 | 69 | 62 | 69 | | | | 49.70 | 0.860 | 90 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BERLIN RESERVOIR | Portage | L-1 | 13-Apr-89 | | 60 | | 59 | L1-Eutrophic | L1-Increasing | | 1.029 | | OEPA 314 GRANT |
| BERLIN RESERVOIR | Portage | L-1 | 10-Aug-89 | 59 | 62 | | | | (+12 TSI Pts) | 18.84 | 0.900 | | OEPA 314 GRANT |
| BERLIN RESERVOIR | Portage | L-1 | 02-Aug-89 | | 64 | 50 | | | | | 0.749 | 24 | OEPA 314 GRANT |
| BERLIN RESERVOIR | Portage | L-2 | 02-Aug-89 | | 61 | 55 | 69 | L2-Hypereutroph. | | | 0.902 | 33 | OEPA 314 GRANT |
| BERLIN RESERVOIR | Portage | L-2 | 13-Apr-89 | | 63 | 69 | | | | | 0.826 | 90 | OEPA 314 GRANT |
| BERLIN R. (WEST BASIN) | Portage | VLMP | SPRSUM-89 | | 80 | | | | | | (N=9) | | NEFCO |
| BERLIN R. (EAST BASIN) | Portage | VLMP | SPRSUM-89 | | 62 | | | | | | (N=5) | | NEFCO |
| BERLIN R. (EAST BASIN) | Portage | VLMP | SPRSUM-88 | | 63 | | | | | | (N=5) | | NEFCO |
| BERLIN RESERVOIR | Portage | L-1 | 28-May-75 | | 70 | 47 | 47 | L1-Mesotrophic | | | 0.490 | 20 | OEPA 1982 305(B) |
| BERLIN RESERVOIR | Portage | L-1 | 27-Aug-75 | | 64 | 53 | | | | | 0.760 | 30 | OEPA 1982 305(B) |
| BERLIN RESERVOIR | Portage | L-1 | 20-Apr-73 | 57 | 61 | 53 | 54 | L1-Eutrophic | | 14.70 | 0.940 | 30 | OEPA 1982 305(B) |
| BERLIN RESERVOIR | Portage | L-1 | 30-Jul-73 | 55 | 60 | 53 | | | | 12.20 | 0.970 | 30 | OEPA 1982 305(B) |
| BRADY LAKE | Portage | L-1 | 08-Aug-80 | 76 | 61 | 76 | 76 | Hypereutrophic | | 98.50 | 0.910 | 150 | OEPA 1982 305(B) |
| BUCKEYE LAKE | Licking | L-1 | 24-Aug-89 | 86 | 77 | 78 | 74 | Hypereutrophic | Same | 274.30 | 0.300 | 170 | OEPA 314 GRANT |
| BUCKEYE LAKE | Licking | L-1 | 08-May-89 | | 75 | 63 | | | (+1 TSI Pts) | | 0.356 | 60 | OEPA 314 GRANT |
| BUCKEYE LAKE | Licking | L-1 | 16-May-78 | 75 | 69 | 76 | 73 | Hypereutrophic | | 92.20 | 0.550 | 150 | OEPA 1982 305(B) |
| BUCKEYE LAKE | Licking | L-1 | 22-Aug-78 | 71 | 59 | 71 | | | | 60.80 | 1.100 | 100 | OEPA 1982 305(B) |
| BUCKEYE LAKE | Licking | L-1 | 16-Aug-75 | | 72 | 71 | 71 | Hypereutrophic | | | 0.430 | 100 | OEPA 1982 305(B) |
| BUCKEYE LAKE | Licking | L-1 | 02-May-75 | | 54 | 71 | | | | | 1.500 | 100 | OEPA 1982 305(B) |
| BUCKEYE LAKE | Licking | L-1 | 04-Apr-73 | 85 | 83 | 76 | 76 | Hypereutrophic | | 258.60 | 0.200 | 150 | OEPA 1982 305(B) |
| BUCKEYE LAKE | Licking | L-1 | 07-Jul-73 | 81 | 77 | 76 | | | | 161.90 | 0.300 | 150 | OEPA 1982 305(B) |
| BURR OAK LAKE | Athens | L-1 | 22-Apr-76 | | 50 | 53 | 53 | Eutrophic | | | 2.000 | 30 | OEPA 1982 305(B) |
| BURR OAK LAKE | Athens | L-1 | 30-Sep-76 | | 55 | 61 | | | | | 1.400 | 50 | OEPA 1982 305(B) |
| CAESAR CREEK RES. | Warren | L-1 | 26-Aug-78 | 52 | 39 | 37 | 62 | Eutrophic | | 8.50 | 4.300 | 10 | OEPA 1982 305(B) |
| CAESAR CREEK RES. | Warren | L-1 | 25-Apr-78 | 47 | 54 | 73 | | | | 5.10 | 1.500 | 120 | OEPA 1982 305(B) |
| CALDWELL LAKE | Nobel | L-1 | YOUGER | 60 | 50 | | 60 | Eutrophic | | | | | OEPA UNPUBL |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHARLES MILL LAKE | Ashland | L-1 | 08-Aug-78 | 72 | 76 | 75 | 72 | Hypereutrophic | | 68.80 | 0.340 | 140 | OEPA 1982 305(B) |
| CHARLES MILL LAKE | Ashland | L-1 | 12-May-78 | 75 | 71 | 72 | | | | 90.20 | 0.460 | 110 | OEPA 1982 305(B) |
| CHARLES MILL LAKE | Ashland | L-1 | 20-Apr-73 | 67 | 67 | 63 | | | | 41.70 | 0.610 | 60 | OEPA 1982 305(B) |
| CHARLES MILL LAKE | Ashland | L-1 | 27-Jul-73 | 74 | 77 | 78 | | | | 85.50 | 0.300 | 170 | OEPA 1982 305(B) |
| CLARK LAKE | Clark | L-1 | 29-May-79 | 54 | 52 | 37 | 38 | Mesotrophic | | 11.20 | 1.700 | 10 | OEPA 1982 305(B) |
| CLARK LAKE | Clark | L-1 | 13-Aug-79 | 39 | 49 | 37 | | | | 2.40 | 2.100 | 10 | OEPA 1982 305(B) |
| CLEAR FORK RES. | Richland | L-1 | 20-Aug-75 | | 60 | 53 | 57 | Eutrophic | | | 1.000 | 30 | OEPA 1982 305(B) |
| CLEAR FORK RES. | Richland | L-1 | 23-May-75 | | 60 | 57 | | | | | 1.000 | 40 | OEPA 1982 305(B) |
| CLENDENING LAKE | Harrison | L-1 | 27-Apr-76 | | 60 | 57 | 57 | Eutrophic | | | 1.000 | 40 | OEPA 1982 305(B) |
| CLENDENING LAKE | Harrison | L-1 | 03-Sep-76 | | 60 | 63 | | | | | 1.000 | 60 | OEPA 1982 305(B) |
| CLOUSE POND | Perry | L-1 | 29-May-80 | 60 | 62 | 57 | 62 | Eutrophic | | 20.30 | 0.860 | 40 | OEPA 1982 305(B) |
| CLOUSE POND | Perry | L-1 | 05-Aug-80 | 68 | 73 | 65 | | | | 46.60 | 0.410 | 70 | OEPA 1982 305(B) |
| COWAN LAKE | Clinton | L-1 | 10-Sep-75 | | 68 | 63 | 73 | Hypereutrophic | | | 0.580 | 60 | OEPA 1982 305(B) |
| COWAN LAKE | Clinton | L-1 | 29-Apr-75 | | 78 | 73 | | | | | 0.280 | 120 | OEPA 1982 305(B) |
| CRYSTAL L. (RAVENNA) | Portage | VLMP | SPRSUM-89 | | 43 | | | Insuff. Data | | | (N=6) | | NEPCO |
| CUTLER LAKE | Muskingum | L-1 | 22-Jul-81 | 66 | 69 | 57 | 66 | Eutrophic | | 35.90 | 0.550 | 40 | OEPA 1982 305(B) |
| C. J. BROWN LAKE | Clark | L-1 | 07-Apr-77 | | 57 | 57 | 61 | Eutrophic | | | 1.200 | 40 | OEPA 1982 305(B) |
| C. J. BROWN LAKE | Clark | L-1 | 02-Aug-77 | 65 | 54 | 57 | | | | 32.30 | 1.500 | 40 | OEPA 1982 305(B) |
| DALE WALBURN RES. | Stark | VLMP | SPRSUM-89 | | 72 | | | | | | (N=4) | | NEPCO |
| DALE WALBURN RES. | Stark | L-1 | 03-May-89 | | 64 | 61 | 61 | Eutrophic | | | 0.743 | 50 | OEPA 314 GRANT |
| DEER CREEK LAKE | Pickaway | L-1 | 12-Sep-75 | | 71 | 63 | 65 | Eutrophic | | | 0.460 | 60 | OEPA 1982 305(B) |
| DEER CREEK LAKE | Pickaway | L-1 | 25-Apr-75 | | 71 | 65 | | | | | 0.480 | 70 | OEPA 1982 305(B) |
| DEER CREEK LAKE | Pickaway | L-1 | 28-Apr-73 | 57 | 72 | 71 | | | | 14.40 | 0.450 | 100 | OEPA 1982 305(B) |
| DEER CREEK LAKE | Pickaway | L-1 | 01-Aug-73 | 53 | 57 | 57 | | | | 9.90 | 1.200 | 40 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEER CREEK RES. | Stark | VLMP | SPRSUM-89 | | 66 | | 59 | Eutrophic | | | (N=7) | | NEFCO |
| DEER CREEK RES. | Stark | L-1 | 23-Apr-77 | | 61 | 57 | | | | | 0.910 | 40 | OEPA 1982 305(B) |
| DEER CREEK RES. | Stark | L-1 | 16-Aug-77 | 62 | 65 | 53 | | | | 25.00 | 0.730 | 30 | OEPA 1982 305(B) |
| DELAWARE LAKE | Delaware | L-1 | 26-Apr-73 | 57 | 67 | 67 | 55 | Eutrophic | | 14.90 | 0.610 | 80 | OEPA 1982 305(B) |
| DELAWARE LAKE | Delaware | L-1 | 01-Aug-73 | 44 | 71 | 65 | | | | 4.10 | 0.460 | 70 | OEPA 1982 305(B) |
| DILLON RESERVOIR | Muskingum | L-1 | 12-Aug-77 | 67 | 66 | 65 | 68 | Hypereutrophic | | 40.90 | 0.670 | 70 | OEPA 1982 305(B) |
| DILLON RESERVOIR | Muskingum | L-1 | 11-Apr-77 | | 71 | 69 | | | | | 0.460 | 90 | OEPA 1982 305(B) |
| DILLON RESERVOIR | Muskingum | L-1 | 30-Jul-73 | 60 | 67 | 72 | | | | 20.00 | 0.610 | 110 | OEPA 1982 305(B) |
| DILLON RESERVOIR | Muskingum | L-1 | 26-Apr-73 | 63 | 70 | 73 | | | | 25.90 | 0.510 | 120 | OEPA 1982 305(B) |
| DOW LAKE | Athens | L-1 | 31-Aug-78 | 48 | 44 | | 42 | Mesotrophic | | 6.20 | 3.000 | | OEPA 1982 305(B) |
| DOW LAKE | Athens | L-1 | 08-May-78 | 53 | 52 | 37 | | | | 9.90 | 1.700 | 10 | OEPA 1982 305(B) |
| EAST BRANCH RES. | Geauga | L-1 | 26-Apr-77 | | 62 | 57 | 60 | Eutrophic | | | 0.850 | 40 | OEPA 1982 305(B) |
| EAST BRANCH RES. | Geauga | L-1 | 15-Aug-77 | 64 | 61 | 61 | | | | 28.80 | 0.910 | 50 | OEPA 1982 305(B) |
| EAST FORK LAKE | Clermont | L-1 | 21-Aug-79 | 68 | 59 | 57 | 67 | Hypereutrophic | | 47.00 | 1.100 | 40 | OEPA 1982 305(B) |
| EAST FORK LAKE | Clermont | L-1 | 01-Jun-79 | 52 | 57 | 67 | | | | 8.50 | 1.200 | 80 | OEPA 1982 305(B) |
| EAST RES. (PORTAGE LK) | Summit | VLMP | SPRSUM-89 | | 59 | | 65 | Eutrophic | | | (N=21) | | NEFCO |
| EAST RESERVOIR | Summit | VLMP | SPRSUM-88 | | 58 | | | | | | (N=6) | | NEFCO |
| EAST RESERVOIR | Summit | L-1 | 23-May-80 | 74 | 64 | 63 | | | | 85.00 | 0.760 | 60 | OEPA 1982 305(B) |
| EAST RESERVOIR | Summit | L-1 | 02-Sep-80 | 68 | 60 | 75 | | | | 46.90 | 1.000 | 140 | OEPA 1982 305(B) |
| EASTWOOD LAKE | Montgom. | L-1 | 14-Aug-89 | 68 | 71 | 55 | 68 | Hypereutrophic | | 46.35 | 0.457 | 35 | OEPA 314 GRANT |
| EASTWOOD LAKE | Montgom. | L-1 | 24-Apr-89 | | | 54 | | | | | | 32 | OEPA 314 GRANT |
| ESSINGTON LAKE | Perry | L-1 | 23-Jul-81 | 38 | 42 | 47 | 38 | Mesotrophic | | 2.10 | 3.500 | 20 | OEPA 1982 305(B) |
| FINDLAY RES. #2 | Hancock | L-1 | 31-Aug-79 | 59 | 54 | 53 | 47 | Mesotrophic | | 18.30 | 1.500 | 30 | OEPA 1982 305(B) |
| FINDLAY RES. #2 | Hancock | L-1 | 27-Jun-79 | 44 | 42 | 37 | | | | 3.90 | 3.400 | 10 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FINDLEY LAKE | Lorain | L-1 | 30-Aug-89 | 85 | 71 | 65 | 64 | Eutrophic | Same | 267.30 | 0.457 | 67 | OEPA 314 GRANT |
| FINDLEY LAKE | Lorain | L-1 | 08-May-89 | | 45 | 44 | | | (-1 TSI Pts) | | 2.819 | 16 | OEPA 314 GRANT |
| FINDLEY LAKE | Lorain | L-1 | 03-Jun-80 | 45 | 42 | 65 | 65 | Eutrophic | | 4.20 | 3.400 | 70 | OEPA 1982 305(B) |
| FINDLEY LAKE | Lorain | L-1 | 12-Aug-80 | 65 | 54 | 53 | | | | 33.80 | 1.500 | 30 | OEPA 1982 305(B) |
| FINDLEY LAKE | Lorain | L-1 | 16-Aug-77 | 68 | 57 | 65 | 68 | Hypereutrophic | | 44.60 | 1.200 | 70 | OEPA 1982 305(B) |
| FIRESTONE RESERVOIR | Summit | L-1 | 14-Jul-81 | 70 | 65 | 37 | 70 | Hypereutrophic | | 55.20 | 0.700 | 10 | OEPA 1982 305(B) |
| FORKED RUN LAKE | Meigs | L-1 | 25-Aug-78 | | 48 | 37 | 37 | Mesotrophic | | | 2.300 | 10 | OEPA 1982 305(B) |
| FORKED RUN LAKE | Meigs | L-1 | 04-May-78 | 43 | 55 | 37 | | | | 3.70 | 1.400 | 10 | OEPA 1982 305(B) |
| FORTY ACRE POND | Auglaize | L-1 | 29-Jul-81 | 78 | | 53 | 78 | Hypereutrophic | | 127.60 | | 30 | OEPA 1982 305(B) |
| FOX LAKE STRUCTURE #6 | Athens | L-1 | 19-Aug-80 | 59 | 53 | 71 | 53 | Eutrophic | | 17.50 | 1.600 | 100 | OEPA 1982 305(B) |
| FOX LAKE STRUCTURE #6 | Athens | L-1 | 02-May-80 | 42 | 49 | 47 | | | | 3.30 | 2.100 | 20 | OEPA 1982 305(B) |
| GRAND LAKE ST. MARYS | Auglaize | L-1 | 16-May-75 | | 72 | 76 | 76 | Hypereutrophic | | | 0.430 | 150 | OEPA 1982 305(B) |
| GRAND LAKE ST. MARYS | Auglaize | L-1 | 12-Aug-75 | | 76 | 74 | | | | | 0.330 | 130 | OEPA 1982 305(B) |
| GRAND LAKE ST. MARYS | Auglaize | L-1 | 04-May-73 | 78 | 96 | 86 | | | | 127.30 | 0.080 | 300 | OEPA 1982 305(B) |
| GRAND LAKE ST. MARYS | Auglaize | L-1 | 01-Aug-73 | 72 | 71 | 74 | | | | 69.70 | 0.460 | 130 | OEPA 1982 305(B) |
| GRANT LAKE | Brown | L-1 | 01-Aug-73 | 68 | 72 | 74 | 68 | Hypereutrophic | | 45.20 | 0.450 | 130 | OEPA 1982 305(B) |
| GUILFORD LAKE | Columbiana | L-1 | 08-Aug-89 | 71 | 65 | 63 | 66 | Eutrophic | Decreasing | 60.65 | 0.686 | 60 | OEPA 314 GRANT |
| GUILFORD LAKE | Columbiana | L-1 | 17-Mar-89 | | 62 | 61 | | | (-5 TSI Pts) | | 0.864 | 50 | OEPA 314 GRANT |
| GUILFORD LAKE | Columbiana | L-1 | 24-Aug-81 | 71 | 65 | 61 | 71 | Hypereutrophic | | 62.90 | 0.730 | 50 | OEPA 1982 305(B) |
| GUILFORD LAKE | Columbiana | L-1 | 26-Aug-75 | | 61 | 61 | | | | | 0.910 | 50 | OEPA 1982 305(B) |
| GUILFORD LAKE | Columbiana | L-1 | 21-May-75 | | 62 | 57 | 57 | Eutrophic | | | 0.860 | 40 | OEPA 1982 305(B) |
| HAMMERTON LAKE | Jackson | L-1 | 14-Jun-79 | 42 | 37 | | 40 | Mesotrophic | | 3.20 | 4.900 | ****** | OEPA 1982 305(B) |
| HAMMERTON LAKE | Jackson | L-1 | 06-Aug-79 | 40 | 37 | 37 | | | | 2.70 | 4.800 | 10 | OEPA 1982 305(B) |
| HARGUS LAKE | Pickaway | L-1 | 04-Aug-78 | 43 | 52 | 37 | 43 | Mesotrophic | | 3.60 | 1.800 | 10 | OEPA 1982 305(B) |
| HARGUS LAKE | Pickaway | L-1 | 20-Apr-78 | 52 | 59 | 61 | | | | 8.60 | 1.100 | 50 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HARRISON LAKE | Fulton | L-1 | 19-Aug-81 | 62 | 69 | 67 | 62 | Eutrophic | Decreasing | 23.90 | 0.550 | 80 | OEPA 1982 305(B) |
| HARRISON LAKE | Fulton | L-1 | 22-Aug-75 | | 70 | 61 | 69 | Eutrophic | (-7 TSI Pts) | | 0.510 | 50 | OEPA 1982 305(B) |
| HARRISON LAKE | Fulton | L-1 | 30-May-75 | | 66 | 69 | | | | | 0.640 | 90 | OEPA 1982 305(B) |
| HIGHLANDTOWN LAKE | Columbiana | L-1 | 15-May-78 | 50 | 52 | 47 | 57 | Eutrophic | | 7.50 | 1.800 | 20 | OEPA 1982 305(B) |
| HIGHLANDTOWN LAKE | Columbiana | L-1 | 21-Aug-78 | 67 | 52 | 37 | | | | 42.50 | 1.800 | 10 | OEPA 1982 305(B) |
| HILLSBORO RESERVOIR | Highland | L-1 | 28-Aug-89 | 53 | 63 | 45 | 45 | Mesotrophic | | 9.46 | 0.813 | 17 | OEPA 314 GRANT |
| HILLSBORO RESERVOIR | Highland | L-1 | 17-May-89 | | 61 | 37 | | | | | 0.914 | 10 | OEPA 314 GRANT |
| HINCKLEY LAKE | Medina | L-1 | 20-Apr-89 | | 70 | 46 | 46 | Mesotrophic | Decreasing | | 0.508 | 18 | OEPA 314 GRANT |
| HINCKLEY LAKE | Medina | L-1 | 12-Jul-89 | | 65 | 61 | | | (-18 TSI Pts) | | 0.724 | 50 | OEPA 314 GRANT |
| HINCKLEY LAKE | Medina | L-1 | 19-Aug-77 | 64 | 77 | 79 | 64 | Eutrophic | | 30.80 | 0.300 | 180 | OEPA 1982 305(B) |
| HOOVER RESERVOIR | Franklin | L-1 | 04-May-89 | | 70 | 50 | 50 | L1-Eutrophic | L1-Decreasing | | 0.500 | 24 | OEPA 314 GRANT |
| HOOVER RESERVOIR | Franklin | L-1 | 25-Aug-89 | 51 | 56 | 45 | | | (-11 TSI Pts) | 7.80 | 1.300 | 17 | OEPA 314 GRANT |
| HOOVER RESERVOIR | Franklin | L-2 | 25-Aug-89 | 51 | 66 | 62 | 55 | L2-Eutrophic | | 33.93 | 0.650 | 56 | OEPA 314 GRANT |
| HOOVER RESERVOIR | Franklin | L-2 | 04-May-89 | | 77 | 60 | | | | | 0.300 | 47 | OEPA 314 GRANT |
| HOOVER RESERVOIR | Franklin | L-1 | 09-May-75 | | 71 | 71 | 71 | L1-Hypereutroph. | | | 0.460 | 100 | OEPA 1982 305(B) |
| HOOVER RESERVOIR | Franklin | L-1 | 29-Aug-75 | | 57 | 53 | | | | | 1.200 | 30 | OEPA 1982 305(B) |
| HOOVER RESERVOIR | Franklin | L-1 | 01-Aug-73 | 50 | 61 | 53 | 55 | L1-Eutrophic | | 7.60 | 0.930 | 30 | OEPA 1982 305(B) |
| HOOVER RESERVOIR | Franklin | L-1 | 26-Apr-73 | 66 | 61 | 61 | | | | 36.30 | 0.910 | 50 | OEPA 1982 305(B) |
| HOSTERMAN LAKE | Clark | L-1 | 17-Jul-81 | 70 | 65 | 67 | 70 | Hypereutrophic | | 58.10 | 0.700 | 80 | OEPA 1982 305(B) |
| HOWER L. (PORTAGE LK) | Summit | VLMP | SPRSUM-89 | | 50 | | | Insuff. Data | | | (N=7) | | NEFCO |
| HOWER LAKE | Summit | VLMP | SPRSUM-88 | | 50 | | | | | | (N=6) | | NEFCO |
| HUDSON SPRINGS LAKE | Summit | VLMP | SPRSUM-89 | | 60 | | | Insuff. Data | | | (N=33) | | NEFCO |
| INDIAN LAKE (SITE L-1) | Logan | L-1 | 27-Sep-89 | | | 65 | 70 | Hypereutrophic | | | | 70 | OEPA PHASE I |
| INDIAN LAKE | Logan | L-1 | 24-Aug-89 | 73 | 80 | 61 | | | | 74.34 | 0.254 | 50 | OEPA PHASE I |
| INDIAN LAKE | Logan | L-1 | 10-Jul-89 | | | 69 | | | | | | 90 | OEPA PHASE I |
| INDIAN LAKE | Logan | L-1 | 21-Jun-89 | | 75 | 65 | | | | | 0.356 | 70 | OEPA PHASE I |
| INDIAN LAKE | Logan | L-1 | 07-Jun-89 | | 77 | | | | | | 0.318 | | OEPA PHASE I |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INDIAN LAKE | Logan | L-1 | 24-May-89 | | 81 | 67 | | | | | 0.229 | 76 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 20-Apr-89 | | 80 | | | | | | 0.254 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 22-Nov-88 | | 76 | | | | | | 0.335 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 09-Nov-88 | | 72 | | | | | | 0.427 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 27-Oct-88 | | 76 | | | | | | 0.335 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 13-Oct-88 | | 77 | 65 | | | | | 0.305 | 70 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 29-Sep-88 | | 87 | 67 | | | | | 0.152 | 80 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 13-Sep-88 | | 80 | | | | | | 0.244 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 30-Aug-88 | | 82 | 71 | | | | | 0.213 | 100 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 18-Aug-88 | | 87 | 74 | | | | | 0.152 | 130 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 02-Aug-88 | | 87 | 73 | | | | | 0.152 | 120 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 21-Jul-88 | 76 | 80 | 78 | 76 | Hypereutrophic | | 107.40 | 0.244 | 170 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-1 | 06-Jul-88 | | 77 | 72 | | | | | 0.305 | 110 | OEPA | PHASE I |
| INDIAN LAKE (SITE L-2) | Logan | L-2 | 27-Sep-89 | | | 70 | | | | | | 97 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 24-Aug-89 | 73 | 77 | 69 | 65 | Eutrophic | | 77.25 | 0.305 | 90 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 10-Jul-89 | | | 58 | | | | | | 43 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 21-Jun-89 | | 70 | 65 | | | | | 0.483 | 66 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 07-Jun-89 | | 77 | 63 | | | | | 0.318 | 59 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 24-May-89 | | 78 | 63 | | | | | 0.279 | 58 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 20-Apr-89 | | 80 | | | | | | 0.254 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 22-Nov-88 | | 71 | 65 | | | | | 0.457 | 70 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 09-Nov-88 | | 71 | | | | | | 0.457 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 29-Sep-88 | | 80 | | | | | | 0.244 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 27-Oct-88 | | 77 | | | | | | 0.305 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 13-Oct-88 | | 76 | 61 | | | | | 0.335 | 50 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 13-Sep-88 | | 80 | | | | | | 0.244 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 30-Aug-88 | | 82 | 67 | | | | | 0.213 | 80 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 18-Aug-88 | | | 73 | | | | | | 120 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 02-Aug-88 | | 80 | 61 | | | | | 0.244 | 50 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 21-Jul-88 | 73 | 80 | 65 | 73 | Hypereutrophic | | 72.10 | 0.244 | 70 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-2 | 06-Jul-88 | | 74 | 63 | | | | | 0.366 | 60 | OEPA | PHASE I |
| INDIAN LAKE (SITE L-3) | Logan | L-3 | 27-Sep-89 | | | 61 | 63 | Eutrophic | | | | 50 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 24-Aug-89 | 73 | 75 | 67 | | | | 79.23 | 0.356 | 80 | OEPA | PHASE I |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INDIAN LAKE | Logan | L-3 | 10-Jul-89 | | | 65 | | | | | | 70 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 21-Jun-89 | | 71 | 55 | | | | | 0.457 | 35 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 07-Jun-89 | | 77 | | | | | | 0.318 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 24-May-89 | | 78 | 61 | | | | | 0.279 | 52 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 20-Apr-89 | | 80 | 63 | | | | | 0.254 | 59 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 22-Nov-88 | | 72 | | | | | | 0.427 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 09-Nov-88 | | 72 | 78 | | | | | 0.427 | 170 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 27-Oct-88 | | 77 | | | | | | 0.305 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 29-Sep-88 | | 80 | | | | | | 0.244 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 13-Sep-88 | | 80 | 81 | | | | | 0.244 | 200 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 30-Aug-88 | | 82 | 69 | | | | | 0.213 | 90 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 18-Aug-88 | | | 63 | | | | | | 60 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 02-Aug-88 | | 79 | | | | | | 0.274 | | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 21-Jul-88 | 73 | 80 | 69 | 73 | Hypereutrophic | | 73.00 | 0.244 | 90 | OEPA | PHASE I |
| INDIAN LAKE | Logan | L-3 | 06-Jul-88 | | 77 | 73 | | | | | 0.305 | 120 | OEPA | PHASE I |
| INDIAN LAKE (SITE L-4) | Logan | L-4 | 18-Aug-77 | 75 | 71 | 71 | 74 | Hypereutrophic | | 92.50 | 0.460 | 100 | OEPA | 1982 305(B) |
| INDIAN LAKE | Logan | L-4 | 21-Apr-77 | 72 | 69 | 73 | | | | 71.60 | 0.550 | 120 | OEPA | 1982 305(B) |
| INDIAN LAKE | Logan | L-4 | 02-Aug-73 | 77 | 72 | 76 | | | | 114.20 | 0.430 | 150 | OEPA | 1982 305(B) |
| INDIAN LAKE | Logan | L-4 | 04-May-73 | 71 | 82 | 61 | | | | 59.40 | 0.220 | 50 | OEPA | 1982 305(B) |
| JACKSON LAKE | Jackson | L-1 | 18-Aug-78 | 53 | 59 | 53 | 50 | Eutrophic | | 10.20 | 1.100 | 30 | OEPA | 1982 305(B) |
| JACKSON LAKE | Jackson | L-1 | 01-May-78 | 58 | 54 | 47 | | | | 15.80 | 1.500 | 20 | OEPA | 1982 305(B) |
| JEFFERSON LAKE | Jefferson | L-1 | 09-May-80 | 43 | 52 | 37 | | | | 3.40 | 1.700 | 10 | OEPA | 1982 305(B) |
| JEFFERSON LAKE | Jefferson | L-1 | 08-Aug-80 | 54 | 54 | 53 | 45 | Mesotrophic | | 10.60 | 1.500 | 30 | OEPA | 1982 305(B) |
| J. GRIGGS RESERVOIR | Franklin | L-1 | 29-Aug-89 | 71 | | | 71 | Hypereutrophic | | 61.67 | | | OEPA | 314 GRANT |
| J. GRIGGS RESERVOIR | Franklin | L-1 | 24-May-79 | | 61 | | | | | | 0.910 | | OEPA | 1982 305(B) |
| J. GRIGGS RESERVOIR | Franklin | L-1 | 06-Aug-79 | | 66 | | | | | | 0.660 | | OEPA | 1982 305(B) |
| KILLDEER RESERVOIR | Wyandot | SW | 05-May-77 | | 35 | 37 | 42 | Mesotrophic | | | 5.800 | 10 | OEPA | 1982 305(B) |
| KILLDEER RESERVOIR | Wyandot | SW | 04-Aug-77 | 47 | 51 | 37 | | | | 5.40 | 1.900 | 10 | OEPA | 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KISER LAKE | Champaign | L-1 | 20-Apr-89 | | 77 | 56 | 64 | Eutrophic | Decreasing | | 0.305 | 36 | OEPA 314 GRANT |
| KISER LAKE | Champaign | L-1 | 17-Aug-89 | 73 | 76 | 63 | | | (-8 TSI Pts) | 79.13 | 0.330 | 60 | OEPA 314 GRANT |
| KISER LAKE | Champaign | L-1 | 22-Apr-77 | 67 | 66 | 65 | | | | 39.00 | 0.640 | 70 | OEPA 1982 305(B) |
| KISER LAKE | Champaign | L-1 | 19-Aug-77 | 80 | 74 | 73 | 72 | Hypereutrophic | | 149.00 | 0.370 | 120 | OEPA 1982 305(B) |
| KNOX LAKE | Knox | L-1 | 21-Aug-89 | | 67 | 69 | 53 | L1-Eutrophic | Decreasing | | 0.600 | 90 | OEPA 314 GRANT |
| KNOX LAKE | Knox | L-1 | 11-May-89 | | 67 | 53 | | | (- 6 TIS Pts) | | 0.620 | 29 | OEPA 314 GRANT |
| KNOX LAKE | Knox | L-2 | 11-May-89 | | 73 | 60 | 60 | L2-Eutrophic | | | 0.400 | 47 | OEPA 314 GRANT |
| KNOX LAKE | Knox | L-2 | 21-Aug-89 | | 74 | 73 | | | | | 0.370 | 120 | OEPA 314 GRANT |
| KNOX LAKE | Knox | L-1 | 30-Aug-77 | 66 | 67 | 67 | 59 | L1-Eutrophic | | 35.30 | 0.610 | 80 | OEPA 1982 305(B) |
| KNOX LAKE | Knox | L-1 | 03-May-77 | | 62 | 53 | | | | | 0.880 | 30 | OEPA 1982 305(B) |
| LaDUE RESERVOIR | Geauga | L-1 | 07-Aug-78 | 54 | 52 | 47 | 57 | Eutrophic | | 11.10 | 1.800 | 20 | OEPA 1982 305(B) |
| LaDUE RESERVOIR | Geauga | L-1 | 11-May-78 | 50 | 52 | 61 | | | | 7.60 | 1.700 | 50 | OEPA 1982 305(B) |
| LAKE ALMA | Vinton | L-2 | 18-Aug-80 | 48 | 50 | 47 | 42 | Mesotrophic | | 6.20 | 2.000 | 20 | OEPA 1982 305(B) |
| LAKE ALMA | Vinton | L-2 | 01-May-80 | 53 | 39 | 37 | | | | 9.60 | 4.400 | 10 | OEPA 1982 305(B) |
| LAKE AQUILLA | Geauga | L-1 | 27-Apr-89 | | 45 | 44 | 53 | Eutrophic | | | 2.807 | 16 | OEPA 314 GRANT |
| LAKE AQUILLA | Geauga | L-1 | 23-Aug-89 | 63 | 49 | 51 | | | | 27.68 | 2.083 | 25 | OEPA 314 GRANT |
| LAKE AQUILLA | Geauga | L-1 | 23-Aug-77 | | 93? | | | | | | 0.100 | | OEPA 1982 305(B) |
| LAKE HODGSON | Portage | VLMP | SPRSUM-89 | | 59 | | 48 | Eutrophic | | | (N=12) | | NEFCO |
| LAKE HODGSON | Portage | VLMP | SPRSUM-88 | | 61 | | | | | | (N=8) | | NEFCO |
| LAKE HODGSON | Portage | L-1 | 12-Aug-77 | 48 | 51 | 73 | | | | 5.80 | 1.900 | 120 | OEPA 1982 305(B) |
| LAKE HOPE | Vinton | L-1 | 27-Apr-78 | 39 | 46 | | 64 | Eutrophic | | 2.30 | 2.700 | | OEPA 1982 305(B) |
| LAKE HOPE | Vinton | L-1 | 01-Aug-78 | 64 | 64 | 37 | | | | 30.10 | 0.760 | 10 | OEPA 1982 305(B) |
| LAKE HOPE | Vinton | L-1 | 03-Sep-75 | | 45 | 53 | | | | | 2.900 | 30 | OEPA 1982 305(B) |
| LAKE HOPE | Vinton | L-1 | 14-May-75 | | 60 | 37 | | | | | 1.000 | 10 | OEPA 1982 305(B) |
| LAKE ISABELLA | Hamilton | L-1 | 08-Jul-81 | 42 | 37 | 53 | 42 | Mesotrophic | | 3.30 | 4.800 | 30 | OEPA 1982 305(B) |
| LAKE KATHARINE | Jackson | L-1 | 22-Mar-79 | 48 | 57 | | | Insuff. Data | | 6.10 | 1.200 | | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAKE LOGAN | Hocking | L-1 | 15-Apr-76 | | 59 | 57 | 57 | Eutrophic | | | 1.100 | 40 | OEPA 1982 305(B) |
| LAKE LOGAN | Hocking | L-1 | 14-Sep-76 | | 67 | 72 | | | | | 0.610 | 110 | OEPA 1982 305(B) |
| LAKE LORAMIE | Shelby | L-1 | 25-Apr-89 | | 74 | 59 | 59 | Eutrophic | Decreasing | | 0.381 | 44 | OEPA 314 GRANT |
| LAKE LORAMIE | Shelby | L-1 | 29-Aug-89 | | 78 | 80 | | | (-13 TSI Pts) | | 0.279 | 190 | OEPA 314 GRANT |
| LAKE LORAMIE | Shelby | L-1 | 29-Jul-81 | 72 | 79 | 78 | 72 | Hypereutrophic | | 71.20 | 0.270 | 170 | OEPA 1982 305(B) |
| LAKE LORAMIE | Shelby | L-1 | 13-Aug-75 | | 83 | 83 | | | | | 0.200 | 230 | OEPA 1982 305(B) |
| LAKE LORAMIE | Shelby | L-1 | 17-May-75 | | 78 | 83 | 83 | Hypereutrophic | | | 0.280 | 240 | OEPA 1982 305(B) |
| LAKE LORAMIE | Shelby | L-1 | 04-May-73 | 69 | 87 | 79 | | | | 50.60 | 0.150 | 180 | OEPA 1982 305(B) |
| LAKE LORAMIE | Shelby | L-1 | 01-Aug-73 | 76 | 87 | 81 | 77 | Hypereutrophic | | 104.20 | 0.150 | 210 | OEPA 1982 305(B) |
| LAKE MILTON | Mahoning | L-1 | 25-Jul-89 | | 60 | 55 | 59 | L1-Eutrophic | L1-Increasing | | 0.997 | 35 | OEPA 314 GRANT |
| LAKE MILTON | Mahoning | L-1 | 04-May-89 | | 57 | 52 | | | (+7 TSI Pts) | | 1.270 | 27 | OEPA 314 GRANT |
| LAKE MILTON | Mahoning | L-1 | 10-Aug-89 | 67 | 61 | 55 | | | | 41.89 | 0.940 | 35 | OEPA 314 GRANT |
| LAKE MILTON | Mahoning | L-2 | 04-May-89 | | 58 | 52 | 52 | L2-Eutrophic | | | 1.130 | 28 | OEPA 314 GRANT |
| LAKE MILTON | Mahoning | L-2 | 25-Jul-89 | | 60 | 63 | | | | | 0.978 | 60 | OEPA 314 GRANT |
| LAKE MILTON | Mahoning | L-1 | 16-Aug-79 | 57 | 59 | 47 | 52 | L1-Eutrophic | | 15.40 | 1.100 | 20 | OEPA 1982 305(B) |
| LAKE MILTON | Mahoning | L-1 | 21-Jun-79 | 52 | 53 | 47 | | | | 9.30 | 1.600 | 20 | OEPA 1982 305(B) |
| LAKE NESMITH | Summit | L-1 | 30-Jul-86 | | 64 | 78 | | Insuff. Data | | | 0.750 | 170 | OEPA UNPUBL |
| LAKE NESMITH | Summit | L-1 | 14-Aug-86 | | 65 | 75 | | | | | 0.700 | 140 | OEPA UNPUBL |
| LAKE NESMITH | Summit | L-1 | 04-Nov-86 | | 66 | 83 | | | | | 0.650 | 240 | OEPA UNPUBL |
| LAKE NESMITH | Summit | L-1 | 26-Sep-79 | 74 | 63 | 47 | 68 | Hypereutrophic | | 83.00 | 0.820 | 20 | OEPA 1982 305(B) |
| LAKE NESMITH | Summit | L-1 | 11-Apr-79 | 71 | 63 | 63 | | | | 63.90 | 0.820 | 60 | OEPA 1982 305(B) |
| LAKE PARK | Mahoning | L-1 | 15-Jul-81 | 63 | 76 | 77 | 63 | Eutrophic | | 26.00 | 0.340 | 160 | OEPA 1982 305(B) |
| LAKE PIPPEN | Portage | L-1 | 18-May-89 | | 41 | 42 | 44 | Mesotrophic | | | 3.710 | 14 | OEPA 314 GRANT |
| LAKE PIPPEN | Portage | L-1 | 09-Aug-89 | 46 | 42 | 41 | | | | 5.04 | 3.543 | 13 | OEPA 314 GRANT |
| LAKE ROCKWELL | Portage | L-1 | Sum-1984 | 63 | 57 | | 63 | Eutrophic | L1-Same | 26.90 | 1.200 | | KSU CITY AKRON |
| LAKE ROCKWELL | Portage | L-1 | Sum-1983 | 60 | 52 | | | | (+4 TSI Pts) | 21.00 | 1.700 | | KSU CITY AKRON |
| LAKE ROCKWELL | Portage | L-1 | Sum-1981 | 59 | 56 | | | | | 18.10 | 1.300 | | KSU CITY AKRON |
| LAKE ROCKWELL | Portage | L-1 | 11-May-76 | | 57 | 61 | | | | | 1.200 | 50 | OEPA 1982 305(B) |
| LAKE ROCKWELL | Portage | L-1 | 20-Aug-76 | | 60 | 63 | | | | | 1.000 | 60 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAKE RUPERT | Vinton | L-1 | 15-Jun-79 | 43 | 49 | 37 | 43 | Mesotrophic | | 3.50 | 2.100 | 10 | OEPA 1982 305(B) |
| LAKE RUPERT | Vinton | L-1 | 04-Sep-79 | 50 | 53 | 37 | | | | 7.30 | 1.600 | 10 | OEPA 1982 305(B) |
| L. SNOWDEN (Struct #2) | Athens | L-1 | 05-Sep-79 | 58 | 52 | 47 | 47 | Mesotrophic | | 17.00 | 1.800 | 20 | OEPA 1982 305(B) |
| L. SNOWDEN (Struct #2) | Athens | L-1 | 08-Jun-79 | | 43 | 37 | | | | . | 3.200 | 10 | OEPA 1982 305(B) |
| LAKE VESUVIUS | Lawrence | L-1 | 13-May-75 | | 63 | 47 | 47 | Mesotrophic | | | 0.810 | 20 | OEPA 1982 305(B) |
| LAKE VESUVIUS | Lawrence | L-1 | 02-Sep-75 | | 45 | 47 | | | | | 2.800 | 20 | OEPA 1982 305(B) |
| LAKE WHITE RES. | Pike | L-1 | 20-Aug-79 | 53 | 53 | 37 | 45 | Mesotrophic | | 10.30 | 1.600 | 10 | OEPA 1982 305(B) |
| LAKE WHITE RES. | Pike | L-1 | 31-May-79 | 44 | 56 | 37 | | | | 3.90 | 1.300 | 10 | OEPA 1982 305(B) |
| LEESVILLE LAKE | Carroll | L-1 | 31-Aug-76 | | 53 | 57 | 53 | Eutrophic | | | 1.600 | 40 | OEPA 1982 305(B) |
| LEESVILLE LAKE | Carroll | L-1 | 18-May-76 | | 55 | 53 | | | | | 1.400 | 30 | OEPA 1982 305(B) |
| LONG L. (PORTAGE LK) | Summit | VLMP | SPRSUM-89 | | 63 | | | Insuff. Data | | | (N=11) | | NEFCO |
| LONG LAKE | Summit | VLMP | SPRSUM-88 | | 69 | | | | | | (N=5) | | NEFCO |
| LONG LAKE | Summit | L-1 | 19-Apr-77 | 73 | 62 | 65 | 68 | Hypereutrophic | | 77.30 | 0.850 | 70 | OEPA 1982 305(B) |
| LONG LAKE | Summit | L-1 | 09-Aug-77 | 71 | 65 | 63 | | | | 62.70 | 0.730 | 60 | OEPA 1982 305(B) |
| LOWER SHAKER LAKE | Cuyahoga | L-1 | 17-Aug-77 | 61 | 67 | 78 | 61 | Eutrophic | | 21.60 | 0.600 | 170 | OEPA 1982 305(B) |
| MADISON LAKE | Madison | L-1 | 05-Jun-79 | 68 | 75 | 69 | 66 | Eutrophic | | 47.30 | 0.360 | 90 | OEPA 1982 305(B) |
| MADISON LAKE | Madison | L-1 | 07-Aug-79 | 63 | 70 | 67 | | | | 26.30 | 0.510 | 80 | OEPA 1982 305(B) |
| MEADOWBROOK LAKE | Summit | VLMP | SPRSUM-89 | | 66 | | | Insuff. Data | | | (N=4) | | NEFCO |
| MEADOWBROOK LAKE | Summit | L-1 | 29-Aug-80 | 71 | 57 | 74 | | | | 58.90 | 1.200 | 130 | OEPA 1982 305(B) |
| MEADOWBROOK LAKE | Summit | L-1 | 02-Jun-80 | 62 | 57 | 72 | 71 | Hypereutrophic | | 25.00 | 1.200 | 110 | OEPA 1982 305(B) |
| MEANDER CREEK RES. | Trumbull | L-1 | 17-Aug-79 | 53 | 52 | 37 | 45 | Mesotrophic | | 9.70 | 1.700 | 10 | OEPA 1982 305(B) |
| MEANDER CREEK RES. | Trumbull | L-1 | 22-Jun-79 | 44 | 49 | 37 | | | | 3.90 | 2.100 | 10 | OEPA 1982 305(B) |
| MIAMI WHITEWATER L. | Hamilton | L-1 | 07-Jul-81 | 61 | 65 | 65 | 61 | Eutrophic | | 21.50 | 0.730 | 70 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MICHAEL J. KIRWIN RES. | Portage | VLMP | SPRSUM-89 | | 63 | | | Insuff. Data | | | (N=1) | | NEFCO |
| MICHAEL J. KIRWIN RES. | Portage | L-1 | 29-Aug-77 | 49 | 55 | 37 | | | | 6.40 | 1.400 | 10 | OEPA 1982 305(B) |
| MICHAEL J. KIRWIN RES. | Portage | L-1 | 18-Apr-77 | 46 | 59 | 37 | 43 | Mesotrophic | | 4.60 | 1.100 | 10 | OEPA 1982 305(B) |
| MILLER ANTRIM LAKE | Franklin | L-1 | YOUGER-87 | 54 | 43 | | 54 | Eutrophic | | | | | OEPA UNPUBL |
| MOGADORE RESERVOIR | Portage | VLMP | SPRSUM-89 | | 56 | | | Insuff. Data | | | (N=22) | | NEFCO |
| MOGADORE RESERVOIR | Portage | L-1 | 23-Aug-76 | | 53 | 53 | | | | | 1.600 | 30 | OEPA 1982 305(B) |
| MOGADORE RESERVOIR | Portage | L-1 | 04-May-76 | | 33 | 53 | 53 | Eutrophic | | | 6.400 | 30 | OEPA 1982 305(B) |
| MONROE LAKE | Monroe | L-1 | 22-Aug-80 | 58 | 52 | 47 | 52 | Eutrophic | | 16.00 | 1.800 | 20 | OEPA 1982 305(B) |
| MONROE LAKE | Monroe | L-1 | 16-May-80 | 46 | 54 | 47 | | | | 4.90 | 1.500 | 20 | OEPA 1982 305(B) |
| MOSQUITO CREEK RES. | Trumbull | L-1 | 10-Jul-89 | | 66 | 54 | | | | | 0.648 | 32 | OEPA 314 GRANT |
| MOSQUITO CREEK RES. | Trumbull | L-1 | 10-Aug-89 | 64 | 66 | 56 | 55 | Eutrophic | Decreasing | 28.75 | 0.673 | 37 | OEPA 314 GRANT |
| MOSQUITO CREEK RES. | Trumbull | L-1 | 25-Apr-89 | | 65 | 46 | | | (-8 TSI Pts) | | 0.711 | 18 | OEPA 314 GRANT |
| MOSQUITO CREEK RES. | Trumbull | L-1 | 24-Aug-76 | | 67 | 65 | | | | | 0.610 | 70 | OEPA 1982 305(B) |
| MOSQUITO CREEK RES. | Trumbull | L-1 | 12-May-76 | | 63 | 63 | 63 | Eutrophic | | | 0.820 | 60 | OEPA 1982 305(B) |
| MOSQUITO CREEK RES. | Trumbull | L-1 | 30-Jul-73 | 67 | 63 | 61 | | | | 40.20 | 0.810 | 50 | OEPA 1982 305(B) |
| MOSQUITO CREEK RES. | Trumbull | L-1 | 21-Apr-73 | 62 | 60 | 53 | 60 | Eutrophic | | 25.70 | 0.990 | 30 | OEPA 1982 305(B) |
| MUD L. (PORTAGE LK) | Summit | VLMP | SPRSUM-89 | | 57 | | | Insuff. Data | | | (N=10) | | NEFCO |
| MUD LAKE | Summit | VLMP | SPRSUM-88 | | 56 | | | | | | (N=3) | | NEFCO |
| MUZZY LAKE | Portage | VLMP | SPRSUM-89 | | 62 | | | Insuff. Data | | | (N=10) | | NEFCO |
| MUZZY LAKE | Portage | VLMP | SPRSUM-88 | | 60 | | | | | | (N=7) | | NEFCO |
| MT. GILEAD L. #1 (UP.) | Morrow | L-1 | 04-Aug-80 | 59 | | 85 | 59 | Eutrophic | | 17.60 | | 270 | OEPA 1982 305(B) |
| MT. GILEAD L. #2 (LOW.) | Morrow | L-1 | 04-Aug-80 | 40 | 91 | 82 | 40 | Mesotrophic | | 2.60 | 0.120 | 220 | OEPA 1982 305(B) |
| NETTLE LAKE | Williams | L-1 | 22-May-78 | 60 | 59 | 57 | 58 | Eutrophic | | 19.50 | 1.100 | 40 | OEPA 1982 305(B) |
| NETTLE LAKE | Williams | L-1 | 14-Aug-78 | 60 | 57 | 57 | | | | 19.50 | 1.200 | 40 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N. LEXINGTON RES. #2 Old | Perry | L-1 | 06-May-80 | 49 | 55 | 47 | 46 | Mesotrophic | | 6.80 | 1.400 | 20 | OEPA 1982 305(B) |
| N. LEXINGTON RES. #2 Old | Perry | L-1 | 04-Aug-80 | 45 | 57 | 53 | | | | 4.30 | 1.200 | 30 | OEPA 1982 305(B) |
| NEWPORT LAKE | Mahoning | L-1 | 28-Aug-80 | 80 | 68 | 83 | 86 | Hypereutrophic | | 155.20 | 0.560 | 230 | OEPA 1982 305(B) |
| NEWPORT LAKE | Mahoning | L-1 | 22-May-80 | 73 | 73 | 92 | | | | 73.20 | 0.410 | 430 | OEPA 1982 305(B) |
| NIMISILA RES. (PORT. L.) | Summit | VLMP SPRSUM-88 | | | 60 | | | | | | (N=6) | | NEFCO |
| NIMISILA RESERVOIR | Summit | L-1 | 02-May-77 | 67 | 66 | 61 | 64 | Eutrophic | | 41.40 | 0.670 | 50 | OEPA 1982 305(B) |
| NIMISILA RESERVOIR | Summit | L-1 | 08-Aug-77 | 68 | 61 | 61 | | | | 43.60 | 0.910 | 50 | OEPA 1982 305(B) |
| NORTH RES. (PORT. LK) | Summit | VLMP SPRSUM-89 | | | 66 | | | Insuff. Data | | | (N=7) | | NEFCO |
| NORTH RESERVOIR | Summit | VLMP SPRSUM-88 | | | 69 | | | | | | (N=6) | | NEFCO |
| N. BR. KOKOSING R. L. | Knox | L-1 | 14-Aug-79 | 69 | 70 | 63 | 63 | Eutrophic | | 48.40 | 0.510 | 60 | OEPA 1982 305(B) |
| N. BR. KOKOSING R. L. | Knox | L-1 | 12-Jun-79 | 57 | 70 | 57 | | | | 14.10 | 0.510 | 40 | OEPA 1982 305(B) |
| OBERLIN RESERVOIR | Lorain | L-1 | 30-May-89 | | 45 | 46 | 46 | Mesotrophic | | | 2.743 | 18 | OEPA 314 GRANT |
| OBERLIN RESERVOIR | Lorain | L-1 | 06-Sep-89 | | 58 | 65 | | | | | 1.156 | 70 | OEPA 314 GRANT |
| O'SHAUGHNESSY RES. | Delaware | L-1 | 26-Apr-73 | 53 | 71 | 78 | 60 | Eutrophic | | 9.60 | 0.460 | 170 | OEPA 1982 305(B) |
| O'SHAUGHNESSY RES. | Delaware | L-1 | 02-Aug-73 | 43 | 71 | 82 | | | | 3.50 | 0.460 | 220 | OEPA 1982 305(B) |
| PAINT CREEK LAKE | Highland | L-1 | 06-May-75 | | 66 | 75 | 75 | Hypereutrophic | | | 0.660 | 140 | OEPA 1982 305(B) |
| PAINT CREEK LAKE | Highland | L-1 | 02-Oct-75 | | 61 | 57 | | | | | 0.910 | 40 | OEPA 1982 305(B) |
| PETROS LAKE | Stark | VLMP SPRSUM-89 | | | 63 | | | Insuff. Data | | | (N=2) | | NEFCO |
| PETROS LAKE | Stark | VLMP SPRSUM-88 | | | 53 | | | | | | (N=6) | | NEFCO |
| PIEDMONT LAKE | Harrison | L-1 | 12-Apr-77 | 58 | 55 | 47 | 56 | Eutrophic | | 16.10 | 1.400 | 20 | OEPA 1982 305(B) |
| PIEDMONT LAKE | Harrison | L-1 | 11-Aug-77 | 65 | 62 | 47 | | | | 33.30 | 0.850 | 20 | OEPA 1982 305(B) |
| PINE LAKE | Ross | L-1 | 12-Mar-80 | 35 | | 27 | 27 | Mesotrophic | | 1.60 | | 5 | OEPA 1982 305(B) |
| PLEASANT HILL LAKE | Ashland | L-1 | 30-Jul-73 | 53 | 59 | 47 | 55 | Eutrophic | | 10.00 | 1.100 | 20 | OEPA 1982 305(B) |
| PLEASANT HILL LAKE | Ashland | L-1 | 20-Apr-73 | 67 | 55 | 57 | | | | 41.70 | 1.400 | 40 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PUNDERSON LAKE | Geauga | L-1 | 19-Apr-89 | | 49 | 58 | 56 | Eutrophic | Same | | 2.134 | 42 | OEPA | 314 GRANT |
| PUNDERSON LAKE | Geauga | L-1 | 29-Aug-89 | 55 | 55 | 63 | | | (+3 TSI Pts) | 11.66 | 1.435 | 60 | OEPA | 314 GRANT |
| PUNDERSON LAKE | Geauga | L-2 | 07-Jul-80 | 53 | 49 | 57 | 53 | Eutrophic | | 9.80 | 2.100 | 40 | OEPA | 1982 305(B) |
| PUNDERSON LAKE | Geauga | L-2 | 19-Aug-75 | | 56 | 53 | | | | | 1.300 | 30 | OEPA | 1982 305(B) |
| PUNDERSON LAKE | Geauga | L-2 | 27-May-75 | | 48 | 53 | 53 | Eutrophic | | | 2.300 | 30 | OEPA | 1982 305(B) |
| PYMATUNING RES. | Ashtabula | L-1 | 31-Jul-73 | 68 | 67 | 61 | 56 | Eutrophic | | 43.10 | 0.610 | 50 | OEPA | 1982 305(B) |
| PYMATUNING RES. | Ashtabula | L-1 | 21-Apr-73 | 51 | 52 | 47 | | | | 7.70 | 1.700 | 20 | OEPA | 1982 305(B) |
| RICHWOOD PARK LAKE | Union | L-1 | 31-Jul-80 | 61 | 61 | 63 | 61 | Eutrophic | | 21.80 | 0.910 | 60 | OEPA | 1982 305(B) |
| ROCKY FORK LAKE | Highland | L-1 | 01-May-89 | | 73 | 63 | 61 | L1-Eutrophic | Decreasing | | 0.406 | 60 | OEPA | 314 GRANT |
| ROCKY FORK LAKE | Highland | L-1 | 22-Aug-89 | 68 | 65 | 57 | | | (-13 TSI Pts) | 46.18 | 0.711 | 38 | OEPA | 314 GRANT |
| ROCKY FORK LAKE | Highland | L-2 | 22-Aug-89 | 66 | 70 | 61 | 56 | L2-Eutrophic | | 37.32 | 0.508 | 50 | OEPA | 314 GRANT |
| ROCKY FORK LAKE | Highland | L-2 | 01-May-89 | | 93 | 51 | | | | | 0.102 | 25 | OEPA | 314 GRANT |
| ROCKY FORK LAKE | Highland | L-1 | 12-Aug-81 | 74 | 63 | 57 | 74 | L1-Hypereutroph. | | 83.90 | 0.790 | 40 | OEPA | 1982 305(B) |
| ROCKY FORK LAKE | Highland | L-1 | 07-May-75 | | 66 | 57 | 57 | L1-Eutrophic | | | 0.640 | 40 | OEPA | 1982 305(B) |
| ROCKY FORK LAKE | Highland | L-1 | 06-Sep-75 | | 62 | 61 | | | | | 0.860 | 50 | OEPA | 1982 305(B) |
| ROCKY FORK LAKE | Highland | L-1 | 01-Aug-73 | 67 | 62 | 63 | 65 | L1-Eutrophic | | 41.60 | 0.860 | 60 | OEPA | 1982 305(B) |
| ROCKY FORK LAKE | Highland | L-1 | 28-Apr-73 | 73 | 65 | 63 | | | | 74.40 | 0.710 | 60 | OEPA | 1982 305(B) |
| ROOSEVELT LAKE | Scioto | L-1 | YOUGER-87 | 64 | 56 | | 64 | Eutrophic | | | | | OEPA | UNPUBL |
| ROSS LAKE | Ross | L-1 | 10-Aug-79 | 45 | 44 | 37 | 46 | Eutrophic | | 4.30 | 3.100 | 10 | OEPA | 1982 305(B) |
| ROSS LAKE | Ross | L-1 | 07-Jun-79 | | 50 | 47 | | | | | 2.000 | 20 | OEPA | 1982 305(B) |
| RUSH RUN LAKE | Preble | L-1 | 21-Aug-89 | 48 | 60 | 61 | 47 | Mesotrophic | | 6.12 | 1.016 | 50 | OEPA | 314 GRANT |
| RUSH RUN LAKE | Preble | L-1 | 26-Apr-89 | | 55 | 47 | | | | | 1.372 | 19 | OEPA | 314 GRANT |
| SALT FORK RES. | Guernsey | L-1 | 20-May-75 | | 53 | 47 | 47 | Mesotrophic | | | 1.600 | 20 | OEPA | 1982 305(B) |
| SALT FORK RES. | Guernsey | L-1 | 15-Aug-75 | | 61 | 53 | | | | | 0.910 | 30 | OEPA | 1982 305(B) |
| SENECAVILLE RES. | Guernsey | L-1 | 20-Apr-76 | | 60 | 57 | 57 | Eutrophic | | | 0.980 | 40 | OEPA | 1982 305(B) |
| SENECAVILLE RES. | Guernsey | L-1 | 17-Aug-76 | | 63 | 57 | | | | | 0.790 | 40 | OEPA | 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHARON WOODS LAKE | Hamilton | L-1 | 08-Jul-81 | 71 | 69 | 98 | 71 | Hypereutrophic | | 64.60 | 0.530 | 660 | OEPA 1982 305(B) |
| SHREVE LAKE | Wayne | L-1 | 11-May-89 | | 63 | 52 | 56 | Eutrophic | | | 0.838 | 28 | OEPA 314 GRANT |
| SHREVE LAKE | Wayne | L-1 | 28-Aug-89 | 61 | 59 | 60 | | | | 23.17 | 1.080 | 48 | OEPA 314 GRANT |
| SIPPO LAKE (AT DAM) | Stark | L-1 | 12-Jul-89 | | 54 | 58 | 56 | L1-Eutrophic | L1-Decreasing | | 1.524 | 43 | OEPA 314 GRANT |
| SIPPO LAKE | Stark | L-1 | 05-Sep-89 | 56 | 54 | 65 | | | (-5 TSI Pts) | 13.49 | 1.473 | 70 | OEPA 314 GRANT |
| SIPPO LAKE (DEEP HOLE) | Stark | L-2 | 05-Sep-89 | 46 | 47 | 54 | 46 | L2-Mesotrophic | | 4.92 | 2.464 | 32 | OEPA 314 GRANT |
| SIPPO LAKE | Stark | VLMP | SPRSUM-89 | | 58 | | | | | | (N=6) | | NEFCO |
| SIPPO LAKE | Stark | VLMP | SPRSUM-88 | | 54 | | | | | | (N=4) | | NEFCO |
| SIPPO LAKE (AT DAM) | Stark | L-1 | 15-Jul-81 | 61 | 63 | 67 | 61 | L1-Eutrophic | | 23.30 | 0.820 | 80 | OEPA 1982 305(B) |
| SNYDER PARK LAKE | Clark | L-1 | 10-Jul-81 | 59 | 67 | 61 | 59 | Eutrophic | | 17.50 | 0.610 | 50 | OEPA 1982 305(B) |
| SPENCER RESERVOIR | Medina | L-1 | 29-Aug-77 | 71 | 73 | 87 | 71 | Hypereutrophic | | 58.90 | 0.400 | 310 | OEPA 1982 305(B) |
| SPRING VALLEY LAKE | Warren | L-1 | 08-May-89 | | 57 | 53 | 50 | Eutrophic | | | 1.219 | 29 | OEPA 314 GRANT |
| SPRING VALLEY LAKE | Warren | L-1 | 14-Aug-89 | 48 | 55 | 51 | | | | 6.06 | 1.372 | 26 | OEPA 314 GRANT |
| SPRINGFIELD LAKE | Summit | VLMP | SPRSUM-89 | | 48 | | | Insuff. Data | | | (N=21) | | NEFCO |
| SPRINGFIELD LAKE | Summit | VLMP | SPRSUM-88 | | 54 | | | | | | (N=7) | | NEFCO |
| SPRINGFIELD LAKE | Summit | L-1 | 04-Aug-81 | 69 | 63 | 57 | 69 | Hypereutrophic | | 50.40 | 0.820 | 40 | OEPA 1982 305(B) |
| STONELICK RESERVOIR | Clermont | L-3 | 10-May-89 | | 87 | 74 | 74 | Hypereutrophic | Increasing | | 0.152 | 130 | OEPA 314 GRANT |
| STONELICK RESERVOIR | Clermont | L-3 | 30-Aug-89 | | 75 | 76 | | | (+7 TSI Pts) | | 0.356 | 150 | OEPA 314 GRANT |
| STONELICK RESERVOIR | Clermont | L-1 | 14-Apr-77 | 70 | 81 | 74 | 67 | Hypereutrophic | | 53.70 | 0.240 | 130 | OEPA 1982 305(B) |
| STONELICK RESERVOIR | Clermont | L-1 | 01-Sep-77 | 61 | 59 | 63 | | | | 21.20 | 1.100 | 60 | OEPA 1982 305(B) |
| SUMMIT L. (MID BASIN) | Summit | L-2 | 24-Apr-86 | | 66 | 67 | 67 | L-2 Hypereutroph. | Same | | 0.650 | 80 | OEPA UNPUBL |
| SUMMIT LAKE | Summit | L-2 | 30-Jul-86 | | 60 | 61 | | | (+1 TSI Pts) | | 1.000 | 50 | OEPA UNPUBL |
| SUMMIT LAKE | Summit | L-2 | 14-Aug-86 | | 67 | | | | | | 0.600 | | OEPA UNPUBL |
| SUMMIT LAKE (S BASIN) | Summit | L-1 | 24-Apr-86 | | 66 | 67 | 67 | L-1 Hypereutroph. | | | 0.650 | 80 | OEPA UNPUBL |
| SUMMIT LAKE | Summit | L-1 | 30-Jul-86 | | 60 | 65 | | | | | 1.000 | 70 | OEPA UNPUBL |
| SUMMIT LAKE | Summit | L-1 | 14-Aug-86 | | 67 | 61 | | | | | 0.600 | 50 | OEPA UNPUBL |
| SUMMIT LAKE (N BASIN) | Summit | L-3 | 14-Aug-86 | | 63 | 67 | 61 | L-3 Eutrophic | | | 0.800 | 80 | OEPA UNPUBL |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUMMIT LAKE | Summit | L-3 | 30-Jul-86 | | 62 | 67 | | | | | 0.900 | 80 | OEPA UNPUBL |
| SUMMIT LAKE | Summit | L-3 | 24-Apr-86 | | 66 | 61 | | | | | 0.650 | 50 | OEPA UNPUBL |
| SUMMIT LAKE | Summit | L-2 | 05-Aug-81 | 66 | 63 | 65 | 66 | L-2 Eutrophic | | 36.80 | 0.820 | 70 | OEPA 1982 305(B) |
| SUMMIT LAKE | Summit | L-2 | 19-Aug-76 | | 66 | 69 | | | | | 0.640 | 90 | OEPA 1982 305(B) |
| SUMMIT LAKE | Summit | L-2 | 03-May-76 | | 62 | 65 | 65 | L-2 Eutrophic | | | 0.850 | 70 | OEPA 1982 305(B) |
| SUNNY L. (HARMON'S PD) | Portage | VLMP | SPRSUM-89 | | 74 | | | Insuff. Data | | | (N=9) | | NEFCO |
| SUNNY L. (HARMON'S PD) | Portage | L-1 | 07-Aug-80 | 70 | 67 | 83 | 70 | Hypereutrophic | | 54.10 | 0.610 | 240 | OEPA 1982 305(B) |
| SWIFT RUN LAKE | Miami | L-1 | 25-Apr-89 | | 68 | 61 | 64 | Eutrophic | | | 0.559 | 50 | OEPA 314 GRANT |
| SWIFT RUN LAKE | Miami | L-1 | 17-Aug-89 | 67 | 73 | 65 | | | | 40.47 | 0.406 | 70 | OEPA 314 GRANT |
| TAPPAN LAKE | Harrison | L-1 | 02-Sep-76 | | 59 | 61 | 57 | Eutrophic | | | 1.100 | 50 | OEPA 1982 305(B) |
| TAPPAN LAKE | Harrison | L-1 | 26-Apr-76 | | 59 | 57 | | | | | 1.100 | 40 | OEPA 1982 305(B) |
| TAPPAN LAKE | Harrison | L-1 | 21-Apr-73 | 63 | 60 | 47 | | | | 28.30 | 0.970 | 20 | OEPA 1982 305(B) |
| TAPPAN LAKE | Harrison | L-1 | 30-Jul-73 | 63 | 60 | 53 | | | | 27.40 | 0.990 | 30 | OEPA 1982 305(B) |
| TINKERS CR. ST PK L. | Portage | VLMP | SPRSUM-89 | | 48 | | | Insuff. Data | | | (N=8) | | NEFCO |
| TURKEY CREEK LAKE | Scioto | L-1 | YOUGER-87 | 63 | 42 | | 63 | Eutrophic | | | | | OEPA UNPUBL |
| TURKEYFT L. (PORT. L.) | Summit | VLMP | SPRSUM-89 | | 60 | | | Insuff. Data | | | (N=21) | | NEFCO |
| TURKEYFOOT LAKE | Summit | VLMP | SPRSUM-88 | | 58 | | | | | | (N=6) | | NEFCO |
| TURKEYFOOT LAKE | Summit | L-1 | 19-Apr-77 | 71 | 66 | 69 | 67 | Hypereutrophic | | 62.10 | 0.640 | 90 | OEPA 1982 305(B) |
| TURKEYFOOT LAKE | Summit | L-1 | 09-Aug-77 | 65 | 59 | 61 | | | | 33.60 | 1.100 | 50 | OEPA 1982 305(B) |
| TYCOON LAKE | Gallia | L-1 | 24-Aug-78 | 53 | 52 | 47 | 50 | Eutrophic | | 10.10 | 1.800 | 20 | OEPA 1982 305(B) |
| TYCOON LAKE | Gallia | L-1 | 02-May-78 | 49 | 50 | 47 | | | | 6.70 | 2.000 | 20 | OEPA 1982 305(B) |
| VAN BUREN LAKE | Hancock | L-1 | 29-Apr-80 | 73 | 76 | 67 | 58 | Eutrophic | | 76.00 | 0.330 | 80 | OEPA 1982 305(B) |
| VAN BUREN LAKE | Hancock | L-1 | 11-Aug-80 | 49 | 93 | 81 | | | | 6.40 | 0.100 | 210 | OEPA 1982 305(B) |
| VETO LAKE | Washington | L-1 | 17-Aug-78 | 57 | 71 | 61 | 59 | Eutrophic | | 14.40 | 0.460 | 50 | OEPA 1982 305(B) |
| VETO LAKE | Washington | L-1 | 09-May-78 | 60 | 71 | 61 | | | | 20.10 | 0.460 | 50 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VIRGINIA KENDALL L. | Summit | VLMP | SPRSUM-88 | | 55 | | | Insuff. Data | | | (N=7) | | NEFCO |
| WABASH CD. RESV. #1 | Darke | L-1 | 29-Aug-89 | | 83 | 69 | 76 | Hypereutrophic | | | 0.203 | 90 | OEPA 314 GRANT |
| WABASH CD RESV. #1 | Darke | L-1 | 25-Apr-89 | | 87 | 76 | | | | | 0.152 | 150 | OEPA 314 GRANT |
| WALLACE LAKE | Cuyahoga | L-1 | 29-Aug-77 | 43 | 50 | 49 | 43 | Mesotrophic | | 3.50 | 2.000 | 22 | OEPA 1982 305(B) |
| WEST RES. (PORTAGE LK) | Summit | VLMP | SPRSUM-89 | | 60 | | | Insuff. Data | | | (N=19) | | NEFCO |
| WEST RESERVOIR | Summit | VLMP | SPRSUM-88 | | 60 | | | | | | (N=8) | | NEFCO |
| WESTERVILLE RES. | Delaware | L-1 | 01-Apr-80 | 59 | 61 | 57 | 57 | Eutrophic | | 17.60 | 0.910 | 40 | OEPA 1982 305(B) |
| WILLARD CITY RES. | Huron | L-1 | 30-Aug-79 | 52 | 53 | 37 | 44 | Mesotrophic | | 8.80 | 1.600 | 10 | OEPA 1982 305(B) |
| WILLARD CITY RES. | Huron | L-1 | 22-Jun-79 | 37 | 33 | 37 | | | | 1.90 | 6.500 | 10 | OEPA 1982 305(B) |
| WILLS CREEK RES. | Coshocton | L-1 | 06-May-76 | | 71 | 67 | 67 | Hypereutrophic | | | 0.460 | 80 | OEPA 1982 305(B) |
| WILLS CREEK RES. | Coshocton | L-1 | 07-Sep-76 | | 71 | 67 | | | | | 0.460 | 80 | OEPA 1982 305(B) |
| WINTON WOODS L. | Hamilton | L-1 | 29-Apr-87 | 62 | 73 | 54 | 77 | Hypereutrophic | Increasing | 25.80 | 0.410 | 32 | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 13-May-87 | 65 | 73 | 100 | | | (+ 8 TSI Pts) | 32.40 | 0.400 | 754 | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 27-May-87 | 70 | 76 | 78 | | | | 55.20 | 0.330 | 167 | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 10-Jun-87 | 63 | 77 | 78 | | | | 27.00 | 0.300 | 169 | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 24-Jun-87 | 61 | 77 | 74 | | | | 22.70 | 0.300 | 129 | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 01-Jul-87 | 78 | | | | | | 119.80 | | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 08-Jul-87 | 71 | 75 | 73 | | | | 64.60 | 0.350 | 116 | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 22-Jul-87 | 63 | 75 | | | | | 26.90 | 0.350 | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 29-Jul-87 | 70 | | | | | | 56.90 | | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 05-Aug-87 | 71 | 76 | | | | | 63.00 | 0.340 | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 12-Aug-87 | 68 | | | | | | 43.70 | | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 19-Aug-87 | 69 | 73 | | | | | 50.90 | 0.400 | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 26-Aug-87 | 71 | | | | | | 60.20 | | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 02-Sep-87 | 73 | | | | | | 72.70 | | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 09-Sep-87 | 65 | | | | | | 33.40 | | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 16-Sep-87 | 69 | 73 | | | | | 48.40 | 0.400 | | Phase I Grant |
| WINTON WOODS L. | Hamilton | L-1 | 24-Apr-78 | 71 | 67 | 72 | 69 | Hypereutrophic | | 62.20 | 0.610 | 110 | OEPA 1982 305(B) |

Appendix C. (continued).

| Lake | County | Site | Date | TSI CH-a | TSI SD | TSI TP | Final TSI | Trophic Classification | Enrichment Trend | CH-a (µg) | SD(m) Raw Data | TP (µg) | Data Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WINTON WOODS L. | Hamilton | L-1 | 25-Jul-78 | 66 | 68 | 77 | | | | 35.70 | 0.560 | 160 | OEPA 1982 305(B) |
| WOLF RUN RESERVOIR | Noble | L-1 | 13-Aug-81 | 41 | 45 | 47 | 41 | Mesotrophic | Decreasing | 2.90 | 2.900 | 20 | OEPA 1982 305(B) |
| WOLF RUN RESERVOIR | Noble | L-1 | 19-Apr-76 | | 50 | 47 | 47 | Mesotrophic | (-6 TSI Pts) | | 2.000 | 20 | OEPA 1982 305(B) |
| WOLF RUN RESERVOIR | Noble | L-1 | 16-Aug-76 | | 42 | 37 | | | | | 3.400 | 10 | OEPA 1982 305(B) |

# APPENDIX D

## Ohio EPA State Lakes Policy

APPENDIX D

Ohio EPA State Lakes Policy

Policy No. 1.05
Effictive: August 1, 1988
Revised: Feb. 22, 1989

Subject: National Pollutant Discharge Elimination System; State Lakes

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The State Lakes Policy applies to point source discharges to all publicly owned lakes and reservoirs and tributary streams within three miles of lakes or reservoirs and establishes effluent limitations for new, existing, or expanded wastewater treatment facilities. This policy is not applicable to upground storage reservoirs, point source dischargers into Lake Erie or privately owned lakes.

Discharges into streams tributary to lakes and reservoirs shall have limitations as stringent as if the discharge were occurring directly into the lake or reservoir except where a stream assimilation study has been done. For lakes whose depth is varied seasonally, such as for flood control purposes, the lake boundary shall be taken at the water surface of the summer low water level.

This policy is to be applied to three different categories of discharge.

Category 1. All new point sources discharging directly into a lake, reservoir, or into streams tributary (within three stream miles) to the lake or reservoir will be assigned the following effluent limitations:

Total discharge volume of facility greater than or equal to 0.1 MGD

| | | |
|---|---|---|
| $CBOD_5$ | | 3.0 mg/l |
| $NH_3$-N | (Summer) | 1.5 mg/l or present ambient standard for toxicity, whichever is more stringent. |
| | (Winter) | Present ambient standard for toxicity. |
| T-Phosphorus | | 1.0 mg/l |
| Dissolved Oxygen | | 6.0 mg/l |
| TRC | (Summer Only) | 11.0 ug/l |
| Fecal Coliform | (Summer Only) | Bathing waters 200/100 ml<br>Other areas 1000/100 ml |

Total discharge volume of facility less than 0.1 MGD

| | | |
|---|---|---|
| $CBOD_5$ | | 8.0 mg/l |
| $NH_3$-N | (Summer) | 1.5 mg/l or present ambient standard for toxicity, whichever is less stringent. |
| | (Winter) | Present ambient standard for toxicity. |
| T-Phosphorus | | 0.83 lbs/day |
| Dissolved Oxygen | | 6.0 mg/l |
| TRC | (Summer Only) | 11.0 ug/l |
| Fecal Coliform | (Summer Only) | Bathing waters 200/100 ml<br>Other areas 1000/100 ml |

Category 2. All existing point source discharges directly into a lake, reservoir, or into streams tributary (within three stream miles) to the lake or reservoir will be assigned the following effluent limitations:

| | | |
|---|---|---|
| $CBOD_5$ | | 10.0 mg/l |
| $NH_3$-N | (Summer) | 2.0 mg/l or present ambient standard for toxicity, whichever is less stringent; if discharge is into a tributary stream, a wasteload allocation may be considered. |
| | (Winter) | Monitor.<br>Note: If design flow is less than 0.01 MGD, neither monitoring nor a $NH_3N$ limitation is required. |
| T-Phosphorus | | If less than 0.2 MGD design flow, no limit or monitoring required.<br><br>If greater than or equal to 0.2 MGD design flow, use 8.34 lbs/day or 1 mg/l, whichever is less stringent. |
| Dissolved Oxygen | | 6.0 mg/l |
| TRC | (Summer Only) | 0.5 ug/l |
| Fecal Coliform | (Summer Only) | Bathing waters 200/100 ml<br>Other areas 1000/100 ml |

Category 3. All point source discharges from expanded facilities discharging directly into a lake, reservoir, or stream tributary (within three stream miles) to the lake or reservoir will be asigned limitations using the following formula in combination with limitations listed to applicable parts of Category 1. The formula develops limitations for Category 3 dischargers by prorating the existing and additional design flows and existing and more stringent effluent limitations. The existing permit limits or the existing effluent quality 95 percent confidenct interval, whichever is most stringent, along with the limitations shown in Category 1 which are applicable to the additional flow, should b eused when developing limitations for Category 3 discharges.

* $$L_N = \frac{(PF_o \times L_o) + (PF_1 \times L_1)}{PF_o + PF_1}$$

$L_N$ = new permit limit
$L_o$ = The limits from Category 2 or existing permit limit/ existing effluent quality 95 percent confidence interval when these are more stringent than Category 2 limits
$L_1$ = limits for expanded capacity as taken from this policy
$PF_o$ = design flow of existing portion of the WWTP
$PF_1$ = design flow of expanded portion of the WWTP

* This formula should not be applied to fecal coliform, TRC, or D.O.

All other possible alternatives should be considered prior to approving a new direct discharge to a lake or reservoir. On-lot wastewater disposal may be feasible where suitable subsoils exist. In some cases, it may be possible to direct the discharge to a stream not tributary to the lake or reservoir. If a direct discharge to a lake or reservoir is the only viable alternative, the Ohio EPA will require public ownership of the treatment facility.

NOTE:

The feasibility of a controlled discharge lagoon discharge to a lake, reservoir, or stream tributary (within three stream miles) to the lake or reservoir that is included in the criteria described above will be assessed on a case-by-case basis. If approved, effluent limitations will be set based upon the Ohio EPA Lagoons Policy. Additional effluent limitations (i.e., phosphorus) may be required as necessary to assure continued high water quality.

# APPENDIX E

## List of Nonpoint Source Targeted Lakes

## APPENDIX E

### List of Nonpoint Source Targeted Lakes

| Lake | Acres | County (at dam) |
|---|---|---|
| Acton Lake | 604 | Butler |
| Berlin Reservoir | 3590 | Portage |
| Brady Lake | 70 | Portage |
| Buckeye Lake | 3136 | Licking |
| C. J. Brown Lake | 2120 | Clark |
| Celeryville Reservoir | 75 | Crawford |
| Cinnamon Lake | 131 | Ashland |
| Clouse Pond | 41 | Perry |
| Cowan Lake | 688 | Clinton |
| Cutler Lake | 18 | Muskingum |
| Deer Creek Lake | 1277 | Pickaway |
| Deer Creek Reservoir | 313 | Stark |
| Dillon Reservoir | 1325 | Muskingum |
| Dow Lake | 161 | Athens |
| East Branch Reservoir | 416 | Geauga |
| East Fork Lake | 2160 | Clermont |
| Findley Lake | 83 | Lorain |
| Fox Lake Structure #6 | 47 | Athens |
| Fulton Pond | 15 | Fulton |
| Girard Lake | 185 | Trumbull |
| Grand Lake St. Marys | 12700 | Auglaize |
| Guilford Lake | 396 | Columbiana |
| Harrison Lake | 96 | Fulton |
| Highlandtown Lake | 170 | Columbiana |
| Hinckley Lake | 88 | Medina |
| Hoover Reservoir | 3000 | Franklin |
| Indian Lake | 5104 | Logan |
| Jackson Lake | 243 | Jackson |
| Jefferson Lake | 25 | Jefferson |
| Knox Lake | 474 | Knox |
| Lake Alma | 63 | Vinton |
| Lake Aquilla | 27 | Geauga |
| Lake Hope | 127 | Vinton |
| Lake Logan (Hocking Lake) | 354 | Hocking |
| Lake Loramie | 785 | Shelby |

| Lake | Acres | County (at dam) |
|---|---|---|
| Lake Nesmith | 80 | Summit |
| Lake Rockwell | 539 | Portage |
| Lake Rupert | 325 | Vinton |
| Liberty Lake | 99 | Trumbull |
| LaDue Reservoir | 1500 | Geauga |
| Madison Lake | 106 | Madison |
| Meadow Brook Lake | 24 | Summit |
| Metzger Reservoir | 157 | Allen |
| Miami Whitewater Lake | 85 | Hamilton |
| Mogadore Reservoir | 900 | Portage |
| Monroe Lake | 39 | Monroe |
| Mt Gilead Lake (Upper) | 11 | Morrow |
| Nettle Lake | 94 | Williams |
| Newport Lake | 105 | Mahoning |
| Paint Creek Lake | 1190 | Highland |
| Punderson Lake | 101 | Geauga |
| Pymatuning Reservoir | 3580 | Ashtabula |
| Riley Reservoir | 28 | Crawford |
| Roaming Rock Lake | 464 | Ashtabula |
| Sharon Woods Lake | 38 | Hamilton |
| Shreve Lake | 58 | Wayne |
| Springfield Lake | 200 | Summit |
| Spring Valley Lake | 58 | Warren |
| Stonelick Lake | 160 | Clermont |
| Sunny Lake (Harmons Pond) | 63 | Portage |
| Swanton Reservoir | 25 | Lucus |
| Swift Run Lake | 40 | Miami |
| Van Buren Lake | 53 | Hancock |
| Veto Lake | 160 | Washington |
| Wauseon Reservoir #1 | 49 | Fulton |
| Wellington Reservoir (Upper) | 21 | Lorain |
| Westville Lake | 90 | Columbiana |
| Willard Marsh Area Lake | 6.3 | Huron |
| Winton Woods Lake | 183 | Hamilton |

[1]Lakes were targeted if they indicated less than full use (fu) attainment for 4 or more of the following Ohio LCI parameters: productivity (P); nutrients (N); volume loss (V); fecal coliform bacteria (B); acid mine drainage (M); aesthetics (A); priority metals (PPM); nuisance levels of macrophytes (NM). See Appendix F for targeted parameters.

[2]Lakes not included in this list either had insufficient data to be assessed or did not meet the targeting criteria.

# Appendix F

## Ohio LCI Parameter Summary
## For Ohio's 417 Publicly Owned Lakes

Appendix F. Summary of the LCI parameters for Ohio's 417 publicly owned lakes. See text for explanation of parameter codes.

| Lake | County | Year Assessed | Surface Area | Ohio Lake Condition Index Parameters | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
| ACTON LAKE | Butler | 1990 | 604 | t(m) | t(bpj) | fu(bpj) | t(m) | fu(m) | t(bpj) | fu(m) | t-e(m) | t-h(m) | ne | t(m) | fu(m) | fu(m) | fu(m) |
| ADAMS LAKE | Adams | 1988 | 37 | t(m) | ne | fu(bpj) | fu(m) | t(m) | ne | fu(m) | t-e(m) | t-h(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| ALDER POND | Summit | 1988 | 15 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ALDRICH POND | Sandusky | 1988 | 34 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ALUM CREEK LAKE | Delaware | 1990 | 3387 | fu(m) | ne | fu(bpj) | fu(bpj) | fu(m) | fu(bpj) | fu(m) | ne | t-e(m) | fu(m) | t(bpj) | ne | fu(m) | fu(m) |
| AMANN RESERVOIR | Morrow | 1988 | 24 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| AMICKS RESERVOIR | Morrow | 1988 | 51 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ARCHBOLD RESERVOIR #1 | Fulton | 1988 | 20 | ne | ne | fu(bpj) | fu(bpj) | ne | t(bpj) | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| ARCHBOLD RESERVOIR #2 | Fulton | 1988 | 49 | ne | ne | fu(bpj) | fu(bpj) | ne | t(bpj) | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| ASTABULA CO. METRO #1 PARKS LAKE | Ashtabula | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ASTABULA CO. METRO PARKS LAKE #2 | Ashtabula | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ATOMIC ENERGY COMM. LAKE #1 | Pike | 1988 | 14 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ATOMIC ENERGY COMM. LAKE #2 | Pike | 1988 | 17 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ATTICA RESERVOIR | Seneca | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ATWOOD RESERVOIR | Tuscarawas | 1990 | 1540 | t(bpj) | ne | fu(bpj) | fu(m) | t(m) | ne | fu(m) | t-e(m) | t-e(m) | ne | fu(m) | ne | fu(m) | fu(m) |
| BALDWIN LAKE | Cuyahoga | 1990 | 32 | t(bpj) | i(bpj) | fu(bpj) | t(m) | ne | ne | ne | t-e(m) | ne | ne | i(bpj) | ne | ne | ne |
| BALDWIN RESERVOIR | Cuyahoga | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BALLVILLE DAM | Sandusky | 1988 | 89 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BARNESVILLE RESERVOIR #1 | Belmont | 1988 | 35 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BARNESVILLE RESERVOIR #2 | Belmont | 1988 | 11 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BARNESVILLE RESERVOIR #3 | Belmont | 1988 | 98 | fu(m) | ne | ne | t(m) | fu(m) | ne | fu(m) | t-h(m) | t-h(m) | ne | ne | ne | ne | fu(m) |
| BEACH CITY LAKE | Tuscarawas | 1988 | 420 | t(bpj) | ne | fu(bpj) | t(bpj) | t(bpj) | ne | ne | t-e(m) | t-h(m) | ne | fu(m) | ne | ne | ne |
| BEAVER CREEK RESERVOIR | Seneca | 1988 | 110 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BEAVER LAKE | Columbiana | 1988 | 103 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BELLEVUE RESERVOIR #1,#2 | Huron | 1988 | 14 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| BELLEVUE RESERVOIR #3 | Huron | 1988 | 14 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| BELLEVUE RESERVOIR #4 | Huron | 1988 | 31 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | ne | ne | ne | ne |
| BELLEVUE RESERVOIR #5 | Huron | 1988 | 87 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BELMONT LAKE | Belmont | 1988 | 117 | t(m) | ne | fu(bpj) | t(m) | ne | ne | ne | t-h(m) | fu(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| BERLIN HEIGHTS RESERVOIR | Erie | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BERLIN RESERVOIR | Portage | 1990 | 3590 | t(m) | fu(bpj) | fu(bpj) | t(m) | fu(m) | t(bpj) | fu(m) | t-e(m) | t-h(m) | fu(m) | fu(m) | ne | fu(m) | fu(m) |
| BETHEL RESERVOIR | Clermont | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BETHESDA RESERVOIR | Belmont | 1988 | 13 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BLANCHESTER RESERVOIR # 1 | Clinton | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |

Appendix F. (continued).

| Lake | County | Year Assessed | Surface Area | Ohio Lake Condition Index Parameters | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
| BLANCHESTER RESERVOIR # 2 | Clinton | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BLANCHESTER RESERVOIR # 3 | Clinton | 1988 | 11 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BLANCHESTER RESERVOIR # 4 | Clinton | 1988 | 11 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BLANCHESTER RESERVOIR # 5 | Clinton | 1988 | 18 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BLUE ROCK STATE PARK LAKE | Muskingum | 1988 | 18 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BOLIVAR DAM | Tuscarawas | 1988 | 0 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BRADY LAKE | Portage | 1988 | 70 | t(m) | ne | t(bpj) | t(bpj) | ne | ne | ne | t-h(m) | t(bpj) | ne | fu(bpj) | ne | ne | fu(m) |
| BRESLER RESERVOIR | Allen | 1988 | 582 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | t(bpj) | ne | ne | t(bpj) | ne | ne | ne |
| BUCKEYE LAKE | Licking | 1990 | 3136 | t(m) | t(bpj) | fu(bpj) | t(m) | fu(m) | fu(bpj) | fu(m) | t-h(m) | t-e(m) | fu(m) | t(m) | fu(m) | fu(m) | fu(m) |
| BUCYRUS RESERVOIR # 4 | Crawford | 1988 | 150 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BUCYRUS RESERVOIR #1 | Crawford | 1988 | 36 | ne | ne | t(bpj) | t(bpj) | ne | ne | ne | t(bpj) | ne | ne | t(bpj) | ne | ne | ne |
| BUCYRUS RESERVOIR #2 | Crawford | 1988 | 31 | ne | ne | t(bpj) | t(bpj) | ne | ne | ne | t(bpj) | ne | ne | t(bpj) | ne | ne | ne |
| BURGESS LAKE | Mahoning | 1988 | 20 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| BURR OAK LAKE (T. JENKINS RESV.) | Athens | 1988 | 664 | fu(bpj) | ne | t(bpj) | fu(bpj) | fu(m) | ne | fu(m) | ne | t-e(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| CAESAR CREEK RESERVOIR | Warren | 1988 | 2830 | fu(bpj) | ne | fu(bpj) | fu(m) | fu(m) | ne | fu(m) | t-e(m) | t-h(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| CALDWELL LAKE | Noble | 1988 | 51 | fu(m) | ne | fu(bpj) | ne | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| CAMBRIDGE RESERVOIR | Guernsey | 1988 | 26 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CAMDEN RESERVOIR | Lorain | 1988 | 9 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CARRIAGE HILL RESERVOIR | Montgomery | 1988 | 14 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CARTER LAKE | Gallia | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CEDARVILLE COLLEGE LAKE | Greene | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CEDARVILLE RESERVOIR | Greene | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CELERYVILLE RESERVOIR | Crawford | 1988 | 75 | ne | ne | t(bpj) | fu(bpj) | ne | t(bpj) | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| CHARLES MILL LAKE | Ashland | 1988 | 1350 | t(bpj) | ne | t(bpj) | t(m) | t(m) | ne | fu(m) | t-h(m) | t-h(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| CHIPPEWA CREEK STRUCTURE 2-A | Medina | 1988 | 12 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CHIPPEWA CREEK STRUCTURE 3-A | Medina | 1988 | 20 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CHIPPEWA CR. WATERSHED VII C | Wayne | 1988 | 34 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CINCINNATI WATERWKS LAKE #1 | Hamilton | 1988 | 18 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CINCINNATI WATERWKS LAKE #2 | Hamilton | 1988 | 19 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CINNAMON LAKE | Ashland | 1988 | 131 | ne | ne | t(bpj) | t(bpj) | ne | ne | ne | t(bpj) | ne | ne | t(bpj) | ne | ne | ne |
| CITY OF ASHLAND LAKE | Ashland | 1988 | 6 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | ne | ne | fu(bpj) | ne | ne | ne |
| CITY OF DAYTON LAKE #1 | Montgomery | 1988 | 10 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CITY OF NEWTON FALLS LAKE | Trumbull | 1988 | 13 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CITY OF PERRYSBURG LAKE | Wood | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| CITY OF WELLSTON LAKE | Jackson | 1988 | 11 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | t(bpj) | ne | fu(bpj) | ne | ne | ne(T. |

Appendix F. (continued).

| Lake | County | Year Assessed | Surface Area | Ohio Lake Condition Index Parameters | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
| HINCKLEY LAKE | Medina | 1990 | 88 | t(m) | i(bpj) | fu(bpj) | t(m) | fu(m) | fu(m) | fu(m) | t-e(m) | fu(m) | ne | t(bpj) | fu(m) | ne | fu(m) |
| HOCKING HILLS RESERVOIR | Hocking | 1988 | 21 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| HOOVER RESERVOIR | Franklin | 1990 | 3000 | t(m) | ne | fu(bpj) | t(bpj) | fu(m) | ne | t(m) | t-e(m) | t-e(m) | ne | t(bpj) | fu(m) | fu(m) | fu(m) |
| HOSTERMAN LAKE | Clark | 1988 | 9 | t(m) | ne | ne | t(m) | fu(m) | ne | ne | t-h(m) | ne | ne | ne | ne | ne | fu(m) |
| HOWER RESERVOIR | Summit | 1990 | 23 | fu(m) | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| HRCD STRUCTURE 1 | Fairfield | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| HRCD STRUCTURE 2 | Fairfield | 1988 | 9 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| HRCD STRUCTURE 5 | Fairfield | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| HRCD STRUCTURE 8 | Fairfield | 1988 | 8 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| HRCD STRUCTURE R-21 | Fairfield | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| HUDSON SPRINGS LAKE | Summit | 1990 | 45 | t(m) | ne | t(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| INDEPENDENCE DAM | Defiance | 1990 | 605 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | fu(m) | ne | ne | ne |
| INDIAN CR. WILDLIFE AREA PONDS | Brown | 1988 | 56 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| INDIAN LAKE | Logan | 1990 | 5104 | t(m) | t(bpj) | t(bpj) | i(m) | t(m) | fu(m) | fu(m) | t-h(m) | t-h(m) | fu(m) | t(m) | fu(m) | fu(m) | fu(m) |
| JACKSON LAKE | Jackson | 1990 | 243 | t(bpj) | ne | t(bpj) | t(bpj) | fu(m) | ne | t(m) | t-e(m) | fu(m) | ne | t(m) | fu(m) | fu(m) | fu(m) |
| JEFFERSON LAKE | Jefferson | 1990 | 25 | fu(m) | ne | t(bpj) | t(bpj) | fu(m) | ne | fu(m) | t-e(m) | fu(m) | ne | t(m) | t(m) | t(m) | fu(m) |
| J. GRIGGS RESERVOIR | Franklin | 1990 | 385 | t(bpj) | ne | fu(bpj) | t(m) | t(m) | ne | fu(m) | t-h(m) | t-e(m) | ne | fu(bpj) | ne | fu(m) | fu(m) |
| KENT BOARD OF TRUSTEES LAKE | Portage | 1988 | 10 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| KILLDEER RESERVOIR | Wyandot | 1988 | 253 | fu(bpj) | ne | fu(bpj) | t(bpj) | fu(m) | ne | fu(m) | fu(m) | fu(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| KILLDEER WILDLIFE POND #1 | Wyandot | 1988 | 9 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| KILLDEER WILDLIFE POND #2 | Wyandot | 1988 | 45 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| KILLDEER WILDLIFE POND #3 | Wyandot | 1988 | 9 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| KILLDEER WILDLIFE POND #4 | Wyandot | 1988 | 8 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| KILLDEER WILDLIFE POND #5 | Wyandot | 1988 | 18 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| KILLDEER WILDLIFE POND #6 | Wyandot | 1988 | 15 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| KILLDEER WILDLIFE POND #7 | Wyandot | 1988 | 225 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| KILLDEER WILDLIFE POND #8 | Wyandot | 1988 | 373 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| KILLDEER WILDLIFE POND #9 | Wyandot | 1988 | 225 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| KIPTON RESERVOIR | Lorain | 1988 | 20 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| KISER LAKE | Champaign | 1990 | 380 | t(m) | fu(bpj) | fu(bpj) | fu(m) | fu(m) | fu(bpj) | fu(m) | t-h(m) | t-e(m) | ne | t(m) | fu(m) | fu(m) | fu(m) |
| KNOX LAKE | Knox | 1990 | 474 | t(m) | ne | fu(bpj) | t(bpj) | fu(m) | ne | fu(m) | t-e(m) | t-e(m) | ne | t(m) | fu(m) | t(m) | fu(m) |
| LaDUE RESERVOIR | Geauga | 1988 | 1500 | fu(bpj) | ne | t(bpj) | t(bpj) | ne | ne | ne | t(bpj) | t(bpj) | ne | t(bpj) | ne | ne | ne |
| LaGRANGE WATER WORKS LAKE | Lorain | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE ALMA | Vinton | 1990 | 63 | fu(m) | ne | t(bpj) | fu(m) | fu(m) | ne | t(m) | t-e(m) | fu(m) | ne | fu(m) | fu(m) | fu(m) | fu(m) |
| LAKE ANNA | Summit | 1988 | 12 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE AQUILLA | Geauga | 1990 | 27 | fu(m) | i(bpj) | i(bpj) | i(m) | fu(m) | fu(bpj) | fu(m) | t-e(m) | fu(m) | ne | t(bpj) | ne | ne | fu(m) |

Appendix F. (continued).

| Lake | County | Year Assessed | Surface Area | Ohio Lake Condition Index Parameters | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
| LAKE CALDWELL | Ross | 1988 | 10 | ne | ne | ne | t(m) | ne | ne | ne | t-h(m) | ne | ne | ne | ne | ne | ne |
| LAKE COHASSET | Mahoning | 1988 | 27 | ne | ne | fu(bpj) | fu(bpj) | t(m) | ne | t(m) | ne | ne | ne | t(bpj) | ne | fu(m) | fu(m) |
| LAKE DAUGHTERY | Hancock | 1988 | 12 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE GEORGE | Portage | 1988 | 12 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE GLACIER | Mahoning | 1988 | 43 | ne | ne | fu(bpj) | fu(bpj) | t(m) | ne | fu(m) | ne | ne | ne | t(bpj) | ne | t(m) | fu(m) |
| LAKE HAMILTON | Mahoning | 1988 | 104 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE HODGSON | Portage | 1990 | 190 | t(m) | ne | t(bpj) | t(bpj) | ne | t(bpj) | ne | fu(m) | ne | ne | t(bpj) | ne | ne | ne |
| LAKE HOPE | Vinton | 1990 | 127 | t(bpj) | ne | t(bpj) | fu(m) | t(m) | ne | t(m) | t-e(m) | fu(m) | ne | t(m) | fu(m) | fu(m) | i(m) |
| LAKE ISABELLA | Hamilton | 1988 | 23 | fu(m) | ne | t(bpj) | fu(m) | ne | ne | ne | fu(m) | ne | ne | ne | ne | ne | fu(m) |
| LAKE ISSAC | Cuyahoga | 1988 | 15 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE KATHARINE | Jackson | 1988 | 42 | fu(bpj) | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE LA SU AN | Williams | 1988 | 134 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | ne | ne | fu(bpj) | ne | ne | ne |
| LAKE LaCOMTE (FOST. RES. #5) | Hancock | 1988 | 128 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| LAKE LAMBERJACK | Hancock | 1988 | 45 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| LAKE LAVERE | Williams | 1988 | 11 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE LOGAN (HOCKING LAKE) | Hocking | 1990 | 354 | t(bpj) | ne | t(bpj) | t(bpj) | fu(m) | ne | fu(m) | t(bpj) | t-e(m) | ne | t(m) | fu(m) | fu(m) | fu(m) |
| LAKE LORAMIE | Shelby | 1990 | 785 | t(m) | fu(bpj) | fu(bpj) | t(m) | t(m) | t(bpj) | fu(m) | t-h(m) | t-e(m) | ne | t(m) | fu(m) | fu(m) | fu(m) |
| LAKE LORETTA | Fairfield | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE MEDINA | Medina | 1988 | 109 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE MILTON | Mahoning | 1990 | 1685 | t(m) | fu(bpj) | fu(bpj) | fu(bpj) | fu(m) | ne | fu(m) | t-h(m) | t-e(m) | fu(m) | fu(bpj) | ne | fu(m) | fu(m) |
| LAKE MOSIER | Hancock | 1988 | 88 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| LAKE MOTRAM | Hancock | 1988 | 18 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE NESMITH | Summit | 1988 | 80 | t(m) | ne | fu(bpj) | t(m) | fu(m) | ne | ne | t-h(m) | t-e(m) | t(m) | t(bpj) | fu(m) | ne | fu(m) |
| LAKE PARK | Mahoning | 1988 | 20 | t(m) | ne | ne | fu(m) | i(m) | ne | ne | t-e(m) | ne | ne | ne | ne | ne | fu(m) |
| LAKE PIPPEN | Portage | 1990 | 143 | fu(m) | ne | t(bpj) | fu(m) | fu(m) | fu(bpj) | fu(m) | fu(m) | fu(m) | ne | fu(bpj) | ne | fu(m) | fu(m) |
| LAKE ROCKWELL | Portage | 1990 | 539 | t(m) | ne | t(bpj) | t(m) | fu(m) | t(bpj) | t(m) | t-e(m) | t-e(m) | ne | t(m) | fu(m) | fu(m) | fu(m) |
| LAKE ROMONA DAM | Fairfield | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE RUPERT | Vinton | 1990 | 325 | fu(bpj) | ne | t(bpj) | fu(m) | fu(m) | ne | fu(m) | t-e(m) | fu(m) | ne | fu(m) | fu(m) | t(m) | fu(m) |
| LAKE SNOWDEN (Structure #2) | Athens | 1988 | 131 | fu(bpj) | ne | fu(bpj) | fu(m) | fu(m) | ne | fu(m) | t-e(m) | fu(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| LAKE STEWART | Ross | 1988 | 8 | ne | ne | ne | t(m) | ne | ne | ne | t-h(m) | ne | ne | ne | ne | ne | ne |
| LAKE SUE | Williams | 1988 | 11 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LAKE VESUVIUS | Lawrence | 1990 | 105 | fu(bpj) | ne | ne | ne | t(m) | ne | t(m) | ne | fu(m) | ne | t(m) | fu(m) | fu(m) | fu(m) |
| LAKE WHITE RESERVOIR | Pike | 1990 | 337 | fu(bpj) | ne | fu(bpj) | fu(bpj) | fu(m) | ne | fu(m) | t-e(m) | fu(m) | ne | t(m) | t(m) | fu(m) | fu(m) |
| LAMPSON RESV. (JEFFERS. RESV.) | Ashtabula | 1988 | 20 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LEESVILLE LAKE | Carroll | 1990 | 1000 | fu(bpj) | ne | ne | ne | fu(m) | ne | fu(m) | ne | t-e(m) | ne | fu(m) | fu(m) | fu(m) | fu(m) |
| LEIPSIC RESERVOIR | Putnam | 1988 | 27 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |

Appendix F. (continued).

| Lake | County | Year Assessed | Surface Area | Ohio Lake Condition Index Parameters | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
| LIBERTY LAKE | Trumbull | 1988 | 99 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LIMA RESERVOIR | Allen | 1988 | 84 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LIME KILN LAKE | Tuscarawas | 1988 | 29 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LONDON FISH HATCHERY LAKE | Madison | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LONG LAKE | Summit | 1990 | 180 | t(m) | ne | ne | t(m) | fu(m) | ne | fu(m) | t-h(m) | t-e(m) | ne | t(m) | t(m) | fu(m) | fu(m) |
| LOST CREEK RESERVOIR | Allen | 1988 | 121 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| LOWER SHAKER LAKE | Cuyahoga | 1988 | 17 | t(bpj) | ne | ne | fu(bpj) | ne | ne | ne | t-e(m) | ne | ne | ne | ne | ne | ne |
| MADISON LAKE | Madison | 1990 | 106 | t(bpj) | ne | t(bpj) | t(bpj) | fu(m) | ne | fu(m) | t-e(m) | t-h(m) | ne | t(m) | t(m) | fu(m) | fu(m) |
| MAPLE GROVE LAKE | Morrow | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| MARGARET CR. CONS. DIST. #1 | Athens | 1988 | ? | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| MARGARET CR. CONS. DIST. #4 | Athens | 1988 | 28 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| MARGARET CR. CONS. DIST. #5 | Athens | 1988 | 8 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| MAYSV. REG. WATER DIST. LAKE | Muskingum | 1988 | 45 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| McCOMB RESERVOIR #1 | Hancock | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| McCOMB RESERVOIR #2 | Hancock | 1988 | 20 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| McKELVEY LAKE | Mahoning | 1988 | 133 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| MEADOW BROOK LAKE | Summit | 1990 | 24 | t(m) | ne | t(bpj) | t(m) | fu(m) | ne | fu(m) | t-h(m) | t-h(m) | ne | t(bpj) | ne | t(m) | fu(m) |
| MEANDER CREEK RESERVOIR | Trumbull | 1988 | 2010 | fu(bpj) | ne | fu(bpj) | fu(bpj) | ne | ne | t(m) | t-e(m) | fu(m) | ne | fu(bpj) | ne | fu(m) | fu(m) |
| METAMORA RESERVOIR | Fulton | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| METZGER RESERVOIR | Allen | 1988 | 157 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | t(bpj) | t(bpj) | ne | t(bpj) | ne | ne | ne |
| MIAMI CONS. DIST. LAKE | Greene | 1988 | 43 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| MIAMI WHITEWATER LAKE | Hamilton | 1988 | 85 | t(m) | ne | fu(bpj) | t(bpj) | fu(m) | ne | ne | t-e(m) | t(bpj) | ne | t(bpj) | ne | ne | fu(m) |
| MICHAEL J. KIRWIN RESERVOIR | Portage | 1990 | 2650 | t(m) | ne | t(bpj) | fu(m) | fu(m) | ne | fu(m) | t-e(m) | fu(m) | ne | fu(m) | ne | fu(m) | fu(m) |
| MILLER ANTRIM QUARRY | Franklin | 1988 | 37 | fu(m) | ne | ne | fu(bpj) | ne | ne | ne | t-h(m) | ne | ne | ne | ne | ne | ne |
| MILLER LAKE | Summit | 1988 | 28 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| MOGADORE RESERVOIR | Portage | 1990 | 900 | fu(m) | ne | t(bpj) | t(m) | fu(m) | t(bpj) | fu(m) | t(bpj) | t-e(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| MOHAWK LAKE | Coshocton | 1988 | ? | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| MOHICANVILLE RESERVOIR | Ashland | 1988 | ? | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | ne | ne | fu(bpj) | ne | ne | ne |
| MONROE LAKE | Monroe | 1988 | 39 | fu(m) | ne | t(bpj) | t(bpj) | ne | ne | fu(m) | t-e(m) | fu(m) | ne | t(bpj) | ne | fu(m) | ne |
| MOSQUITO CREEK RESERVOIR | Trumbull | 1990 | 7850 | t(m) | fu(bpj) | fu(bpj) | t(m) | t(m) | fu(m) | fu(m) | t-e(m) | fu(m) | fu(m) | fu(bpj) | fu(m) | fu(m) | fu(m) |
| MOUNT ORAB RESERVOIR # 2 | Brown | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| MT. GILEAD LAKE (LOWER) | Morrow | 1988 | 11 | t(m) | ne | ne | fu(m) | ne | ne | ne | fu(m) | ne | ne | ne | ne | ne | fu(m) |
| MT. GILEAD LAKE (UPPER) | Morrow | 1988 | 7 | ne | ne | t(bpj) | t(bpj) | t(m) | ne | ne | t-e(m) | ne | ne | t(bpj) | ne | ne | fu(m) |
| MUD LAKE | Summit | 1990 | 85 | fu(m) | ne | ne | ne | ne | ne | ne | ne | ne | ne | t(m) | fu(m) | ne | ne |
| MUDPORT BASIN | Coshocton | 1988 | 9 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| MUNROE BASIN | Muskingum | 1988 | 17 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |

Appendix F. (continued).

| Lake | County | Year Assessed | Surface Area | Ohio Lake Condition Index Parameters | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
| MUZZY LAKE | Portage | 1990 | 82 | t(m) | ne | t(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| MWCD STRUCTURE 7-C | Medina | 1988 | 23 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| M. OLANDER PARK LAKE | Lucas | 1988 | 20 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| NETTLE LAKE | Williams | 1988 | 94 | fu(bpj) | ne | t(bpj) | fu(m) | fu(m) | ne | fu(m) | t-e(m) | t-e(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| NEW CONCORD RESERVOIR | Muskingum | 1988 | 10 | ne | ne | t(bpj) | fu(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| NEW LEXINGT. RESERV. #1, NEW | Perry | 1988 | 44 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| NEW LEXINGT. RESERV.#2, OLD | Perry | 1988 | 27 | fu(m) | ne | fu(bpj) | fu(m) | fu(m) | ne | t(m) | fu(m) | fu(m) | ne | fu(bpj) | ne | fu(m) | fu(m) |
| NEW LONDON RESERVOIR | Huron | 1988 | 221 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| NEW WILMINGTON RESERVOIR | Clinton | 1988 | 54 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| NEWPORT LAKE | Mahoning | 1988 | 105 | t(m) | ne | fu(bpj) | t(m) | ne | ne | t(m) | t-h(m) | t-h(m) | fu(m) | t(bpj) | ne | i(m) | fu(m) |
| NIMISILA RESERVOIR | Summit | 1990 | 825 | t(m) | ne | ne | t(m) | fu(m) | ne | fu(m) | t-h(m) | t-e(m) | ne | ne | ne | fu(m) | fu(m) |
| NORTH BALTIMORE RESERVOIR | Wood | 1988 | 29 | ne | ne | fu(bpj) | fu(bpj) | ne | t(bpj) | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| NORTH BRANCH KOKOSING LAKE | Knox | 1988 | 154 | t(bpj) | ne | fu(bpj) | t(m) | fu(m) | ne | fu(m) | t-h(m) | t-e(m) | ne | fu(bpj) | ne | fu(m) | fu(m) |
| NORTH KINGSVILLE RESERVOIR | Ashtabula | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| NORTH RESERVOIR | Summit | 1990 | 160 | t(m) | ne | ne | ne | ne | ne | ne | ne | ne | ne | t(m) | ne | ne | ne |
| NORWALK LOWER RESERVOIR | Huron | 1988 | 31 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| NORWALK MEMORIAL RESERVOIR | Huron | 1988 | 97 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| NORWALK UPPER RESERVOIR | Huron | 1988 | 50 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| OAK THORPE RESERVOIR | Fairfield | 1988 | 43 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| OBERLIN OLD UPGROUND RESERV. | Lorain | 1988 | 10 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| OBERLIN RESERVOIR | Lorain | 1990 | 56 | t(m) | ne | fu(bpj) | fu(bpj) | fu(m) | t(bpj) | fu(m) | t(bpj) | fu(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| OHIO POWER REC. LAKE | Morgan | 1988 | 2000 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| OLD REID PARK LAKE | Clark | 1988 | 15 | ne | ne | ne | fu(m) | fu(m) | ne | ne | fu(m) | ne | ne | ne | ne | ne | ne |
| OPOSSUM CREEK LAKE #1 | Montgomery | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| OPOSSUM CREEK LAKE #2 | Montgomery | 1988 | 18 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| OSU GOLF COURSE LAKE | Franklin | 1988 | 9 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| OTTAWA NAT. WILDL.REF. LAKE | Ottawa | 1988 | 8 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| OTTAWA RESERVOIR | Putnam | 1988 | 20 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| OXBOW LAKE | Defiance | 1988 | 40 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| O'SHAUGHNESSY RESERVOIR | Delaware | 1990 | 920 | t(bpj) | ne | fu(bpj) | t(bpj) | ne | ne | ne | fu(m) | t-h(m) | ne | t(m) | fu(m) | ne | ne |
| PAINT CREEK LAKE | Highland | 1988 | 1190 | t(bpj) | ne | t(bpj) | t(bpj) | fu(m) | t(bpj) | fu(m) | t(bpj) | t-h(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| PARK LAKE | Summit | 1988 | 13 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| PAULDING PONDS | Paulding | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| PAULDING RESERVOIR | Paulding | 1988 | 67 | ne | ne | fu(bpj) | fu(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | t(bpj) | ne |
| PERRY RECLAMATION POND | Perry | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| PETROS LAKE | Stark | 1990 | 12 | t(m) | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |

Appendix F. (continued).

| Lake | County | Year Assessed | Surface Area | Ohio Lake Condition Index Parameters | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
| ST. JOSEPH'S LAKE | Perry | 1988 | 60 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ST. MARTIN RESERVOIR | Brown | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| SUMMIT LAKE | Summit | 1988 | 100 | t(m) | ne | fu(bpj) | fu(bpj) | fu(m) | fu(m) | fu(m) | t-e(m) | t-e(m) | t(m) | t(bpj) | t(m) | fu(m) | fu(m) |
| SUNBURY RESERVOIR # 2 | Delaware | 1988 | 19 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| SUNBURY RESERVOIR #1 | Delaware | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| SUNNY LAKE (HARMONS POND) | Portage | 1990 | 63 | t(m) | ne | t(bpj) | t(m) | ne | ne | ne | t-h(m) | t(bpj) | ne | t(bpj) | ne | ne | ne |
| SWANTON RESERVOIR | Lucas | 1988 | 25 | ne | ne | t(bpj) | t(bpj) | ne | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | ne | ne |
| SWIFT RUN LAKE | Miami | 1990 | 40 | t(m) | fu(bpj) | i(bpj) | fu(m) | t(m) | t(bpj) | fu(m) | t-h(m) | t-e(m) | ne | t(bpj) | ne | ne | fu(m) |
| TAPPEN LAKE | Harrison | 1988 | 2350 | t(bpj) | ne | fu(bpj) | fu(m) | fu(m) | ne | fu(m) | t-e(m) | t-e(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| TAWAWA LAKE | Shelby | 1988 | 8 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| THOREAU POND (BLENDON WOODS) | Franklin | 1988 | 11 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| TINKERS CREEK STATE PARK LAKE | Portage | 1990 | 5 | fu(m) | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| TOUSSAINT CR. WILDL. AREA LAKE | Ottawa | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| TURKEY CREEK LAKE | Scioto | 1988 | 51 | fu(m) | ne | fu(bpj) | t(m) | ne | ne | ne | t-h(m) | ne | ne | t(bpj) | ne | ne | ne |
| TURKEY FOOT LAKE | Summit | 1990 | 318 | t(m) | ne | ne | fu(m) | fu(m) | ne | fu(m) | t-e(m) | t-h(m) | ne | ne | ne | fu(m) | fu(m) |
| TWIN LAKES RESERVOIR | Allen | 1988 | 26 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| TYCOON LAKE | Gallia | 1988 | 204 | fu(bpj) | ne | t(bpj) | fu(m) | fu(m) | ne | i(m) | t-e(m) | fu(m) | ne | fu(bpj) | ne | fu(m) | fu(m) |
| UPPER SANDUSKY RESERVOIR | Wyandot | 1988 | 36 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| UPPER SHAKER LAKE | Cuyahoga | 1988 | 11 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| USA DEPT. LABOR LAKE | Medina | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| VAN BUREN LAKE | Hancock | 1988 | 53 | t(m) | ne | t(bpj) | fu(m) | t(m) | t(bpj) | fu(m) | t-e(m) | t-h(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| VAN WERT RESERVOIR #1 | Van Wert | 1988 | 60 | ne | ne | fu(bpj) | t(bpj) | ne | t(bpj) | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| VAN WERT RESERVOIR #2 | Van Wert | 1988 | 60 | ne | ne | fu(bpj) | t(bpj) | ne | t(bpj) | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| VA. KENDALL PARK LAKE | Summit | 1990 | 14 | fu(m) | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| VETO LAKE | Washington | 1988 | 160 | t(bpj) | ne | t(bpj) | fu(m) | fu(m) | ne | t(m) | t-e(m) | t-e(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| VILLAGE OF BARNESVILLE LAKE | Belmont | 1988 | 8 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| VILLAGE OF BLANCHESTER LAKE | Clinton | 1988 | 10 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| VILLAGE OF CONTINENTAL LAKE | Putnam | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| VILLAGE OF GRAFTON LAKE | Lorain | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| VILLAGE OF TIPP CITY LAKE #1 | Miami | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| VILLAGE OF TIPP CITY LAKE #2 | Miami | 1988 | 14 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WABASH CONS. DIST. RESV. #1 | Darke | 1990 | 57 | t(m) | ne | t(bpj) | fu(m) | t(m) | t(bpj) | fu(m) | ne | t-h(m) | ne | t(bpj) | ne | ne | fu(m) |
| WALLACE LAKE | Cuyahoga | 1990 | 16 | t(bpj) | t(bpj) | fu(bpj) | fu(m) | ne | ne | ne | fu(m) | ne | ne | fu(bpj) | ne | ne | ne |
| WASHINGTON C.H. RESERVOIR | Fayette | 1988 | 37 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WAUSEON RESERVOIR #1 | Fulton | 1988 | 49 | ne | ne | t(bpj) | t(bpj) | ne | t(bpj) | ne | t(bpj) | t(bpj) | ne | t(bpj) | ne | ne | ne |
| WAUSEON RESERVOIR #2 | Fulton | 1988 | 17 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |

Appendix F. (continued).

| Lake | County | Year Assessed | Surface Area | Ohio Lake Condition Index Parameters | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SD | IBI | NM | A | NP | PPO | PPM | P | N | F | V | S | B | M |
| WAYNE NATIONAL FOREST LAKE | Gallia | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WAYNOKA RESERVOIR | Brown | 1988 | 12 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WAYNOKA RETENTION DAM | Brown | 1988 | 12 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WELLINGTON RESERVOIR (LOWER) | Lorain | 1988 | 160 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WELLINGTON RESERVOIR (UPPER) | Lorain | 1988 | 21 | ne | ne | ne | t(bpj) | ne | t(bpj) | ne | t(bpj) | t(bpj) | ne | t(bpj) | ne | ne | ne |
| WELLSVILLE RESERVOIR | Columbiana | 1988 | 25 | ne | ne | t(bpj) | fu(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| WEST RESERVOIR | Summit | 1990 | 104 | t(m) | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WESTERVILLE RESERVOIR | Delaware | 1988 | 53 | t(m) | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WESTVILLE LAKE | Columbiana | 1990 | 90 | ne | ne | t(bpj) | i(m) | fu(m) | ne | fu(m) | t-h(m) | ne | fu(m) | t(m) | t(m) | fu(m) | fu(m) |
| WHITE SULPHUR LAKE | Delaware | 1988 | 39 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WILLARD CITY RESERVOIR | Huron | 1988 | 200 | fu(bpj) | ne | fu(bpj) | fu(m) | fu(m) | ne | fu(m) | t-e(m) | fu(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| WILLARD MARSH AREA | Huron | 1988 | 6 | ne | ne | fu(bpj) | t(bpj) | ne | ne | ne | t(bpj) | t(bpj) | ne | t(bpj) | ne | ne | ne |
| WILLS CREEK RESERVOIR | Coshocton | 1988 | 900 | t(bpj) | ne | fu(bpj) | fu(bpj) | t(bpj) | ne | fu(m) | ne | t-h(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| WILLSHIRE QUARRY LAKE | Van Wert | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WILMINGTON RESERVOIR | Clinton | 1988 | 16 | ne | ne | fu(bpj) | fu(bpj) | ne | t(bpj) | ne | ne | t(bpj) | ne | fu(bpj) | ne | ne | ne |
| WINCHESTER LAKE | Adams | 1988 | 10 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WINTON WDS L. (W.FK.MILL CK.) | Hamilton | 1990 | 183 | t(m) | i(bpj) | t(m) | i(m) | fu(m) | ne | fu(m) | t-h(m) | t-h(m) | fu(m) | t(m) | fu(m) | i(m) | fu(m) |
| WOLF CREEK RESERVOIR | Summit | 1990 | 196 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | t(m) | fu(m) | ne | ne |
| WOLF RUN RESERVOIR | Noble | 1988 | 209 | fu(m) | ne | t(bpj) | fu(m) | fu(m) | ne | fu(m) | fu(m) | fu(m) | ne | t(bpj) | ne | fu(m) | fu(m) |
| WOODLAND HILLS PARK LAKE | Cuyahoga | 1988 | 5 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| WOODSFIELD RESERVOIR | Monroe | 1988 | 7 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| YOUCTANGEE PARK LAKE | Ross | 1988 | 6 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ZANESVILLE ST. NURSERY LAKE | Muskingum | 1988 | 10 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |
| ZEPPERNICK LAKE | Columbiana | 1988 | 41 | ne | ne | t(bpj) | fu(bpj) | ne | ne | ne | ne | ne | ne | t(bpj) | ne | ne | ne |
| ZOAR LAKE WILDLIFE AREA | Tuscarawas | 1988 | 28 | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne | ne |

[1]**LCI Metric Abbreviations: SD**=Secchi Disk; **IBI**=Index of Biotic Integrity; **NM**: Nuisance Macrophytes; **A**: Aesthetics; **NP**: Non-Priority Pollutants; **PPO**: Priority Organics; **PPM**: Priority Metals; **P**: Productivity (summer chlorophyll-a); **N**: Nutrients (spring total phosphorus); **F**: Fish Tissue Contamination ; **M**: Acid Mine Drainage.

[2]**LCI Metric Evaluation Abbreviations: ne**: Not Assessed; **t(bpj)**: threatened based on evaluated data; **t(m)**: threatened based on monitored data; **I(m)**: impaired based on monitored data; **fu(m)**: full use based on monitored data; **t-e(m)**: monitored eutrophic condition; **t-h(m)**: monitored hypereutrophic condition.

# APPENDIX G

## Lake Water Quality Survey Questionaire

APPENDIX G

Lake Water Quality Assessment Survey Ques;tionnaire

*State of Ohio Environmental Protection Agency*
*Division of Water Quality Planning and Assessment*
*Lake Condition Questionnaire*

---

Lake Name _____ County _____

Date_____ Lake Owner _____

---

This questionnaire should be completed by someone who is familiar with lake conditions over the past two years. If monitored data are not available, please use your best judgement. Please attach a copy of any raw data that were collected over the past two years. Thank you for your time; this information will be used by the Ohio EPA to update the State of Ohio's 305(b) Lake Water Quality Inventory Report that is submitted to the US EPA. If you have any questions or suggestions for improvement please contact: Bob Davic, Ohio EPA, Northeast District Office, 2110 E. Aurora Rd., Twinsburg, Ohio 44087. (216) 425-9171. Please return to the above address.

1. Inlake Conditions

a. Does the lake support a well balanced mix of sport and forage fish, or do a few species dominate? (Circle one).

| Insufficient Data | Well Balanced Fishery | Partially Balanced | Impaired Fisbery |
|---|---|---|---|

b. How would you rate the fishing in this lake?
_____ Excellent, _____ Good, _____ Acceptable
_____ Marginal, _____ Very Poor

c. If 'marginal' or 'very poor', please indicate why?

_____ Water quality problems
_____ Overfishing
_____ Stunted growth within fish populations
_____ Physical characteristics of the lake
_____ Other (please specify) _____

d. Please list the types and numbers of fish that have been stocked in this lake during over the past two years.

_____

_____

e. What type of fish were most frequently caught in this lake?

_____ Largemouth Bass, _____ Crappie, _____ Bluegill,
_____ Other Sunfish, _____ Catfish, _____ Other (specify) _____

f. Are fish tissue data available? Yes _____ No _____. If yes, please attach a copy of the raw data.

g. Has the bottom sediment been chemically tested? Yes _____ No _____. If yes, please attach a copy of the raw data.

h. Has any bottom sediment been dredged or removed from the lake? Yes _____ No _____.

i. Have any chemical tests (nutrients, fecal bacteria, metals, ect.) been conducted on the lake water during the past two years? Yes _____ No _____. If yes, please attach a copy of raw data.

j. During the summer months, to what extent do aquatic weeds cover the shoreline of the lake?

<10% 10-25% 25-50% 50-75% >75%

k. Has a survey of the types and abundance of aquatic weeds been conducted for the lake? Yes _____ No _____. If yes, attach a copy of the raw data.

l. Based on your best judgement, how much of the original lake volume has been lost due to sedimentation from the upstream watershed?

<10% 10-25% 25-40% 40-60% >60%

m. Has a survey been conducted since 1980 to document the extent of volume loss? Yes _____ No _____. If yes, what is the (%) loss of capacity _____%.

n. During the past two summers, how would you rate the water quality of this lake?

Excellent,_____ Good,_____ Acceptable,_____ Marginal,_____ Poor, _____

o. On a scale of 1-10 (1=no problem, 10=extreme problem), please rank the following summer conditions at this lake:

1. Algae blooms (pea green water)
   1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

2. Floating scums
   1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

3. Fish kills (more than 200 fish at one time)
   1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

4. Odors
   1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

5. Duckweed
   1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

6. Muddy (brown) water
   1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

7. Taste and Odors Problems (If used as water supply)
1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

8. THM (Trihalomethane) Problems (If used as a water supply)
1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

2. Lake Uses.

Please indicate all of the types of uses supported by the lake.

| | |
|---|---|
| _____ Public water supply (primary) | _____ Industrial water supply |
| _____ Public water supply (back-up) | _____ Flood Control |
| _____ Agricultural water supply | _____ Fishing (from shore) |
| _____ Stormwater management | _____ Fishing (from boats) |
| _____ Boating-nonmotorized | _____ Boating-motorized |
| _____ Water skiing | _____ Swimming |
| _____ Camping/Picnicking | _____ Others (Name) _____ |
| _____ Conservation | |

3. Inlake Treatments.

Please indicate the types of lake management techniques that have been used at the lake over the past two years.

| | |
|---|---|
| _____ Weed (Macrophyte) Harvesting | _____ Sediment covers |
| _____ Nutrient inactivation (Alum) | _____ Fish removal |
| _____ Copper Sulfate treatment | _____ Dilution/flushing |
| _____ Circulation/aeration | _____ Lake level drawdown |
| _____ Hypolimnetic aeration | _____ Dredging |
| _____ Grass Carp (White Amur) | _____ Others |

_____ Herbicides/algacides other than Copper Sulfate, name
_____, _____, _____

4. Mics. Information.

a. Would local funds (either in dollars or manhours) be available in the next two years to match a potential $50,000 federal EPA Clean Lake Program lake grant to conduct a detailed study of lake and watershed conditions?
Not sure _____, No _____, Yes _____

b. In the space below, please indicate your general impressions of the overall health or condition of this lake, and what steps you feel are necessary to protect and/or restore lake uses.

5. Causes of Lake Problems.

On a scale of 1 to 4 (1=very high magnitude, 2=moderate, 3=slight, 4=no problem), please rank the importance of the following causes of potential problems in this lake.

| Code | Cause | Rank | | | |
|---|---|---|---|---|---|
| 01 | Unknown Toxicity | 1 | 2 | 3 | 4 |
| 02 | Pesticides | 1 | 2 | 3 | 4 |
| 03 | Priority Organics (i.e., PCB,s) | 1 | 2 | 3 | 4 |
| 04 | Nonpriority Organics | 1 | 2 | 3 | 4 |
| 05 | Metals | 1 | 2 | 3 | 4 |
| 06 | Ammonia | 1 | 2 | 3 | 4 |
| 07 | Chlorine | 1 | 2 | 3 | 4 |
| 08 | Other Inorganics | 1 | 2 | 3 | 4 |
| 09 | Nutrients (TP, Nitrogen) | 1 | 2 | 3 | 4 |
| 10 | pH | 1 | 2 | 3 | 4 |
| 11 | Siltation/sedimentation | 1 | 2 | 3 | 4 |
| 12 | Organic Enrichment/low D.O. | 1 | 2 | 3 | 4 |
| 13 | Salinity | 1 | 2 | 3 | 4 |
| 14 | Thermal Modifications | 1 | 2 | 3 | 4 |
| 15 | Flow Alterations | 1 | 2 | 3 | 4 |
| 16 | Habitat Alterations | 1 | 2 | 3 | 4 |
| 17 | Pathogens (fecal bacteria) | 1 | 2 | 3 | 4 |
| 18 | Radiation | 1 | 2 | 3 | 4 |
| 19 | Oil and Grease | 1 | 2 | 3 | 4 |
| 20 | Taste and Odor (if water supply) | 1 | 2 | 3 | 4 |
| 21 | Nitrite | 1 | 2 | 3 | 4 |
| 22 | Unknown | 1 | 2 | 3 | 4 |

6. Sources of Lake Pollution.

On a scale of 1 to 4 (1= very high magnitude, 2= moderate, 3 = slight, 4= no problem), please rank the importance of the following sources of pollution loading to this lake.

| Code | | Source | Rank | | | |
|---|---|---|---|---|---|---|
| 00 | | Point Sources: | | | | |
| | 01 | Industrial | 1 | 2 | 3 | 4 |
| | 02 | Municipal | 1 | 2 | 3 | 4 |
| | 03 | Municipal Pre-treatment | 1 | 2 | 3 | 4 |
| | 04 | Combined Sewer Overflows | 1 | 2 | 3 | 4 |
| | 05 | Storm Sewers | 1 | 2 | 3 | 4 |
| 10 | | Agriculture: | | | | |
| | 11 | Non-irrigated Crop Production | 1 | 2 | 3 | 4 |
| | 12 | Irrigated Crop Production | 1 | 2 | 3 | 4 |
| | 13 | Truck Farming, Orchards | 1 | 2 | 3 | 4 |
| | 14 | Pasture Lands | 1 | 2 | 3 | 4 |
| | 15 | Range Land | 1 | 2 | 3 | 4 |
| | 16 | Feedlots | 1 | 2 | 3 | 4 |
| | 17 | Aquaculture | 1 | 2 | 3 | 4 |
| | 18 | Animal Holding Areas | 1 | 2 | 3 | 4 |
| 20 | | Silviculture: | | | | |
| | 21 | Tree Harvesting | 1 | 2 | 3 | 4 |
| | 22 | Forest Management | 1 | 2 | 3 | 4 |
| | 23 | Road Construction | 1 | 2 | 3 | 4 |
| 30 | | Construction: | | | | |
| | 31 | Highway Construction | 1 | 2 | 3 | 4 |
| | 32 | Land Development | 1 | 2 | 3 | 4 |
| 40 | | Urban Runoff: | | | | |
| | 41 | Storm Sewers | 1 | 2 | 3 | 4 |
| | 42 | Combined Sewer Overflows | 1 | 2 | 3 | 4 |
| | 43 | Surface Runoff (paved areas) | 1 | 2 | 3 | 4 |
| 50 | | Mining: | | | | |
| | 51 | Surface Mining | 1 | 2 | 3 | 4 |
| | 52 | Subsurface Mining | 1 | 2 | 3 | 4 |
| | 53 | Placer Mining | 1 | 2 | 3 | 4 |
| | 54 | Dredge Mining | 1 | 2 | 3 | 4 |
| | 55 | Petroleum Activities | 1 | 2 | 3 | 4 |
| | 56 | Mill Tailings | 1 | 2 | 3 | 4 |
| | 57 | Mine Tailings | 1 | 2 | 3 | 4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 60 | | Land Disposal: | | | | |
| | 61 | Sludge ---------- | 1 | 2 | 3 | 4 |
| | 62 | Wastewater ---------- | 1 | 2 | 3 | 4 |
| | 63 | Landfills ---------- | 1 | 2 | 3 | 4 |
| | 64 | Industrial ---------- | 1 | 2 | 3 | 4 |
| | 65 | Septic Tanks ---------- | 1 | 2 | 3 | 4 |
| | 66 | Hazardous Waste ---------- | 1 | 2 | 3 | 4 |
| 70 | | Habitat Degradation: | | | | |
| | 71 | Stream Channelization ---------- | 1 | 2 | 3 | 4 |
| | 72 | In-lake Dredging ---------- | 1 | 2 | 3 | 4 |
| | 73 | Dam Construction ---------- | 1 | 2 | 3 | 4 |
| | 74 | Flow Regulation (drawdown) ---------- | 1 | 2 | 3 | 4 |
| | 75 | Bridge Construction ---------- | 1 | 2 | 3 | 4 |
| | 76 | Riparian (shoreline) removal ---------- | 1 | 2 | 3 | 4 |
| | 77 | Streambank Modification ---------- | 1 | 2 | 3 | 4 |
| 80 | | Other: | | | | |
| | 81 | Atmospheric Deposition ---------- | 1 | 2 | 3 | 4 |
| | 84 | Spills ---------- | 1 | 2 | 3 | 4 |
| | 85 | In-place Contaminants (sediment) ---------- | 1 | 2 | 3 | 4 |
| | 86 | Natural Aging ---------- | 1 | 2 | 3 | 4 |
| 90 | | Source Unknown : ---------- | 1 | 2 | 3 | 4 |

---

Respondent Identification:

Name _____

Title _____

Address _____

City _____ Zip _____

Telephone ( ) -

**THANK YOU FOR YOUR ASSISTANCE !**

Appendix H. Summary of classified uses for Ohio lakes, ponds, and reservoirs.

| Classified Use | Size Classified for Use<br>Lakes<br>(acres) |
|---|---|
| | *Aquatic Life Uses* |
| EWH | 200,000[1] |
| | *Water Supply* |
| PWS | 117,361[2] |
| | *Recreation* |
| PC | 200,000[3] |
| | *State Resource Waters* |
| SRW | 117,361 |
| ORW | 72[4] |

Abbreviations:**EWH** - Exceptional Warmwater Habitat; **PWS** - Public Water Supply; **PC** - Primary Contact; **SRW** - State Resource Waters; **ORW** - Outstanding Resource Waters.

[1]Estimated from ODNR (1982).

[2]All publicly owned lakes and reservoirs except Piedmont Reservoir.

[3]Lakes and Reservoirs and not specifically given a primary contact recreation use in OAC, but this use is assumed.

[4]Lake Katherine and Stages Pond are designated Outstanding Resource Waters in OAC Chapter 3745-1.

Appendix I. Summary of aquatic life use and CWA goal support in Ohio's publicly owned lakes, ponds, and reservoirs of greater than 5 acres in surface area. Data from 417 lakes (117,323 acres).

| | CWA Goals | | Use Support Category: | |
|---|---|---|---|---|
| | Fishable | Swimable | PWS | EWH |
| *Lakes/Reservoirs Assessed:* | | | | |
| Number | 14 | 178 | 100 | 101 |
| Acres | 26,015 | 102,731 | 84,773 | 91,607 |
| *Use Support Unknown - Insufficient Data:* | | | | |
| Number | 403 | 239 | 317 | 316 |
| Acres | 91,346 | 14,630 | 32,588 | 25,754 |
| *Fully Supports Use:* | | | | |
| Number | 5 | 10 | 4 | 15 |
| Acres | 15,601 | 3,993 | 1,339 | 4,803 |
| *Threatened:* | | | | |
| Number | 5 | 40 | 26 | 34 |
| Acres | 9,278 | 16,960 | 21,652 | 29,798 |
| *Partially Supports Use:* | | | | |
| Number | 2 | 117 | 63 | 48 |
| Acres | 865 | 75,722 | 60,962 | 56,564 |
| *Does Not Support Use:* | | | | |
| Number | 2 | 11 | 7 | 4 |
| Acres | 271 | 6,056 | 820 | 443 |

Appendix J. Relative assessment of causes of impacts (i.e., acres1) causing non-support of all beneficial uses in Ohio lakes, reservoirs, and ponds.

| Causes | High Magnitude | Moderate Magnitude | Slight Magnitude |
|---|---|---|---|
| Habitat modification | – | – | – |
| Ammonia | – | – | – |
| Siltation | 626 | 10,132 | – |
| Organic enrich./DO | 1,389 | 7,154 | – |
| Metals | 127 | 4,252 | – |
| Pesticides | 604 | 868 | 3,590 |
| Unknown toxicity | – | – | 3,590 |
| Priority organics | – | – | 3,590 |
| Nonpriority organics | – | – | – |
| Chlorine | – | – | – |
| Other inorganics | – | – | – |
| Nutrients | 1,389 | 9,971 | – |
| pH | 83 | – | – |
| Flow Alteration | – | 3,590 | – |
| Pathogens | – | 626 | – |
| Radiation | – | – | – |
| Oil and grease | – | 3,590 | – |

Total Acres Monitored for Toxics[2]: **95,897** Total Acres Impaired by Toxics: **8,868**

[1] Acres counted add to more than total acres because more than one cause can be high, moderate, or minor in any given lake.

[2] Toxics include ammonia, metals, priority organics, non-priority organics, chlorine, and pesticides

Appendix K. Relative assessment of sources of impacts (i.e., acres1) causing non-support of aquatic life uses in Ohio lakes, reservoirs, and ponds .

| Sources | Acres - All Impacts Major | Moderate | Minor |
|---|---|---|---|
| **I. Point Sources** | — | **9,020** | — |
| Industrial Sources | — | 5,152 | — |
| Municipal Sources | — | 5,998 | — |
| Combined Sewer Overflows | — | 3,000 | — |
| Stormwater Sewers | — | 5,130 | — |
| **II. Nonpoint Sources (Agric.)** | **1,389** | **9,803** | **—** |
| *General Agriculture* | *1,389* | *8,395* | — |
| *Livestock/feedlots* | *604* | *1,651* | — |
| *Crop Production* | — | *3,785* | — |
| *Pasture* | — | *2,110* | — |
| *Feedlots* | *1,389* | *1,325* | — |
| *Animal Holding Areas* | *604* | — | — |
| **III. Other Nonpoint** | **3,717** | **7,826** | |
| Silviculture | — | 434 | — |
| Construction | — | 127 | — |
| Urban Runoff | — | 7,978 | — |
| Mining | 254 | 63 | — |
| Landfills | 3,590 | 83 | — |
| Septic Tanks | — | 6,624 | — |
| Hazardous Waste | 3,590 | — | — |
| Oil/Gas Well Sites | — | 1,540 | — |
| **IV. Habitat Modifications** | — | **5,241** | **604** |
| Hydro/habitat mod. | — | 5,240 | 604 |
| **V. Other** | — | **4,480** | |
| Spills | — | 3590 | — |
| In-place Pollutants | — | 4480 | — |

[1]Acres counted add to more than total acres because more than one cause can be high, moderate, or minor in a lake.