WATER QUALITY IN THE IOWA GREAT LAKES

a report to the IOWA GREAT LAKES WATER QUALITY CONTROL PLAN

May, 1974

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I. SUMMARY AND CONCLUSIONS

A. Present Limnological Conditions in the Iowa Great Lakes

All the Iowa Great Lakes are eutrophic or biologically productive, but there are differences in the degree of eutrophication among lakes. In Table a, we have summarized several of the measurements made on the respective lakes. The concentrations of phosphorus and nitrogen compounds are indicative of the potential growth of plant materials in these lakes while the COD and chlorophyll a measurements indicate the amounts of growth achieved. Because planktonic algae play the major role in determining the water transparency in these lakes, the Secchi disc transparency is greatest in Lake West Okoboji which is the least eutrophic lake. Transparency is poorest in Lower Gar Lake, the most eutrophic lake. Using the data in Table a, we can rank the lakes in the order of decreasing water quality. This order is: Lake West Okoboji, Big Spirit Lake, Lake East Okoboji (including Upper Gar Lake and Lake Minnewashta), and Lower Gar Lake.

Each of these lakes has summer algal problems ranging from mild to serious nuisance conditions. The algal problems are most serious in Lower Gar Lake and Lake East Okoboji. The problem is least serious in Lake West Okoboji and is usually local because of downwind concentration of blue-green algal cells. Because of the low algal densities, Lake West Okoboji probably has the clearest water of any major natural

Table a. Summary comparison of Lake West Okoboji, Big Spirit Lake, Lake East Okoboji (including Upper Gar Lake and Lake Minnewashta), and Lower Gar Lake, including ratios of watershed areas to lake volumes and mean summer (1971, 1972, and 1973) values for total phosphorus, nitrate nitrogen, ammonia nitrogen, COD, chlorophyll a and Secchi disc transparency.

Ratio of watershed area to lake volume	Lake West Okoboji	Big Spirit Lake	Lake East Okoboji	Lower Gar Lake
m^2/m^3	0.32	0.57	2.25	39.6
Total P mg/l	0.033	0.041	0.165	0.222
NO_3-N mg/l	0.009	0.017	0.085	0.145
NH_3-N mg/l	0.110	0.239	0.468	0.644
COD mg/l	20.5	24.9	46.5	56.5
Chlorophyll a mg/m^3	4.28	27.5	122.2	226.8
Secchi disc transparency m	3.2	1.7	0.9	0.4

lake in Iowa.

B. Recent Changes in the Lakes

The most dramatic change noted in any of the Iowa Great Lakes is the drastic decrease in the quantity and number of species of aquatic macrophytes in Lake East Okoboji, Lake Minnewashta, and the Gar Lakes and their apparent replacement by blooms of blue-green algae. We can be certain of this change because macrophytes were a conspicuous feature of these lakes at the beginning of this century, and early investigators noted and made records of the composition and density of these plants. For other biological or chemical parameters, the past record is scattered or nonexistent.

A second change is the decline in density and species numbers of the once rich molluscan fauna of Lake West Okoboji. Recent investigations indicate that from 25 to 40 fewer species are currently present in this lake than at the beginning of this century.

Hypolimnetic oxygen deficits in Lake West Okoboji were 50% greater in the period 1950-1973 than they were in 1919-1928. This indicates that the lake has become slightly more eutrophic in the past 50 years.

Cultural eutrophication has had an alarming effect on the trophic conditions of many water bodies in recent years. Lake Washington and Lake Erie are examples of lakes that have changed from an oligotrophic to a eutrophic state in a matter of decades, a process that occurs naturally over thousands of years. Results of this investigation indicate eutrophication has not been accelerated to as great an extent in the Iowa Great Lakes.

Although the Iowa Great Lakes are presently eutrophic, we have reason to believe they have been eutrophic for several thousand years. There are no physical or floristic changes in the sediments of Lake West Okoboji indicative of severe changes in the sedimentation rate or trophic level of the lake, even in recent deposits, which would reflect changes due to the activities of man (Stoermer, 1963; Collins, 1968; Dodd, 1971). The diatom flora of the sediment of Lake West Okoboji is characterized by taxa normally associated with eutrophic waters, indicating a long-term eutrophic condition in this lake. Because Lake West Okoboji is the deepest lake, it likely was the last lake within the watershed to undergo a trophic advance; thus, it is reasonable that the other watershed lakes were eutrophic before Lake West Okoboji.

During the past century, human action within this watershed has been responsible for the following: drainage and tiling of surrounding wetlands and potholes; row cropping of former grasslands; concentration of livestock feeding; grazing of cattle--in some instances to the water's edge; urban development in the towns of Spirit Lake, Arnolds Park, and Okoboji; development of lakeside homes; dredging of some canals for development; riprap and shoreline filling; construction of water-control structures on outlets of Loon Lake, Spirit Lake, and Lower Gar Lake; use of copper sulfate in Lake East Okoboji; and an introduction of treated and untreated human waste into the lakes, followed by a program of collection and export of these wastes.

All these activities were taking place concurrently within the watershed without documentation, making it impossible to say which, if any, of these activities brought about the changes noted in the lakes. In other lakes, each of these types of changes has been shown to have a deleterious limnological effect. In all probability, these changes had some effect on the Iowa Great Lakes. Some expectedly had very minor effects, and other activities had greater importance.

There is some indication that human sewage contributed to changes in the lakes. Shimek (1935), and Bovbjerg and Ulmer (1960) referred to pollution as the cause of the snail decline in Lake West Okoboji. Many eutrophication problems in lakes have been attributed to effects of human sewage such as in Lake Washington, Lake Mendota, Lake Erie, and Lake Zurich. Although not well documented in this case, various persons calling for the establishment of the Iowa Great Lakes Sanitary Sewer District cited problems related to human waste as reason for building the present sewer system. Reductions in species numbers, as took place in the snail population of Lake West Okoboji, is a typical response to various kinds of pollutants.

Sewage wastes also may have played some role in the loss of higher aquatic plants from Lake East Okoboji. For many years, treated sewage from the town of Spirit Lake emptied into the upper end of Lake East Okoboji, where it flowed down to Upper Gar Lake, Lake Minnewashta, and Lower Gar Lake. On the other hand, there is reason to believe that the construction of the water-control structure on the outlet of Lower Gar Lake also could have played a role in this loss. One of the purposes for constructing that structure was to facilitate the passage of steamboats up Lake East Okoboji because they were sometimes hindered in their passage by dense growths of aquatic macrophytes. It was noted that the decrease in higher aquatic plants coincided with the establishment of this structure (Crum and Bachmann, 1973).

The question now arises that, if some of these watershed alterations have had undesirable effects, what can be done to reverse this condition? Little can be done to stop the process of urbanization within the municipal areas of the watershed, although zoning laws could limit the urban density around the lakeshores. Likewise, little could be done to change agricultural practices such as row cropping and animal husbandry within the watershed. Some benefit may be derived from banning further drainage of wetlands and pothole areas around the lakes inasmuch as they have been shown to act as a nutrient sink for the entrapment of nitrogen. The water-control structure could be removed so that the lakes could fluctuate naturally. This might reduce the blue-green algal problem in the shallow Lake East Okoboji chain of lakes, but likely, these lakes would revert to a marsh condition, impairing boating and other recreational uses. The dam provides an advantage in the conservation of water during periodic drought conditions such as existed in the 1930s and 1950s.

C. Nutrient Inputs from Tributaries and Their Limnological Effects

Although we could not give definite reasons for changes within the lakes in the past, we have throughout this study looked for factors that influence water quality at present. This has led us to look at plant nutrients entering the lakes because of the strong relationship found in other lakes between nutrients and algal growth. This relationship is important because algal-bloom conditions seem the single most important water-quality problem in the Iowa Great Lakes.

The nutrient concentrations of tributary streams in the Iowa Great Lakes region are similar to the nutrient concentrations found in streams draining other Iowa agricultural areas (see Iowa Water Pollution Control Commission, 1967; Kilkus, 1972). Therefore, these nutrient concentrations in runoff are typical values in this rich agricultural state and are not unique to this watershed. They are of greater concern in the Iowa Great Lakes area because these streams drain into an extensive lake system rather than flowing directly to the Mississippi or Missouri rivers.

Phosphorus seems the nutrient element controlling algal growth in the Iowa Great Lakes. The size of the algal populations in the various lakes was found directly related to phosphorus input per unit volume of water. In individual lakes, the size of the summer bloom was related to the annual input of phosphorus. Years with high phosphorus inputs from the tributaries were years with high summer standing crops of algae. The response of the lakes to yearly phosphorus inputs indicated that the recycling of phosphorus was relatively unimportant in determining the magnitude of summer algal blooms. This suggests that the lakes would respond rapidly with smaller algal densities to reductions in the annual input of phosphorus.

We found that the summer phosphorus concentrations in the respective lakes were directly proportional to the annual inputs from the tributaries and rainfall and inversely proportional to the lake volumes. Those lakes with the smallest ratios of watershed area to lake volume had the lowest concentrations of phosphorus (Table a). The relatively good condition of Lake West Okoboji can be attributed in part to its relatively large volume and small drainage area.

D. Influence of Land-Use Practices

Because nutrient inputs play such an important role in the water quality of the Iowa Great Lakes, we focused particular attention upon land-use practices that may control the quality of inflowing waters. We first determined nutrient budgets for the respective lakes. If all the lakes are grouped together for the entire period of study, we find that an estimated 17% of the phosphorus came in by rainfall, and possibly an additional 3% was contributed from urban areas. The remaining 80% of the phosphorus came from the inflowing streams that drain the watersheds surrounding the lakes. Because more than 90% of the terrestrial watershed area is used in some form of agricultural practice, our analysis was primarily focused on these uses. In looking at phosphorus variations in the tributary streams, we could find no variations with the percentage of the watersheds in pasture, row crops, or marshlands. Indeed, the only significant correlation we could find was that with the number of animal units confined in feedlots having surface drainage to a stream or tile drain. This is not surprising because other investigators have found feedlot runoff to be very high in phosphorus (Edwards et al., 1972). Furthermore, the phosphorus runoff per animal unit was highest in years with greatest annual surface runoff to the lakes.

Although livestock were the only factor that we could definitely correlate with the phosphorus inputs, this does not mean that they were the sole source of phosphorus in the agricultural watersheds. The phosphorus attributable to feedlot livestock units made up only 19% of the estimated phosphorus inflows from agricultural watersheds (not including rainfall). This is a reflection of the relatively high background phosphorus levels which we could not attribute to a specific source within these watersheds. There may be other specific sources that we could not identify or did not adequately measure. It also is possible that these phosphorus levels may be typical of the runoff from the kinds of soils and topography found in the Iowa Great Lakes region.

In a nutrient-reduction program, the only specific source we can point to for phosphorus control is runoff from livestock feedlots. If all phosphorus from feedlot runoff could be eliminated, the overall effect would be to reduce phosphorus inputs from all sources to the Iowa Great Lakes as a whole by about 15%. Looking at the individual lakes, it would reduce the input by 13% in Lake West Okoboji, 19% in Lake East Okoboji, 10% in Spirit Lake, and 5% in Lower Gar Lake.

A major nutrient-reduction program already has been carried out in this watershed. We found that the sanitary sewer system now in operation annually diverts more phosphorus from the watershed than comes in from all other sources combined. This system is of major benefit in preserving the quality of the lakes. Without it, conditions would undoubtedly be much worse.

E. Recommendations for the Protection of the Water Quality of the Iowa Great Lakes

1. Maintenance of Present Water Quality

Given the strong relationship between algal blooms in the respective lakes and the annual inputs of phosphorus, every effort should be made to prevent increases in the amounts of phosphorus flowing into the lakes. No new additions from urban or agricultural sources should be introduced to the lakes.

2. Improvement of Water Quality

Improvements in the algal problems can be expected if the present levels of phosphorus inputs can be reduced. Three specific areas can be mentioned. First, would be the elimination of all human and industrial wastes entering the lakes. This would entail the completion of the sanitary sewer system around Lake East Okoboji and Big Spirit Lake, as well as the elimination of any septic tank connections to field tile drainage systems in the surrounding watersheds. Second, a program to prevent feedlot runoff from entering surface streams or tile drains should be initiated. Third, the use of storm drains for the disposal of high nutrient wastes by residential, commercial, or industrial users should be discontinued.

Although siltation was not considered a problem for the lakes as a whole, there were soil-erosion problems associated with a few of the streams. The present soil conservation program should be continued, with particular attention given to streams delivering high loads of silt to the lakes.

3. Continued Monitoring

We were hampered in our study by a lack of long-term limnological data collected and reported in a standard manner. It would be highly desirable to maintain a continuing monitoring program on the lakes to evaluate any control measures undertaken or to point out problems before they become serious. A minimum program might include summer measurements of plant nutrients, algal quantity and composition, deepwater oxygen concentrations, and periodic surveys of specific plant and animal groups.

II. INTRODUCTION

The Iowa Great Lakes (Big Spirit Lake, Lake West Okoboji, Lake East Okoboji, Upper Gar Lake, Lower Gar Lake, and Lake Minnewashta) are located in Dickinson County, Iowa (Figure 1). Together they compose a unique aquatic resource in a prairie state with few natural lakes within its boundaries. Of the natural lakes in Iowa, Lake West Okoboji is the deepest, although Big Spirit Lake has the largest surface area. Together these lakes and wetlands in Dickinson County, make up the only true lake district within the state. They are an important recreational asset, not only to Iowans, but also to individuals in surrounding states who own recreational property on their shores. In addition, the waters of this lake system serve as a public water supply for many of the local residents.

This study was carried out with the support of a group of local citizens interested in maintaining the quality of the lakes for future generations. This group was aware of the problems of pollution and cultural eutrophication afflicting lakes throughout the world and wanted a scientific basis for determining if there were similar problems in the Iowa Great Lakes. If such problems existed, recommendations were sought on ways and means to solve them.

The specific objectives of this study were:

1. To determine the present limnological condition of the Iowa Great Lakes.

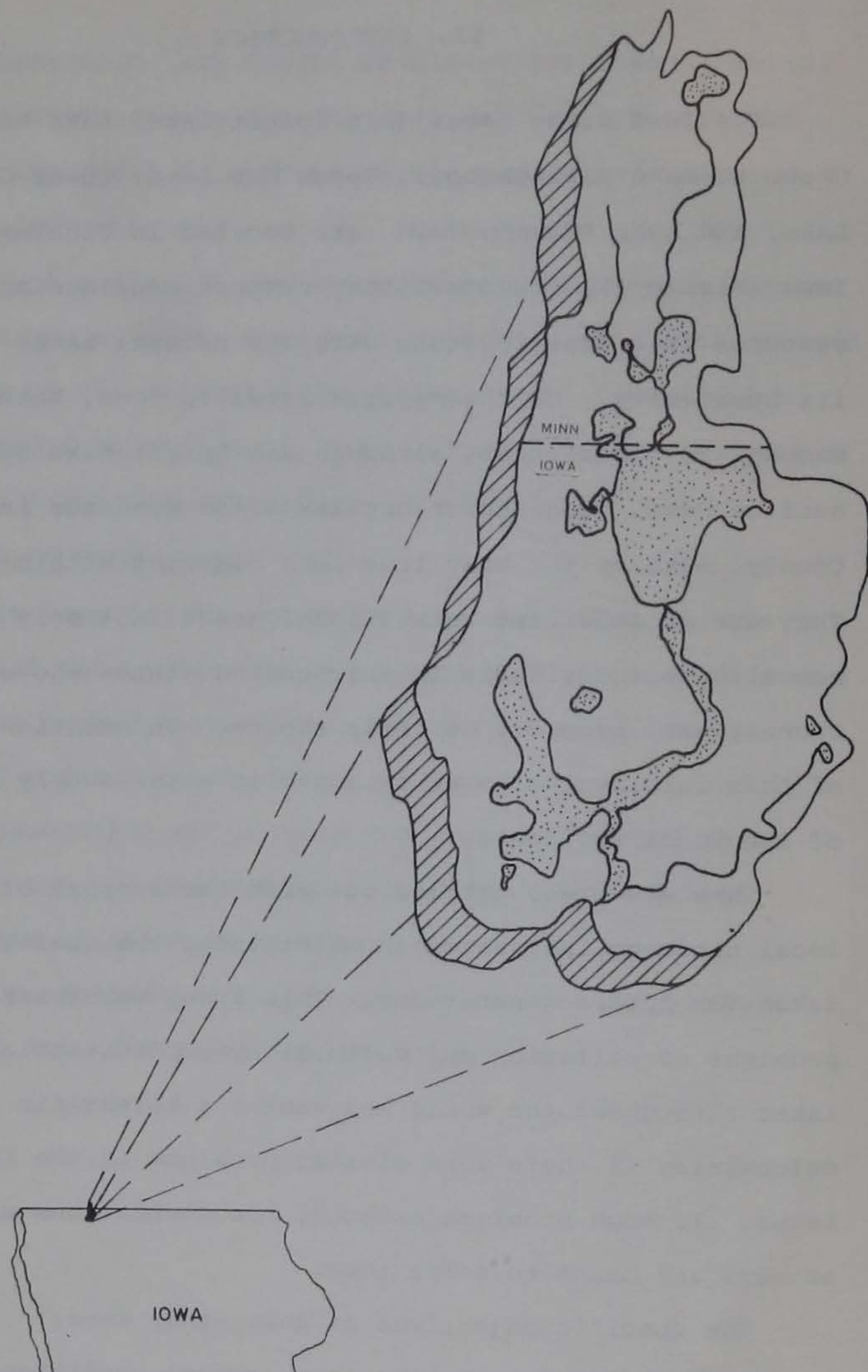


Figure 1. The Iowa Great Lakes watershed, located in Jackson County, Minnesota, and Dickinson County, Iowa.

2. To determine if the lakes have changed in recent years.
3. To determine the amounts of plant nutrients entering the lakes and how those nutrients influence the limnological features of the lakes.
4. To determine how various land-use practices influence the amounts of plant nutrients entering the lakes.
5. To recommend ways to protect and improve the quality of the lakes in the future.

To meet these objectives, a data-collection program on the lakes and their tributaries was initiated on March 1, 1971, and carried out continuously through August 31, 1973. Primary emphasis was placed upon nutrient inputs and algal blooms because this seemed the greatest potential source of problems in these lakes.

Concurrent with this study, a watershed-management plan for the basin was developed by Eugene Hickok, Inc., consulting engineers, under a grant from the U. S. Environmnetal Protection Agency to the Dickinson County Board of Supervisors. We cooperated with Mr. Hickok and provided him with our data and preliminary conclusions up until his deadline in the spring of 1973.

III. METHODS AND MATERIALS

A. Sampling Methods

Lake sampling stations (Figures 2 and 3) included 6 sampling stations on Lake West Okoboji (49, 49.1, 49.2, 49.3, 49.4, and 50), 5 stations on Lake East Okoboji (55, 55.1, 56, 56.1, and 57), 5 stations on Big Spirit Lake (54, 54.1, 54.2, 54.3, and 54.4), 2 sampling stations on Little Spirit Lake (1.2 and 1.3), and 1 sampling station on the following lakes: Upper Gar (51), Minnewashta (52), Lower Gar (53), Loon (4.3), and Pearl (4.5). Major lake stations were sampled approximately every 2 weeks during the summer and at least monthly during the rest of the year. Sample collection was completed between 0730 and 1130 hours, except under special circumstances, such as ice-melt and excessive bloom conditions. Lake samples were collected by boat during ice-free periods, and by snowmobile, truck or by foot for collections through the ice. Lake station locations were determined by sighting on convergent lines from two or more landmarks on shore.

Water samples were collected by using a 3-liter, opaque plastic Van Dorn sampling bottle. Through the ice, a 20-cm diameter hole was cut at each station with a gas-powered ice auger to facilitate sample collection. One sample was taken 10 to 20 cm below the water surface, and another just above the bottom substrate. From each sample, one 300-ml glass

Figure 2. Lake and stream sampling stations on and around Lakes West Okoboji, East Okoboji, Upper Gar, Minnewashta, and Lower Gar.

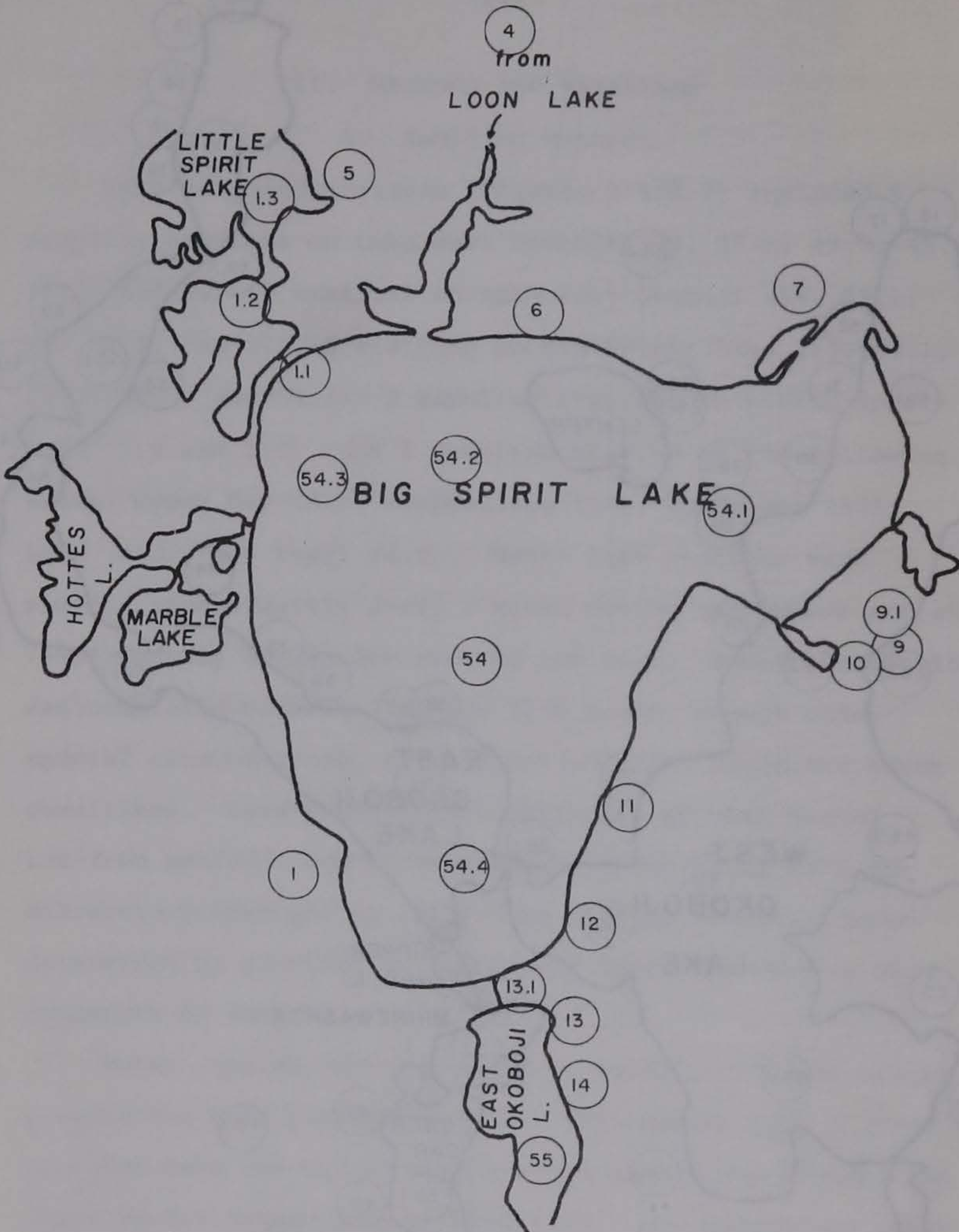


Figure 3. Lake and stream sampling stations on and around Big Spirit Lake.

BOD Bottle was filled for chemical analyses, and a second BOD bottle was fixed for dissolved oxygen determination. Samples for chlorophyll a measurements and qualitative algal analyses were taken by immersing a one-gallon plastic jug 10 to 20 cm under the water surface. At Station 49, the deepest area of Lake West Okoboji, a vertical series of samples was collected at 5 m intervals to the depth of 35 to 40 m. Seasonally, an additional liter of water was collected in a polyethelene bottle from each lake sampling location for hardness, alkalinity, and chloride analyses. All lake samples were immediately transported to Iowa Lakeside Laboratory for complete analysis within 8 hours of collection.

Stream sampling stations were located on streams in the watershed that flowed into or from the lakes (Figures 2 and 3). Along several of the larger streams, stations were located at more than one point to describe water quality within the subwatersheds. A detailed map of stream watersheds, sampling points, and major tile lines is given in Appendix E. Stream samples were collected on an approximate weekly sampling schedule throughout the study. Field collection took between 2 and 3 hours, depending upon climatic conditions, and was completed between 0800 and 1130 hours. During special situations, such as spring thaw and after heavy rains, samples were collected in the afternoon. Collections were made at stations close to the point where the stream enters the lake (except at stations deliberately located higher in the watershed). Notes giving the location of sampling points are included in Appendix E. All stations were accessible by automobile, with some walking required to get to the established sampling site.

Stream samples for chemical analyses were collected by immersing BOD bottles below the water surface. During ice conditions, water samples were collected by chopping a hole in the ice with a steel bar. At the time of sample collection, an estimate of stream flow was made. This estimate consisted of locating a stretch of the stream with generally parallel banks and uniform flow. A width was measured across the flow. The average depth was found by measuring four depths across the flow at the point where the width measurement was taken. A fixed length was marked off (0.5, 1.0, or 2.0 m) encompassing the point where the width and depth readings were taken. A small float (wood chip, twig, blade of grass, etc.) was placed on the water and timed across the fixed length with a stop-watch to the nearest 0.1 second. Volume of flow was then calculated by the formula:

$$\text{Volume of Flow } (m^3/sec) = \frac{\text{Depth (m)} \times \text{Width (m)} \times \text{Length (m)}}{\text{Time (seconds)}}$$

At three stations (Loon Lake outlet, Orleans Spillway, and Stream Gage outlet on Milford Creek) volume of flow was measured by continuous recording stream gages operated by the U. S. Geological Survey (Iowa City, Iowa). At these stations, flow was not estimated, but later determined from USGS records.

Storm sewers in Arnolds Park, Okoboji, and Spirit Lake, Iowa, were sampled occasionally to obtain estimates of nutrient inputs from these sources. One storm sewer (Station 13.3) draining along 15th Street in Spirit Lake, Iowa, was sampled regularly from June 1972 to August 1973. Other storm sewers were not identified by a station, but the location was recorded at the time of sample collection. Sampling occurred during the time of runoff from spring snowmelt and during various rainstorms.

Rainfall was sampled frequently to estimate nutrient concentrations. At Iowa Lakeside Laboratory, rainwater was collected on the roof of the Limnology Laboratory. The collector was constructed of a 2-m^2 sheet of vinyl stretched loosely across a wooden frame. At the lowest sag point of the vinyl, a small diameter plastic hose was inserted, draining rainwater from the collector to a 5-gallon carboy. Usually, a complete rainfall could be collected in the carboy. Samples were removed after each rainfall for analysis.

B. Physical Measurements

Stream temperatures were taken with each sample by using a mercury laboratory thermometer (range: -20 C to 110 C). At lake stations, surface and bottom temperatures were taken with a Whitney Underwater Resistance Thermometer (Montedoro Corporation, San Luis Obisbo, Calif.). Turbidity (in Jackson Turbidity Units, JTU) was measured on both stream and lake samples by using a Hach DR A Colorimeter. At lake stations, water clarity was determined with a 20-cm Secchi disc painted alternately black and white.

Light penetration measurements were taken on Lake West Okoboji at Station 49. On perfectly clear days, light readings were made with a Whitney Underwater Photometer. Readings were expressed as percentage of surface light at 1 m intervals until extinction. Series of readings were taken by using Schott light filters (BG 12, VG 9, and RG 1), corresponding, respectively, to the blue, green, and red regions.

C. Chemical Measurements

The following colorimetric tests were made on all unfiltered lake, stream, rain, and storm sewer samples by using a Hach DR A Colorimeter according to the procedures described by Hach (1967). Ammonia nitrogen concentration (mg/l) was determined by the direct Nesselerization method. Nitrate nitrogen concentration (mg/l) was determined by the cadmium-reduction method. Orthophosphate concentration (mg/l) was determined by the stannous chloride method. On lake samples, additional analyses were conducted to determine silica and total iron concentrations by using the Hach

Colorimeter. Silica (mg/l) was determined by the silico-molybdate method. Total iron (mg/l) was determined by using the phenanthroline method before September 7, 1972; after this date, the more sensitive 2, 4, 6-Tripyridyltriazine method was used. Nitrite nitrogen (mg/l) was determined by the diazotization method, but values were seldom found above 0.10 in streams and 0.01 in lakes, and the test was discontinued in August 1971. All nitrate nitrogen values reported in this study, therefore, also include the small amount of nitrite nitrogen present.

Total phosphate (mg/l) was determined according to the procedures of Murphy and Riley (1962) with a persulfate oxidation described by Menzel and Corwin (1965). Total phosphate samples were read on a Bausch and Lomb Spectronic 20 spectrophotometer at 882 nanometers.

The hydrogen-ion concentration of the lake samples was determined in the laboratory by using a Beckman Model N pH meter. The pH of stream samples was measured in the field by use of a Hach Continuous Color Disc (Thymol Blue range 7.8-10.0, or Phenol Red range 6.5-8.5). An Industrial Instruments Conductivity Bridge Model RC 16B1 was used to measure specific conductance on all water samples, recorded in micromhos/cm at 25 C. Chemical oxygen demand was measured on lake and storm sewer samples by the dichromate-oxidation method (A.P.H.A., 1965) by using a 1-hour reflux time and 0.025N potassium dichromate and 0.01N ferrous sulfate.

Dissolved oxygen samples were collected and processed following standard procedures (A.P.H.A., 1965). The sample was titrated with 0.025N Phenylarsine Oxide (1 ml PAO = 1 mg/l O_2). During winter collection, powder reagents were used for fixation (Hach, 1967).

Seasonally, lake samples were analyzed for total hardness, calcium hardness, alkalinity, and chloride according to methods described by Hach (1967). Total and calcium hardness (mg/l calcium carbonate) were determined by the CDTA method. Total alkalinity (mg/l calcium carbonate) was determined by using Brom Cresol Green-Methyl Red indicator and titrating with 0.02N sulfuric acid. The mercuric nitrate method was used to determine the chloride concentration (mg/l).

D. Biological Measurements

A measured subsample of water collected for chlorophyll a analysis was filtered through a Type A Gelman glass-fiber filter. The filter was frozen over desiccant and transported within 30 days to Iowa State University, Ames, Iowa, for extraction. The chlorophyll concentration was determined by placing the cell-bearing filter into a tissue-grinding tube with 2 ml of 90% acetone and 0.1 g of magnesium carbonate. The contents of the tube were ground mechanically for 1 minute by using a teflon pestle and tissue-grinding motor. The material in the grinding tube was washed into a 10-ml graduated centrifuge tube with enough 90% acetone to bring the final volume to 7-ml. The tube was centrifuged 5 minutes in an International Clinical Centrifuge Model CL. The supernatant was decanted into a 1-cm silica cuvette, and the optical density was read at wavelengths of 630, 645, 665, and 750 nanometers on a Beckman DU-2 spectrophotometer (Richards with Thompson, 1952; Yentsch and Menzel, 1963). Chlorophyll values were calculated from the equations of Parsons and Strickland (1963). Results were recorded as mg/m^3.

The remaining water sample collected for algal analysis was passed through a no. 25 plankton net to concentrate remaining algae. Several slide preparations of this concentrate were examined on a compound microscope, and the algal genera were recorded.

E. Land-Use Inventory

A land-use inventory was conducted on the entire Iowa Great Lakes watershed by Mr. William Higgins. Information was obtained through the cooperation of groups such as the area Extension Office, the Soil Conservation Service, and the Agricultural Stabilization and Conservation Service, as well as from individual landowners in both Iowa and Minnesota portions of the watershed. Much field work also was necessary to obtain this information. The watershed area, as well as the area of each individual lake watershed, was determined from USGS topographic maps (7.5-minute series). Separate subwatersheds surrounding each major lake were delineated, and for these, determinations were made of the number of hectares of row crops (corn, beans, oats, and set-aside), grasslands (pastured and unpastured grassland, as well as conserving-base areas), woodlands, marshland, permanent water (small lakes and ponds), and urban areas. The soil type and soil slope in each watershed also were identified from SCS and ASCS records. The livestock numbers in each watershed were determined from ASCS records, county tax records, and field inspection. Calculations were made to convert livestock values into the total numbers of animal units by using the definition of the Environmental Protection Agency where one animal unit is defined as the number of animals required to produce wastes with a biochemical oxygen demand equivalent to that of one beef steer. By this definition, one animal unit consists of: 1 beef animal, 0.7 dairy animal, 4.5 slaughter hogs, 35 feeder pigs, 12 sheep or lambs, 180 laying hens, 290 broiler chickens, 145 ducks or 55 turkeys or geese.

Two categories of subwatersheds are considered in the study. The first is a metered watershed, which has a specific boundary with an assigned station number where the surface or tile drainage has been monitored according to the sampling schedule. The second type is an unmetered watershed, which was not monitored during the study. An unmetered watershed may or may not have a surface stream, and may be made up of one or more unmetered subwatersheds.

The land-use inventory data for metered watersheds including the number of animal units, soil type, and soil slope is given in Appendix C. This same breakdown for the unmetered watersheds is given in Appendix D.

The exact location and watershed boundary for each metered and unmetered watershed is shown on the map in Appendix E.

IV. RESULTS

A. Physical Features

1. Watershed Characteristics

a. Geology. The Iowa Great Lakes region is located in three townships of north-central Dickinson County, Iowa, with approximately one-third of the watershed extending into parts of four townships of Jackson County, Minnesota (Figure 4). Six major lakes lie within the Iowa portion of the watershed, they are: Lake West Okoboji, Lake East Okoboji, Spirit Lake, Upper Gar Lake, Lake Minnewashta, and Lower Gar Lake. In Minnesota, Pearl, Loon, and Rush Lakes are the largest bodies of water that drain southerly into Spirit Lake in Iowa. Several other small lakes and numerous wetland marsh areas also

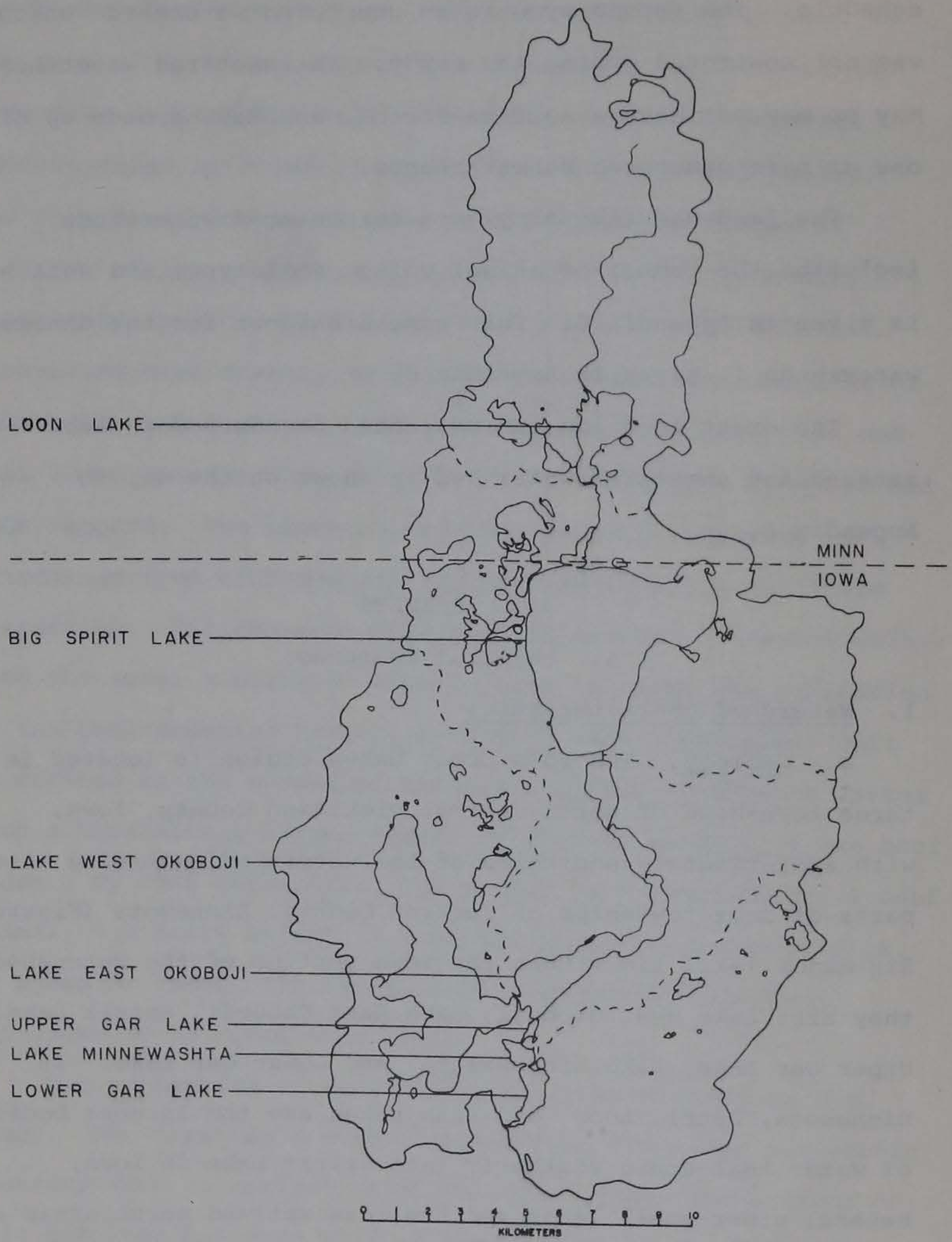


Figure 4. The Iowa Great Lakes watershed. Dashed lines indicate watershed boundaries.

are located within the watershed. The outflow for this system is an ungated spillway on Lower Gar Lake through which all the lakes eventually drain to the Missouri River via the Little Sioux River.

The lake system lies on the Cary glacial drift of the Des Moines lobe and is enclosed by morainal topography (Carman, 1917). The morainal features in this region are complex, and the origin of the lakes system is related to their development (Ruhe, 1952). A radiocarbon date of 12,700 ± 200 years before present has been reported by Dodd et al. (1968) from sediments at a depth of 11 meters in Little Miller's Bay, Lake West Okoboji. This date would indicate a late Cary or a postglacial age for the lake basin. Thomas (1913) and Tilton (1916a) have described possible modes of glacial activity that created the lakes.

The Iowa Great Lakes watershed can be divided into separate watersheds for each of the major lakes. A breakdown of the entire watershed and each of the individual lake watersheds into surface area in land and water is given in Table 1. A summary of the general land-use practices within the entire watershed is given in Figure 5. Most of the land area within the watershed is devoted to row crop agriculture or animal husbandry (as reflected in the grassland category), with nearly 20% of the watershed surface covered by ponds, lakes, or marshland. In Table 2, the land-use practices

Table 1. Total area, land area, and area of lakes ponds and marshes in the Iowa Great Lakes watershed and individual lake watersheds.

	Iowa Great Lakes Watershed	West Okoboji Lake Watershed	East Okoboji Lake Watershed	Spirit Lake Watershed	Lower Gar Lake Watershed	Loon Lake Watershed
Total Area (ha)	36218.3	7697.6	5903.2	9962.3	4720.0	7935.2
Land Area (ha)	29379.5	5807.9	5062.1	6935.4	4194.5	7361.6
Area of Lakes Ponds and Marshes (ha)	6838.8	1889.7	841.1	3008.9	525.5	573.7

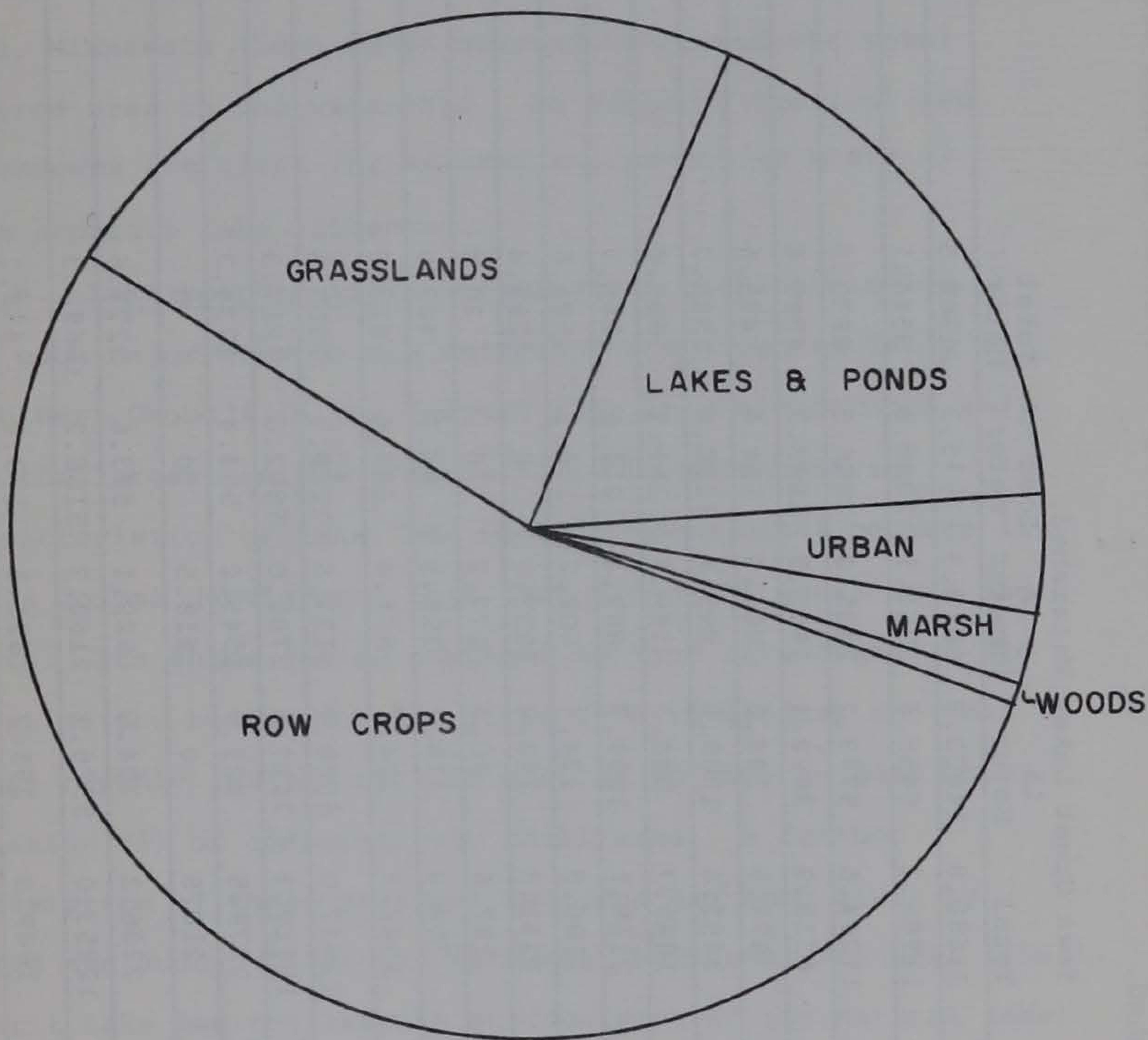


Figure 5. Distribution of land use practices in the Iowa Great Lakes watershed.

Table 2. Breakdown of metered and unmetered land use practices in the Iowa Great Lakes watershed.

	Iowa Great Lakes Watershed Total	IA Meter	IA Unmeter	Loon MN Meter	Total Meter
Total Area	31586.8	14033.3	9618.3	7935.2	21968.5
Animal Units	11906.2	6455.6	3362.1	2088.5	8544.1
Land Use					
Corn	11264.5	5773.2	2425.0	3066.3	8839.5
Beans	6518.9	3022.4	1653.3	1843.2	4865.6
Oats	678.8	344.0	200.4	134.4	478.4
Set Aside	3455.6	1269.8	895.4	1250.4	2520.2
Conserving Base	1045.7	504.3	389.7	151.7	656.0
Pastured Grassland	2118.1	1037.7	869.4	211.0	1248.7
Non Pastured Grassland	1106.8	324.4	602.2	180.2	504.6
Urban	1331.3	293.4	1037.9	0	293.4
Woodland	197.6	20.4	177.2	0	20.4
Marsh	762.4	379.7	298.5	84.2	463.9
Permanent Water	1444.9	324.1	631.4	489.4	813.5
Soil Type					
Clarion-Storden-Glencoe	12447.0	6080.7	5137.5	1228.8	7309.5
Clarion-Nicollet-Webster	15619.3	7117.3	2700.0	5802.0	9817.3
Webster-Clarion-Nicollet	3279.5	829.9	1545.2	904.4	1734.3
Wadena-Esterville	218.5	0	218.5	0	0
Soil Slope					
0%	2206.2	704.0	929.1	573.6	1277.6
0+ - 5%	12853.0	5526.1	2160.7	5166.2	10692.3
Trapped 0+ - 5%	1089.3	295.2	621.1	173.0	468.2
5 + %	13654.7	6782.7	4849.7	2022.3	8805.0
Trapped 5 + %	1770.3	709.8	1060.5	0	709.8

are given for the Iowa Great Lakes watershed, including a total breakdown, the Iowa metered area, Iowa unmetered area, Minnesota (Loon Lake) metered area, and the total metered area in the watershed. In Table 3, the land-use breakdowns are given for metered and unmetered areas of each separate lake watershed.

b. Lake Morphometry. Morphometric characteristics for each major lake in the watershed are given in Table 4. Lake West Okoboji is the deepest lake in the watershed and has the largest volume (Figure 6). The morphometric characteristics of Lake West Okoboji are unusual because it has a volume development less than a cone of equal area and depth. Its shape can be compared to that of a funnel. The slope of the bottom for the first 30 m is gradual and then drops rapidly for the next 10 m so as to give a "deep hole" (Station 49) of comparatively small area. A further description of these physical features has been given by Birge and Juday (1920) and Bachmann, Bovbjerg, and Hall (1966). Spirit Lake has the largest surface area of any natural lake in Iowa, with a gradually sloping bottom that attains a relatively uniform depth of approximately 6 meters (Figure 7). Little Spirit Lake, Hottes Lake, and Marble Lake must be considered as part of its watershed because separate watersheds cannot be delineated for these lakes. Lake East Okoboji

Table 3. Breakdown of metered and unmetered land use practices in the individual lake watersheds of the Iowa Great Lakes.

	West Okoboji			East Okoboji		
	Total	Meter	Unmeter	Total	Meter	Unmeter
Total Area	6157.6	4196.0	1961.6	5077.8	3303.3	1774.5
Animal Units	2084.8	1496.4	588.4	2781.2	1988.7	792.5
Land Use Corn	1969.4	1556.7	412.7	1965.3	1625.4	339.9
Beans	1055.1	784.4	270.7	966.3	614.2	352.1
Oats	111.4	78.9	32.5	59.6	59.6	0
Set Aside	448.2	337.8	110.4	388.2	320.0	68.2
Conserving Base	306.0	197.5	108.5	159.8	122.3	37.5
Pastured Grassland	600.3	464.1	136.2	471.5	176.4	295.1
Non Pastured Grassland	440.3	222.7	217.6	137.3	7.2	130.1
Urban	656.0	137.0	519.0	504.8	147.6	357.2
Woodland	0	0	0	124.0	20.4	103.6
Marsh	93.6	63.7	29.9	15.0	3.9	11.1
Permanent Water	256.1	213.7	42.4	0.7	0.1	0.6
Soil Type Clarion-Storden-Glencoe	4109.9	2653.9	1456.0	1710.4	693.7	1016.7
Clarion-Nicollet-Webster	1829.0	1542.0	287.0	3345.7	2609.8	735.9
Webster-Clarion-Nicollet	0	0	0	0	0	0
Wadena-Esterville	218.5	0	218.5	0	0	0
Soil Slope 0%	349.7	277.4	72.3	15.7	4.0	11.7
0+ - 5%	1106.5	573.4	533.1	2722.8	2163.9	558.9
Trapped 0+ - 5%	75.6	46.5	29.1	242.6	97.6	145.0
5 + %	3663.0	2702.0	961.0	1933.8	914.4	1019.4
Trapped 5 + %	962.0	596.4	365.6	152.3	113.4	38.9

Table 3. (Continued)

	Spirit Lake			Lower Gar			Loon
	Total	Meter	Unmeter	Total	Meter	Unmeter	Total
Total Area	7794.3	2538.5	5255.8	4621.9	3995.5	626.4	7935.2
Animal Units	3749.7	1943.1	1806.6	1202.0	1027.4	174.6	2088.5
Land Use Corn	2606.8	1151.9	1454.9	1656.7	1439.2	217.5	3066.3
Beans	1497.4	605.9	891.5	1156.9	1017.9	139.0	1843.2
Oats	244.7	80.0	164.7	128.7	125.5	3.2	134.4
Set Aside	929.6	285.2	644.4	399.2	326.8	72.4	1250.4
Conserving Base	296.6	65.2	231.4	131.6	119.3	12.3	151.7
Pastured Grassland	435.1	71.2	363.9	400.2	326.0	74.2	211.0
Non Pastured Grassland	256.5	33.8	222.7	92.5	60.7	31.8	180.2
Urban	152.9	8.8	144.1	17.6	0	17.6	0
Woodland	73.6	0	73.6	0	0	0	0
Marsh	252.5	27.1	225.4	317.1	285.0	32.1	84.2
Permanent Water	588.4	0	588.4	110.3	110.3	0	489.4
Soil Type Clarion-Storden-Glencoe	2907.2	708.3	2198.9	2490.7	2024.8	465.9	1228.8
Clarion-Nicollet-Webster	3178.1	1666.8	1511.3	1464.5	1298.7	165.8	5802.0
Webster-Clarion-Nicollet	1708.5	163.3	1545.2	666.6	666.6	0	904.4
Wadena-Esterville	0	0	0	0	0	0	0
Soil Slope 0%	840.3	27.3	813.0	427.4	395.3	32.1	573.6
0+ - 5%	2379.9	1324.7	1055.2	1477.6	1464.1	13.5	5166.2
Trapped 0+ - 5%	598.1	151.1	447.0	0	0	0	173.0
5 + %	3418.1	1035.6	2382.5	2617.5	2130.7	486.8	2022.3
Trapped 5 + %	556.7	0	556.7	99.3	0	99.3	0

Table 4. Morphometric characteristics of each major lake in the Iowa Great Lakes Watershed.

	West Okoboji	East Okoboji	Spirit Lake	Lower Gar	Minne-washta	Upper Gar	Little Spirit	Hottes Lake	Marble Lake	Loon Lake
Lake Area (ha)	1540	764	2168	98.1	47.3	14.1	292	126	71	291.4
Lake Volume ($1x10^6m^3$)	184.0	21.24	111.92	1.06	1.20	0.15	7.12	1.89	1.06	4.49
Mean Depth ($1x10^6m^3$)	11.9	2.78	5.16	1.08	2.56	1.06	2.43	1.5	1.5	1.54

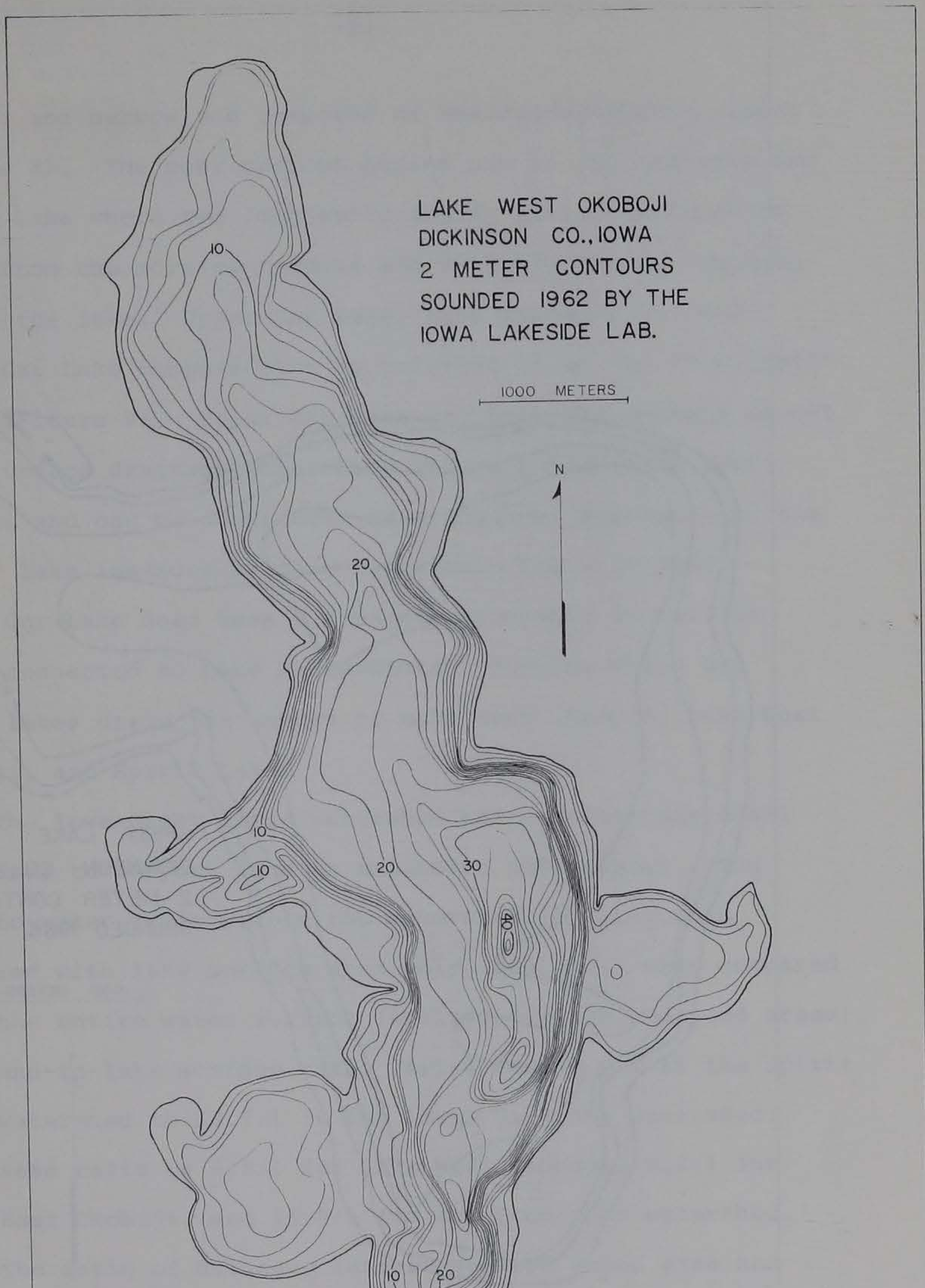


Figure 6. Morphometric characteristics of Lake West Okoboji.

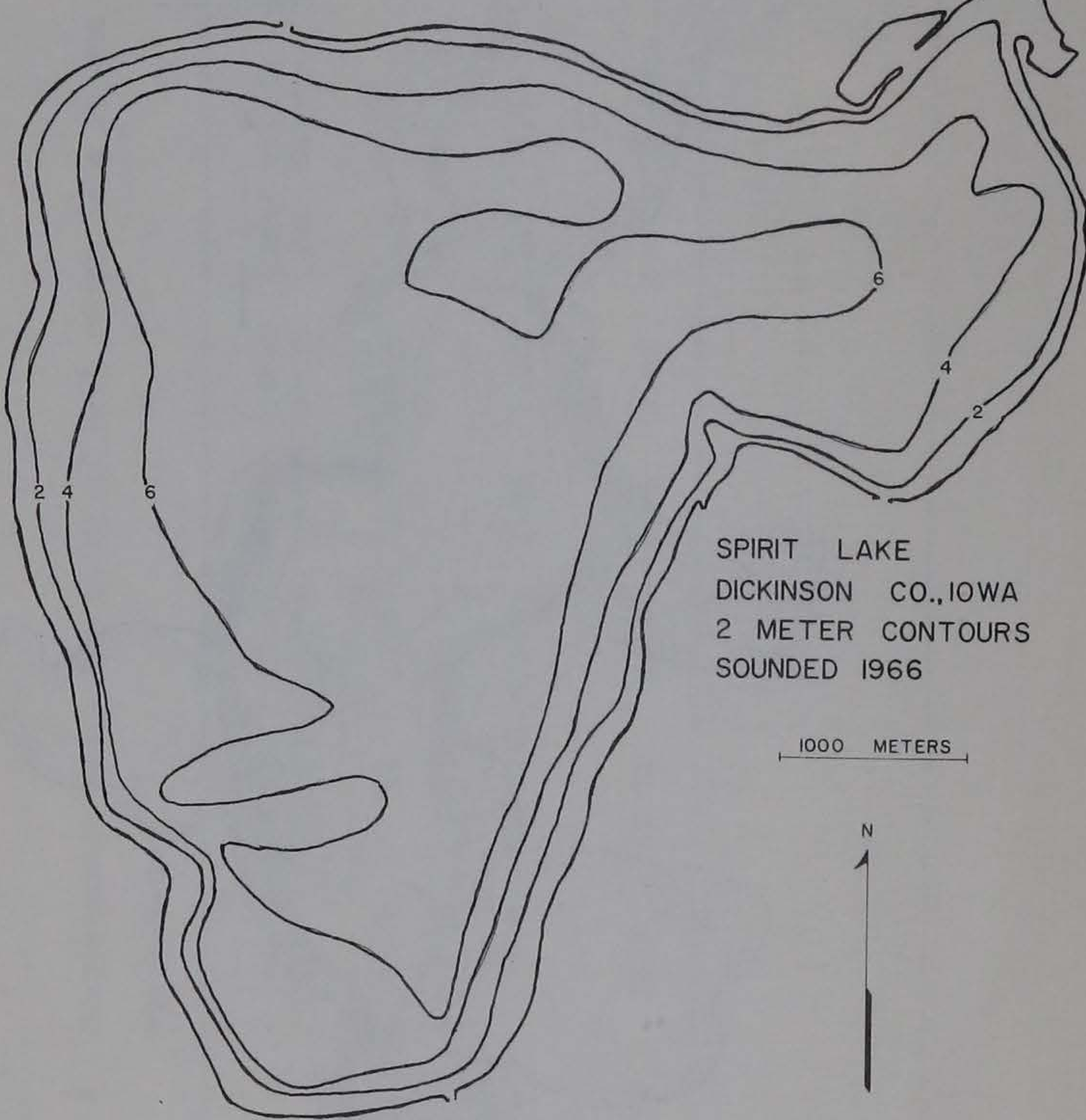


Figure 7. Morphometric characteristics of Big Spirit Lake.

is long and narrow and composed of several connected basins (Figure 8). The most obvious basins are at the northern end of the lake where two long spits nearly divide two shallow areas from the more contiguous and slightly deeper southern end of the lake. Upper Gar Lake, Lake Minnewashta, and Lower Gar Lake compose what is referred to as the "Gar Chain" lakes (Figure 9). Upper Gar Lake and Lake Minnewashta do not have surface drainage watersheds separate from Lake East Okoboji and can be considered as a southern expansion of the larger lake inasmuch as they lie within its watershed. Lower Gar Lake does have a separate watershed as well as being connected to Lake Minnewashta. Through these Gar chain lakes drain the waters of Lake East Okoboji, Lake West Okoboji, and Spirit Lake.

The Iowa Great Lakes watershed has a relatively small land area to support such an extensive lake system. The land-to-water ratio within the watershed is 5.1:1 when compared with lake surface area only, and 4.3:1 when compared with the entire water surface (including marsh and pond areas). The land-to-lake surface ratio varies from 2.6:1 in the Spirit Lake watershed to 42.7:1 in the Lower Gar Lake watershed. This same ratio is 3.8:1 for Lake West Okoboji, 6.1:1 for Lake East Okoboji, and 16.8:1 for the Loon Lake watershed.

The ratio of drainage land to surface water area and

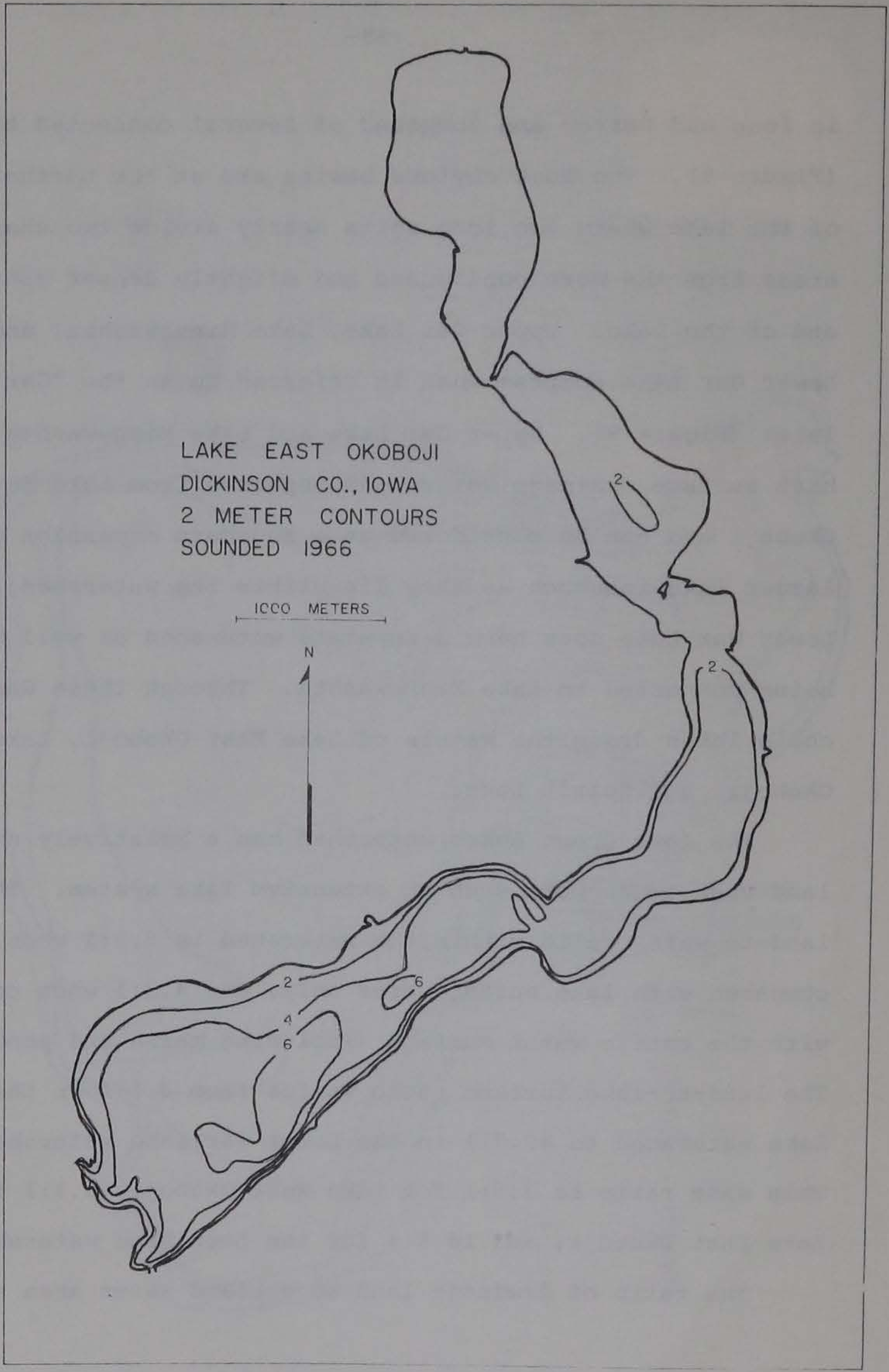


Figure 8. Morphometric characteristics of Lake East Okoboji.

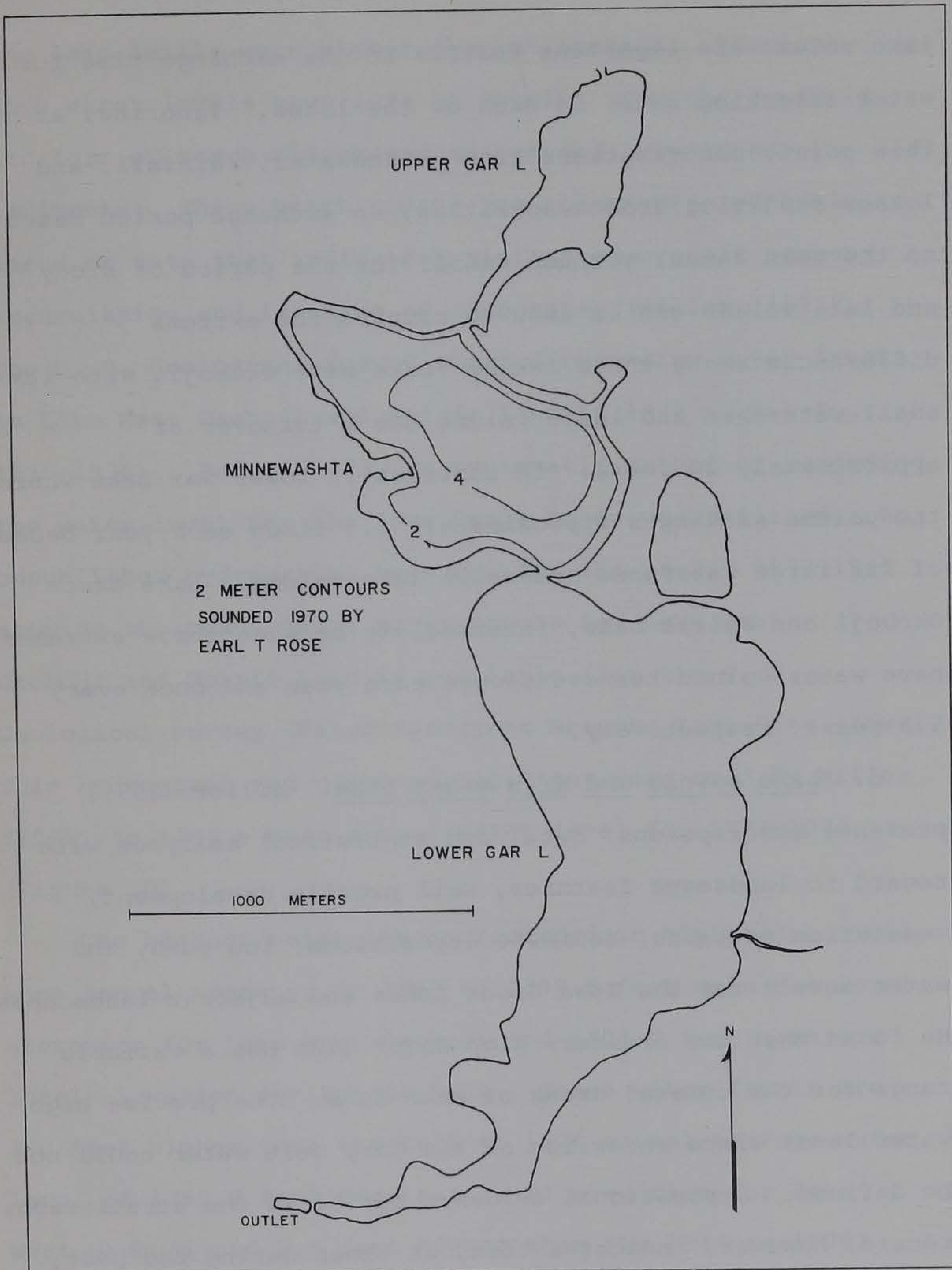


Figure 9. Morphometric characteristics of Upper Gar Lake, Lake Minnewashta, and Lower Gar Lake.

lake volume are important factors in the exchange time for water (flushing rate) in each of the lakes. Ignoring, at this point, contributions from groundwater, rainfall, and losses resulting from evaporation, an exchange period based on the mean annual surface runoff for the period of study and lake volume can be used to compare the extreme differences among these lakes. Lake West Okoboji, with its small watershed and large volume has a turnover of approximately 20 years. In contrast is Lower Gar Lake where the volume exchanges approximately 3.5 times each year because of its large watershed and small lake volume. Lake East Okoboji and Spirit Lake, intermediate between these extremes, have water volume turnovers once each year and once every 5.5 years, respectively.

c. Lake Levels and High Water Line. Miller (1971) presents descriptions, data, and statistical analyses with regard to landscape features, soil profile development, vegetation patterns, sediment depositions, ice push, and water levels for the Iowa Great Lakes and adjacent landscapes. He found that the ordinary high water line has a variable range for the coastal areas of each lake. The precise high water level since recession of the Cary melt water could not be defined. Depositional evidence buried in the stratigraphic record, however, indicates that, at times during the past, the lake levels were higher than at present. Previous high water levels have left an imprint upon the coast in the form of beach ridges and associated lacustrine sediments. These beach ridges are relatively youthful, based on data that indicate a minimum of organic carbon accumulation and leaching of carbonates (Miller, 1971). The U. S. Geological Survey started recording water levels in Lake West Okoboji and Spirit Lake in 1933 (U.S.D.I., 1935-1936). Before 1933, no systematic method of recording the water level for the Iowa Great Lakes was utilized. An unpublished hydrograph, however, for the period 1873-1945 showing the mean annual water levels for Lake West Okoboji and Spirit Lake is available from the U. S. Geological Survey (Water Resources Branch, Iowa City, Iowa). This hydrograph and other publications were used by Miller (1971) to plot a mean annual water level for 1873-1970 (Figure 10).

The highest water levels recorded in historical times were annual readings in 1883 of 1398.8 feet mean sea level elevation for Lake West Okoboji and 1403.2 feet mean sea level elevation for Spirit Lake. These water levels are 3.0 feet higher than the 1910 to 1970 annual average water level of 1395.2 feet mean sea level elevation for Lake West Okoboji and 2.9 feet higher than the 1944 to 1970

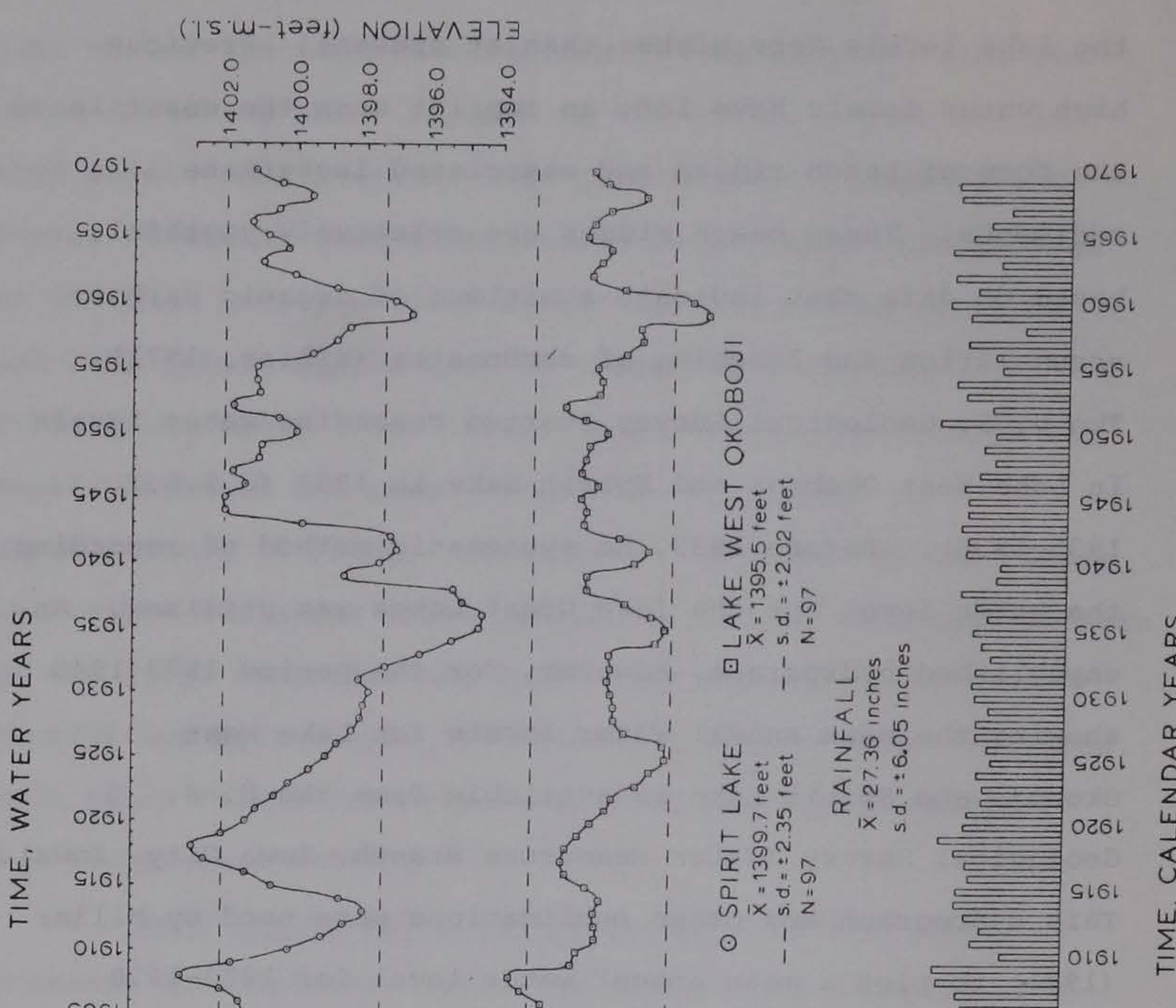


Figure 10. Hydrograph of mean annual water levels for Lake West Okoboji and Spirit Lake for water years 1873 through 1970. Dashed lines indicate the range of one standard deviation for the period of record (from Miller, 1971).

annual average water level of 1400.3 feet mean sea level elevation for Spirit Lake. The years 1910 and 1944 mark the control of natural outlets for the Okoboji lakes and Spirit Lake by construction of dams on Lower Gar Lake and at the Spirit Lake outflow. The magnitude of fluctuations in the lake levels apparently was reduced by the construction of these ungated spillways. The statistical range of one standard deviation since 1910 for the water level of Lake West Okoboji has been reduced from 2.02 feet to 0.90 feet. For the water level of Spirit Lake since 1944, the range of one standard deviation has been reduced from 2.35 to 1.40 feet (Miller, 1971).

Miller found the present high water line to be marked by a change in terrestrial vegetation on the gently sloping beach face or by the base of the upper beach scarp that has vegetation at the beach terrace contact. He concludes that the ordinary high water line should be marked on the land adjacent to the present water line. The ordinary high water line may not extend completely across coastal terraces, but would include low-lying marsh and ponded areas on the terraces that are joined directly or indirectly to the main body of each lake.

d. Man-caused Changes in the Watersheds. Since the first human settlement about a century ago, there have been several changes in the watersheds that may have had some influence on the character of the lakes. Much of the surrounding prairie was converted to row-crop agriculture or pastureland. In many instances, this involved extensive tile systems (Appendix E) that drained former marshes and potholes. Cattle were grazed right up to the lake shores, though this now is infrequent.

Urban development occurred in the town of Spirit Lake and in the small towns and unincorporated areas along the shores of the lakes. Human wastes from these areas undoubtedly influenced the lakes to some degree. At one time, the town of Spirit Lake had a sewage treatment plant that emptied its effluent into the upper part of Lake East Okoboji, and a similar plant at Arnolds Park emptied into Lake Minnewashta. No organized system existed for the collection and treatment of the wastes from the many cottages that ringed Lake West Okoboji or that occurred in some areas along the shores of the other lakes.

In the 1930s, a sewage treatment plant was established on Milford Creek below the outlet for the Iowa Great Lakes. Over the years, lines were extended to circle Lake West Okoboji and to collect the wastes from the town of Spirit Lake and from portions of the shorelines of Lake East Okoboji and Big Spirit Lake. Most of the developed areas in the watershed now are being served by this system, and extensions are under way with the goal of reaching all lakeside homes.

Some direct modifications to the lakes themselves, other than the water-level-control structures mentioned previously, would include the dredging of canals to provide lake access for real estate developments and the filling in and riprapping of shoreline areas in some locations. For several years the Iowa Conservation Commission applied copper sulfate to Lake East Okoboji as a measure to control blue-green algal blooms.

e. Climatology and Meteorology. Climatological and meteorological data are collected daily at Iowa Lakeside Laboratory, Miller's Bay, Lake West Okoboji. Temperature and precipitation data for the period of study are given in Table 5. Precipitation totaled 68.6 cm during calendar year 1971, 79.4 cm during calendar year 1972, and 42.4 cm between January 1 and July 31, 1973. The climate is classified as humid-continental, characterized by wide variations in daily and seasonal conditions.

2. Physical Water-Quality Parameters

a. Temperature Values. Several historic studies have been concerned with the temperature cycle and internal waves of West Okoboji. Tilton (1916a, 1917) first reported vertical lake temperatures and lake level oscillations. Birge and Juday (1920) extensively reviewed the temperature characteristics of West Okoboji, noting that the small volume of the lower water gives rise to the exceptionally high bottom temperatures. Birge and Juday also calculated the summer heat-income and

Table 5. Mean, maximum, and minimum temperatures and precipitation by month between January 1971 and August 1973 collected at Iowa Lakeside Laboratory, West Okoboji.

	Month	Mean °C	Maximum °C	Minimum °C	Precipitation cm
1971					
	Jan	-13.4	3.3	-28.3	0.58
	Feb	- 7.7	-	-	7.26
	Mar	- 1.8	20.5	-21.1	2.69
	April	8.8	26.1	- 7.8	3.30
	May	13.7	30.0	- 2.2	4.39
	June	22.5	36.1	9.4	12.52
	July	20.7	32.8	5.0	10.13
	Aug	21.5	35.0	7.2	3.15
	Sept	17.2	35.0	- 1.1	3.78
	Oct	11.9	26.7	- 4.4	13.59
	Nov	1.4	21.7	-14.4	4.67
	Dec	- 6.8	1.7	-21.1	2.54
1972					
	Jan	-12.8	3.3	-34.4	1.19
	Feb	-10.4	7.2	-31.7	1.62
	Mar	- 0.3	16.7	-21.6	2.29
	April	6.8	26.1	- 6.7	8.79
	May	16.0	32.2	1.1	11.45
	June	20.2	33.3	5.0	6.12
	July	21.3	33.3	6.7	19.18
	Aug	21.2	35.0	6.7	5.14
	Sept	15.8	32.8	- 1.1	7.09
	Oct	7.8	26.1	-10.5	7.95
	Nov	0.2	16.1	-12.8	4.04
	Dec	-11.2	6.7	-27.8	4.24
1973					
	Jan	- 7.9	7.2	-27.8	1.75
	Feb	- 5.3	6.7	-28.9	1.22
	Mar	4.4	17.8	- 6.1	6.53
	April	7.6	23.3	- 8.3	8.23
	May	14.3	32.2	0.5	9.88
	June	21.5	35.5	9.4	7.39
	July	22.5	33.8	10.0	7.42
	Aug	22.6	34.4	10.0	6.17

annual heat budget for West Okoboji and drew comparisons between temperatures in Lake West Okoboji and Lake Geneva, Wisconsin. Stromsten (1925, 1927) related the extent of thermocline formation in Lake West Okoboji to seasonal climatic and wind conditions during 1922 to 1927, noting a surprising variation in the degree of thermal stratification among years studied. Stromsten found that the ends of the lake constitute the chief mixing areas, and they are the regions where gradual warming of the thermocline and hypolimnion occurs. Stromsten also calculated the distribution of heat at various depths, the amount of heat absorbed by the lake, the effect of wind velocity on heat distribution, and the relation between surface and air temperatures. Jahn and Taylor (1939) discuss the temperature cycle in Lake West Okoboji, noting a thermocline development in Emerson Bay and the late thermocline development in the main lake during the summer of 1936. Bardach, Morrill, and Gambony (1951) discuss changes in condition and thermal resistance of the thermocline in Lake West Okoboji and relate these phenomena to the biota. The internal and standing waves of Lake West Okoboji were studied by Bardach (1954), and effects of these thermocline shifts were related to fish and midge larvae distribution (Bardach, 1955). Fee (1967) compared the surface and internal seiches of Lake West Okoboji.

Temperature measurements were made with each lake sample collected during the study (Appendix A). Measurements were made in the morning, and slightly higher values would be expected with afternoon measurements because water temperatures increase with diurnal air values.

Surface temperatures at stations on each lake on a given sampling date were within 2.0 C of each other. The highest recorded temperature was 27.2 C in Upper Gar Lake on August 22, 1971. During the winters of 1971 and 1972, 0 C readings were measured through the ice in each lake. The annual seasonal thermal pattern was similar in all lakes during 1971 (Figure 11) and 1972 (Figure 12). The lake temperature follows the pattern of seasonal temperatures, with lake temperatures varying from 0 C during the winter to between 20.0 C to 25.0 C during the summer. The spring is a warming period, and the fall is a cooling period. From Figures 11 and 12, it is seen that Lake West Okoboji, due to its larger volume, warms more slowly than Lake East Okoboji and Spirit Lake in the spring and cools more slowly in the fall. Stewart (1973) found this same temperature relationship between Lake Mendota and the smaller Madison lakes.

After sufficient cooling in the fall, ice covers each of the lakes and increases in thickness during the winter. It is common to measure ice thicknesses of 50 to 70 cm in January and March on Spirit Lake and Lake West Okoboji, with the

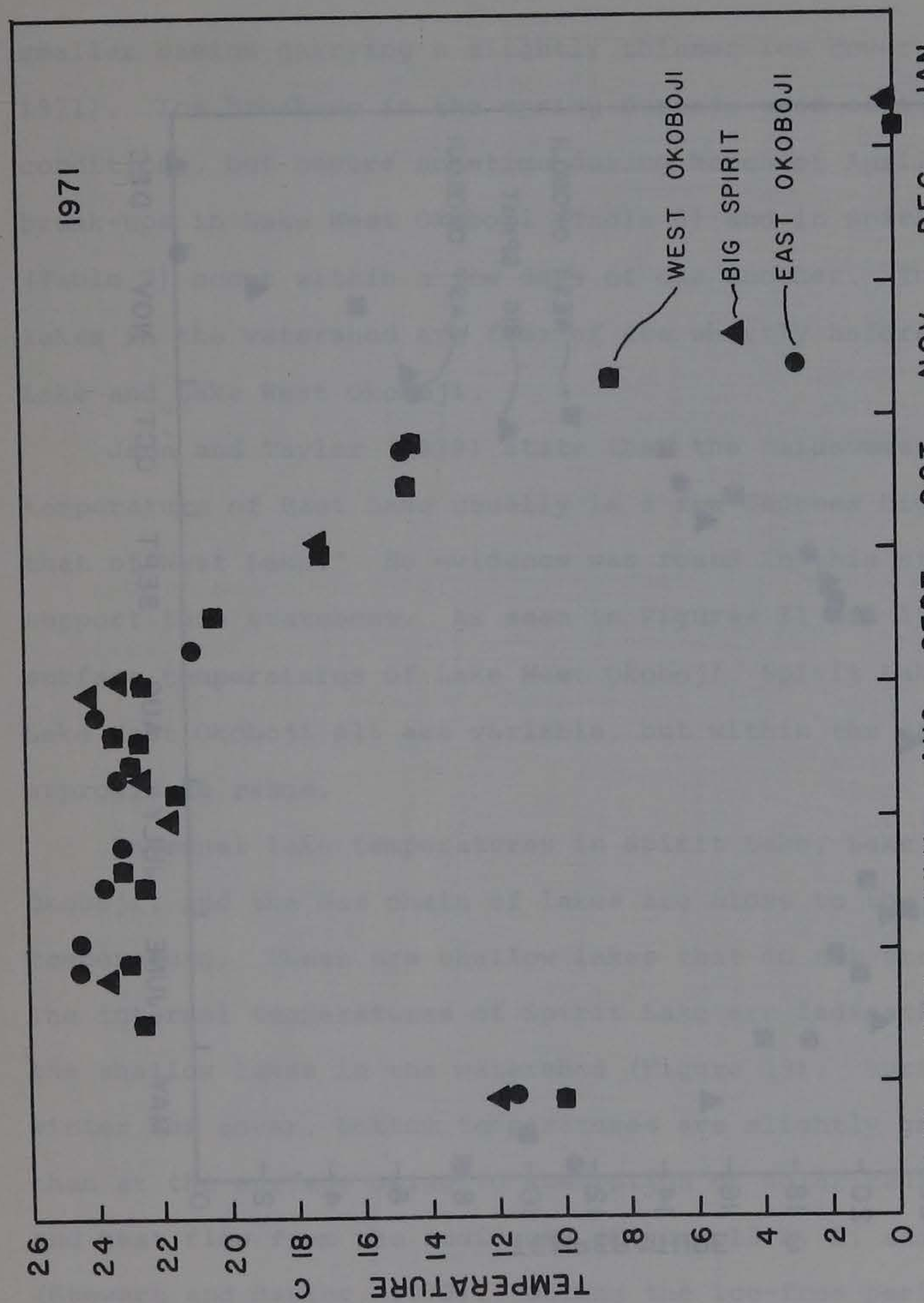


Figure 11. Surface temperatures (C) in lakes West Okoboji, East Okoboji, and Big Spirit between May, 1971, and January, 1972.

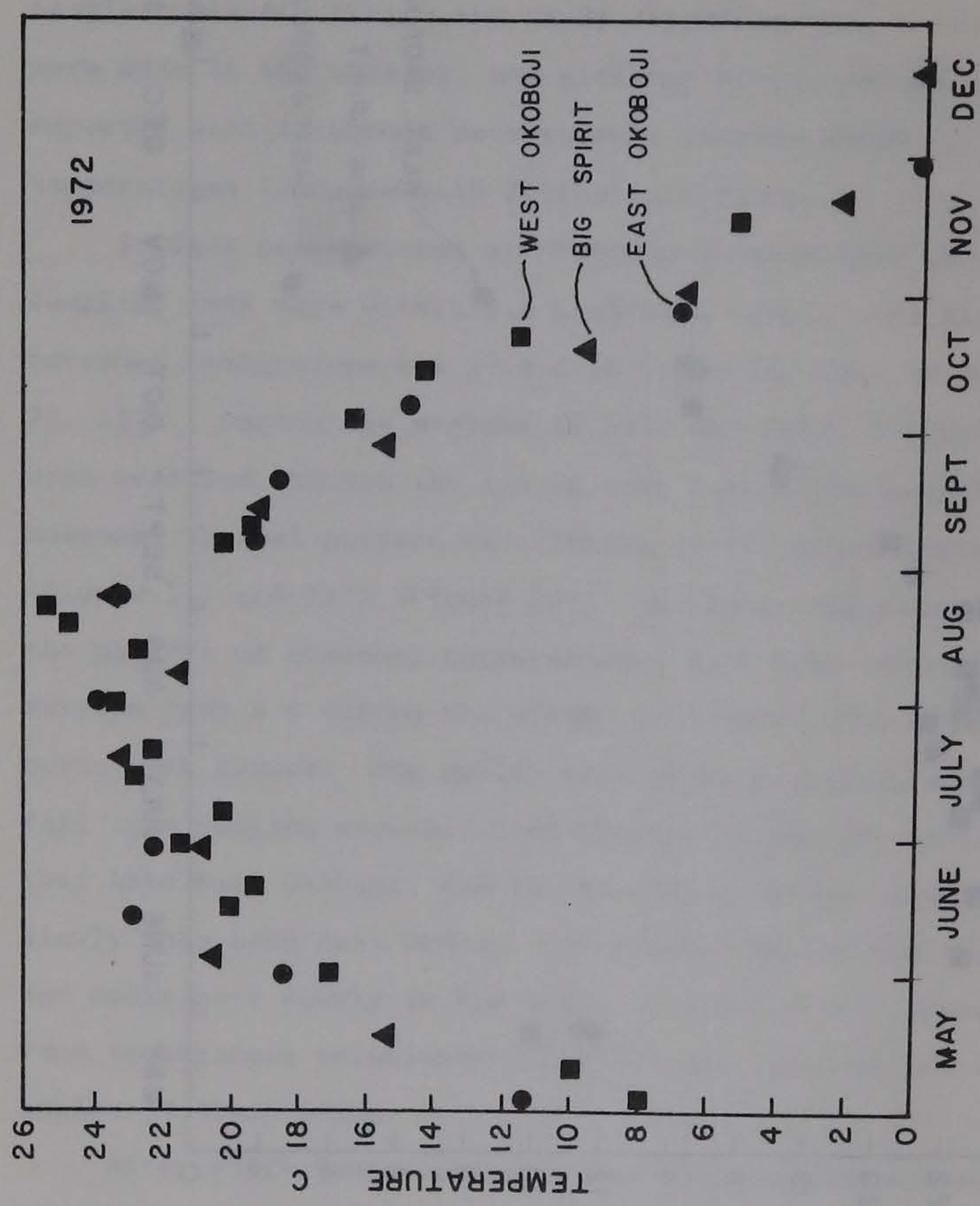


Figure 12. Surface temperatures (C) in Lakes West Okoboji, East Okoboji and Big Spirit between May, 1971 and January, 1972.

smaller basins carrying a slightly thinner ice cover (Miller, 1971). Ice break-up in the spring depends upon climatic conditions, but occurs sometime during March or April. Ice break-ups in Lake West Okoboji (Table 6) and in Spirit Lake (Table 7) occur within a few days of one another. The smaller lakes in the watershed are free of ice shortly before Spirit Lake and Lake West Okoboji.

Jahn and Taylor (1939) state that the "midsummer average temperature of East Lake usually is a few degrees higher than that of West Lake." No evidence was found in this study to support this statement. As seen in Figures 11 and 12, the surface temperatures of Lake West Okoboji, Spirit Lake, and Lake East Okoboji all are variable, but within the same approximate range.

Internal lake temperatures in Spirit Lake, Lake East Okoboji, and the Gar chain of lakes are close to the surface temperature. These are shallow lakes that do not stratify. The internal temperatures of Spirit Lake are indicative of the shallow lakes in the watershed (Figure 13). During winter ice cover, bottom temperatures are slightly greater than at the surface owing to absorption of solar radiation and heat flow from the sediments (Figure 13 A, B, and C) (Stewart and Hasler, 1972). During the ice-free period (Figure 13 D to H), temperatures are uniform through the profile. Lake West Okoboji, however, is a temperate dimictic

Table 6. Date of ice break-up on West Okoboji between 1967 and 1973, supplied by R. T. Benson, Iowa Lakeside Laboratory, Milford, Iowa.

March 26, 1973
April 10, 1972
April 17, 1971
April 16, 1970
April 19, 1969
March 26, 1968
March 28, 1967

Table 7. Date of ice break-up on Spirit Lake between 1944 and 1973, supplied by Iowa Conservation Commission, Spirit Lake Fish Hatchery, Spirit Lake, Iowa.

March 26, 1973	April 15, 1958
April 7, 1972	April 10, 1957
April 14, 1971	April 16, 1956
April 15, 1970	April 3, 1955
April 19, 1969	April 8, 1954
March 27, 1968	March 31, 1953
March 30, 1967	April 21, 1952
March 17, 1966	April 28, 1951
April 22, 1965	April 18, 1950
April 12, 1964	April 11, 1949
April 3, 1963	March 31, 1948
April 22, 1962	April 6, 1947
April 14, 1961	March 26, 1946
April 11, 1960	March 23, 1945
April 6, 1959	April 6, 1944

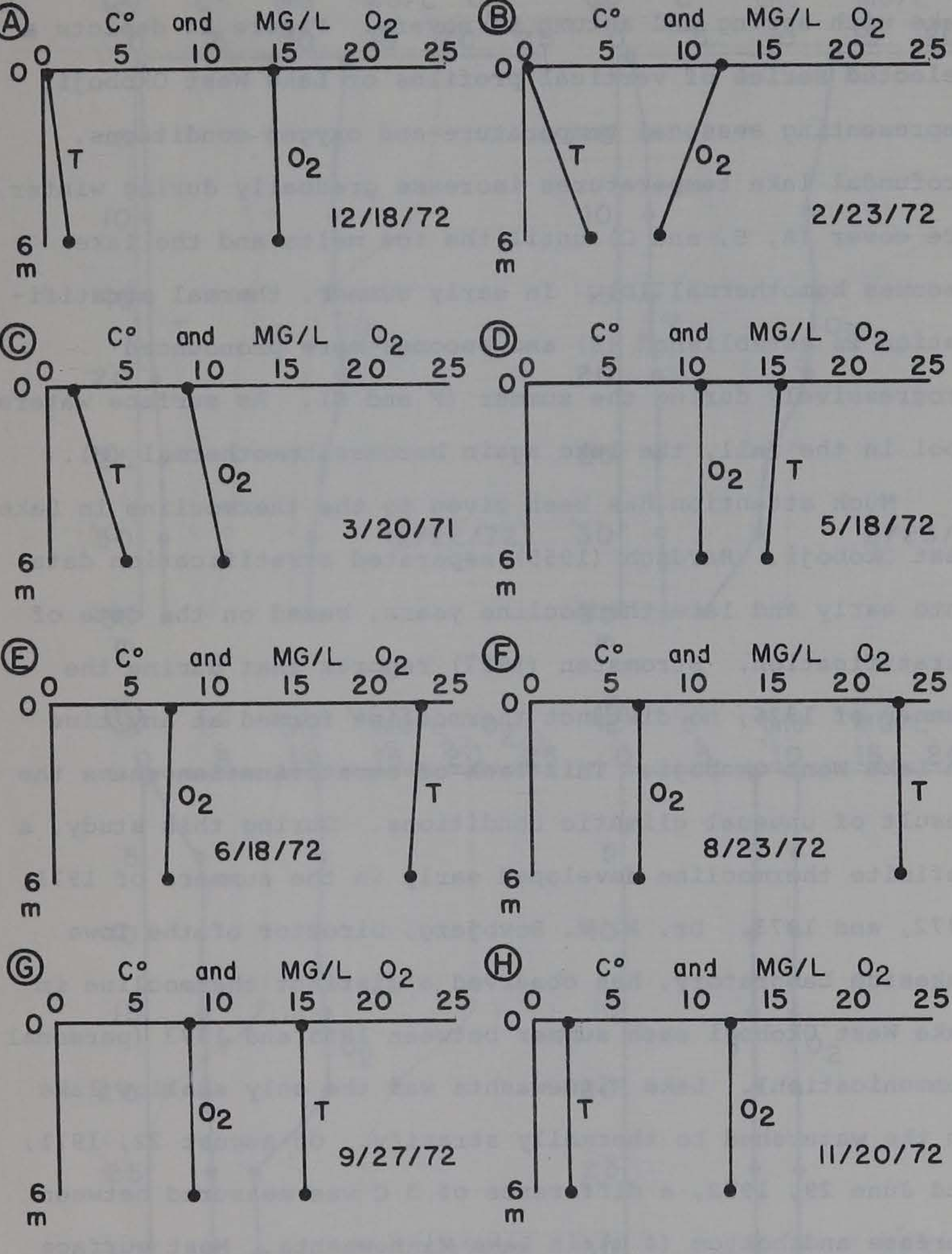


Figure 13. Selected temperature (C) and oxygen (mg/l O_2) profiles from Big Spirit Lake depicting seasonal variation.

lake with spring and autumn turnovers. Figure 14 depicts a selected series of vertical profiles of Lake West Okoboji, representing seasonal temperature and oxygen conditions. Profundal lake temperatures increase gradually during winter ice cover (A, B, and C) until the ice melts and the lake becomes homothermal (D). In early summer, thermal stratification is established (E) and becomes more pronounced progressively during the summer (F and G). As surface waters cool in the fall, the lake again becomes homothermal (H).

Much attention has been given to the thermocline in Lake West Okoboji. Bardach (1955) separated stratification data into early and late thermocline years, based on the date of stratification. Stromsten (1927) reports that during the summer of 1926, no distinct thermocline formed at any time in Lake West Okoboji. This lack of stratification seems the result of unusual climatic conditions. During this study, a definite thermocline developed early in the summers of 1971, 1972, and 1973. Dr. R. V. Bovbjerg, Director of the Iowa Lakeside Laboratory, has observed a distinct thermocline in Lake West Okoboji each summer between 1955 and 1973 (personal communication). Lake Minnewashta was the only shallow lake in the watershed to thermally stratify. On August 22, 1971, and June 29, 1972, a difference of 3 C was measured between surface and bottom (4 m) in Lake Minnewashta. Most surface and bottom temperatures measured in this lake varied by less

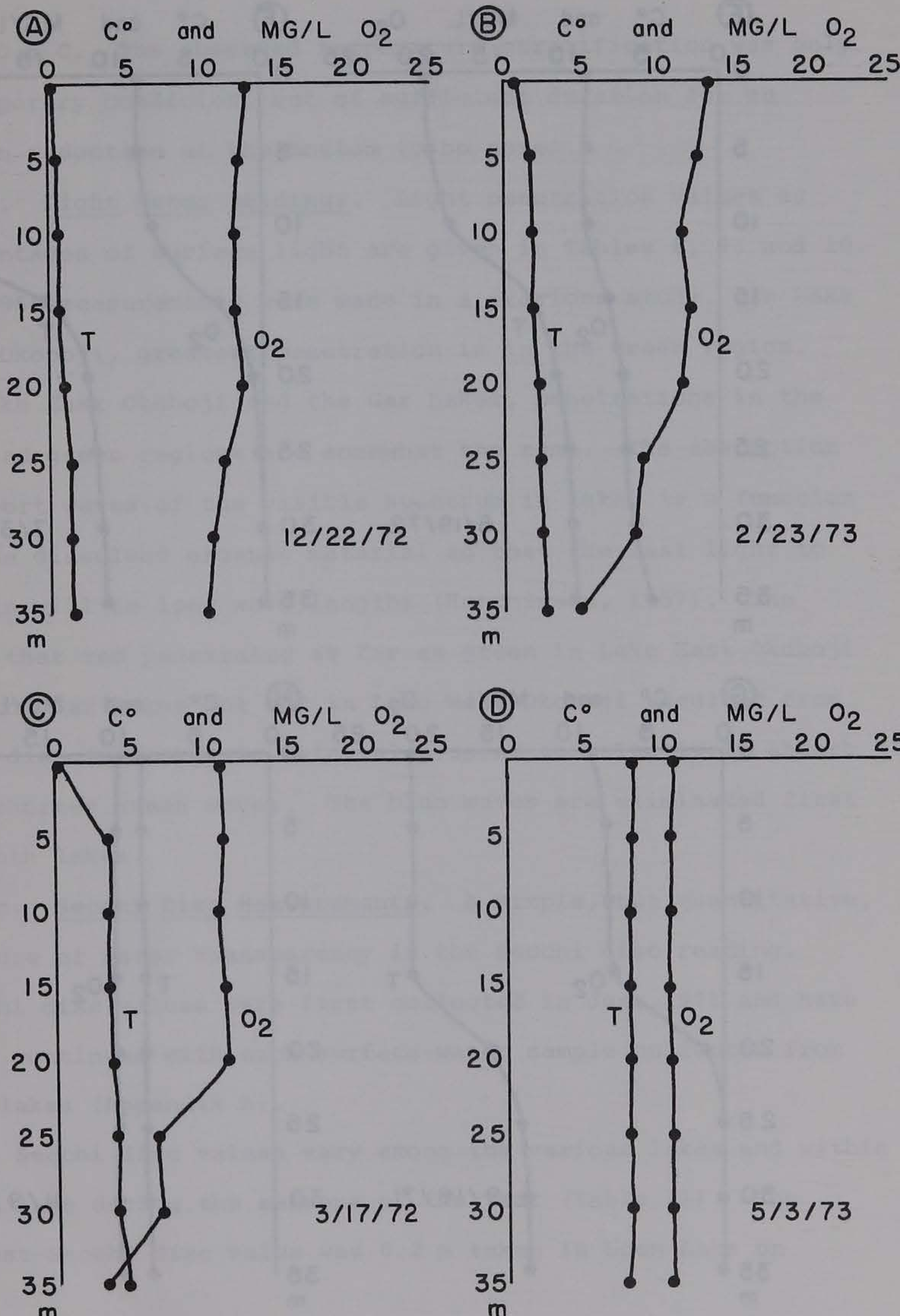


Figure 14. Selected temperature and oxygen profiles from Lake West Okoboji, depicting seasonal variation.

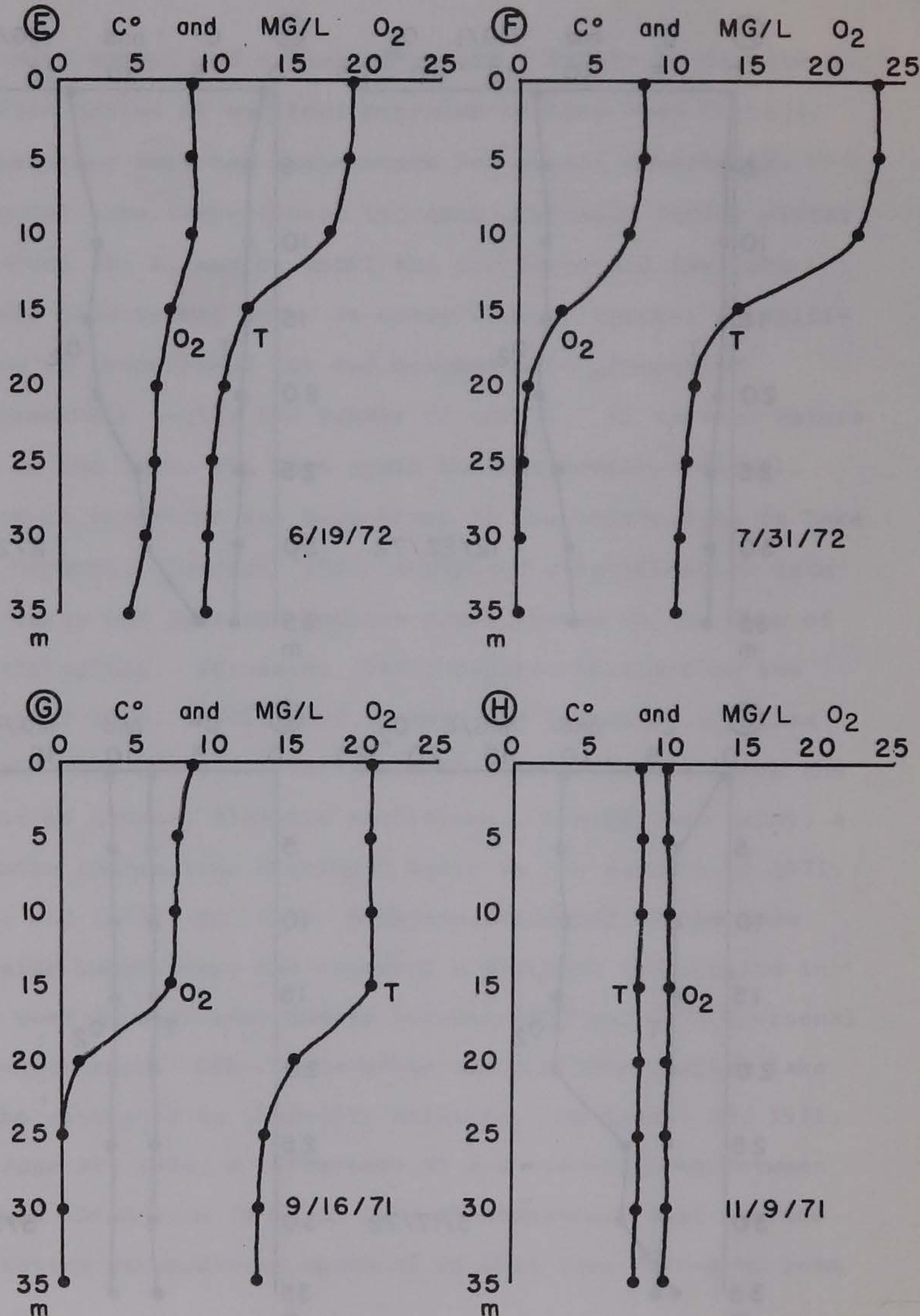


Figure 14 (continued)

than 0.5 C. The observed temperature stratification was only a temporary condition, but of sufficient duration for an oxygen reduction at the bottom to be noted.

b. <u>Light Meter Readings</u>. Light penetration values as percentages of surface light are given in Tables 8, 9, and 10. The 1966 measurements were made in a previous study. In Lake West Okoboji, greatest penetration is in the green region. In Lake East Okoboji and the Gar Lakes, penetrations in the red and green regions are somewhat the same. The absorption of short waves of the visible spectrum in lakes is a function of the dissolved organic material so that the last light to remain will be long wave lengths (Hutchinson, 1957). The fact that red penetrated as far as green in Lake East Okoboji and the Gar Lakes but not in Lake West Okoboji resulted from more dissolved organic material present to selectively absorb the shorter green waves. The blue waves are eliminated first in both lakes.

c. <u>Secchi Disc Measurements</u>. A simple, but quantitative, measure of water transparency is the Secchi disc reading. Secchi disc values were first collected in June 1971 and have been continued with each surface-water sample collected from the lakes (Appendix A).

Secchi disc values vary among the various lakes and within each lake during the seasons of the year (Table 11). The lowest Secchi disc value was 0.2 m taken in Loon Lake on

Table 8. Light-penetration measurements as percentage of surface light in Lake West Okoboji on July 19, 1966.

July 19, 1966

depth (ft)	Blue	Red	Green
0	100	100	100
2	48.0	69.8	92
4	40.5	51.4	64.9
6	23.0	38.8	56.8
8	17.3	29.6	48.7
10	10.7	23.5	46.0
12	8.3	15.9	36.0
14	5.2	12.0	29.8
16	3.1	9.3	23.0
18	2.8	7.3	18.9
20	1.8	5.1	14.1
22		3.8	12.4
24		3.0	9.7
26		2.1	8.1
28		1.5	6.5
30		1.2	5.7
32		0.8	4.1
34		0.7	3.2
36			2.5
38			2.1
40			1.6

November 4, 1971

depth (m)	Blue	Red	Green
1	100	100	100
2	35.1	40.6	37.6

Table 8 (Continued)

depth (m)	Blue	Red	Green
3	14.9	19.7	29.5
4	5.9	14.7	24.6
5	3.0	7.6	15.8
6	1.5	3.6	9.2
7	0.7	2.1	6.8
8	0.4	1.2	4.2
9	0.2	0.8	2.8
10	0.1	0.5	1.5
11		0.2	1.3
12		0.1	0.9
13			0.6
14			0.4
15			0.3
16			0.2
17			0.1

June 15, 1972

depth (m)	Blue	Red	Green
0	100	100	100
1	75.8	61.0	83.5
2	58.9	33.6	79.1
3	46.4	19.4	67.2
4	34.8	10.8	59.3
5	26.7	6.7	52.7
6	21.4	3.5	43.9
7	13.3	2.3	37.8
8	11.6	1.2	31.6
9	8.9	0.7	25.4
10	2.2	0.4	20.6
11	1.8	0.3	14.5
12	0.9	0.2	11.2

Table 8 (Continued)

depth (m)	Blue	Red	Green
13	0.4	0.1	8.3
14			6.1
15			4.4
16			3.5
17			1.7
18			1.3
19			0.9
20			0.4

August 16, 1973

depth (m)	Blue	Red	Green
0	100	100	100
1	68.7	76.3	81.8
2	52.5	56.1	71.0
3	28.1	43.0	57.0
4	18.6	26.3	42.9
5	10.5	16.2	34.7
6	4.9	9.4	23.9
7	2.6	6.0	18.1
8	1.3	3.1	11.6
9	0.8	2.0	6.6
10		1.2	4.3
11		0.8	2.8
12		0.6	1.9
13			1.2
14			0.8
15			0.6

Table 9. Light penetration measurements as percentage of surface light in Lake East Okoboji on July 19, 1966, and August 3, 1966.

July 19, 1966

depth (ft)	Blue	Red	Green
0	100	100	100
2	13.1	29.2	29.1
4	1.8	9.1	9.3
6		2.5	3.0
8		0.7	0.9
10			0.4

August 3, 1966

depth (ft)	Blue	Red	Green
0	100	100	100
1	37.3	62.2	70.6
2	17.3	39.2	39.4
3	7.5	28.4	21.2
4	4.4	16.8	16.5
5	1.5	11.9	9.8
6	0.6	7.9	6.0
7		4.3	3.8
8		2.9	2.7
9		1.7	1.7
10		1.1	1.1

Table 10. Light penetration measurements as percentage of surface light in Upper Gar Lake, Lake Minnewashta, and Lower Gar Lake on August 3, 1966.

	Upper Gar Lake		
depth (ft)	Blue	Red	Green
0	100	100	100
1	25.1	49.2	59.1
2	6.8	26.9	22.3
3	1.7	14.4	12.7
4	0.5	9.9	8.5
	Lake Minnewashta		
depth (ft)	Blue	Red	Green
0	100	100	100
1	20.7	29.8	37.5
2	7.5	11.9	15.3
3	2.1	5.1	8.5
4	1.1	3.5	4.7
5	0.3	1.7	2.3
6		1.6	
	Lower Gar Lake		
depth (ft)	Blue	Red	Green
0	100	100	100
1	2.3	12.0	8.1
2	0.7	3.1	1.6
3	0.2	0.7	0.7
4		0.6	

Table 11. Mean Secchi disc values (m) from Lake West Okoboji (Bay Stations), Lake West Okoboji (Deep Hole), Lake East Okoboji (North Stations 55 and 55.1), Lake East Okoboji (South Stations 56 to 57), Spirit Lake, Upper Gar Lake, Lake Minnewashta, Lower Gar Lake, and Loon Lake (at 4.3) summarized by seasons between June, 1971, and September, 1973. N = the number of samples in the mean.

Seasons	W. Okoboji B. Stations	W. Okoboji Deep Hole	E. Okoboji N. Stations	E. Okoboji S. Stations
	N	N	N	N
June-Sept. 1971	(25) 2.6	(6) 2.9	(24) 0.6	(16) 1.1
Oct.-Nov. 1971	(6) 3.6	(2) 3.0	(6) 1.5	(4) 1.9
Jan.-May 1972	(13) 5.5	(5) 6.5	(11) 1.7	(7) 2.7
June-Sept. 1972	(19) 3.0	(5) 3.1	(21) 0.8	(13) 1.2
Oct.-Nov. 1972	(6) 4.2	(2) 3.3	(6) 1.1	(6) 2.1
Dec.-May 1973	-	(7) 8.9	(12) 1.4	(17) 1.9
June-Sept. 1973	-	(12) 4.2	(14) 0.6	(24) 0.9

Table 11. (Continued)

Seasons	Spirit Lake	Upper Gar	Lake Minn.	Lower Gar	Loon Lake 4.3
	N	N	N	N	N
June-Sept. 1971	(18) 1.5	(7) 0.6	(7) 0.9	(7) 0.4	(3) 0.2
Oct.-Nov. 1971	(6) 1.4	(2) 1.0	(2) 1.8	(2) 0.8	(1) 1.8
Jan.-May 1972	(16) 4.4	(3) 1.1	(4) 2.1	(4) 1.1	(2) 1.9
June-Sept. 1972	(35) 2.0	(6) 0.6	(6) 1.2	(6) 0.4	-
Oct.-Nov. 1972	(10) 3.5	(3) 1.0	(2) 1.1	(2) 0.8	-
Dec.-May 1973	(13) 4.3	(5) 1.2	(4) 1.7	(4) 0.8	-
June-Sept. 1973	(30) 1.6	(5) 0.6	(5) 0.8	(5) 0.5	-

July 16 and August 25, 1971 and, in Lower Gar Lake, on June 29, 1972. The deepest Secchi disc reading was 11.7 m at the deep hole in Lake West Okoboji on January 8, 1973. Secchi disc measurements are routinely deeper in Lake West Okoboji than in the other lakes studied. The overall Secchi disc average in Lake West Okoboji is 4.1 m, while Secchi disc values of less than 0.5 m were commonly measured on Loon Lake, Upper Gar Lake, Lake Minnewashta, Lower Gar Lake, and at the northern end of Lake East Okoboji. Secchi values from Lake West Okoboji are approximately 1.6 times the Spirit Lake values, 3.2 times the Lake East Okoboji values, 5 times the mean value of the Gar Lakes, and 13 times values found in Loon Lake.

Seasonal changes in Secchi disc values follow the same pattern in each lake (Table 11). Lowest values occur during the summer when algal activity is the greatest. Values increase in late fall, with the greatest values during ice cover and in early spring. As algal activity increases in the summer months, Secchi values decrease.

Secchi disc transparency can be used as a quantitative, though subjective, measure of water clarity. It seems that algal activity is the factor controlling water clarity in the Iowa Great Lakes. When Secchi disc values are plotted against chlorophyll concentrations on a log-log plot, the points are widely scattered, but there is a significant

(P=0.01) negative correlation (r=-0.86) with low transparency being associated with high chlorophyll (Figure 15). The scatter in this relationship is expected because the visibility of the Secchi disc is more dependent upon the number of particles scattering light than on the chlorophyll content of the particles (Edmondson, 1972). This correlation indicates that algal populations play an important role in determining water transparency in these lakes. Field observations indicated that inorganic turbidity due to soil erosion was not important in determining the water clarity.

d. Turbidity Measurements. Turbidity measurements were made on all lakes sampled beginning in March, 1971. Values ranged from 0 to over 100 JTU. Of the turbidity values measured, 55.8 % ranged from 0-5 JTU, 14.2 % from 6-10 JTU, 13.1% from 11-20 JTU, 12.7% from 20-50 JTU, 3.8% from 61-100 JTU, and 0.4% over 100 JTU. When arranged in order from smallest mean turbidity values to the largest, the lakes are: West Okoboji, Spirit, East Okoboji, Minnewashta, Upper Gar, and Lower Gar.

Turbidity values follow the same seasonal pattern in each lake. Highest values occur during the summer, concurrent with greatest algal activity. This is especially evident in Lake East Okoboji and the Gar chain lakes, where turbidity values of over 60 JTU are commonly measured during blue-green algal blooms. Turbidities are intermediate during the spring

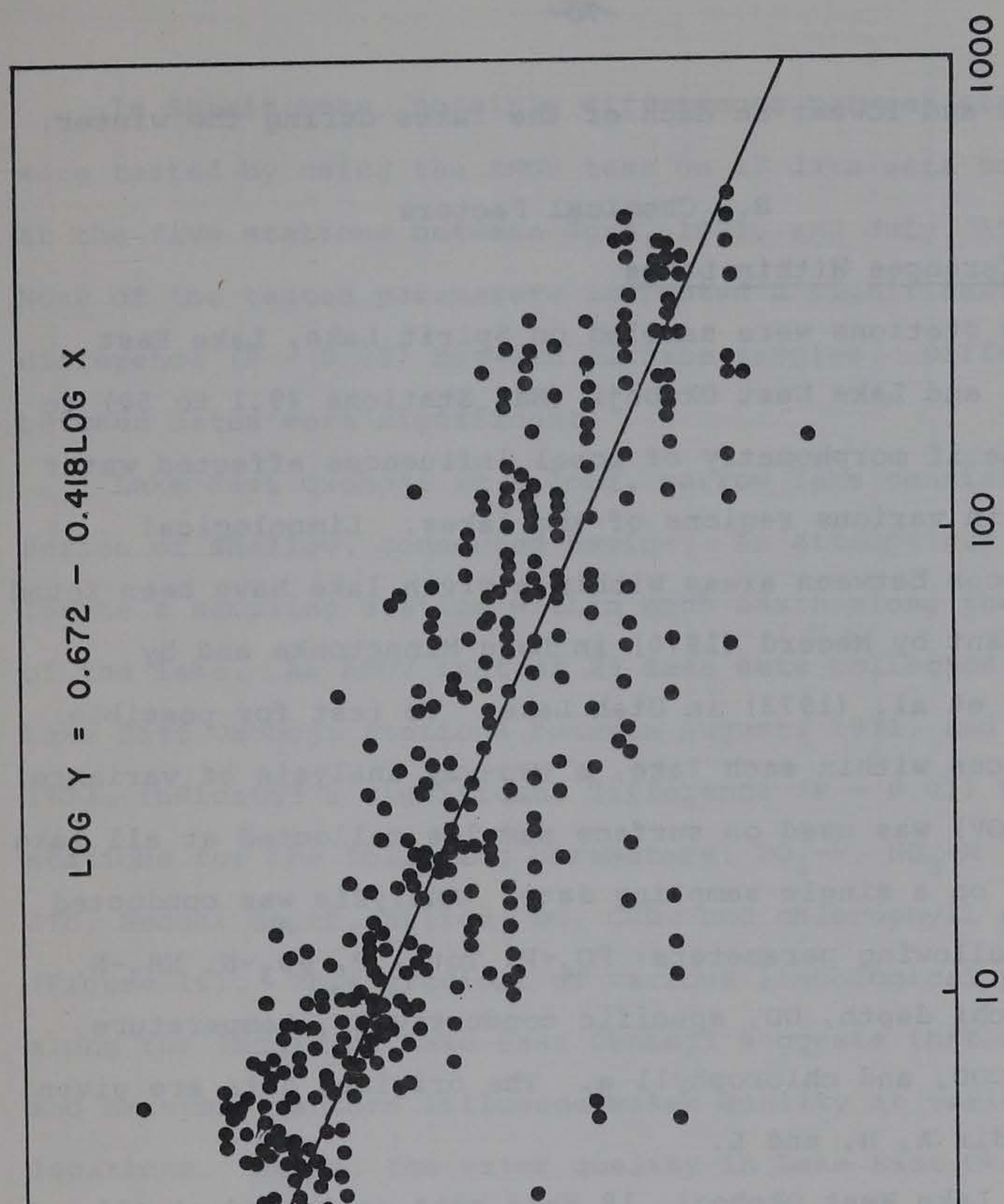


Figure 15. The regression of Secchi depth (m) on chlorophyll a concentration from the Iowa Great Lakes.

and fall and lowest in each of the lakes during the winter.

B. Chemical Factors

1. Differences Within Lakes

Five stations were sampled on Spirit Lake, Lake East Okoboji, and Lake West Okoboji (Bay Stations 49.1 to 50) to determine if morphometry of local influences affected water quality in various regions of the lakes. Limnological differences between areas within a given lake have been found significant by Megard (1970) in Lake Minnetonka and by Bradshaw et al. (1973) in Utah Lake. To test for possible differences within each lake, a two-way analysis of variance test (ANOV) was used on surface samples collected at all lake stations on a single sampling date. Analysis was conducted on the following parameters: PO_4-P, Total P, NO_3-N, NH_3-N, JTU, Secchi depth, DO, specific conductivity, temperature, silica, COD, and chlorophyll a. The original data are given in Appendix A, H, and L.

For Lake West Okoboji, 19 data sets collected at all stations between July, 1971, and November, 1972, were analyzed. None of the stations was significantly different ($P = 0.05$) for any of the tested parameters. Differences between dates were significant. In the ANOV of Secchi data, the shallow stations 49.1 (2 m) and 49.4 (3 m) were eliminated from analysis because readings were frequently made on the bottom.

In Spirit Lake, possible differences between stations were tested by using the ANOV test on 17 data sets collected at the five stations between June, 1971, and July, 1973. None of the tested parameters indicated a significant difference (P = 0.05) between surface samples. Differences between dates were significant.

Lake East Okoboji is a long, narrow lake consisting of a series of shallow, connected basins. An attempt was made to locate a sampling station within each basin along the length of the lake. An ANOV test of 29 data sets collected from Lake East Okoboji stations between August, 1971, and July, 1973, indicated a significant difference (P = 0.01) between stations for the following parameters: PO_4-P, NO_3-N (P = 0.025), JTU, Secchi depth, silica, DO, COD, and chlorophyll a (Figure 16). This gradient of various limnological parameters along the length of Lake East Okoboji suggests that morphological and external factors influence water quality at various locations. Hence, the water quality in Lake East Okoboji is not homogeneous across the lake surface as in Lake West Okoboji and Spirit Lake.

A paired "t" test analysis was used to test possible differences in water quality between surface and bottom samples collected from the various stations in Spirit Lake and Lake East Okoboji. The test was run on parameters tested in the ANOV analysis of differences between stations (except Secchi

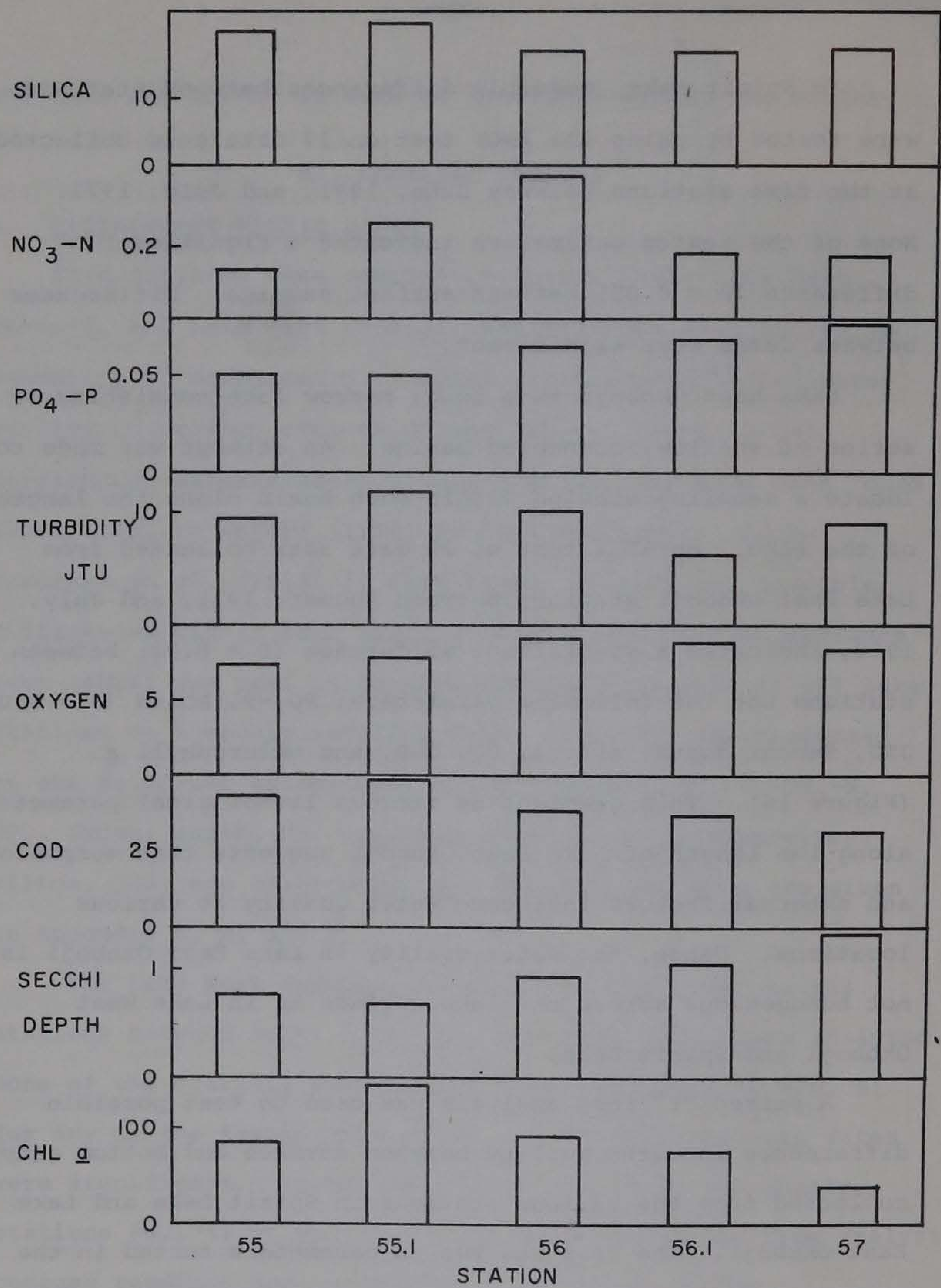


Figure 16. Mean water-quality characteristics at the various stations in Lake East Okoboji.

transparency and chlorophyll *a*). Data collected from surface and bottom at each station in Spirit Lake from March 1971 to May 1973 and from March 1971 to December 1972 in Lake East Okoboji were tested. None of the differences in the tested parameters was significant at the 0.01 level of confidence in either lake. In Spirit Lake, DO was significantly different ($P = 0.05$) at Stations 54.1 and 54.3, and pH was significantly different ($P = 0.05$) at Stations 54 and 54.1. In Lake East Okoboji, DO was significantly different from surface to bottom ($P = 0.05$) at Stations 55 and 57, NH_3-N was significant ($P = 0.05$) at Station 56.1, and JTU was significant ($P = 0.05$) at Station 57.

None of these differences between surface and bottom samples are considered biologically important. The conclusion drawn is that Spirit Lake is a homogeneous water body, both across its surface and within the water column. Lake East Okoboji, however, does have a water-quality gradient along the several basin-like areas from north to south.

2. Lake Chemistry

a. Chemical Oxygen Demand Measurements. Chemical oxygen demand (COD) analyses were initiated in August 1971 and were run on each subsequent lake sample collected during the study (Appendix A). Between August 1971 and September 1973, COD values ranged from 12.8 mg/l in Lake Minnewashta on April 24, 1972, to 137.6 mg/l in Lake East Okoboji (Station 57) on November 11, 1971. Seasonal fluctuations took place in each lake, with fall and winter values somewhat below the summer and spring means (Table 12). Seasonal variation was most pronounced in Lake East Okoboji and the Gar Lakes where algal blooms caused high summer and fall COD values. The least amount of seasonal variation was observed in Lake West Okoboji, where COD values were approximately 20 mg/l throughout the year.

There are consistent differences between the COD values measured in the various lakes. When arranged in order of increasing COD value, the lakes are: West Okoboji, Spirit, Minnewashta, East Okoboji, Upper Gar, and Lower Gar.

An analysis of variance was used to determine if COD values varied along the vertical profile taken every 5 meters at the deep hole in Lake West Okoboji. Data collected on 14 sampling dates during summer stratification in 1971, 1972, and 1973 were tested, and we found that differences between sample depths were not significant.

Adamson and Jahn (1939) first measured the oxidizable organic matter in Lake West Okoboji and found an average of 7.32 mg/l O_2 consumed in July-August 1936 and 7.28 mg/l O_2 consumed in July-August 1937. In Lake East Okoboji, 13.55 mg/l O_2 was consumed in this period of 1936. Less oxygen was consumed in 1936-37 than in recent analyses, but this is not

Table 12. Mean chemical oxygen demand values (mg/l O_2) from Lake West Okoboji (Bay Stations), Lake West Okoboji (Deep Hole), Lake East Okoboji (North Stations, 55 and 55.1), Lake East Okoboji (South Stations, 56 to 57), Spirit Lake, Upper Gar Lake, Lake Minnewashta, and Lower Gar Lake summarized by seasons between June 1971 and September 1973. N = the number of samples in the mean.

COD	Lake West Okoboji Bay Stations N	Lake West Okoboji Deep Hole N	Lake East Okoboji N Stations N	Lake East Okoboji S Stations N	Spirit Lake N	Upper Gar Lake N	Lake Minnewashta N	Lower Gar Lake N
Aug-Sept 1971	(50) 20.9	(27) 20.6	(15) 62.0	(23) 42.9	(15) 24.5	(6) 60.6	(6) 48.5	(6) 71.6
Oct-Nov 1971	(20) 21.2	(16) 22.2	(8) 46.3	(12) 44.4	(13) 31.9	(4) 54.0	(4) 42.8	(4) 43.4
Jan-May 1972	(44) 20.8	(50) 19.8	(17) 34.7	(28) 29.2	(31) 25.4	(7) 27.9	(10) 26.7	(9) 27.7
June-Sept 1972	(54) 20.9	(37) 20.2	(24) 59.9	(33) 43.3	(70) 24.0	(10) 50.3	(10) 38.9	
Oct-Nov 1972	(22) 21.9	(16) 20.7	(8) 62.9	(16) 34.6	(20) 25.4	(6) 41.1	(4) 38.5	(4) 48.8
Dec-May 1973	-	(51) 19.4	(8) 37.8	(22) 32.5	(36) 27.5	(4) 31.0	(3) 28.1	(3) 29.6
June-Sept 1973	-	(56) 20.2	(14) 36.0	(25) 34.8	(30) 26.2	(5) 35.5	(5) 36.4	(5) 45.3

sufficient proof to conclude that more organic matter is currently present in the lake because Adamson and Jahn used a permanganate method, which yields a less complete oxidation than the potassium dichromate-sulfuric acid reflux method used in this study. For this reason, comparisons cannot be drawn between 1936-37 values and current measurements. We can, however, compare with Robinson (1939), who used the permanganate method, and found values from 1.2 to 2.3 mg/l O_2 in Lake Washington in 1933. Lake Washington was oligotrophic at that time (W. T. Edmondson, personal communication). This indicates that Lake West Okoboji had an organic concentration in 1936 several times that of an oligotrophic lake. In 1936-37, oxidizable organic matter in Lake East Okoboji is approximately 50% greater than found in Lake West Okoboji; this likely is related to the larger algal standing crop in Lake East Okoboji. In current analyses of COD, the mean value in Lake East Okoboji also is about 50% greater than the mean of Lake West Okoboji.

b. Dissolved Oxygen. In all lakes, the dissolved oxygen content was greater during the fall and winter than during spring and summer. The seasonal cycle in Spirit Lake is indicative of the shallow, unstratified lakes within the watershed (Figure 13). Dissolved oxygen samples in all the unstratified lakes and above the thermocline in Lake West Okoboji (bay stations 49.1, 49.3, 49.4, and 50) varied little between surface and bottom samples on any given sampling date (Figure 13) (Appendix A). This is the result of continuous mixing taking place in these lakes and above the thermocline in Lake West Okoboji. In Lake West Okoboji (above the thermocline) and in Spirit Lake, most oxygen samples varied less than 0.5 mg/l DO between surface and bottom. In Spirit Lake, the largest difference between a surface and bottom sample was 6.62 mg/l DO, which occurred at Station 54.4 on February 23, 1972, taken through the ice.

In Lake East Okoboji, there is greater variability between dissolved oxygen concentrations between stations, and between surface and bottom samples at the same station, than in Lake West Okoboji and Spirit Lake. On 19 of 30 sampling dates, the difference between surface and bottom dissolved oxygen samples at the five Lake East Okoboji stations was greater than 1.7 mg/l DO. The greatest difference between a surface and bottom sample at the same station was 3.90 mg/l DO at Station 57 on August 10, 1971.

Values of less than 5.0 mg/l DO have been measured at all Lake East Okoboji stations during the summers of 1971 and 1972. Oxygen samples were collected between 0830 and 1030 hours, and 5.0 mg/l is below the saturation value controlled by temperature. This indicates that diurnal oxygen fluctuations, as a result of algal respiration, take place within this lake.

The highest dissolved oxygen concentration found during the study was 25.78 mg/l from under the ice in Lake East

Okoboji (Station 55.1). The water where this sample was taken was turbid with Euglenoid algae. Under ice cover conditions in 1972, Stations 55 and 55.1 underwent oxygen depletion. On November 11, 1971, these stations contained over 11.0 mg/l DO under a skim of ice. By February 24, 1972, surface and bottom samples had less than 0.6 mg/l DO. Oxygen depletion also was noted at these stations in 1973. On January 26, 1973, samples from both stations had less than 1.0 mg/l DO.

Dissolved oxygen values in Upper Gar Lake, Lake Minnewashta, and Lower Gar Lake are similar to values found at Lake East Okoboji stations. Depressed oxygen concentrations below the saturation level, indicative of diurnal fluctuation, have been measured in each of the lakes during summer, 1971 and 1973. On August 22, 1971, and June 29, 1972, oxygen concentration differences between surface and bottom (4 m) samples in Lake Minnewashta varied 5.65 mg/l and 10.83 mg/l DO respectively. This difference occurred during periods of ephemeral thermal stratification occasionally observed on this lake. On February 16, 1972, under the ice, partial depletion was noted in each of these lakes; all oxygen values were less than 1.5 mg/l on this date.

Oxygen depletion noted in Lake East Okoboji, Lake Minnewashta, and Upper and Lower Gar Lakes during the winters of 1972 and 1973, also occurred in the past and has resulted in occasional fish kills. Personnel of the Spirit Lake Fish

Hatchery run by the Iowa Conservation Commission collected winter dissolved-oxygen data from East Okoboji between 1951 and 1965. They frequently measured values of 2 mg/l DO from various areas in the lake. Records indicate heavy fish kills in Lake East Okoboji during the winters 1950-1951, 1953, and 1956. The 1956 fish kill resulted in very heavy fish loss from a large portion of Lake East Okoboji, including all fish species except bullheads. This resulted when heavy runoff through the Spring Run area (Station 48, drainage to Lower Gar Lake) forced water depleted of oxygen from the two Gar Lakes and Lake Minnewashta back into Lake East Okoboji.

Records indicate there were fish kills in Lake Minnewashta during the winters of 1949, 1956, and 1959 when DO values were less than 1 mg/l. Lower Gar Lake had a slight winter kill in 1948 resulting from oxygen depletion.

Lonergan (1930) reports an extensive fish kill in Upper Gar Lake in early October 1929. No dissolved oxygen was present in the water during an extensive algal bloom.

At the deep hole (42 m) (Station 49) of Lake West Okoboji, a vertical dissolved-oxygen series at 5-m intervals was measured to describe the profile resulting from thermal stratification and oxidative metabolism. Lake West Okoboji is a dimictic lake having homothermal periods during the spring and fall each year. During these turnover periods, dissolved oxygen concentrations are nearly uniform from surface to bottom (Figure 13 D and H). During stratification periods of summer and winter, oxygen depletion at the lower depths is found (Figure 13 A, B, C, E, F, G). By early September 1971, 1972, and 1973, a clinograde oxygen profile was established, with oxygen being completely depleted below the 25 m depth. Uniformity was again established during the fall turnover periods (November 9, 1971, and October 20, 1972), and dissolved oxygen concentrations differed by less than 0.3 mg/l along the vertical profile (surface to 35 m). Winter oxygen consumption in the lower strata is not complete, but does result in a clinograde profile (Figure 13 B and C).

The bottom sample at Station 49.2 (Lake West Okoboji) is 18 m deep, which most of the year is below the thermocline. Bottom dissolved-oxygen values at Station 49.2 decreased progressively during the summer months of 1971 and 1972. In early September of both years, the bottom dissolved-oxygen value at 49.2 was less than 1.0 mg/l DO; by late September (1971 and 1972), bottom values were over 8.0 mg/l DO as the thermocline dropped below the 18 m depth. This station was not sampled after November 1972.

One measure of the state of eutrophication of a lake is the extent and rate of loss of oxygen in the hypolimnion. It is assumed that the rate of delivery of oxidizable organic materials to the hypolimnion is proportional to the rate of production in the epilimnion; hence the greater the productivity, the greater the oxygen deficit (Edmondson, 1966). For example, Bazin and Saunders (1971) found that the rate of oxygen loss in the hypolimnion in Douglas Lake, Michigan, is higher in recent years than it was in the past, thus indicating that the lake has become more eutrophic.

We examined past and recent oxygen measurements in Lake West Okoboji to determine if similar changes have taken place in that lake. The available data falls into two time periods, 1919-1928 and 1950-1973. Most of the early oxygen data was obtained from an unpublished notebook of Dr. F. Stromsten. The original data from various sources are listed in Appendix F.

The summer measurements were divided into six blocks of 10 to 15 days in length. The average dissolved oxygen concentrations at 5 m depth intervals were calculated for each block for each of the time periods. These averages are plotted in Figure 17. Because of insufficient data, oxygen concentrations for depths below 30 m are not included.

In recent years less oxygen was present at various depths below the thermocline (about 10 m) than was present in the 1919-1928 period. A t-test analysis was used to determine which of the means were significantly different. Standard error bars are indicated in Figure 17 for those depths where significant differences were found. In July

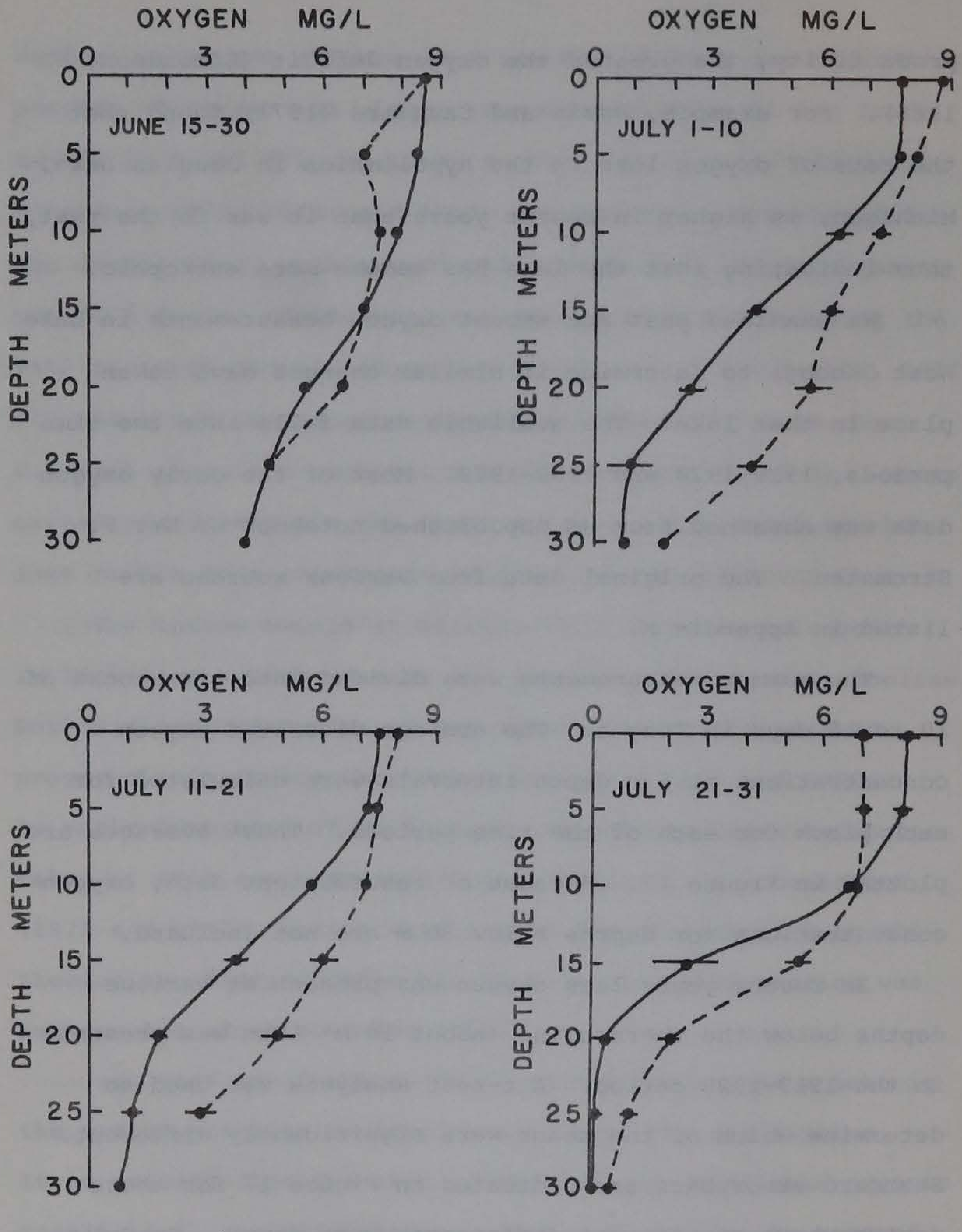
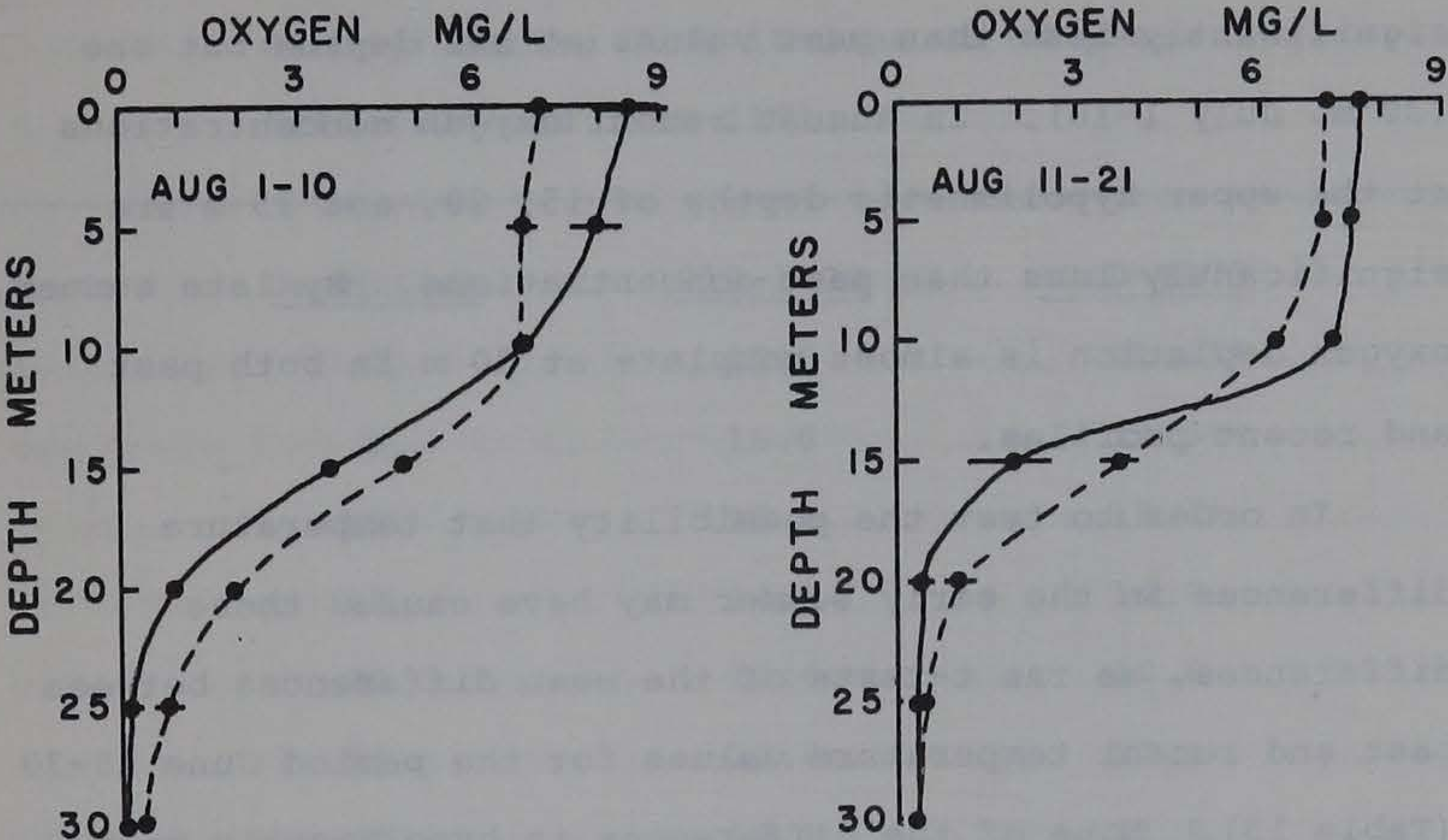


Figure 17. Average dissolved oxygen concentrations at 5m depth intervals in Lake West Okoboji during June-August 1919-1928 and 1950-1973. Standard error bars indicate means are significantly different at a given depth.


OXYGEN MG/L
0 3 6 9
0
5
10
15
20
25
30
DEPTH METERS
AUG I-10
AUG II-21

recent oxygen concentrations below the thermocline are significantly less than past values at all depths but one (30 m, July 1-10). In August recent oxygen concentrations at the upper hypolimnetic depths of 15, 20, and 25 m are significantly less than past concentrations. By late summer, oxygen depletion is almost complete at 30 m in both past and recent profiles.

In order to test the possibility that temperature differences in the early summer may have caused these differences, we ran t-tests of the mean differences between past and recent temperature values for the period June 15-30 (Table 13). None of the differences in hypolimnetic mean temperatures were significant. It is concluded that increased biological activity in the hypolimnion is responsible for the oxygen differences found.

The hypothesis that increased algal productivity in the epilimnion is responsible for this change is supported by the finding that epilimnetic oxygen concentrations are greater in 1950-1973 than they were in 1919-1928 during the period July 21 through August 10. Again water temperatures could not account for this difference since recent average temperatures for this period are slightly higher (22.9 C) than those measured in 1919-1928 (21.2 C). This difference is statistically significant and would tend to make the recent oxygen concentrations lower rather than higher on the basis

Table 13. Mean temperature values (C) from Lake West Okoboji during June 15-June 30 of years 1919-1928 and 1950-1973.

Depth (m)	1919-1928	1950-1973
0	17.6	21.2**
5	16.6	19.3**
10	16.4	18.4*
15	14.8	14.8
20	13.6	12.6
25	12.8	12.1
30	12.1	11.8

** means significantly different at P = 0.01

* means significantly different at P = 0.05

of solubility laws. Higher rates of photosynthetic oxygen production in the epilimnion in recent years could account for these higher values.

Oxygen deficits in the hypolimnion at various times in the summer were calculated in the following manner. The hypolimnion (10 m to 30 m) was assumed to be initially saturated with oxygen at the temperatures represented by the average temperature profiles for June 15-30 in the periods 1919-1928 and 1950-1973 (Table 13). By using the saturation values for those temperatures and the volume-depth curve for the lake, it was calculated that the average oxygen content of the hypolimnion at the onset of stratification was 685,500 kg in 1919-1928 and 684,000 kg in 1950-1973. The oxygen content of the hypolimnion for each of the six time blocks for each of the periods was then calculated and subtracted from the appropriate initial value. The differences were then divided by the surface area of the 10-m contour (716 ha) to yield aerial oxygen deficits. These were converted to units of mg/cm^2 (Table 14). The initial values are similar for the two time periods, but by July the recent values are about 50% greater than those calculated for the period 1919-1928. The August oxygen deficit values converge as the hypolimnetic oxygen is exhausted and no further oxygen consumption is possible.

Table 14. Hypolimnetic oxygen deficit values (mg O_2/cm^2) from Lake West Okoboji during 1919-1928 and 1950-1973.

Date	1919-1928	1950-1973
June 15-30	2.98	3.15
July 1-10	3.77	5.77
July 11-20	4.11	6.16
July 21-31	5.26	6.85
August 1-10	5.64	6.42
August 10-21	6.39	6.97

From these results it is concluded that about 50% more organic matter is being deposited in the hypolimnion of Lake West Okoboji each year in the period 1950-1973 than was being deposited in 1919-1928. This indicates that the lake has become slightly more eutrophic in the past 50 years.

c. Hardness, Alkalinity, and Chloride. The Iowa Great Lakes are typical of hardwater lakes of the bicarbonate type (Hutchinson, 1957). Total hardness values are above the 28.5 mg/l criteria set forth by Birge and Juday (1911) for hard waters, and alkalinities are above the 40 mg/l concentration that Moyle (1956) used to separate the hard and soft water lakes of Minnesota. The chloride concentration of the lakes is somewhat higher than most freshwater lakes (Hutchinson, 1957), but is similar to other Iowa Lakes (Bachmann, 1965).

Hardness, alkalinity, and chloride measurements have been made on the lakes in previous studies (Volker, 1962; Stoermer, 1963, 1964; Bachmann, 1965; Cooke, 1966a; Lang, 1970; Gale et al., 1972; and Krohn, unpublished) (Table 15). A selected sample of these past data is included in Appendix F.

Hardness, alkalinity, and chloride measurements made during this study are tabulated in Appendix G, and mean values for each lake appear in Table 16. Mean values for each parameter compare closely, with few exceptions, to previous records (Table 15) in any given lake. Variations in hardness

Table 15. Mean values of total hardness, calcium hardness, alkalinity and chloride measurements made on West Okoboji, East Okoboji, Spirit Lake, and Lake Minnewashta collected in past work.

Lake and Collector	Total Hardness mg/l $CaCo_3$	Calcium Hardness mg/l $CaCo_3$	Alkalinity mg/l $CaCo_3$	Chloride mg/l
East Okoboji Volker (1962)	210.7	84.5	198.7	10.4
West Okoboji Stoermer (1963)	220.6	83.2	216.5	12.1
West Okoboji Bachmann (1965)	205.0	-	199.0	6.2
East Okoboji Bachmann (1965)	221.0	-	209.0	7.1
Spirit Bachmann (1965)	243.0	-	208.0	6.1
Minnewashta Bachmann (1965)	232.0	-	210.0	7.1
Millers Bay West Okoboji Cooke (1966a)	210.0	65.0	200.0	-
West Okoboji Hostetter and Stoermer (1968)	206.5	-	195.5	-
Spirit March 1970 to 1971 Krohn	256.7	89.6	188.6	10.9
West Okoboji Lang (1970)	-	-	228.9	-
West Okoboji Gale et al (1972)	232.0	-	212.0	-
East Okoboji Gale et al (1972)	248.0	-	218.0	-

Table 16. Mean and standard error of the mean values for total hardness, calcium hardness, alkalinity and chloride measurements made on the Iowa Great Lakes between August 17, 1971 and July 20, 1973.

Lake	N	Total Hardness mg/l $CaCo_3$	N	Calcium Hardness mg/l $CaCo_3$	N	Alkalinity mg/l $CaCo_3$	N	Chloride mg/l
West Okoboji	62	212.9 ± 2.2	45	75.6 ± 1.3	45	203.6 ± 0.8	62	7.8 ± 0.1
East Okoboji	52	228.9 ± 6.3	37	110.1 ± 4.5	42	210.0 ± 4.9	47	10.6 ± 0.2
Spirit Lake	45	225.7 ± 2.6	45	87.1 ± 1.9	45	180.6 ± 3.0	44	9.1 + 0.1
Upper Gar	6	221.9 ± 22.7	4	107.7 ± 20.3	6	202.7 ± 14.3	6	10.4 ± 0.4
Minnewashta	7	221.4 ± 16.0	5	117.4 ± 16.1	7	200.3 ± 9.8	7	10.4 ± 0.3
Lower Gar	6	229.4 ± 35.4	4	124.5 ± 24.1	6	210.6 ± 25.6	6	10.4 ± 0.4

and alkalinity values between this study and previous reports are difficult to interpret because of seasonal fluctuations. The mean chloride concentration in Lake West Okoboji, Lake East Okoboji, Spirit Lake, and Lake Minnewashta for this study is slightly higher than the mean reported by Bachmann (1965), but below the mean chloride values that Krohn (unpublished) found on Spirit Lake, Stoermer (1963) found on Lake West Okoboji, and Volker (1962) found on Lake East Okoboji.

During this study, hardness and alkalinity concentrations varied only slightly between lakes in the watershed. Lake West Okoboji had the lowest mean chloride and total and calcium hardness values. Spirit Lake had the lowest mean alkalinity. Lower Gar Lake had the highest total and calcium hardness and alkalinity mean values, and Lake East Okoboji had the highest average chloride content.

Samples were not measured on a regular basis, making a discussion of seasonal variation difficult. On February 16, 1972, the highest total hardness measurement (395.2 mg/l $CaCO_3$) and the highest alkalinity measurement (329 mg/l $CaCO_3$) were collected through the ice in Lower Gar Lake. The lowest total hardness value (173.0 mg/l $CaCO_3$) was collected in Lake East Okoboji on August 20, 1971. On September 2, 1971, the lowest alkalinity concentration (152.2 mg/l $CaCO_3$) was in Spirit Lake. This cyclic tendency of alkalinity and hardness to be high in the winter and low in the summer also has been noted by Forney (1957). Forney attributes this cycle to the utilization of carbonate forms during periods of biological activity and their subsequent return to solution during reduced activity.

Thomas (1953) has used the difference between winter and summer alkalinities in the epilimnion as an index to the trophic state of a lake. Absolute comparisons between the Swiss Lakes studied by Thomas and the Iowa Great Lakes are difficult. From seasonal alkalinity differences, it seems that Lake East Okoboji and the Gar Lakes are at a higher trophic state than are Lake West Okoboji and Spirit Lake. The alkalinity differences (winter to summer) in Lake East Okoboji and the Gar Lakes are from 80-165 mg/l, approximately 50 mg/l in Spirit Lake, and less than 10 mg/l in Lake West Okoboji.

Unlike most lakes, where the calcium fraction accounts for approximately 80% of the alkaline carbonates (Ruttner, 1963), magnesium bicarbonate is the dominant buffer in the Iowa Great Lakes. Calcium hardness ranged from 35% of the total in Lake West Okoboji to 54% of the total hardness in Lower Gar Lake. The difference between calcium and total hardness is considered as magnesium hardness. Birge and Juday (1911) also found more magnesium bicarbonate in relation to calcium in Lake Mendota. The ratio between Ca and Mg in

Lake Mendota was 0.6:1. In Lake West Okoboji and Spirit Lake, the Ca-to-Mg ratios are 0.5:1 and 0.6:1, respectively. In Lake East Okoboji and Lower Gar Lake, these ratios are 0.9:1 and 1.2:1.

d. Plant Nutrients. Nitrogen and phosphorus are recognized as important nutrients for plant growth. We routinely measured total and soluble (ortho) phosphorus and the inorganic forms of nitrogen (ammonia and nitrate) (Appendix A). Total nitrogen was not routinely measured because of a lack of equipment to measure the organic fraction. Organic nitrogen analyses were made, however, on selected lake and stream samples from the Iowa Great Lakes watershed between March and June 1972. Samples were analyzed by the Engineering Research Institute Analytical Laboratory, Iowa State University, Ames, Iowa, by using the Phenate method (A.P.H.A., 1965) and a Technicon Auto Analizer II (Technicon Inst. Co., Tarrytown, N.Y.). Lake values (Table 17) ranged from 0.55 mg/l organic N in Spirit Lake to 1.07 mg/l in Lake East Okoboji. Lake West Okoboji values averaged 0.68 mg/l. Inorganic nitrogen is only 25% of the organic nitrogen fraction (Table 17). For this reason, our measurements of the inorganic forms in the lakes greatly underestimate the total nitrogen content.

In an analysis of the total organic nitrogen concentration of the Okoboji Lakes in July-August 1937, Adamson and Jahn

Table 17. Organic ammonia and nitrate nitrogen values (mg/l) from Lake West Okoboji, Lake East Okoboji, and Spirit Lake between March and June 1972.

Lake	Date	Organic N	NH_3-N	NO_3-N
West Okoboji	May 3, 1972			
Station 49 Surface		0.63	0.18	0
5m		0.64	0.17	0
10m		0.69	0.13	0
15m		0.71	0.10	0
20m		0.68	0.10	0
25m		0.69	0.10	0
30m		0.70	0.05	0
East Okoboji	May 4, 1972			
Station 55		0.81	0.24	0.09
55.1		1.01	0.21	0.18
56		1.07	0.22	0.37
56.1		1.00	0.20	0.08
57		0.90	0.25	0.05
Spirit Lake	May 18, 1972			
54		0.97	0.03	0.01
54.3		0.69	0.03	0.01
54.4		1.05	0.08	0.01
Spirit Lake	June 5, 1972			
54		0.57	0.14	0.02
54.1		0.59	0.21	0.01
54.2		0.55	0.36	0
54.3		0.56	0.23	0
54.4		0.55	0.25	0

(1939) found 0.82 mg/l organic N in Lake West Okoboji and 1.72 mg/l organic N in Lake East Okoboji. Although the methods of analysis differ and there are a small number of samples, the past and present organic nitrogen contents of these lakes are similar. In both studies, the organic nitrogen content of Lake East Okoboji is approximately twice the concentration found in Lake West Okoboji.

Organic nitrogen values varied in the streams (Table 18), ranging from 0.07 mg/l to 4.3 mg/l. In watersheds drained by the sampled streams, organic nitrogen averaged 0.54 mg/l, ammonia nitrogen averaged 0.43 mg/l, and nitrate nitrogen averaged 2.84 mg/l (Appendix B). During this period, the organic fraction in these streams was 16% of the inorganic load. Therefore, most of the nitrogen lost from the watershed in stream or tile drainage was in the inorganic form, and the accuracy of estimating nitrogen output from these watersheds was only slightly impaired by not measuring the inorganic nitrogen fraction.

Concentrations of total phosphorus, orthophosphate phosphorus, and nitrate and ammonia nitrogen varied between the sampled lakes and within each lake during the yearly seasons. In general, nutrient levels in Lake West Okoboji and Spirit Lake are similar. Total phosphorus concentrations are approximately 0.03-0.04 mg/l in Lake West Okoboji and are slightly higher in Spirit Lake. Orthophosphate phosphorus and nitrate nitrogen in these lakes are seldom detected and,

Table 18. Organic nitrogen values (mg/l) from stream stations in the Iowa Great Lakes Watershed during March and April 1972.

Station	Date	Organic N (mg/l N)
17	3-21-72	1.44
32	3-21-72	0.44
19	3-21-72	0.71
20	3-21-72	0.40
23	3-21-72	0.62
24	3-21-72	0.43
24.1	3-21-72	0.20
28	3-21-72	0.59
29	3-21-72	0.10
29.1	3-21-72	0.07
30	3-21-72	0.22
31	3-21-72	0.04
33	3-25-72	0.05
38	3-25-72	0.29
38.1	3-25-72	0.59
13.2	3-25-72	0.23
10	3-25-72	0.22
11	3-25-72	0.03
12	3-25-72	0.23
13	3-25-72	0.18
16	3-25-72	0.23
29	4-7-72	0.60
29.1	4-7-72	0.30
29.2	4-7-72	0.68
29.3	4-7-72	1.55
23	4-7-72	0.31

Table 18 (continued)

Station	Date	Organic N (mg/l N)
32	4-7-72	0.41
20	4-7-72	0.39
19	4-7-72	0.65
22	4-7-72	0.89
21.1	4-7-72	0.29
24.1	4-7-72	0.34
41	4-7-72	0.68
18	4-7-72	0.70
39.1	4-8-72	1.28
41.1	4-8-72	0.49
23	4-17-72	0.30
39.1	4-17-72	1.18
13	4-17-72	0.49
22	4-17-72	0.73
38.3	4-17-72	1.10
38	4-17-72	0.56
38.2	4-17-72	1.20
33	4-17-72	0.23
13.2	4-17-72	4.30
38.1	4-17-72	0.90
21.1	4-17-72	0.35
16	4-17-72	0.56
48.2	4-18-72	0.28
48	4-18-72	0.95
46.1	4-18-72	0.61
40	4-18-72	0.41
48.1	4-18-72	0.57
40.1	4-18-72	0.43
41.1	4-18-72	0.73
47	4-18-72	0.40
41	4-18-72	1.11
46	4-18-72	0.55
41.2	4-18-72	0.31

if present, are found at levels from 0.01 to 0.10 mg/l. Ammonia nitrogen is around 0.15 mg/l in Lake West Okoboji and approximately 0.20 mg/l in Spirit Lake. In Lake East Okoboji, total phosphorus and ammonia nitrogen concentrations approximate 0.18 and 0.50 mg/l, respectively. Orthophosphate phosphorus and nitrate nitrogen usually are measurable in Lake East Okoboji at concentrations of 0.05 to 0.10 mg/l or greater. Nutrient concentrations in Upper Gar Lake and Lake Minnewashta approximate concentrations measured in Lake East Okoboji. Nitrogen and phosphorus concentrations in Lower Gar Lake are approximately 10% greater than Lake East Okoboji levels and are the highest nutrient concentrations of any lake within the watershed.

Mean seasonal values of nitrogen and phosphorus in Lake West Okoboji, Lake East Okoboji, Spirit Lake, and Lower Gar Lake for 1971 through 1973 are given in Tables 19, 20, 21, and 22. Nutrient cycles in Lake West Okoboji and Spirit Lake follow the same general pattern, whereas the annual patterns of Lake East Okoboji and Lower Gar Lake are similar.

In Lake West Okoboji and Spirit Lake, total phosphorus concentrations are greatest in September and October, decrease during the winter, rise slightly in the spring, and are relatively stable throughout the summer. Ammonia nitrogen concentrations are greatest during the fall in both lakes; winter and summer values are somewhat below this level.

Table 19. Mean seasonal concentration of total phosphorus, orthophosphate phosphorus, nitrate nitrogen and ammonia nitrogen (mg/l) in Lake West Okoboji between March 1971 and September 1973.

Season	Mean Total Phosphorus mg/l	Mean Orthophosphate Phosphorus mg/l	Mean Nitrate Nitrogen mg/l	Mean Ammonia Nitrogen mg/l
June-Sept 1971, 1972, 1973	0.033	0.010	0.009	0.110
Oct-Nov 1971, 1972	0.049	0.028	0.043	0.231
Dec-May 1971, 1972 1973	0.032	0.021	0.043	0.178

Table 20. Mean seasonal concentration of total phosphorus, orthophosphate phosphorus, nitrate nitrogen, and ammonia nitrogen (mg/l) in Lake East Okoboji between March 1971 and August 1972.

Season	Mean Total Phosphorus mg/l	Mean Orthophosphate Phosphorus mg/l	Mean Nitrate Nitrogen mg/l	Mean Ammonia Nitrogen mg/l
June-Sept 1971, 1972, 1973	0.165	0.054	0.085	0.468
Oct-Nov 1971, 1972	0.212	0.092	0.163	0.683
Dec-May 1971, 1972, 1973	0.207	0.130	0.431	0.881

Table 21. Mean seasonal concentration of total phosphorus, orthophosphate phosphorus, nitrate nitrogen and ammonia nitrogen (mg/l) in Spirit Lake between March 1971 and September 1973.

Season	Mean Total Phosphorus mg/l	Mean Orthophosphate Phosphorus mg/l	Mean Nitrate Nitrogen mg/l	Mean Ammonia Nitrogen mg/l
June-Sept 1971, 1972, 1973	0.041	0.011	0.017	0.239
Oct-Nov 1971, 1972	0.045	0.008	0.067	0.247
Dec-May 1971, 1972, 1973	0.023	0.010	0.110	0.188

Table 22. Mean seasonal concentration of total phosphorus, orthophosphate phosphorus, nitrate nitrogen, and ammonia nitrogen (mg/l) in Lower Gar Lake between March 1971 and September 1973.

Season	Mean Total Phosphorus mg/l	Mean Orthophosphate Phosphorus mg/l	Mean Nitrate Nitrogen mg/l	Mean Ammonia Nitrogen mg/l
June-Sept 1971, 1972, 1973	0.222	0.053	0.145	0.644
Oct-Nov 1971, 1972	0.203	0.087	0.134	0.960
Dec-May 1971, 1972, 1973	0.198	0.138	0.349	1.334

Orthophosphate phosphorus and nitrate nitrogen seldom are measurable in Lake West Okoboji and Spirit Lake during the summer. On September 27, 1972, 0.05 mg/l NO_3-N was measurable in Spirit Lake; succeeding samples showed an increase in NO_3-N until March 1, 1973, when 0.22 mg/l NO_3-N was present. After ice-melt in Spirit Lake, nitrate nitrogen was undetectable. From November 1971 to March 1972, approximately 0.14 mg/l NO_3-N was measured in Spirit Lake. Only trace amounts of orthophosphate phosphorus were detectable in Spirit Lake between October and March during both years. In Lake West Okoboji, approximately 0.025 mg/l PO_4-P and 0.06 mg/l NO_3-N were detectable during the winters of 1971-1972 and 1972-1973.

In Lake East Okoboji and Lower Gar Lake, orthophosphate phosphorus and nitrate nitrogen concentrations between June and September vary from trace amounts to levels of 0.05 to 0.10 mg/l, respectively. Total phosphorus is approximately 0.2 mg/l in both lakes during the summer. Nutrient concentrations in these lakes increase during the fall and winter. Under the ice, nutrient concentrations in both lakes are approximately 0.2-0.3 mg/l total P, 0.15-0.2 mg/l PO_4-P, 0.35 mg/l NO_3-N, and 0.8-2.0 mg/l NH_3-N. Presumably, these high nutrient concentrations are from the oxidative release of nitrogen and phosphorus from the breakdown of organic materials produced within, and washed into the lakes. After the ice melts from these lakes in the spring, nutrient levels drop to about 20% of the winter concentration.

Lake West Okoboji is the only one of these lakes to have nitrogen and phosphorus concentrations vary along a depth profile. Four general conditions describe the seasonal nutrient profiles found within this lake. These profiles are directly related to seasonal thermal patterns. During spring overturn, the nitrogen and phosphorus levels are nearly uniform through the profile (Figure 18 A). At the onset of stratification, hypolimnetic nutrient concentrations increase with depth. Throughout summer stratification, hypolimnetic nitrogen and phosphorus concentrations increase, with the highest levels being attained shortly before the fall overturn (Figure 18 B). During the summers of 1971, 1972, and 1973, nitrate nitrogen concentrations decreased in the hypolimnion until midsummer when nitrate was no longer detected below the thermocline. Presumably, this loss resulted from denitrification. Brezonik and Lee (1968) found this same hypolimnetic denitrification pattern in Lake Mendota. Fall turnover causes nitrogen and phosphorus levels to become consistent once again throughout the profile (Figure 18 C). During winter stratification, nutrient concentrations again increase with depth (Figure 18 D).

e. Silica Measurements. Silica measurements (mg/l SiO_2)

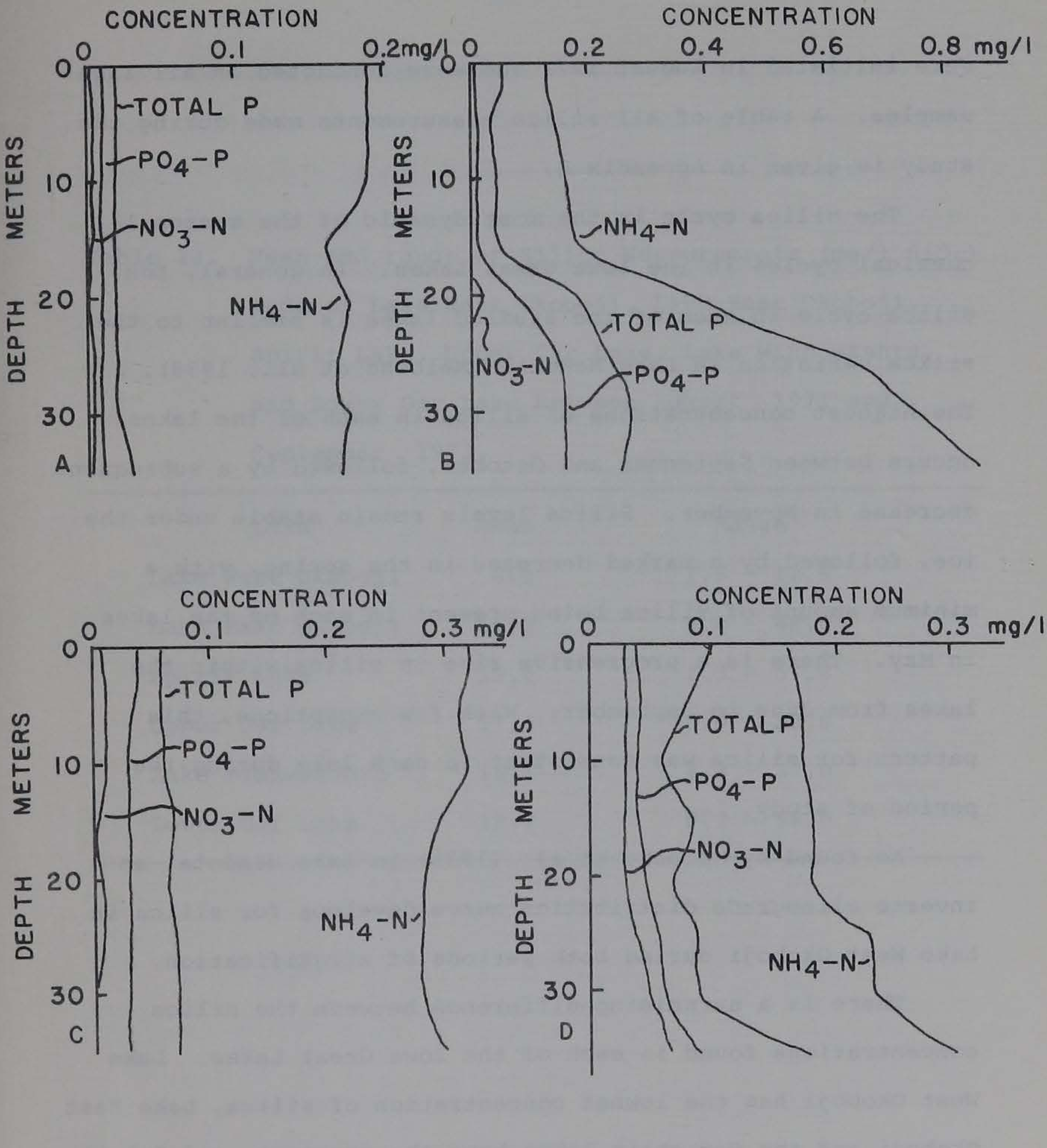


Figure 18. Selected phosphorus (mg/l) and nitrogen (mg/l) profiles depicting seasonal variation in Lake West Okoboji.

were initiated in August 1971 and were conducted on all lake samples. A table of all silica measurements made during the study is given in Appendix H.

The silica cycle is the most dynamic of the seasonal chemical cycles in the Iowa Great Lakes. In general, the silica cycle in each of the studied lakes is similar to the silica variation in Lake Mendota (Meloche et al., 1938). The highest concentrations of silica in each of the lakes occurs between September and October, followed by a subsequent decrease in November. Silica levels remain stable under the ice, followed by a marked decrease in the spring, with a minimum amount of silica being present in each of the lakes in May. There is a progressive rise in silica within the lakes from June to September. With few exceptions, this pattern for silica was consistent in each lake during the period of study.

As found by Meloche et al. (1938) in Lake Mendota, an inverse clinograde distribution curve develops for silica in Lake West Okoboji during both periods of stratification.

There is a surprising difference between the silica concentrations found in each of the Iowa Great Lakes. Lake West Okoboji has the lowest concentration of silica, Lake East Okoboji and the Gar chain lakes have the greatest, and Spirit Lake silica concentrations oscillated between these extremes during the study (Table 23).

Table 23. Mean and range of Silica Measurements (mg/l SiO_2) made on Lake West Okoboji, Lake East Okoboji, Spirit Lake, Upper Gar Lake, Lake Minnewashta, and Lower Gar Lake between August 1971 and September 1973.

Lake	Mean	Range
Lake West Okoboji	6.0	1.5 - 12.9
Lake East Okoboji	16.3	0.0 - 48.0
Spirit Lake	10.6	1.3 - 57.0
Upper Gar Lake	17.4	0.9 - 52.0
Lake Minnewashta	16.1	4.3 - 37.0
Lower Gar Lake	19.2	0.2 - 58.0

Silica is a major nutrient for diatoms, and variations in silica concentration can be related to fluctuations in diatom populations in a lake (Meloche et al., 1938). Therefore, it is not surprising that Lake West Okoboji, with an abundant diatom flora, had the lowest mean and smallest range of silica concentration of the lakes surveyed. In Lake East Okoboji and the Gar chain lakes during the summer months of 1971 and 1972, silica concentrations ranged from 10 to over 50 mg/l, while Aphanizomenon was the major planktonic algae. From May through June 1973, Melosira granulata was the dominant plankton algae, and silica values dropped to zero at the northern end of Lake East Okoboji and never got above 10 mg/l at any station from June to August 1973. Blue-green algae dominated the phytoplankton of Spirit Lake in August and September 1971, when silica values ranged from 35-50 mg/l. From July to September 1972, Stephanodiscus made up an abundant portion of the Spirit Lake phytoplankton, and silica concentrations were below 4.0 mg/l, which is less than in Lake West Okoboji during this time. Again in 1973, Stephanodiscus was prominent in the summer plankton, and silica concentrations were below 7.0 mg/l.

f. Total Iron. Total iron measurements (mg/l) began in August 1971 and were continued on all lake samples until May 1973. The raw data from these tests are given in Appendix I.

These measurements were initiated to determine if concentrations of this element differed among the various lakes studied. Such a difference does exist, with lowest concentrations being found in Lake West Okoboji and the highest values in Lower Gar Lake. Values in Lake East Okoboji and Spirit Lake were similar. Total iron ranged from 0.01-0.26 mg/l in Lake West Okoboji, 0.02-0.39 mg/l in Spirit Lake, 0.03-0.38 mg/l in Lake East Okoboji, and 0.05-1.08 mg/l in Lower Gar Lake.

3. Interchange of Water Between East and West Okoboji

Because Milford Creek, which flows out of Lower Gar Lake, represents the only surface outlet for the Iowa Great Lakes, it has long been assumed that water from Lake West Okoboji flows under the U.S. Highway 71 bridge into Lake East Okoboji. Field observations, on the other hand, have indicated that the waters of Smith's Bay, just west of the bridge, have several characteristics similar to the waters of Lake East Okoboji. In the summers of 1971, 1972, and 1973, several series of water samples were taken at stations along a transect extending from the deep hole of Lake West Okoboji to the open waters of the southern end of Lake East Okoboji (Figure 19). The mean values of several of the measured parameters are given in Tables 24, 25, and 26.

In general, the levels of plant nutrients and algal chlorophylls are somewhat higher in inner Smith's Bay than are

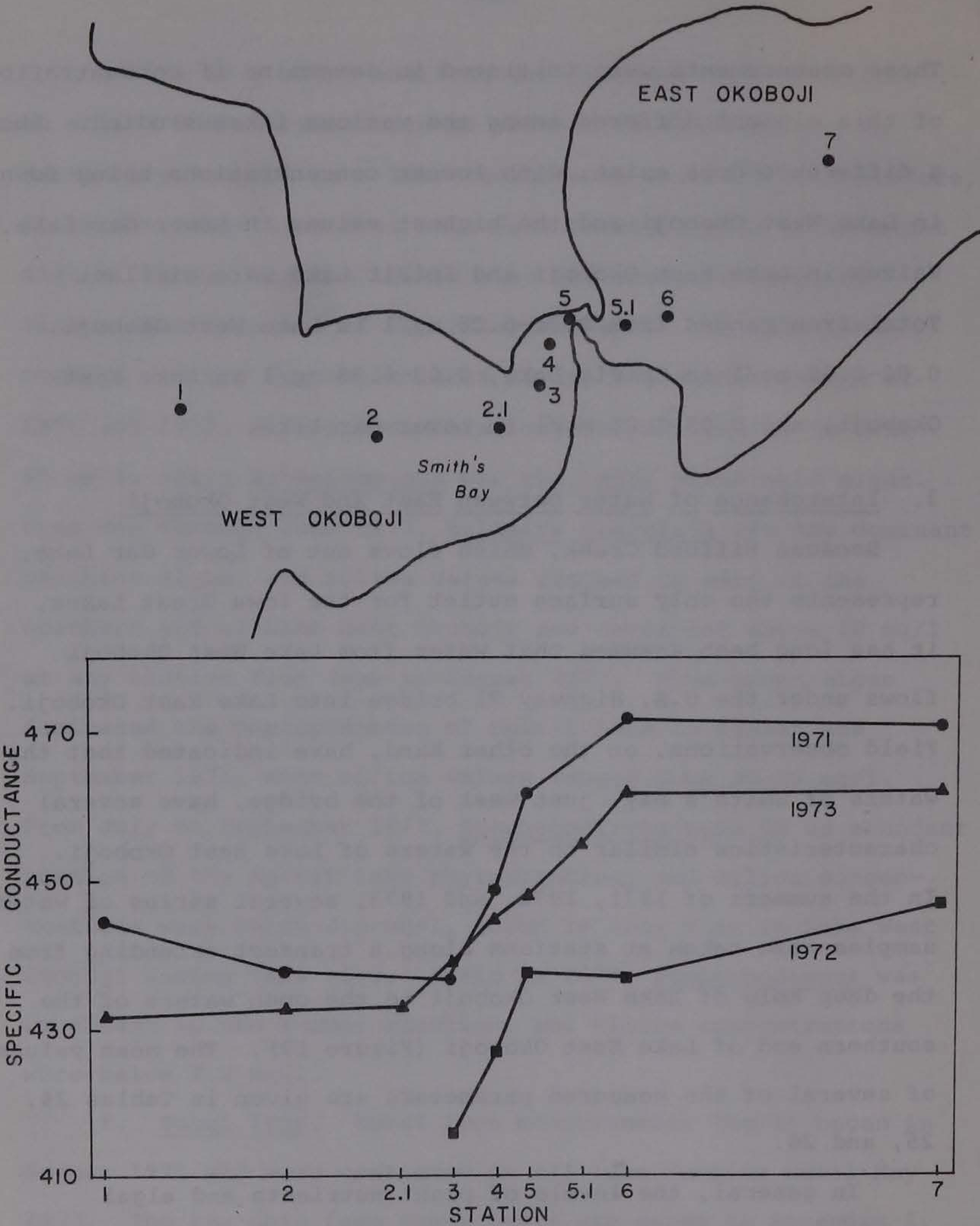


Figure 19. Map of stations along a transect extending from the deep hole of Lake West Okoboji to the open waters of Lake East Okoboji. Also, the distribution of mean specific conductance values across the transect in 1971, 1972 and 1973 are plotted for their respective station.

Table 24. Mean of water-quality parameters collected along transect from Lake West Okoboji to Lake East Okoboji on August 26, 30, and September 20, 1971. A map of station location is given in Figure 19.

1971	N	1	2	3	4	5	6	7
PO_4-P	(2)	.00	.00	.01	.05	.10	.14	.14
Si	(3)	7.1	6.9	7.3	12.9	19.3	25.3	24.4
JTU	(2)	3	5	6	13	12	13	15
O_2	(3)	7.94	8.24	8.64	7.82	6.42	7.06	6.87
Temp	(3)	21.8	21.7	21.8	21.4	21.3	21.4	21.6
Secchi	(3)	2.7	2.4	1.9	1.3	1.4	1.2	1.2
S.Cond	(2)	445.3	438.0	437.2	449.3	462.8	472.1	471.2

Table 25. Mean of water-quality parameters collected along a transect from Lake West Okoboji to Lake East Okoboji on August 1, 24, and September 6, 1972. A map of station location is given in Figure 19.

1972	N	3	4	5	6	7
PO_4-P	(3)	.01	.02	.06	.06	.08
Total P	(3)	.04	.07	.13	.15	.19
NO_3-N,	(3)	.01	.03	.06	.06	.06
NH_3-N	(3)	.16	.31	.55	.61	.81
JTU	(3)	2	5	6	5	5
Si	(3)	6.7	9.0	13.6	16.3	19.0
S. Cond	(3)	416.0	426.8	438.3	437.5	446.7
Temp	(3)	22.2	22.0	21.9	22.1	22.2
Secchi	(2)	2.3	1.6	1.6	1.6	2.0

Table 26. Mean of water-quality parameters collected along a transect from Lake West Okoboji to Lake East Okoboji on June 22, July 16 and 20, August 8 and 20, 1973. A map of station location is given in Figure 19.

1973										
Secchi	(5)	3.9	2.8	2.6	1.6	1.0	0.9	0.9	0.8	1.0
JTU	(5)	4	4	2	5	10	11	19	20	16
Silica	(5)	4.9	5.0	5.3	6.5	5.5	5.8	6.0	6.1	6.5
Oxygen	(5)	6.47	6.36	6.48	5.92	5.77	5.09	5.48	5.70	5.68
PO_4-P	(5)	.01	.02	.02	.03	.04	.04	.05	.05	.05
Total P	(5)	.03	.03	.03	.04	.08	.09	.12	.12	.10
S.Cond	(5)	432.9	433.3	433.1	438.9	445.0	447.7	455.9	462.1	462.1
NH_3-N	(5)	.06	.06	.09	.12	.23	.29	.31	.39	.36
NO_3-N	(5)	.01	.01	.01	.01	.02	.03	.07	.11	.12
COD	(5)	24.8	23.3	23.7	26.3	29.1	38.3	34.3	34.4	27.5
Chlorophyll a	(4)	4.43	5.19	6.35	14.74	37.91	98.61	95.28	64.18	35.06

the values found in the open waters of Lake West Okoboji, although they are not as high as the values found in Lake East Okoboji.

The mixing pattern in this region can be inferred from the distribution of the specific conductance values across the transect. These are plotted in Figure 19. In general, Lake East Okoboji has higher values for specific conductance than does Lake West Okoboji. If there were a general outflow of water from Lake West Okoboji into Lake East Okoboji, these lower values should persist up to the bridge (Station 5) and then increase as the transect extends into Lake East Okoboji. This was not found. Rather, there was a gradient extending across the connection, indicating that some of the East Okoboji water was flowing into West Okoboji and that some of the West Okoboji water was flowing into East Okoboji. In many respects, this situation is similar to the mixing zones found where rivers flow into tidal estuaries.

Lake East Okoboji had a higher ratio of watershed area to lake area than did Lake West Okoboji. During periods of rising water levels, Lake East Okoboji would rise at a more rapid rate than Lake West Okoboji if runoff volumes per unit area are the same in the two watersheds. Thus, water would tend to flow from East Okoboji to West Okoboji at those times. During periods of falling water levels due to outflows through the

Lower Gar Lake outlet, the flow would be in the other direction. During periods of stable water levels, wind action and waves would tend to cause a small interchange of water in the immediate vicinity of the bridge. Groundwater flows may also play a role in determining the pattern of flow between these two lakes.

It was not possible for us to measure the magnitude of the flows between the two lakes so that they could be taken into account in the calculation of nutrient budgets. This was not considered to be a large source of error.

4. Quality of Storm Water

Storm-water flowing into the lakes from the municipal areas of Spirit Lake, Arnolds Park, and Okoboji were measured intermittently during the study for nitrogen and phosphorus load entering the lakes from this source. The urban area of Spirit Lake drains into Lake East Okoboji by a storm-sewer system, parts of which are connected to metered watersheds 13.2, 38, and 33. Station 13.3 was a storm drain discharging into Lake East Okoboji at the west end of 15th Street, Spirit Lake, Iowa. This station was monitored regularly between June 1972 and August 1973. Arnolds Park and Okoboji, Iowa, are split, with a portion of each town draining into Lake West Okoboji and Lake East Okoboji. Areas of Arnolds Park also drain into Upper Gar Lake and Lake Minnewashta. Results of storm water analyses collected from Spirit Lake, Arnolds Park, and Okoboji, Iowa, appear in Appendix K. Analyses of water samples collected from Station 13.3 appear in Appendix B.

Nitrogen and phosphorus concentrations in storm water are quite high. Total P averaged 0.56 mg/l; NO_3-N averaged 2.08 mg/l, and a mean of 1.21 mg/l NH_3-N was found in the storm water.

5. Rainfall

Rainfall was collected at Iowa Lakeside Laboratory on 36 dates between June 24, 1971, and August 7, 1973, and analyzed for phosphorus (ortho and total), nitrogen (NH_3-N and NO_3-N), specific conductance, and turbidity. Data are tabulated in Appendix J. The mean and standard error of the mean for each measured parameter appear in Table 27. The mean concentrations of nitrate and ammonia nitrogen found in this study are within the range of values found in rainwater across Iowa (M.A. Tabatabai, Dept. of Agronomy, ISU, personal communication) and are within the range reported by Carroll (1962) in rainfall across the United States. Junge (1958) found lower ammonia nitrogen concentrations than did Carroll (1962) or the present study, but found comparable nitrate nitrogen concentrations in rainwater over the United States. The total phosphorus concentrations in rainwater found in this study are within the range given by Weibel (1969) for rainfall around Lake Erie. Allan et al. (1968) have found concentrations of inorganic

Table 27. Means and standard errors of the mean for phosphorus, nitrogen, turbidity, and specific conductance measurements made on rainwater collected at Iowa Lakeside Laboratory between June 24, 1971, and August 7, 1973.

	PO_4-P	Total P	NH_3-N	NO_3-N	JTU	Spec. Cond.
N	36	29	36	36	32	10
$\bar{X}$	.04	.05	.85	.47	3.3	29.1
Std Error	.01	.01	.08	.12	.8	5.7

nitrogen and phosphorus in rainwater to be greater over areas of intensive farming, such as the Okoboji area.

C. Biological Features

1. Historical Literature Review

a. Iowa Lakeside Laboratory Studies. Scientific investigations of the fauna and flora of the lakes region increased after the establishment of the Iowa Lakeside Laboratory in 1909 on a 100-acre tract located on the west shore of Lake West Okoboji on Little Miller's Bay. The laboratory is run during the summer as a field instruction and research institution (Macbride, 1909; Bodine, 1940; Hayden, 1948; King, 1963). Ulmer (1963) has compiled a comprehensive list of more than 200 papers published and resulting, at least in part, from research conducted at the Iowa Lakeside Laboratory. This publication should be referred to for a complete summary of biological work done in the Iowa Great Lakes region up to 1960.

b. Planktonic Algae. Of particular interest is the rich phytoplankton flora of the lakes region. This interest is, in part, the result of blue-green algal blooms in the lakes, which are responsible for local nuisance conditions (Larrabee, 1927a; Lonergan, 1930; Rose, 1934, 1953).

Myers (1898) reported the diatom taxa collected from lakes in the Okoboji watershed. Buchanan (1907) published notes on algae collected in Lakes East and West Okoboji and the Gar Lakes. An extensive study of the plankton algae in lakes and wetlands of the Okoboji area was made by Smith (1926). Smith tabulated the distribution and maximum frequency of the collected algae. Birge and Juday (1920) enumerate the results of a net plankton catch from Lake West Okoboji, August 1, 1919. They report finding Anabaena, Gleotrichia, Microcystis, Staurastrum, Pandorina, Aphanocapsa, Oocystis, Asterionella, Fragilaria, Melosira, and Stephanodiscus in a vertical profile. Tiffany (1926) studied the filamentous algae of northwestern Iowa, with many references to the Iowa Great Lakes. Prescott (1929, 1931), in studying Iowa algae, refers to collections from the Iowa Great Lakes. Other authors have since studied aspects of the planktonic algae of the region (Stoermer, 1963, 1964; Hostetter and Stoermer, 1968).

It is difficult to identify exactly when the blue-green genera became a problem in the northwestern Iowa lakes because few data are available. Smith (1926) reports Aphanizomenon flos aquae and Microcystis sp. as being rarely found in the plankton of Lake East Okoboji and Spirit Lake during the summer of 1923. Microcystis aeruginosa was found by Smith in abundance only in Upper Gar Lake. This report is of interest because Aphanizomenon and Microcystis presently are the dominant plankton genera in Lake East Okoboji and the Gar Lakes.

Wylie (1912), while studying the aquatic vegetation of Lake East Okoboji, refers to a "yellowish tinge of the waters... due primarily to the myriads of tiny one-celled algae, diatoms...". He makes no reference to blue-green genera. A year later, Shimek (1913a) refers to a discoloration in late summer of Lake East Okoboji and "life which ordinarily abounds in Lake East Okoboji and in Gar Lakes was destroyed, evidently by the befouled waters". Shimek does not identify the cause of this discoloration. Larrabee (1927a) refers to phytoplankton decomposition in Spirit Lake in August 1922, but does not identify the genera. Wieters (1928) mentions that the "lakes are not in their original condition of pristine purity" but fails to delineate the exact nature of the change. The green color of Lake East Okoboji is referred to by Kelley (1926a) and is again mentioned by Francis (1930), who states that this change has "come on in the last 4-5 years". Since that time, many authors have mentioned the blue-green algae of Lake East Okoboji and the Gar Lakes (Lonergan, 1930; Rose, 1934, 1953; McDonald, 1939; Parsons, 1950; Dodd, 1953; Weber, 1958; Volker, 1962; Volker and Smith, 1965; Gale et al., 1973).

The blue-green algae of Lake West Okoboji have received much less attention than those of Lake East Okoboji. Wylie (1920), in a survey of vegetation in Lake West Okoboji, states "algae are always in evidence..., but they are seldom conspicuous and never large". Smith (1926) mentions that

Gleotrichia is abundant in West Lake. Jahn and Taylor (1939) refer to nuisance blue-green conditions in Lake West Okoboji during the summer of 1936. Rose (1953) refers to Gleotrichia scums in Lake West Okoboji.

c. Aquatic Macrophytes. Shimek (1896) published some notes on the aquatic plants of northwestern Iowa, including Spirit Lake and the Okoboji Lakes, which were previously studied by Cratty (1896). Wylie (1912, 1920) has done further work on the aquatic macrophytes of the lakes region. Shimek (1915a) lists species and relative abundance of the aquatic plants of the lakes region, including Spirit Lake, Lake West Okoboji, Lake East Okoboji, and the Gar Lakes. The flora of 15 northern Iowa lakes was reported by L. H. Pammel in 1916 as Part III of the State Highway Commission report on Iowa lakes and lake beds (Iowa State Highway Commission, 1917). Water depth ranges and relative abundance were noted for each species. Knupp (1911) discusses the floral development of Myriophyllum spicatum and its abundance in the bay regions of Lake West Okoboji. Jones found 11.5% of the total area of Lake West Okoboji covered by Ceratophyllum (E. N. Jones, 1925). Sawyer (1926), in a study of the Charophyta of the Okoboji region, mapped the distribution of these plants in the lakes. Larrabee (1927a), notes increasing amounts of vegetation are found in Spirit Lake, then Lake West Okoboji, with Lake East Okoboji having the greatest amount. Sigler (1948) surveyed the aquatic vegetation of Spirit Lake. Conrad (1952) refers to the lakes region flora in a general view of aquatic communities and algae of Iowa. The changes in the aquatic vegetation of Lake East Okoboji have been reported by Volker and Smith (1965). They found that, in the years between 1915 and 1961, the aquatic vascular species in Lake East Okoboji apparently had been reduced by about 60% from 44 to 18 species. Crum and Bachmann (1973) surveyed the higher aquatic plants in Spirit Lake, Lake East Okoboji, Lake West Okoboji, and the Gar Lakes during the summer 1972. Their data were compared with reports of earlier investigators. Species composition has remained relatively stable in Lake West Okoboji and Spirit Lake since early in this century. Many species of vascular hydrophytes occurred downward to a depth of 6.5 m in Lake West Okoboji and 4 m in Spirit Lake. Nonvascular macrophytes (Characeae) were found somewhat deeper. Species composition, distribution and abundance have been reduced in lakes East Okoboji, Upper Gar, Minnewashta, and Lower Gar where dense blooms of blue-green algae commonly occur. Submerged macrophytes in the Lake East Okoboji chain of lakes were restricted to water less than 1.5 m deep.

d. Terrestrial Vegetation. The terrestrial region around the lakes is floristically rich and has attracted many botanical researchers. Several authors have studied the flora of the lakes region and surrounding Dickinson County area

Lake West Okoboji, was made by D. T. Jones (1925) and included aquatic fauna. Bardach et al. (1951), in a survey of bottom organisms of Lake West Okoboji, found that: 1. certain mollusks were largely confined to specific types of bottom material, and 2. there was a shift in dominance of invertebrate groups as one went from shallow to deep regions. Mollusks were dominant between 10-15 m, Chironomid larvae predominated between 15-25 m, and Tubificid worms abounded in the deepest regions of the lake (25-40 m). The bottom fauna of Miller's Bay and Little Miller's Bay was studied during the summer of 1959 (Clampitt, Waffle, and Bovbjerg, 1960). They found Miller's Bay to have a richer biota than Little Miller's Bay. These qualitative differences were explained by the greater variety of habitats and microhabitats in Miller's Bay, related to its larger extent and greater depth. Chironomids were most numerous in the study area, and their distribution, as well as that of other invertebrate groups, was found related to depth, vegetation, and substratum characteristics. During summer 1970, the bottom fauna of Lakes West and East Okoboji were sampled (Gale, Dreves, and Gross, 1972) to repeat the bottom fauna study of Bardach et al. (1951). The same species found in 1950 were present in 1970, and the only difference noted was an increase in the density of tubificid worms in 1970.

Fifteen genera of water mites collected throughout the lakes region during the summer of 1924 have been described by

f. Benthic Fauna. The rich molluscan fauna of the lakes described by Shimek (1913b, 1915b) was found to have decreased in the 1930s in density and species numbers (Shimek, 1935). Shimek attributed this decline to pollution from septic tanks and storm sewers. Bovbjerg and Ulmer (1960) systematically collected snails from Lake West Okoboji from 1954 to 1959. They concur with Shimek (1935) that pollution has caused a decline in the molluscan fauna and felt that from 25 to 40 additional species were found in the lake during the first quarter of this century and which are not present today. Of the 11 species reported by Bovbjerg and Ulmer (1960), only six are fairly widely distributed and in any numbers. In 1960, the dominant genus was Physa, over half of the snails collected were of this genus.

McIntosh (1948) collected snails of the genus Succinea in the Okoboji region during August 1947. The characteristics, distribution, and parasitic infections of the clams Lampsilis luteola and Anondonta grandis in Spirit Lake and Lake West Okoboji have been described by Kelley (1926a). Kelley (1926a, 1926b) also tells of clam destruction by a cyclonic storm on Spirit Lake.

Ecological investigations of the benthic fauna of the lakes region are scarce. Some deep water bottom samples were collected by Birge and Juday (1920) in Lake West Okoboji. An ecological survey of the sand spit area of Miller's Bay, Lake West Okoboji, was made by D. T. Jones (1925) and included aquatic fauna. Bardach et al. (1951), in a survey of bottom organisms of Lake West Okoboji, found that: 1. certain mollusks were largely confined to specific types of bottom material, and 2. there was a shift in dominance of invertebrate groups as one went from shallow to deep regions. Mollusks were dominant between 10-15 m, Chironomid larvae predominated between 15-25 m, and Tubificid worms abounded in the deepest regions of the lake (25-40 m). The bottom fauna of Miller's Bay and Little Miller's Bay was studied during the summer of 1959 (Clampitt, Waffle, and Bovbjerg, 1960). They found Miller's Bay to have a richer biota than Little Miller's Bay. These qualitative differences were explained by the greater variety of habitats and microhabitats in Miller's Bay, related to its larger extent and greater depth. Chironomids were most numerous in the study area, and their distribution, as well as that of other invertebrate groups, was found related to depth, vegetation, and substratum characteristics. During summer 1970, the bottom fauna of Lakes West and East Okoboji were sampled (Gale, Dreves, and Gross, 1972) to repeat the bottom fauna study of Bardach et al. (1951). The same species found in 1950 were present in 1970, and the only difference noted was an increase in the density of tubificid worms in 1970.

Fifteen genera of water mites collected throughout the lakes region during the summer of 1924 have been described by

Marshall (1926). Mathers (1948) found two additional species of leeches in the Okoboji region not included in the 20 species described by Mullin (1926). The Glossiphoniidae in the area were studied by Waffle (1963). Caldwell and Bovbjerg (1969) studied the natural history of two species of crayfish (Orconetes) that occur in northwestern Iowa.

g. Fisheries. Larrabee (1927a, 1927b) conducted an ecological study of the fish taxa of the lakes region during the summers 1921, 1922, 1924, and 1925. He also reviews the work of Meek (1894) who previously investigated fish in the area. Larrabee found 45 species of fish in the Okoboji region, of which 40 are native to it. Much of the ichthyological research carried out in the region, particularly on Spirit Lake, is conducted by the Iowa Conservation Commission who operate the Spirit Lake Fish Hatchery at Orleans (Rose, 1948, 1955; Jennings, 1968, 1969). Reports of fisheries studies are reported in the Quarterly Biology Reports, Iowa Conservation Commission, Des Moines, Iowa. A program of rough fish removal from each of the lakes is carried out. The life history and management of the white bass in Spirit Lake was studied by Sigler (1947) between 1941 and 1946. The yellow perch and yellow pikeperch are important sport fish of the area whose growth rates and population have been studied (Parsons, 1950; Carlander, 1947; Rose, 1947). Diurnal movement of the yellow perch in Lake West Okoboji also has been studied (Brown and

Rosen, 1951). Rose and Moen (1952) studied the increase in game fish populations in Lake East Okoboji after intensive rough fish removal.

2. Planktonic Algae

a. Differences Among Lakes. Planktonic algal standing crops differ among the Iowa Great Lakes. Lake West Okoboji supports the smallest algal standing crop of any of the lakes studied. During the summer, algal concentrations in Lake West Okoboji increase and cause occasional nuisance conditions, but usually are localized by winds and are of short duration. Lakes East Okoboji, Loon, Upper Gar, Minnewashta, and Lower Gar, however, are at the opposite extreme. These lakes support dense blooms of blue-green algae throughout the summer and fall. As a result of the algal activity, the lakes appear green, and frequently, during these bloom periods, the odor of decaying algae is noticeable. Spirit Lake supports variable crops of planktonic algae, between the extremes described for the other lakes.

Two types of measurements have been made on the planktonic algae of these lakes. The first is a quantitative measurement of the chlorophyll a content per cubic meter of water in each of the lakes. The second is a qualitative record of the dominant algal genera composing the planktonic algae of the lakes with some subjective notation as to abundance.

b. Chlorophyll a. Chlorophyll a determinations began on lake samples in late June 1971 and were continued throughout the study. In 1971, chlorophyll a samples were collected only with water samples for chemical analyses. During the summers of 1972 and 1973, additional chlorophyll samples were collected at times intermediate to the lake chemistry sampling schedule. Chlorophyll a values have been collected from stations on Lakes West Okoboji, East Okoboji, Spirit Lake, Upper Gar, Minnewashta, Lower Gar, and Loon Lake (Appendix L).

The highest measured chlorophyll a concentration was 545.1 mg/l on August 6, 1971, in Lower Gar Lake. Values of less than 1 mg/m^3 have been found in lakes West Okoboji, East Okoboji, and Spirit Lake during ice-cover periods and in Lake West Okoboji during spring 1973.

Chlorophyll a concentrations varied between the sampled lakes and within each lake according to season (Table 28). Lake West Okoboji consistently has the lowest chlorophyll a concentrations of the lakes studied (Table 28). Consistantly, the highest values are found in Lake East Okoboji, Loon Lake, and the Gar Lakes. Chlorophyll a values in Spirit Lake were somewhat intermediate between lakes East and West Okoboji.

Seasonal patterns of chlorophyll a concentrations are similar in each of the lakes (Table 28). June through

Table 28. Mean Chlorophyll a (mg/m^3) values from West Okoboji (Bay Stations), West Okoboji (Deep Hole), East Okoboji (North Stations), East Okoboji (South Stations), Spirit Lake, Upper Gar, Minnewashta, Lower Gar, and Loon Lake (at 4.3 in 1971 and 4.0 in 1972), summarized by seasons between June 1971 and September 1973. N = the number of samples in the mean.

Period	W. Okoboji B. Stations	W. Okoboji Deep Hole	E. Okoboji North	E. Okoboji South
June-Sept. 1971	(41) 5.63	(5) 5.70	(36) 207.21	(23) 132.45
Oct.-Nov. 1971	(9) 4.35	(2) 2.96	(6) 99.40	(11) 12.38
Jan.-May 1972	(15) 1.74	(4) 1.79	(11) 12.38	(4) 2.65
June-Sept. 1972	(59) 4.76	(10) 3.42	(43) 142.19	(30) 72.82
Oct.-Nov. 1972	(19) 4.86	(2) 4.62	(9) 97.76	(9) 36.84
Dec.-May 1973	(21) 5.29	(11) 3.94	(16) 8.51	(23) 15.04
June-Sept. 1973	(48) 4.20	(16) 3.43	(22) 51.21	(34) 79.82

Table 28. (Continued)

Period	Spirit Lake	Upper Gar	Minne-washta	Lower Gar	Loon Lake
June-Sept. 1971	(18) 57.89	(13) 135.06	(13) 160.86	(11) 338.54	(3) 177.24
Oct.-Nov. 1971	(4) 128.12	(1) 11.23	(1) 3.76	(2) 4.15	-
Jan.-May 1972	(13) 1.36	(2) 2.66	(2) 0.70	(2) 2.87	(1) 7.04
June-Sept. 1972	(52) 9.79	(13) 93.31	(13) 74.85	(13) 123.41	(5) 227.90
Oct.-Nov. 1972	(10) 5.22	(3) 31.57	(2) 60.64	(1) 79.84	(2) 107.51
Dec.-May 1973	(35) 6.22	(6) 16.72	(5) 22.69	(5) 25.16	(14) 53.07
June-Sept. 1973	(55) 12.12	(9) 56.31	(8) 83.95	(8) 148.70	(2) 148.4

September is the time of highest mean and individual pigment concentrations. Values generally decrease in October and November and are lowest during the ice-cover (December through March) and early spring (April and May). Each of the lakes follows this seasonal pattern, with a few exceptions. In Spirit Lake, the October-November 1971 mean chlorophyll a value exceeds the previous summer mean value. This high average is caused by an unusually high reading of 407.8 mg/m^3 from one station on October 1, 1971. The other values taken on Spirit Lake during this period ranged between 0.8 and 59.5 mg/m^3. The high value was the result of wind-concentrated Aphanizomenon and Microcystis. The Secchi disc value was 0.3 m in the concentrated algae and 1.1 m at the other Spirit Lake stations sampled on this date. The mean chlorophyll a value in West Okoboji during December-May 1973 is greater than the summer 1972 or 1973 mean values. This high is the result of chlorophyll values ranging from 15.7 to 17.7 mg/m^3 collected at the six Lake West Okoboji stations on April 3, 1973. These are the highest chlorophyll concentrations measured in Lake West Okoboji during the study. On this date, the plankton algae were mainly diatoms of the genera Cymbella, Asterionella, Fragilaria, and Stephanodiscus.

c. Algal Taxa. Identifications of the dominant algal genera making up the planktonic flora of the lakes surveyed have been made since July 1971. Water samples for algal analysis were passed through a no. 25 silk, bolting-cloth plankton net to concentrate the algal cells. This process is biased towards the larger cells and may allow some of the smaller genera to be underrepresented in the samples.

In lakes East Okoboji, Spirit Lake, Upper Gar, Minnewashta, and Lower Gar, blue-green algae dominate the plankton during most of the year. In Lake West Okoboji, there is a fluctuating codominance of blue-green and green algal genera, with an abundant diatom flora also noted. During the winter, diatoms dominate almost exclusively the planktonic flora of all of the lakes surveyed.

The summer algal populations of Lake West Okoboji are heterogeneous. The dominant plankton genera during various times of this period are: Gleotrichia, Anabaena, Microcystis, Aphanizomenon, Asterionella, Ceratium, Cymatopleura, Euglena, Scenedesmus, Melosira, Navicula, Nitzschia, Surirella, Volvox, Fragilaria, Staurastrum, Synedra, Mougeotia, Rhizosolenia, Dinobryon, Gomphosphaeria, Pediastrum, Coelosphaerium, Botryococcus, Stephanodiscus, Pandorina, Pleodorina, Cymbella, and Mallomonas. Of the blue-greens, Gleotrichia is more important in the early summer, with Anabaena and Coelosphaerium becoming more numerous in the late summer. Aphanizomenon and Microcystis were observed in all regions of Lake West Okoboji, but seemed most abundant in Smith's Bay, which is connected to Lake East Okoboji, where these genera dominate. During the winter-spring months, Lake West Okoboji is dominated by the following genera: Stephanodiscus, Gyrosigma, Nitzschia, Fragilaria, Melosira, Navicula, Synedra, Peridinium, Gomphonema, Amphora, Asterionella, Cymatopleura, Cymbella, and Pinnularia.

From summer to fall, the plankton algae in Spirit Lake are mainly the blue-green genera Aphanizomenon, Anabaena, Gleotrichia, Coelosphaerium, and Microcystis. Lesser numbers of Stephanodiscus, Botryococcus, Asterionella, Melosira, and Ceratium also were noted. During the winter and spring, the plankton algae of Spirit Lake consisted of Stephanodiscus, Navicula, Gyrosigma, Fragilaria, Synedra, Asterionella, Dinobryon, Microcystis, and Euglena. In Appendix M, a taxonomic list of diatoms collected from Spirit Lake is included for reference. Many of ths listed taxa also are common to Lake West Okoboji as reported by Stoermer (1963).

All stations in Lake East Okoboji were dominated by heavy blooms of Aphanizomenon and, to a lesser extent, of Microcystis, Coelosphaerium, Anabaena, and Gleotrichia during May to November 1971 and 1972. A Melosira bloom developed in Lake East Okoboji in late May 1973, and no Aphanizomenon was observed at any station until June 21, 1973. In May and June 1973, Microcystis, Anabaena, Stephanodiscus, Asterionella, Fragilaria, Euglena, and Nitzschia also were observed. In

July and August 1973, Aphanizomenon and Microcystis dominated the East Okoboji plankton.

Lakes Upper Gar, Minnewashta, and Lower Gar are similar to East Okoboji in that the algal flora is dominated much of the year by dense blooms of Aphanizomenon and Microcystis. In May and June 1973, Melosira dominated the phytoplankton of these lakes, as it did in Lake East Okoboji. During the winter and spring, Stephanodiscus, Fragilaria, Euglena, Synedra, Navicula, Gyrosigma, Pediastrum, and Dinobryon were observed.

During the summer, Loon Lake was dominated by Aphanizomenon. During the winter and spring, Stephanodiscus, Melosira, Scenedesmus, Pediastrum, Euglena, Synedra, Diatoma, Fragilaria, Gyrosigma, Gomphonema, Pinnularia, and Stauroneis were found.

D. Nutrient Budgets

The sampling program of monitoring the inflowing streams serves a number of purposes, one of which was to estimate the annual inputs of nitrogen and phosphorus to the Iowa Great Lakes. The three major sources of nutrients considered are metered watersheds, unmetered watersheds, and rainfall on the lake surface.

The analyses are broken down into three periods: March 1, 1971, to December 31, 1971; January 1, 1972, to December 31, 1972; and January 1, 1973, to July 31, 1973. Most of the annual

Table 29. Estimated total phosphorus, nitrate nitrogen, and ammonia nitrogen inputs (kg) to Lake West Okoboji from metered watersheds, unmetered watersheds and rainfall in 1971, 1972, and 1973.

Lake West Okoboji									
	Total P Kg			Nitrate Nitrogen Kg			Ammonia Nitrogen Kg		
	1971	1972	1973	1971	1972	1973	1971	1972	1973
metered watersheds	1667	558	1415	14412	13609	33495	4142	1365	3919
unmetered watersheds	922	267	661	7970	6505	15642	2290	652	1830
Rainfall	531	608	323	4994	5718	3040	9032	10341	5498
Total	3120	1433	2399	27376	25832	52177	15464	12358	11247

Table 30. Estimated total phosphorus, nitrate nitrogen, and ammonia nitrogen inputs (kg) to Spirit Lake from metered watersheds, unmetered watersheds, rainfall, and the Loon Lake outlet in 1971, 1972, and 1973.

Big Spirit Lake

	Total P Kg			Nitrate Nitrogen Kg			Ammonia Nitrogen Kg		
	1971	1972	1973	1971	1972	1973	1971	1972	1973
metered watersheds	1627	977	891	29784	24303	39965	3259	1962	2236
unmetered watersheds	3173	1905	1737	58079	47391	77932	6355	3826	4360
Rainfall	748	856	455	7031	8050	4280	12715	14558	7740
Loon Lake Outlet	1685	601	530	14907	1048	2242	13030	2065	2250
Total	7233	4339	3613	109801	80792	124419	35359	22411	16586

Table 31. Estimated total phosphorus, nitrate nitrogen, and ammonia nitrogen inputs (kg) to Lake East Okoboji from metered watersheds, unmetered watersheds, rainfall and the Spirit Lake Outlet in 1971, 1972,and 1973.

Lake East Okoboji (Upper Gar, Minnewashta)

	Total P Kg			Nitrate Nitrogen Kg			Ammonia Nitrogen Kg		
	1971	1972	1973	1971	1972	1973	1971	1972	1973
metered watersheds	2524	1087	1745	31575	29518	51471	5375	2642	4043
unmetered watersheds	1454	587	937	18187	15940	27640	3096	1427	2171
Rainfall	285	330	173	2676	3102	1629	4841	5610	2947
Spirit Lake Outlet	402	71	234	350	63	1056	2900	278	2058
Total	4665	2075	3089	52788	48623	81796	16212	9957	11219

Table 32. Estimated total phosphorus, nitrate nitrogen, and ammonia nitrogen inputs (kg) to Lower Gar Lake from metered watersheds, unmetered watersheds, and rainfall in 1971, 1972, and 1973.

	Lower Gar Lake								
	Total P Kg			Nitrate Nitrogen Kg			Ammonia Nitrogen Kg		
	1971	1972	1973	1971	1972	1973	1971	1972	1973
metered watershed	624	697	687	6089	9488	15234	2064	1994	2900
unmetered watershed	98	109	108	956	1490	2392	324	313	455
Rainfall	338	387	21	318	364	194	575	658	350
Total	1060	1193	816	7363	11342	17820	2963	2965	3705

and have no tributary streams flowing directly into them, they are combined with East Okoboji. For similar reasons, Hottes Lake, Marble Lake, and Little Spirit Lake are included with Big Spirit Lake. Lower Gar Lake is also connected to this system, but was treated separately using only the inputs from its own watershed.

In 1971, a deep winter snowpack and sudden spring thaw resulted in heavy runoff that delivered the largest input of phosphorus to Lake West Okoboji, Lake East Okoboji and Spirit Lake of any period during the study. In this period, Lake West Okoboji received 3120 kg total P, Lake East Okoboji received 4665 kg total P, and Spirit Lake received 7233 kg total P. Runoff was moderate in 1972 and the phosphorus input was approximately 50% of the 1971 load to Lake West Okoboji, Lake East Okoboji, and Spirit Lake. The total phosphorus inputs in 1972 to these lakes were 1433 kg, 2075 kg, and 3613 kg, respectively. The 1973 conditions were somewhat intermediate between the previous two years. The 1973 winter was marked by a series of warm spells so that a deep snowpack never developed, and spring rains were sufficient to make the total runoff between January and July of 1973 slightly exceed the 1971 total. Phosphorus inputs to the lakes in 1973, however, were only about 60% of the 1971 values. In Lake West Okoboji, the 1973 total phosphorus input was 2399 kg; in Lake East Okoboji, the input was 3089 kg;

and in Spirit Lake, the input was 3613 kg.

Ammonia nitrogen followed about the same pattern as phosphorus during the three study periods. Ammonia nitrogen inputs were greatest in 1971, the 1972 load was approximately 68% of this value and the 1973 load to each lake was about 64% of the 1971 input. The ammonia nitrogen input to Lake West Okoboji during 1971, 1972, and 1973 was 15464 kg, 12358 kg, and 11247 kg. In Lake East Okoboji, the ammonia nitrogen input during the respective periods was 16212 kg, 9957 kg, and 11219 kg. Spirit Lake had an ammonia nitrogen input of 35359 kg in 1971, 22411 kg in 1972, and 16586 kg in 1973.

Nitrate nitrogen inputs to the lakes were somewhat different from phosphorus and ammonia nitrogen inputs. The 1972 nitrate input was approximately 85% of the 1971 input to Lake West Okoboji, Lake East Okoboji, and Spirit Lake. The difference observed between nitrate nitrogen and other nutrients is that 1973 was the period of highest nitrate load. The 1973 nitrate input to the three lakes being considered is about 1.5 times the 1971 input and 1.7 times the 1972 input.

The nitrate nitrogen input to Lake West Okoboji was 27376 kg in 1971, 25832 kg in 1972, and 52177 kg in 1973. In Lake East Okoboji, the nitrate load was 52788 kg in 1971, 48623 kg in 1972, and 81796 kg in 1973. Spirit Lake had a nitrate nitrogen load of 109801 kg, 80792 kg, and 124419 kg during the respective periods.

The exception to this general nutrient-input pattern was in Lower Gar Lake where nutrient inputs were similar in 1971 and 1972. In 1973, nitrate and ammonia nitrogen inputs were about 35% greater than in the previous 2 years, whereas phosphorus loads were 28% less than an average of the 1971 and 1972 levels. In 1971, the nutrient budget of Lower Gar Lake was 1060 kg total P, 7363 kg NO_3-N, and 2963 kg NH_3-N. The 1972 budget was 1193 kg total P, 11342 kg NO_3-N, and 2965 kg NH_3-N. In 1973, 816 kg total P, 11342 kg NO_3-N and 3705 NH_3-N entered the lake.

This difference between the nutrient inputs to Lower Gar Lake and those of the other lakes in the watershed may be more apparent than real because this difference may be the result of sampling procedures. Station 48, draining a 3917-hectare area known as Spring Run, is Lower Gar Lake's major watershed. This watershed delivered approximately 65% of the phosphorus and 70% of the nitrogen that entered this lake during the study. On March 4, 1971, this station had a measured flow of 0.286 m^3/sec, which ranks as the 14th highest flow measured at this station during the study. This high flow at a time when the other sampling stations were frozen or flowing at a minimum suggests that an important portion of the nitrogen and phosphorus input from this station may have occurred before this date, between January 1 and March 1, 1971. This is a reasonable conclusion since Spring Run is the largest metered area in the watershed and not as susceptible to freezing as the smaller areas. Also, Station 48 flowed throughout the winters of 1972 and 1973, indicating that it possibly also flowed through the winter months of 1971.

The 1972 input from this station may be overestimated, because of sampling errors. In August 1972, Station 48 was sampled after a rainstorm and then unintentionally omitted from the sampling schedule on the two subsequent sampling dates. This oversight may have resulted in erroneously high nitrogen and phosphorus levels from Station 48, using the integration procedure,greatly affecting the nutrient budget of Lower Gar Lake in 1972.

In Lake West Okoboji and Lake East Okoboji, the nutrient inputs are not sensitive to contributions from a single stream because no single watershed on either lake contributes a major fraction of the nutrient inputs. The yearly nutrient budget in Spirit Lake, however, depends to a variable degree upon the input from the Loon Lake watershed. In those years when a substantial amount of water runs from Loon Lake to Spirit Lake, the nutrient budget of Spirit Lake is greatly increased. For example, in 1971, 1685 kg P were delivered from Loon Lake to Spirit Lake. This represents 23% of the total phosphorus input to the lake from all sources in this year. In 1972 and 1973, outflow from Loon Lake to Spirit Lake was about one-third of the 1971 flow. Spirit Lake received 601 kg P from Loon Lake in 1972 and 530 in 1973. This represents about 15% of the total phosphorus budget in this lake during these 2 years and is approximately one-third of the amount of phosphorus that entered Spirit Lake in 1971 from this source. The nitrate and ammonia nitrogen loads carried in the outflow of Loon Lake to Spirit Lake follow the phosphorus pattern of being highest in 1971 and lower during years of reduced flow.

From these nutrient budgets, there is evidence that the Iowa Great Lakes act as a phosphorus trap. Of the 4339 kg of phosphorus estimated to have entered Spirit Lake during 1972, only 71 kg passed through the outflow. This represents a retention of 98.4% of the phosphorus that entered the lake. In Lake West Okoboji, Lake East Okoboji, and the Gar chain of lakes, 69.5% of the phosphorus was retained in 1972. This phenomenon is not unique to the Iowa Lakes and has been found in other lakes (Vollenweider, 1968; Megard, 1970).

The retention of nitrogen by this lake system cannot be estimated inasmuch as total nitrogen was not measured, and the contribution to the nitrogen budget from nitrification by blue-green algae is not known, nor is that lost by bacterial denitrification known.

An important factor to be considered in the nutrient budget is the nutrient load diverted from the lakes by the sewage system. The watershed, plus the town of Milford, Iowa, is served by a secondary treatment facility located on Milford Creek below the outflow on Lower Gar Lake. During 1972, approximately 14900 kg of phosphorus was delivered to Milford Creek from the sewage effluent. This value was calculated by attributing the difference between the annual phosphorus loads of Milford Creek above (Station 25) and below (Station 26), the sewage outfall, to phosphorus load from the effluent. The town of Milford contributes about 10% of the load. The remaining value is more than 1.5 times the total phosphorus input to the Iowa Great Lakes during 1972. Although we cannot assume that all this phosphorus would actually reach the lakes, there is no doubt that this system has had a beneficial effect upon the water quality of the lakes. This present system is superior to the dumping of effluent into Lake East Okoboji and Lake Minnewashta as was previously done by the municipalities of Spirit Lake and Arnolds Park. Completion of the trunk line sewers around Big Spirit Lake and Lake East Okoboji also should result in an additional benefit to the water quality in these lakes.

These nutrient budgets are not complete, but are estimates of the magnitude of nitrogen and phosphorus that enter the system over a 29-month period. One contributing factor ignored by the budget was the addition of nutrients to the system by groundwater. This is a difficult source to quantify and, by necessity, has been left out of this analysis. Those cottages on the portions of Big Spirit Lake and Lake East Okoboji that are not yet served by the sanitary sewer system may indirectly contribute nutrients through leaching of septic tank effluents. This source could not be measured. Also no consideration was given to nitrogen fixation by blue-green algae nor to bacterial denitrification. Other unmeasured losses would be fish removal and the withdrawal of municipal water supplies as occurs in Big Spirit Lake and Lake West Okoboji. The exchange of water between Lake East Okoboji and Lake West Okoboji could not be measured, nor could the contribution of water from East Okoboji to Lower Gar Lake.

A much more extensive sampling program would be required to measure the contributions from the many storm sewers in the region. In our estimated nutrient budgets, we assumed that the urban areas contributed the same amounts of phosphorus and nitrogen per unit area as did the agricultural watersheds. This probably was an underestimate because the storm waters measured in this study (Appendix K) were relatively rich in plant nutrients. Total phosphorus concentrations averaged 0.56 mg/l as P, ammonia nitrogen averaged 1.21 mg/l, and nitrate nitrogen averaged 1.83 mg/l.

A rough estimate of the storm-water contribution can be made by assuming that our samples are representative of the storm-water composition in the urban areas of Spirit Lake, Arnolds Park, Orleans, and Okoboji (see map in Appendix E).

If we further assume that 25% of the precipitation that fell on those areas flowed through the storm-water system, their contributions to the nutrient budgets of Lake West Okoboji and Lake East Okoboji can be estimated (Table 33). For the entire period of our study, the storm-water contribution to the phosphorus budget of all the lakes combined amounts to about 3% of the contributions from other sources. On this basis, it does not seem that this is an important source.

This is, of course, a crude estimate and is dependent upon some unproven assumptions. Also several storm drains within the municipal areas of this watershed were found to flow continuously, indicating that they function in groundwater drainage, or for drainage purposes other than storm water. Further work is necessary to obtain an accurate estimate of the nutrient contributions from these urban watersheds.

E. Nutrient Inputs and Algal Crops

Recent research on the reversal of eutrophication in Lake Washington has indicated that the annual input of plant nutrients is a major factor in determining the summer standing crop of plankton algae (Edmondson, 1961, 1969, 1970, 1972). This hypothesis was tested on the Iowa Great Lakes in the following manner. The nutrient input was taken as the total amount of phosphorus and inorganic nitrogen entering the lakes, divided by the volume of the lakes to yield a potential

Table 33. Annual inputs of total phosphorus, nitrate nitrogen, and ammonia nitrogen in 1971, 1972, and 1973 attributed to storm water draining to Lake West Okoboji and Lake East Okoboji (includes Lake Minnewashta).

	Kg total P			Kg NO_3-N			Kg NH_3-N	
Lake West Okoboji								
1971	1972	1973	1971	1972	1973	1971	1972	1973
105	123	62	342	403	201	226	266	133
Lake East Okoboji								
1971	1972	1973	1971	1972	1973	1971	1972	1973
213	251	125	697	820	410	461	542	271

nutrient concentration, as suggested by Edmondson (1961). This potential concentration was then related to the summer standing algal crop as estimated by chlorophyll a pigment.

The time period for 1972 and 1973 extended from January 1 to July 31 on the assumption that nutrients entering after that time would not measurably contribute to the magnitude of the summer algal bloom. In 1971, the nutrient income was based on a March 1 to July 31 time period, but because there is little flow between January 1 and March 1, we considered that the nutrient incomes for the 3 years were comparable. Nutrient incomes for each lake during these periods were estimated utilizing the procedures employed to calculate the annual nutrient budgets. Inputs from metered watersheds, unmetered watersheds, and rainfall were included. The total nutrient load for Lake West Okoboji, Lake East Okoboji, and Spirit Lake was divided by the volume of each lake to yield a potential concentration. The results are given in Table 34. To calculate potential concentrations for Lake East Okoboji, Upper Gar Lake, and Lake Minnewashta, the lake volumes were combined. This was necessary because Upper Gar Lake and Lake Minnewashta do not have separate watersheds, and independent potential nutrient concentrations could not be calculated for the three lakes. For this reason, the lake volumes of Spirit Lake, Marble Lake, Hottes Lake, and Little Spirit Lake were combined.

Table 34. Maximum and mean July-August values of chlorophyll a for the Iowa Great Lakes. Potential concentrations of total phosphorus and inorganic nitrogen for Lake West Okoboji, Lake East Okoboji, and Spirit Lake are calculated from total inputs between January 1 and July 31, divided by the volume of the respective lakes. The potential concentrations for Lower Gar Lake are based on the mean nitrogen and total phosphorus concentration of inflowing streams (Station 47 and 48). Values for Lake East Okoboji include Upper Gar Lake and Lake Minnewashta.

	Maximum Chlorophyll a mg/m^3	Mean July-August Chlorophyll a mg/m^3	Potential total P mg/l	Potential inorganic N mg/l
1971				
Lake West Okoboji	9.28	5.11	0.015	0.197
Spirit Lake	130.34	63.06	0.051	1.103
Lake East Okoboji	434.50	175.83	0.215	2.864
Lower Gar Lake	545.08	329.52	0.204	2.742
1972				
Lake West Okoboji	4.92	3.64	0.006	0.147
Spirit Lake	20.35	9.16	0.029	0.579
Lake East Okoboji	496.96	88.69	0.072	1.663
Lower Gar Lake	309.03	133.16	0.224	3.468
1973				
Lake West Okoboji	8.03	4.09	0.013	0.345
Spirit Lake	26.70	10.33	0.030	1.178
Lake East Okoboji	392.56	102.06	0.137	4.117
Lower Gar Lake	470.52	217.84	0.144	3.810

The annual phosphorus income to the Iowa Great Lakes seems to determine the total phosphorus concentration of summer lake water and, thus, the phosphorus available for algal growth. In Lower Gar Lake, however, the annual increment of water is over three times the lake volume so that the potential nutrient concentration based on annual input is not achieved. For this reason, the mean nutrient concentration of the watershed drainage is used as the "potential concentration" for Lower Gar Lake in the following analyses (Table 34). This approach was used by Edmondson (1961) in such situations, and is particularly valid in this case because Lower Gar Lake has only one major stream (Station 48) responsible for the continuous flushing of this lake. The average nutrient concentration of this stream is the potential concentration available to algal growth within the lake. A significant ($P = 0.01$) positive relationship exists between potential phosphorus and actual phosphorus concentrations in the lakes studied (Figure 20). The correlation coefficient for this relationship is 0.91 and a paired t-test shows the difference between the actual and potential phosphorus means to be nonsignificant ($P = 0.01$). Vollenweider (1968) found a similar relationship between phosphorus loading ($gm/m^2/year$) and springtime phosphorus concentrations within different lakes. This relationship suggests that phosphorus recycling within the Iowa Great Lakes

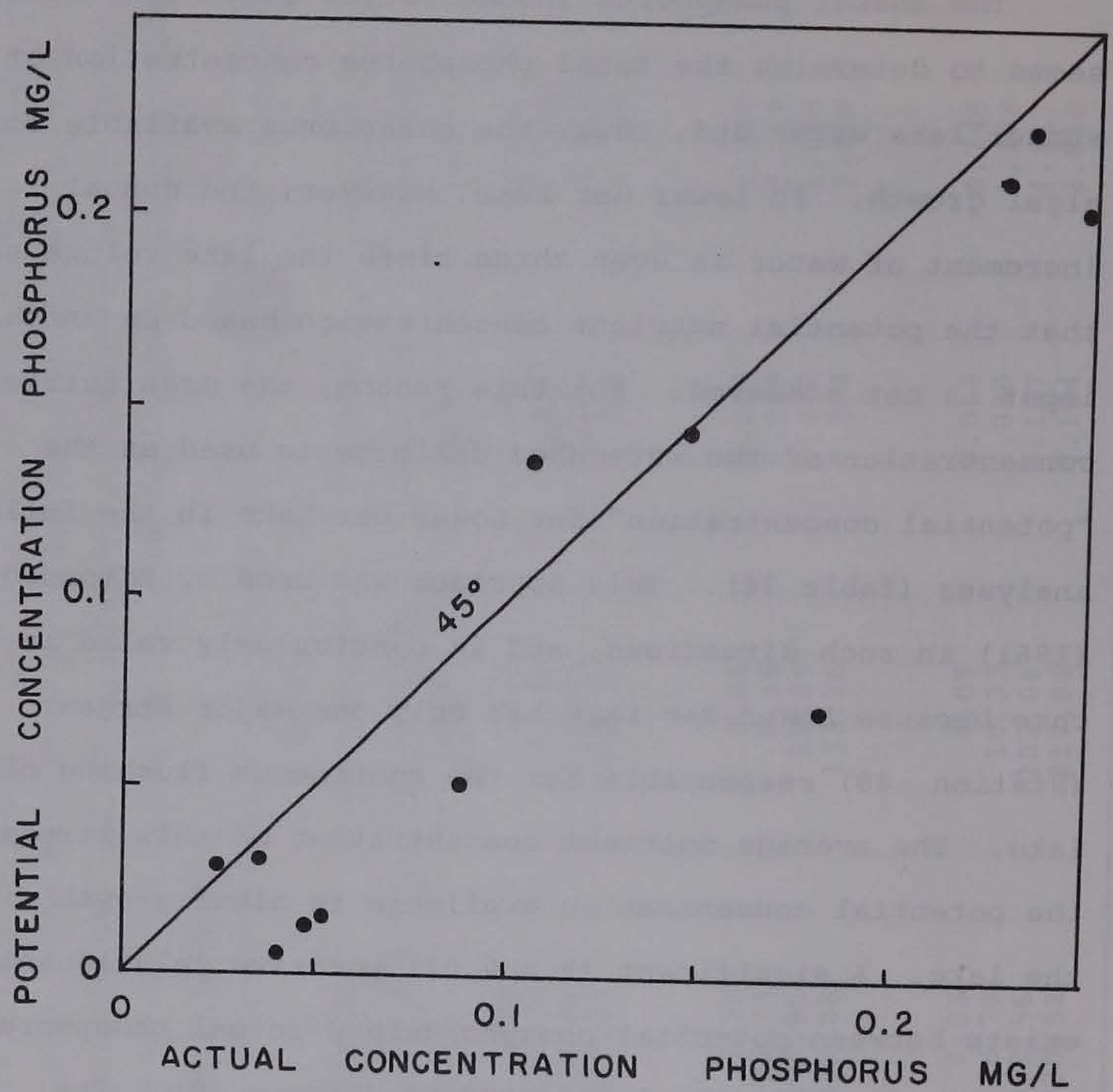


Figure 20. Potential phosphorus concentration (mg/l) plotted against the actual summer phosphorus concentration (mg/l) in Lakes West Okoboji, East Okoboji, Big Spirit, and Lower Gar for 1971, 1972, and 1973.

is unimportant in determining the summer phosphorus concentration when compared with the annual input.

Phosphorus can be considered as the limiting element in the Iowa Great Lakes system because many blue-green algae composing the planktonic flora of these lakes are known to fix molecular nitrogen. Further evidence that phosphorus is limiting in these lakes comes from the nitrogen to phosphorus ratio of the inputs. The ratio of nitrogen to phosphorus loading rate in the lakes ranged from 13.2:1 to 38.6:1, which is similar to the tolerable N/P ratio of 15:1 described by Vollenweider (1968). Thus, if this ratio is correct, there should be an adequate or excess amount of inorganic nitrogen as compared with phosphorus for algal growth within each of the studied lakes.

Phosphorus limitation of algal growth is not unique to the Iowa Great Lakes; others have found this element limiting to algal growth in field and laboratory situations (Chu, 1943; Vollenweider, 1968; Edmondson, 1969, 1970, 1972; Megard, 1970; Schindler, 1971; Schindler et al., 1971; Fuhs et al., 1972; Powers et al., 1972). In many bioassay analyses, growth has shown a clear response to phosphorus concentrations, provided that a supply of nitrogen and minor elements are available. Under such conditions, algal growth rate is a function of phosphorus concentration (Fuhs et al., 1972). Edmondson (1969, 1970, 1972) has shown that algal standing crop in Lake

Washington is a function of phosphorus concentration. The progressive decrease of planktonic algae in Lake Washington during the past decade coincides with a consistent increase in phosphorus concentration.

If indeed phosphorus is limiting algal growth in the Iowa Great Lakes, then the annual potential phosphorus concentration for each individual lake should be related to the summer algal standing crop. This assumption is based on the relationship found by Edmondson (1961) in which lakes that produce more severe algal nuisances have high phosphorus incomes, and those that are not noteworthy for algae have lower incomes.

The best relationship between potential phosphorus concentration and algal chlorophyll would be with the largest summer value from each lake because this would represent the maximum standing crop produced from a given phosphorus load. At the time of maximum standing crop, one would expect stored algal phosphorus or luxury-consumed phosphorus to be minimal and the algal biomass at its peak.

With use of maximum chlorophyll values and corresponding potential phosphorus concentrations for each lake during the three study periods, a simple correlation was determined ($r = 0.81$). A regression equation was calculated by dividing the sum of the maximum chlorophyll concentrations by the sum of the potential phosphorus concentrations (Snedecor and Cochran, 1967). This model was used because the variance is believed to increase progressively as potential nutrient and chlorophyll concentrations increase. The zero intercept provided by the model is a result of the assumption that summer algal growth is dependent upon annual phosphorus inputs. This assumption is somewhat simplified and will be discussed in detail later. The relationship between potential phosphorus and maximum chlorophyll concentration is significant (P = 0.01) and is given in Figure 21. Despite the scatter at higher potential phosphorus and chlorophyll concentrations, there is a strong relationship between annual phosphorus input to a given lake and magnitude of the plankton bloom.

Algal densities at the height of bloom conditions are critical determinants of lake water quality, but such extreme values are difficult to reproduce because their magnitude depends greatly on the vagaries of sampling frequence and climatic circumstance (Shannon and Brezonik, 1972a). One such climatic factor is wind concentration of planktonic algae, which can give erroneous maximum standing crop values. Such factors may add to the scatter noted in Figure 21. To circumvent this problem, the mean July-August chlorophyll value (as used by Edmondson, 1972) from each lake during the 3 years of study was regressed on the potential phosphorus concentration by using the same model (Figure 22). The correlation coefficient for this model was significant (P = 0.01) (r = 0.85). This model can be used to describe the levels of summer algal blooms and the annual phosphorus inputs to each

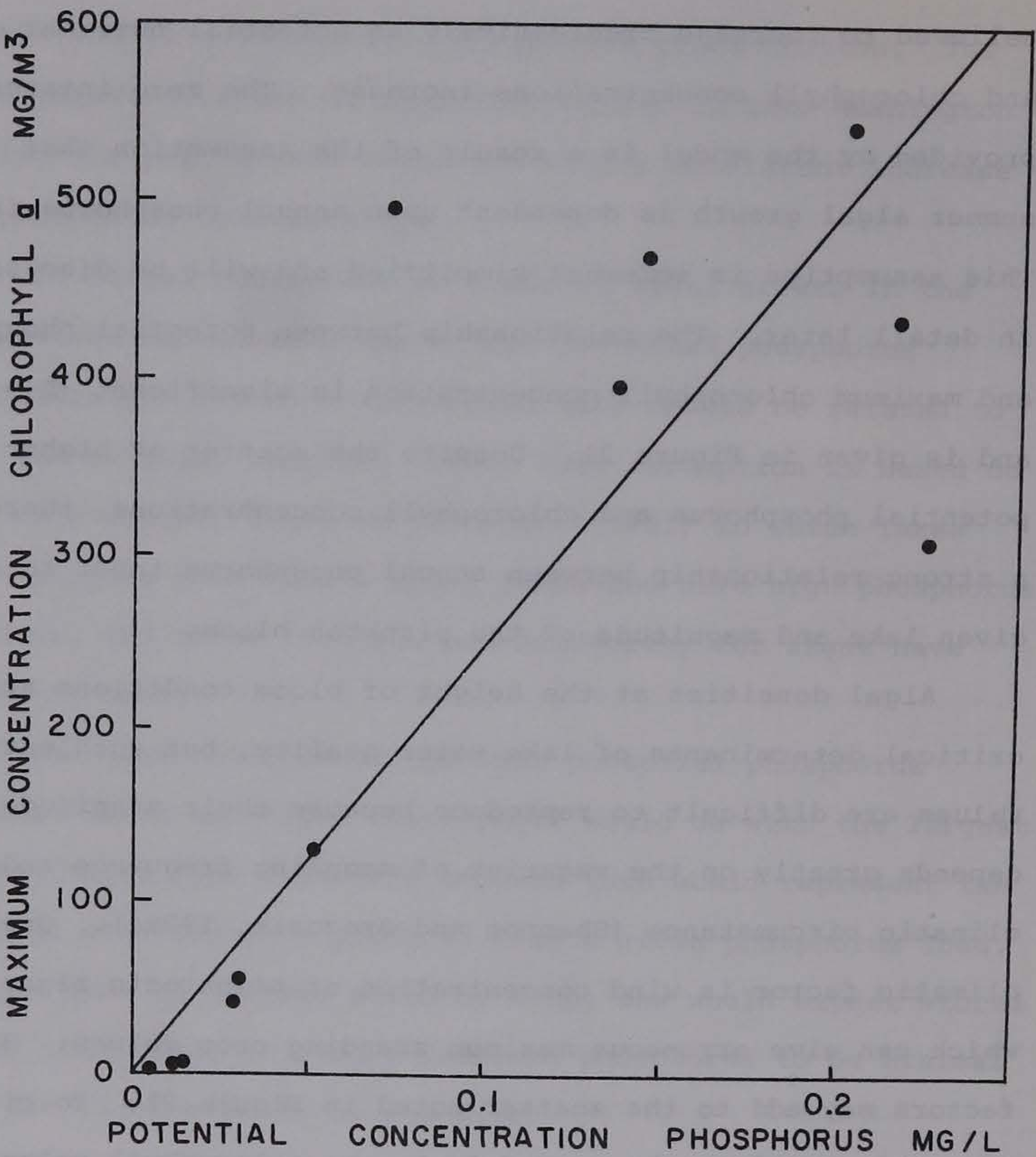


Figure 21. The regression of maximum chlorophyll a concentration (mg/m^3) on the potential phosphorus concentration (mg/l) in 1971, 1972, and 1973.

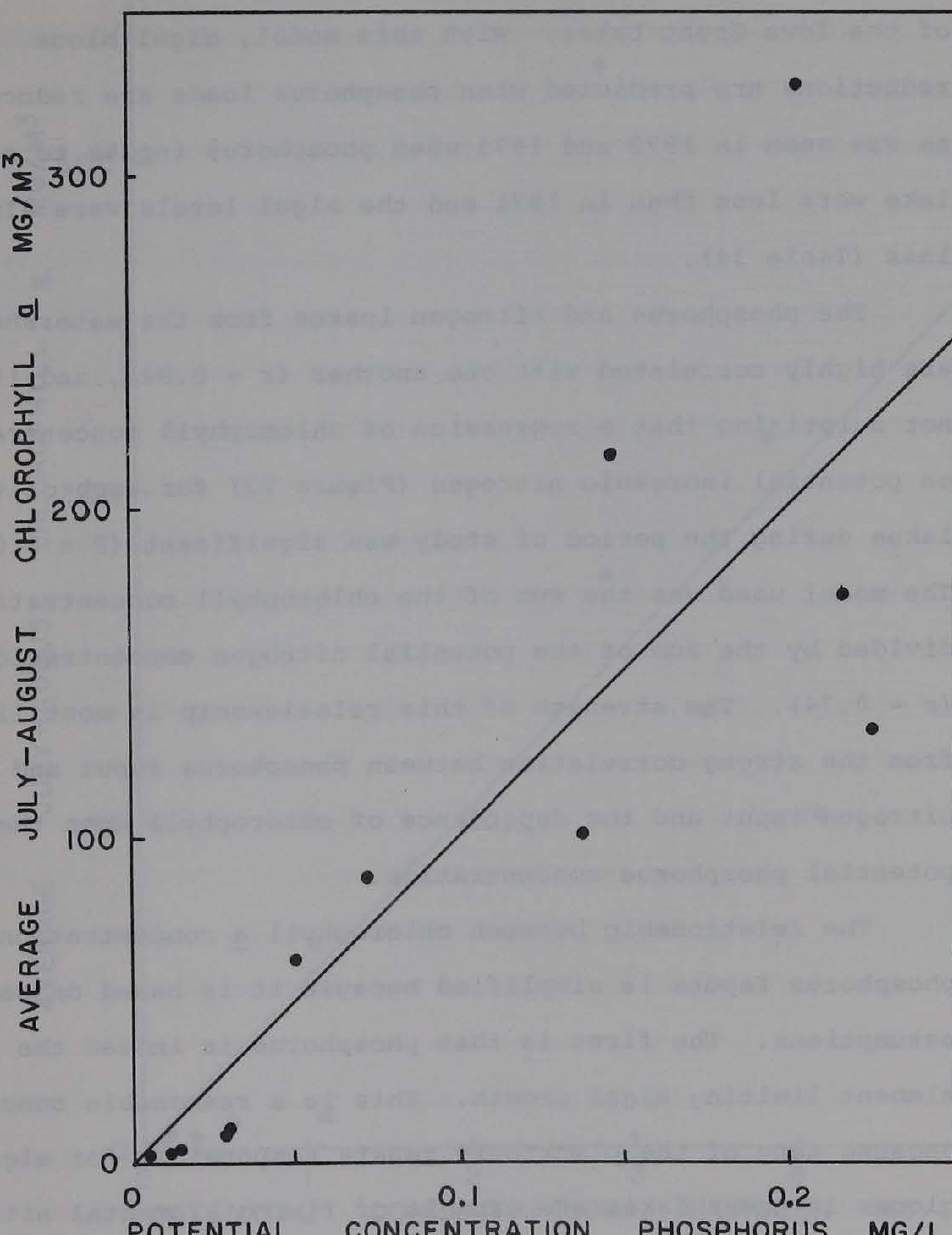


Figure 22. The regression of mean July-August chlorophyll a (mg/m^3) on the potential phosphorus concentration (mg/l) in the Iowa Great Lakes during 1971, 1972, and 1973.

of the Iowa Great Lakes. With this model, algal bloom reductions are predicted when phosphorus loads are reduced as was seen in 1972 and 1973 when phosphorus inputs to each lake were less than in 1971 and the algal levels were also less (Table 34).

The phosphorus and nitrogen losses from the watersheds are highly correlated with one another ($r = 0.84$), and it is not surprising that a regression of chlorophyll concentration on potential inorganic nitrogen (Figure 23) for each of the lakes during the period of study was significant ($P = 0.01$). The model used was the sum of the chlorophyll concentrations divided by the sum of the potential nitrogen concentrations ($r = 0.74$). The strength of this relationship is most likely from the strong correlation between phosphorus input and nitrogen input and the dependence of chlorophyll upon the potential phosphorus concentration.

The relationship between chlorophyll a concentration and phosphorus inputs is simplified because it is based on several assumptions. The first is that phosphorus is indeed the element limiting algal growth. This is a reasonable conclusion because many of the planktonic genera responsible for algal blooms in these lakes are capable of fixing elemental nitrogen. Also, the ratio of nitrogen to phosphorus in inflowing water contains adequate nitrogen when compared with the available amount of phosphorus. Another important assumption is that

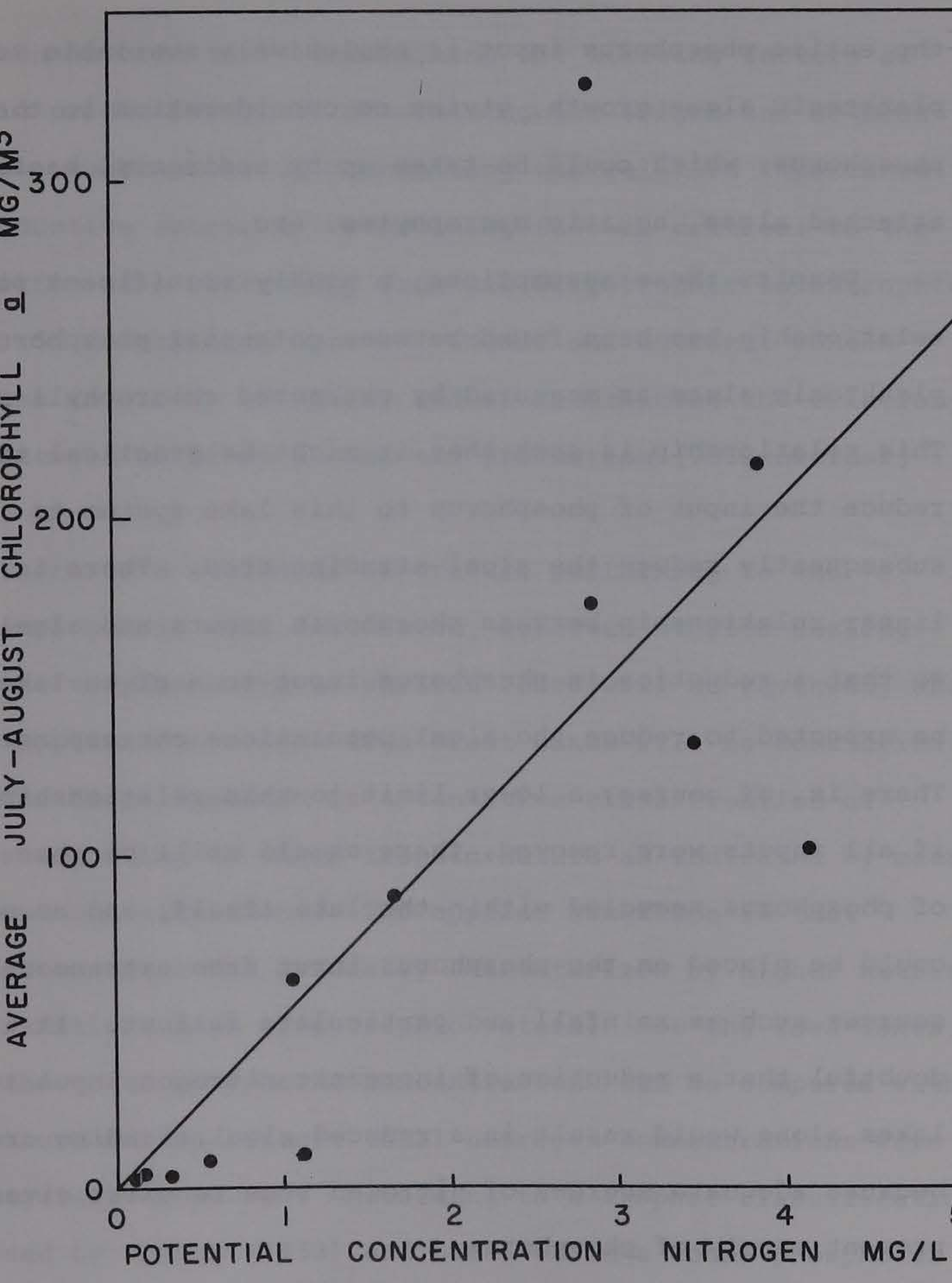


Figure 23. The regression of mean July-August chlorophyll a (mg/m^3) on the potential nitrogen concentration (mg/l) in the Iowa Great Lakes during 1971, 1972, and 1973.

the entire phosphorus input is exclusively available to planktonic algae growth, giving no consideration to the phosphorus, which could be taken up by sediments, bacteria, attached algae, aquatic macrophytes, etc.

Despite these assumptions, a highly significant positive relationship has been found between potential phosphorus and planktonic algae as measured by extracted chlorophyll pigments. This relationship is such that it might be practical to reduce the input of phosphorus to this lake system to subsequently reduce the algal standing crop. There is a linear relationship between phosphorus inputs and algal levels so that a reduction in phosphorus input to a given lake might be expected to reduce the algal populations correspondingly. There is, of course, a lower limit to this relationship, for, if all inputs were removed, there should still be some amount of phosphorus recycled within the lake itself, and no controls could be placed on the phosphorus input from extraneous sources such as rainfall and particulate fallout. It is doubtful that a reduction of inorganic nitrogen input to the lakes alone would result in a reduced algal standing crop because adequate sources of nitrogen seem to exist given the present supply of phosphorus.

F. Trophic Condition of the Iowa Great Lakes

Much recent limnological literature has been devoted to resolving the problem of eutrophication. To this end, work has been devoted to 1) determining the limiting factors of aquatic productivity, 2) determining the origin and sources of these substances, 3) determining the relative importance of productive rates, 4) determining factors critical to the transition of a water body from its oligotrophic to eutrophic state, 5) determining nutrient income and nutrient concentrations in a body of water, and 6) determining the relationship between nutrient income and production (Vollenweider, 1968).

There is a wealth of literature pertaining to the problems, but in this discussion, selected studies dealing with the trophic state of various lakes will be reviewed, and their application to the Iowa Great Lakes will be considered.

The first approach is a tentative classification of waters according to their trophic nature as indicated by mean nutrient concentrations. The applied assertion is that eutrophic waters are generally characterized by higher nutrient concentrations than oligotrophic waters. For the Iowa lakes, only the total phosphorus concentrations can be compared with literature values because total nitrogen concentrations were not regularly measured. According to a trophic classification proposed by Thomas (1953) and based on lake total phosphorus concentration, Spirit Lake and Lake West Okoboji fall at the higher range of a transitional group of lakes approaching the eutrophic state, whereas Lake East Okoboji and the Gar Lakes would be considered seriously eutrophic. With the values proposed by Sakamoto (1966a) for total phosphorus in Japanese waters, all the Iowa Great Lakes would be considered eutrophic. Sakamoto (1966b) has found larger chlorophyll a concentrations in eutrophic lakes and smaller amounts in oligotrophic bodies. Chlorophyll concentrations from all the Iowa lakes studied fall within the range found in eutrophic lakes in Japan.

Vollenweider (1968) suggests the classifications set forth by Thomas (1953) and Sakamoto (1966a, 1966b) are not to be regarded as rigid guidelines and states that each case must be considered separately. Further, Vollenweider (1968) agrees with Edmondson (1961) that the productivity and trophic state of a lake does not lie in its nutrient concentration, but on the total annual amount of nutrients entering a lake. For this reason, Vollenweider has proposed a definition of critical loading levels as related to eutrophication, based on specific surface loading (gm/m^2). Lakes known to be oligotrophic have small nutrient loading rates, and eutrophic lakes have loading rates considerably higher. Vollenweider has established permissible and dangerous loading levels for total nitrogen and total phosphorus on the basis of mean lake depth (Table 35). The specific phosphorus loading rate ($mg/m^2/year$) for each of the Iowa Great Lakes (Table 36) indicates that all the lakes,

Table 35. Permissible and dangerous loading levels proposed by Vollenweider (1968) for total nitrogen and total phosphorus (gm/m^2-year) according to lake mean depth.

Mean Depth Up To	Permissible Loading Up To		Dangerous Loading In Excess Of	
	N	P	N	P
5	1.0	0.07	2.0	0.13
10	1.5	0.10	3.0	0.20
50	4.0	0.25	8.0	0.50

Table 36. Total phosphorus loading levels (gm/m^2-year) for Lake West Okoboji, Lake East Okoboji, Spirit Lake, and Lower Gar Lake for 1971 and the mean of 1971-1972.

Lake	Mean Depth m	1971	1971-1972
Lake West Okoboji	11.9	0.20	0.15
Lake East Okoboji	2.8	0.62	0.44
Spirit Lake	5.2	0.27	0.21
Lower Gar Lake	1.1	1.1	1.1

except Lake West Okoboji, have phosphorus loading rates in excess of Vollenweider's dangerous level, placing them in the eutrophic category. Lake West Okoboji, because of its mean depth of 12 m, has a larger permissible phosphorus loading level than the other lakes studied, all of which have mean depths of less than 5 m. In 1971, the phosphorus load to Lake West Okoboji was, however, at the level Vollenweider considers dangerous, indicating that Lake West Okoboji is approaching this threshold point at which eutrophic conditions may become more severe.

Shannon and Brezonik (1972a, 1972b) have found relationships between lake trophic state and nitrogen and phosphorus loading rates, indicating that lake trophic state is largely dependent on the gross supply of nitrogen and phosphorus to the lake (mainly phosphorus). This relationship is most applicable to shallow subtropical lakes having a mean depth of less than 10 m. A comparison of the volumetric loading rate (gm/m^3/year) and the surface loading rate (gm/m^2/year) from Lake East Okoboji and Lower Gar Lake with the trophic state index values proposed for Florida lakes, places these Iowa lakes into the eutrophic category. Spirit Lake falls within the mesotrophic range, based on surface loading. Because its mean depth exceeds 10 m, Lake West Okoboji is not included in the relationship.

G. Nutrient Losses From Watersheds

1. Annual Differences.

It has been noted that there are differences in the nutrient budgets of the respective lakes from year to year. In Figure 24, we have summarized the output of plant nutrients and water from the metered watersheds. For each year, separate consideration is given to the interval preceding July 31 (Period I) and after July 31 (Period II). Total phosphorus, ammonia nitrogen, and the volume of water delivered from the metered areas are about equal in the first half of both 1971 and 1973. Almost twice as much nitrate nitrogen, however, ran off the watersheds in Period I of 1973 as compared with Period I of 1971. In general, the runoff and nutrient losses by the watersheds during period I of 1972 were half of the 1971 and 1973 values, whereas about twice the amount of nutrients and water were delivered from the watersheds during Period II of 1972 as during period II 1971.

For the most part, the spring runoff period in the first half of the year seems to make the major contribution of plant nutrients to the lake system.

2. Factors associated with differences between streams.

Early in the study, it was noted that there were differences in the concentrations of phosphorus and inorganic nitrogen among the various streams (Appendix B). In Table 37, the mean concentrations of total phosphorus, nitrate nitrogen,

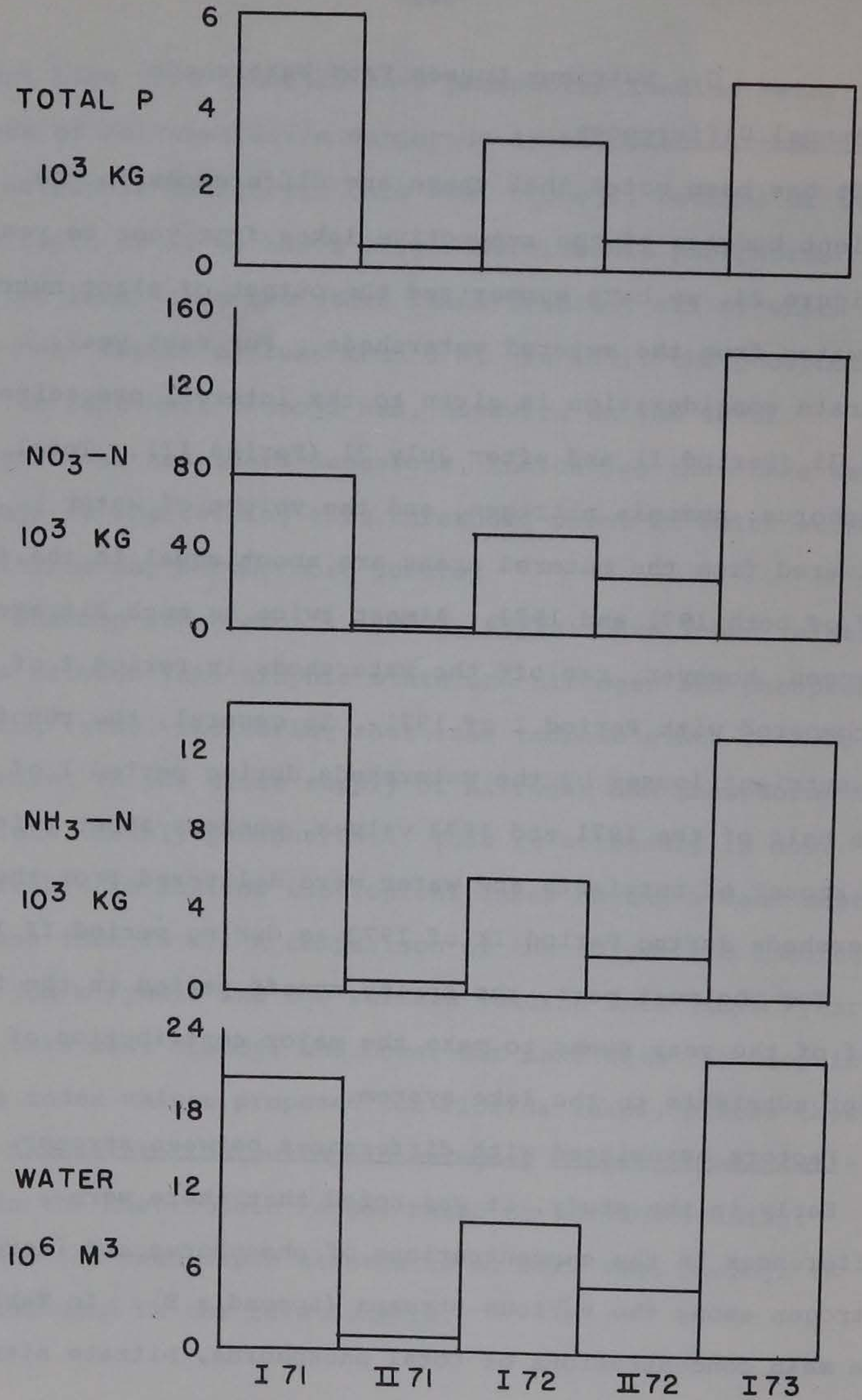


Figure 24. Output of plant nutrients and water from the Iowa Great Lakes metered watersheds in 1971, 1972, and 1973.

and ammonia nitrogen for 35 sampling stations are given for our sampling periods in 1971, 1972, and 1973. A goal of this study was to determine what factors were responsible for these differences among streams.

A statistical procedure was used to determine if these differences could be related to the various types of land-use practices conducted within the respective watersheds. From the land-use inventory of each watershed (Appendix C) the number of hectares of row crops, grasslands, woodlands, marshlands, and urban uses were each divided by the watershed area and multiplied by 100. This yielded percentage values that could be used to compare different watersheds. The numbers of animal units in the watersheds also were divided by the watershed areas to yield a livestock density in animal units per hectare.

A multiple-regression analysis was carried out for each sampled year by using the concentration of phosphorus (mg/l) of the 35 watersheds listed in Table 37 as the dependent variables. The independent variables included animal units per hectare and percentages of each watershed in row crops, pastures, and marshland. The woodland and urban-use categories were not represented in enough watersheds to be included in this analysis. The independent variables were used separately and in all possible combinations in a series of multiple, linear-regression calculations against phosphorus

Table 37. Average concentrations (mg/l) of Total P, NO_3-N, and NH_3-N during 1971, 1972, and 1973 for 35 stream sampling stations within the Iowa Great Lakes Watershed.

Station	Total P			NO_3-N			NH_3-N		
	1971	1972	1973	1971	1972	1973	1971	1972	1973
1	1.04	0.47	0.35	3.80	6.32	7.10	1.63	1.09	0.64
2	0.11	0.01	0.05	0.21	0.53	10.19	0.02	0.01	0.14
3	0.38	0.25	0.35	1.44	4.19	2.30	0.69	0.25	0.57
5	0.11	0.25	0.09	3.43	2.92	3.51	0.67	0.56	0.73
6	0.15	0.09	0.11	0.15	0.11	0.10	0.84	0.64	0.91
8	0.43	0.45	0.33	7.45	10.52	12.81	0.91	1.52	0.83
9.1	0.21	0.21	0.16	7.96	12.85	12.38	0.20	0.21	0.41
10	0.22	0.25	0.16	5.14	5.53	9.59	0.44	0.44	0.28
11	0.18	0.50	0.13	4.97	6.54	9.17	0.40	0.77	0.25
12	0.27	0.22	0.28	1.52	0.62	0.93	0.41	0.29	0.69
13	0.20	0.17	0.14	5.12	6.24	7.35	0.24	0.11	0.17
15	0.57	0.18	0.47	3.13	2.82	5.58	0.95	0.24	0.74
16	0.28	0.17	0.14	3.89	3.33	7.93	0.28	0.17	0.21
17	0.62	0.61	0.59	1.04	1.77	0.94	1.09	1.08	1.04
18	0.31	0.22	0.25	2.26	4.88	5.60	0.65	0.21	0.65
19	0.30	0.17	0.14	3.17	4.04	8.00	0.51	0.37	0.26
22	0.17	0.14	0.25	4.49	5.90	7.27	0.52	0.44	0.59
23	0.17	0.10	0.09	2.76	1.95	4.20	0.42	0.21	0.18
24.1	0.25	0.18	0.16	3.71	5.15	5.69	0.14	0.07	0.15
28	0.92	0.71	0.78	4.54	6.65	4.74	1.46	0.53	2.44
29	0.28	0.13	0.13	0.23	0.14	0.29	0.93	0.51	0.61
30	0.08	0.11	0.27	1.67	1.22	1.00	0.17	0.11	0.53
31	0.24	0.12	0.13	5.46	7.16	4.48	0.32	0.08	0.17
32	0.28	0.32	0.21	0.05	0.04	0.07	0.39	0.24	0.37
33	0.17	0.07	0.11	2.76	4.13	5.11	0.28	0.12	0.26
34	0.17	0.10	0.04	5.46	9.10	10.32	0.31	0.10	0.10
38	0.55	0.37	0.36	2.74	4.80	7.06	0.77	0.49	0.48
39	2.76	8.18	3.52	3.74	8.00	3.85	2.72	0.73	8.00
40	0.39	0.16	0.19	3.37	4.95	7.49	1.01	0.93	0.55
41	0.34	0.08	0.23	8.24	9.49	9.40	0.75	0.21	0.77
42	2.96	1.33	2.40	2.52	1.90	4.18	4.65	0.89	6.32
44	0.13	0.10	0.07	5.37	7.92	9.97	0.29	0.37	0.26
46	0.23	0.13	0.21	5.11	10.03	10.97	0.30	0.15	0.25
47	0.21	0.12	0.15	5.94	7.91	8.40	0.28	0.06	0.25
48	0.20	0.19	0.14	1.69	2.37	2.78	0.67	0.56	0.60

concentration. Each calculated regression was tested by using t-tests of the hypothesis that the slopes (the b values) were not different from zero. The 1% confidence limit was chosen as the criterion for significant difference.

The number of animal units per hectare was the only independent variable significantly related to the differences in phosphorus concentration among streams. The correlation coefficients (r) were 0.78, 0.65, and 0.75 for 1971, 1972, and 1973. The calculated regression equation for 1971 and a plot of phosphorus concentrations against animal units per hectare are given in Figure 25, where P is the mean concentration of phosphorus (mg/l), and A is the number of animal units per hectare.

To determine the strength of the relationship between phosphorus losses and animal units, a multiple-regression analysis was conducted using the output of phosphorus in kilograms per hectare for 17 metered watersheds greater than 100 hectares sampled throughout the study (Table 38). The smaller watersheds were omitted from this analysis because most had flows for relatively short periods, and possibly, the weekly sampling schedule did not adequately measure the total nutrient delivery from those watersheds. The dependent variable, phosphorus (kg/ha), was determined by integrating the periodic measurements of flow and phosphorus concentration

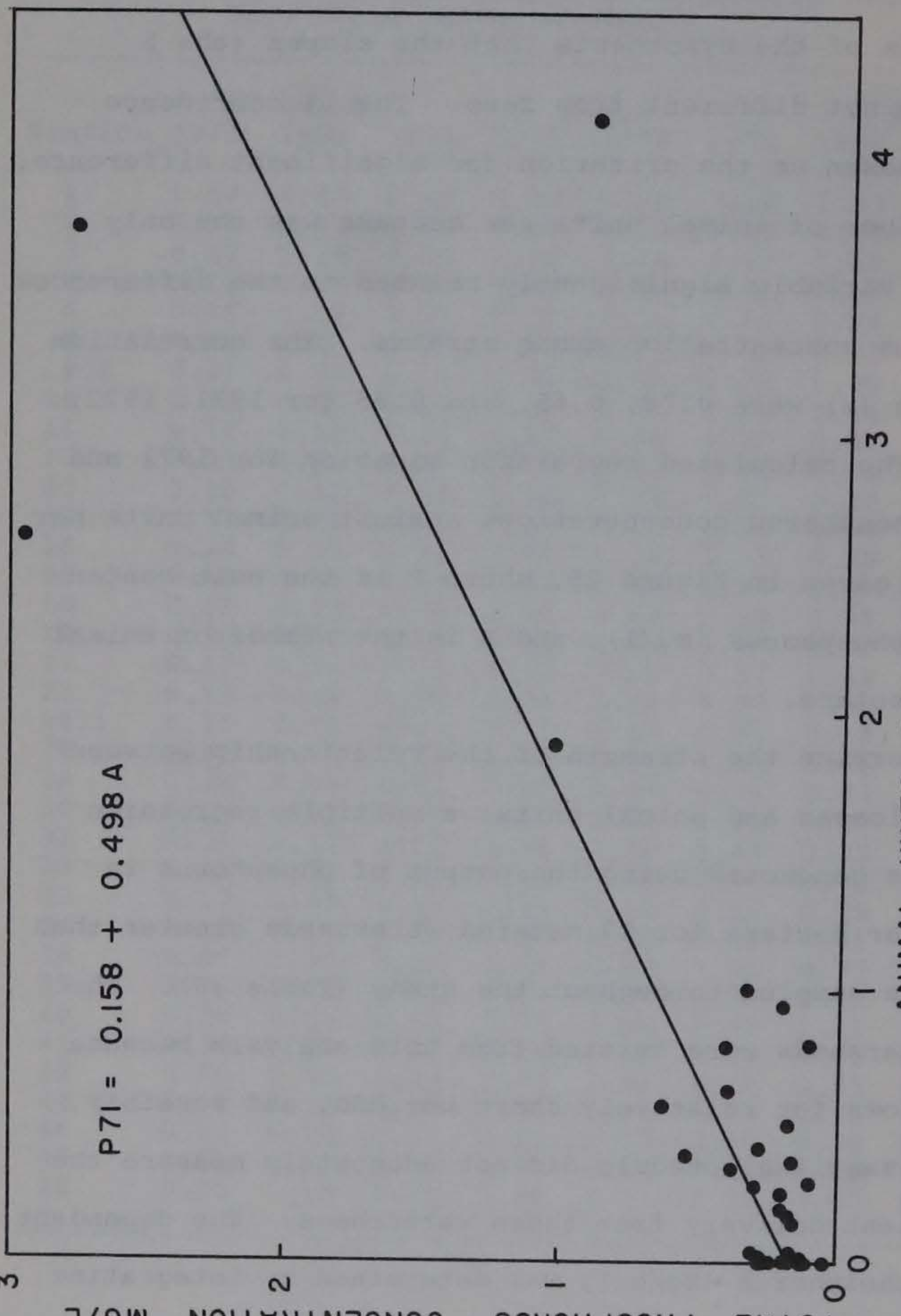


Figure 25. The regression of total phosphorus concentration (mg/l) on animal units per hectare for 35 metered watersheds in the Iowa Great Lakes area in 1971.

Table 38. Nutrient inputs for the 17 watersheds larger than 100 hectares used in the regression analysis. Values of Total P, NO_3-N, and NH_3-N for 1971, 1972, and 1973 are expressed in kilograms per hectare per year.

Station	Total P 1971	Total P 1972	Total P 1973	NO_3-N 1971	NO_3-N 1972	NO_3-N 1973	NH_3-N 1971	NH_3-N 1972	NH_3-N 1973
1	2.86	0.68	0.89	10.40	9.20	17.96	4.45	1.58	1.61
5	0.47	0.24	0.09	14.31	2.78	3.38	2.81	0.53	0.71
6	0.49	0.04	0.17	0.50	0.05	0.16	2.74	0.29	1.41
8	0.96	0.45	0.64	16.62	10.56	25.31	2.03	1.53	1.64
10	0.46	0.41	0.21	10.91	9.03	12.34	0.93	0.72	0.37
11	0.23	0.53	0.18	6.65	6.91	12.32	0.54	0.81	0.34
18	0.50	0.10	0.43	3.65	2.11	9.51	1.04	0.10	1.10
19	0.72	0.21	0.34	7.68	4.88	19.89	1.24	0.45	0.66
22	0.32	0.23	0.48	8.32	9.68	14.09	0.96	0.73	1.14
23	0.38	0.24	0.18	6.33	4.68	8.67	0.95	0.50	0.37
29	0.36	0.06	0.18	0.29	0.07	0.42	1.17	0.24	0.86
33	0.38	0.10	0.39	5.99	5.83	18.12	0.61	0.17	0.94
34	0.06	0.01	0.02	1.85	0.54	5.77	0.11	0.01	0.05
38	1.29	0.60	0.67	6.42	7.84	13.08	1.80	0.80	0.89
40	0.68	0.23	0.33	5.91	6.98	13.15	1.77	1.32	0.96
41	0.90	0.14	0.55	21.55	16.09	21.81	1.97	0.36	1.78
48	0.15	0.17	0.17	1.30	2.09	3.37	0.51	0.49	0.73

over time to yield annual outputs of phosphorus for each watershed. These were divided by the respective watershed areas to yield annual outputs in kilograms per hectare. Percentages in each watershed of row crops, pasture, marshland, and the animal units per hectare were used as independent variables.

Phosphorus (kg/ha) differences between watersheds were significantly related to the number of animal units in each watershed, and no relationship with any other variable was found significant. The correlation coefficients between animal units and phosphorus load (kg/ha) for 1971, 1972, and 1973 were 0.79, 0.64, and 0.71. The calculated regression equations for each of these years are:

$$P71 = 0.175 + 1.043A$$
$$P72 = 0.136 + 0.269A$$
$$P73 = 0.189 + 0.344A$$

where P is the phosphorus load in kilograms per hectare, and A is the number of animal units per hectare.

Further analyses were concentrated on the animal units alone. A multiple-regression analysis was used to test the relationship between phosphorus losses (kg/ha) in these 17 watersheds and 1) the number of animal units in feedlots with drainage to streams or tiles, 2) the number of animal units in pastures with drainage to streams or tiles, 3) the number of animal units in feedlots with no drainage to streams or tiles, and 4) the number of animal units in pastures with no drainage to streams or tiles. Each of the independent variables in the four categories (Table 39) was divided by the watershed area to yield pastured or feedlot animal units per hectare.

All combinations of the independent variables were tested. The only significant correlation found was with animals in feedlots with drainage to streams or tiles. The 1971, 1972, and 1973 correlation coefficients between phosphorus losses (kg/ha) and feedlot animal units/ha with drainage were 0.89, 0.56, and 0.75, respectively. The regressions are shown in Figures 26 and 27. This significant relationship strongly suggests that the animal units, particularly those animal units held in feedlots where drainage enters a stream or tile, are identifiable sources of phosphorus in these watersheds. This relationship is not unique because others have found surface runoff from livestock feedlots high in phosphorus concentration (Miner et al., 1966; McCalla et al., 1969; Gilbertson et al., 1970; Taylor et al., 1971; U.S. EPA, 1971; Edwards et al., 1972).

The relationship between an increased phosphorus load associated with watershed animal units is not the only land-use practice related to phosphorus concentration within the Iowa Great Lakes watershed. It seems the phosphorus load is reduced by the amount of lake area within the watershed. Evidence for this relationship comes from the annual

Table 39. Animal units per hectare in 17 watersheds separated into pasture animal units with drainage to a stream or tile, pasture animal units without drainage, feedlot animal units with drainage to a stream or tile, and feedlot animal units without drainage.

Station	Pasture animal units without drainage	Pasture animal units with drainage	Feedlot animal units with drainage	Feedlot animal units without drainage
1	0	0.161	1.75	0
5	0	0	0	0
6	0	0	0	0
8	0.038	0	0.713	0.040
10	0	0.241	0	0.050
11	0.003	0.008	0.140	0.809
18	0.122	0.066	0.089	0.209
19	0	0.004	0	0.025
22	0.102	0.052	0	0.215
23	0.072	0.096	0	0
29	0.027	0.108	0.065	0.087
33	0.027	0.021	0	0.007
34	0.030	0	0	0
38	0.044	0.058	0.092	0.194
40	0	0.154	0.270	0.246
41	0	0.044	0.680	0.203
48	0.031	0.121	0.015	0.095

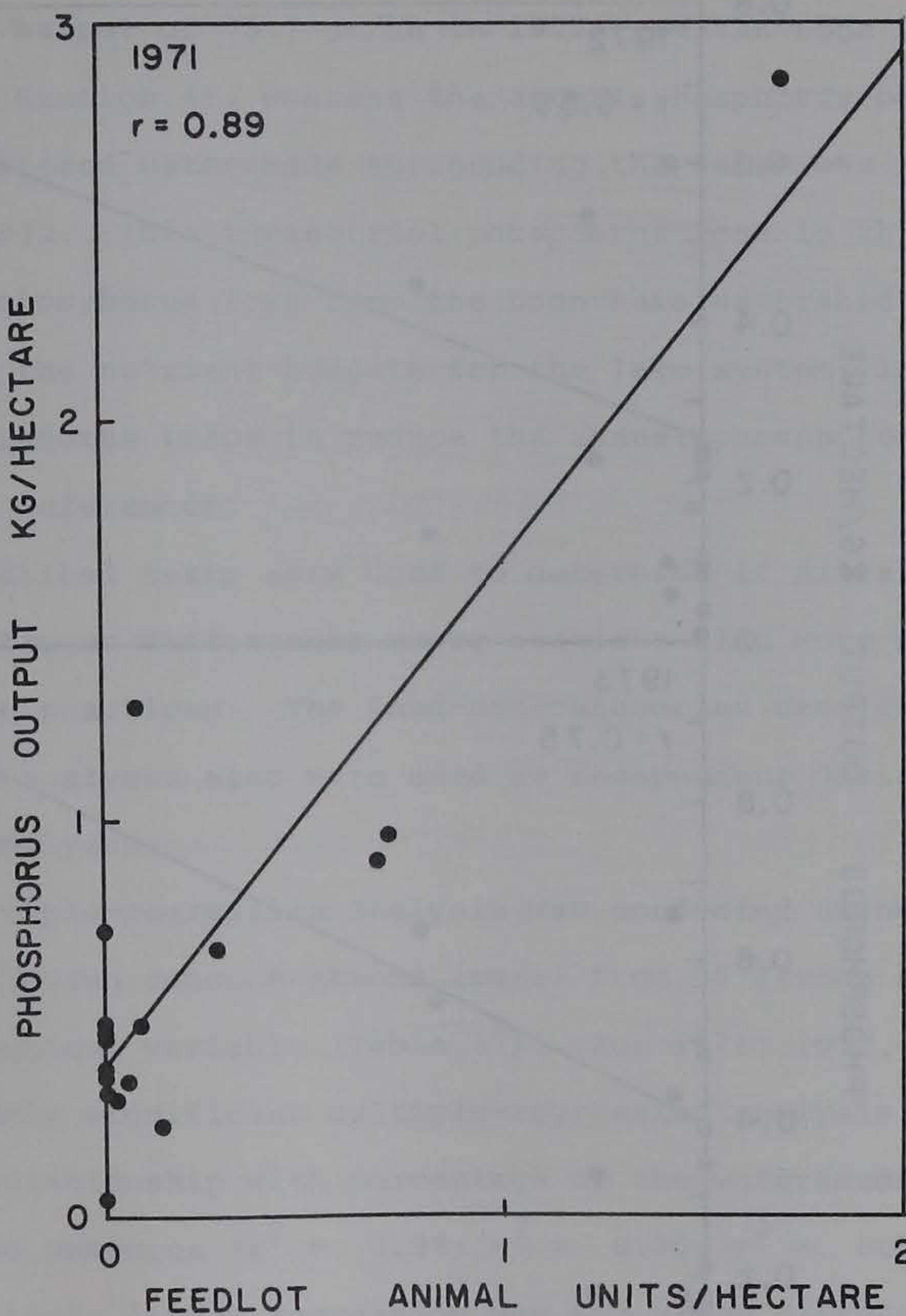


Figure 26. The regression of phosphorus output (kg/ha) on feedlot animal units/ha for 17 watersheds in the Iowa Great Lakes area in 1971.

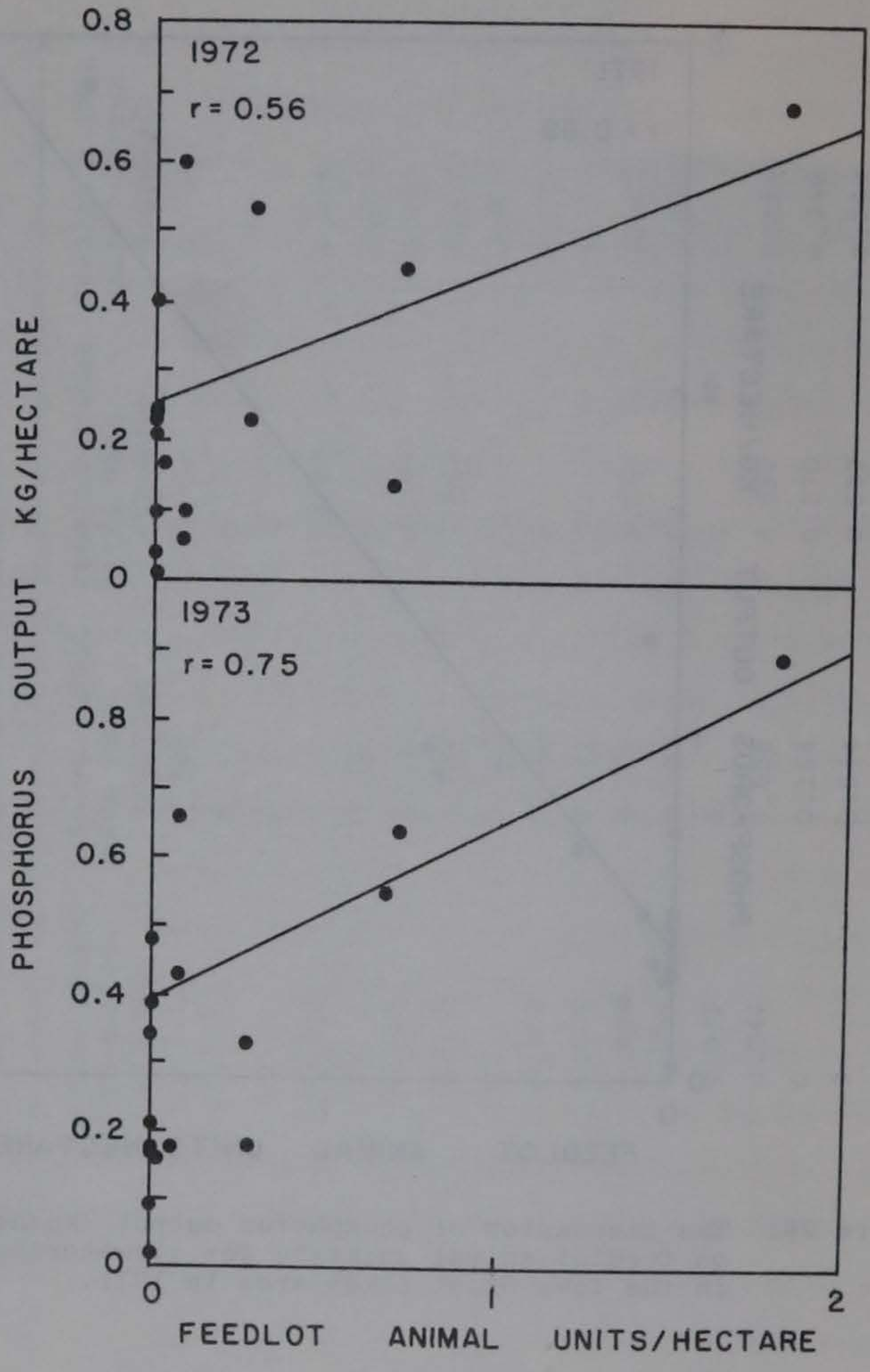


Figure 27. The regression of phosphorus output (kg/ha) on feedlot animal units/ha for 17 watersheds in the Iowa Great Lakes area in 1971 and 1972.

phosphorus output of 75.7 gm/ha in 1972 from the Loon Lake watershed (Station 4), whereas the annual phosphorus output from the metered watersheds surrounding the lakes was 237.1 gm/ha in 1972. This terrestrial phosphorus loss is three times the phosphorus loss from the Loon Lake watershed. Thus, as seen in the nutrient budgets for the lake system, lakes act as phosphorus traps to reduce the annual phosphorus loss from their watersheds.

Statistical tests were used to determine if nitrate and ammonia nitrogen differences among stations also were related to land-use practices. The land-use categories used in the phosphorus analyses also were used as independent variables in these analyses.

A multiple-regression analysis was conducted using nitrate nitrogen concentrations (mg/l) from 35 stream stations as the dependent variable (Table 37). For 1971, 1972, and 1973 the only significant multiple-regression analysis was a negative relationship with percentage of the watersheds in marshes and pastures ($r^2 = 0.38$; $r^2 = 0.30$; $r^2 = 0.56$).

A multiple linear regression was run using nitrate loads (kg/ha) for 17 metered watersheds larger than 100 hectares (Table 38). For 1971, 1972, and 1973 a significant negative correlation was found with percentage of watersheds in marshlands. The correlation coefficients were -0.54, -0.63, and -0.73. None of the multiple variable models were significant.

No significant relationship was found between nitrate nitrogen and animal units in pastures or feedlots.

In a multiple regression of ammonia concentrations (mg/l) from the 35 stations in Table 37, a positive significant correlation was found with animal units per hectare for all years. The correlation coefficients were 0.73, 0.45, and 0.79.

With the ammonia nitrogen (kg/ha) values from the 17 largest watersheds in Table 38 as the dependent variable and animal units per hectare and land-use categories as independent variables, a significant relationship with animal units was found for all years (the 1973 value was significant at the 2% level). The correlation coefficients were 0.58, 0.68, and 0.55.

An analysis of animal units broken down into pastures and feedlots with or without drainage in Table 39, compared with ammonia nitrogen (kg/ha) yielded a positive correlation with feedlot animal units per hectare with drainage to a stream or tile inlet. The correlation coefficients for 1971, 1972, and 1973 were 0.73, 0.67, and 0.63.

Nitrate nitrogen has, by some researchers, been considered the plant nutrient associated with many of the problems of livestock waste and feedlot output rather than ammonia nitrogen or phosphorus (Henderson, 1962; Stewart et al., 1967; Elliot et al., 1972; Martin and Goff, 1972). This is because of the high affinity of soils for phosphorus and ammonia nitrogen and the ability of nitrate nitrogen to percolate and move freely in the groundwater (Stewart et al., 1967; Biggar and Corey, 1969; John, 1971; Zwerman et al., 1972). In this study, nitrate nitrogen concentrations were not identified with livestock numbers in the watersheds.

From the analyses of watershed factors associated with nutrient loads, it seems that phosphorus and ammonia nitrogen are the nutrients related to livestock feedlots in the Iowa Great Lakes watershed. The analyses relate animal units and, specifically, animal units in feedlots draining to a surface stream or tile intake, with a portion of the ammonia nitrogen and total phosphorus load.

The Iowa Great Lakes watershed is small, and the distance a stream or tile flows before emptying into a lake is relatively short. It seems that phosphorus and ammonia nitrogen are being carried by runoff from feedlots in the watershed to the lakes in stream flow or tile drainage. There are strong positive relationships between the concentration (mg/l) ($r = 0.91$) and losses (kg/ha) ($r = 0.82$) of phosphorus and ammonia from the metered watersheds. Because both are positively correlated with feedlot animal units with surface or tile drainage, it seems that these feedlots are an identifiable source of these nutrients to the tributaries of the Iowa Great Lakes. This is further supported by phosphorus losses being greatest in 1971 and 1973, years of highest runoff. Correlations between phosphorus outputs and animal units were greatest in those years.

Feedlot drainage without direct access to a stream or tile seems to have little influence on the phosphorus or ammonia nitrogen load of a given watershed inasmuch as feedlots without surface drainage did not significantly describe any of the nutrient load in a multiple-regression analysis. This is because of the extreme insolubility of inorganic phosphate forms in soil solution and binding of ammonia nitrogen to cation exchange sites in soil (Bigger and Corey, 1969).

Ammonia is a major nitrogen constituent in feedlot surface drainages due to the hydrolysis of urea (Martin and Goff, 1972) and phosphorus is contained in the solid waste (Taiganides and Hazen, 1966; Vollenweider, 1968). Edwards et al., (1972) have found phosphorus concentrations in barnlot runoff water several hundred times greater than in streams draining forest and farmland. Pomeroy and Orlab (1967) and Gilbertson et al. (1970) have found ammonia nitrogen concentrations from 25 to 150 mg/l in feedlot runoff.

H. Potential Benefits of a Nutrient Reduction Program

The strong correlation between potential phosphorus concentrations and chlorophyll a concentrations indicates that control of the annual phosphorus input is the key to controlling the summer algal blooms in the Iowa Great Lakes.

Algal growth is a major water-quality problem in these lakes so that a desirable goal of water-quality management would be to prevent an increase of algal problems and, if possible, reduce the present bloom levels. Because of the strong correlation between phosphorus input and algal standing crop, we presume a reduction in phosphorus input to the lakes would result in a corresponding reduction in summer algal growth.

Statistically, livestock have been identified as a source of phosphorus to the tributaries of the Iowa Great Lakes during the 3 years of study. The best correlation between animal units and phosphorus is found with that portion of the livestock population located in feedlots where surface runoff flows to a stream or tile intake. It is, therefore, proposed that a livestock waste-control program aimed at preventing the flow of feedlot drainage from entering the lakes would reduce the phosphorus input and in turn reduce the algal standing crop.

To estimate the effect of such an abatement program, an evaluation of the lake nutrient budgets during 1971, 1972, and 1973, subtracting the phosphorus contributions from feedlots in the watershed, is worthwhile. The slope of the regression equations between phosphorus and feedlot animal units per hectare (Figures 26 and 27) indicates 1.27 kg P, 0.25 kg P, and 0.39 kg P per feedlot animal unit were lost from the watersheds in 1971, 1972, and 1973. The phosphorus contribution from feedlot animal units was calculated by multiplying the total number of feedlot animal units having surface drainage in each lake watershed (Table 40) by the slope of the regression line. The results are given in Table 41.

Had an abatement program been conducted that prevented feedlot runoff from entering the lakes before 1971, we would expect that phosphorus output from the terrestrial watersheds of Lake East Okoboji, Lake West Okoboji, and Spirit Lake would have been reduced by approximately 27% in 1971, 13% in 1972, and 13% in 1973. Of the total nutrient budget for each lake (including rainfall and outflow from other lakes) this represents a 22%, 9%, and 11% reduction for the respective periods.

Of the three lakes involved, an abatement program would be most effective in reducing phosphorus inputs to Lake East Okoboji. In 1971, such a program would have reduced the phosphorus budget to this lake by 31%, and in 1972 and 1973, a 15% reduction would have resulted. In Lake West Okoboji and Spirit Lake, such a program would have reduced the phosphorus load from all sources by approximately 20% in 1971, and 8% in 1972 and 1973. Phosphorus reductions from such a program would, therefore, be greatest in Lake East Okoboji and somewhat less in Lake West Okoboji and Spirit Lake.

Table 40. Mean number of feedlot animal units having surface drainage to a stream or tile intake in the watersheds of West Okoboji, East Okoboji, Spirit Lake, and Lower Gar Lake during 1971, 1972, and 1973.

Lake	Feedlot animal units with drainage to a stream	Feedlot animal units with drainage to a tile intake
West Okoboji	331	175
East Okoboji	429	720
Spirit Lake	500	401
Lower Gar Lake	74	-

Table 41. Amount of phosphorus attributed to feedlot animals, and total phosphorus from feedlot animals as a percentage of phosphorus from all sources.

Lake	Amount of phosphorus attributed to feedlot animals	Phosphorus attributed to feedlot animals as a percentage of phosphorus from all sources
West Okoboji		
1971	643 kg	21%
1972	127 kg	9%
1973	197 kg	8%
East Okoboji		
1971	1459 kg	31%
1972	287 kg	14%
1973	448 kg	15%
Spirit Lake		
1971	1144 kg	16%
1972	225 kg	5%
1973	351 kg	10%
Lower Gar Lake		
1971	94 kg	9%
1972	19 kg	2%
1973	29 kg	4%

Little reduction would be derived from such an abatement program in the Lower Gar Lake watershed. Only 74 animal units are held in feedlots with drainage in this watershed, and the phosphorus load attributed to this source is only 2-9% of the incoming phosphorus during the years of study.

During the study, a control structure was built on one feedlot with 211 animal units that drained to the stream at Station 1. Construction began in September 1972 and was completed in December 1972. The structure is designed to entrap feedlot runoff in an earth lagoon. Runoff is either pumped to a nearby grassland or allowed to evaporate. The lagoon seems to have had a measurable effect on the phosphorus output from this watershed. Total phosphorus concentration in the stream dropped from a mean of 1.64 mg P/l preceding September 1972 to 0.42 mg P/l from December 1972 to August 1973. Orthophosphate phosphorus decreased from an average of 0.82 mg P/l between March 1971 to September 1972 to 0.32 mg P/l after diversion.

I. Algal densities and water transparency

Increased water transparency is one expected benefit of a reduction in algal densities. In Figure 28 we have graphed the relationship between Secchi disc transparency and chlorophyll a concentrations for a large group of lakes including the Iowa Great Lakes (Bachmann and Jones, in press). At high concentrations of chlorophyll a the water transparency

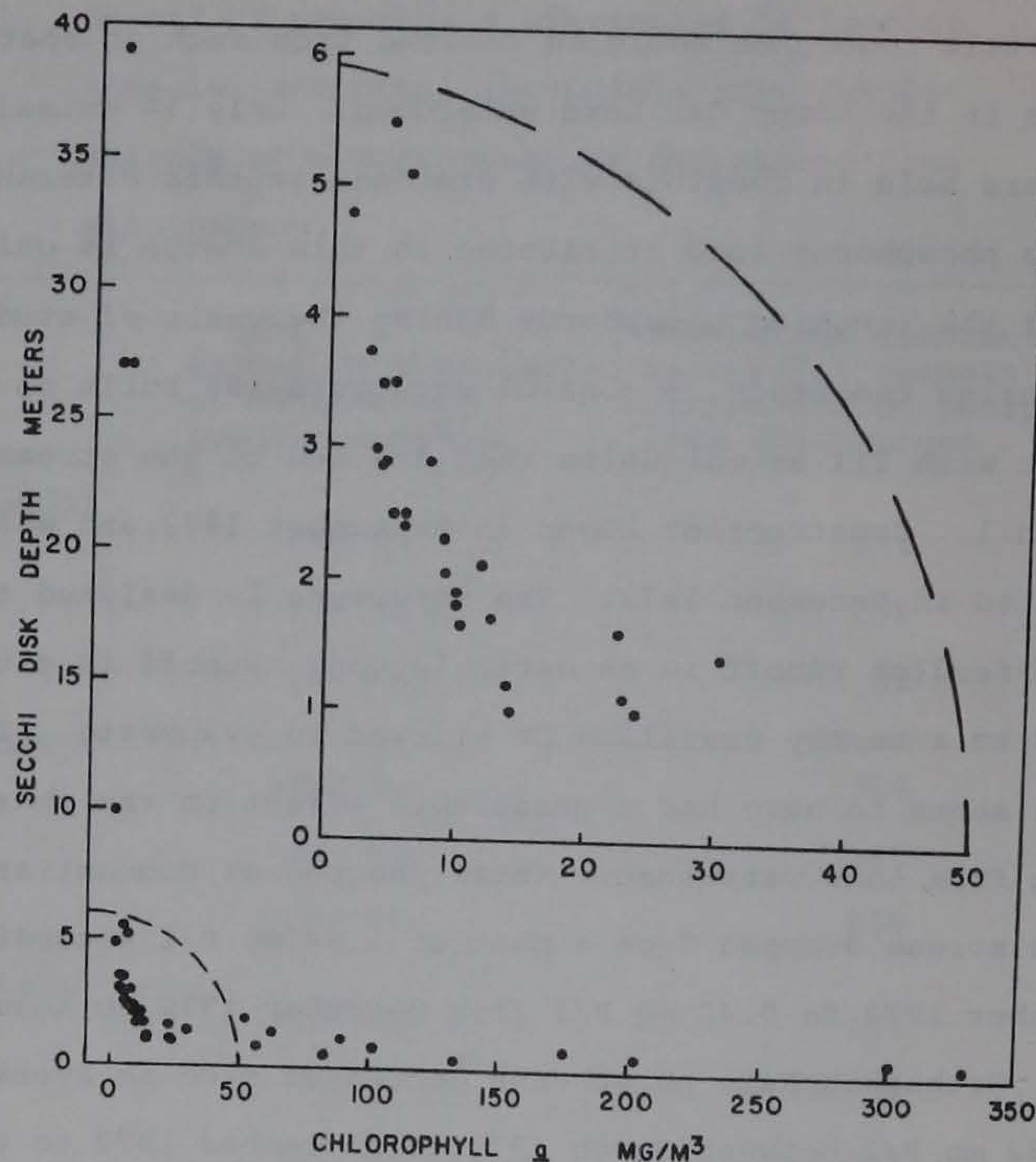


Figure 28. Relationship between mean Secchi disc transparencies for July and August and the mean July-August chlorophyll a concentrations for 16 lakes of various trophic states.

is less than 1 m. As the chlorophyll levels decrease there is little improvement in transparency until a level of about 10 mg/m^3 is reached. Below that level water clarity increases rapidly as the concentration is reduced. The implication of this finding is that an algal reduction program will not result in noticeable improvement in water clarity unless algal levels can be reduced below a concentration of 10 mg/m^3 of chlorophyll a. From this standpoint the greatest potential improvements will be seen in Lake West Okoboji and Big Spirit Lake where the present chlorophyll a concentrations are below or close to that level (Table 28). Much more substantial reductions in algal populations would have to be made in the other lakes before increases in water transparency would be apparent.

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VII. Data Appendices

Appendix A

Chemical and Secchi disc values from West Lake Okoboji, East Lake Okoboji, Spirit Lake, Upper Gar Lake, Lake Minnewashta, Lower Gar Lake, Loon Lake, Pearl Lake, Rush Lake and Little Spirit Lake between March, 1971 and September 1973. Missing values designated by *****.

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LITTLE SPIRIT LAKE STATION 1.2 SAMPLED ON 7/16/71 SECCHI DEPTH = 0.6 METERS										
0.0	*****	0.01	0.02	0.52	28		452	8.9	25.0	****
LITTLE SPIRIT LAKE STATION 1.2 SAMPLED ON 7/22/71 SECCHI DEPTH = 0.5 METERS										
0.0	*****	0.00	0.04	0.48	27		471	9.1	26.8	****
2.0	*****	0.00	0.04	0.50	30	7.2	475	8.9	24.2	****
LITTLE SPIRIT LAKE STATION 1.2 SAMPLED ON 10/ 7/71 SECCHI DEPTH = 0.4 METERS										
0.0	0.09	0.00	0.04	0.20	30	9.4	456	8.7	14.5	44.8
2.0	0.07	0.00	0.05	0.23	31	9.3	453	8.7	14.4	51.2
LITTLE SPIRIT LAKE STATION 1.2 SAMPLED ON 1/17/72 SECCHI DEPTH = 2.0 METERS										
0.0	0.04	0.00	0.11	0.62	9	10.2	581	7.8	1.1	47.2
2.0	0.04	0.00	0.12	0.61	9	9.8	575	7.8	2.9	47.2
LITTLE SPIRIT LAKE STATION 1.2 SAMPLED ON 2/17/72 SECCHI DEPTH = 1.5 METERS										
0.0	0.05	0.00	0.09	1.05	5	5.4	668	7.4	0.3	52.0
LITTLE SPIRIT LAKE STATION 1.3 SAMPLED ON 7/16/71 SECCHI DEPTH = 0.5 METERS										
0.0	*****	0.00	0.02	0.45	34		435	8.9	25.0	****
LITTLE SPIRIT LAKE STATION 1.3 SAMPLED ON 7/22/71 SECCHI DEPTH = 0.5 METERS										
0.0	*****	0.00	0.05	0.42	28		455	9.2	26.6	****
2.0	*****	0.00	0.03	0.48	32	8.5	471	9.1	24.4	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LITTLE SPIRIT LAKE STATION 1.3 SAMPLED ON 8/25/71 SECCHI DEPTH = 0.3 METERS										
0.0	0.07	0.00	0.06	0.48	17	7.3	474	8.9	24.1	50.3
1.5	0.08	0.00	0.06	0.43	21	6.9	466	8.9	23.9	50.6
LOON LAKE STATION 4.3 SAMPLED ON 3/ 8/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.06	0.97	0.61	23	10.7	605	7.6	1.0	****
2.5	*****	0.04	1.21	0.67	21	10.5	617	7.6	1.0	****
LOON LAKE STATION 4.3 SAMPLED ON 3/22/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.05	0.98	0.82	21	11.4	378	6.5	0.0	****
2.5	*****	0.09	1.32	1.24	25	7.5	550	6.5	0.0	****
LOON LAKE STATION 4.3 SAMPLED ON 7/16/71 SECCHI DEPTH = 0.2 METERS										
0.0	*****	0.00	0.12	0.58	74		359	9.3	26.0	****
LOON LAKE STATION 4.3 SAMPLED ON 7/22/71 SECCHI DEPTH = 0.3 METERS										
0.0	*****	0.00	0.00	0.51	58		353	9.6	26.8	****
2.1	*****	0.00	0.00	0.57	63	6.8	378	9.1	24.0	****
LOON LAKE STATION 4.3 SAMPLED ON 8/25/71 SECCHI DEPTH = 0.2 METERS										
0.0	0.17	0.02	0.11	0.53	44	7.4	420	9.0	24.1	46.6
1.8	0.18	0.03	0.10	0.55	52	7.5	438	8.9	24.0	42.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LOON LAKE			STATION	4.3 SAMPLED ON	9/22/71	SECCHI	DEPTH =	0.0 METERS		
0.0	0.14	0.00	0.08	0.29	55		444	****	13.0	****
LOON LAKE			STATION	4.3 SAMPLED ON	10/ 7/71	SECCHI	DEPTH =	0.3 METERS		
0.0	0.16	0.00	0.06	0.21	42	9.2	448	8.5	13.1	36.0
2.5	0.14	0.00	0.07	0.28	67	9.8	446	8.6	13.0	59.2
LOON LAKE			STATION	4.3 SAMPLED ON	11/10/71	SECCHI	DEPTH =	1.7 METERS		
0.0	0.07	0.03	0.12	0.41	9	11.8	475	8.1	3.3	24.0
1.7	0.08	0.03	0.11	0.45	8	11.7	485	8.1	3.8	24.8
LOON LAKE			STATION	4.3 SAMPLED ON	1/17/72	SECCHI	DEPTH =	1.8 METERS		
0.0	0.05	0.02	0.02	0.50	2	4.4	575	7.3	0.0	21.6
1.8	0.05	0.02	0.03	0.50	5	4.6	576	7.3	2.9	29.2
LOON LAKE			STATION	4.3 SAMPLED ON	2/17/72	SECCHI	DEPTH =	2.0 METERS		
0.0	0.06	0.03	0.04	0.77	6	0.6	646	7.0	0.1	23.2
2.0	0.07	0.03	0.02	0.91	6	0.4	646	7.1	2.3	16.0
PEARL LAKE			STATION	4.5 SAMPLED ON	10/ 7/71	SECCHI	DEPTH =	0.2 METERS		
0.0	0.14	0.00	0.08	0.39	62	9.2	337	8.6	14.8	61.6
2.0	0.21	0.01	0.08	0.41	70	9.3	337	8.6	14.8	66.4

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
PEARL LAKE STATION 4.5 SAMPLED ON 1/17/72 SECCHI DEPTH = 1.4 METERS										
0.0	0.06	0.01	0.14	0.84	8	8.4	464	7.6	0.9	40.8
PEARL LAKE STATION 4.5 SAMPLED ON 2/17/72 SECCHI DEPTH = 1.2 METERS										
0.0	0.09	0.03	0.01	1.52	6	0.2	531	7.1	1.8	41.6
LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 3/10/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.03	0.00	0.57	0	11.1	326	7.6	2.0	****
5.0	*****	0.05	0.00	0.27	0	13.4	470	7.7	3.0	****
10.0	*****	0.04	0.17	0.28	0	10.6	460	7.6	3.5	****
15.0	*****	0.04	0.09	0.29	0	8.3	455	7.5	3.5	****
20.0	*****	0.04	0.00	0.28	0	8.5	451	7.8	3.0	****
25.0	*****	0.04	0.01	0.30	0	7.4	460	7.6	4.0	****
30.0	*****	0.06	0.00	0.30	1	6.3	470	7.1	3.0	****
33.0	*****	0.03	0.00	0.30	1	11.6	451	8.5	2.5	****
LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 3/26/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.03	0.16	0.48	3	11.9	446	8.1	0.0	****
5.0	*****	0.04	0.13	0.34	1	11.4	569	8.3	1.0	****
10.0	*****	0.03	0.18	0.32	0	11.0	498	8.3	2.0	****
15.0	*****	0.04	0.15	0.28	1	9.7	502	8.1	2.0	****
20.0	*****	0.04	0.23	0.35	0	8.5	524	7.8	2.0	****
25.0	*****	0.06	0.33	0.30	0	5.9	544	7.8	2.0	****
30.0	*****	0.09	0.30	0.42	5	4.3	485	7.6	3.0	****
35.0	*****	0.12	0.31	0.83	4	1.3	590	7.5	3.0	****
38.0	*****	0.14	0.24	1.08	23	0.7	563	6.5	3.0	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 5/ 4/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.01	0.03	0.31	2		466	****	10.0	****
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 5/27/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.02	0.02	0.28	1	9.3	447	8.4	11.0	****
5.0	*****	0.02	0.00	0.23	0	9.2	440	8.4	11.0	****
10.0	*****	0.02	0.00	0.28	0	9.3	439	8.4	11.0	****
15.0	*****	0.02	0.00	0.23	0	9.4	439	8.4	11.0	****
20.0	*****	0.02	0.00	0.25	1	9.3	440	8.5	11.0	****
25.0	*****	0.03	0.00	0.25	1	9.2	438	8.5	11.0	****
30.0	*****	0.02	0.00	0.27	0	9.3	438	8.4	11.0	****
35.0	*****	0.02	0.00	0.23	2	9.1	438	8.4	11.0	****
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 6/16/71 SECCHI DEPTH = 4.5 METERS							
0.0	*****	0.01	0.00	0.10	0	10.2	437	8.5	22.6	****
5.0	*****	0.01	0.00	0.07	0	9.9	433	8.5	19.1	****
10.0	*****	0.01	0.00	0.05	0	8.9	445	8.1	15.4	****
15.0	*****	0.02	0.01	0.17	0	8.4	445	8.1	12.9	****
20.0	*****	0.03	0.02	0.26	5	7.1	449	8.0	11.9	****
25.0	*****	0.04	0.04	0.33	5	5.9	452	7.9	11.7	****
28.0	*****	0.04	0.03	0.38	0	5.7	452	7.9	11.2	****
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 7/19/71 SECCHI DEPTH = 2.4 METERS							
0.0	*****	0.01	0.00	0.25	3	8.1	437	8.3	23.2	****
5.0	*****	0.01	0.00	0.98	0	7.9	458	8.2	23.1	****
10.0	*****	0.00	0.00	0.22	0	7.9	426	8.6	23.0	****
15.0	*****	0.04	0.08	0.29	0	3.3	446	8.3	15.8	****
20.0	*****	0.05	0.17	0.29	0	2.6	450	7.9	13.4	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 7/19/71 SECCHI DEPTH = 2.4 METERS							
25.0	*****	0.07	0.22	0.36	0	1.3	459	7.8	12.8	****
30.0	*****	0.08	0.20	0.45	0	0.9	456	7.7	12.7	****
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 8/ 6/71 SECCHI DEPTH = 2.9 METERS							
0.0	*****	0.00	0.01	0.00	5	8.2	456	8.7	21.6	****
5.0	*****	0.00	0.01	0.00	4	8.4	456	8.7	21.6	****
1.0	*****	0.01	0.00	0.00	5	7.3	456	8.6	21.2	****
15.0	*****	0.01	0.02	0.00	5	5.8	461	8.5	18.3	****
20.0	*****	0.07	0.19	0.00	3	0.4	496	7.9	13.6	****
25.0	*****	0.10	0.15	0.22	2	0.1	483	7.9	12.9	****
30.0	*****	0.13	0.15	0.32	0	0.4	487	8.0	12.7	****
35.0	*****	0.15	0.14	0.40	0	0.2	489	8.0	12.4	****
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 8/17/71 SECCHI DEPTH = 2.6 METERS							
0.0	*****	0.01	0.00	0.00	4	8.2	460	8.5	22.7	14.6
5.0	*****	0.01	0.00	0.00	4	8.4	455	8.5	22.7	14.4
10.0	*****	0.01	0.00	0.01	2	8.1	455	8.5	22.5	18.2
15.0	*****	0.03	0.05	0.05	3	5.4	465	8.3	18.6	21.4
20.0	*****	0.09	0.17	0.20	5	0.3	462	7.8	13.8	12.0
25.0	*****	0.15	0.10	0.43	2	0.2	489	7.7	12.9	26.9
30.0	*****	0.16	0.00	0.54	0	0.2	493	7.7	12.7	26.1
35.0	*****	0.17	0.00	0.62	3	0.1	497	7.8	12.6	33.5
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 8/30/71 SECCHI DEPTH = 2.6 METERS							
0.0	*****	0.00	0.00	*****	2	8.3	454	8.5	22.9	****

DEPTH METERS	TCTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 9/ 2/71				SECCHI DEPTH = 2.4 METERS			
0.0	0.02	0.00	0.00	0.00	2	7.4	460	8.6	22.5	22.2
5.0	0.02	0.00	0.00	0.00	2	7.7	455	8.6	22.5	22.4
10.0	0.02	0.00	0.00	0.00	0	7.7	453	8.6	22.5	21.9
15.0	0.07	0.04	0.11	0.00	0	3.1	462	8.2	20.0	20.0
20.0	0.17	0.14	0.09	0.24	0	0.3	477	7.9	14.1	20.0
25.0	0.22	0.17	0.00	0.40	0	0.2	469	7.8	13.2	21.0
30.0	0.24	0.19	0.00	0.48	0	0.1	494	7.8	13.1	19.8
35.0	0.24	0.20	0.00	0.52	0	0.0	488	7.8	12.9	19.4
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 9/16/71				SECCHI DEPTH = 3.0 METERS			
0.0	*****	0.03	0.01	0.00	5	8.7	445	8.3	20.6	16.8
5.0	*****	0.01	0.01	0.00	6	7.7	438	8.4	20.6	18.4
10.0	*****	0.01	0.01	0.00	8	7.7	437	8.4	20.6	****
15.0	*****	0.01	0.01	0.00	6	7.7	435	8.5	20.6	17.6
20.0	*****	0.07	0.04	0.19	9	1.3	450	7.9	15.4	15.2
25.0	*****	0.19	0.04	0.60	9	0.0	468	7.7	13.6	17.6
30.0	*****	0.20	0.03	0.75	9	0.0	472	7.6	13.3	20.0
35.0	*****	0.22	0.04	0.80	10	0.0	473	7.6	13.2	49.6
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 9/20/71				SECCHI DEPTH = 3.1 METERS			
0.0	*****	0.02	*****	*****	*****	7.4	436	****	19.0	****
5.0	*****	0.02	*****	*****	*****	7.4	425	****	19.1	****
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 11/ 9/71				SECCHI DEPTH = 3.7 METERS			
0.0	0.06	0.03	0.08	0.22	0	10.3	431	8.4	8.5	26.4
0.5	0.07	0.03	0.00	0.22	0	10.1	423	8.4	8.5	20.8
10.0	0.06	0.03	0.02	0.20	0	10.3	423	8.5	8.5	32.0

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 11/ 9/71				SECCHI DEPTH = 3.7 METERS			
15.0	0.07	0.02	0.00	0.18	0	10.3	405	8.4	8.4	18.4
20.0	0.07	0.03	0.00	0.19	0	10.4	423	8.5	8.4	19.2
25.0	0.06	0.03	0.02	0.17	0	10.2	427	8.5	8.4	26.4
30.0	0.07	0.02	0.00	0.18	0	10.3	427	8.5	8.4	20.0
35.0	0.05	0.04	0.00	0.17	0	10.3	437	8.6	8.3	21.6
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 11/15/71				SECCHI DEPTH = 2.3 METERS			
0.0	0.07	0.03	0.06	0.10	2	8.4	436	8.3	14.6	23.2
0.5	0.07	0.02	0.04	0.09	0	8.9	430	8.3	14.6	22.4
10.0	0.06	0.03	0.02	0.11	0	8.7	429	8.3	14.6	20.8
15.0	0.06	0.03	0.02	0.08	0	8.3	433	8.4	14.6	20.8
20.0	0.06	0.03	0.03	0.04	0	8.4	431	8.5	14.1	22.4
25.0	0.05	0.02	0.02	0.08	0	8.4	425	8.4	14.0	22.4
30.0	0.06	0.03	0.02	0.04	0	8.4	425	8.5	13.9	19.2
35.0	0.05	0.03	0.01	0.04	0	7.3	425	8.4	13.3	19.2
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 1/ 5/72				SECCHI DEPTH = 7.0 METERS			
0.0	0.06	0.03	0.05	0.21	0	13.0	446	8.4	0.0	31.2
5.0	0.07	0.03	0.07	0.22	0	12.9	438	8.3	1.0	30.4
10.0	0.08	0.03	0.04	0.21	0	12.3	429	8.3	1.1	22.4
15.0	0.07	0.02	0.05	0.16	0	12.5	478	****	1.2	29.6
20.0	0.05	0.02	0.03	0.18	0	12.4	429	8.4	1.4	32.0
25.0	0.04	0.02	0.07	0.20	0	11.3	429	8.3	1.6	28.0
30.0	0.04	0.02	0.04	0.19	2	11.5	435	8.3	1.6	23.2

DEPTH METERS	TOTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST CKOBOJI			STATION 49.0 SAMPLED ON 2/14/72 SECCHI DEPTH = 7.3 METERS							
0.0	0.06	0.03	0.07	0.11	2	12.6	454	8.3	0.0	25.6
5.0	0.05	0.02	0.05	0.09	2	12.2	449	8.2	1.7	27.2
10.0	0.06	0.02	0.11	0.06	3	11.4	449	8.2	1.8	25.6
15.0	0.07	0.03	0.09	0.08	2	11.3	449	8.2	2.0	24.8
20.0	0.06	0.03	0.13	0.02	3	9.8	449	8.1	2.5	26.4
25.0	0.09	0.04	0.12	0.16	5	8.0	453	8.1	2.8	26.4
30.0	0.08	0.05	0.11	0.26	6	7.4	454	8.0	2.9	26.4
35.0	0.19	0.10	0.09	0.30	6	6.8	454	7.9	2.9	28.0
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 3/17/72 SECCHI DEPTH = 8.0 METERS							
0.0	0.03	0.03	0.17	0.10	0	10.6	411	7.8	0.9	24.0
5.0	0.04	0.03	0.11	0.08	0	11.0	452	7.8	3.5	34.4
10.0	0.04	0.03	0.18	0.06	0	10.8	453	7.8	3.5	22.4
15.0	0.03	0.03	0.19	0.09	0	11.2	453	7.8	3.5	22.4
20.0	0.05	0.03	0.19	0.07	0	11.2	461	7.3	3.7	36.0
25.0	0.06	0.04	0.24	0.09	0	6.8	455	7.3	4.0	20.8
30.0	0.06	0.05	0.24	0.09	0	7.0	463	7.4	4.1	21.6
35.0	0.09	0.07	0.31	0.18	0	3.2	466	7.2	4.5	20.0
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 5/ 3/72 SECCHI DEPTH = 5.4 METERS							
0.0	0.03	0.01	0.00	0.18	1	10.8	420	8.4	8.3	25.6
5.0	0.02	0.01	0.00	0.17	0	10.8	420	8.4	8.1	25.6
10.0	0.03	0.01	0.00	0.13	0	10.8	420	8.5	8.0	23.2
15.0	0.02	0.01	0.00	0.10	0	10.6	419	8.6	8.0	25.6
20.0	0.03	0.01	0.00	0.10	0	10.6	420	8.5	8.0	28.8
25.0	0.02	0.01	0.00	0.10	0	10.8	420	8.5	8.0	20.0
30.0	0.02	0.01	0.00	0.05	0	10.9	420	8.6	6.0	21.6
35.0	0.03	0.01	0.00	0.11	0	10.8	422	8.6	7.9	20.0

LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 5/31/72 SECCHI DEPTH = 4.9 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.02	0.02	0.02	0.15	0	9.1	425	8.8	17.2	26.0
5.0	0.01	0.01	0.01	0.13	0	9.1	419	8.8	17.2	23.6
10.0	0.01	0.01	0.01	0.14	0	9.0	419	8.8	14.1	23.2
15.0	0.01	0.01	0.01	0.17	0	9.0	421	8.5	10.9	23.8
20.0	0.02	0.02	0.02	0.19	0	8.5	423	8.5	10.5	19.0
25.0	0.03	0.03	0.01	0.21	0	8.3	424	8.5	10.1	19.6
30.0	0.03	0.02	0.02	0.22	0	7.9	424	8.6	10.0	19.2
35.0	0.02	0.02	0.02	0.29	0	7.7	426	8.6	10.0	18.8
40.0	0.04	0.03	0.01	0.28	0	7.5	423	8.6	9.9	20.0

LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 6/19/72 SECCHI DEPTH = 2.9 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.04	0.01	0.00	0.11	2	8.6	419	8.6	19.2	19.8
5.0	0.04	0.00	0.03	0.09	1	8.7	419	8.6	18.9	22.3
10.0	0.03	0.01	0.02	0.11	1	8.4	418	8.6	17.7	20.6
15.0	0.03	0.01	0.02	0.12	1	7.2	426	8.3	12.3	22.3
20.0	0.04	0.03	0.08	0.20	0	6.5	426	8.3	10.8	18.8
25.0	0.05	0.03	0.11	0.22	0	6.4	426	8.2	10.0	19.5
30.0	0.06	0.03	0.19	0.37	0	5.7	435	8.2	9.8	18.4
35.0	0.07	0.04	0.21	0.40	0	4.6	434	8.2	9.8	17.8
40.0	0.06	0.05	0.20	0.44	2	4.5	445	8.1	9.7	18.6

LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 7/31/72 SECCHI DEPTH = 2.6 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.02	0.01	0.00	0.11	1	8.0	420	8.7	23.4	13.7
5.0	0.01	0.01	0.00	0.21	0	8.1	417	8.7	23.4	22.1
10.0	0.01	0.00	0.00	0.38	0	7.1	418	8.6	22.2	21.7
15.0	0.03	0.01	0.03	0.29	0	2.7	435	8.2	14.3	19.6
20.0	0.10	0.06	0.13	0.33	0	0.6	436	7.7	11.7	17.8
25.0	0.14	0.09	0.13	0.46	0	0.3	444	7.9	11.1	17.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 7/31/72 SECCHI DEPTH = 2.6 METERS										
30.0	0.14	0.10	0.13	0.42	0	0.4	446	7.8	10.8	18.2
35.0	0.17	0.10	0.13	0.61	0	0.1	458	8.1	10.6	19.9
LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 8/21/72 SECCHI DEPTH = 2.9 METERS										
0.0	0.04	0.01	0.02	0.17	4	8.2	406	8.8	25.4	22.1
5.0	0.03	0.01	0.02	0.19	1	8.3	400	8.8	25.4	20.2
10.0	0.03	0.01	0.02	0.14	1	7.5	407	8.6	21.1	22.2
15.0	0.06	0.02	0.04	0.18	1	4.2	409	8.1	15.8	19.8
20.0	0.10	0.09	0.14	0.30	2	0.5	429	7.6	12.3	****
25.0	0.15	0.12	0.01	0.51	1	0.1	429	7.7	12.2	****
30.0	0.17	0.14	0.02	0.63	1	0.1	433	7.5	10.9	****
35.0	0.17	0.14	0.01	0.78	1	0.0	433	7.6	10.6	****
LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 9/ 8/72 SECCHI DEPTH = 3.8 METERS										
0.0	0.05	0.01	0.01	0.13	1	7.4	420	8.5	19.5	20.5
5.0	0.03	0.01	0.01	0.14	0	7.6	420	8.8	19.5	20.1
10.0	0.04	0.01	0.01	0.16	0	7.5	418	8.6	19.5	20.8
15.0	0.04	0.01	0.01	0.17	1	7.2	419	8.5	18.8	19.9
20.0	0.19	0.09	0.02	0.40	5	0.4	439	7.8	12.4	18.9
25.0	0.23	0.15	0.01	0.65	1	0.0	444	7.8	11.1	18.7
30.0	0.27	0.16	0.01	0.75	4	0.0	444	7.6	10.8	18.0
35.0	0.25	0.16	0.01	0.87	2	0.0	448	7.6	10.7	18.3
LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 9/26/72 SECCHI DEPTH = 3.4 METERS										
0.0	0.06	0.03	0.01	0.18	8	8.0	420	8.6	17.5	21.2
5.0	0.06	0.03	0.02	0.22	5	8.1	416	8.6	17.5	23.6
10.0	0.06	0.02	0.02	0.21	1	8.0	417	8.6	17.5	24.2

LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 9/26/72 SECCHI DEPTH = 3.4 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
15.0	0.06	0.02	0.04	0.19	4	8.1	415	8.6	17.5	24.6
20.0	0.05	0.02	0.05	0.20	0	8.0	417	8.6	16.8	21.9
25.0	0.26	0.22	0.05	0.62	0	0.0	440	7.8	11.7	21.1
30.0	0.30	0.24	0.06	0.77	1	0.0	444	7.8	11.1	21.7
35.0	0.30	0.24	0.06	0.82	1	0.0	444	7.7	11.0	20.5

LAKE WEST CKOBOJI STATION 49.0 SAMPLED ON 10/13/72 SECCHI DEPTH = 3.8 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.06	0.04	0.00	0.24	0	8.9	448	8.6	14.4	18.9
5.0	0.05	0.04	0.00	0.23	1	8.9	443	8.6	14.4	19.2
10.0	0.06	0.04	0.00	0.26	1	8.8	448	8.6	14.4	20.3
15.0	0.05	0.04	0.00	0.23	2	8.7	453	8.6	14.4	19.3
20.0	0.06	0.04	0.00	0.29	1	8.6	449	8.6	14.4	19.8
25.0	0.06	0.04	0.00	0.28	2	8.7	448	8.6	14.3	20.1
30.0	0.34	0.32	0.02	1.45	8	0.0	478	7.9	11.3	22.3

LAKE WEST CKOBOJI STATION 49.0 SAMPLED ON 10/20/72 SECCHI DEPTH = 2.8 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.06	0.04	0.01	0.32	1	8.9	434	8.5	11.6	20.4
5.0	0.06	0.03	0.01	0.31	0	8.9	435	8.6	11.6	22.6
10.0	0.06	0.03	0.01	0.32	1	9.0	440	8.6	11.6	22.1
15.0	0.07	0.03	0.00	0.29	1	9.0	437	8.6	11.6	20.2
20.0	0.06	0.03	0.01	0.28	1	9.0	433	8.5	11.6	21.1
25.0	0.07	0.03	0.01	0.28	1	9.1	432	8.5	11.4	21.1
30.0	0.07	0.03	0.00	0.28	1	9.2	433	8.5	11.3	19.1
35.0	0.07	0.03	0.00	0.29	1	9.2	433	8.5	11.2	21.6
40.0	0.07	0.03	0.00	0.30	0	9.2	433	8.5	11.1	23.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 12/22/72 SECCHI DEPTH = 10.3 METERS							
0.0	0.04	0.03	0.02	0.23	0	13.1	391	8.5	0.1	19.0
5.0	0.05	0.03	0.01	0.23	0	12.6	373	8.5	0.4	18.9
10.0	0.04	0.04	0.02	0.22	0	12.4	373	8.5	0.6	16.5
15.0	0.05	0.04	0.02	0.18	0	12.3	395	8.5	0.6	18.0
20.0	0.05	0.03	0.02	0.21	0	12.6	382	8.5	1.0	17.7
25.0	0.05	0.03	0.02	0.24	0	11.5	378	8.5	1.3	19.0
30.0	0.05	0.03	0.02	0.28	0	10.9	382	8.4	1.4	16.9
35.0	0.05	0.03	0.02	0.32	0	10.2	382	8.4	1.6	16.8
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 1/ 8/73 SECCHI DEPTH = 11.7 METERS							
0.0	0.04	0.03	0.02	0.21	1	12.7	375	7.9	0.0	20.4
5.0	0.04	0.03	0.02	0.18	1	12.2	372	8.0	0.2	18.7
10.0	0.04	0.03	0.02	0.18	0	12.0	474	7.9	0.5	19.2
15.0	0.04	0.03	0.01	0.14	0	11.9	372	8.0	0.9	18.2
20.0	0.05	0.03	0.01	0.23	0	11.1	368	8.0	1.3	17.6
25.0	0.05	0.04	0.01	0.23	0	10.7	370	8.0	1.6	21.3
30.0	0.05	0.04	0.04	0.33	0	9.6	369	7.9	1.8	16.8
35.0	0.07	0.05	0.04	0.46	0	8.5	368	7.8	2.2	18.0
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 2/ 2/73 SECCHI DEPTH = 10.7 METERS							
0.0	0.04	0.02	0.03	0.36	0	12.4	446	7.9	0.2	16.3
5.0	0.03	0.02	0.02	0.29	2	12.4	439	7.8	1.1	16.5
10.0	0.03	0.02	0.03	0.27	0	12.1	439	7.9	1.2	14.9
15.0	0.04	0.03	0.05	0.25	0	10.8	438	7.9	1.4	14.4
20.0	0.04	0.03	0.08	0.30	0	9.9	442	7.9	1.7	19.6
30.0	0.06	0.04	0.05	0.63	2	7.6	444	7.7	2.0	21.6
35.0	0.07	0.04	0.03	0.62	3	7.4	437	7.8	2.4	15.6

LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 2/23/73 SECCHI DEPTH = 5.9 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.03	0.02	0.06	0.24	2	13.2	436	8.1	0.7	25.0
5.0	0.04	0.03	0.08	0.17	1	12.8	437	8.1	1.5	26.7
10.0	0.04	0.03	0.12	0.17	1	11.9	435	8.1	1.6	19.3
15.0	0.03	0.03	0.12	0.16	0	12.1	435	8.1	1.8	19.8
20.0	0.04	0.03	0.14	0.10	0	12.7	437	8.1	2.1	22.6
25.0	0.05	0.04	0.22	0.16	0	9.0	440	7.9	2.3	22.7
30.0	0.05	0.05	0.22	0.23	0	8.5	443	7.7	2.5	23.6
35.0	0.08	0.07	0.26	0.44	0	5.0	447	7.6	2.8	26.8

LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 4/26/73 SECCHI DEPTH = 6.0 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.01	0.01	0.00	0.14	0	11.2	428	8.7	8.1	16.2

LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 5/ 8/73 SECCHI DEPTH = 9.3 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.03	0.01	0.00	0.19	1	10.4	428	8.6	9.5	18.7
5.0	0.02	0.01	0.00	0.19	1	10.4	430	8.6	9.2	19.3
10.0	0.02	0.01	0.00	0.16	1	10.4	428	8.6	9.1	21.7
15.0	0.02	0.01	0.01	0.18	1	10.4	428	8.6	9.0	18.2
20.0	0.02	0.01	0.00	0.17	1	10.5	430	8.6	9.0	18.2
25.0	0.02	0.01	0.01	0.17	1	10.4	428	8.6	8.9	20.5
30.0	0.02	0.01	0.01	0.18	1	10.4	427	8.6	8.9	20.4
35.0	0.03	0.01	0.00	0.17	1	10.4	428	8.6	8.9	20.6
40.0	0.02	0.01	0.00	0.17	1	10.3	429	8.6	8.8	19.0

LAKE WEST OKOBOJI STATION 49.0 SAMPLED ON 5/23/73 SECCHI DEPTH = 8.5 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.03	0.01	0.00	0.16	1	10.8	424	8.9	13.4	22.5
5.0	0.03	0.01	0.00	0.18	1	10.4	401	8.7	13.2	23.5
10.0	0.03	0.01	0.00	0.16	1	10.2	404	8.7	13.1	22.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON			5/23/73 SECCHI DEPTH = 8.5 METERS				
15.0	0.03	0.01	0.00	0.17	1	10.2	403	8.7	12.8	23.3
20.0	0.03	0.02	0.00	0.19	1	10.0	405	8.7	11.6	20.1
25.0	0.04	0.02	0.00	0.19	1	9.2	407	8.7	11.1	20.1
30.0	0.04	0.02	0.00	0.19	1	9.3	406	8.6	11.0	19.4
35.0	0.04	0.02	0.00	0.23	1	9.0	406	8.6	10.9	19.4
40.0	0.04	0.02	0.00	0.24	1	8.9	406	8.6	10.8	19.6
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON			6/ 7/73 SECCHI DEPTH = 8.2 METERS				
0.0	0.02	0.00	0.00	0.17	1	9.6	450	8.6	17.4	16.9
5.0	0.02	0.00	0.00	0.19	1	9.5	440	8.7	17.2	29.9
10.0	0.03	0.00	0.00	0.18	1	9.2	440	8.6	15.1	17.7
15.0	0.03	0.02	0.00	0.14	1	8.6	448	8.5	14.0	15.2
20.0	0.04	0.02	0.00	0.17	0	8.3	449	8.5	13.1	16.2
25.0	0.04	0.03	0.01	0.18	0	7.4	450	8.4	12.8	19.8
30.0	0.04	0.03	0.01	0.19	0	7.4	448	8.4	12.5	21.0
35.0	0.05	0.03	0.01	0.21	0	6.6	451	8.3	12.3	22.1
40.0	0.07	0.05	0.01	0.22	0	5.9	446	8.3	12.2	22.2
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON			6/16/73 SECCHI DEPTH = 4.5 METERS				
0.0	0.03	0.01	0.00	0.08	3	8.7	476	8.6	23.6	19.6
5.0	0.03	0.01	0.00	0.06	2	8.2	473	8.5	20.4	18.6
10.0	0.03	0.00	0.01	0.06	1	8.3	469	8.5	19.3	17.8
15.0	0.02	0.01	0.01	0.05	0	7.6	468	8.4	16.1	16.8
20.0	0.04	0.02	0.01	0.05	1	6.8	472	8.3	13.8	17.5
25.0	0.04	0.04	0.01	0.04	0	5.9	477	8.1	13.2	17.9
30.0	0.05	0.04	0.02	0.04	0	5.7	477	8.1	13.0	16.0
35.0	0.05	0.04	0.02	0.03	0	5.3	477	8.1	13.0	17.0

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 6/22/73			SECCHI DEPTH = 4.1 METERS				
0.0	0.02	0.01	0.00	0.07	2	7.2	432	8.6	19.5	21.9
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 6/30/73			SECCHI DEPTH = 4.6 METERS				
0.0	0.02	0.02	0.01	0.08	1	7.1	443	8.7	21.0	21.5
5.0	0.03	0.03	0.00	0.02	1	6.4	441	8.6	20.8	18.0
10.0	0.03	0.02	0.01	0.05	0	6.1	444	8.6	20.4	20.5
15.0	0.06	0.05	0.02	0.21	1	4.5	449	8.3	17.2	16.2
20.0	0.06	0.06	0.10	0.25	1	3.7	452	8.2	14.1	17.9
25.0	0.09	0.08	0.10	0.38	0	2.7	450	7.9	13.3	17.7
30.0	0.11	0.11	0.07	0.49	6	1.4	459	7.8	13.1	19.0
35.0	0.12	0.12	0.04	0.54	2	1.1	459	7.8	13.1	18.0
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 7/15/73			SECCHI DEPTH = 4.5 METERS				
0.0	0.03	0.03	0.00	0.21	2	6.4	439	8.7	23.8	18.5
5.0	0.04	0.04	0.00	0.18	0	6.6	439	8.7	23.8	18.2
10.0	0.03	0.02	0.00	0.17	1	6.1	438	8.6	23.5	19.4
15.0	0.07	0.06	0.05	0.24	0	3.8	441	8.2	18.1	17.7
20.0	0.10	0.10	0.18	0.25	0	1.1	446	7.8	14.5	14.5
25.0	0.15	0.15	0.13	0.53	0	0.2	454	7.8	13.5	18.2
30.0	0.16	0.16	0.12	0.63	2	0.1	457	7.7	13.3	17.4
35.0	0.18	0.18	0.13	0.72	1	0.1	449	7.6	13.2	18.2
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 7/16/73			SECCHI DEPTH = 4.2 METERS				
0.0	0.02	0.02	0.00	0.07	8	5.4	434	8.7	23.8	21.9

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 7/20/73 SECCHI DEPTH = 5.5 METERS							
0.0	0.03	0.01	0.02	0.07	2	6.1	434	8.7	23.7	20.2
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 8/ 3/73 SECCHI DEPTH = 3.8 METERS							
0.0	0.02	0.01	0.00	0.02	6	6.6	436	8.7	22.9	20.3
5.0	0.03	0.01	0.02	0.01	0	6.1	435	8.7	23.0	19.7
10.0	0.02	0.02	0.01	0.00	0	6.0	435	8.6	22.5	20.2
15.0	0.05	0.05	0.13	0.00	0	3.0	445	8.3	19.3	23.2
20.0	0.14	0.11	0.19	0.26	0	0.4	446	7.9	14.4	20.0
25.0	0.21	0.18	0.00	0.57	0	0.2	452	7.8	13.4	20.0
30.0	0.22	0.20	0.00	0.84	2	0.2	453	7.8	13.2	20.7
35.0	0.22	0.21	0.00	0.93	2	0.0	453	7.8	13.1	21.5
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 8/ 8/73 SECCHI DEPTH = 2.9 METERS							
0.0	0.03	0.02	0.00	0.02	1	7.2	435	8.8	23.2	26.4
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 8/16/73 SECCHI DEPTH = 2.9 METERS							
0.0	0.03	0.01	0.00	0.08	0	6.0	440	8.6	23.8	21.5
5.0	0.04	0.01	0.00	0.06	7	5.8	441	8.7	23.7	22.1
10.0	0.03	0.01	0.00	0.07	0	5.6	441	8.7	23.1	21.0
15.0	0.04	0.04	0.03	0.08	3	4.5	444	8.4	21.1	20.0
20.0	0.10	0.09	0.00	0.33	2	0.4	451	7.9	14.8	18.4
25.0	0.24	0.18	0.02	0.72	1	0.0	455	7.7	13.6	19.8
30.0	0.23	0.18	0.01	0.96	7	0.1	457	7.8	13.4	18.1
35.0	0.26	0.24	0.01	1.04	0	0.0	463	7.7	13.2	18.4

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 8/20/73				SECCHI DEPTH = 2.9 METERS			
0.0	0.03	0.01	0.01	0.07	6	6.4	436	8.7	23.9	26.6
LAKE WEST OKOBOJI			STATION 49.0 SAMPLED ON 9/15/73				SECCHI DEPTH = 2.8 METERS			
0.0	0.03	0.01	0.00	0.11	7	7.2	475	8.6	20.4	29.0
5.0	0.03	0.01	0.00	0.11	4	6.4	473	8.6	20.4	22.4
10.0	0.03	0.03	0.00	0.12	3	7.8	471	8.6	20.4	22.4
15.0	0.04	0.02	0.00	0.11	4	6.6	477	8.6	20.4	24.0
20.0	0.11	0.10	0.00	0.41	5	4.8	485	8.3	15.1	22.6
25.0	0.28	0.32	0.00	1.38	12	0.0	489	8.0	13.7	22.6
30.0	0.30	0.29	0.00	1.64	12	0.0	489	7.7	13.4	24.2
35.0	0.31	0.27	0.00	1.81	15	0.0	489	7.6	13.4	28.9
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 6/14/71				SECCHI DEPTH = 2.6 METERS			
0.0	*****	0.01	0.00	0.06	0		426	****	21.0	****
3.0	*****	0.01	0.01	0.02	0	10.5	426	****	****	****
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 6/28/71				SECCHI DEPTH = 1.9 METERS			
0.0	*****	0.01	0.01	0.30	9		450	7.8	23.3	****
2.0	*****	0.00	0.01	0.31	7	8.1	428	8.4	23.0	****
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 7/15/71				SECCHI DEPTH = 1.9 METERS			
0.0	*****	0.00	0.00	0.00	5		437	8.6	23.0	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON	7/20/71	SECCHI DEPTH = 2.0 METERS						
0.0	*****	0.01	0.00	0.12	5	7.9	438	8.2	22.7	****
2.0	*****	0.01	0.00	0.05	3	7.9	437	8.2	22.7	****
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON	8/ 3/71	SECCHI DEPTH = 2.5 METERS						
0.0	*****	0.00	0.00	0.00	7		468	8.7	21.0	****
2.5	*****	0.02	0.01	0.00	7	8.3	457	8.7	21.0	****
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON	8/13/71	SECCHI DEPTH = 2.1 METERS						
0.0	*****	0.01	0.01	0.21	1	8.8	439	8.7	23.3	23.6
2.5	*****	0.01	0.02	0.20	1	8.8	435	8.8	23.2	19.8
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON	8/19/71	SECCHI DEPTH = 2.2 METERS						
0.0	*****	0.00	0.00	0.00	2	8.2	458	8.6	23.9	20.2
2.2	*****	0.00	0.00	0.00	2	8.3	454	8.7	23.9	19.2
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON	9/ 1/71	SECCHI DEPTH = 2.2 METERS						
0.0	0.03	0.00	0.01	0.01	2	8.0	464	8.7	22.7	26.8
3.0	0.03	0.00	0.00	0.00	2	8.0	456	8.6	22.7	24.6
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON	9/15/71	SECCHI DEPTH = 2.0 METERS						
0.0	0.03	0.01	0.01	0.00	3	8.0	447	8.5	20.4	22.4
2.0	0.03	0.01	0.00	0.00	3	8.1	446	8.7	20.4	19.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 9/29/71				SECCHI DEPTH = 2.3 METERS			
0.0	0.04	0.02	0.01	0.00	8	8.0	428	8.5	17.4	16.8
2.3	0.04	0.02	0.01	0.00	4	8.4	428	8.5	17.4	16.8
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 10/21/71				SECCHI DEPTH = 2.0 METERS			
0.0	0.05	0.02	0.06	0.04	0	8.9	425	8.5	14.6	21.6
2.0	0.06	0.02	0.04	0.05	0	8.9	424	8.5	14.6	19.2
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 11/12/71				SECCHI DEPTH = 2.0 METERS			
0.0	0.03	0.02	0.09	0.38	0	10.5	434	8.5	8.0	18.4
2.0	0.03	0.03	0.08	0.29	0	10.5	432	8.5	8.1	20.0
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 1/ 6/72				SECCHI DEPTH = 1.5 METERS			
0.0	0.03	0.03	0.06	0.22	5	13.6	444	8.4	0.1	22.4
1.5	0.03	0.03	0.07	0.26	7	12.8	449	8.4	0.8	22.4
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 2/22/72				SECCHI DEPTH = 1.5 METERS			
0.0	0.05	0.02	0.10	0.01	1	12.5	464	8.0	0.3	25.6
1.5	0.03	0.03	0.09	0.01	1	11.8	456	8.1	2.1	20.0
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 5/ 9/72				SECCHI DEPTH = 2.2 METERS			
0.0	0.04	0.01	0.00	0.10	0	11.1	436	8.4	9.5	18.4
2.2	0.04	0.01	0.01	0.08	0	10.8	436	8.4	9.4	19.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON 5/31/72				SECCHI DEPTH = 2.5 METERS				
0.0	0.02	0.01	0.02	0.06	0	9.4	421	8.9	16.7	22.9
2.5	*****	0.01	0.02	0.05	0	9.1	420	8.9	16.7	23.6
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON 6/12/72				SECCHI DEPTH = 2.4 METERS				
0.0	0.04	0.01	0.03	0.10	7	8.7	424	8.6	19.5	20.8
2.4	0.04	0.02	0.00	0.07	7	8.6	424	8.6	19.4	18.4
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON 6/26/72				SECCHI DEPTH = 2.2 METERS				
0.0	0.04	0.00	0.01	0.19	0	9.5	417	8.6	20.6	26.5
2.2	0.02	0.00	0.00	0.15	0	9.5	415	8.6	20.6	18.2
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON 7/19/72				SECCHI DEPTH = 2.6 METERS				
0.0	0.02	0.00	0.01	0.32	0	8.3	415	8.7	22.7	22.4
2.6	0.02	0.00	0.03	0.29	0	8.5	423	8.7	22.7	24.2
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON 8/17/72				SECCHI DEPTH = 2.3 METERS				
0.0	0.04	0.01	0.00	0.22	0	8.2	423	9.1	24.8	19.3
2.3	0.03	0.01	0.00	0.25	3	8.2	417	8.8	24.7	21.0
LAKE WEST OKOBOJI		STATION 49.1 SAMPLED ON 9/15/72				SECCHI DEPTH = 2.2 METERS				
0.0	0.05	0.01	0.02	0.39	6	8.4	398	8.8	19.2	26.4
2.2	0.03	0.02	0.02	0.20	0	8.5	419	8.8	19.2	19.8

DEPTH METERS	TCTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NF3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PF	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 10/ 2/72				SECCHI DEPTH = 2.3 METERS			
0.0	0.05	0.02	0.02	0.22	0	9.1	424	8.7	16.5	24.8
2.3	0.07	0.03	0.04	0.24	0	9.1	424	8.6	16.5	25.5
LAKE WEST OKOBOJI			STATION 49.1 SAMPLED ON 11/16/72				SECCHI DEPTH = 2.6 METERS			
0.0	0.04	0.03	0.03	0.23	0	10.8	449	8.6	5.4	18.1
2.6	0.06	0.03	0.03	0.24	0	10.8	442	8.6	5.2	17.8
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 6/14/71				SECCHI DEPTH = 5.8 METERS			
0.0	*****	0.00	0.01	0.01	0		422	****	****	****
18.0	*****	0.03	0.01	0.26	0	6.6	435	****	****	****
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 6/28/71				SECCHI DEPTH = **** METERS			
0.0	*****	0.01	0.01	0.26	8		435	8.1	23.0	****
18.0	*****	0.05	0.10	0.40	10	5.0	450	8.1	16.8	****
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 7/15/71				SECCHI DEPTH = 2.1 METERS			
0.0	*****	0.00	0.00	0.00	5		431	8.6	23.0	****
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 7/20/71				SECCHI DEPTH = 2.5 METERS			
0.0	*****	0.01	0.01	0.03	2		434	8.4	22.9	****
18.0	*****	0.06	0.18	0.16	3	1.8	458	7.9	13.7	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 8/ 3/71 SECCHI DEPTH = 3.0 METERS										
0.0	*****	0.00	0.01	0.00	7		457	8.7	21.8	****
18.0	*****	0.06	0.22	0.02	6	1.1	472	8.1	14.5	****
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 8/13/71 SECCHI DEPTH = 2.3 METERS										
0.0	*****	0.01	0.00	0.07	1	8.5	435	8.7	22.7	21.3
18.0	*****	0.06	0.15	0.12	2	2.1	454	8.2	15.7	19.8
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 8/19/71 SECCHI DEPTH = 2.3 METERS										
0.0	*****	0.00	0.00	0.00	5	8.4	457	8.6	23.6	24.2
18.0	*****	0.06	0.19	0.02	2	1.1	479	8.0	17.6	27.1
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 9/ 1/71 SECCHI DEPTH = 2.7 METERS										
0.0	0.02	0.01	0.00	0.00	2	8.1	455	8.6	22.8	27.0
17.0	0.10	0.07	0.14	0.01	1	1.0	477	8.0	17.1	23.0
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 9/15/71 SECCHI DEPTH = 2.7 METERS										
0.0	0.03	0.01	0.00	0.00	4	7.5	446	8.7	20.7	20.8
18.0	0.07	0.04	0.01	0.10	7	4.2	453	8.3	19.2	17.6
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 9/29/71 SECCHI DEPTH = 2.8 METERS										
0.0	0.05	0.02	0.01	0.02	2	8.1	435	8.4	17.4	19.2
18.0	0.04	0.03	0.01	0.00	7	8.2	432	8.6	17.1	16.8

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 10/21/71 SECCHI DEPTH = 2.7 METERS							
0.0	0.06	0.02	0.01	0.11	0	8.8	425	8.4	14.6	20.8
18.0	0.04	0.03	0.02	0.13	0	8.7	425	8.5	14.7	20.8
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 11/12/71 SECCHI DEPTH = 4.3 METERS							
0.0	0.03	0.03	0.08	0.38	0	10.6	434	8.5	7.9	24.8
18.0	0.02	0.03	0.07	0.34	0	10.6	432	8.4	7.8	20.8
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 1/ 6/72 SECCHI DEPTH = 5.0 METERS							
0.0	0.03	0.03	0.06	0.26	7	12.6	437	8.4	0.0	22.4
18.0	0.05	0.03	0.03	0.26	3	11.3	429	8.4	1.6	23.2
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 2/22/72 SECCHI DEPTH = 7.0 METERS							
0.0	0.04	0.03	0.14	0.00	0	12.0	458	8.3	0.2	20.0
18.0	0.04	0.02	0.17	0.05	0	10.2	452	7.9	2.8	20.8
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 5/ 9/72 SECCHI DEPTH = 5.4 METERS							
0.0	0.02	0.01	0.00	0.08	0	11.1	435	8.5	9.8	19.2
16.0	0.03	0.01	0.00	0.09	0	10.5	437	8.4	8.9	20.8
LAKE WEST OKOBOJI			STATION 49.2 SAMPLED ON 5/31/72 SECCHI DEPTH = 5.1 METERS							
0.0	0.02	0.02	0.02	0.09	0	9.2	421	9.0	17.1	21.3
17.5	0.02	0.02	0.01	0.18	0	8.3	426	8.6	11.1	19.0

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 6/12/72 SECCHI DEPTH = 3.1 METERS										
0.0	0.03	0.01	0.01	0.10	3	8.6	424	8.6	19.3	18.4
17.8	0.04	0.01	0.01	0.18	3	6.6	431	8.2	10.2	17.6
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 6/26/72 SECCHI DEPTH = 3.4 METERS										
0.0	0.05	0.00	0.00	0.19	1	9.5	425	8.6	20.6	21.2
18.5	0.05	0.03	0.04	0.35	0	5.2	425	8.2	11.4	19.0
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 7/19/72 SECCHI DEPTH = 3.1 METERS										
0.0	0.02	0.00	0.03	0.17	1	8.3	386	8.7	22.3	24.8
18.0	0.03	0.02	0.04	0.43	1	3.7	415	9.6	13.8	21.3
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 8/17/72 SECCHI DEPTH = 3.2 METERS										
0.0	0.03	0.01	0.02	0.29	2	8.3	423	8.6	24.3	19.8
17.5	0.08	0.05	0.07	0.34	0	2.6	435	8.0	13.1	17.0
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 9/ 5/72 SECCHI DEPTH = 2.8 METERS										
0.0	0.03	0.01	0.00	0.12	0	7.5	424	8.5	20.2	22.2
18.0	0.12	0.07	0.07	0.26	3	0.3	442	7.9	14.5	19.9
LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 9/15/72 SECCHI DEPTH = 3.7 METERS										
0.0	0.05	0.01	0.02	0.22	1	8.0	426	8.6	19.0	21.2
17.9	0.04	0.01	0.02	0.35	0	8.2	430	8.6	18.9	20.7

LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 10/ 2/72 SECCHI DEPTH = 3.8 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.07	0.03	0.01	0.25	1	8.6	425	8.8	16.0	22.0
18.0	0.06	0.04	0.04	0.21	0	8.3	424	8.6	15.9	20.3

LAKE WEST OKOBOJI STATION 49.2 SAMPLED ON 11/16/72 SECCHI DEPTH = 5.3 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	0.06	0.03	0.03	0.26	0	10.9	445	8.7	6.0	21.5
18.0	0.05	0.03	0.03	0.27	0	10.8	442	8.6	6.4	20.6

LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 6/28/71 SECCHI DEPTH = **** METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	*****	0.01	0.01	0.20	9		447	7.8	22.6	****
8.5	*****	0.01	0.01	0.25	10	8.1	428	8.4	22.3	****

LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 7/15/71 SECCHI DEPTH = 2.1 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	*****	0.00	0.00	0.00	5		428	8.7	22.0	****

LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 7/20/71 SECCHI DEPTH = 2.4 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	*****	0.01	0.00	0.25	4		431	8.5	23.1	****
8.5	*****	0.04	0.02	0.41	11	5.0	440	8.3	21.6	****

LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 8/ 3/71 SECCHI DEPTH = 2.9 METERS

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
0.0	*****	0.01	0.03	0.02	9		457	8.7	22.1	****
8.5	*****	0.03	0.02	0.08	9	6.3	457	8.6	20.2	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 8/13/71 SECCHI DEPTH = 2.4 METERS										
0.0	*****	0.00	0.00	0.13	7	8.6	435	8.7	22.8	19.0
8.5	*****	0.00	0.01	0.12	8	8.1	435	8.7	22.2	18.1
LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 8/19/71 SECCHI DEPTH = 2.4 METERS										
0.0	*****	0.00	0.00	0.01	2	8.2	457	8.6	23.1	23.6
8.5	*****	0.01	0.00	0.03	3	7.7	459	8.6	23.0	27.4
LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 9/ 1/71 SECCHI DEPTH = 2.6 METERS										
0.0	0.02	0.00	0.00	0.00	2	8.1	454	8.6	22.8	23.0
8.0	0.02	0.00	0.01	0.00	3	8.1	453	8.6	22.6	23.2
LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 9/15/71 SECCHI DEPTH = 2.6 METERS										
0.0	0.03	0.00	0.01	0.00	6	8.1	446	8.5	20.7	18.4
8.5	0.02	0.01	0.00	0.00	8	8.1	446	8.6	20.6	24.8
LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 9/29/71 SECCHI DEPTH = 3.6 METERS										
0.0	0.04	0.02	0.00	0.02	7	7.8	417	8.4	17.1	16.0
8.5	0.05	0.02	0.01	0.04	10	7.8	425	8.8	17.0	16.8
LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 10/21/71 SECCHI DEPTH = 3.1 METERS										
0.0	0.06	0.02	0.01	0.09	0	8.9	427	8.4	14.5	21.6
8.5	0.06	0.01	0.01	0.08	0	8.7	427	8.4	14.4	20.8

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 11/12/71 SECCHI DEPTH = 4.8 METERS							
0.0	0.03	0.03	0.08	0.29	0	10.4	440	8.5	8.0	22.4
8.5	0.02	0.02	0.07	0.32	0	10.0	434	8.5	7.6	22.4
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 1/ 7/72 SECCHI DEPTH = 5.0 METERS							
0.0	0.05	0.03	0.06	0.19	0	12.7	435	8.2	0.2	17.6
8.5	0.03	0.03	0.03	0.12	0	11.7	435	8.3	4.1	16.8
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 2/22/72 SECCHI DEPTH = 7.0 METERS							
0.0	0.02	0.01	0.11	0.00	0	12.2	461	8.3	0.0	19.2
8.5	0.04	0.02	0.13	0.08	0	7.1	475	7.5	3.3	31.2
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 3/23/72 SECCHI DEPTH = 6.0 METERS							
0.0	0.01	0.00	0.01	0.01	0	12.2	446	8.1	4.9	20.8
8.5	0.01	0.01	0.01	0.00	0	13.8	143	8.0	2.0	8.8
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 5/ 9/72 SECCHI DEPTH = 4.5 METERS							
0.0	0.05	0.01	0.02	0.11	0	10.8	435	8.4	9.8	33.6
8.0	0.08	0.01	0.00	0.10	0	10.8	435	8.4	9.6	18.4
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 5/31/72 SECCHI DEPTH = 5.1 METERS							
0.0	0.02	0.01	0.01	0.12	0	9.1	413	8.9	17.1	19.6
9.5	0.02	0.02	0.02	0.09	0	9.0	420	8.9	12.3	20.1

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 6/12/72				SECCHI DEPTH = 3.6 METERS			
0.0	0.01	0.01	0.00	0.19	8	8.8	424	8.5	19.2	16.0
8.5	0.02	0.01	0.00	0.07	6	8.6	424	8.3	17.8	17.6
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 6/26/72				SECCHI DEPTH = 2.8 METERS			
0.0	0.04	0.02	0.03	0.20	8	9.8	413	8.7	21.5	21.4
9.8	0.07	0.04	0.02	0.18	6	5.5	418	8.3	17.6	20.6
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 7/19/72				SECCHI DEPTH = 3.0 METERS			
0.0	0.02	0.00	0.01	0.22	0	8.1	417	8.7	22.2	29.9
9.7	0.03	0.02	0.01	0.27	0	5.2	429	8.4	19.3	22.9
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 8/17/72				SECCHI DEPTH = 3.1 METERS			
0.0	0.04	0.01	0.01	0.26	0	8.6	420	8.7	24.7	20.9
10.0	0.06	0.02	0.01	0.35	1	5.6	424	8.3	20.3	20.9
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 9/15/72				SECCHI DEPTH = 3.6 METERS			
0.0	0.05	0.01	0.03	0.17	1	7.8	419	8.4	19.0	19.8
9.2	0.04	0.01	0.02	0.17	1	7.8	419	8.7	19.0	17.7
LAKE WEST OKOBOJI			STATION 49.3 SAMPLED ON 10/ 2/72				SECCHI DEPTH = 3.2 METERS			
0.0	0.05	0.03	0.04	0.29	3	9.1	425	8.8	16.1	23.9
9.7	0.06	0.02	0.02	0.32	1	9.2	430	8.8	15.0	26.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 11/16/72 SECCHI DEPTH = 5.4 METERS										
0.0	0.06	0.04	0.03	0.28	1	10.8	444	8.5	5.7	22.3
9.0	0.05	0.03	0.02	0.25	0	10.9	442	8.5	5.2	20.6
LAKE WEST OKOBOJI STATION 49.3 SAMPLED ON 4/26/73 SECCHI DEPTH = **** METERS										
0.0	0.01	0.01	0.00	0.15	0	11.4	432	8.7	8.4	17.4
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 6/14/71 SECCHI DEPTH = 4.0 METERS										
0.0	*****	0.00	0.00	0.00	0		422	****	****	****
4.0	*****	0.01	0.03	0.41	8	5.2	440	****	****	****
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 7/15/71 SECCHI DEPTH = 1.9 METERS										
0.0	*****	0.00	0.00	0.00	7		427	8.7	22.0	****
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 7/20/71 SECCHI DEPTH = 2.2 METERS										
0.0	*****	0.01	0.00	0.03	7	8.6	425	8.7	23.1	****
4.0	*****	0.00	0.00	0.01	5	8.8	425	8.6	23.1	****
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 8/ 3/71 SECCHI DEPTH = 2.5 METERS										
0.0	*****	0.01	0.02	0.00	9		453	8.8	22.1	****
4.0	*****	0.01	0.02	0.04	10	9.8	450	8.8	21.6	****
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 8/13/71 SECCHI DEPTH = 2.4 METERS										
0.0	*****	0.00	0.01	0.20	5	8.2	434	8.7	22.5	17.1
4.0	*****	0.00	0.00	0.18	7	8.0	436	8.7	22.3	17.4

DEPTH METERS	TOTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 8/19/71 SECCHI DEPTH = 2.6 METERS										
0.0	*****	0.01	0.00	0.00	2	8.4	457	8.7	23.1	19.4
4.0	*****	0.00	0.00	0.00	2	8.4	458	8.7	23.1	19.6
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 9/ 1/71 SECCHI DEPTH = 2.8 METERS										
0.0	0.02	0.01	0.02	0.00	3	7.5	463	8.6	22.3	23.5
4.0	0.02	0.01	0.01	0.00	3	7.4	458	8.6	22.2	21.4
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 9/15/71 SECCHI DEPTH = 2.2 METERS										
0.0	0.02	0.00	0.01	0.00	5	8.3	446	8.5	19.8	20.0
4.0	0.02	0.00	0.01	0.00	7	8.1	444	8.6	19.8	16.8
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 9/29/71 SECCHI DEPTH = 3.0 METERS										
0.0	0.04	0.03	0.01	0.01	9	8.9	419	8.4	17.1	16.8
4.0	0.04	0.02	0.00	0.03	6	7.9	419	8.4	17.1	17.6
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 10/21/71 SECCHI DEPTH = 3.1 METERS										
0.0	0.06	0.02	0.05	0.10	0	8.8	425	8.4	14.6	19.2
4.0	0.04	0.02	0.06	0.10	0	8.8	425	8.4	14.6	19.2
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 11/12/71 SECCHI DEPTH = 4.1 METERS										
0.0	0.03	0.03	0.08	0.29	0	10.1	438	8.4	8.2	26.4
5.0	0.02	0.02	0.07	0.33	0	10.1	434	8.5	8.2	29.6

DEPTH METERS	TOTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 1/ 6/72 SECCHI DEPTH = 3.5 METERS										
0.0	0.05	0.03	0.04	0.32	6	12.8	444	8.4	0.0	25.6
3.5	0.04	0.02	0.04	0.25	10	12.4	435	8.4	1.6	23.2
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 2/22/72 SECCHI DEPTH = 2.5 METERS										
0.0	0.03	0.03	0.12	0.01	1	11.4	475	8.3	0.0	20.8
4.0	0.03	0.02	0.12	0.02	0	6.9	474	8.3	1.9	21.6
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 3/23/72 SECCHI DEPTH = 2.5 METERS										
0.0	0.02	0.01	0.02	0.09	0	13.4	446	7.9	4.5	20.0
4.0	0.01	0.00	0.10	0.05	0	9.2	137	7.8	1.7	9.6
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 5/ 9/72 SECCHI DEPTH = 3.2 METERS										
0.0	0.03	0.01	0.00	0.11	0	10.7	435	8.4	10.3	19.2
4.0	0.03	0.02	0.00	0.10	0	10.8	435	8.5	10.2	20.8
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 5/31/72 SECCHI DEPTH = 3.0 METERS										
0.0	0.03	0.02	0.02	0.11	0	9.0	423	9.0	17.2	22.4
3.0	0.02	0.02	0.02	0.10	0	9.1	420	8.9	17.2	20.6
LAKE WEST OKOBOJI STATION 49.4 SAMPLED ON 6/12/72 SECCHI DEPTH = 3.2 METERS										
0.0	0.02	0.02	0.00	0.09	8	8.6	424	8.5	19.1	16.0
3.8	0.04	0.01	0.00	0.06	8	8.8	424	8.5	16.0	17.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 49.4 SAMPLED ON			6/26/72	SECCHI	DEPTH =	2.6	METERS
0.0	0.05	0.01	0.06	0.18	5	9.7	409	8.7	21.2	20.8
2.8	0.02	0.01	0.02	0.16	2	9.7	409	8.7	20.3	23.2
LAKE WEST OKOBOJI			STATION 49.4 SAMPLED ON			7/19/72	SECCHI	DEPTH =	2.9	METERS
0.0	0.01	0.00	0.02	0.20	0	9.2	414	8.7	21.9	21.4
2.9	0.01	0.01	0.02	0.26	0	10.0	415	8.7	21.9	14.4
LAKE WEST OKOBOJI			STATION 49.4 SAMPLED ON			8/17/72	SECCHI	DEPTH =	2.5	METERS
0.0	0.04	0.01	0.00	0.31	0	8.1	420	8.8	23.9	23.2
2.5	0.03	0.00	0.00	0.27	5	8.6	421	8.7	23.8	23.4
LAKE WEST OKOBOJI			STATION 49.4 SAMPLED ON			9/15/72	SECCHI	DEPTH =	2.9	METERS
0.0	0.04	0.01	0.01	0.17	1	8.1	418	8.6	18.9	19.4
2.9	0.05	0.01	0.01	0.21	1	8.0	418	8.6	18.9	20.2
LAKE WEST OKOBOJI			STATION 49.4 SAMPLED ON			10/ 2/72	SECCHI	DEPTH =	2.5	METERS
0.0	0.07	0.03	0.06	0.25	1	8.8	427	8.7	16.1	24.7
2.5	0.07	0.03	0.06	0.27	0	9.1	427	8.8	15.4	24.3
LAKE WEST OKOBOJI			STATION 49.4 SAMPLED ON			11/16/72	SECCHI	DEPTH =	3.8	METERS
0.0	0.05	0.03	0.02	0.26	0	10.8	443	8.5	5.6	22.4

DEPTH METERS	TCTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 50.0 SAMPLED CN 3/10/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.03	0.00	0.45	5	12.5	476	7.7	0.0	****
8.0	*****	0.08	0.13	0.54	4	7.7	487	7.8	2.0	****
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 3/25/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.03	0.00	0.55	2	11.7	428	8.0	1.0	****
8.0	*****	0.09	0.00	0.56	20	6.8	504	7.2	3.0	****
LAKE WEST OKOBOJI STATION 50.0 SAMPLED CN 5/ 4/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.01	0.02	0.29	3		451	****	****	****
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 5/25/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.01	0.00	0.22	7	9.1	460	8.4	11.0	****
8.0	*****	0.01	0.00	0.18	6	9.1	462	8.3	11.0	****
LAKE WEST CKOBOJI STATION 50.0 SAMPLEC ON 7/15/71 SECCHI DEPTH = 1.6 METERS										
0.0	*****	0.01	0.00	0.00	9		427	8.6	22.5	****
LAKE WEST OKOBOJI STATION 50.0 SAMPLED CN 7/20/71 SECCHI DEPTH = 2.1 METERS										
0.0	*****	0.01	0.00	0.02	2		434	8.5	23.3	****
8.0	*****	0.01	0.00	0.04	5	8.0	431	8.5	23.1	****
LAKE WEST OKOBOJI STATION 50.0 SAMPLED CN 8/ 3/71 SECCHI DEPTH = 2.5 METERS										
0.0	*****	C.01	0.01	0.00	8		457	8.7	21.6	****
8.0	*****	0.02	0.02	0.02	10	8.4	457	8.8	21.5	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 8/13/71 SECCHI DEPTH = 1.9 METERS							
0.0	*****	0.01	0.00	0.15	8	8.7	435	8.8	23.4	26.2
8.0	*****	0.01	0.02	0.20	8	7.3	438	8.6	22.3	22.9
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 8/19/71 SECCHI DEPTH = 2.3 METERS							
0.0	*****	0.00	0.00	0.00	1	8.3	454	8.7	23.4	18.6
8.0	*****	0.01	0.00	0.00	3	8.0	458	8.6	23.2	22.6
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 8/30/71 SECCHI DEPTH = 2.1 METERS							
0.0	*****	0.01	0.00	*****	3	8.5	448	8.6	23.2	****
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 9/ 1/71 SECCHI DEPTH = 2.1 METERS							
0.0	0.03	0.01	0.01	0.01	3	7.9	456	8.6	22.7	24.2
7.0	0.03	0.01	0.00	0.00	1	7.5	456	8.6	22.5	25.6
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 9/16/71 SECCHI DEPTH = 2.0 METERS							
0.0	*****	0.01	0.02	0.00	10		445	8.5	20.2	19.2
8.0	*****	0.01	0.03	0.00	10	8.1	437	8.5	20.0	20.0
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 9/20/71 SECCHI DEPTH = 3.0 METERS							
0.0	*****	0.01	*****	*****	*****	8.3	427	****	18.3	****
5.0	*****	0.01	*****	*****	*****	8.1	425	****	18.3	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 9/29/71 SECCHI DEPTH = 2.8 METERS										
0.0	0.04	0.02	0.05	0.00	9	8.4	424	8.4	17.2	17.6
8.0	0.04	0.02	0.04	0.00	9	8.4	424	8.5	17.3	20.0
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 10/21/71 SECCHI DEPTH = 3.0 METERS										
0.0	0.04	0.02	0.03	0.08	0	9.1	425	8.5	14.5	20.0
8.0	0.05	0.02	0.04	0.04	0	9.1	425	8.4	14.6	13.6
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 11/12/71 SECCHI DEPTH = 4.0 METERS										
0.0	0.03	0.03	0.08	0.34	0	10.3	434	8.4	8.1	21.6
8.0	0.03	0.03	0.08	0.40	0	9.6	440	8.4	7.8	20.0
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 1/ 6/72 SECCHI DEPTH = 5.5 METERS										
0.0	0.05	0.03	0.06	0.30	3	12.1	438	8.3	0.1	21.6
8.0	0.06	0.03	0.09	0.29	10	12.6	439	8.3	3.5	23.2
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 2/22/72 SECCHI DEPTH = 6.0 METERS										
0.0	0.03	0.03	0.11	0.03	2	12.2	471	8.2	0.0	21.6
8.0	0.08	0.05	0.30	0.19	3	6.3	482	7.6	3.0	21.6
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 5/ 9/72 SECCHI DEPTH = 5.2 METERS										
0.0	0.02	0.01	0.01	0.10	0	11.0	435	8.5	9.3	17.6
7.5	0.04	0.01	0.00	0.09	0	11.3	435	8.4	9.2	18.4

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 5/31/72				SECCHI DEPTH = 4.6 METERS			
0.0	0.02	0.01	0.02	0.10	0	9.1	413	8.8	16.9	20.8
7.5	0.02	0.02	0.02	0.11	0	8.8	427	8.8	13.5	21.6
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 6/12/72				SECCHI DEPTH = 3.0 METERS			
0.0	0.02	0.01	0.01	0.06	8	8.9	427	8.5	19.0	18.4
7.5	0.03	0.02	0.00	0.11	5	8.3	425	8.5	18.2	17.6
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 6/26/72				SECCHI DEPTH = 2.9 METERS			
0.0	0.06	0.01	0.00	0.17	0	9.8	415	8.6	20.3	13.0
7.5	0.05	0.02	0.01	0.32	0	6.7	422	8.5	18.2	23.0
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 7/19/72				SECCHI DEPTH = 2.7 METERS			
0.0	0.02	0.01	0.02	0.20	1	8.7	419	8.7	22.4	22.6
7.8	0.09	0.06	0.01	0.39	1	4.6	428	8.4	20.7	22.5
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 8/ 1/72				SECCHI DEPTH = 2.3 METERS			
0.0	0.01	0.01	0.01	0.28	2		407	8.6	23.6	****
LAKE WEST OKOBOJI			STATION 50.0 SAMPLED ON 8/17/72				SECCHI DEPTH = 3.1 METERS			
0.0	0.05	0.00	0.00	0.23	2	8.4	423	8.7	24.6	21.3
7.8	0.04	0.01	0.00	0.32	3	7.3	448	9.9	20.9	27.5

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 8/24/72 SECCHI DEPTH = 3.0 METERS										
0.0	0.04	0.00	0.02	0.01	0		410	8.7	23.0	****
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 9/ 5/72 SECCHI DEPTH = 2.3 METERS										
0.0	0.04	0.01	0.01	0.10	0	8.0	423	8.6	20.0	24.8
7.8	0.03	0.01	0.01	0.12	1	8.1	421	8.7	19.8	25.6
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 9/15/72 SECCHI DEPTH = 3.3 METERS										
0.0	0.05	0.01	0.02	0.19	0	8.7	417	8.7	19.2	22.2
7.7	0.04	0.01	0.03	0.19	1	8.8	417	8.7	19.2	21.7
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 10/ 2/72 SECCHI DEPTH = 3.1 METERS										
0.0	0.07	0.04	0.06	0.24	1	9.2	428	8.7	16.5	26.7
7.5	0.05	0.04	0.06	0.27	1	9.2	424	8.7	15.5	26.3
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 11/16/72 SECCHI DEPTH = 4.6 METERS										
0.0	0.05	0.03	0.04	0.27	2	10.8	443	8.6	5.5	18.5
7.8	0.06	0.04	0.03	0.27	2	10.8	442	8.5	5.4	25.4
LAKE WEST CKOBOJI STATION 50.0 SAMPLED ON 4/26/73 SECCHI DEPTH = 5.1 METERS										
0.0	0.01	0.00	0.00	0.17	0	11.4	430	8.7	7.8	15.9
8.0	0.01	0.00	0.00	0.16	0	11.4	430	8.7	7.9	18.1

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 6/22/73 SECCHI DEPTH = 2.5 METERS										
0.0	0.03	0.01	0.01	0.12	0	7.6	433	8.5	19.3	24.0
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 7/16/73 SECCHI DEPTH = 3.7 METERS										
0.0	0.03	0.03	0.00	0.08	8	5.6	432	8.7	23.5	21.1
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 7/20/73 SECCHI DEPTH = 3.5 METERS										
0.0	0.03	0.03	0.00	0.04	5	6.0	436	8.7	23.5	21.8
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 8/ 8/73 SECCHI DEPTH = 1.8 METERS										
0.0	0.04	0.02	0.00	0.00	4	6.0	431	8.8	23.3	25.2
LAKE WEST OKOBOJI STATION 50.0 SAMPLED ON 8/20/73 SECCHI DEPTH = 2.4 METERS										
0.0	0.03	0.01	0.00	0.05	2	6.6	432	8.6	24.0	24.2
UPPER GAR LAKE STATION 51.0 SAMPLED ON 3/ 8/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.23	0.30	0.82	4	4.7	517	7.4	0.0	****
1.5	*****	0.23	0.34	0.82	8	4.5	529	7.3	0.0	****
UPPER GAR LAKE STATION 51.0 SAMPLED ON 3/25/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.15	0.09	0.68	1	6.9	529	7.0	2.0	****
1.5	*****	0.15	0.00	0.66	0	7.0	510	7.6	3.0	****

DEPTH METERS	TCTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
UPPER GAR LAKE STATION 51.0 SAMPLED ON 5/ 4/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.06	0.04	0.58	5	9.5	474	8.7	12.0	****
UPPER GAR LAKE STATION 51.0 SAMPLED ON 5/25/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.09	0.08	0.62	11	8.7	496	8.3	11.0	****
1.5	*****	0.09	0.08	0.62	12	8.7	497	8.3	11.0	****
UPPER GAR LAKE STATION 51.0 SAMPLED ON 7/15/71 SECCHI DEPTH = 1.0 METERS										
0.0	*****	0.04	0.00	0.48	17		427	9.0	23.0	****
UPPER GAR LAKE STATION 51.0 SAMPLED ON 7/22/71 SECCHI DEPTH = 1.1 METERS										
0.0	*****	0.04	0.02	0.42	28		446	8.9	24.9	****
1.5	*****	0.06	0.03	0.36	31	8.6	437	9.0	24.5	****
UPPER GAR LAKE STATION 51.0 SAMPLED ON 8/ 2/71 SECCHI DEPTH = 0.6 METERS										
0.0	*****	0.02	0.11	0.37	28		448	9.3	22.1	****
1.5	*****	0.01	0.11	0.39	28	9.6	444	9.2	22.0	****
UPPER GAR LAKE STATION 51.0 SAMPLED ON 8/16/71 SECCHI DEPTH = 0.4 METERS										
0.0	*****	0.06	0.18	0.30	48	8.5	443	9.2	23.2	****
1.5	*****	0.05	0.06	0.21	51	8.4	440	9.3	23.1	****
UPPER GAR LAKE STATION 51.0 SAMPLED ON 8/22/71 SECCHI DEPTH = 0.3 METERS										
0.0	0.15	0.06	0.04	0.48	54	7.2	464	9.1	27.2	54.2
1.7	0.17	0.07	0.04	0.48	50	7.4	457	9.0	27.2	50.8

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 9/13/71 SECCHI DEPTH = 0.5 METERS							
0.0	0.22	0.06	0.02	0.11	39	10.0	451	9.3	20.7	72.0
1.5	0.25	0.06	0.03	0.12	25	9.5	451	9.3	20.6	59.2
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 9/28/71 SECCHI DEPTH = 0.6 METERS							
0.0	0.23	0.09	0.07	0.77	48	6.7	467	8.8	17.3	82.4
1.5	0.23	0.09	0.13	0.76	38	6.6	463	8.7	17.3	44.8
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 10/22/71 SECCHI DEPTH = 1.0 METERS							
0.0	0.24	0.13	0.18	1.00	13	6.6	472	8.3	13.3	75.2
1.5	0.24	0.13	0.12	0.98	13	6.6	472	8.3	13.3	66.4
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 11/15/71 SECCHI DEPTH = 1.1 METERS							
0.0	0.27	0.15	0.28	1.77	0	9.6	474	8.0	5.6	35.2
1.5	0.31	0.16	0.28	1.80	9	9.6	470	8.0	5.6	39.2
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 2/16/72 SECCHI DEPTH = 1.0 METERS							
0.0	0.44	0.26	0.35	2.30	17	1.1	648	7.3	1.7	37.6
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 4/24/72 SECCHI DEPTH = 0.8 METERS							
0.0	0.11	0.01	0.02	0.30	12	11.7	426	8.9	7.6	21.6
1.8	0.11	0.01	0.03	0.25	10	11.2	418	8.8	7.7	20.8

DEPTH METERS	TOTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
UPPER GAR LAKE STATION 51.0 SAMPLED ON 5/16/72 SECCHI DEPTH = 1.4 METERS										
0.0	0.11	0.07	0.12	0.59	2	8.4	646	7.9	16.4	32.0
1.4	0.12	0.06	0.09	0.57	0	8.2	642	7.9	15.7	33.6
UPPER GAR LAKE STATION 51.0 SAMPLED ON 6/ 1/72 SECCHI DEPTH = 0.6 METERS										
0.0	0.15	0.09	0.13	0.67	7	6.8	460	8.2	18.6	25.1
1.5	0.18	0.07	0.17	0.69	6	6.8	460	8.3	18.5	24.8
UPPER GAR LAKE STATION 51.0 SAMPLED ON 6/16/72 SECCHI DEPTH = 0.4 METERS										
0.0	0.17	0.04	0.07	0.54	21	8.9	454	8.8	20.3	54.6
1.6	0.15	0.04	0.06	0.45	24	8.7	360	8.9	20.4	46.0
UPPER GAR LAKE STATION 51.0 SAMPLED ON 6/29/72 SECCHI DEPTH = 0.3 METERS										
0.0	0.23	0.01	0.04	0.78	51	10.2	465	9.0	22.8	69.0
1.5	0.17	0.02	0.03	0.65	29	8.1	463	8.8	22.0	55.7
UPPER GAR LAKE STATION 51.0 SAMPLED ON 7/31/72 SECCHI DEPTH = 1.3 METERS										
0.0	0.16	0.07	0.04	0.78	12	5.9	438	8.6	23.9	32.6
1.3	0.17	0.06	0.05	0.79	16	5.3	437	8.6	23.9	37.8
UPPER GAR LAKE STATION 51.0 SAMPLED ON 8/25/72 SECCHI DEPTH = 0.8 METERS										
0.0	0.26	0.05	0.07	0.39	29	8.0	442	8.8	19.8	60.1
2.0	0.16	0.04	0.03	0.42	21	8.7	437	8.9	19.9	47.0

DEPTH METERS	TCTAL P MG/L	PC4-P MG/L	NC3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
UPPER GAR LAKE STATION 51.0 SAMPLED CN 9/ 5/72 SECCHI DEPTH = 0.5 METERS										
0.0	0.26	0.03	0.07	0.39	25	9.9	434	8.9	18.3	68.1
1.6	0.14	C.03	0.04	0.27	19	9.8	439	8.8	18.3	32.3
UPPER GAR LAKE STATION 51.0 SAMPLED ON 10/ 4/72 SECCHI DEPTH = 0.6 METERS										
C.0	C.20	C.07	0.04	0.48	38	9.4	459	9.1	15.0	60.9
1.7	0.18	0.07	0.04	0.43	40	9.5	447	9.0	14.9	54.1
UPPER GAR LAKE STATION 51.0 SAMPLED ON 10/25/72 SECCHI DEPTH = 1.1 METERS										
C.0	0.19	0.13	0.17	0.98	19	10.1	470	8.4	5.0	32.4
1.4	0.20	C.12	0.19	1.02	14	10.1	468	8.4	5.0	39.9
UPPER GAR LAKE STATION 51.0 SAMPLED ON 11/29/72 SECCHI DEPTH = 1.5 METERS										
0.0	0.20	0.16	0.33	C.97	9	12.1	417	8.3	0.8	30.0
1.5	C.19	0.14	0.31	C.98	2	12.1	386	8.2	1.0	29.4
UPPER GAR LAKE STATION 51.0 SAMPLED CN 12/19/72 SECCHI DEPTH = 1.5 METERS										
0.0	0.22	C.16	0.58	1.07	3	10.4	571	8.2	0.2	32.6
UPPER GAR LAKE STATION 51.0 SAMPLED CN 1/26/73 SECCHI DEPTH = 1.5 METERS										
0.0	0.21	0.15	0.36	1.00	4	9.9	511	7.7	0.7	27.8
UPPER GAR LAKE STATION 51.0 SAMPLED CN 4/18/73 SECCHI DEPTH = 1.5 METERS										
C.0	0.05	C.02	0.31	C.35	4	11.2	450	8.5	9.0	34.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 5/18/73 SECCHI DEPTH = 0.9 METERS							
0.0	0.10	0.03	0.39	0.53	9	10.2	486	8.6	14.5	26.7
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 5/30/73 SECCHI DEPTH = 0.8 METERS							
0.0	0.06	0.01	0.37	0.49	19	9.3	464	8.6	16.5	32.0
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 6/21/73 SECCHI DEPTH = 0.6 METERS							
0.0	0.15	0.07	0.43	0.38	21	5.0	500	8.2	19.7	25.4
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 6/29/73 SECCHI DEPTH = 0.5 METERS							
0.0	0.14	0.04	0.46	0.02	28	6.8	501	8.4	20.5	30.6
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 7/10/73 SECCHI DEPTH = 0.9 METERS							
0.0	0.08	0.02	0.03	0.13	18	9.1	448	8.9	25.4	31.5
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 7/19/73 SECCHI DEPTH = 0.5 METERS							
0.0	0.09	0.02	0.01	0.17	35	6.0	454	8.8	24.7	38.2
UPPER GAR LAKE			STATION 51.0 SAMPLED ON 8/15/73 SECCHI DEPTH = 0.5 METERS							
0.0	0.14	0.03	0.01	0.32	36	6.2	432	8.8	24.3	51.9
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 3/ 8/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.22	0.37	0.70	12	6.1	494	7.4	0.0	****
4.0	*****	0.20	0.29	0.91	9	3.6	536	7.1	0.0	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE MINNEWASHTA			**STATION 52.0 SAMPLED ON**			**3/25/71**	**SECCHI DEPTH = **** METERS**			
0.0	*****	0.15	0.18	0.69	2	6.1	517	6.9	1.0	****
4.0	*****	0.18	0.02	0.71	6	6.0	565	6.5	2.0	****
LAKE MINNEWASHTA			**STATION 52.0 SAMPLED ON**			**5/ 4/71**	**SECCHI DEPTH = **** METERS**			
0.0	*****	0.07	0.04	0.67	12	9.0	485	8.8	13.0	****
LAKE MINNEWASHTA			**STATION 52.0 SAMPLED ON**			**5/25/71**	**SECCHI DEPTH = **** METERS**			
0.0	*****	0.10	0.11	0.78	29	8.1	497	8.3	12.0	****
4.0	*****	0.11	0.10	0.80	29	8.3	497	8.2	12.0	****
LAKE MINNEWASHTA			**STATION 52.0 SAMPLED ON**			**7/15/71**	**SECCHI DEPTH = 0.9 METERS**			
0.0	*****	0.00	0.05	0.38	29		410	9.4	24.0	****
LAKE MINNEWASHTA			**STATION 52.0 SAMPLED ON**			**7/22/71**	**SECCHI DEPTH = 0.9 METERS**			
0.0	*****	0.01	0.02	0.42	43		445	9.1	25.6	****
4.0	*****	0.10	0.06	0.78	22	4.4	451	8.7	23.9	****
LAKE MINNEWASHTA			**STATION 52.0 SAMPLED ON**			**8/ 2/71**	**SECCHI DEPTH = 0.8 METERS**			
0.0	*****	0.01	0.10	0.32	60		436	9.3	22.2	****
4.0	*****	0.03	0.03	0.46	8	8.5	432	9.1	21.4	****
LAKE MINNEWASHTA			**STATION 52.0 SAMPLED ON**			**8/16/71**	**SECCHI DEPTH = 0.4 METERS**			
0.0	*****	0.02	0.10	0.22	51	8.1	422	9.4	24.1	****
4.0	*****	0.06	0.04	0.32	26	6.9	427	9.3	23.6	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 8/22/71 SECCHI DEPTH = 0.5 METERS							
0.0	0.15	0.02	0.02	0.29	68	8.7	421	9.4	26.9	64.2
3.0	0.18	0.07	0.03	0.68	23	3.0	436	9.1	23.9	40.2
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 9/13/71 SECCHI DEPTH = 1.2 METERS							
0.0	0.21	0.10	0.04	0.88	10	5.5	442	8.9	21.5	54.4
4.0	*****	0.11	0.04	0.96	14	5.3	441	8.8	21.5	44.8
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 9/28/71 SECCHI DEPTH = 1.4 METERS							
0.0	0.24	0.13	0.02	0.87	15	6.6	449	8.6	16.5	45.6
4.0	0.25	0.13	0.03	0.81	15	6.3	446	8.5	16.1	41.6
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 10/22/71 SECCHI DEPTH = 1.9 METERS							
0.0	0.30	0.16	0.09	1.66	7	5.7	472	8.0	14.1	51.2
4.0	0.30	0.18	0.11	1.68	8	5.6	472	7.9	14.2	48.8
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 11/15/71 SECCHI DEPTH = 1.8 METERS							
0.0	0.32	0.20	0.28	2.51	7	9.7	467	7.9	4.9	33.6
4.0	0.33	0.19	0.29	2.51	7	9.6	467	7.9	4.9	37.6
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 1/ 7/72 SECCHI DEPTH = 1.5 METERS							
0.0	0.36	0.22	0.38	2.48	5	6.5	517	7.3	0.2	32.0
4.0	0.35	0.21	0.34	2.30	11	4.1	497	7.3	2.0	34.4

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE MINNEWASHTA		STATION 52.0 SAMPLED ON 2/16/72					SECCHI DEPTH = 2.5 METERS			
0.0	0.35	0.22	0.63	2.00	12	1.4	591	7.2	0.0	31.2
4.0	0.35	0.22	0.52	2.04	8	0.4	592	7.3	3.2	30.4
LAKE MINNEWASHTA		STATION 52.0 SAMPLED ON 4/24/72					SECCHI DEPTH = 0.6 METERS			
0.0	0.14	0.02	0.07	0.51	25	9.3	395	8.4	8.6	12.8
4.0	0.12	0.03	0.09	0.57	28	9.0	395	8.4	8.9	23.2
LAKE MINNEWASHTA		STATION 52.0 SAMPLED ON 5/16/72					SECCHI DEPTH = 4.0 METERS			
0.0	0.09	0.06	0.09	0.67	5	7.7	492	7.7	16.8	26.4
4.5	0.12	0.06	0.12	0.68	0	7.7	494	7.7	14.4	24.0
LAKE MINNEWASHTA		STATION 52.0 SAMPLED ON 6/ 1/72					SECCHI DEPTH = 3.0 METERS			
0.0	0.14	0.08	0.09	0.59	1	6.6	456	8.1	19.1	27.4
4.9	0.18	0.09	0.08	0.70	1	5.1	451	8.1	17.6	25.2
LAKE MINNEWASHTA		STATION 52.0 SAMPLED ON 6/16/72					SECCHI DEPTH = 0.7 METERS			
0.0	0.18	0.06	0.06	0.53	4	9.1	350	8.8	21.3	40.2
4.0	0.18	0.06	0.04	0.72	18	9.3	415	8.7	21.2	37.1
LAKE MINNEWASHTA		STATION 52.0 SAMPLED ON 6/29/72					SECCHI DEPTH = 0.4 METERS			
0.0	0.15	0.01	0.03	0.65	38	13.3	443	9.1	22.4	64.6
4.5	0.29	0.17	0.01	0.97	0	2.5	497	8.3	19.3	32.9

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE MINNEWASHTA STATION 52.0 SAMPLED ON 7/31/72 SECCHI DEPTH = 13.3 METERS										
0.0	0.18	0.06	0.06	0.89	12	5.5	426	8.6	24.4	36.2
4.0	0.16	0.06	0.06	0.89	10	5.3	437	8.6	24.3	36.2
LAKE MINNEWASHTA STATION 52.0 SAMPLED ON 8/25/72 SECCHI DEPTH = 0.9 METERS										
0.0	0.14	0.05	0.03	0.70	13	4.3	427	8.5	22.0	40.0
4.0	0.18	0.06	0.03	0.70	13	4.3	427	8.7	22.1	38.8
LAKE MINNEWASHTA STATION 52.0 SAMPLED ON 9/ 5/72 SECCHI DEPTH = 0.9 METERS										
0.0	0.16	0.06	0.05	0.65	11	7.1	440	8.6	19.4	31.5
4.1	0.18	0.06	0.07	0.63	11	7.1	435	8.6	19.4	31.5
LAKE MINNEWASHTA STATION 52.0 SAMPLED ON 10/ 4/72 SECCHI DEPTH = 1.0 METERS										
0.0	0.22	0.09	0.05	0.76	32	6.7	455	8.8	14.8	49.4
4.1	0.18	0.11	0.05	0.81	10	6.5	453	8.7	14.2	39.4
LAKE MINNEWASHTA STATION 52.0 SAMPLED ON 10/25/72 SECCHI DEPTH = 1.2 METERS										
0.0	0.21	0.12	0.16	1.12	16	7.6	472	8.3	6.1	33.1
4.2	0.21	0.13	0.17	1.24	16	7.0	471	8.3	5.9	32.3
LAKE MINNEWASHTA STATION 52.0 SAMPLED ON 12/19/72 SECCHI DEPTH = 2.8 METERS										
0.0	0.22	0.15	0.74	1.30	4	9.8	565	8.2	0.7	33.7

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 4/18/73 SECCHI DEPTH = 1.1 METERS							
0.0	0.05	0.01	0.25	0.33	10	11.2	451	8.6	8.9	26.5
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 5/18/73 SECCHI DEPTH = 1.2 METERS							
0.0	0.10	0.04	0.37	0.74	11	9.1	483	8.6	14.7	26.9
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 5/30/73 SECCHI DEPTH = 1.8 METERS							
0.0	0.05	0.02	0.34	0.44	12	9.5	463	8.5	17.0	24.2
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 6/21/73 SECCHI DEPTH = 0.4 METERS							
0.0	0.20	0.09	0.35	0.50	39	4.2	497	8.0	20.5	26.9
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 6/29/73 SECCHI DEPTH = 0.4 METERS							
0.0	0.20	0.09	0.34	0.15	30	5.1	503	8.2	21.6	28.1
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 7/10/73 SECCHI DEPTH = 0.4 METERS							
0.0	0.33	0.04	0.01	0.04	54	12.1	468	9.0	26.0	61.2
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 7/19/73 SECCHI DEPTH = 1.7 METERS							
0.0	0.12	0.05	0.01	0.28	8	6.1	457	8.8	24.7	27.4
LAKE MINNEWASHTA			STATION 52.0 SAMPLED ON 8/15/73 SECCHI DEPTH = 0.9 METERS							
0.0	0.11	0.04	0.01	0.29	19	6.3	420	8.9	24.9	38.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 3/ 8/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.25	0.29	1.30	18		418	7.5	0.0	****
1.5	*****	0.21	0.41	1.05	30	4.7	428	7.5	0.0	****
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 3/25/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.14	0.27	0.65	4	6.2	460	7.5	0.0	****
1.5	*****	0.15	0.28	0.72	6	6.1	517	6.5	1.0	****
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 7/15/71 SECCHI DEPTH = 0.5 METERS							
0.0	*****	0.01	0.09	0.37	34		407	9.2	23.5	****
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 7/22/71 SECCHI DEPTH = 0.5 METERS							
0.0	*****	0.00	0.03	0.43	42		391	9.3	24.9	****
1.5	*****	0.01	0.04	0.49	41	10.2	415	9.3	24.9	****
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 8/ 2/71 SECCHI DEPTH = 0.4 METERS							
0.0	*****	0.01	0.13	0.41	50		381	9.7	21.5	****
1.5	*****	0.00	0.15	0.40	40	11.8	383	9.7	21.1	****
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 8/16/71 SECCHI DEPTH = 0.3 METERS							
0.0	*****	0.06	0.14	0.33	58	8.9	387	9.5	23.1	****
1.5	*****	0.07	0.09	0.34	102	8.6	389	9.5	23.1	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LOWER GAR LAKE STATION 53.0 SAMPLED ON 8/22/71 SECCHI DEPTH = 0.3 METERS										
0.0	0.23	0.11	0.05	0.43	69	6.8	391	9.5	27.1	67.8
1.5	0.26	0.11	0.04	0.49	64	6.8	391	9.4	27.1	72.9
LOWER GAR LAKE STATION 53.0 SAMPLED ON 9/13/71 SECCHI DEPTH = 0.3 METERS										
0.0	0.30	0.13	0.10	0.50	55	6.1	451	8.7	20.3	52.0
1.5	0.30	0.13	0.12	0.45	56	6.0	450	8.7	20.3	56.8
LOWER GAR LAKE STATION 53.0 SAMPLED ON 9/28/71 SECCHI DEPTH = 0.3 METERS										
0.0	0.40	0.07	0.06	0.32	83	7.6	454	8.9	17.6	90.9
1.5	0.46	0.07	0.04	0.27	93	7.6	457	8.9	17.6	90.9
LOWER GAR LAKE STATION 53.0 SAMPLED ON 10/22/71 SECCHI DEPTH = 0.8 METERS										
0.0	0.21	0.12	0.10	0.87	27	6.2	471	8.3	13.2	54.4
1.5	0.26	0.12	0.07	0.87	20	6.0	472	8.3	13.3	49.6
LOWER GAR LAKE STATION 53.0 SAMPLED ON 11/15/71 SECCHI DEPTH = 0.8 METERS										
0.0	0.25	0.14	0.30	1.91	15	10.0	474	8.1	5.9	36.8
1.5	0.25	0.14	0.27	1.90	20	10.1	474	8.1	5.9	32.8
LOWER GAR LAKE STATION 53.0 SAMPLED ON 1/ 7/72 SECCHI DEPTH = 1.1 METERS										
0.0	0.28	0.15	0.27	3.50	10	2.0	607	7.2	0.9	41.6
1.1	0.24	0.15	0.28	2.50	5	1.6	606	7.2	2.9	29.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 2/16/72 SECCHI DEPTH = 1.2 METERS							
0.0	0.41	0.27	0.35	2.58	10	0.6	540	7.3	2.3	38.4
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 4/24/72 SECCHI DEPTH = 0.4 METERS							
0.0	0.09	0.03	0.10	0.41	40	10.3	367	8.1	7.4	13.6
1.5	0.12	0.03	0.08	0.40	30	10.5	367	8.1	7.4	21.6
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 5/16/72 SECCHI DEPTH = 1.6 METERS							
0.0	0.08	0.06	0.35	0.56	5	7.2	536	7.8	17.9	25.6
1.6	0.09	0.06	0.36	0.49	2	7.8	547	7.7	17.1	22.4
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 6/ 1/72 SECCHI DEPTH = 0.5 METERS							
0.0	0.14	0.08	0.23	0.71	19	7.3	460	8.2	18.2	24.5
1.6	0.17	0.08	0.23	0.72	18	7.2	462	8.2	17.9	31.9
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 6/16/72 SECCHI DEPTH = 0.3 METERS							
0.0	0.23	0.02	0.16	1.12	100	7.3	435	8.7	20.3	52.7
1.4	0.24	0.03	0.15	1.15	104	7.4	435	8.7	20.3	58.7
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 6/29/72 SECCHI DEPTH = 0.2 METERS							
0.0	0.22	0.03	0.28	1.11	103	7.1	457	8.7	22.5	46.8
1.5	0.22	0.04	0.35	1.83	201	6.0	459	8.6	22.2	63.0

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 7/31/72 SECCHI DEPTH = 0.4 METERS							
0.0	0.20	0.04	0.16	0.90	48	5.3	436	8.6	23.8	46.4
1.5	0.20	0.06	0.17	1.01	65	4.9	437	8.6	23.8	39.7
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 8/25/72 SECCHI DEPTH = 0.4 METERS							
0.0	0.27	0.07	0.12	0.99	55	6.1	457	8.4	19.4	52.0
2.0	0.29	0.07	0.14	1.10	72	5.8	457	8.5	19.5	56.3
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 9/ 5/72 SECCHI DEPTH = 0.4 METERS							
0.0	0.23	0.05	0.13	0.61	42	8.4	463	8.5	18.1	62.0
1.5	0.22	0.05	0.13	0.61	42	8.2	464	8.4	18.0	49.4
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 10/ 4/72 SECCHI DEPTH = 0.7 METERS							
0.0	0.15	0.02	0.04	0.52	36	8.9	460	9.1	14.7	42.6
1.8	0.18	0.03	0.05	0.55	38	9.0	459	9.2	14.6	40.8
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 10/25/72 SECCHI DEPTH = 1.0 METERS							
0.0	0.16	0.06	0.11	0.52	28	10.4	473	8.8	4.1	63.4
1.3	0.17	0.07	0.13	0.54	22	11.4	477	8.8	4.1	48.6
LOWER GAR LAKE			STATION 53.0 SAMPLED ON 12/19/72 SECCHI DEPTH = 1.3 METERS							
0.0	0.20	0.14	1.20	1.18	8	8.4	567	8.1	0.9	29.8

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LOWER GAR LAKE STATION 53.0 SAMPLED ON 4/18/73 SECCHI DEPTH = 0.7 METERS										
0.0	0.05	0.00	0.31	0.39	16	11.3	454	8.6	9.9	29.6
LOWER GAR LAKE STATION 53.0 SAMPLED ON 5/18/73 SECCHI DEPTH = 0.5 METERS										
0.0	0.12	0.02	0.53	0.97	28	8.9	498	8.4	13.5	29.6
LOWER GAR LAKE STATION 53.0 SAMPLED ON 5/30/73 SECCHI DEPTH = 0.8 METERS										
0.0	0.06	0.01	0.34	0.56	14	9.9	464	8.4	16.8	26.6
LOWER GAR LAKE STATION 53.0 SAMPLED ON 6/21/73 SECCHI DEPTH = 0.4 METERS										
0.0	0.14	0.04	0.69	0.39	43	5.5	510	8.2	18.5	30.4
LOWER GAR LAKE STATION 53.0 SAMPLED ON 6/29/73 SECCHI DEPTH = 0.3 METERS										
0.0	0.16	0.02	0.49	0.18	68	6.2	494	8.7	20.1	40.6
LOWER GAR LAKE STATION 53.0 SAMPLED ON 7/10/73 SECCHI DEPTH = 0.8 METERS										
0.0	0.08	0.03	0.16	0.25	23	6.5	457	8.8	25.8	31.2
LOWER GAR LAKE STATION 53.0 SAMPLED ON 7/19/73 SECCHI DEPTH = 0.7 METERS										
0.0	0.08	0.02	0.01	0.28	26	6.5	417	9.0	23.9	46.6
LOWER GAR LAKE STATION 53.0 SAMPLED ON 8/15/73 SECCHI DEPTH = 0.3 METERS										
0.0	0.28	0.03	0.03	0.36	92	4.6	384	9.1	24.1	77.8

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 3/ 8/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.03	0.15	0.35	11	17.5	441	8.5	0.0	****
6.0	*****	0.04	0.01	0.27	2	12.9	532	8.0	1.0	****
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 3/22/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.01	0.30	0.72	32	14.9	529	7.5	0.0	****
6.0	*****	0.01	0.10	0.64	16	12.2	517	8.3	1.0	****
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 5/ 4/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.01	0.02	0.32	11	10.6	493	8.7	12.0	****
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 5/26/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.03	0.01	0.39	5	9.2	491	8.1	12.0	****
6.0	*****	0.03	0.01	0.32	7	9.0	489	8.2	12.0	****
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 6/21/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.01	0.00	0.16	8		480	8.7	23.3	****
6.0	*****	0.01	0.00	0.12	8	8.1	472	8.4	21.5	****
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 7/29/71 SECCHI DEPTH = 0.9 METERS							
0.0	*****	0.01	0.03	0.12	24		455	9.0	21.7	****
6.0	*****	0.01	0.03	0.10	20	9.4	454	****	21.6	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 8/10/71 SECCHI DEPTH = 0.8 METERS							
0.0	*****	0.01	0.03	0.08	25		429	9.0	22.0	****
6.0	*****	0.01	0.06	0.27	25	8.2	437	8.9	22.0	****
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 8/26/71 SECCHI DEPTH = 2.5 METERS							
0.0	0.12	0.07	0.02	0.76	12	7.1	452	8.5	23.8	21.7
6.0	0.11	0.05	0.01	0.76	13	7.0	450	8.4	23.5	21.8
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 11/19/71 SECCHI DEPTH = 2.0 METERS							
0.0	0.03	0.01	0.12	0.27	0	11.4	438	8.5	4.6	27.2
6.0	0.04	0.01	0.12	0.24	2	11.0	438	8.5	4.7	25.6
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 1/12/72 SECCHI DEPTH = 5.0 METERS							
0.0	0.02	0.00	0.12	0.10	0	12.9	466	7.9	0.0	25.6
5.5	0.02	0.00	0.13	0.08	0	11.9	454	7.9	3.6	22.4
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 2/23/72 SECCHI DEPTH = 6.0 METERS							
0.0	0.02	0.01	0.14	0.14	0	12.4	502	7.9	0.0	27.2
6.0	0.02	0.01	0.17	0.15	0	10.1	493	7.7	3.9	26.4
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 3/20/72 SECCHI DEPTH = 4.0 METERS							
0.0	0.03	0.00	0.15	0.09	2	8.7	313	7.6	1.7	17.6
6.0	0.05	0.00	0.14	0.10	0	9.8	508	7.6	5.1	26.4

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 5/18/72 SECCHI DEPTH = 2.2 METERS							
0.0	0.03	0.02	0.01	0.03	1	10.8	457	9.0	16.1	18.4
6.5	0.02	0.01	0.02	0.08	2	10.8	456	9.0	14.4	26.4
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 6/ 5/72 SECCHI DEPTH = 2.2 METERS							
0.0	0.03	0.00	0.02	0.14	0	9.0	439	9.0	20.5	21.6
6.5	0.02	0.00	0.01	0.25	7	8.8	439	9.1	19.5	24.0
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 6/27/72 SECCHI DEPTH = 2.1 METERS							
0.0	0.04	0.01	0.02	0.18	9	7.8	443	8.6	20.3	21.0
6.2	0.04	0.01	0.00	0.12	1	7.3	442	8.5	19.1	20.6
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 7/18/72 SECCHI DEPTH = 2.7 METERS							
0.0	0.01	0.00	0.02	0.18	0	7.1	457	8.5	23.2	21.0
6.3	0.02	0.00	0.03	0.21	0	6.9	455	8.4	22.5	20.9
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 8/ 7/72 SECCHI DEPTH = 1.5 METERS							
0.0	0.03	0.00	0.01	0.18	2	8.4	459	8.6	21.4	21.9
6.3	0.03	0.00	0.01	0.22	1	8.0	457	8.6	21.2	26.4
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 8/23/72 SECCHI DEPTH = 1.7 METERS							
0.0	0.04	0.00	0.01	0.13	4	7.0	437	8.5	23.1	21.8
6.0	0.03	0.00	0.02	0.10	2	7.1	438	8.5	23.2	22.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 9/12/72 SECCHI DEPTH = 1.7 METERS							
0.0	0.04	0.00	0.03	0.15	2	8.7	454	8.8	18.9	26.2
6.0	0.05	0.00	0.03	0.16	2	9.1	454	8.8	18.9	23.8
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 9/27/72 SECCHI DEPTH = 1.4 METERS							
0.0	0.05	0.01	0.06	0.20	1	8.5	455	8.8	15.4	23.9
6.0	0.05	0.01	0.06	0.24	3	8.4	455	8.6	15.4	25.0
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 10/31/72 SECCHI DEPTH = 3.1 METERS							
0.0	0.05	0.01	0.08	0.35	2	11.0	460	8.4	6.8	22.9
6.0	0.04	0.01	0.07	0.34	1	10.9	455	8.4	6.8	21.4
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 11/20/72 SECCHI DEPTH = 6.2 METERS							
0.0	0.03	0.02	0.07	0.32	1	12.1	489	8.2	2.2	22.5
6.2	0.04	0.01	0.04	0.27	1	12.1	485	8.3	2.3	21.0
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 12/18/72 SECCHI DEPTH = **** METERS							
0.0	0.03	0.01	0.16	0.15	0	14.1	498	8.5	0.0	27.6
6.2	0.03	0.01	0.17	0.17	0	13.7	492	8.5	1.2	22.8
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 1/15/73 SECCHI DEPTH = 6.0 METERS							
0.0	0.02	0.00	0.16	0.19	3	15.0	508	8.1	0.0	25.4
6.0	0.02	0.01	0.15	0.28	3	14.0	501	8.0	2.2	23.3

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE STATION 54.0 SAMPLED ON 3/ 1/73 SECCHI DEPTH = 5.7 METERS										
0.0	0.01	0.01	0.22	0.19	0	14.9	523	8.2	0.8	22.7
6.2	0.03	0.01	0.22	0.29	0	10.1	523	7.7	4.2	21.3
BIG SPIRIT LAKE STATION 54.0 SAMPLED ON 5/ 4/73 SECCHI DEPTH = 1.8 METERS										
0.0	0.01	0.00	0.01	0.12	1	10.5	464	8.7	9.5	25.2
6.0	0.01	0.00	0.01	0.13	1	10.4	467	8.6	9.3	25.0
BIG SPIRIT LAKE STATION 54.0 SAMPLED ON 5/15/73 SECCHI DEPTH = 3.6 METERS										
0.0	0.02	0.01	0.01	0.24	2	9.8	480	8.6	11.6	33.2
6.0	0.02	0.01	0.00	0.21	2	9.8	480	8.6	11.6	31.4
BIG SPIRIT LAKE STATION 54.0 SAMPLED ON 6/26/73 SECCHI DEPTH = **** METERS										
0.0	0.03	0.00	0.00	0.08	2	7.0	465	8.5	****	28.8
BIG SPIRIT LAKE STATION 54.0 SAMPLED ON 7/18/73 SECCHI DEPTH = 1.7 METERS										
0.0	0.04	0.03	0.02	0.27	0	6.0	461	8.7	0.0	26.6
BIG SPIRIT LAKE STATION 54.0 SAMPLED ON 7/26/73 SECCHI DEPTH = 1.8 METERS										
0.0	0.03	0.02	0.00	0.14	5	7.2	475	8.8	****	26.8
BIG SPIRIT LAKE STATION 54.0 SAMPLED ON 8/ 3/73 SECCHI DEPTH = 2.1 METERS										
0.0	0.02	0.01	0.00	0.09	9	7.4	464	8.7	****	24.2

DEPTH METERS	TOTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 8/16/73 SECCHI DEPTH = 1.7 METERS							
0.0	0.04	0.01	0.02	0.16	5	5.9	484	8.6	****	****
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 8/30/73 SECCHI DEPTH = 0.9 METERS							
0.0	0.04	0.01	0.00	0.21	18	5.0	479	8.5	****	29.2
BIG SPIRIT LAKE			STATION 54.0 SAMPLED ON 9/15/73 SECCHI DEPTH = 1.4 METERS							
0.0	0.04	0.01	0.00	0.18	9	9.1	505	8.7	19.0	27.7
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 6/21/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.01	0.00	0.18	5		487	8.4	22.8	****
6.0	*****	0.01	0.00	0.12	15	8.4	483	8.5	22.5	****
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 7/29/71 SECCHI DEPTH = 0.9 METERS							
0.0	*****	0.00	0.04	0.12	25		454	9.0	21.6	****
6.0	*****	0.00	0.04	0.11	30	9.0	457	****	21.5	****
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 8/10/71 SECCHI DEPTH = 1.0 METERS							
0.0	*****	0.00	0.02	0.08	12		425	9.1	23.0	****
6.0	*****	0.01	0.01	0.25	21	7.4	439	8.9	23.0	****
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 8/26/71 SECCHI DEPTH = 2.3 METERS							
0.0	0.07	0.03	0.01	0.79	8	7.2	458	8.5	24.6	22.2
6.0	0.07	0.04	0.01	0.76	12	5.7	452	8.3	23.8	20.1

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE STATION 54.1 SAMPLED ON 9/ 2/71 SECCHI DEPTH = 1.5 METERS										
0.0	0.09	0.02	0.03	0.59	6	9.1	461	8.7	23.1	32.3
6.0	0.08	0.02	0.04	0.53	4	9.0	453	8.6	23.0	29.8
BIG SPIRIT LAKE STATION 54.1 SAMPLED ON 10/ 1/71 SECCHI DEPTH = 1.1 METERS										
0.0	0.04	0.00	0.04	0.04	18	8.1	429	9.0	17.2	27.2
6.0	0.03	0.01	0.06	0.10	18	7.3	434	9.0	16.7	32.0
BIG SPIRIT LAKE STATION 54.1 SAMPLED ON 1/12/72 SECCHI DEPTH = 5.0 METERS										
0.0	0.03	0.01	0.14	0.10	0	13.0	467	8.0	0.0	24.8
5.5	0.02	0.01	0.11	0.08	0	13.0	454	8.0	3.4	22.4
BIG SPIRIT LAKE STATION 54.1 SAMPLED ON 2/23/72 SECCHI DEPTH = 6.2 METERS										
0.0	0.02	0.01	0.14	0.09	0	12.3	500	7.9	0.0	25.6
6.2	0.02	0.01	0.15	0.19	0	8.5	519	7.7	2.5	24.8
BIG SPIRIT LAKE STATION 54.1 SAMPLED ON 6/ 5/72 SECCHI DEPTH = 2.8 METERS										
0.0	0.02	0.01	0.01	0.21	0	8.9	447	9.0	20.1	23.2
6.5	0.04	0.01	0.01	0.36	0	8.2	443	9.0	18.1	24.0
BIG SPIRIT LAKE STATION 54.1 SAMPLED ON 6/27/72 SECCHI DEPTH = 2.2 METERS										
0.0	0.06	0.00	0.02	0.17	0	8.6	441	8.6	21.7	22.9
6.5	0.03	0.01	0.00	0.16	0	7.8	439	8.6	19.8	22.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 7/18/72 SECCHI DEPTH = 2.4 METERS							
0.0	0.01	0.00	0.02	0.43	0	7.4	457	8.5	23.1	27.3
6.5	0.02	0.01	0.02	0.39	0	7.2	457	8.5	22.6	29.8
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 8/ 7/72 SECCHI DEPTH = 1.6 METERS							
0.0	0.02	0.01	0.01	0.21	8	8.5	455	8.6	21.6	23.3
6.4	0.03	0.00	0.01	0.25	7	8.0	455	8.6	21.3	27.9
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 8/23/72 SECCHI DEPTH = 1.8 METERS							
0.0	0.04	0.01	0.03	0.21	1	6.6	436	8.5	23.8	21.4
6.1	0.03	0.01	0.03	0.28	1	7.0	436	8.4	23.2	21.3
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 9/12/72 SECCHI DEPTH = 1.8 METERS							
0.0	0.05	0.01	0.02	0.18	3	8.8	451	8.8	19.2	27.0
6.0	0.05	0.00	0.02	0.18	3	8.8	455	8.8	19.1	25.1
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 9/27/72 SECCHI DEPTH = 1.5 METERS							
0.0	0.06	0.01	0.02	0.19	1	8.5	454	8.7	15.4	21.5
5.8	0.05	0.01	0.04	0.20	1	8.4	455	8.7	15.4	21.7
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 10/18/72 SECCHI DEPTH = 1.9 METERS							
0.0	0.04	0.01	0.04	0.31	4	10.2	500	8.7	8.8	28.2
6.0	0.05	0.01	0.05	0.30	4	10.2	496	8.7	8.8	26.6

DEPTH METERS	TCTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.1 SAMPLED CN 12/18/72 SECCHI DEPTH = **** METERS							
0.0	0.02	0.01	0.16	0.18	0	14.4	502	8.5	0.0	25.7
6.2	0.02	C.01	0.13	0.11	0	14.3	502	8.6	1.4	24.2
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 1/15/73 SECCHI DEPTH = 6.0 METERS							
0.0	0.02	C.01	0.17	0.38	2	15.5	507	8.1	0.0	25.3
6.0	0.02	0.01	0.16	0.36	0	13.1	517	8.0	2.1	23.6
BIG SPIRIT LAKE			STATION 54.1 SAMPLED CN 6/26/73 SECCHI DEPTH = **** METERS							
0.0	0.03	0.00	0.00	0.07	1	7.0	463	8.5	****	26.1
BIG SPIRIT LAKE			STATION 54.1 SAMPLED CN 7/18/73 SECCHI DEPTH = 1.8 METERS							
0.0	0.03	0.02	0.02	0.24	2	6.3	461	8.7	0.0	27.1
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 7/26/73 SECCHI DEPTH = 1.5 METERS							
0.0	0.04	0.01	0.00	0.12	5	7.9	473	8.8	****	26.2
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 8/ 3/73 SECCHI DEPTH = 2.1 METERS							
0.0	0.02	C.02	0.01	0.11	10	7.6	468	8.7	****	29.8
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 8/16/73 SECCHI DEPTH = 1.4 METERS							
0.0	0.04	0.01	0.02	0.15	0	7.0	487	8.7	****	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 8/30/73 SECCHI DEPTH = 0.9 METERS							
0.0	0.06	0.01	0.00	0.15	12	4.5	478	8.5	****	34.9
BIG SPIRIT LAKE			STATION 54.1 SAMPLED ON 9/15/73 SECCHI DEPTH = 1.4 METERS							
0.0	0.03	0.00	0.00	0.17	8	9.3	487	8.7	19.0	28.0
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 6/21/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.01	0.00	0.10	5		480	8.5	22.9	****
6.0	*****	0.02	0.00	0.12	7	8.3	480	8.5	22.3	****
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 7/29/71 SECCHI DEPTH = 0.7 METERS							
0.0	*****	0.00	0.02	0.21	29		451	9.0	21.7	****
6.0	*****	0.00	0.03	0.18	32	8.8	451	****	21.7	****
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 8/10/71 SECCHI DEPTH = 0.8 METERS							
0.0	*****	0.01	0.01	0.20	22		428	9.1	23.0	****
6.0	*****	0.01	0.02	0.26	29	9.1	428	9.0	23.0	****
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 8/26/71 SECCHI DEPTH = 2.6 METERS							
0.0	0.08	0.03	0.02	0.76	9	6.6	446	8.5	24.4	20.7
6.0	0.07	0.04	0.00	0.74	13	7.0	450	8.3	23.6	23.6
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 9/ 2/71 SECCHI DEPTH = 1.2 METERS							
0.0	0.09	0.01	0.06	0.44	11	10.4	450	8.8	23.2	32.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 10/ 1/71 SECCHI DEPTH = 1.1 METERS							
0.0	0.04	0.01	0.03	0.01	15	8.9	414	9.1	17.1	32.8
6.0	0.03	0.00	0.03	0.00	15	8.4	417	9.1	16.6	28.8
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 11/19/71 SECCHI DEPTH = 1.9 METERS							
0.0	0.03	0.01	0.15	0.28	1	10.7	446	8.6	4.7	24.0
6.0	0.04	0.00	0.12	0.26	1	10.8	445	8.5	4.8	24.8
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 1/12/72 SECCHI DEPTH = 5.5 METERS							
0.0	0.02	0.01	0.13	0.10	0	12.8	467	8.0	0.0	23.2
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 2/23/72 SECCHI DEPTH = 6.0 METERS							
0.0	0.03	0.01	0.12	0.18	0	11.4	509	7.9	0.0	28.0
6.0	0.02	0.02	0.14	0.22	0	5.4	496	7.4	4.0	24.0
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 3/20/72 SECCHI DEPTH = 4.0 METERS							
0.0	0.04	0.00	0.11	0.05	0	9.1	273	7.6	1.7	19.2
6.0	0.04	0.00	0.12	0.09	0	12.8	510	7.9	5.0	28.0
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 6/ 5/72 SECCHI DEPTH = 2.4 METERS							
0.0	0.04	0.01	0.00	0.36	3	9.0	439	9.0	20.1	18.4
6.5	0.04	0.01	0.00	0.23	0	9.0	439	9.1	19.9	22.4

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 6/27/72 SECCHI DEPTH = 2.3 METERS							
0.0	0.03	0.01	0.00	0.28	9	8.4	440	8.6	21.3	22.0
6.1	0.01	0.00	0.00	0.12	5	8.3	441	8.6	20.1	20.5
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 7/18/72 SECCHI DEPTH = 2.5 METERS							
0.0	0.01	0.00	0.01	0.30	0	7.5	456	8.6	23.2	24.9
6.3	0.01	0.01	0.02	0.21	1	7.5	455	8.5	22.6	24.3
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 8/ 7/72 SECCHI DEPTH = 1.4 METERS							
0.0	0.03	0.01	0.02	0.16	7	8.2	455	8.7	21.6	28.5
6.1	0.03	0.01	0.03	0.20	5	7.6	455	8.7	21.5	24.0
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 8/23/72 SECCHI DEPTH = 2.1 METERS							
0.0	0.03	0.01	0.03	0.20	2	6.6	436	8.4	23.8	24.6
6.2	0.04	0.01	0.02	0.25	2	6.7	435	8.4	23.7	22.1
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 9/12/72 SECCHI DEPTH = 1.8 METERS							
0.0	0.03	0.01	0.02	0.16	3	8.7	450	8.8	19.1	26.2
6.0	0.05	0.01	0.03	0.17	3	8.5	457	8.8	19.1	26.1
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 9/27/72 SECCHI DEPTH = 1.4 METERS							
0.0	0.05	0.00	0.06	0.21	3	8.4	455	8.6	15.5	23.4
6.0	0.04	0.01	0.06	0.25	3	8.6	455	8.8	15.5	25.4

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 10/18/72 SECCHI DEPTH = 2.0 METERS							
0.0	0.04	0.00	0.03	0.32	4	9.9	502	8.7	8.9	27.9
5.8	0.05	0.01	0.03	0.29	4	10.0	501	8.7	8.9	33.0
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 12/18/72 SECCHI DEPTH = **** METERS							
0.0	0.03	0.01	0.17	0.12	0	14.6	499	8.6	0.0	24.5
6.3	0.02	0.01	0.16	0.14	0	14.4	506	8.5	1.3	23.4
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 1/15/73 SECCHI DEPTH = 5.7 METERS							
0.0	0.02	0.01	0.15	0.23	0	15.1	503	8.0	0.0	23.7
5.7	0.02	0.01	0.17	0.29	0	15.0	496	8.1	1.7	25.9
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 6/26/73 SECCHI DEPTH = **** METERS							
0.0	0.03	0.01	0.00	0.09	8	7.3	462	8.6	****	27.9
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 7/18/73 SECCHI DEPTH = 1.8 METERS							
0.0	0.03	0.02	0.01	0.23	2	6.8	465	8.7	0.0	25.9
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 7/26/73 SECCHI DEPTH = 1.7 METERS							
0.0	0.03	0.01	0.00	0.13	5	8.5	469	8.8	****	27.0
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 8/ 3/73 SECCHI DEPTH = 2.1 METERS							
0.0	0.02	0.02	0.01	0.03	12	7.1	465	8.7	****	24.5

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 8/16/73 SECCHI DEPTH = 1.2 METERS							
0.0	0.04	0.03	0.01	0.19	3	6.0	472	8.5	****	****
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 8/30/73 SECCHI DEPTH = 1.2 METERS							
0.0	0.04	0.02	0.03	0.18	17	5.5	471	8.7	****	27.2
BIG SPIRIT LAKE			STATION 54.2 SAMPLED ON 9/15/73 SECCHI DEPTH = 1.5 METERS							
0.0	0.03	0.01	0.01	0.18	8	7.9	499	8.7	19.0	29.0
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 6/21/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.01	0.00	0.12	8		510	7.3	23.0	****
5.0	*****	0.01	0.00	0.12	5	8.4	481	8.4	22.4	****
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 7/29/71 SECCHI DEPTH = 0.9 METERS							
0.0	*****	0.00	0.05	0.12	21		451	9.0	21.8	****
5.0	*****	0.01	0.03	0.14	20	9.4	453	****	21.8	****
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 8/10/71 SECCHI DEPTH = 1.0 METERS							
0.0	*****	0.00	0.01	0.28	14		438	9.1	22.0	****
5.0	*****	0.01	0.01	0.22	19	8.1	430	9.0	22.0	****
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 8/26/71 SECCHI DEPTH = 2.5 METERS							
0.0	0.07	0.03	0.02	0.74	13	7.4	446	8.5	24.2	21.9
6.0	0.08	0.04	0.02	0.79	12	6.5	450	8.4	23.6	25.7

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 10/ 1/71 SECCHI DEPTH = 0.3 METERS										
0.0	0.20	0.00	0.02	0.01	58	8.6	425	9.0	17.0	73.6
5.0	0.04	0.01	0.02	0.02	13	8.1	425	9.0	16.7	28.8
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 1/12/72 SECCHI DEPTH = 3.5 METERS										
0.0	0.02	0.00	0.12	0.08	0	12.9	467	8.0	0.0	24.8
5.0	0.02	0.01	0.12	0.08	0	12.2	454	8.0	3.4	24.0
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 2/23/72 SECCHI DEPTH = 5.0 METERS										
0.0	0.03	0.01	0.15	0.10	0	12.9	509	7.9	0.0	25.6
5.0	0.02	0.01	0.14	0.12	0	10.6	496	7.9	3.9	24.8
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 5/18/72 SECCHI DEPTH = 2.1 METERS										
0.0	0.01	0.01	0.01	0.03	2	11.0	456	8.9	15.6	27.2
5.2	0.03	0.01	0.01	0.06	2	10.8	456	8.9	15.4	25.6
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 6/ 5/72 SECCHI DEPTH = 2.0 METERS										
0.0	0.04	0.01	0.00	0.23	3	9.1	439	9.0	20.5	20.0
5.9	0.03	0.00	0.03	0.31	1	8.9	439	9.1	20.0	23.2
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 6/27/72 SECCHI DEPTH = 2.7 METERS										
0.0	0.04	0.01	0.00	0.15	0	8.1	440	8.6	20.8	21.6
6.2	0.03	0.01	0.01	0.10	0	8.4	421	8.6	19.2	21.5

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 7/18/72 SECCHI DEPTH = 3.0 METERS										
0.0	0.01	0.00	0.00	0.16	0	7.4	454	8.5	23.3	24.9
6.1	0.01	0.01	0.02	0.13	0	7.1	457	8.5	22.5	22.2
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 8/ 7/72 SECCHI DEPTH = 1.8 METERS										
0.0	0.03	0.02	0.02	0.19	6	8.6	453	8.6	21.5	35.9
6.2	0.03	0.01	0.02	0.15	3	8.2	453	8.7	21.3	32.0
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 8/23/72 SECCHI DEPTH = 1.7 METERS										
0.0	0.04	0.00	0.02	0.21	5	7.0	438	8.5	23.2	21.4
6.2	0.04	0.00	0.02	0.16	2	6.4	437	8.5	23.2	22.2
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 9/12/72 SECCHI DEPTH = 1.8 METERS										
0.0	0.04	0.01	0.03	0.17	3	9.2	459	8.8	19.1	20.0
6.0	0.05	0.01	0.03	0.19	3	8.9	454	8.8	19.1	25.4
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 9/27/72 SECCHI DEPTH = 1.5 METERS										
0.0	0.05	0.01	0.07	0.23	1	8.8	455	8.6	15.5	22.9
6.0	0.06	0.01	0.07	0.22	3	8.5	455	8.8	15.5	22.9
BIG SPIRIT LAKE STATION 54.3 SAMPLED ON 10/18/72 SECCHI DEPTH = 2.0 METERS										
0.0	0.05	0.00	0.05	0.32	3	10.0	503	8.7	8.9	27.7
6.0	0.06	0.01	0.04	0.34	4	10.3	504	8.7	8.9	26.3

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 10/31/72 SECCHI DEPTH = 3.0 METERS							
0.0	0.05	0.01	0.08	0.35	2	11.5	460	8.3	6.9	31.4
6.0	0.04	0.01	0.09	0.35	0	10.9	456	8.4	6.9	22.1
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 11/20/72 SECCHI DEPTH = 6.1 METERS							
0.0	0.04	0.02	0.08	0.32	1	12.2	484	8.2	2.1	25.2
6.1	0.04	0.01	0.08	0.27	1	12.0	485	8.3	2.2	22.7
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 12/18/72 SECCHI DEPTH = **** METERS							
0.0	0.03	0.01	0.17	0.19	0	14.4	508	8.5	0.0	31.7
6.2	0.02	0.01	0.17	0.13	0	14.4	493	8.6	1.3	25.6
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 1/15/73 SECCHI DEPTH = 6.1 METERS							
0.0	0.02	0.01	0.18	0.28	0	14.7	505	8.1	0.1	23.4
6.1	0.02	0.01	0.14	0.34	0	15.1	507	8.1	2.1	25.5
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 5/ 4/73 SECCHI DEPTH = 1.8 METERS							
0.0	0.01	0.01	0.01	0.11	1	10.8	464	8.7	9.7	27.7
6.0	0.01	0.00	0.01	0.15	1	10.2	465	8.7	9.5	27.2
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 5/15/73 SECCHI DEPTH = 3.4 METERS							
0.0	0.02	0.01	0.00	0.23	3	9.7	482	8.6	11.9	55.0
6.0	0.03	0.01	0.01	0.25	3	9.7	480	8.6	11.8	37.8

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 6/26/73 SECCHI DEPTH = **** METERS							
0.0	0.03	0.01	0.00	0.11	6	7.1	462	8.5	****	27.0
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 7/18/73 SECCHI DEPTH = 2.3 METERS							
0.0	0.04	0.02	0.02	0.23	6	6.5	468	8.7	0.0	24.1
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 7/26/73 SECCHI DEPTH = 1.8 METERS							
0.0	0.04	0.04	0.00	0.11	4	7.4	473	8.8	****	27.0
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 8/ 3/73 SECCHI DEPTH = 2.3 METERS							
0.0	0.02	0.01	0.02	0.04	4	7.6	466	8.7	****	24.1
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 8/16/73 SECCHI DEPTH = 1.5 METERS							
0.0	0.04	0.01	0.01	0.19	2	6.9	488	8.6	****	****
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 8/30/73 SECCHI DEPTH = 1.2 METERS							
0.0	0.04	0.02	0.02	0.23	14	5.9	480	8.7	****	28.1
BIG SPIRIT LAKE			STATION 54.3 SAMPLED ON 9/15/73 SECCHI DEPTH = 1.5 METERS							
0.0	0.04	0.01	0.00	0.17	9	7.9	481	8.8	19.0	27.2
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 6/21/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.01	0.00	0.17	10		423	8.7	23.3	****
6.0	*****	0.00	0.00	0.18	10	8.3	407	8.5	22.7	****

DEPTH METERS	TOTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 7/29/71 SECCHI DEPTH = 0.9 METERS							
0.0	*****	0.01	0.03	C.19	22		454	9.0	21.7	****
6.0	*****	0.01	0.03	C.46	38	9.6	457	****	21.7	****
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 8/10/71 SECCHI DEPTH = 1.0 METERS							
0.0	*****	0.00	0.03	C.18	19		437	9.1	22.0	****
6.0	*****	0.03	0.01	0.40	13	5.2	448	8.7	21.0	****
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 8/26/71 SECCHI DEPTH = 3.0 METERS							
0.0	0.07	0.05	0.02	0.78	13	6.9	451	8.5	23.8	20.6
6.0	0.12	C.06	0.02	C.75	13	6.2	450	8.3	23.3	21.2
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 9/ 2/71 SECCHI DEPTH = 2.0 METERS							
0.0	0.08	0.03	0.04	0.59	4	8.9	452	8.6	23.2	28.6
6.0	0.10	0.03	0.04	0.60	6	8.6	454	8.6	23.1	25.9
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 10/ 1/71 SECCHI DEPTH = **** METERS							
0.0	0.03	0.01	0.03	0.00	16	8.7	430	8.9	17.5	34.4
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 11/19/71 SECCHI DEPTH = 2.2 METERS							
C.0	0.03	C.01	0.12	C.28	1	11.4	449	8.4	4.7	30.4
6.0	0.03	0.00	0.13	C.23	2	11.5	449	8.5	4.7	25.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON			1/12/72	SECCHI DEPTH = 4.5 METERS			
0.0	0.03	0.01	0.13	0.08	0	10.7	467	7.9	0.0	24.8
6.0	0.02	0.00	0.13	0.10	0	9.4	455	7.8	3.2	22.4
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON			2/23/72	SECCHI DEPTH = 6.0 METERS			
0.0	0.03	0.01	0.15	0.18	0	12.2	508	7.9	0.0	28.0
6.0	0.02	0.02	0.11	0.37	0	5.6	495	7.4	4.0	23.2
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON			3/20/72	SECCHI DEPTH = 3.0 METERS			
0.0	0.06	0.01	0.19	0.18	1	8.8	412	7.6	1.8	26.4
6.0	0.03	0.01	0.12	0.15	0	9.8	508	7.7	3.8	36.8
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON			5/18/72	SECCHI DEPTH = 2.5 METERS			
0.0	0.04	0.02	0.01	0.08	2	10.7	458	8.9	14.8	26.4
6.2	0.02	0.01	0.01	0.08	5	10.7	503	9.4	14.4	36.0
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON			6/ 5/72	SECCHI DEPTH = 2.2 METERS			
0.0	0.01	0.00	0.00	0.25	2	8.8	439	9.0	20.5	19.2
6.3	0.02	0.00	0.02	0.20	7	8.1	441	9.1	18.4	20.8
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON			6/27/72	SECCHI DEPTH = 2.6 METERS			
0.0	0.04	0.01	0.00	0.13	0	8.4	440	8.6	20.2	23.2
6.5	0.03	0.00	0.00	0.33	18	7.9	462	9.5	19.2	25.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 7/18/72 SECCHI DEPTH = 3.2 METERS							
0.0	0.01	0.00	0.02	0.22	2	7.3	457	8.5	23.1	22.6
6.2	0.02	0.01	0.02	0.19	3	6.7	458	8.4	22.6	23.5
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 8/ 7/72 SECCHI DEPTH = 1.8 METERS							
0.0	0.03	0.00	0.01	0.12	4	8.3	453	8.7	21.5	34.2
6.1	0.03	0.01	0.02	0.16	3	8.1	454	8.7	21.3	34.4
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 8/23/72 SECCHI DEPTH = 1.4 METERS							
0.0	0.04	0.01	0.02	0.17	1	6.8	446	8.5	22.9	22.6
6.1	0.04	0.01	0.01	0.18	2	6.9	441	8.3	22.9	22.5
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 9/12/72 SECCHI DEPTH = 1.9 METERS							
0.0	0.03	0.01	0.02	0.13	3	8.4	465	8.8	19.0	29.5
6.0	0.05	0.01	0.01	0.15	3	8.5	460	8.8	19.0	25.4
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 9/27/72 SECCHI DEPTH = 1.2 METERS							
0.0	0.06	0.01	0.04	0.23	9	8.5	456	8.7	15.4	24.5
6.0	0.07	0.01	0.03	0.24	5	8.4	456	8.8	15.5	24.0
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 10/18/72 SECCHI DEPTH = 1.6 METERS							
0.0	0.05	0.01	0.03	0.31	3	10.1	497	8.7	8.5	26.2
5.9	0.04	0.01	0.04	0.29	3	10.2	497	8.7	8.5	28.3

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 10/31/72 SECCHI DEPTH = 3.1 METERS							
0.0	0.04	0.01	0.08	0.38	1	10.5	466	8.3	6.9	21.2
6.0	0.05	0.01	0.08	0.38	1	10.4	459	8.4	6.9	24.5
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 11/20/72 SECCHI DEPTH = 6.0 METERS							
0.0	0.04	0.02	0.08	0.32	1	12.5	481	7.7	2.2	22.8
6.0	0.03	0.01	0.07	0.28	1	12.0	486	8.4	2.3	22.9
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 12/18/72 SECCHI DEPTH = **** METERS							
0.0	0.02	0.01	0.16	0.10	0	14.4	500	8.6	0.2	25.2
5.8	0.03	0.01	0.17	0.14	0	14.6	502	8.6	1.5	25.2
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 1/15/73 SECCHI DEPTH = 6.0 METERS							
0.0	0.02	0.01	0.13	0.30	4	15.2	518	8.1	0.0	25.3
6.0	0.02	0.01	0.12	0.29	0	13.7	502	8.0	2.2	26.6
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 3/ 1/73 SECCHI DEPTH = 5.3 METERS							
0.0	0.02	0.01	0.24	0.23	0	15.1	526	8.2	0.9	28.2
6.0	0.03	0.01	0.22	0.26	0	10.6	524	7.7	4.2	26.9
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 5/ 4/73 SECCHI DEPTH = 1.8 METERS							
0.0	0.01	0.00	0.01	0.11	1	10.4	467	8.7	9.4	27.6
6.0	0.01	0.00	0.01	0.12	1	10.2	467	8.6	9.2	30.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE STATION 54.4 SAMPLED ON 5/15/73 SECCHI DEPTH = 3.1 METERS										
0.0	0.02	0.01	0.00	0.24	3	10.0	482	8.6	11.6	29.3
6.0	0.02	0.01	0.00	0.26	3	10.1	481	8.6	11.6	37.9
BIG SPIRIT LAKE STATION 54.4 SAMPLED ON 6/26/73 SECCHI DEPTH = **** METERS										
0.0	0.03	0.01	0.00	0.07	8	6.7	467	8.4	****	27.5
BIG SPIRIT LAKE STATION 54.4 SAMPLED ON 7/18/73 SECCHI DEPTH = 2.0 METERS										
0.0	0.04	0.03	0.02	0.22	12	6.6	462	8.7	0.0	24.5
BIG SPIRIT LAKE STATION 54.4 SAMPLED ON 7/26/73 SECCHI DEPTH = 1.7 METERS										
0.0	0.03	0.01	0.00	0.13	3	7.9	474	8.8	****	27.4
BIG SPIRIT LAKE STATION 54.4 SAMPLED ON 8/ 3/73 SECCHI DEPTH = 2.0 METERS										
0.0	0.02	0.01	0.01	0.04	0	7.8	465	8.6	****	24.9
BIG SPIRIT LAKE STATION 54.4 SAMPLED ON 8/16/73 SECCHI DEPTH = 1.5 METERS										
0.0	0.04	0.02	0.00	0.17	6	6.3	484	8.5	****	****
BIG SPIRIT LAKE STATION 54.4 SAMPLED ON 8/30/73 SECCHI DEPTH = 1.1 METERS										
0.0	0.04	0.01	0.01	0.19	11	5.3	465	8.6	****	28.5

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
BIG SPIRIT LAKE			STATION 54.4 SAMPLED ON 9/15/73 SECCHI DEPTH = 1.2 METERS							
0.0	0.04	0.01	0.00	0.18	9	9.5	513	8.8	19.0	27.8
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 3/ 8/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.13	0.20	0.95	17	8.8	572	6.5	0.0	****
2.0	*****	0.16	0.27	1.45	26	6.7	569	7.7	2.0	****
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 3/25/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.07	0.15	0.68	3	10.0	519	7.2	1.0	****
2.0	*****	0.07	0.00	0.61	20	9.9	580	6.5	2.0	****
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 5/ 3/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.01	0.01	0.23	19	10.0	477	8.9	11.0	****
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 5/27/71 SECCHI DEPTH = **** METERS							
0.0	*****	0.03	0.03	0.43	20	11.0	488	8.4	11.0	****
2.0	*****	0.03	0.02	0.48	24	10.7	488	8.4	11.0	****
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 6/23/71 SECCHI DEPTH = 0.7 METERS							
0.0	*****	0.01	0.07	0.23	22		461	8.9	24.8	****
2.0	*****	0.01	0.11	0.26	33	11.0	459	9.0	24.4	****
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 7/ 2/71 SECCHI DEPTH = 1.0 METERS							
0.0	*****	0.00	0.03	0.21	25		446	7.8	24.6	****
2.0	*****	0.00	0.03	0.19	21	11.7	446	7.9	23.8	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 7/15/71			SECCHI DEPTH = 0.8 METERS				
0.0	*****	0.03	0.05	0.26	32		423	9.1	23.5	****
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 7/21/71			SECCHI DEPTH = 0.8 METERS				
0.0	*****	0.04	0.03	0.84	78		467	9.0	23.9	****
2.0	*****	0.04	0.03	0.72	32	9.0	468	9.1	23.8	****
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 8/10/71			SECCHI DEPTH = 0.5 METERS				
0.0	*****	0.04	0.11	0.44	45	8.4	427	9.4	23.5	62.6
2.0	*****	0.04	0.08	0.34	38	8.1	425	9.4	23.5	54.9
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 8/20/71			SECCHI DEPTH = 0.7 METERS				
0.0	0.23	0.11	0.04	0.53	27	4.7	443	9.2	24.4	59.1
2.0	*****	0.13	0.04	0.56	35	4.2	443	9.3	24.4	59.2
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 9/ 9/71			SECCHI DEPTH = 0.5 METERS				
0.0	0.26	0.16	0.29	1.70	35	5.2	532	8.1	20.4	****
2.0	0.30	0.17	0.29	1.68	38	5.4	529	8.1	20.5	35.2
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 9/28/71			SECCHI DEPTH = 0.8 METERS				
0.0	0.18	0.07	0.22	0.19	23	7.1	522	8.0	16.1	48.8
2.0	0.18	0.07	0.23	0.19	21	7.1	519	8.1	16.0	48.0

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 10/20/71 SECCHI DEPTH = 1.6 METERS										
0.0	0.16	0.07	0.07	0.30	0	8.8	503	8.4	14.7	50.4
2.0	0.16	0.06	0.09	0.22	5	8.8	503	8.4	14.7	38.4
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 11/11/71 SECCHI DEPTH = 1.2 METERS										
0.0	0.21	0.13	0.29	0.98	10	11.4	503	8.2	3.3	34.4
2.0	0.15	0.12	0.26	0.99	11	11.3	532	8.2	4.5	33.6
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 1/10/72 SECCHI DEPTH = 2.0 METERS										
0.0	0.21	0.12	0.32	0.62	2	4.8	575	7.3	1.2	35.2
2.0	0.23	0.12	0.29	0.79	8	4.4	586	7.3	3.4	39.2
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 2/24/72 SECCHI DEPTH = 1.7 METERS										
0.0	0.26	0.15	0.20	1.09	1	0.6	686	7.2	0.0	32.0
1.7	0.27	0.13	0.18	1.11	0	0.6	688	7.2	3.1	32.8
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 5/ 4/72 SECCHI DEPTH = 2.0 METERS										
0.0	0.07	0.03	0.09	0.24	2	9.7	447	7.9	11.6	28.0
2.0	0.09	0.04	0.08	0.29	2	9.6	447	7.9	11.6	31.2
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 6/ 1/72 SECCHI DEPTH = 0.6 METERS										
0.0	0.08	0.01	0.08	0.35	17	9.5	462	8.7	18.3	38.0
2.2	0.10	0.01	0.08	0.35	20	9.4	462	8.8	17.9	30.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 6/13/72 SECCHI DEPTH = 0.4 METERS										
0.0	0.11	0.01	0.09	0.71	55	7.5	438	8.6	20.9	44.8
2.0	0.12	0.01	0.11	0.78	71	7.5	446	8.6	20.8	39.2
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 6/28/72 SECCHI DEPTH = 0.4 METERS										
0.0	0.11	0.01	0.06	0.58	60	10.5	421	9.3	22.1	69.6
2.0	0.12	0.02	0.06	0.95	64	10.4	410	9.3	21.9	63.3
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 8/ 1/72 SECCHI DEPTH = 0.9 METERS										
0.0	0.13	0.03	0.05	0.56	10	8.3	400	9.1	23.8	60.5
2.1	0.13	0.01	0.05	0.63	16	8.0	430	10.2	23.8	55.2
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 8/24/72 SECCHI DEPTH = 1.4 METERS										
0.0	0.23	0.07	0.03	0.90	14	4.5	403	9.3	21.2	56.6
1.9	0.21	0.06	0.03	0.69	5	4.4	405	9.2	21.0	52.2
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 9/ 6/72 SECCHI DEPTH = 0.8 METERS										
0.0	0.24	0.08	0.06	1.20	13	7.6	435	8.6	19.0	52.6
2.0	0.23	0.08	0.06	1.10	9	7.7	432	8.6	19.0	49.8
LAKE EAST OKOBOJI STATION 55.0 SAMPLED ON 9/22/72 SECCHI DEPTH = 0.6 METERS										
0.0	0.24	0.03	0.03	0.21	23	7.6	426	9.1	17.9	80.2
2.0	0.25	0.03	0.03	0.27	22	7.4	422	9.1	17.9	73.9

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI — STATION 55.0 SAMPLED ON 10/ 5/72 SECCHI DEPTH = 1.0 METERS										
0.0	0.19	0.03	0.04	0.44	28	10.6	442	9.5	15.2	60.2
1.9	0.18	0.04	0.04	0.43	29	10.7	444	9.5	15.2	60.4
LAKE EAST OKOBOJI — STATION 55.0 SAMPLED ON 10/27/72 SECCHI DEPTH = 1.0 METERS										
0.0	0.18	0.06	0.08	0.57	28	9.9	466	9.0	6.9	56.0
1.9	0.20	0.06	0.08	0.62	24	9.9	460	9.0	6.9	61.6
LAKE EAST OKOBOJI — STATION 55.0 SAMPLED ON 12/21/72 SECCHI DEPTH = 1.9 METERS										
0.0	0.25	0.15	0.58	1.35	8	7.5	517	8.0	0.4	51.5
1.9	0.23	0.15	0.57	1.29	11	7.1	507	7.9	2.6	49.9
LAKE EAST OKOBOJI — STATION 55.0 SAMPLED ON 1/26/73 SECCHI DEPTH = 2.0 METERS										
0.0	0.34	0.19	0.37	1.87	4	1.5	569	7.4	0.6	44.1
LAKE EAST OKOBOJI — STATION 55.0 SAMPLED ON 3/ 5/73 SECCHI DEPTH = 0.7 METERS										
0.0	0.49	0.38	0.38	1.78	56	9.3	306	7.3	1.1	50.5
LAKE EAST OKOBOJI — STATION 55.0 SAMPLED ON 4/18/73 SECCHI DEPTH = 2.0 METERS										
0.0	0.03	0.03	0.15	0.53	7	10.9	466	8.4	9.3	21.5
LAKE EAST OKOBOJI — STATION 55.0 SAMPLED ON 5/18/73 SECCHI DEPTH = 0.8 METERS										
0.0	0.04	0.01	0.07	0.37	15	9.8	504	8.7	13.6	29.0

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 5/30/73 SECCHI DEPTH = 1.0 METERS							
0.0	0.03	0.01	0.21	0.48	5	10.6	487	8.0	16.4	24.6
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 6/21/73 SECCHI DEPTH = 0.9 METERS							
0.0	0.06	0.01	0.29	0.09	18	5.9	525	8.5	18.9	28.0
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 6/28/73 SECCHI DEPTH = 0.6 METERS							
0.0	0.07	0.01	0.22	0.05	17	6.0	494	8.7	21.0	29.7
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 7/10/73 SECCHI DEPTH = 0.4 METERS							
0.0	0.06	0.02	0.02	0.09	27	6.7	486	8.7	25.7	31.6
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 7/19/73 SECCHI DEPTH = 0.7 METERS							
0.0	0.05	0.04	0.00	0.17	17	6.0	492	8.7	25.0	30.8
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 7/25/73 SECCHI DEPTH = 0.8 METERS							
0.0	0.16	0.05	0.00	0.07	14	6.4	450	8.9	22.8	42.3
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 8/ 8/73 SECCHI DEPTH = 0.5 METERS							
0.0	0.07	0.01	0.00	0.24	33	5.5	485	8.8	23.8	42.6
LAKE EAST OKOBOJI			STATION 55.0 SAMPLED ON 8/15/73 SECCHI DEPTH = 0.4 METERS							
0.0	0.06	0.01	0.00	0.19	31	5.5	476	8.7	23.5	36.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON			6/23/71	SECCHI DEPTH = 0.4 METERS			
0.0	*****	0.02	0.11	0.56	60		445	8.9	25.1	****
2.0	*****	0.02	*****	0.63	48	10.5	443	8.9	24.3	****
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON			7/ 2/71	SECCHI DEPTH = 0.8 METERS			
0.0	*****	0.00	0.04	0.30	36		429	8.9	24.5	****
2.0	*****	0.00	0.05	0.36	40	12.2	429	8.9	24.3	****
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON			7/15/71	SECCHI DEPTH = 0.7 METERS			
0.0	*****	0.03	0.06	0.29	34		405	9.6	24.0	****
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON			7/21/71	SECCHI DEPTH = 0.5 METERS			
0.0	*****	0.05	0.06	0.97	32		462	9.0	23.9	****
2.0	*****	0.07	0.05	0.86	38	7.7	462	9.1	23.8	****
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON			8/10/71	SECCHI DEPTH = 0.4 METERS			
0.0	*****	0.04	0.09	0.38	48	8.6	415	9.4	23.3	63.8
2.0	*****	0.01	0.12	0.33	60	8.9	419	9.4	23.3	64.5
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON			8/20/71	SECCHI DEPTH = 0.4 METERS			
0.0	0.23	0.08	0.04	0.31	70	4.7	429	9.3	24.6	90.0
2.0	*****	0.08	0.06	0.32	87	4.6	431	9.3	24.6	80.1

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 9/ 9/71 SECCHI DEPTH = 0.4 METERS							
0.0	0.25	0.06	0.04	0.37	66	6.5	460	9.2	20.8	68.8
2.0	0.27	0.06	0.06	0.34	64	7.2	460	9.2	21.0	73.6
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 9/28/71 SECCHI DEPTH = 0.8 METERS							
0.0	0.17	0.05	0.11	0.26	29	8.8	482	9.4	16.4	56.0
2.0	0.23	0.07	0.05	0.27	35	8.8	476	9.4	16.4	65.6
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 10/20/71 SECCHI DEPTH = 0.5 METERS							
0.0	0.35	0.06	0.06	0.28	42	7.7	471	9.2	15.2	73.6
2.0	0.22	0.06	0.10	0.29	35	7.9	476	9.3	15.3	65.6
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 11/11/71 SECCHI DEPTH = 2.0 METERS							
0.0	0.25	0.13	0.16	1.61	2	11.6	498	8.2	2.6	39.2
2.0	0.26	0.14	0.21	1.58	4	11.5	509	8.2	4.2	35.2
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 1/10/72 SECCHI DEPTH = 2.0 METERS							
0.0	0.27	0.16	0.27	1.95	8	2.9	587	7.4	0.2	36.0
2.0	0.29	0.17	0.25	2.00	3	1.9	592	7.4	3.1	37.6
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 2/24/72 SECCHI DEPTH = 2.0 METERS							
0.0	0.46	0.25	0.13	2.95	0	0.2	716	7.2	0.1	35.2
2.0	0.52	0.30	0.10	2.90	0	0.1	716	7.2	3.3	37.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 3/22/72 SECCHI DEPTH = 1.0 METERS							
1.5	0.14	0.04	0.12	0.38	4	25.8	561	8.9	6.6	36.8
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 5/ 4/72 SECCHI DEPTH = 0.5 METERS							
0.0	0.11	0.01	0.18	0.21	20	10.4	412	8.9	11.7	26.4
2.1	0.12	0.01	0.25	0.21	19	10.4	420	8.8	11.6	35.2
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 6/ 1/72 SECCHI DEPTH = 0.8 METERS							
0.0	0.07	0.01	0.18	0.38	12	11.8	460	8.9	18.4	36.3
2.3	0.08	0.02	0.18	0.38	12	11.5	462	8.9	17.9	41.5
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 6/13/72 SECCHI DEPTH = 0.5 METERS							
0.0	0.18	0.00	0.04	0.35	65	13.2	416	9.0	22.8	62.4
2.1	0.18	0.00	0.06	0.40	60	9.9	431	8.8	21.0	53.6
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 6/28/72 SECCHI DEPTH = 0.4 METERS							
0.0	0.21	0.01	0.07	1.14	88	8.7	407	9.3	22.3	77.5
2.0	0.18	0.01	0.07	0.99	64	8.5	431	9.2	22.1	77.8
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 8/ 1/72 SECCHI DEPTH = 0.8 METERS							
0.0	0.21	0.06	0.06	0.91	15	7.4	395	8.9	24.0	51.8
2.2	0.19	0.06	0.04	0.95	17	7.4	393	8.9	24.0	54.1

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 8/24/72 SECCHI DEPTH = 0.6 METERS							
0.0	0.24	0.07	0.06	0.59	31	5.0	515	10.0	21.4	60.6
2.0	0.25	0.06	0.05	0.55	27	4.8	419	9.1	21.5	56.9
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 9/ 6/72 SECCHI DEPTH = 0.6 METERS							
0.0	0.28	0.06	0.06	0.39	28	8.8	435	8.9	19.5	66.4
2.0	0.25	0.05	0.05	0.51	27	8.6	436	8.8	19.5	59.2
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 9/22/72 SECCHI DEPTH = 0.6 METERS							
0.0	0.25	0.03	0.06	0.27	30	7.4	428	9.0	18.1	62.7
2.0	0.17	0.03	0.05	0.28	18	7.6	427	9.2	17.9	58.0
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 10/ 5/72 SECCHI DEPTH = 0.9 METERS							
0.0	0.18	0.02	0.03	0.47	57	9.9	449	9.5	15.1	70.9
1.9	0.18	0.01	0.04	0.42	49	9.8	443	9.5	15.1	65.1
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 10/27/72 SECCHI DEPTH = 1.0 METERS							
0.0	0.16	0.02	0.07	0.64	27	10.2	454	9.1	7.0	62.0
1.9	0.22	0.01	0.09	0.64	23	10.1	466	9.1	7.0	67.6
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 12/21/72 SECCHI DEPTH = 1.8 METERS							
0.0	0.21	0.14	0.92	1.42	3	7.6	543	8.1	1.2	46.0
2.0	0.21	0.14	0.88	1.46	9	7.5	532	8.1	2.5	47.0

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 1/26/73	SECCHI DEPTH = 1.5 METERS						
0.0	0.42	0.28	0.81	2.20	14	1.2	478	7.2	0.5	46.0
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 3/ 5/73	SECCHI DEPTH = 1.1 METERS						
0.0	0.18	0.15	2.60	1.28	17	6.4	427	7.1	1.2	32.6
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 4/18/73	SECCHI DEPTH = 2.1 METERS						
0.0	0.03	0.03	0.26	0.63	5	10.3	456	8.4	9.4	28.4
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 5/18/73	SECCHI DEPTH = 1.1 METERS						
0.0	0.05	0.01	0.26	0.35	12	10.1	503	8.7	14.0	30.2
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 5/30/73	SECCHI DEPTH = 1.3 METERS						
0.0	0.04	0.01	0.33	0.43	11	11.3	484	8.6	16.4	28.7
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 6/21/73	SECCHI DEPTH = 0.9 METERS						
0.0	0.06	0.01	0.90	0.11	11	6.8	536	8.4	19.1	28.3
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 6/28/73	SECCHI DEPTH = 0.5 METERS						
0.0	0.11	0.00	0.36	0.01	19	6.4	513	8.6	21.2	27.8
LAKE EAST OKOBOJI			STATION 55.1 SAMPLED ON 7/10/73	SECCHI DEPTH = 0.5 METERS						
0.0	0.09	0.01	0.02	0.17	33	5.9	476	8.8	26.0	48.7

DEPTH METERS	TCTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NF3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PF	TEMP C	COD MG/L
LAKE EAST OKOBOJI STATION 55.1 SAMPLED CN 7/19/73 SECCHI DEPTH = 0.6 METERS										
0.0	0.07	0.02	0.00	0.21	24	6.9	457	8.9	24.6	44.2
LAKE EAST OKOBOJI STATION 55.1 SAMPLED CN 7/25/73 SECCHI DEPTH = 0.8 METERS										
0.0	0.06	0.02	0.00	0.38	8	6.7	454	8.8	23.1	32.6
LAKE EAST OKOBOJI STATION 55.1 SAMPLED ON 8/ 8/73 SECCHI DEPTH = 0.5 METERS										
0.0	C.12	C.05	0.02	0.39	31	6.1	449	8.9	24.9	43.0
LAKE EAST OKOBOJI STATION 55.1 SAMPLED ON 8/15/73 SECCHI DEPTH = 0.8 METERS										
0.0	0.09	0.02	0.01	C.19	24	6.4	432	9.0	24.2	37.4
LAKE EAST CKOBOJI STATION 56.0 SAMPLED ON 3/10/71 SECCHI DEPTH = **** METERS										
0.C	*****	0.84	1.95	1.72	58	6.5	331	7.8	2.0	****
3.0	*****	0.46	1.02	1.55	46	5.5	470	7.6	2.0	****
LAKE EAST OKOBOJI STATION 56.C SAMPLED CN 3/25/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.21	0.27	C.84	27	10.3	220	7.6	1.0	****
LAKE EAST OKOBOJI STATION 56.0 SAMPLED ON 5/ 3/71 SECCHI DEPTH = **** METERS										
C.0	*****	0.01	0.01	C.39	19	12.7	447	9.2	12.0	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 5/27/71				SECCHI DEPTH = **** METERS			
0.0	*****	0.07	0.09	0.58	9	10.2	477	8.4	12.0	****
3.0	*****	0.07	0.10	0.57	11	10.7	477	8.5	12.0	****
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 6/23/71				SECCHI DEPTH = 1.1 METERS			
0.0	*****	0.03	0.05	0.33	10		440	8.7	24.5	****
3.0	*****	0.04	0.05	0.28	18	10.5	442	8.7	24.1	****
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 7/ 2/71				SECCHI DEPTH = 0.8 METERS			
0.0	*****	0.00	0.04	0.28	32		433	8.7	24.5	****
3.0	*****	0.01	0.05	0.33	38	11.2	433	8.6	24.2	****
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 7/15/71				SECCHI DEPTH = 0.5 METERS			
0.0	*****	0.06	0.10	0.58	38		405	9.4	24.0	****
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 7/21/71				SECCHI DEPTH = 0.6 METERS			
0.0	*****	0.05	0.09	0.73	52		457	9.1	24.2	****
3.0	*****	0.04	0.08	0.72	51	9.2	457	9.1	24.0	****
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 8/10/71				SECCHI DEPTH = 0.4 METERS			
0.0	*****	0.07	0.06	0.32	42	8.4	449	9.1	23.4	70.9
3.0	*****	0.06	0.11	0.32	41	7.6	450	9.0	23.4	52.9

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 8/20/71			SECCHI DEPTH = 0.7 METERS				
0.0	0.23	0.13	0.04	0.62	34	5.6	462	8.5	24.8	43.8
3.0	*****	0.13	0.05	0.63	33	5.3	476	8.5	24.8	46.9
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 9/ 9/71			SECCHI DEPTH = 0.8 METERS				
0.0	0.24	0.10	0.07	0.49	20	7.7	479	8.8	21.1	40.0
3.0	0.19	0.11	0.10	0.42	19	7.6	479	8.8	21.1	56.0
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 9/28/71			SECCHI DEPTH = 0.6 METERS				
0.0	0.23	0.06	0.17	0.30	32	7.7	498	9.1	16.7	62.4
3.0	0.23	0.03	0.05	0.19	32	8.0	492	9.1	16.6	56.0
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 10/20/71			SECCHI DEPTH = 1.0 METERS				
0.0	0.21	0.09	0.15	0.56	15	7.9	469	8.9	14.7	30.4
3.0	0.22	0.08	0.15	0.58	13	7.8	469	8.9	14.8	31.2
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 11/11/71			SECCHI DEPTH = 2.5 METERS				
0.0	0.23	0.14	0.23	1.30	3	11.4	481	8.4	2.3	33.6
3.0	0.22	0.13	0.20	1.23	2	11.3	481	8.4	2.9	32.6
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 1/10/72			SECCHI DEPTH = 2.5 METERS				
0.0	0.25	0.14	0.30	0.92	6	12.0	510	7.7	0.4	35.2
3.0	0.25	0.14	0.28	0.95	6	10.9	510	7.7	2.6	33.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 2/24/72				SECCHI DEPTH = 2.5 METERS			
0.0	0.27	0.14	0.42	1.10	1	9.7	573	7.4	0.0	31.2
2.5	0.27	0.13	0.50	1.00	1	8.0	569	7.4	2.2	30.4
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 3/22/72				SECCHI DEPTH = 1.5 METERS			
0.0	0.34	0.16	0.77	1.00	8	10.4	411	7.4	1.7	32.0
2.0	0.30	0.15	0.99	0.98	7	8.8	484	7.3	5.0	31.2
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 5/ 4/72				SECCHI DEPTH = 0.7 METERS			
0.0	0.12	0.00	0.37	0.22	20	10.2	447	8.8	11.0	39.2
2.8	0.06	0.00	0.48	0.21	20	10.1	447	8.8	10.9	34.4
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 6/ 1/72				SECCHI DEPTH = 1.8 METERS			
0.0	0.10	0.03	0.22	0.37	9	8.9	473	8.7	18.8	31.1
2.8	0.11	0.04	0.20	0.37	7	8.2	469	8.6	18.7	27.9
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 6/13/72				SECCHI DEPTH = 0.4 METERS			
0.0	0.38	0.02	0.03	0.30	75	12.8	427	9.0	24.0	99.9
2.5	0.27	0.02	0.04	0.30	60	12.8	427	9.0	23.9	81.6
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 6/28/72				SECCHI DEPTH = 0.5 METERS			
0.0	0.18	0.02	0.03	0.78	33	12.5	422	9.1	22.3	69.5
2.2	0.15	0.02	0.06	0.78	42	11.5	407	9.1	21.8	64.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 8/ 1/72 SECCHI DEPTH = 1.5 METERS							
0.0	0.18	0.06	0.12	0.63	14	10.1	418	8.9	24.2	46.6
2.2	0.22	0.07	0.14	0.48	8	9.4	418	8.9	24.2	52.1
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 8/24/72 SECCHI DEPTH = 0.9 METERS							
0.0	0.20	0.07	0.05	0.45	12	5.0	436	8.8	22.4	37.3
2.1	0.24	0.08	0.04	0.41	10	5.9	437	8.8	22.3	35.1
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 9/22/72 SECCHI DEPTH = 0.7 METERS							
0.0	0.16	0.06	0.04	0.21	15	7.7	438	8.9	18.6	36.7
2.3	0.20	0.05	0.04	0.21	16	8.5	438	8.8	18.6	41.7
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 10/ 5/72 SECCHI DEPTH = 1.7 METERS							
0.0	0.16	0.08	0.04	0.42	9	9.6	447	9.2	14.8	38.1
2.0	0.21	0.08	0.03	0.41	13	9.6	449	9.2	14.8	33.7
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 10/27/72 SECCHI DEPTH = 1.3 METERS							
0.0	0.22	0.09	0.16	0.65	24	10.7	461	8.6	7.2	38.1
2.2	0.19	0.10	0.15	0.56	18	10.7	470	8.6	7.2	42.2
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON 12/21/72 SECCHI DEPTH = 2.4 METERS							
0.0	0.22	0.17	0.49	0.86	2	11.9	460	8.3	0.2	32.1
2.4	0.21	0.16	0.44	0.93	2	12.0	456	8.3	0.4	33.0

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI STATION 56.0 SAMPLED ON 1/26/73 SECCHI DEPTH = 2.5 METERS										
0.0	0.39	0.27	1.95	1.39	17	10.4	422	7.3	0.4	41.7
3.0	0.25	0.17	0.43	1.07	3	11.1	538	7.8	1.8	42.9
LAKE EAST OKOBOJI STATION 56.0 SAMPLED ON 3/ 5/73 SECCHI DEPTH = 0.4 METERS										
0.0	0.93	0.52	1.80	3.05	58	5.9	266	6.9	0.5	77.8
LAKE EAST OKOBOJI STATION 56.0 SAMPLED ON 4/18/73 SECCHI DEPTH = 1.5 METERS										
0.0	0.04	0.01	0.69	0.42	7	11.0	456	8.6	8.9	22.9
LAKE EAST OKOBOJI STATION 56.0 SAMPLED ON 5/18/73 SECCHI DEPTH = 1.0 METERS										
0.0	0.07	0.01	0.56	0.36	13	11.2	492	8.8	14.6	30.3
LAKE EAST OKOBOJI STATION 56.0 SAMPLED ON 5/30/73 SECCHI DEPTH = 1.4 METERS										
0.0	0.04	0.01	0.60	0.41	14	9.9	474	8.6	16.1	25.5
LAKE EAST OKOBOJI STATION 56.0 SAMPLED ON 6/21/73 SECCHI DEPTH = 1.0 METERS										
0.0	0.13	0.04	0.59	0.13	7	5.9	524	8.4	19.5	26.1
LAKE EAST OKOBOJI STATION 56.0 SAMPLED ON 6/28/73 SECCHI DEPTH = 0.7 METERS										
0.0	0.11	0.02	0.65	0.00	11	7.0	497	8.8	21.5	30.2

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON			7/10/73 SECCHI DEPTH = 1.2 METERS				
0.0	0.08	0.02	0.26	0.07	13	5.9	463	8.8	25.3	31.6
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON			7/19/73 SECCHI DEPTH = 1.8 METERS				
0.0	0.08	0.05	0.00	0.18	3	5.4	454	8.8	24.0	31.4
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON			7/25/73 SECCHI DEPTH = 0.6 METERS				
0.0	0.06	0.02	0.01	0.23	15	5.8	484	8.8	23.7	33.3
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON			8/ 8/73 SECCHI DEPTH = 0.4 METERS				
0.0	0.21	0.04	0.01	0.24	64	7.7	425	9.1	25.0	50.4
LAKE EAST OKOBOJI			STATION 56.0 SAMPLED ON			8/15/73 SECCHI DEPTH = 0.7 METERS				
0.0	0.18	0.09	0.00	0.32	34	5.7	440	8.9	24.8	43.8
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON			6/23/71 SECCHI DEPTH = 1.5 METERS				
0.0	*****	0.03	0.04	0.25	12		441	8.7	24.6	****
4.0	*****	0.04	0.03	0.29	8	10.5	441	8.7	23.7	****
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON			7/ 2/71 SECCHI DEPTH = 0.8 METERS				
0.0	*****	0.02	0.04	0.40	47		444	9.0	24.3	****
4.0	*****	0.02	0.06	0.35	25	6.4	429	8.6	23.7	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 7/15/71				SECCHI DEPTH = 0.4 METERS			
0.0	*****	0.03	0.10	0.55	38		409	9.4	24.0	****
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 7/21/71				SECCHI DEPTH = 1.1 METERS			
0.0	*****	0.04	0.04	0.69	14		465	8.9	24.0	****
4.0	*****	0.04	0.03	0.71	19	7.6	465	8.9	23.7	****
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 8/10/71				SECCHI DEPTH = 0.6 METERS			
0.0	*****	0.09	0.05	0.65	18	7.7	452	8.9	23.2	58.2
4.0	*****	0.10	0.02	0.89	10	4.8	460	8.7	23.1	35.9
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 8/20/71				SECCHI DEPTH = 1.0 METERS			
0.0	0.23	0.16	0.04	0.98	25	3.8	485	8.1	24.5	35.4
4.0	*****	0.17	0.03	0.99	29	3.6	485	8.2	24.5	33.1
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 9/ 9/71				SECCHI DEPTH = 0.8 METERS			
0.0	0.22	0.11	0.09	0.66	27	7.6	481	8.5	21.5	47.2
4.0	0.24	0.11	0.10	0.68	31	7.2	482	8.5	21.5	37.6
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 9/28/71				SECCHI DEPTH = 1.4 METERS			
0.0	0.17	0.09	0.06	0.20	10	8.4	476	9.0	16.0	30.4
4.0	0.16	0.10	0.08	0.23	17	8.3	468	8.9	15.9	34.4

CEPTH METERS	TCTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED CN 10/20/71 SECCHI DEPTH = 0.9 METERS							
0.0	0.46	0.09	0.22	C.38	37	7.9	467	8.9	14.7	73.6
2.0	0.24	C.10	0.19	0.49	20	8.0	467	8.9	14.7	43.2
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 11/11/71 SECCHI DEPTH = 2.7 METERS							
C.C	C.25	C.15	0.19	1.10	4	10.8	481	8.3	3.1	32.0
4.0	0.24	0.14	0.19	1.12	2	10.6	498	8.3	3.8	30.4
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 1/10/72 SECCHI DEPTH = 2.5 METERS							
0.0	0.25	0.15	0.31	1.02	5	12.3	533	7.7	0.0	31.2
4.0	0.24	C.15	0.29	C.98	3	12.5	521	7.7	4.1	35.2
LAKE EAST CKOBOJI			STATION 56.1 SAMPLED ON 2/24/72 SECCHI DEPTH = 3.8 METERS							
0.0	0.27	C.15	0.37	1.15	2	9.4	578	7.5	0.0	32.8
3.8	C.27	0.14	0.37	1.15	2	7.6	569	7.4	3.4	28.8
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED CN 5/ 4/72 SECCHI DEPTH = 1.1 METERS							
C.0	C.07	0.02	0.08	0.20	11	10.1	438	8.8	11.7	34.4
4.0	0.08	C.01	0.04	C.26	11	9.8	447	8.8	11.3	24.8
LAKE EAST CKOBOJI			STATION 56.1 SAMPLED ON 6/ 1/72 SECCHI DEPTH = 2.2 METERS							
0.0	0.12	0.06	0.17	0.48	5	7.7	469	8.4	18.5	23.1
4.0	C.12	0.06	0.18	C.48	3	7.5	463	8.5	17.6	24.1

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 6/13/72 SECCHI DEPTH = 0.8 METERS										
0.0	0.19	0.03	0.02	0.29	21	12.7	447	8.9	22.6	56.0
4.1	0.13	0.05	0.02	0.27	18	11.1	456	8.7	20.8	40.8
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 6/28/72 SECCHI DEPTH = 0.4 METERS										
0.0	0.19	0.01	0.05	0.90	42	14.0	414	9.1	22.3	85.8
3.7	0.10	0.02	0.05	0.43	10	11.0	430	8.9	21.6	41.1
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 8/ 1/72 SECCHI DEPTH = 1.4 METERS										
0.0	0.16	0.07	0.08	0.73	7	7.0	424	8.7	24.1	31.6
3.2	0.17	0.05	0.12	0.81	14	7.1	472	9.9	24.1	36.9
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 8/24/72 SECCHI DEPTH = 0.9 METERS										
0.0	0.21	0.09	0.04	0.53	12	4.5	437	8.7	22.9	36.1
3.6	0.27	0.08	0.04	0.57	11	4.5	444	9.3	22.9	34.0
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 9/ 6/72 SECCHI DEPTH = 0.9 METERS										
0.0	0.23	0.09	0.07	0.90	9	7.1	457	8.4	19.5	29.5
3.5	0.21	0.09	0.07	0.90	12	7.4	457	8.4	19.5	35.0
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 9/22/72 SECCHI DEPTH = 1.0 METERS										
0.0	0.18	0.06	0.06	0.15	11	9.5	436	8.8	19.1	37.7
3.6	0.18	0.05	0.06	0.17	13	9.4	438	8.9	19.1	38.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 10/ 5/72 SECCHI DEPTH = 1.8 METERS							
0.0	0.19	0.10	0.05	0.49	11	8.3	457	9.1	14.8	32.9
3.8	0.17	0.11	0.05	0.52	12	7.7	454	9.0	14.8	33.7
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 10/27/72 SECCHI DEPTH = 1.5 METERS							
0.0	0.20	0.11	0.14	0.51	16	10.8	470	8.7	7.1	38.3
3.8	0.19	0.10	0.14	0.52	13	10.9	466	8.7	7.1	33.8
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 11/29/72 SECCHI DEPTH = 2.9 METERS							
0.0	0.19	0.15	0.58	0.84	8	12.7	467	8.1	0.0	32.0
3.6	0.19	0.14	0.49	0.84	5	12.3	453	8.3	0.2	31.7
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 12/21/72 SECCHI DEPTH = 3.4 METERS							
0.0	0.22	0.16	0.48	0.87	3	12.1	466	8.2	0.1	31.8
3.4	0.22	0.15	0.49	0.84	1	12.3	466	8.3	0.7	30.1
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 1/26/73 SECCHI DEPTH = 3.6 METERS							
0.0	0.23	0.17	0.46	0.97	3	11.2	489	7.5	0.5	34.9
3.6	0.22	0.17	0.39	0.97	4	10.9	526	7.6	1.8	35.1
LAKE EAST OKOBOJI			STATION 56.1 SAMPLED ON 4/18/73 SECCHI DEPTH = 1.4 METERS							
0.0	0.04	0.01	0.50	0.36	9	11.0	449	8.7	8.7	23.9

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 5/18/73 SECCHI DEPTH = 1.2 METERS										
0.0	0.09	0.02	0.44	0.44	8	10.3	493	8.6	14.2	27.8
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 5/30/73 SECCHI DEPTH = 1.3 METERS										
0.0	0.05	0.01	0.60	0.35	11	9.9	484	8.6	16.0	24.7
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 6/21/73 SECCHI DEPTH = 0.9 METERS										
0.0	0.12	0.06	0.21	0.27	15	6.5	522	8.4	19.9	26.3
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 6/28/73 SECCHI DEPTH = 0.9 METERS										
0.0	0.13	0.04	0.56	0.00	32	7.0	491	8.7	21.9	29.3
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 7/10/73 SECCHI DEPTH = 1.3 METERS										
0.0	0.06	0.01	0.21	0.08	28	6.6	457	9.0	25.5	32.6
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 7/19/73 SECCHI DEPTH = 0.6 METERS										
0.0	0.12	0.06	0.00	0.17	26	6.9	437	8.9	24.4	48.0
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 7/25/73 SECCHI DEPTH = 0.7 METERS										
0.0	0.08	0.04	0.01	0.32	3	7.4	458	8.7	23.2	27.2
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 8/ 8/73 SECCHI DEPTH = 0.5 METERS										
0.0	0.22	0.08	0.00	0.30	64	7.4	440	9.1	24.8	83.1

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI STATION 56.1 SAMPLED ON 8/15/73 SECCHI DEPTH = 0.8 METERS										
0.0	0.13	0.07	0.00	0.28	29	7.1	434	9.0	24.6	46.6
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 3/ 8/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.48	0.72	1.34	24	5.7	392	6.6	1.0	****
3.5	*****	0.25	0.38	0.84	7	3.2	557	7.0	3.0	****
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 3/25/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.21	0.27	0.84	27	10.3	220	7.6	1.0	****
3.5	*****	0.13	0.00	0.93	14	8.8	495	7.1	2.0	****
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 5/ 4/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.06	0.06	0.60	3	8.8	468	8.8	12.0	****
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 5/25/71 SECCHI DEPTH = **** METERS										
0.0	*****	0.08	0.08	0.61	18	8.7	493	8.3	13.0	****
3.5	*****	0.08	0.07	0.58	15	8.5	497	8.3	13.0	****
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 6/23/71 SECCHI DEPTH = 2.8 METERS										
0.0	*****	0.04	0.04	0.38	10		441	8.7	24.9	****
3.5	*****	0.04	0.04	0.42	12	8.2	445	8.7	24.0	****
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 7/ 2/71 SECCHI DEPTH = 1.2 METERS										
0.0	*****	0.02	0.06	0.20	30		465	8.7	24.5	****
3.5	*****	0.02	0.05	0.20	20	9.5	455	8.9	24.0	****

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			7/15/71	SECCHI DEPTH = 0.4 METERS			
0.0	*****	0.01	0.12	0.82	58		411	9.5	24.0	****
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			7/21/71	SECCHI DEPTH = 0.5 METERS			
0.0	*****	0.02	0.01	0.71	75		459	9.2	24.7	****
3.5	*****	0.03	0.01	0.66	46	11.2	457	9.1	24.6	****
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			8/10/71	SECCHI DEPTH = 1.7 METERS			
0.0	*****	0.09	0.01	0.89	2	5.1	462	8.7	23.1	30.6
3.5	*****	0.17	0.01	0.94	0	1.2	464	8.6	21.3	23.9
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			8/20/71	SECCHI DEPTH = 2.3 METERS			
0.0	0.23	0.16	0.04	1.05	18	4.1	491	8.2	23.4	29.9
3.5	*****	0.17	0.04	1.07	15	4.0	490	8.2	23.3	****
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			8/30/71	SECCHI DEPTH = 1.2 METERS			
0.0	*****	0.17	0.03	*****	18	5.0	489	8.1	23.3	****
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			9/ 9/71	SECCHI DEPTH = 1.5 METERS			
0.0	0.22	0.16	0.19	0.74	5	6.9	482	8.3	21.8	27.2
3.5	0.22	0.14	0.19	0.72	7	7.0	482	8.2	21.8	24.8
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			9/20/71	SECCHI DEPTH = 0.9 METERS			
0.0	*****	0.12	*****	*****	*****	11.2	453	****	17.5	****
3.5	*****	0.11	*****	*****	*****	10.6	449	****	17.5	****

DEPTH METERS	TCTAL P MG/L	PC4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 9/28/71				SECCHI DEPTH = 0.9 METERS			
0.0	0.27	0.10	0.15	0.10	25	8.6	468	8.8	16.7	55.2
3.5	0.29	0.10	0.18	0.18	30	8.7	465	8.8	16.7	55.2
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 10/20/71				SECCHI DEPTH = 1.3 METERS			
0.0	0.22	0.10	0.12	0.29	4	8.9	462	8.8	14.2	27.2
3.5	0.23	0.09	0.11	0.23	3	9.0	462	8.8	14.3	25.6
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 11/11/71				SECCHI DEPTH = 2.5 METERS			
0.0	0.40	0.14	0.24	1.60	52	10.4	472	8.4	3.8	37.6
3.5	0.26	0.13	0.25	1.05	10	10.4	481	8.4	3.8	36.0
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 1/10/72				SECCHI DEPTH = 3.0 METERS			
0.0	0.25	0.15	0.39	0.80	3	11.5	519	7.8	0.0	32.0
3.5	0.26	0.16	0.32	0.92	2	10.5	508	7.8	2.3	32.8
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 2/24/72				SECCHI DEPTH = 2.0 METERS			
0.0	0.26	0.15	0.57	1.00	1	6.0	563	7.4	0.0	28.0
2.0	0.28	0.15	0.57	0.90	2	5.8	561	7.4	2.4	28.8
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 3/22/72				SECCHI DEPTH = 3.5 METERS			
0.0	0.06	0.03	0.26	0.13	0	7.3	111	7.0	1.7	10.4
3.5	0.25	0.16	0.49	0.41	0	3.1	574	7.2	5.5	29.6

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			5/ 4/72 SECCHI DEPTH = 3.5 METERS				
0.0	0.07	0.03	0.05	0.25	2	9.3	447	8.8	10.9	25.6
4.0	0.07	0.03	0.04	0.27	2	9.3	459	9.0	10.8	25.6
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			6/ 1/72 SECCHI DEPTH = 2.0 METERS				
0.0	0.10	0.07	0.13	0.52	6	7.1	460	8.3	18.4	22.5
3.9	0.11	0.07	0.14	0.49	3	7.0	460	8.3	18.3	22.3
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			6/13/72 SECCHI DEPTH = 1.1 METERS				
0.0	0.13	0.06	0.04	0.30	20	10.4	456	8.7	21.5	28.8
3.0	0.14	0.05	0.04	0.37	20	9.7	457	8.6	21.0	31.2
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			6/28/72 SECCHI DEPTH = 0.8 METERS				
0.0	0.09	0.02	0.03	0.57	19	12.5	430	9.0	22.2	45.6
6.1	0.15	0.11	0.03	0.80	3	4.9	454	8.5	19.4	26.9
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			8/ 1/72 SECCHI DEPTH = 2.1 METERS				
0.0	0.16	0.07	0.05	0.89	4	5.1	428	8.5	24.0	33.4
5.4	0.16	0.07	0.04	0.95	7	5.0	427	8.5	24.0	30.9
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			8/24/72 SECCHI DEPTH = 1.9 METERS				
0.0	0.21	0.09	0.04	0.69	2	5.1	453	8.4	22.9	28.4
6.1	0.18	0.09	0.05	0.67	3	5.1	439	8.4	22.5	29.8

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 9/ 6/72 SECCHI DEPTH = 1.0 METERS							
0.0	0.21	0.09	0.08	0.85	9	7.0	457	8.2	19.7	24.9
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 9/22/72 SECCHI DEPTH = 0.7 METERS							
0.0	0.19	0.06	0.14	0.23	18	8.7	437	8.9	19.5	34.0
6.1	0.20	0.07	0.16	0.20	15	8.7	447	9.3	19.4	40.2
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 10/ 5/72 SECCHI DEPTH = 1.3 METERS							
0.0	0.19	0.11	0.06	0.47	11	8.3	453	9.0	14.7	37.6
6.1	0.18	0.11	0.06	0.49	9	8.0	454	9.0	14.6	32.3
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 10/27/72 SECCHI DEPTH = 1.8 METERS							
0.0	0.21	0.12	0.16	0.64	7	10.2	471	8.4	7.3	35.8
6.2	0.20	0.14	0.17	0.63	11	10.1	470	8.4	7.3	31.5
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 11/29/72 SECCHI DEPTH = 3.5 METERS							
0.0	0.20	0.15	0.32	0.82	4	11.9	466	8.2	0.0	32.2
3.5	0.19	0.15	0.42	0.79	5	11.9	463	8.3	0.2	29.1
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON 12/21/72 SECCHI DEPTH = 2.5 METERS							
0.0	0.22	0.16	0.47	0.84	4	11.8	458	8.1	0.3	31.4
3.0	0.22	0.16	0.47	0.84	3	11.7	460	8.2	1.1	36.3

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			1/26/73 SECCHI DEPTH = 1.8 METERS				
0.0	0.36	0.28	0.11	1.12	6	9.8	487	7.5	0.8	33.0
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			3/ 5/73 SECCHI DEPTH = 2.3 METERS				
0.0	0.11	0.10	0.81	0.67	3	11.9	423	7.8	0.5	22.8
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			4/18/73 SECCHI DEPTH = 3.2 METERS				
0.0	0.04	0.02	0.34	0.40	4	10.7	451	8.3	7.7	23.2
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			5/18/73 SECCHI DEPTH = 2.0 METERS				
0.0	0.09	0.03	0.43	0.48	7	9.8	486	8.5	14.0	26.6
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			5/30/73 SECCHI DEPTH = 1.2 METERS				
0.0	0.05	0.01	0.37	0.46	11	9.4	473	8.7	15.6	26.9
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			6/21/73 SECCHI DEPTH = 0.7 METERS				
0.0	0.13	0.07	0.45	0.18	15	5.8	503	8.3	20.2	24.9
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			6/22/73 SECCHI DEPTH = 0.8 METERS				
0.0	0.11	0.05	0.48	0.52	16	5.8	489	8.3	20.5	27.2
LAKE EAST OKOBOJI			STATION 57.0 SAMPLED ON			6/28/73 SECCHI DEPTH = 0.8 METERS				
0.0	0.15	0.07	0.48	0.02	15	5.9	498	8.3	21.7	26.0

DEPTH METERS	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	OXYGEN MG/L	SP COND	PH	TEMP C	COD MG/L
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 7/10/73 SECCHI DEPTH = 1.3 METERS										
0.0	0.06	0.04	0.19	0.07	14	8.3	466	9.0	25.3	33.6
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 7/19/73 SECCHI DEPTH = 0.9 METERS										
0.0	0.08	0.04	0.00	0.19	14	6.2	457	8.8	24.5	32.5
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 7/16/73 SECCHI DEPTH = 1.1 METERS										
0.0	0.06	0.05	0.11	0.28	9	5.6	459	8.7	24.4	23.8
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 7/20/73 SECCHI DEPTH = 0.6 METERS										
0.0	0.12	0.04	0.00	0.18	28	5.2	450	8.7	23.8	33.4
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 7/25/73 SECCHI DEPTH = 1.4 METERS										
0.0	0.16	0.06	0.00	0.06	22	6.7	450	8.9	23.3	39.7
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 8/ 8/73 SECCHI DEPTH = 1.3 METERS										
0.0	0.09	0.06	0.02	0.28	19	6.6	448	8.8	24.0	24.2
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 8/15/73 SECCHI DEPTH = 1.1 METERS										
0.0	0.10	0.06	0.00	0.17	21	6.2	440	8.9	24.3	36.2
LAKE EAST OKOBOJI STATION 57.0 SAMPLED ON 8/20/73 SECCHI DEPTH = 1.4 METERS										
0.0	0.13	0.09	0.00	0.55	9	5.2	462	8.5	24.3	28.7

Appendix B

Chemical and flow measurements (m^3/sec) on drainage from metered watersheds within the Iowa Great Lakes Watershed between March, 1971 and August, 1973. Missing values designated by *****.

STATION 1.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	2	71	*****	0.31	3.06	1.06	12	695	7.6	0.0	0.0448
3	5	71	*****	0.21	1.55	0.93	8	701	7.6	0.0	0.0242
3	22	71	*****	0.22	3.75	0.92	27	694	7.6	0.0	0.0230
3	31	71	*****	0.36	1.98	0.95	39	460	7.4	4.0	0.1050
4	5	71	*****	0.32	2.76	0.87	19	740	7.6	3.0	0.0142
4	9	71	*****	0.36	3.98	0.59	14	793	7.7	6.0	0.0257
4	16	71	*****	0.32	5.28	0.58	19	762	8.0	13.0	0.0387
4	23	71	*****	0.29	5.22	0.30	20	793	8.2	10.0	0.0206
5	1	71	*****	0.45	2.26	0.93	27	779	7.9	9.0	0.0122
5	10	71	*****	0.34	4.38	0.68	18	722	8.1	15.0	0.0098
5	19	71	*****	0.50	2.37	0.77	67	694	8.3	10.0	0.0150
5	28	71	*****	0.30	4.06	0.96	25	748	8.0	14.0	0.0058
6	5	71	*****	2.09	3.03	2.31	142	774	7.6	17.5	0.0330
6	9	71	*****	0.30	7.10	0.80	28	779	7.5	13.5	0.0153
6	14	71	*****	0.33	5.14	1.61	36	788	7.5	16.0	0.2073
6	21	71	*****	0.39	4.27	1.49	25	834	7.6	19.0	******
6	28	71	*****	0.47	4.65	2.20	69	801	7.8	23.0	0.0131
7	8	71	*****	0.55	3.67	2.21	70	801	7.8	21.0	0.0039
7	14	71	*****	0.55	5.84	1.26	42	809	7.7	21.0	0.0061
7	28	71	*****	0.78	0.60	1.45	38	745	8.1	19.0	0.0015
8	5	71	*****	0.62	1.52	1.26	55	620	7.5	16.0	******
8	12	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	27	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	71	8.26	5.09	2.70	10.75	500	909	7.7	4.0	0.0524
11	1	71	6.62	5.70	2.85	14.00	1500	496	7.6	4.0	0.0027
11	16	71	5.79	5.22	1.20	8.90	245	698	7.5	7.0	0.0025
11	22	71	4.22	3.42	3.30	6.90	140	909	7.5	0.0	0.0011
12	9	71	1.50	0.83	4.20	3.85	5	981	7.4	0.0	0.0015
1	18	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 1.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	7	72	0.63	0.26	1.50	1.52	71	174	6.8	1.0	0.0104
3	13	72	0.53	0.28	3.70	0.78	26	468	7.3	0.0	0.0253
3	24	72	0.97	0.52	3.90	1.38	10	853	7.4	2.0	0.0056
4	5	72	0.32	0.19	3.50	0.71	10	758	8.3	4.0	0.0034
4	5	72	0.32	0.19	3.50	0.71	10	758	8.3	4.0	0.0034
4	11	72	0.35	0.17	3.20	0.68	13	748	8.4	8.0	0.0054
4	20	72	0.47	0.17	2.90	1.00	27	725	8.1	7.0	0.0072
5	8	72	0.28	0.16	9.10	0.52	16	749	7.8	7.0	0.0144
5	17	72	0.33	0.19	5.50	0.44	12	742	7.9	17.0	0.0150
6	6	72	0.75	0.31	9.00	3.35	230	776	7.8	18.0	0.0136
6	15	72	0.38	0.25	11.50	1.65	67	738	7.9	0.0	0.0163
6	23	72	0.52	0.23	10.00	1.45	80	755	7.9	19.0	0.0108
7	11	72	0.42	0.25	3.20	0.83	28	593	8.4	27.0	0.0059
7	24	72	0.36	0.27	8.50	1.15	51	756	8.0	22.5	0.0188
8	10	72	0.28	0.10	6.50	0.65	49	733	8.3	18.0	0.0043
8	28	72	1.20	0.75	2.80	0.65	61	688	8.0	20.0	0.0010
9	7	72	1.02	0.52	0.30	0.73	48	704	8.1	19.0	0.0011
9	25	72	0.60	0.30	0.24	0.75	98	658	8.0	14.0	0.0014
10	10	72	1.70	1.58	2.90	0.76	41	820	8.0	10.5	******
11	7	72	0.25	0.20	5.10	0.38	13	812	8.2	5.5	0.0092
11	27	72	0.11	0.09	6.00	0.15	8	796	7.5	0.0	0.0051
12	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	15	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	28	72	0.54	0.36	*****	1.84	29	1108	7.2	0.0	0.0013
1	10	73	0.36	0.27	*****	1.95	2	900	7.1	0.0	0.0029
1	17	73	0.60	0.49	*****	1.58	46	280	7.2	0.0	0.0583
1	24	73	0.24	0.18	6.60	0.59	8	673	7.2	0.0	0.0137
2	6	73	0.23	0.18	4.50	0.53	7	643	7.2	0.0	0.0080
2	20	73	0.35	0.15	8.20	0.38	4	818	7.3	0.0	0.0082
2	27	73	0.24	0.19	6.10	0.49	7	580	7.3	0.0	0.0055

STATION 1.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	6	73	0.42	0.31	5.90	0.68	16	502	7.2	1.0	0.0332
3	12	73	0.29	0.18	9.60	0.78	37	575	7.4	1.0	0.0339
3	19	73	0.21	0.14	10.50	0.41	4	749	7.4	3.0	0.0133
3	28	73	0.16	0.14	8.70	0.21	3	760	7.7	6.0	0.0211
4	7	73	0.09	0.08	9.90	0.25	6	738	7.9	6.0	0.0231
4	23	73	0.09	0.07	9.10	0.34	6	742	7.8	6.0	0.0183
4	30	73	0.11	0.07	8.90	0.44	13	697	7.9	10.0	0.0094
5	12	73	0.21	0.13	8.10	0.44	14	690	8.0	9.0	0.0099
5	24	73	0.58	0.46	5.35	0.68	29	734	7.9	15.0	0.0156
5	29	73	0.22	0.16	7.60	0.51	20	777	7.7	11.0	0.0405
6	9	73	0.19	0.19	4.50	0.43	41	807	8.1	18.0	0.0110
6	18	73	0.60	0.28	8.30	0.66	350	535	7.6	13.0	0.1045
6	26	73	0.10	0.10	11.00	0.08	59	819	7.8	19.0	0.0072
7	3	73	0.31	0.25	9.50	0.45	57	752	7.7	18.0	0.0081
7	11	73	0.17	0.17	7.55	0.61	102	781	7.8	22.0	0.0069
7	23	73	0.31	0.23	4.10	0.44	49	760	7.8	19.0	0.0050
8	1	73	0.16	0.16	1.35	0.53	69	770	7.8	19.0	0.0018
8	7	73	0.73	0.55	0.20	0.78	28	759	7.8	22.0	0.0015
8	13	73	0.86	0.86	0.15	0.85	39	771	7.7	22.0	0.0003
8	23	73	1.40	1.09	0.01	1.07	270	758	7.7	18.0	0.0001
8	28	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 1.1

CATE MC	CAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	16	71	*****	0.02	0.10	0.49	30	460	8.6	13.0	******
4	23	71	*****	0.01	0.08	0.43	27	462	8.9	14.0	0.6962
5	1	71	*****	0.01	0.00	0.47	29	449	9.0	11.0	0.1928
5	10	71	*****	0.01	0.00	0.37	20	466	8.7	14.0	******
5	19	71	*****	0.01	0.01	0.40	11	453	8.6	13.0	0.3398
5	28	71	*****	0.02	0.01	0.28	0	494	8.3	14.0	******
6	5	71	*****	0.02	0.02	0.43	9	464	8.8	19.5	0.2268
6	9	71	*****	0.01	0.00	0.22	19	466	8.5	18.0	0.0340
6	14	71	*****	0.03	0.02	0.63	19	455	8.6	23.0	0.0768
6	21	71	*****	0.01	0.01	0.03	4	565	8.5	23.0	0.1605
6	28	71	*****	0.01	0.02	0.25	28	431	8.8	25.0	0.3276
7	8	71	*****	0.00	0.01	0.41	25	449	8.7	23.0	0.3629
7	14	71	*****	0.01	0.01	0.05	10	452	8.9	23.0	******
7	28	71	*****	0.00	0.05	0.42	42	457	9.0	22.0	0.4354
8	5	71	*****	0.00	0.02	0.49	23	416	7.8	20.0	0.0788
8	12	71	*****	0.00	0.11	0.55	30	445	8.8	21.0	******
8	17	71	*****	0.01	0.04	0.40	30	475	9.0	23.0	0.1340
8	24	71	0.07	0.00	0.04	0.56	42	473	8.9	24.0	0.2208
9	17	71	*****	0.00	0.04	0.33	40	473	8.8	15.0	******
10	1	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	8	71	0.09	0.01	0.04	0.26	22	438	8.8	12.0	0.0934
10	13	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	27	71	0.05	0.02	0.03	0.22	8	433	8.4	14.0	******
11	1	71	0.12	0.01	0.09	0.41	18	430	8.1	7.0	******
11	22	71	0.11	0.02	0.16	0.65	22	424	8.1	0.0	******
12	9	71	0.03	0.00	0.11	0.14	0	461	8.1	0.0	******
1	18	72	0.03	0.01	0.09	0.65	2	523	7.6	1.0	******
2	21	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	28	72	0.03	0.01	0.14	0.39	0	547	7.8	0.0	0.1633
3	7	72	0.05	0.01	0.05	1.61	0	646	7.2	0.0	******

STATION 1.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	13	72	0.05	0.02	0.05	1.05	4	573	7.2	2.0	******
3	24	72	0.02	0.01	0.05	0.00	2	426	8.2	3.0	******
4	5	72	0.06	0.04	0.03	0.22	0	405	8.1	4.0	******
4	11	72	0.06	0.03	0.02	0.16	10	457	7.8	5.0	******
4	20	72	0.05	0.00	0.00	0.08	8	428	8.5	7.0	******
5	8	72	0.04	0.02	0.03	0.10	0	455	8.8	8.0	******
6	6	72	0.05	0.00	0.00	0.20	8	452	8.7	18.0	0.2340
6	15	72	0.07	0.00	0.04	0.32	12	450	8.9	0.0	0.2909
6	23	72	0.05	0.00	0.04	0.47	6	434	8.7	20.0	0.0502
7	11	72	0.04	0.01	0.03	0.35	1	417	9.1	25.0	******
7	24	72	0.05	0.00	0.03	0.22	8	427	9.0	27.0	0.2563
8	10	72	0.04	0.00	0.04	0.22	8	450	8.8	20.0	******
8	28	72	0.06	0.01	0.02	0.12	11	455	8.4	21.0	******
9	7	72	0.07	0.00	0.04	0.26	19	434	9.1	19.0	0.3251
9	25	72	0.09	0.00	0.06	0.27	35	431	9.0	16.0	0.0000
10	10	72	0.07	0.01	0.01	0.38	20	475	8.4	12.0	******
11	7	72	0.07	0.01	0.06	0.78	4	464	8.3	5.5	0.1368
12	15	72	0.04	0.01	1.05	0.38	3	495	8.9	1.0	******
11	27	72	0.05	0.01	0.22	0.44	3	484	8.3	1.5	0.1896
3	19	73	0.10	0.01	0.08	0.33	29	250	8.0	4.0	******
3	28	73	0.04	0.01	0.01	0.33	8	430	8.6	7.0	******
4	23	73	0.05	0.00	0.00	0.39	11	465	8.9	9.0	******
5	24	73	0.03	0.00	0.00	0.18	3	482	8.5	16.0	******
6	9	73	0.06	0.00	0.02	0.32	12	504	8.6	21.0	******
6	19	73	0.10	0.01	0.01	0.23	47	497	8.3	21.0	******
6	26	73	0.17	0.00	0.10	0.25	172	516	8.4	23.0	******
7	3	73	0.15	0.02	0.07	0.45	52	479	8.4	24.0	******
7	11	73	0.04	0.01	0.00	0.22	8	476	8.4	25.0	******
7	23	73	0.06	0.02	0.00	0.28	12	465	8.5	21.0	******
8	1	73	0.08	0.01	0.05	0.30	54	471	8.9	22.0	******

STATION 1.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	13	73	0.07	0.01	0.08	0.34	51	474	8.8	24.0	******
8	28	73	0.07	0.01	0.03	0.43	29	501	8.7	22.0	******

STATION 2.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	2	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	10	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	19	71	*****	0.02	3.40	0.24	1	883	8.0	7.0	0.0003
5	28	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	5	71	*****	0.03	3.99	0.22	0	929	7.1	9.0	0.0033
6	9	71	*****	0.02	4.50	0.28	5	904	7.0	9.0	0.0040
6	14	71	*****	0.01	3.01	0.45	3	918	7.0	10.0	0.0023
6	21	71	*****	1.24	0.00	0.00	0	1082	7.1	11.0	0.0105
6	28	71	*****	0.02	5.90	0.00	10	721	7.3	12.0	0.0004
7	8	71	*****	0.01	3.91	0.24	5	901	7.0	14.0	0.0010
7	14	71	*****	0.02	4.50	0.00	9	946	7.4	14.0	0.0012
7	28	71	*****	0.02	5.20	0.00	5	971	7.9	15.0	******
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	8	72	0.03	0.03	4.80	0.02	0	889	7.4	6.0	0.0040
5	17	72	0.04	0.02	3.10	0.00	0	893	7.6	8.0	0.0024
6	6	72	0.01	0.01	7.50	0.10	0	924	7.4	9.0	0.0018
6	15	72	0.03	0.01	7.70	0.02	0	907	7.4	0.0	0.0004
6	23	72	0.07	0.02	6.10	0.30	0	888	7.6	12.0	0.0020
7	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	24	72	0.01	0.02	6.00	0.08	0	939	7.1	14.5	0.0048
8	10	72	0.07	0.04	3.70	0.17	5	956	7.9	16.0	******

STATION 2.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	27	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	******
12	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	6	73	0.97	0.85	4.70	1.38	26	436	7.3	2.0	0.0009
3	12	73	0.05	0.03	8.10	0.16	1	834	7.6	3.0	0.0007
3	21	73	0.02	0.02	9.60	0.17	1	857	7.6	3.0	0.0004
3	28	73	0.02	0.02	8.10	0.13	0	889	7.5	4.0	0.0039
4	7	73	0.02	0.02	9.70	0.12	0	892	7.8	4.0	0.0010
4	23	73	0.01	0.01	8.30	0.13	0	922	7.4	8.0	0.0015
4	30	73	0.01	0.00	9.60	0.16	0	911	7.9	8.0	0.0003
5	12	73	0.04	0.01	9.40	0.18	1	907	7.6	6.0	0.0002
5	24	73	0.02	0.02	7.10	0.04	0	931	7.4	7.0	0.0003
5	31	73	0.01	0.01	3.30	0.15	0	937	7.2	18.0	0.0011
6	9	73	0.01	0.01	4.30	0.17	5	961	7.4	8.0	0.0005
6	19	73	0.04	0.01	12.00	0.07	3	955	7.2	11.0	0.0150
6	26	73	0.02	0.02	12.50	0.02	0	991	7.3	11.0	0.0009
7	3	73	0.04	0.02	11.50	0.02	0	965	7.3	12.0	0.0010
7	11	73	0.02	0.02	5.50	0.12	0	970	7.6	14.0	0.0004
7	23	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	1	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	13	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 3.0

DATE MO	DATE DAY	DATE YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	2	71	*****	0.46	1.76	1.02	40	517	7.0	0.0	0.0013
3	5	71	*****	0.32	1.12	1.17	26	527	7.1	0.0	0.0022
3	22	71	*****	0.19	1.40	0.90	14	609	7.1	1.0	0.0026
3	31	71	*****	0.23	0.18	0.78	17	316	7.4	1.0	0.0546
4	5	71	*****	0.12	0.39	0.52	10	626	7.3	2.0	0.0082
4	9	71	*****	0.08	2.17	0.35	9	728	7.6	5.0	0.0036
4	16	71	*****	0.11	3.70	0.46	9	718	7.4	11.0	0.0010
4	23	71	*****	0.10	4.80	0.27	12	791	7.2	9.0	0.0025
5	1	71	*****	0.10	1.99	0.30	2	701	7.1	6.0	0.0017
5	10	71	*****	0.12	3.56	0.43	7	717	7.2	9.0	0.0028
5	19	71	*****	0.10	3.58	0.40	19	681	7.2	8.0	0.0011
5	28	71	*****	0.12	6.08	0.29	2	745	7.2	9.0	0.0009
6	5	71	*****	0.22	1.00	0.80	32	746	7.2	18.0	0.0315
6	9	71	*****	0.13	3.00	0.44	20	729	7.3	14.0	0.0063
6	14	71	*****	0.17	3.63	0.53	8	731	7.0	13.0	0.0120
6	21	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	28	71	*****	0.15	10.48	0.03	35	724	7.1	15.0	0.0020
7	8	71	*****	0.15	6.49	0.14	8	774	6.9	15.0	0.0005
7	14	71	*****	0.12	6.98	0.00	8	769	7.1	15.0	0.0004
7	28	71	*****	0.09	7.94	0.25	36	842	7.0	16.0	******
8	5	71	*****	0.09	4.92	2.11	249	789	7.3	13.0	******
8	12	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	13	72	0.53	0.29	1.70	0.61	8	311	7.0	0.0	0.0054
3	24	72	0.27	0.17	4.50	0.00	0	664	7.2	3.0	0.0013
4	5	72	0.16	0.10	3.30	0.38	12	599	7.2	3.0	0.0005
4	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	8	72	0.12	0.07	4.60	0.08	0	744	7.6	6.0	0.0040
5	17	72	0.14	0.09	3.20	0.01	2	725	7.3	13.0	0.0018

STATION 3.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	6	72	0.17	0.13	9.80	0.14	0	755	6.8	11.0	0.0004
6	15	72	0.18	0.12	10.50	0.07	0	566	7.0	0.0	0.0004
6	23	72	0.19	0.13	9.00	0.21	0	744	6.9	13.0	0.0003
7	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	24	72	0.28	0.17	4.20	0.45	7	729	6.9	17.0	0.0013
8	10	72	0.10	0.04	6.10	0.19	3	821	6.9	15.5	0.0003
8	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	7	72	0.34	0.23	7.50	0.34	18	768	7.1	8.0	0.0002
11	27	72	0.13	0.08	4.40	0.22	4	772	6.8	0.0	0.0001
12	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	24	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	6	73	0.55	0.28	3.70	0.35	9	522	7.0	1.0	0.0020
2	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	6	73	0.43	0.30	0.80	0.72	16	297	6.8	2.0	0.0647
3	12	73	0.35	0.21	3.60	0.52	7	500	7.2	3.0	0.0195
3	21	73	0.14	0.09	3.60	0.31	4	631	7.3	2.0	0.0025
3	28	73	0.10	0.03	1.30	0.57	13	763	8.1	6.0	0.0064
4	7	73	0.09	0.07	5.50	0.21	2	746	7.3	4.0	0.0011
4	23	73	0.12	0.10	4.30	0.25	2	725	7.2	9.0	0.0014
4	30	73	0.13	0.11	9.10	0.22	0	733	7.2	7.0	0.0008
5	12	73	0.15	0.12	9.80	0.15	0	730	7.2	8.0	0.0005
5	24	73	0.16	0.13	6.80	0.22	3	751	7.1	10.0	0.0008
5	31	73	0.13	0.09	3.20	0.28	3	758	7.1	9.5	0.0038
6	9	73	0.17	0.14	5.30	0.17	6	807	7.2	15.0	0.0015
6	19	73	0.19	0.17	11.50	0.09	0	789	7.0	12.0	0.0014
6	26	73	0.15	0.14	5.00	0.46	0	849	7.0	13.0	0.0008
7	3	73	0.18	0.18	9.90	0.17	6	792	7.1	16.0	0.0006
7	11	73	0.14	0.14	8.00	0.05	2	828	7.2	16.0	0.0003
7	23	73	0.17	0.17	12.75	0.09	98	816	7.3	15.0	0.0002

STATION 3.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	1	73	0.14	0.14	12.75	0.07	18	847	7.5	15.0	0.0001
8	13	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 4.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	2	71	*****	0.05	0.88	1.30	19	706	7.2	1.0	1.4700
3	5	71	*****	0.07	0.37	1.59	16	705	7.2	1.0	1.4720
3	22	71	*****	0.11	1.35	1.50	23	547	7.1	1.0	3.1270
3	31	71	*****	0.10	2.20	0.92	18	529	7.3	3.0	2.9830
4	5	71	*****	0.08	1.90	0.69	17	488	7.3	2.0	2.6100
4	9	71	*****	0.06	1.35	0.32	20	410	7.6	3.0	1.9460
4	16	71	*****	0.03	0.85	0.47	41	366	8.9	12.0	1.7610
4	23	71	*****	0.01	0.40	0.33	34	344	9.2	14.0	0.9563
5	1	71	*****	0.01	0.21	0.40	25	331	9.4	10.0	0.6103
5	10	71	*****	0.04	0.06	0.32	54	323	9.1	15.0	0.2092
5	19	71	*****	0.01	0.02	0.47	74	317	8.7	13.0	0.4373
5	28	71	*****	0.02	0.07	0.49	38	343	9.3	14.0	0.3218
6	5	71	*****	0.01	0.67	0.62	81	329	8.5	19.0	2.5020
6	9	71	*****	0.01	0.18	0.32	60	337	8.8	19.0	1.1330
6	14	71	*****	0.00	0.29	0.62	31	322	9.2	23.5	1.3920
6	21	71	*****	0.01	0.22	0.16	32	407	8.7	24.0	0.4102
6	28	71	*****	0.00	0.13	0.33	62	375	8.7	24.5	0.5812
7	8	71	*****	0.00	0.12	0.67	65	372	8.7	23.0	0.7842
7	14	71	*****	0.00	0.12	0.32	68	364	8.9	24.0	0.6491
7	28	71	*****	0.00	0.10	0.42	68	376	8.9	19.5	******
8	5	71	*****	0.01	0.07	0.53	52	381	8.8	22.0	0.0070

STATION 4.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	12	71	*****	0.08	0.10	1.42	35	409	7.4	19.0	0.0012
8	17	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	27	71	0.11	0.01	0.04	0.30	21	460	8.0	14.0	0.0000
11	16	71	0.07	0.01	0.23	0.33	9	466	7.6	6.0	0.0003
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	13	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	22	72	0.08	0.01	0.14	0.11	0	396	8.4	2.5	0.3113
3	24	72	0.10	0.01	0.13	0.08	0	418	8.3	3.0	0.2519
4	5	72	0.06	0.01	0.09	0.31	8	454	8.3	4.0	0.1924
4	11	72	0.07	0.02	0.01	0.30	7	445	8.8	7.0	0.1443
4	20	72	0.08	0.01	0.03	0.18	16	418	8.3	8.0	0.0566
5	8	72	0.07	0.01	0.32	0.10	10	443	8.9	9.0	1.1037
5	17	72	0.10	0.03	0.09	0.19	15	403	8.9	18.0	0.6792
6	6	72	0.12	0.01	0.07	0.54	38	379	8.5	0.0	0.3679
6	15	72	0.14	0.00	0.09	0.63	37	379	9.0	0.0	0.2830
6	23	72	0.18	0.00	0.11	0.54	45	363	9.2	21.0	0.1698
7	11	72	0.11	0.00	0.08	0.56	40	337	9.4	24.5	0.0396
7	24	72	0.09	0.00	0.13	0.41	55	319	9.9	28.0	0.9056
8	4	72	0.17	0.00	0.18	0.88	94	330	10.0	23.0	0.2745
8	10	72	0.17	0.00	0.18	0.75	101	330	9.3	18.0	0.2094
8	28	72	0.18	0.00	0.17	0.60	85	336	9.9	20.0	0.3396
9	7	72	0.18	0.00	0.14	0.70	52	347	8.7	19.0	0.0067
9	25	72	0.20	0.01	0.20	0.21	93	367	8.8	14.0	0.0008
10	10	72	0.18	0.01	0.00	0.23	92	384	9.2	12.0	0.0008
11	8	72	0.09	0.01	0.18	0.62	14	405	8.2	4.0	0.0566
11	27	72	0.11	0.01	0.19	0.67	17	453	7.6	0.0	0.0424
12	15	72	0.06	0.00	3.80	0.44	12	533	8.5	0.0	0.0243
12	28	72	0.07	0.02	*****	0.75	8	522	7.5	1.0	0.0679
1	10	73	0.06	0.02	*****	0.96	12	545	7.3	2.0	0.0453
1	17	73	0.07	0.03	*****	1.17	4	648	7.1	1.0	0.0623

STATION 4.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
1	24	73	0.06	0.02	1.30	0.47	5	590	7.5	3.0	0.1330
2	6	73	0.09	0.01	0.12	0.87	22	564	7.9	2.0	0.2405
2	20	73	0.23	0.01	0.26	0.80	8	583	7.6	2.0	0.1698
2	27	73	0.11	0.00	0.23	0.74	20	577	7.6	3.0	0.2349
3	6	73	0.05	0.01	0.32	0.86	17	576	7.8	3.0	0.3962
3	12	73	0.10	0.01	0.31	0.58	18	437	8.1	3.0	0.5660
3	21	73	0.12	0.01	0.73	0.34	13	385	8.3	5.0	0.6226
3	29	73	0.11	0.00	1.10	0.32	21	419	8.6	5.0	0.6509
4	7	73	0.08	0.01	0.99	0.47	23	440	8.7	7.0	0.4811
4	23	73	0.07	0.00	0.32	0.39	21	447	8.9	10.0	0.3679
4	30	73	0.10	0.00	0.29	0.35	21	422	8.9	11.0	0.2830
5	12	73	0.16	0.00	0.24	0.18	42	421	8.7	11.0	0.3396
5	24	73	0.12	0.02	0.00	0.17	36	399	8.8	17.0	0.0849
5	31	73	0.10	0.01	0.19	0.52	36	406	8.9	16.5	0.5377
6	11	73	0.13	0.00	0.11	0.19	47	399	9.1	22.0	0.3396
6	19	73	0.12	0.00	0.07	0.22	62	401	8.8	18.0	0.3396
6	26	73	0.12	0.00	0.14	0.16	36	481	8.7	23.0	0.2632
7	5	73	0.08	0.03	0.07	0.87	27	453	8.5	25.0	******
7	12	73	0.12	0.04	0.04	0.28	26	441	8.6	25.0	******
7	24	73	0.15	0.01	0.00	0.27	49	438	8.7	20.0	******
8	1	73	0.15	0.02	0.00	0.26	39	433	8.8	21.0	******
8	13	73	0.16	0.01	0.07	0.43	55	403	8.6	24.0	******
8	28	73	0.15	0.01	0.00	0.18	63	335	9.0	24.0	******

STATION 4.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	9	71	*****	0.06	1.77	0.29	18	379	7.6	6.0	0.9575
4	16	71	*****	0.03	0.62	0.48	32	316	9.3	12.0	0.6048
4	23	71	*****	0.02	0.45	0.29	23	318	9.3	14.0	0.4325
5	1	71	*****	0.01	0.08	0.33	15	321	9.3	10.0	0.2446
5	10	71	*****	0.03	0.27	0.32	26	319	8.2	16.0	0.1091
5	19	71	*****	0.01	0.16	0.47	37	307	8.9	13.0	0.0974
5	28	71	*****	0.03	0.16	0.49	23	310	9.5	14.0	0.0340
6	5	71	*****	0.01	0.62	0.41	37	326	9.1	20.0	0.8121
6	9	71	*****	0.01	0.22	0.28	55	343	9.0	19.0	0.9784
6	14	71	*****	0.00	0.10	0.79	50	322	9.1	24.0	0.6671
6	21	71	*****	0.00	0.16	0.69	47	428	8.3	25.0	0.4404
6	28	71	*****	0.01	0.14	0.45	70	388	8.2	25.0	0.3990
7	8	71	*****	0.00	0.10	0.78	81	398	8.4	24.0	0.2280
7	14	71	*****	0.00	0.12	0.48	93	382	8.9	24.0	0.2284
7	28	71	*****	0.01	0.19	0.91	73	394	7.7	19.0	0.0313
8	5	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	12	71	*****	0.12	0.16	1.65	45	422	7.7	19.0	******
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	13	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	24	72	0.10	0.01	0.11	0.37	5	431	8.5	5.0	0.0283
4	5	72	0.08	0.01	0.03	0.40	17	379	8.6	4.0	0.1288
4	11	72	0.11	0.03	0.03	0.41	13	380	9.0	7.0	0.0554
4	20	72	0.07	0.01	0.03	0.19	9	361	9.0	9.0	0.0508
5	8	72	0.08	0.02	0.28	0.13	13	418	8.9	9.0	0.3630
5	17	72	0.09	0.01	0.18	0.28	18	394	8.9	21.0	0.2904
6	6	72	0.14	0.01	0.07	0.76	40	413	8.3	0.0	0.1965
6	15	72	0.15	0.00	0.09	0.59	38	381	8.9	0.0	0.1615
6	23	72	0.13	0.00	0.12	0.66	41	388	9.0	19.0	0.0869
7	11	72	0.09	0.00	0.18	0.79	30	371	8.9	26.5	0.0366
7	24	72	0.11	0.00	0.08	0.38	35	364	9.2	28.0	0.3202

STATION 4.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	10	72	0.15	0.00	0.13	0.64	54	379	8.9	19.0	******
8	28	72	0.13	0.01	0.13	0.48	49	376	8.8	20.0	0.0291
9	7	72	0.10	0.00	0.16	0.88	34	369	7.9	17.5	0.0091
9	25	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	8	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	27	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	24	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	6	73	0.09	0.01	0.18	1.89	17	602	7.8	3.0	1.2300
2	20	73	0.28	0.00	0.61	1.47	18	623	7.9	2.5	0.0807
2	27	73	0.14	0.01	0.64	1.47	21	600	7.6	3.0	0.0984
3	6	73	0.10	0.01	0.47	1.54	33	515	7.5	3.0	0.2095
3	12	73	0.15	0.00	0.84	0.69	38	411	8.3	3.0	0.3683
3	21	73	0.11	0.01	0.87	0.47	27	371	8.5	5.0	0.5240
3	29	73	0.14	0.00	1.30	0.48	31	431	8.6	6.0	0.4380
4	7	73	0.13	0.01	0.62	0.58	33	420	8.9	7.0	0.1448
4	23	73	0.11	0.00	0.23	0.57	34	453	9.0	10.0	0.2160
4	30	73	0.13	0.00	0.19	0.54	38	436	8.9	10.0	0.6286
5	12	73	0.17	0.00	0.04	0.25	56	417	8.8	10.0	0.3466
5	24	73	0.13	0.00	0.00	0.26	48	420	8.8	18.0	0.1425
5	31	73	0.11	0.00	0.22	0.61	35	439	8.9	17.5	0.4091
6	11	73	0.14	0.00	0.21	0.37	51	472	8.9	23.0	0.3632
6	19	73	0.14	0.00	0.14	0.36	73	466	8.8	18.0	0.1512
6	26	73	0.16	0.00	0.06	0.17	53	513	9.0	23.0	0.1451
7	5	73	0.11	0.02	0.00	0.23	43	454	8.7	25.0	0.2477
7	12	73	0.09	0.02	0.02	0.36	33	472	8.7	26.0	0.1968
7	24	73	0.10	0.02	0.02	0.48	39	471	8.5	20.0	0.1080
8	1	73	0.11	0.02	0.09	0.55	38	477	8.7	21.0	0.0217
8	13	73	0.31	0.06	0.09	5.60	31	483	7.3	20.0	0.0011
8	28	73	0.15	0.01	0.16	0.25	43	353	8.3	22.0	0.0021

STATION 4.2

CATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	9	71	*****	0.04	2.06	0.24	26	314	7.4	7.0	0.5484
4	16	71	*****	0.01	1.54	0.53	71	353	8.9	13.0	0.3765
4	23	71	*****	0.02	1.26	0.33	34	366	9.3	13.0	0.2350
5	1	71	*****	0.02	0.66	0.43	32	345	9.5	10.0	0.1514
5	10	71	*****	0.02	0.45	0.47	60	320	9.8	16.0	0.1237
5	19	71	*****	0.01	0.06	0.49	77	321	9.1	11.0	0.0659
5	28	71	*****	0.02	0.13	0.61	41	360	9.4	12.0	0.0784
6	5	71	*****	0.02	1.00	0.52	80	337	8.0	19.0	0.6606
6	9	71	*****	0.01	1.13	0.34	65	389	8.8	18.0	0.0799
6	14	71	*****	0.00	0.92	0.70	59	353	8.8	24.0	0.4358
6	21	71	*****	0.00	0.70	0.96	68	490	8.0	24.0	0.6500
6	28	71	*****	0.00	0.49	1.40	75	469	7.9	24.0	0.3617
7	8	71	*****	0.01	0.03	1.29	59	507	8.0	21.0	0.3255
7	14	71	*****	0.01	0.31	1.02	150	501	8.7	23.0	0.1517
7	28	71	*****	0.03	0.10	0.83	78	477	7.8	19.0	******
8	5	71	*****	0.11	0.01	1.39	19	487	7.8	17.0	******
8	12	71	*****	0.06	0.08	2.05	65	464	7.2	19.0	******
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	13	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	24	72	0.14	0.00	0.31	0.13	5	426	8.2	2.0	0.0939
4	5	72	0.11	0.01	0.23	0.41	18	434	8.3	4.0	0.1320
4	11	72	0.16	0.02	0.09	0.33	8	439	8.4	7.0	******
4	20	72	0.11	0.01	0.00	0.28	13	418	8.2	9.0	0.0662
5	8	72	0.09	0.02	1.10	0.12	11	475	8.9	9.0	0.4156
5	17	72	0.16	0.01	0.79	0.32	31	459	8.2	21.0	0.3324
6	6	72	0.25	0.00	0.14	0.80	68	450	8.2	0.0	0.1524
6	15	72	0.20	0.01	0.14	0.69	61	394	8.9	0.0	0.0436
6	23	72	0.25	0.01	0.11	0.85	51	439	8.9	19.0	0.0910
7	11	72	0.19	0.00	0.14	0.83	72	356	9.2	26.5	0.0355
7	24	72	0.10	0.00	0.55	0.93	104	362	8.7	27.0	0.1851

STATION 4.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	10	72	0.25	0.00	0.26	1.15	98	392	8.3	18.0	0.0808
8	28	72	0.20	0.00	0.15	1.25	46	394	8.2	19.5	0.1418
9	7	72	0.21	0.00	0.13	1.15	27	399	7.2	18.0	0.0194
9	25	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	10	72	*****	0.00	0.0C	0.00	0	0	0.0	0.0	0.0000
11	8	72	0.18	0.06	0.05	0.60	21	542	6.9	2.5	0.0000
11	27	72	0.07	0.02	0.55	0.72	18	487	7.5	0.0	0.0057
12	15	72	0.06	0.01	0.20	0.92	13	548	8.4	0.0	******
12	28	72	0.08	0.01	*****	1.14	12	574	7.4	1.5	0.0527
1	10	73	0.07	0.01	*****	1.44	10	627	7.3	1.0	0.1190
1	17	73	0.07	0.01	*****	1.25	13	713	7.3	2.0	0.0785
1	24	73	0.24	0.06	1.50	1.16	27	586	7.2	1.0	0.2262
2	6	73	0.20	0.01	2.60	0.73	37	551	7.7	2.C	0.1690
2	20	73	0.33	0.00	1.20	0.79	54	634	8.2	2.0	0.0808
2	27	73	0.23	0.01	1.60	1.27	38	548	7.5	2.C	0.2026
3	6	73	0.30	0.15	1.60	1.29	25	340	7.0	2.0	0.2731
3	12	73	0.27	0.10	1.80	0.73	22	340	7.5	3.0	0.4500
3	21	73	0.13	0.01	1.40	0.40	18	397	8.3	5.0	0.3837
3	29	73	0.12	0.01	2.80	0.41	26	452	8.5	5.0	0.3459
4	7	73	0.10	0.01	2.30	0.53	28	433	8.8	7.C	0.2893
4	23	73	0.12	0.00	0.94	0.64	43	449	9.2	11.0	0.2556
4	30	73	0.11	0.00	1.10	0.59	47	432	9.0	10.0	0.1989
5	12	73	0.15	0.00	0.81	0.24	62	436	8.8	11.0	0.1707
5	24	73	0.15	0.00	0.00	0.26	64	427	8.9	17.0	0.1435
5	31	73	0.14	0.00	0.85	0.69	52	460	8.7	17.C	0.4800
6	11	73	0.14	0.01	0.68	0.26	51	493	8.7	23.0	0.1939
6	19	73	0.15	0.00	0.49	0.32	58	477	8.8	18.0	0.2603
6	26	73	0.06	0.01	0.49	0.15	51	495	8.8	23.0	0.1725
7	3	73	0.17	0.02	0.26	0.52	74	464	8.5	23.0	0.2583
7	11	73	0.12	0.07	0.24	0.42	49	449	9.0	25.C	0.3016

STATION 4.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	24	73	0.12	0.02	0.07	0.42	42	466	8.9	20.0	0.1028
8	1	73	0.11	0.01	0.00	0.26	42	468	8.9	20.0	0.0545
8	13	73	0.11	0.02	0.07	1.11	34	496	7.7	22.0	0.0113
8	28	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 4.4

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
1	18	72	0.12	0.08	6.50	0.42	12	841	7.6	0.0	******
2	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
3	7	72	0.63	0.19	2.00	2.20	142	179	7.0	0.0	0.4173
3	13	72	0.29	0.13	3.20	0.71	30	381	7.0	0.0	0.0866
3	24	72	0.11	0.06	5.00	0.13	5	762	7.5	1.0	******
4	5	72	0.06	0.03	4.60	0.37	10	731	7.8	4.0	******
4	11	72	0.08	0.06	5.80	0.30	15	735	7.7	6.0	******
4	20	72	0.07	0.03	5.80	0.09	6	716	7.6	7.0	0.0741
5	8	72	0.05	0.04	9.80	0.02	2	833	7.5	9.0	0.1262
5	17	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	6	72	0.07	0.03	11.00	0.28	8	773	7.6	0.0	******
6	15	72	0.05	0.02	12.50	0.40	0	699	7.9	0.0	******
6	23	72	0.09	0.05	9.70	0.41	11	752	7.7	0.0	******
7	11	72	0.07	0.05	9.20	0.59	25	718	7.8	14.0	******
7	24	72	0.27	0.06	9.50	0.27	21	859	7.3	22.0	******
8	10	72	0.07	0.04	8.80	0.25	19	835	7.9	17.0	******
8	28	72	0.11	0.05	4.10	0.25	22	837	7.8	15.0	******
9	7	72	0.19	0.06	3.80	0.69	30	516	7.7	17.0	******
9	25	72	0.24	0.08	4.59	0.51	63	772	7.9	13.0	******

STATION 4.4 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
10	10	72	0.21	0.09	3.80	0.57	61	852	7.8	10.0	******
11	7	72	0.13	0.06	8.60	0.32	28	852	7.6	7.0	******
11	27	72	0.07	0.06	9.60	0.20	9	837	7.7	1.0	******
12	15	72	0.17	0.14	16.00	0.58	11	863	8.0	1.0	******
12	28	72	0.07	0.06	*****	0.40	8	774	7.8	0.5	******
1	10	73	0.14	0.10	*****	0.76	43	766	7.7	0.0	******
1	17	73	0.81	0.75	*****	2.60	56	293	7.1	0.0	******
1	24	73	0.12	0.09	8.30	0.46	14	758	7.5	0.0	******
2	6	73	0.22	0.17	4.70	0.55	10	607	7.4	0.0	******
3	7	73	0.36	0.19	7.10	0.79	22	578	7.3	2.0	******
3	13	73	0.22	0.15	9.90	0.53	13	651	7.3	3.0	******
3	28	73	0.08	0.06	10.50	0.18	1	835	7.5	5.0	******
4	23	73	0.03	0.03	7.10	0.19	3	794	7.5	10.0	******
5	12	73	0.04	0.03	12.00	0.18	1	762	7.7	6.0	******
5	24	73	0.07	0.04	9.10	0.33	8	762	7.7	13.0	******
6	11	73	0.06	0.04	14.00	0.38	32	813	7.7	15.0	******
6	19	73	0.06	0.05	14.50	0.25	39	846	7.7	12.0	******
6	26	73	0.04	0.03	13.50	0.26	12	911	8.1	15.0	******
7	3	73	0.15	0.13	12.50	0.24	45	819	7.7	14.0	******
7	11	73	0.11	0.08	12.50	0.33	22	810	8.0	18.0	******
7	24	73	0.12	0.10	2.50	0.38	35	815	7.9	18.0	******
8	1	73	0.08	0.08	6.90	0.28	12	733	8.1	17.0	******
8	13	73	0.12	0.03	3.90	0.35	32	727	8.0	21.0	******
8	28	73	0.15	0.08	1.92	0.77	68	704	8.1	23.0	******

STATION 4.6

CATE			TOTAL P	PO4-P	NO3-N	NH3-N	TURB	SP COND	PH	TEMP	FLOW CUBIC M /SEC
MO	DAY	YR	MG/L	MG/L	MG/L	MG/L	JTU			C	
4	20	72	0.08	0.03	3.90	0.10	5	735	7.6	6.0	0.2434
5	8	72	0.09	0.07	9.90	0.08	0	857	7.5	9.0	0.4009
5	17	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	6	72	0.09	0.04	9.90	0.52	19	815	7.7	16.0	******
6	15	72	0.09	0.03	9.20	0.40	12	590	7.8	0.0	******
6	23	72	0.14	0.05	8.60	0.71	23	749	7.7	14.0	******
7	11	72	0.06	0.07	7.30	0.92	25	737	7.7	24.0	******
7	24	72	0.27	0.07	7.70	0.47	11	876	7.5	16.5	******
8	10	72	0.09	0.04	7.20	0.36	22	824	7.7	16.0	******
8	28	72	0.14	0.06	3.20	0.47	33	837	7.8	18.0	******
9	7	72	0.18	0.03	2.30	0.94	50	622	7.2	17.5	******
9	25	72	0.16	0.04	2.00	0.46	49	720	7.4	13.0	******
10	10	72	0.09	0.04	2.30	0.41	23	820	7.6	10.0	******
11	7	72	0.19	0.13	8.30	0.35	13	868	7.7	5.0	******
11	27	72	0.06	0.09	6.80	0.21	9	849	7.8	0.0	******
12	15	72	0.09	0.07	15.80	0.39	2	805	8.3	1.0	******
12	28	72	0.09	0.09	*****	0.32	3	743	7.1	1.5	******
1	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	17	73	0.47	0.27	*****	1.59	42	308	7.1	0.0	******
1	24	73	0.54	0.35	8.60	1.28	24	688	7.2	0.0	******
2	6	73	1.04	0.75	5.60	3.25	43	656	7.0	0.0	******
3	7	73	0.80	0.48	5.70	1.53	39	534	7.2	1.0	******
3	13	73	0.37	0.21	8.80	0.77	17	624	7.1	2.0	******
3	28	73	0.12	0.10	11.00	0.20	2	875	7.5	5.0	******
4	23	73	0.05	0.05	6.30	0.18	4	805	7.6	11.0	******
5	12	73	0.11	0.05	9.70	0.19	2	799	7.6	5.5	******
5	24	73	0.11	0.06	8.10	0.33	7	796	7.6	12.0	******
6	11	73	0.09	0.07	14.40	0.40	28	846	7.9	17.0	******
6	19	73	0.16	0.12	11.00	0.35	108	673	7.5	13.0	******
6	26	73	0.05	0.05	13.00	0.23	16	949	8.1	14.0	******

STATION 4.6 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	3	73	0.07	0.07	15.00	0.07	8	870	7.3	11.0	******
7	11	73	0.11	0.08	16.00	0.34	9	861	8.1	17.0	******
7	24	73	0.10	0.09	1.50	0.44	27	792	7.8	18.0	******
8	1	73	0.05	0.05	5.80	0.38	28	750	7.9	15.0	******
8	13	73	0.07	0.04	2.05	0.44	14	636	7.6	21.0	******
8	28	73	0.21	0.15	1.30	0.51	32	545	7.6	22.0	******

STATION 5.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	2	71	*****	0.59	2.28	1.25	45	529	6.9	0.0	******
3	22	71	*****	0.10	1.81	0.88	24	356	7.0	1.0	******
3	31	71	*****	0.06	0.54	0.56	22	286	7.0	3.0	0.0428
4	5	71	*****	0.04	1.18	0.51	13	531	7.2	4.0	0.0281
4	9	71	*****	0.03	2.97	0.33	18	605	7.3	7.0	0.0171
4	16	71	*****	0.02	1.44	0.67	32	662	7.2	****	******
4	23	71	*****	0.03	0.01	0.54	33	800	7.3	10.0	0.0071
5	1	71	*****	0.05	4.80	1.03	64	821	7.4	9.0	0.0929
5	10	71	*****	0.03	4.78	1.01	107	868	7.4	14.0	0.0101
5	19	71	*****	0.03	5.24	0.97	43	847	7.7	11.0	0.0060
5	28	71	*****	0.04	7.75	0.85	132	912	7.3	15.0	0.0042
6	5	71	*****	0.06	3.02	0.68	52	746	7.0	15.5	0.3796
6	9	71	*****	0.05	0.35	0.46	20	741	7.0	15.0	0.0159
6	14	71	*****	0.03	2.96	0.75	20	788	7.0	16.5	0.0150
6	21	71	*****	0.03	4.23	0.43	12	934	7.3	17.0	0.1617
6	28	71	*****	0.01	7.86	0.71	75	863	7.4	22.0	0.0050
7	8	71	*****	0.00	4.29	0.83	155	843	7.8	20.0	0.0079

STATION 5.0 CONTINUED

DATE MO	 DAY	 YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	14	71	*****	0.01	2.38	0.86	115	859	7.2	21.0	0.0050
7	28	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	1.19	0.52	2.20	2.68	53	249	6.8	0.0	******
3	13	72	1.28	0.62	1.90	1.85	23	271	6.7	0.0	0.0184
3	24	72	0.23	0.12	1.60	0.38	1	521	7.3	2.0	0.0125
4	5	72	0.04	0.01	0.02	0.50	3	496	8.7	5.0	******
4	11	72	0.09	0.01	0.02	0.48	4	537	8.7	7.0	0.0092
4	20	72	0.06	0.00	0.00	0.41	5	592	7.8	8.0	0.0087
5	8	72	0.05	0.02	3.80	0.11	0	777	7.3	9.0	0.0152
5	17	72	0.09	0.01	5.60	0.17	7	816	7.2	16.0	0.0038
6	6	72	0.02	0.01	7.40	0.31	3	783	7.3	0.0	0.0021
6	15	72	0.06	0.01	8.40	0.51	0	757	7.1	0.0	0.0031
6	23	72	0.04	0.01	5.70	0.43	0	629	6.9	18.0	0.0028
7	14	72	0.06	0.02	0.10	0.53	8	738	7.0	22.0	0.0024
7	24	72	0.17	0.07	2.40	0.88	18	738	6.9	21.5	0.0056
8	10	72	0.02	0.01	3.30	0.31	6	814	7.1	17.0	0.0030
8	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	8	72	0.14	0.08	3.40	0.33	3	834	6.9	3.5	0.0061
11	27	72	0.04	0.02	6.60	0.27	2	921	7.1	2.0	0.0025
12	15	72	0.10	0.08	18.00	0.76	9	1026	7.7	0.0	0.0002
12	28	72	0.10	0.07	*****	0.70	9	891	7.1	1.0	0.0006
1	10	73	0.22	0.16	*****	1.87	33	1109	7.1	0.0	0.0002
1	17	73	0.58	0.35	*****	1.86	35	324	6.9	0.0	0.0061
1	24	73	0.26	0.19	6.70	0.87	14	688	6.9	1.0	******
2	6	73	0.32	0.20	2.40	0.89	33	439	7.0	0.0	******
2	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	73	0.20	0.08	2.40	0.67	8	316	6.8	0.0	0.0115
3	13	73	0.19	0.11	4.20	0.74	21	374	6.9	2.0	0.0158

STATION 5.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	21	73	0.08	0.04	4.60	0.53	6	642	7.0	3.0	0.0044
3	29	73	0.06	0.03	1.80	0.68	7	644	6.9	3.0	0.0022
4	7	73	0.04	0.03	3.90	0.59	2	784	7.0	5.0	0.0040
4	23	73	0.02	0.00	5.70	0.51	4	800	7.2	11.0	0.0084
4	30	73	0.02	0.01	7.40	0.49	5	789	6.9	8.0	0.0148
5	12	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	24	73	0.08	0.00	1.90	0.88	16	787	6.9	14.0	0.0074
5	31	73	0.04	0.01	4.90	0.71	9	761	6.9	13.5	0.0244
6	11	73	0.12	0.04	1.50	1.19	34	813	6.9	20.0	0.0062
6	19	73	0.06	0.01	0.25	0.77	13	743	7.0	14.0	0.0198
6	26	73	0.07	0.02	1.50	0.57	17	926	6.9	19.0	0.0069
7	5	73	0.05	0.02	3.35	0.74	13	773	7.0	20.0	0.0061
7	12	73	0.11	0.04	1.55	0.82	58	797	7.1	21.0	0.0022
8	1	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	13	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 6.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	2	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	5	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	17	71	*****	0.15	0.07	0.89	23	706	7.1	0.0	******
3	31	71	*****	0.09	0.21	1.04	24	605	6.8	3.0	0.2205
4	5	71	*****	0.06	0.25	0.62	15	511	6.8	1.0	0.0855
4	9	71	*****	0.01	0.24	0.39	20	474	6.9	6.0	0.0930
4	16	71	*****	0.02	0.01	0.55	15	582	7.3	****	0.0525
4	23	71	*****	0.03	0.07	0.67	19	656	7.2	12.0	0.0374

STATION 6.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	1	71	*****	0.01	0.00	0.68	13	706	7.0	9.0	0.0213
5	10	71	*****	0.04	0.02	0.70	21	738	7.1	14.0	0.0105
5	19	71	*****	0.04	0.02	0.80	13	756	7.2	10.0	0.0239
5	28	71	*****	0.05	0.02	0.74	13	803	7.1	14.0	0.0035
6	5	71	*****	0.08	0.28	0.82	19	804	7.1	20.0	0.0660
6	9	71	*****	0.07	0.01	0.73	22	741	7.1	17.0	0.0676
6	14	71	*****	0.11	0.03	1.20	27	737	7.1	21.5	0.0422
6	21	71	*****	0.10	0.03	0.83	9	831	7.2	23.0	0.0062
6	28	71	*****	0.22	0.03	0.50	44	734	7.1	23.0	0.0058
7	8	71	*****	0.16	0.04	1.41	38	726	6.9	21.0	0.0154
7	14	71	*****	0.07	0.05	0.90	25	680	7.1	23.0	0.0032
7	28	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	13	72	0.69	0.36	1.10	0.76	16	411	6.7	1.0	0.0024
3	24	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	20	72	0.04	0.01	0.05	0.40	0	1198	6.8	7.0	0.0005
5	8	72	0.06	0.03	0.10	0.32	0	766	7.2	9.0	0.0226
5	17	72	0.09	0.03	0.00	0.94	3	816	7.3	21.0	0.0113
6	6	72	0.13	0.08	0.03	1.08	7	752	7.0	0.0	0.0072
6	15	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	23	72	0.18	0.12	0.05	1.01	11	548	6.8	19.0	0.0017
7	14	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	25	72	0.04	0.13	0.08	0.69	13	575	6.7	20.5	0.0034
8	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	8	72	0.15	0.09	0.45	0.57	9	840	6.8	2.0	0.0018
11	27	72	0.06	0.03	0.12	0.58	8	862	6.9	0.0	0.0013
12	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 6.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
2	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	73	0.34	0.23	0.14	1.78	36	605	6.7	0.0	0.0402
3	13	73	0.20	0.10	0.30	0.92	9	389	6.9	2.0	0.0254
3	21	73	0.07	0.02	0.43	0.71	7	610	7.2	2.0	0.0232
3	29	73	0.03	0.01	0.17	0.56	8	683	7.2	3.0	0.0308
4	7	73	0.02	0.01	0.02	0.67	7	740	7.2	6.0	0.0238
4	23	73	0.04	0.02	0.03	0.75	7	814	7.3	10.0	0.0172
4	30	73	0.03	0.02	0.02	0.69	6	820	7.0	9.0	0.0111
5	12	73	0.06	0.05	0.04	0.77	5	840	7.1	10.0	0.0183
5	24	73	0.14	0.11	0.00	1.13	7	805	6.9	15.0	0.0050
5	31	73	0.10	0.08	0.03	0.92	8	805	7.2	16.0	0.0489
6	11	73	0.16	0.14	0.05	1.00	18	789	7.0	23.0	0.0127
6	19	73	0.15	0.11	0.03	0.91	14	716	7.1	16.0	0.0153
6	27	73	0.08	0.08	0.02	0.81	17	743	7.0	0.0	0.0089
7	5	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	12	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	1	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 7.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	2	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	5	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	17	71	*****	0.11	3.28	0.82	30	619	6.9	0.0	******
3	31	71	*****	0.14	3.92	0.72	21	1461	7.2	2.0	0.0372
4	5	71	*****	0.14	0.05	0.68	17	231	6.7	2.0	******
4	9	71	*****	0.08	0.71	0.50	14	310	7.0	5.0	0.0400

STATION 7.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	16	71	*****	0.04	0.75	0.45	18	503	7.9	14.0	******
4	23	71	*****	0.02	0.17	0.59	40	519	8.5	15.0	0.0771
5	1	71	*****	0.02	0.21	0.59	23	605	8.2	11.0	******
5	10	71	*****	0.07	0.02	0.57	20	598	7.8	17.0	******
5	19	71	*****	0.09	0.06	0.66	17	595	7.8	10.0	******
5	28	71	*****	0.06	0.02	0.57	17	585	8.3	15.0	******
6	5	71	*****	0.07	1.28	1.05	30	647	7.5	21.5	******
6	9	71	*****	0.06	1.15	0.68	27	645	7.7	18.0	******
6	14	71	*****	0.08	0.46	1.02	22	640	7.8	24.0	******
6	21	71	*****	0.13	0.03	0.43	10	658	8.8	26.0	******
6	28	71	*****	0.34	0.05	1.35	30	561	8.3	25.0	******
7	8	71	*****	0.32	0.01	0.71	22	550	8.5	23.5	******
7	14	71	*****	0.27	0.04	0.49	23	522	9.2	23.0	******
7	28	71	*****	0.19	0.03	0.53	25	534	8.7	20.5	******
8	5	71	*****	0.16	0.00	0.65	15	489	8.4	19.0	******
8	12	71	*****	0.20	0.04	0.68	20	407	8.6	21.0	******
8	17	71	*****	0.19	0.03	0.68	30	541	7.9	23.0	******
8	24	71	0.39	0.24	0.06	0.86	39	547	8.1	22.0	******
11	1	71	0.15	0.02	0.03	0.82	11	765	7.6	4.0	******
11	16	71	0.09	0.01	0.03	0.52	13	841	7.4	9.0	******
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	24	72	0.09	0.03	0.02	0.17	2	592	7.9	1.0	******
4	5	72	0.09	0.02	0.02	0.45	7	525	8.2	5.0	******
4	11	72	0.13	0.03	0.00	0.44	1	592	8.0	8.0	******
4	20	72	0.15	0.02	0.00	0.30	8	592	7.8	7.0	******
5	8	72	0.03	0.01	1.90	0.21	0	798	7.8	11.0	******
5	17	72	0.04	0.03	0.82	0.22	1	722	7.5	23.0	******
6	6	72	0.18	0.09	0.06	0.64	2	566	7.9	0.0	******
6	15	72	0.20	0.11	0.01	0.50	3	507	9.4	0.0	******
6	23	72	0.19	0.13	0.03	0.42	2	515	9.4	20.0	******

STATION 7.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	14	72	0.32	0.20	0.03	0.54	12	473	9.3	23.0	******
7	25	72	0.16	0.08	0.04	0.41	7	511	7.5	24.5	******
8	11	72	0.11	0.06	0.03	0.80	8	509	7.9	22.0	******
8	28	72	0.05	0.03	0.02	0.21	5	493	8.0	20.0	******
9	7	72	0.08	0.02	0.06	0.38	8	476	7.4	18.0	0.0000
9	25	72	0.17	0.08	0.09	0.26	22	467	7.6	12.0	******
11	8	72	0.06	0.01	0.04	0.38	7	538	7.8	3.0	******
11	10	72	0.09	0.02	0.01	0.48	11	495	8.1	12.0	******
11	27	72	0.04	0.01	0.02	0.32	2	665	7.1	1.0	******
6	19	73	0.08	0.04	3.20	0.53	8	606	7.5	15.0	0.0495
7	5	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	12	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 8.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	2	71	*****	0.13	5.43	0.47	15	730	7.5	1.0	0.0590
3	5	71	*****	0.12	2.67	0.77	25	723	7.7	3.0	0.0210
3	17	71	*****	0.20	3.51	0.85	40	379	7.2	3.0	0.2145
3	31	71	*****	0.29	5.32	0.93	40	507	7.3	4.0	0.4838
4	5	71	*****	0.10	6.23	0.47	10	723	7.3	4.0	0.0818
4	9	71	*****	0.14	14.06	0.57	18	831	7.5	7.0	0.1089
4	15	71	*****	0.13	17.22	0.47	13	872	7.9	12.0	0.0596
4	23	71	*****	0.10	11.82	0.39	20	852	7.8	11.0	0.0415
5	1	71	*****	0.09	14.73	0.43	11	847	7.7	10.0	0.0386
5	10	71	*****	0.08	14.82	0.10	26	806	8.2	12.0	0.0132
5	19	71	*****	0.21	13.18	0.88	32	827	8.3	12.0	0.0189

STATION 8.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	2	71	*****	0.12	6.88	0.28	4	800	7.4	13.0	0.0650
6	9	71	*****	0.10	10.49	0.30	20	853	7.2	11.0	0.0757
6	14	71	*****	0.17	6.36	1.36	102	853	7.2	14.5	0.0620
6	17	71	*****	0.08	13.97	0.20	51	836	7.5	15.0	0.0394
6	21	71	*****	0.13	11.38	1.05	113	1022	7.2	15.5	0.0416
6	28	71	*****	0.24	16.36	1.55	135	841	7.6	24.0	0.0175
7	8	71	*****	0.24	9.00	2.82	980	889	7.4	19.0	0.0280
7	14	71	*****	0.27	11.87	1.80	280	859	7.6	24.0	0.0167
7	28	71	*****	0.14	14.37	0.63	98	819	8.0	22.0	0.0033
8	5	71	*****	0.17	17.30	1.66	65	841	7.9	19.0	0.0066
8	12	71	*****	0.18	12.27	1.46	45	853	7.9	21.0	0.0021
8	17	71	*****	0.24	10.18	4.50	80	896	7.9	22.0	0.0016
8	24	71	*****	0.42	6.10	6.20	128	883	8.0	20.0	0.0026
9	11	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	13	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	27	71	23.31	11.41	3.50	23.50	475	1044	7.3	13.0	0.0023
11	1	71	0.68	0.38	17.50	0.61	16	810	7.8	7.0	0.0141
11	16	71	1.97	1.03	10.30	9.65	39	889	8.0	9.0	0.0044
11	22	71	0.29	0.22	14.80	0.84	10	766	7.9	0.0	0.0084
1	18	72	0.38	0.34	14.00	1.18	5	841	7.8	1.0	******
2	28	72	1.57	0.75	14.50	4.95	11	889	7.9	0.0	******
3	7	72	0.33	0.09	4.70	0.84	33	474	7.1	1.0	0.1266
3	13	72	1.24	0.49	6.95	4.50	40	549	7.2	4.0	0.0600
3	24	72	0.28	0.17	9.60	0.24	0	811	7.6	6.0	0.0192
4	5	72	0.28	0.16	7.40	0.55	5	758	8.0	9.0	0.0072
4	11	72	0.24	0.13	9.30	0.58	4	805	8.2	6.0	0.0069
4	20	72	0.40	0.19	13.50	0.36	18	735	8.3	7.0	0.0070
5	10	72	0.15	0.06	9.00	0.10	1	846	7.5	9.0	0.0198
5	22	72	0.11	0.09	9.20	0.17	20	841	7.6	13.0	0.0178
6	6	72	1.17	0.46	14.00	4.80	420	874	7.7	0.0	0.0238

STATION 8.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	15	72	0.46	0.19	15.00	1.68	143	791	7.6	0.0	0.0177
6	23	72	*****	0.15	21.00	2.17	3400	828	7.1	17.0	0.0153
7	14	72	0.68	0.32	12.50	1.66	109	808	7.5	17.5	0.0458
7	25	72	0.28	0.07	14.50	0.59	475	874	7.2	17.0	0.0228
8	11	72	0.32	0.16	10.50	7.75	9999	881	7.7	18.5	0.0087
8	28	72	0.55	0.25	10.10	2.25	99	905	7.7	18.0	0.0051
9	7	72	0.67	0.35	9.60	2.50	70	926	8.0	16.0	0.0040
9	25	72	0.51	0.29	15.00	0.98	139	769	7.9	11.5	0.0015
10	10	72	0.40	0.25	7.90	0.73	35	885	8.1	13.0	0.0009
11	8	72	0.20	0.12	14.80	0.26	8	897	7.7	7.0	0.0295
11	14	72	0.15	0.09	12.00	0.42	13	855	7.8	5.5	0.0281
11	28	72	0.17	0.11	3.40	0.32	12	888	7.7	2.0	0.0144
12	15	72	0.25	0.18	21.00	0.53	10	830	8.4	2.0	0.0076
12	28	72	0.18	0.15	*****	0.53	3	786	8.0	4.0	0.0155
1	10	73	0.22	0.13	*****	0.45	115	790	7.8	0.0	0.0036
1	17	73	1.20	1.11	*****	7.35	56	519	7.1	2.0	0.0927
1	24	73	0.17	0.14	28.00	0.36	7	887	7.6	4.0	0.0149
2	6	73	0.19	0.15	10.10	0.48	4	770	7.6	1.0	0.0140
2	20	73	0.32	0.15	10.50	0.59	1	872	7.9	1.0	0.0020
2	27	73	0.20	0.16	9.20	0.57	13	729	7.4	3.0	0.0187
3	7	73	0.25	0.17	9.30	0.68	7	663	7.1	3.0	0.0905
3	13	73	0.22	0.16	12.10	0.52	7	689	7.3	3.5	0.1380
3	21	73	0.14	0.11	10.90	0.29	8	790	7.4	5.0	0.0446
3	29	73	0.11	0.10	13.50	0.25	1	862	7.4	6.0	0.0715
4	7	73	0.09	0.09	24.00	0.17	2	863	7.6	4.0	0.0387
4	23	73	0.10	0.08	8.50	0.24	2	866	7.6	8.0	0.0433
5	1	73	0.17	0.14	12.30	0.43	11	844	7.4	6.0	0.1050
5	11	73	0.11	0.09	9.90	0.27	13	874	7.6	10.0	0.1012
5	24	73	0.11	0.08	8.60	0.19	6	856	7.6	9.5	0.0409
5	31	73	0.07	0.06	13.50	0.29	8	852	7.2	11.0	0.1050

STATION 8.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	11	73	0.96	0.27	24.00	0.89	550	890	7.4	16.0	0.0861
6	12	73	0.12	0.07	17.00	0.27	54	860	7.5	11.0	0.0678
6	18	73	0.59	0.22	11.50	6.50	270	740	7.1	16.0	******
6	20	73	0.14	0.07	15.50	0.12	26	863	7.5	13.0	0.1288
6	27	73	0.19	0.08	19.50	0.00	38	867	7.7	0.0	0.0426
7	2	73	0.98	0.25	14.70	0.47	380	867	7.4	16.0	0.1870
7	5	73	0.10	0.10	17.50	0.23	31	878	7.4	15.0	0.0743
7	9	73	2.29	2.18	15.00	5.40	215	985	7.5	16.0	0.0378
7	12	73	0.41	0.22	15.00	0.33	133	869	7.7	18.0	0.0259
7	19	73	0.62	0.40	12.50	1.03	353	889	7.6	21.0	0.0040
7	24	73	0.22	0.17	18.00	0.67	84	872	7.9	17.0	0.0149
8	1	73	0.25	0.25	10.50	1.04	150	847	8.3	19.0	0.0042
8	7	73	0.55	0.25	10.50	1.17	94	896	8.0	19.0	0.0071
8	14	73	0.22	0.22	14.00	1.05	85	882	8.0	16.0	0.0044
8	23	73	1.75	0.44	10.50	2.90	730	902	8.0	18.0	0.0008
8	28	73	0.56	0.38	7.50	3.60	68	602	8.1	24.0	0.0046

STATION 8.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	12	73	0.07	0.06	17.50	0.06	0	860	7.2	****	******
6	18	73	0.16	0.07	11.50	0.32	46	793	7.2	****	******
6	20	73	0.07	0.04	14.00	0.33	1	860	7.2	****	******
6	27	73	0.06	0.04	16.50	0.07	0	867	7.3	****	******
7	2	73	0.08	0.06	17.00	0.09	0	879	7.2	****	******
7	5	73	0.06	0.06	19.00	0.05	0	878	7.1	****	******
7	12	73	0.06	0.06	14.50	0.00	0	865	7.4	****	******

STATION 8.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	19	73	0.07	0.07	17.50	0.08	3	873	7.5	****	******
7	24	73	0.07	0.07	13.50	0.08	0	884	7.5	****	******
8	1	73	0.08	0.08	16.00	0.14	0	870	8.2	****	******
8	7	73	0.10	0.10	14.50	0.15	0	883	7.6	****	******
8	14	73	0.10	0.10	16.50	0.04	7	874	7.8	****	******
8	23	73	0.14	0.13	16.50	0.20	0	894	7.9	****	******
8	28	73	0.13	0.12	12.00	0.02	0	591	7.7	****	******

STATION 9.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	17	71	*****	0.06	8.84	0.00	2	890	7.1	11.5	0.1105
9	11	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	18	72	0.21	0.15	14.00	0.10	5	735	7.8	1.0	0.0006
2	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	0.98	0.42	4.20	1.62	88	302	7.1	1.0	0.0843
3	13	72	0.52	0.16	3.05	0.52	14	387	7.1	2.0	0.0844
3	24	72	0.37	0.22	10.50	0.13	0	827	7.6	3.0	0.0210
4	5	72	0.27	0.16	9.30	0.42	1	819	7.8	4.0	0.0111
4	20	72	0.26	0.14	14.00	0.02	2	820	7.9	7.0	0.0049
5	22	72	0.09	0.08	9.90	0.00	0	808	7.4	10.0	0.0654
6	6	72	0.08	0.05	14.00	0.00	0	878	7.3	0.0	0.0314
6	15	72	0.09	0.05	14.90	0.15	0	863	7.5	0.0	0.0360
6	23	72	0.09	0.07	32.00	0.10	0	861	7.4	13.0	0.0161
7	14	72	0.16	0.09	19.00	0.27	18	827	7.2	15.0	0.0391
7	25	72	0.07	0.07	13.00	0.00	0	910	7.1	15.0	0.0982
8	11	72	0.15	0.09	27.00	0.54	1	865	7.2	16.0	0.0136

STATION 9.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	28	72	0.57	0.31	19.00	0.19	9	919	7.4	17.0	0.0033
9	7	72	1.58	0.53	13.50	1.45	42	1077	7.4	15.0	0.0029
9	25	72	0.57	0.43	12.90	0.18	17	845	8.0	12.5	0.0014
10	10	72	0.16	0.12	8.00	0.12	3	945	7.7	14.0	0.0078
11	8	72	0.11	0.09	16.50	0.08	0	904	7.5	9.0	0.0884
11	28	72	0.09	0.09	3.85	0.02	0	906	8.0	1.5	0.0272
12	15	72	0.14	0.12	23.50	0.10	0	1016	8.3	0.0	0.0200
12	28	72	0.09	0.09	*****	0.18	9	793	8.2	5.0	0.0120
1	10	73	0.13	0.09	*****	0.32	17	793	8.0	2.0	0.0086
1	17	73	1.24	1.21	*****	5.70	53	463	7.2	3.0	0.0446
2	6	73	0.20	0.13	9.40	0.15	5	683	7.7	3.0	0.0251
2	20	73	0.24	0.16	8.60	0.47	19	838	7.9	3.0	0.0095
2	27	73	0.20	0.16	10.25	0.37	16	580	7.4	3.0	0.0327
3	7	73	0.30	0.19	9.20	0.25	6	635	7.2	3.0	0.1030
3	13	73	0.20	0.15	9.80	0.29	11	668	7.3	3.0	0.1892
3	21	73	0.09	0.08	11.00	0.14	4	804	7.3	2.0	0.0569
3	29	73	0.07	0.07	13.00	0.17	2	837	7.3	3.0	0.0925
4	7	73	0.06	0.06	14.50	0.09	0	846	7.6	4.0	0.0555
4	23	73	0.06	0.06	8.60	0.18	0	880	7.3	5.0	0.0600
5	1	73	0.12	0.10	13.50	0.18	3	870	7.3	5.5	0.1474
5	12	73	0.06	0.06	14.00	0.12	0	853	7.5	8.0	0.0779
5	24	73	0.07	0.05	9.80	0.07	0	860	7.3	8.0	0.0732
6	1	73	0.05	0.05	8.90	0.18	1	883	7.2	9.0	0.0887
6	12	73	0.07	0.04	21.50	0.02	4	899	7.2	10.0	0.0669
6	19	73	0.05	0.05	22.00	0.01	1	912	7.2	10.0	0.1043
6	27	73	0.04	0.04	21.50	0.05	2	911	7.3	12.0	0.0496
7	5	73	0.06	0.06	18.50	0.00	3	911	7.2	13.0	0.0579
7	12	73	0.06	0.06	16.50	0.00	3	930	7.3	14.0	0.0265
7	24	73	0.14	0.07	8.50	0.24	12	935	7.5	14.0	0.0063
8	1	73	0.15	0.15	25.50	0.19	2	902	8.1	15.0	0.0057

STATION 9.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	14	73	0.36	0.27	21.50	0.21	11	890	7.6	14.0	0.0015
8	28	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 10.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	5	71	*****	0.11	1.91	0.65	1	684	7.3	3.0	0.0198
3	17	71	*****	0.15	2.97	0.55	22	652	7.1	3.0	0.0393
3	31	71	*****	0.17	4.27	0.74	31	546	7.3	4.0	0.1040
4	5	71	*****	0.09	4.48	0.42	3	733	7.2	3.0	0.0372
4	9	71	*****	0.11	7.26	0.35	8	785	7.1	5.0	0.0274
4	15	71	*****	0.09	10.23	0.50	6	785	7.3	7.0	0.0300
4	23	71	*****	0.09	6.95	0.49	12	769	7.1	7.0	0.0204
5	1	71	*****	0.08	7.72	0.41	4	759	7.1	7.0	0.0936
5	10	71	*****	0.06	3.75	0.01	7	671	7.3	8.0	0.0142
5	19	71	*****	0.10	5.98	0.37	11	694	7.3	9.0	0.0099
6	2	71	*****	0.09	5.11	0.33	2	754	7.1	9.C	0.0201
6	9	71	*****	0.06	8.71	0.18	10	837	7.1	11.0	0.0290
6	14	71	*****	0.07	7.97	0.60	11	819	6.9	12.0	0.0235
6	21	71	*****	0.06	7.49	0.02	5	923	7.1	12.0	0.0148
6	28	71	*****	0.05	5.99	0.22	145	721	7.0	13.0	0.0078
7	8	71	*****	0.06	3.24	0.31	11	749	7.0	14.0	0.0028
7	14	71	*****	0.04	3.00	0.02	5	687	7.2	15.0	0.0045
7	28	71	*****	0.02	0.40	0.11	15	648	7.3	16.0	******
8	5	71	0.00	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	12	71	*****	0.03	0.30	0.75	78	653	7.3	16.0	0.0034
8	17	71	*****	0.02	0.37	0.26	20	660	7.2	14.0	0.0033

STATION 10.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	24	71	0.00	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	17	71	0.00	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	22	71	0.03	0.02	0.03	0.00	2	632	****	10.0	0.0040
10	8	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	13	71	0.03	0.01	0.10	0.00	5	485	7.4	13.0	0.0068
10	27	71	0.70	0.52	0.00	0.56	10	472	7.2	13.0	0.0145
11	1	71	0.14	0.07	3.20	0.18	0	708	7.2	12.0	0.0057
11	16	71	0.07	0.04	2.00	0.15	0	680	7.2	10.0	0.0060
11	22	71	0.09	0.05	4.00	0.27	6	675	7.2	10.0	0.0116
12	9	71	0.05	0.03	4.75	0.08	0	706	7.2	7.0	0.0084
1	18	72	0.03	0.02	1.40	0.06	4	630	7.4	7.0	0.0085
2	28	72	0.03	0.01	0.90	0.00	0	609	7.3	7.0	0.0039
3	7	72	1.00	0.43	1.20	2.04	52	166	7.0	0.0	0.0900
3	13	72	0.22	0.15	4.50	0.12	1	677	7.1	4.0	0.0187
3	25	72	0.16	0.09	6.05	0.00	5	728	7.2	3.0	0.0127
4	5	72	0.06	0.06	2.90	0.24	0	731	7.5	5.0	0.0066
4	11	72	0.09	0.07	5.70	0.21	0	733	7.6	10.0	0.0089
5	10	72	0.08	0.06	6.40	0.07	0	805	7.3	7.0	0.0177
5	22	72	0.09	0.07	9.10	0.05	1	765	7.3	10.0	0.0152
6	6	72	0.14	0.07	12.00	0.31	3	805	7.0	0.0	0.0118
6	15	72	0.14	0.08	13.00	0.21	0	810	6.9	0.0	0.0178
6	23	72	0.18	0.08	9.20	0.19	0	788	7.1	13.0	0.0077
7	14	72	0.14	0.09	9.50	0.25	3	780	6.9	13.0	0.0107
7	25	72	0.12	0.08	12.00	0.00	3	867	7.0	14.5	0.0098
8	11	72	0.07	0.07	4.00	0.30	3	709	6.8	14.0	0.0025
8	29	72	0.06	0.04	0.80	0.18	0	642	6.9	14.5	0.0051
9	11	72	0.03	0.02	0.40	0.15	0	629	7.0	14.0	0.0037
9	25	72	0.07	0.04	0.44	0.23	7	613	7.1	13.5	0.0034
10	10	72	0.09	0.04	1.80	0.18	0	697	7.2	13.0	0.0030
11	8	72	0.10	0.07	8.90	0.11	2	796	7.2	9.0	0.0126

STATION 10.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
11	28	72	0.07	0.07	5.80	0.00	6	750	7.2	8.0	0.0077
12	15	72	0.06	0.06	4.70	0.14	6	632	7.3	2.0	0.0062
12	28	72	0.05	0.04	*****	0.09	3	617	7.3	7.0	0.0080
1	10	73	0.09	0.09	*****	0.25	6	778	7.2	5.0	0.0072
1	17	73	0.92	0.80	*****	1.87	34	263	7.0	2.0	0.0300
1	24	73	0.14	0.11	6.20	0.38	5	738	7.3	5.0	0.0075
2	6	73	0.12	0.11	5.90	0.28	3	843	7.2	4.5	0.0000
2	20	73	0.25	0.08	2.10	0.26	3	643	7.3	6.5	0.0060
2	27	73	0.10	0.08	5.95	0.22	0	724	7.2	5.0	0.0097
3	7	73	0.18	0.13	8.80	0.29	5	685	7.1	3.0	0.0143
3	13	73	0.18	0.14	12.20	0.20	2	731	7.0	3.5	0.0234
3	21	73	0.09	0.09	9.80	0.22	2	757	7.1	3.5	0.0181
3	29	73	0.19	0.10	8.90	0.33	1	787	7.1	4.0	0.0326
4	7	73	0.06	0.06	9.70	0.09	0	787	7.4	5.0	0.0209
4	23	73	0.09	0.08	8.30	0.22	0	824	7.2	6.0	0.0151
4	30	73	0.05	0.05	9.90	0.10	0	792	7.3	6.0	0.0179
5	11	73	0.09	0.08	11.00	0.16	3	843	7.2	7.0	0.0181
5	24	73	0.08	0.07	10.50	0.13	2	781	7.2	9.0	0.0125
6	1	73	0.09	0.09	8.30	0.16	0	891	7.1	9.0	0.0225
6	12	73	0.10	0.07	14.50	0.01	4	879	7.1	10.0	0.0171
6	19	73	0.10	0.07	25.00	0.02	4	937	7.1	9.0	0.0205
6	27	73	0.06	0.06	18.50	0.09	4	867	7.4	11.0	0.0098
7	5	73	0.06	0.06	13.00	0.02	1	870	7.0	13.0	0.0113
7	12	73	0.10	0.10	10.50	0.09	0	853	7.2	13.0	0.0060
7	24	73	0.08	0.08	3.65	0.08	0	719	7.2	12.0	0.0053
8	1	73	0.03	0.03	1.55	0.13	1	661	7.5	12.0	0.0035
8	14	73	0.04	0.04	0.20	0.03	4	629	7.4	13.0	0.0014
8	28	73	0.05	0.03	0.23	0.13	5	450	7.3	15.0	0.0012

STATION 11.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	5	71	*****	0.08	0.91	0.68	1	743	7.6	2.0	0.0244
3	17	71	*****	0.09	2.37	0.50	19	481	7.1	3.0	0.1920
3	31	71	*****	0.10	4.48	0.47	19	559	7.4	5.0	0.2700
4	5	71	*****	0.07	4.39	0.41	5	743	7.5	5.0	0.1160
4	9	71	*****	0.08	6.38	0.27	8	765	7.8	8.0	0.0630
4	15	71	*****	0.06	7.76	0.30	11	815	7.8	10.0	0.0486
4	23	71	*****	0.07	6.66	0.38	9	786	8.1	11.0	0.0504
5	1	71	*****	0.05	6.30	0.32	3	787	7.9	9.0	0.0375
5	11	71	*****	0.06	5.45	0.12	3	782	7.7	8.0	0.0255
5	20	71	*****	0.07	6.32	0.27	1	825	7.6	7.0	0.0217
6	2	71	*****	0.08	6.01	0.28	0	811	7.5	10.0	0.0395
6	8	71	*****	0.07	9.18	0.24	12	807	7.2	10.5	0.1133
6	14	71	*****	0.06	7.23	0.65	15	819	7.6	13.0	0.0475
6	21	71	*****	0.05	6.96	0.05	5	960	8.0	16.0	0.0396
6	28	71	*****	0.07	9.93	0.25	30	754	7.8	17.5	0.0185
7	9	71	*****	0.06	6.84	0.05	10	818	7.7	14.0	0.0234
7	15	71	*****	0.06	5.41	0.23	8	897	7.7	13.5	0.0108
7	28	71	*****	0.06	5.35	0.02	20	842	7.8	18.0	******
8	5	71	*****	0.06	3.50	0.47	14	863	7.7	16.0	0.0060
8	12	71	*****	0.09	1.43	0.55	12	802	7.5	19.0	0.0024
8	17	71	*****	0.19	0.68	0.85	33	817	7.4	21.5	******
8	24	71	*****	0.49	0.05	1.49	27	772	7.7	21.0	0.0010
9	11	71	0.39	0.16	0.22	1.05	72	800	7.3	15.0	0.0005
9	17	71	*****	0.10	0.24	1.22	61	809	7.5	9.0	0.0002
9	22	71	0.22	0.11	0.28	0.71	49	777	****	9.0	0.0010
10	8	71	0.25	0.09	0.22	0.32	44	740	7.1	9.0	0.0003
10	13	71	0.09	0.04	0.00	0.20	47	764	7.4	11.0	0.0008
10	27	71	0.44	0.26	0.00	0.64	33	728	7.3	14.0	0.0035
11	1	71	0.36	0.21	7.95	0.59	1	905	7.6	7.0	0.0080
11	16	71	0.21	0.13	4.55	0.41	5	821	7.3	9.0	0.0027

STATION 11.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
11	22	71	0.16	0.10	6.95	0.40	2	828	7.6	0.0	0.0052
1	18	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	2.66	1.27	2.85	4.30	59	302	7.0	0.0	0.1613
3	13	72	0.74	0.32	3.70	1.52	20	627	7.2	0.0	0.0326
3	25	72	0.14	0.07	3.20	0.12	5	764	7.3	1.0	0.0162
4	6	72	0.10	0.06	5.30	0.13	0	811	7.3	3.0	0.0039
4	11	72	0.08	0.06	4.30	0.14	0	817	7.7	5.0	0.0096
4	25	72	0.12	0.06	4.00	0.25	0	817	7.5	6.0	0.0138
5	10	72	0.10	0.04	7.60	0.03	0	817	7.4	9.0	0.1025
5	22	72	0.07	0.06	6.90	0.04	3	878	7.4	9.0	0.0288
6	8	72	0.16	0.09	8.50	0.15	12	833	7.5	12.0	0.0746
6	19	72	0.11	0.05	9.70	0.15	0	831	7.3	13.0	0.0400
7	5	72	0.14	0.09	7.80	0.27	0	785	7.5	11.0	0.0152
7	14	72	0.16	0.11	5.10	0.36	4	735	7.4	17.0	0.0280
7	25	72	0.09	0.07	9.20	0.00	4	828	7.4	15.5	0.0408
8	11	72	0.15	0.09	4.90	0.53	9	761	7.3	17.0	0.0102
8	29	72	0.37	0.23	2.20	0.52	11	818	7.2	17.0	0.0047
9	11	72	0.28	0.17	2.40	0.58	15	838	7.4	18.0	0.0029
9	25	72	0.26	0.25	2.85	0.14	35	750	7.3	11.0	0.0030
10	10	72	0.15	0.11	4.85	0.16	9	914	7.8	12.0	0.0096
11	9	72	0.08	0.06	8.70	0.11	4	849	7.6	7.0	0.0241
11	28	72	0.09	0.06	2.80	0.03	2	852	7.8	1.0	0.0126
12	15	72	0.09	0.08	13.00	0.12	0	794	8.0	1.0	0.0088
12	28	72	0.06	0.05	*****	0.15	1	768	7.8	0.0	0.0053
1	10	73	0.07	0.07	*****	0.22	2	766	7.7	0.0	0.0100
1	17	73	0.79	0.71	*****	1.90	33	410	7.1	0.5	0.0651
1	24	73	0.14	0.11	6.10	0.20	5	715	7.4	2.0	0.0194
2	6	73	0.12	0.09	4.40	0.25	5	722	7.6	1.5	0.0000
2	20	73	0.13	0.06	5.00	0.13	0	812	7.5	0.0	0.0041

STATION 11.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
2	27	73	0.13	0.09	5.90	0.16	6	691	7.4	2.5	0.0236
3	7	73	0.16	0.11	8.90	0.23	3	713	7.3	4.0	0.0785
3	13	73	0.17	0.14	12.00	0.22	3	734	7.2	3.0	0.1072
3	21	73	0.09	0.07	9.90	0.19	1	760	7.6	3.0	0.0578
3	29	73	0.07	0.06	12.00	0.16	1	803	7.6	5.0	0.0973
4	7	73	0.05	0.05	12.00	0.07	3	787	7.6	5.0	0.0846
4	23	73	0.04	0.03	6.80	0.15	1	802	7.7	5.0	0.0786
5	1	73	0.27	0.18	9.10	0.36	10	808	7.4	6.0	0.1194
5	11	73	0.04	0.03	9.60	0.09	5	811	7.7	9.0	0.0500
5	25	73	0.06	0.05	12.50	0.15	4	806	7.7	8.0	0.0443
6	1	73	0.08	0.04	5.30	0.12	2	836	7.6	10.0	0.1058
6	12	73	0.07	0.03	10.50	0.04	8	852	7.6	11.0	0.0423
6	20	73	0.10	0.05	13.50	0.28	13	860	7.6	12.0	0.0491
6	27	73	0.09	0.05	12.00	0.18	8	860	7.6	13.0	0.0245
7	5	73	0.08	0.08	11.50	0.19	6	844	7.5	14.0	0.0229
7	12	73	0.13	0.11	11.00	0.18	15	853	7.8	18.0	0.0183
7	25	73	0.18	0.15	6.50	0.43	12	841	7.8	19.0	0.0104
8	2	73	0.18	0.15	7.10	0.37	13	892	7.9	13.0	0.0050
8	14	73	0.37	0.28	1.00	1.15	18	814	7.8	15.0	0.0028
8	28	73	1.25	1.25	0.25	2.53	34	561	7.9	24.0	0.0019

STATION 12.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	5	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	17	71	*****	0.21	1.90	0.44	12	554	7.4	0.0	0.0195
3	31	71	*****	0.17	2.41	0.55	18	491	7.7	7.0	0.0794
4	5	71	*****	0.17	2.14	0.48	12	611	7.5	4.0	0.0261
4	9	71	*****	0.09	1.03	0.31	12	672	7.9	11.0	0.0141
4	15	71	*****	0.07	1.01	0.38	8	683	8.0	11.0	0.0140
4	23	71	*****	0.05	0.09	0.30	17	697	7.9	14.0	0.0087
4	30	71	*****	0.06	0.28	0.31	12	721	7.8	11.0	0.0065
5	11	71	*****	0.09	0.32	0.23	7	755	7.8	10.0	0.0012
5	20	71	*****	0.10	0.04	0.38	6	750	7.7	9.0	0.0042
6	2	71	*****	0.10	0.17	0.32	0	697	7.8	12.0	0.0093
6	8	71	*****	0.09	1.05	0.17	12	685	7.5	15.0	0.0213
6	16	71	*****	0.09	0.20	0.25	10	746	7.7	18.0	0.0070
6	21	71	*****	0.12	0.23	0.18	7	889	7.8	20.0	0.0042
6	28	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	9	71	*****	0.15	0.24	0.20	9	793	7.8	18.0	0.0217
7	15	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	0.94	0.45	1.50	1.29	19	203	7.0	0.0	******
3	13	72	0.90	0.46	1.60	1.10	18	361	7.1	0.0	0.0094
3	25	72	0.19	0.11	1.20	0.00	0	629	7.5	1.0	0.0012
4	6	72	0.13	0.06	0.10	0.10	4	858	7.3	3.0	0.0014
4	25	72	0.13	0.07	0.10	0.27	1	704	7.6	6.0	0.0021
5	10	72	0.07	0.03	0.40	0.11	3	640	7.7	12.0	0.0284
5	22	72	0.21	0.16	0.35	0.23	7	774	7.6	19.0	0.0096
6	8	72	0.27	0.14	0.84	0.50	30	693	7.7	18.0	0.0192
6	19	72	0.23	0.11	0.37	0.65	20	748	8.0	18.0	0.0015
7	5	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	14	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	25	72	0.12	0.09	0.46	0.01	5	711	8.0	21.0	0.0050

STATION 12.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	9	72	0.18	0.14	1.70	0.09	3	788	7.6	5.0	0.0007
11	28	72	0.07	0.06	1.30	0.00	1	708	7.6	0.0	0.0005
12	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	24	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	73	0.68	0.41	1.80	1.39	14	506	7.4	1.0	0.0240
3	13	73	0.31	0.23	2.55	1.17	8	560	7.4	3.5	0.0250
3	21	73	0.18	0.14	2.80	0.23	2	663	7.5	4.5	0.0083
3	29	73	0.12	0.11	2.70	0.24	1	706	8.0	5.0	0.0113
4	7	73	0.07	0.06	1.70	0.19	2	681	7.9	5.0	0.0235
4	24	73	0.03	0.02	0.45	0.37	123	688	7.7	15.0	0.0143
5	1	73	0.09	0.06	2.35	0.41	9	652	7.7	7.0	0.0501
5	11	73	0.08	0.06	0.78	0.33	9	683	7.9	12.0	0.0057
5	25	73	0.20	0.15	0.47	0.49	14	727	7.7	10.0	0.0057
6	1	73	0.14	0.11	1.70	0.31	12	727	7.9	16.0	0.0352
6	12	73	0.27	0.20	1.45	0.42	24	755	7.9	15.0	0.0016
6	20	73	0.15	0.12	4.00	0.33	7	755	7.9	15.0	0.0060
6	27	73	0.21	0.15	0.20	0.23	11	749	8.2	18.0	0.0004
7	5	73	0.19	0.19	0.21	0.43	28	755	8.2	19.0	0.0007
7	12	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 13.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.14	4.24	0.80	58	757	7.5	2.0	0.0263
3	12	71	*****	0.07	2.78	0.30	25	623	7.5	3.0	0.0160
3	17	71	*****	0.13	2.94	0.30	11	605	7.3	3.0	0.0188
3	30	71	*****	0.11	4.34	0.34	20	600	7.4	4.0	0.0429
4	3	71	*****	0.12	4.03	0.24	5	616	7.4	4.0	0.0214
4	5	71	*****	0.12	3.84	0.30	3	646	7.5	4.0	0.0205
4	8	71	*****	0.10	4.38	0.23	10	654	7.6	6.0	0.0125
4	15	71	*****	0.07	5.94	0.18	7	664	7.6	7.0	0.0180
4	22	71	*****	0.07	5.39	0.32	13	667	7.8	9.0	0.0105
4	30	71	*****	0.08	4.79	0.13	7	692	7.8	9.0	0.0150
5	11	71	*****	0.14	5.22	0.40	4	760	7.7	9.0	0.0061
5	20	71	*****	0.09	4.98	0.27	1	693	7.6	9.0	0.0034
6	2	71	*****	0.07	3.87	0.22	0	686	7.5	11.0	0.0061
6	7	71	*****	0.14	3.81	0.38	40	655	7.5	12.0	0.0606
6	16	71	*****	0.06	6.49	0.03	3	663	7.5	14.0	0.0085
6	23	71	*****	0.06	5.48	0.00	10	682	7.5	14.0	0.0042
6	29	71	*****	0.07	9.45	0.00	3	521	7.5	16.0	0.0333
7	9	71	*****	0.06	6.47	0.00	12	665	7.9	15.0	0.0384
7	15	71	*****	0.08	7.47	0.05	5	711	7.6	15.0	0.0022
7	21	71	*****	0.12	7.44	0.15	5	794	7.6	15.5	0.0004
7	30	71	*****	0.06	4.90	0.00	5	763	7.4	12.0	0.0003
8	4	71	*****	0.04	5.50	0.06	0	772	7.3	14.0	0.0003
8	12	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	16	72	0.43	0.25	3.20	0.41	0	728	7.2	3.0	0.0028
3	25	72	0.28	0.16	3.60	0.00	2	733	7.2	3.0	0.0021
4	6	72	0.27	0.12	4.10	0.40	49	733	7.3	4.0	0.0007
4	17	72	0.17	0.12	3.10	0.04	2	740	7.5	7.0	0.0006
4	25	72	0.29	0.16	3.80	0.30	2	746	7.4	6.0	0.0022
5	10	72	0.15	0.09	6.90	0.00	1000	704	7.4	10.0	0.0067

STATION 13.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	23	72	0.21	0.12	5.30	0.28	3	735	7.4	11.0	0.0037
6	8	72	0.17	0.09	8.00	0.05	14	689	7.5	13.0	0.0125
6	19	72	0.12	0.07	7.90	0.22	0	635	7.3	14.0	0.0018
7	5	72	0.07	0.04	6.00	0.01	0	629	7.9	14.0	0.0005
7	14	72	0.23	0.13	4.30	0.28	14	638	7.5	17.5	0.0021
7	26	72	0.09	0.07	8.30	0.13	2	711	7.2	17.0	0.0029
8	8	72	0.11	0.07	5.60	0.09	0	694	7.4	15.0	0.0006
8	29	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	25	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	10	72	0.11	0.09	4.00	0.22	2	711	7.8	12.0	0.0002
11	9	72	0.19	0.17	5.90	0.06	0	750	7.4	8.0	0.0018
11	28	72	0.14	0.12	3.40	0.00	2	715	7.6	1.0	0.0014
12	16	72	0.08	0.07	6.50	0.12	2	746	7.4	1.0	0.0018
1	10	73	0.17	0.14	*****	0.32	3	667	7.6	0.0	0.0009
1	17	73	0.29	0.19	*****	1.37	18	337	7.1	1.0	0.0078
1	24	73	0.23	0.16	5.20	0.05	3	740	7.3	5.0	0.0023
2	6	73	0.21	0.15	5.30	0.32	4	788	7.4	2.0	0.0036
2	20	73	0.29	0.18	5.10	0.38	0	844	7.4	3.5	0.0075
2	27	73	0.18	0.14	6.25	0.13	3	644	7.2	2.5	0.0021
3	7	73	0.19	0.14	5.30	0.19	2	588	7.0	3.0	0.0196
3	13	73	0.22	0.19	6.30	0.12	3	645	7.2	2.0	0.0257
3	26	73	0.14	0.13	6.10	0.06	1	691	7.4	3.5	0.0202
4	2	73	0.14	0.12	7.90	0.18	7	727	7.4	5.0	0.0164
4	17	73	0.14	0.14	7.90	0.06	2	716	7.4	8.5	0.0203
4	24	73	0.09	0.09	8.30	0.14	1	715	7.4	10.0	0.0169
5	2	73	0.14	0.13	8.95	0.15	1	735	7.3	6.0	0.0301
5	11	73	0.09	0.08	6.90	0.13	4	713	7.4	9.5	0.0128
5	25	73	0.11	0.08	9.00	0.19	6	730	7.4	9.0	0.0076
6	1	73	0.11	0.09	4.60	0.18	2	727	7.5	10.0	0.0156
6	12	73	0.10	0.08	13.00	0.08	8	738	7.4	11.0	0.0078

STATION 13.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	20	73	0.08	0.07	9.90	0.19	6	740	7.4	13.0	0.0138
6	27	73	0.07	0.05	8.00	0.07	0	738	7.4	14.0	0.0055
7	5	73	0.08	0.08	9.80	0.02	1	741	7.4	15.0	0.0128
7	12	73	0.10	0.10	10.00	0.18	4	771	7.6	18.0	0.0074
7	25	73	0.13	0.12	8.80	0.12	2	756	7.7	18.0	0.0015
8	2	73	0.15	0.14	10.50	0.06	7	828	7.9	16.0	0.0004
8	14	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 13.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	15	71	*****	0.01	0.15	0.32	17	465	8.4	6.0	3.3630
4	22	71	*****	0.01	0.10	0.38	20	477	8.3	10.0	1.8400
4	28	71	*****	0.01	0.00	0.52	13	477	8.7	9.0	3.7150
5	7	71	*****	0.01	0.00	0.27	3	483	8.7	13.0	2.2058
5	14	71	*****	0.01	0.01	0.26	4	484	8.7	15.0	0.8087
5	20	71	*****	0.01	0.00	0.30	3	490	8.3	13.0	0.4616
6	2	71	*****	0.03	0.01	0.32	0	484	8.2	14.0	0.6539
6	8	71	*****	0.01	0.04	0.08	3	466	8.3	18.0	2.0300
6	16	71	*****	0.01	0.01	0.15	7	464	8.5	23.0	1.2510
6	23	71	*****	0.01	0.00	0.00	10	471	8.7	24.0	0.5371
6	29	71	*****	0.01	0.01	0.00	10	401	8.7	25.0	0.8076
7	9	71	*****	0.00	0.01	0.19	15	467	9.1	24.0	0.9900
7	15	71	*****	0.01	0.02	0.21	18	458	9.0	22.5	0.5508
7	21	71	*****	0.00	0.06	0.25	15	469	9.0	22.5	0.1731
7	30	71	*****	0.02	0.04	0.45	41	470	8.9	17.0	0.2421
8	4	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 13.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
9	17	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	22	71	0.09	0.03	0.06	0.25	34	470	****	13.0	0.0244
10	8	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	22	72	0.06	0.06	0.01	0.04	5	481	8.9	20.0	0.0367
6	8	72	0.04	0.01	0.02	0.14	15	439	8.4	19.0	0.3113
6	19	72	0.07	0.00	0.01	0.34	1	444	8.7	20.0	0.1868
7	5	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	14	72	0.02	0.01	0.02	0.15	1	434	8.3	23.0	0.0254
7	25	72	0.02	0.02	0.02	0.00	0	460	8.6	26.5	0.5094
8	8	72	0.06	0.01	0.05	0.27	14	452	8.8	20.0	0.2830
8	29	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	11	72	0.05	0.00	0.03	0.19	8	450	8.8	19.0	0.0065
9	25	72	0.07	0.01	0.05	0.21	19	445	8.6	15.5	0.0175
10	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	16	72	0.19	0.19	0.00	1.47	10	566	7.1	1.0	0.0006
3	7	73	0.06	0.04	0.52	0.67	4	458	7.4	2.0	0.0594
3	13	73	0.04	0.02	0.62	0.23	3	502	8.1	3.0	0.1953
3	26	73	0.02	0.01	0.07	0.12	2	433	8.6	5.0	1.4433
4	2	73	0.03	0.01	0.46	0.25	11	499	8.4	5.0	1.6697
4	17	73	0.02	0.00	0.00	0.11	3	463	8.7	6.5	1.0471
4	24	73	0.02	0.00	0.00	0.25	6	480	8.6	13.0	1.1603
5	1	73	0.01	0.00	0.01	0.26	4	466	8.7	10.0	1.3867
5	11	73	0.01	0.01	0.00	0.26	7	481	8.6	13.0	1.1037
5	25	73	0.03	0.00	0.00	0.21	5	483	8.5	14.0	0.6509
6	1	73	0.03	0.03	0.03	0.19	0	477	8.5	17.0	1.0471
6	12	73	0.04	0.01	0.01	0.18	5	479	8.7	19.0	0.5943

STATION 13.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	20	73	0.04	0.01	0.00	0.26	14	472	8.6	18.0	0.4811
6	27	73	0.04	0.00	0.01	0.19	16	472	8.6	20.0	0.4245
7	5	73	0.03	0.03	0.00	0.15	1	462	8.7	24.0	******
7	12	73	0.02	0.02	0.01	0.12	6	465	8.8	25.0	******
7	25	73	0.06	0.02	0.02	0.22	9	463	8.7	21.0	******
8	2	73	0.03	0.02	0.02	0.04	9	481	8.8	22.0	******
8	14	73	0.04	0.03	0.01	0.19	8	459	8.7	22.0	******
8	28	73	0.04	0.01	0.01	0.13	13	376	8.7	24.0	******

STATION 13.2

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
10	27	71	0.33	0.09	0.00	1.40	161	100	7.1	13.0	0.0094
11	22	71	0.57	0.39	7.95	1.85	3	981	7.2	7.0	0.0019
12	9	71	0.49	0.28	9.80	1.17	6	1109	7.2	3.0	0.0007
1	18	72	0.14	0.10	2.20	0.51	8	963	6.9	0.0	******
3	7	72	0.93	0.46	2.65	1.74	29	344	7.1	1.0	0.0174
3	13	72	0.79	0.32	1.80	1.32	78	367	7.0	1.0	0.0212
3	25	72	0.24	0.14	5.90	0.00	0	846	7.5	2.0	0.0017
4	6	72	0.21	0.12	7.30	0.00	0	911	7.3	3.0	0.0019
4	17	72	4.11	1.43	5.80	15.20	34	969	7.7	9.0	0.0015
4	25	72	0.75	0.31	5.80	3.55	0	907	7.6	5.0	0.0032
5	10	72	0.24	0.12	7.10	0.20	0	856	7.3	7.0	0.0074
5	22	72	0.17	0.15	5.90	0.21	1	852	7.6	9.0	0.0072
6	8	72	0.16	0.09	7.00	0.17	8	844	7.8	11.0	0.0045
6	19	72	0.17	0.10	9.50	0.24	0	935	7.7	14.0	0.0052
7	14	72	0.24	0.15	2.60	0.83	62	450	7.3	18.5	0.0050

STATION 13.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	8	72	0.20	0.14	6.80	0.22	0	1010	7.6	16.0	0.0019
8	29	72	0.39	0.26	2.30	0.80	2	1053	7.2	17.0	0.0012
9	11	72	0.08	0.06	3.70	0.70	4	1122	6.9	17.0	0.0004
9	25	72	0.17	0.05	0.85	0.72	111	141	7.0	12.0	0.0030
10	10	72	0.34	0.31	5.10	0.30	2	1219	7.2	13.0	******
11	7	72	0.20	0.17	4.30	0.20	0	951	7.6	9.5	0.0024
11	27	72	0.16	0.13	6.20	0.00	0	984	7.3	4.5	0.0017
12	15	72	0.17	0.14	13.50	0.12	0	870	8.7	2.0	0.0007
12	28	72	0.55	0.59	*****	0.24	3	805	8.0	3.0	0.0006
1	10	73	0.17	0.15	*****	0.38	4	726	7.9	0.5	0.0008
1	17	73	1.17	0.95	*****	2.15	34	395	7.2	3.0	0.0068
1	24	73	0.29	0.25	4.80	0.37	5	695	7.2	4.0	0.0051
2	6	73	0.23	0.20	4.60	0.07	2	780	7.8	3.0	0.0022
2	20	73	0.62	0.28	8.80	0.00	0	906	7.8	2.0	0.0022
2	27	73	0.27	0.22	6.60	0.36	0	789	7.3	3.0	0.0018
3	6	73	0.56	0.38	5.10	0.76	24	542	7.3	2.5	0.0207
3	12	73	0.62	0.39	4.70	0.72	17	555	7.3	2.5	0.0093
3	19	73	0.11	0.09	7.80	0.17	1	800	7.5	3.0	0.0082
3	28	73	0.11	0.08	6.90	0.15	0	821	7.6	4.0	0.0062
4	7	73	0.09	0.09	9.20	0.10	3	826	7.7	5.0	0.0041
4	23	73	0.11	0.11	8.70	0.29	3	836	7.6	7.0	0.0039
4	30	73	0.13	0.11	9.80	0.37	3	854	7.7	6.0	0.0028
5	12	73	0.13	0.09	8.50	0.13	3	826	7.8	7.0	0.0056
5	24	73	0.32	0.12	3.10	0.96	146	423	7.3	13.0	0.0095
5	27	73	1.15	0.48	0.78	0.48	245	389	****	****	0.0750
5	29	73	0.16	0.10	4.95	0.34	2	800	7.6	8.0	0.0168
6	4	73	0.14	0.11	3.15	0.83	114	476	7.4	13.0	0.0064
6	9	73	0.08	0.07	2.85	0.12	2	814	8.1	10.0	0.0043
6	18	73	0.19	0.11	7.20	0.35	19	719	7.6	13.0	0.0092
6	27	73	0.07	0.05	6.75	0.07	1	860	8.0	0.0	0.0027

STATION 13.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	11	73	0.38	0.34	1.55	0.97	1	698	8.2	20.0	0.0009
7	23	73	0.21	0.21	1.98	0.35	6	622	8.4	18.0	0.0003
8	1	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	13	73	0.57	0.08	1.10	5.20	113	316	7.3	21.0	0.0010
8	23	73	0.08	0.07	0.15	0.62	7	338	7.4	21.0	0.0008

STATION 13.3

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	17	72	0.10	0.07	2.00	0.63	53	403	7.7	21.0	0.0033
8	2	72	*****	0.04	0.70	0.69	0	407	7.8	22.0	0.0020
8	8	72	0.11	0.07	1.80	0.29	2	594	8.3	19.0	0.0007
9	11	72	0.22	0.11	2.10	0.60	4	629	8.1	18.0	0.0060
9	25	72	0.23	0.16	2.20	0.87	380	126	7.8	12.0	0.3500
10	10	72	1.14	1.04	1.90	2.42	8	1175	8.4	15.0	******
11	7	72	1.02	0.90	4.65	1.23	19	1137	7.9	10.5	0.0008
11	27	72	1.36	1.29	2.75	0.37	0	1370	8.2	5.5	0.0001
12	15	72	1.57	1.39	0.15	0.52	7	1844	8.8	3.0	0.0002
12	28	72	1.14	0.84	*****	0.86	5	1840	8.5	4.0	******
1	17	73	0.70	0.68	*****	2.30	84	1578	8.5	4.0	0.0034
3	6	73	0.79	0.27	2.10	2.51	605	533	7.4	2.0	0.0090
3	12	73	0.68	0.52	4.80	0.27	4	1013	8.2	3.5	0.0011
3	28	73	0.66	0.49	4.60	0.28	1	1125	8.1	6.0	0.0015
4	30	73	0.32	0.11	0.70	1.18	305	111	7.4	****	******
5	1	73	0.30	0.15	2.15	1.36	223	305	7.3	8.0	0.0197
5	3	73	0.34	0.24	6.80	0.43	9	1073	7.9	8.0	0.0012
5	7	73	0.83	0.22	0.49	0.79	530	158	****	****	******

STATION 13.3 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	21	73	0.35	0.25	1.60	1.12	67	408	7.6	12.0	0.0012
5	24	73	0.69	0.37	0.74	2.45	270	218	7.2	14.0	0.0105
5	29	73	0.47	0.29	5.65	0.99	72	1189	8.2	11.0	0.0011
6	4	73	0.19	0.19	1.30	2.20	500	248	7.1	17.0	******
6	9	73	0.48	0.38	16.50	1.24	19	1036	8.4	13.0	0.0011
6	18	73	0.29	0.14	2.70	0.33	240	350	7.6	17.0	0.0469
6	27	73	0.24	0.20	0.00	0.16	3	907	8.5	0.0	0.0005
7	11	73	0.14	0.13	6.65	0.22	3	885	8.2	16.0	0.0023
7	23	73	0.21	0.21	3.85	0.02	0	1006	8.2	16.0	0.0014
8	1	73	0.08	0.08	4.00	0.34	1	1114	8.3	16.0	0.0002
8	13	73	0.64	0.16	2.70	5.80	360	744	8.0	18.0	0.0009
8	23	73	0.06	0.06	3.70	0.31	0	1138	8.2	18.0	0.0003

STATION 14.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	12	71	*****	0.08	1.79	0.26	14	504	7.3	1.0	0.0048
3	17	71	*****	0.06	1.59	0.24	11	498	7.3	1.0	0.0058
3	30	71	*****	0.06	3.11	0.68	204	298	7.4	3.0	0.0228
4	3	71	*****	0.05	4.19	0.18	8	480	7.2	1.0	0.0047
4	5	71	*****	0.07	2.12	0.32	9	513	7.2	2.0	0.0045
4	8	71	*****	0.09	3.23	0.20	11	502	7.2	5.0	0.0059
4	15	71	*****	0.07	1.80	0.37	10	563	7.2	7.0	0.0032
4	22	71	*****	0.07	1.30	0.28	14	550	7.1	9.0	0.0023
4	30	71	*****	0.11	1.50	0.11	5	572	7.1	7.0	0.0016
5	11	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	20	71	*****	0.07	1.97	0.18	1	630	6.9	8.0	0.0006

STATION 14.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	2	71	*****	0.04	1.60	0.11	0	623	6.9	9.0	0.0010
6	7	71	*****	0.05	2.15	0.51	98	520	7.5	13.0	0.0096
6	16	71	*****	0.03	1.39	0.05	1	606	6.9	14.0	0.0010
6	23	71	*****	0.03	5.49	0.00	10	640	6.9	13.5	0.0009
6	29	71	*****	0.02	0.49	0.00	2	497	6.7	14.0	0.0011
7	9	71	*****	0.03	1.23	0.00	9	642	6.9	15.0	0.0027
7	15	71	*****	0.02	1.30	0.01	0	687	6.7	14.C	0.0004
7	21	71	*****	0.03	2.60	0.00	0	736	6.6	15.0	******
7	30	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	17	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	5	72	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
7	14	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	8	72	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
8	29	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	28	72	0.07	0.04	2.00	0.07	0	736	6.9	5.C	0.0001
12	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
1	17	73	0.31	0.16	*****	1.98	32	151	6.9	0.0	0.0120
1	24	73	0.03	0.03	3.40	0.00	2	723	6.7	4.C	0.0001
2	6	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	26	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	73	0.08	0.06	3.70	0.32	3	527	6.9	2.0	0.0025
3	13	73	0.08	0.07	5.50	0.17	4	578	7.1	2.0	0.0032
3	26	73	0.06	0.06	5.10	0.08	3	579	7.0	3.5	0.0021
4	2	73	0.05	0.04	5.20	0.14	8	605	7.3	4.0	0.0035
4	17	73	0.02	0.02	5.70	0.08	0	601	7.2	7.0	0.0057
4	24	73	0.02	0.02	4.70	0.16	2	617	7.2	11.0	0.0025
5	2	73	0.03	0.03	6.10	0.14	0	616	7.2	5.5	0.0035

STATION 14.0 CONTINUED

DATE			TOTAL P	PO4-P	NO3-N	NH3-N	TURB	SP COND	PH	TEMP	FLOW CUBIC M /SEC
MO	DAY	YR	MG/L	MG/L	MG/L	MG/L	JTU			C	
5	11	73	0.03	0.03	3.60	0.22	3	631	7.2	9.0	0.0022
5	25	73	0.04	0.03	3.20	0.16	3	658	7.3	9.0	0.0014
6	1	73	0.07	0.07	2.65	0.19	1	635	7.4	11.0	0.0020
6	12	73	0.05	0.04	5.30	0.07	7	679	7.4	13.0	0.0012
6	20	73	0.05	0.04	6.70	0.12	7	661	7.5	12.0	0.0013
6	27	73	0.04	0.04	5.75	0.13	5	682	7.5	14.0	0.0009
7	5	73	0.04	0.04	5.50	0.09	2	674	7.5	15.0	0.0008
7	12	73	0.04	0.04	3.35	0.13	0	720	7.8	18.0	0.0014
7	25	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 15.0

DATE			TOTAL P	PO4-P	NO3-N	NH3-N	TURB	SP COND	PH	TEMP	FLOW CUBIC M /SEC
MO	DAY	YR	MG/L	MG/L	MG/L	MG/L	JTU			C	
3	12	71	*****	0.29	0.62	1.40	21	572	7.5	0.0	0.0075
3	17	71	*****	0.49	0.00	1.50	21	572	7.5	0.0	0.0081
3	30	71	*****	0.42	1.86	1.72	24	502	7.6	2.0	0.0259
4	3	71	*****	0.61	2.48	1.78	8	543	7.6	0.0	0.0209
4	5	71	*****	0.46	2.55	1.49	9	552	7.5	3.0	0.0082
4	8	71	*****	0.30	2.86	0.86	12	605	7.5	7.0	0.0040
4	15	71	*****	0.16	1.69	0.28	8	658	7.5	7.0	0.0056
4	22	71	*****	0.13	1.27	0.38	16	650	7.7	10.0	0.0038
4	30	71	*****	0.11	1.49	0.21	7	654	7.6	10.0	0.0032
5	11	71	*****	0.10	1.03	0.20	5	649	7.5	10.0	0.0022
5	20	71	*****	0.10	1.56	0.28	7	682	7.6	9.0	0.0021
6	2	71	*****	0.15	1.37	0.40	5	694	7.6	12.0	0.0029
6	7	71	*****	0.25	6.65	0.41	35	665	7.6	14.0	0.0366
6	16	71	*****	0.16	3.38	0.19	10	543	7.9	17.0	0.0037

STATION 15.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	23	71	*****	0.16	1.89	0.15	11	750	7.7	16.0	0.0012
6	29	71	*****	0.10	4.05	0.26	15	811	7.7	19.0	0.0010
7	9	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	15	71	*****	0.09	2.18	0.32	9	769	7.1	16.5	0.0010
7	21	71	*****	0.08	0.65	0.82	10	855	7.6	18.0	0.0004
7	30	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	16	72	0.12	0.04	0.08	0.20	2	533	7.1	1.0	0.0004
3	25	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	17	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	23	72	0.17	0.07	1.80	0.15	2	723	7.5	16.0	0.0021
6	8	72	0.22	0.13	5.80	0.34	26	711	7.8	16.0	0.0040
6	19	72	0.22	0.11	2.80	0.48	31	794	7.5	16.0	0.0004
7	5	72	0.41	0.29	1.30	0.48	7	880	7.3	13.0	0.0002
7	14	72	0.18	0.08	0.90	0.97	67	562	7.3	19.0	0.0023
7	26	72	0.19	0.12	2.70	0.23	8	746	7.6	18.0	0.0097
8	8	72	0.10	0.07	1.00	0.61	7	780	7.3	16.0	0.0020
8	29	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	9	72	0.16	0.12	3.90	0.10	2	737	7.2	4.5	0.0032
11	28	72	0.05	0.07	1.50	0.06	0	726	7.1	0.0	0.0014
12	16	72	0.09	0.08	0.20	0.18	8	760	7.1	0.0	0.0004
1	10	73	0.11	0.12	*****	0.32	17	636	7.1	0.0	0.0008
1	17	73	0.75	0.61	*****	2.10	37	203	7.0	0.0	0.0095
1	24	73	0.15	0.11	1.70	0.14	3	690	7.2	0.5	0.0010
2	6	73	0.93	0.77	2.50	0.94	8	710	7.4	0.0	0.0000
2	20	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	27	73	0.95	0.73	2.70	1.17	4	633	7.3	0.0	0.0018
3	7	73	1.20	1.07	2.60	2.15	16	515	7.3	1.0	0.0125

STATION 15.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	13	73	1.11	1.04	3.80	2.20	6	607	7.3	3.5	0.0106
3	26	73	0.44	0.37	8.10	0.43	1	717	7.5	3.0	0.0130
4	2	73	0.31	0.26	7.20	0.23	5	741	7.8	3.0	0.0092
4	17	73	0.22	0.20	8.80	0.17	3	723	7.8	10.0	0.0128
4	24	73	0.18	0.18	6.20	0.21	3	744	7.7	11.0	0.0061
5	2	73	0.18	0.15	8.20	0.16	3	749	7.7	5.0	0.0162
5	11	73	0.16	0.14	4.30	0.22	4	751	7.7	9.5	0.0039
5	25	73	0.22	0.20	1.60	0.32	3	767	7.5	10.0	0.0032
6	1	73	0.23	0.18	3.20	0.32	9	793	7.9	13.0	0.0068
6	12	73	0.23	0.18	4.10	0.21	9	824	7.8	14.0	0.0031
6	20	73	0.24	0.18	7.15	0.29	6	852	8.0	13.0	0.0018
6	27	73	0.20	0.14	2.70	0.14	9	849	7.8	16.0	0.0008
7	5	73	0.18	0.18	1.75	0.31	7	840	7.7	17.0	0.0008
7	17	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	25	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 15.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	1	73	0.11	0.01	4.80	0.17	4	714	7.6	11.0	0.0026
6	12	73	0.04	0.01	12.00	0.09	3	755	7.9	13.0	0.0006
6	20	73	0.03	0.01	15.25	0.11	0	743	7.7	13.0	0.0007
6	27	73	0.03	0.02	11.50	0.06	0	760	7.8	14.0	0.0005
7	5	73	0.02	0.02	10.50	0.04	5	750	7.8	16.0	0.0002
7	17	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	25	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 16.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	12	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	17	71	*****	0.16	1.69	0.53	8	847	7.4	1.0	0.0042
3	30	71	*****	0.16	4.52	0.38	39	577	7.6	4.0	0.0186
4	3	71	*****	0.14	1.90	0.22	7	679	7.3	0.0	******
4	5	71	*****	0.15	4.12	0.50	10	743	7.6	3.0	0.0035
4	8	71	*****	0.19	5.19	0.25	12	556	7.5	8.0	0.0054
4	15	71	*****	0.15	2.39	0.25	5	785	7.4	6.0	0.0005
4	22	71	*****	0.12	1.92	0.39	16	781	7.7	10.0	0.0004
4	30	71	*****	0.12	2.05	0.24	6	818	7.7	9.0	0.0004
5	11	71	*****	0.09	0.92	0.17	8	845	7.7	9.0	0.0002
5	20	71	*****	0.12	0.22	0.33	7	889	7.7	8.0	0.0002
6	2	71	*****	0.15	0.34	0.39	8	922	7.8	11.0	0.0003
6	7	71	*****	0.11	3.97	0.18	16	766	7.5	13.0	0.0096
6	16	71	*****	0.10	3.76	0.18	11	721	8.0	17.0	0.0004
6	23	71	*****	0.15	1.87	0.45	32	836	7.9	16.0	******
6	29	71	*****	0.22	0.27	0.40	25	912	7.9	19.0	0.0001
7	9	71	*****	0.14	0.56	0.33	22	802	7.8	12.0	0.0008
7	15	71	*****	0.16	0.66	0.43	10	929	7.9	15.5	0.0001
7	21	71	*****	0.19	0.28	0.45	5	993	7.9	16.5	0.0001
7	30	71	*****	0.29	0.06	0.64	21	1069	7.8	11.0	0.0001
8	4	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	16	72	0.17	0.09	2.80	0.08	0	662	7.1	0.0	0.0018
3	25	72	0.15	0.09	2.70	0.00	1	814	7.2	1.0	0.0015
4	6	72	0.13	0.07	2.60	0.10	0	836	7.3	1.0	0.0012
4	17	72	0.15	0.08	1.30	0.20	0	860	7.5	7.0	0.0009
4	25	72	0.14	0.03	2.20	0.35	0	881	7.4	5.0	0.0011
5	10	72	0.13	0.09	8.50	0.04	0	764	7.3	10.0	0.0008
5	23	72	0.13	0.09	3.50	0.12	0	775	7.5	14.0	0.0010
6	8	72	0.20	0.12	5.70	0.28	18	780	7.7	14.0	0.0012

STATION 16.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	19	72	0.20	0.11	4.40	0.22	5	868	7.6	15.0	0.0002
7	5	72	0.03	0.07	5.20	0.94	12	849	8.2	13.0	0.0002
7	14	72	0.36	0.22	0.57	0.76	22	729	7.6	18.0	0.0003
7	26	72	0.15	0.11	3.50	0.11	1	827	7.7	****	0.0004
8	8	72	0.20	0.13	0.90	0.21	2	922	7.9	15.0	0.0002
8	29	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	9	72	0.14	0.13	2.40	0.13	4	911	7.3	5.0	0.0001
11	28	72	0.13	0.12	1.00	0.23	2	878	7.3	0.0	0.0001
12	16	72	0.16	0.12	0.00	0.62	8	1163	6.6	0.0	0.0003
1	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	13	73	0.25	0.20	6.80	0.17	3	720	7.5	2.5	0.0033
3	26	73	0.17	0.16	10.50	0.13	1	748	7.5	3.0	0.0017
4	2	73	0.17	0.15	7.50	0.21	4	796	7.6	4.0	0.0013
4	17	73	0.14	0.12	8.80	0.14	2	751	7.6	9.0	0.0012
4	24	73	0.11	0.11	8.70	0.17	6	786	7.5	10.0	0.0005
5	2	73	0.12	0.12	9.90	0.22	1	805	7.6	5.5	0.0028
5	11	73	0.12	0.10	6.30	0.23	5	799	7.6	10.0	0.0005
5	25	73	0.12	0.10	4.70	0.30	4	864	7.7	9.5	0.0004
6	1	73	0.08	0.08	3.95	0.28	9	802	7.7	12.0	0.0018
6	12	73	0.15	0.11	7.20	0.35	18	845	7.8	13.0	0.0004
6	20	73	0.11	0.06	11.50	0.18	1	775	7.9	12.0	0.0012
6	27	73	0.12	0.08	6.90	0.12	8	875	8.0	15.0	0.0003
7	5	73	0.14	0.14	5.10	0.19	8	894	8.1	16.0	0.0006
7	17	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	25	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 17.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.19	0.38	0.53	51	753	6.9	1.0	0.0053
3	15	71	*****	0.58	0.08	1.85	31	298	7.0	0.0	0.0300
3	27	71	*****	0.35	0.40	1.25	14	656	7.0	2.0	0.0063
4	1	71	*****	0.32	0.35	0.71	7	588	7.2	2.0	0.0089
4	6	71	*****	0.38	0.38	0.66	11	610	6.9	3.0	0.0052
4	12	71	*****	0.32	0.52	0.65	10	632	7.1	5.0	0.0054
4	17	71	*****	0.32	0.23	0.48	9	633	6.9	6.0	0.0049
4	20	71	*****	0.23	0.48	0.25	10	683	7.1	8.0	0.0037
4	29	71	*****	0.29	0.41	0.50	3	730	6.9	6.0	0.0037
5	5	71	*****	0.25	0.91	0.48	4	776	7.1	7.0	0.0020
5	17	71	*****	0.20	0.09	0.40	0	812	7.2	10.0	0.0013
5	21	71	*****	0.22	0.63	0.33	0	827	7.1	9.0	0.0010
6	4	71	*****	0.28	0.96	0.40	10	624	7.1	11.0	0.0013
6	7	71	*****	0.29	0.57	0.39	13	750	6.9	11.5	0.0120
6	10	71	*****	0.28	0.42	0.55	18	783	7.0	12.0	0.0040
6	15	71	*****	0.21	0.58	0.15	4	774	7.4	12.0	0.0040
6	25	71	*****	0.21	0.55	0.45	2	870	6.8	14.0	0.0014
6	30	71	*****	0.24	0.10	0.32	10	953	7.1	15.0	0.0013
7	6	71	*****	0.22	1.01	0.22	15	793	7.1	15.0	0.0029
7	13	71	*****	0.22	0.39	0.24	45	807	7.0	15.0	0.0017
7	20	71	*****	0.00	0.51	0.12	20	913	7.2	17.0	0.0012
7	26	71	*****	0.19	0.35	0.55	68	1106	7.0	20.0	0.0002
8	2	71	*****	0.21	0.48	0.43	125	992	7.1	17.0	0.0001
8	9	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	13	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	18	71	0.16	0.03	2.15	0.51	9999	134	****	15.0	0.0156
10	27	71	0.23	0.05	3.30	0.48	1450	315	****	14.0	0.0044
11	2	71	0.33	0.25	2.05	0.00	0	750	7.0	10.0	0.0003
11	17	71	0.38	0.20	6.60	2.00	496	394	7.2	7.0	0.0069
11	23	71	0.27	0.21	1.10	0.18	2	775	7.4	6.0	0.0019

STATION 17.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
12	8	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	14	72	0.72	0.13	2.00	0.50	550	422	7.1	1.0	0.0023
3	21	72	0.95	0.37	3.40	2.50	280	911	7.2	2.0	0.0020
4	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	12	72	0.23	0.16	0.10	0.00	0	956	7.3	3.C	0.0003
4	21	72	0.86	0.29	1.80	1.40	215	611	6.9	4.0	0.0030
5	15	72	0.37	0.27	1.60	0.09	7	721	7.0	8.0	0.0012
6	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
6	14	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	5	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	12	72	0.41	0.36	0.80	1.03	98	580	6.8	19.0	0.0010
8	7	72	0.23	0.21	0.53	0.46	8	851	6.9	18.0	0.0007
8	16	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	17	72	0.30	0.28	0.56	0.12	1	829	7.0	1.C	0.0001
12	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	2	73	0.05	0.04	0.70	0.05	0	451	7.2	2.0	0.0001
1	16	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	23	73	0.32	0.22	0.60	0.63	5	579	7.4	2.5	0.0001
2	5	73	0.21	0.15	1.35	0.94	20	611	7.0	2.0	0.0010
2	19	73	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
2	24	73	0.29	0.17	1.30	1.46	22	467	6.6	0.0	0.0128
3	3	73	0.30	0.20	0.35	1.51	24	219	6.8	0.0	0.0128
3	9	73	0.27	0.20	0.65	0.26	3	779	6.9	0.0	0.0014
3	15	73	0.95	0.90	0.65	1.39	36	460	7.0	3.0	0.0222

STATION 17.0 CONTINUED

MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	26	73	0.52	0.41	3.20	0.44	3	655	6.8	5.0	0.0038
4	6	73	0.30	0.26	1.40	0.15	1	823	6.9	5.0	0.0010
4	20	73	0.14	0.14	2.30	0.24	9	740	7.0	8.0	0.0039
4	27	73	0.26	0.25	1.45	0.22	0	851	7.2	6.0	0.0007
5	7	73	0.90	0.75	0.58	0.45	5	654	7.0	7.0	0.0017
5	21	73	0.25	0.22	0.75	0.36	2	897	6.8	11.0	0.0007
5	29	73	0.84	0.78	0.48	0.63	12	515	7.6	14.0	0.0101
6	2	73	0.26	0.25	0.95	0.16	0	816	7.3	14.0	0.0016
6	14	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	18	73	0.69	0.62	0.45	0.98	113	271	7.1	18.0	0.0223
6	23	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	2	73	0.61	0.53	1.65	0.62	11	681	7.2	18.0	0.0041
7	9	73	0.41	0.41	0.18	1.50	74	385	7.2	19.0	0.0071
7	13	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	18	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	6	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 18.0

MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	15	71	*****	0.18	2.15	0.72	20	446	7.2	0.0	2.7460
3	27	71	*****	0.12	3.79	0.52	16	706	7.1	2.0	******
4	1	71	*****	0.17	3.30	0.61	10	505	7.6	0.0	******
4	6	71	*****	0.09	1.32	0.28	14	451	7.4	3.0	0.3602
4	12	71	*****	0.12	2.80	0.51	42	622	7.2	10.0	0.3700

STATION 18.0 CONTINUED

MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	17	71	*****	0.02	1.66	0.62	66	677	8.1	11.0	******
4	20	71	*****	0.03	2.55	0.44	55	588	8.0	14.0	******
4	29	71	*****	0.07	3.33	0.58	30	686	8.1	6.0	0.1420
5	5	71	*****	0.03	3.18	0.77	150	706	7.5	13.0	******
5	17	71	*****	0.06	2.57	0.68	41	725	7.6	17.0	******
5	21	71	*****	0.05	2.69	0.67	47	685	8.1	14.0	******
6	4	71	*****	0.05	2.16	0.70	78	657	7.7	20.0	******
6	7	71	*****	0.17	6.85	0.64	59	675	7.3	16.0	******
6	10	71	*****	0.09	3.90	0.68	30	724	7.3	15.0	******
6	15	71	*****	0.07	5.00	0.58	50	741	7.5	19.0	******
6	25	71	*****	0.03	4.09	0.51	23	721	8.0	21.0	******
6	30	71	*****	0.05	2.96	0.64	100	738	7.6	23.0	******
7	6	71	*****	0.07	5.08	0.35	30	717	7.4	21.0	******
7	13	71	*****	0.06	1.56	0.42	65	682	8.0	20.0	******
7	20	71	*****	0.01	1.20	0.23	35	688	7.9	21.0	******
7	26	71	*****	0.01	0.10	0.56	85	708	8.3	23.5	******
8	2	71	*****	0.00	0.15	0.46	58	710	8.0	19.5	******
8	9	71	*****	0.02	0.06	0.48	38	617	7.5	22.0	******
8	18	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	8	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	14	71	0.29	0.17	6.20	0.32	37	791	****	15.0	0.0014
9	21	71	*****	0.19	5.08	0.10	20	772	7.8	9.0	0.0011
9	27	71	0.28	0.19	3.20	0.37	59	741	7.7	14.0	0.0010
10	5	71	0.46	0.46	3.40	0.19	22	766	7.6	12.0	0.0018
10	13	71	0.33	0.23	4.00	0.38	24	777	7.5	9.0	0.0016
10	29	71	*****	0.95	5.95	0.91	16	784	7.5	5.0	0.0034
11	2	71	0.50	0.34	6.15	0.36	1	854	7.7	7.0	0.0060
11	23	71	0.35	0.25	6.90	0.22	1	807	7.8	3.0	0.0065
12	8	71	0.28	0.17	5.80	0.28	1	787	7.9	1.0	0.0050
12	16	71	0.25	0.17	6.00	0.20	3	768	7.3	0.0	0.0048

STATION 18.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
1	19	72	0.29	0.19	6.00	0.21	3	751	7.3	0.0	******
3	2	72	0.39	0.17	4.85	0.28	10	584	7.6	0.0	******
3	8	72	*****	0.20	4.70	0.40	0	609	7.1	3.0	0.0278
3	14	72	0.37	0.19	4.40	0.45	13	561	7.3	3.0	0.0920
3	28	72	0.25	0.14	5.10	0.13	0	708	7.7	2.0	0.0221
4	7	72	0.26	0.15	4.60	0.00	2	730	8.0	1.0	0.0173
4	12	72	0.25	0.16	5.10	0.05	0	790	7.8	5.0	0.0165
5	19	72	0.16	0.10	6.80	0.06	0	779	7.6	9.0	0.0424
6	2	72	0.14	0.11	8.20	0.18	0	737	7.4	10.0	0.0377
6	14	72	0.19	0.09	0.83	0.17	4	711	7.4	12.0	0.0523
7	7	72	0.20	0.12	8.40	0.20	0	696	7.8	14.0	0.0182
7	12	72	0.26	0.17	6.50	0.30	16	651	7.1	14.0	0.0238
7	17	72	0.25	0.04	0.53	0.82	69	483	7.4	15.0	******
11	17	72	0.14	0.08	4.90	0.33	12	711	7.8	0.0	0.0231
12	9	72	0.12	0.09	8.50	0.34	0	785	7.6	1.0	0.0165
8	2	72	*****	0.02	2.70	0.49	21	633	7.7	22.0	0.0077
8	16	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	17	72	0.14	0.08	4.90	0.33	12	711	7.8	0.0	0.0231
12	9	72	0.12	0.09	8.50	0.34	0	785	7.6	1.0	0.0165
12	20	72	0.15	0.12	10.50	0.53	1	817	7.5	1.0	0.0073
1	2	73	0.58	0.46	1.35	0.56	17	464	7.4	1.0	******
1	16	73	0.18	0.15	*****	0.48	3	722	7.7	0.0	******
1	18	73	0.72	0.47	*****	1.78	49	225	7.0	0.0	0.4267
1	23	73	0.37	0.22	8.50	1.08	15	706	7.3	0.0	******
2	5	73	0.39	0.29	3.30	1.24	22	424	7.1	0.0	******
2	13	73	0.23	0.16	6.50	0.50	5	738	7.4	1.0	******
2	19	73	0.44	0.15	5.80	0.48	2	764	7.3	1.0	******
2	24	73	0.56	0.37	2.70	2.20	57	304	6.9	0.0	0.1183

STATION 18.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	73	0.61	0.38	2.80	1.97	23	348	6.9	1.0	0.1883
3	9	73	0.21	0.13	3.40	0.51	4	452	7.2	1.0	0.0892
3	15	73	0.23	0.17	5.40	0.73	9	581	7.3	3.0	0.2892
3	26	73	0.11	0.09	6.90	0.27	3	704	7.5	5.0	0.0972
4	6	73	0.06	0.04	3.20	0.17	3	566	7.6	6.0	0.0789
4	24	73	0.11	0.03	3.95	0.43	87	599	7.4	13.0	0.1395
4	30	73	0.13	0.04	5.70	0.39	59	628	7.6	8.0	0.0494
5	7	73	0.09	0.04	4.20	0.37	49	635	7.5	10.0	0.1545
5	22	73	0.20	0.03	3.10	0.53	47	565	7.8	16.0	0.1070
5	28	73	0.23	0.17	13.00	0.51	22	738	7.4	10.0	0.3584
6	8	73	0.08	0.04	11.00	0.51	39	686	7.4	18.0	0.0599
6	20	73	0.20	0.09	6.20	0.15	28	740	7.6	16.0	0.1162
6	29	73	0.17	0.05	3.00	0.04	41	748	8.0	19.0	0.0907
7	2	73	0.29	0.18	6.60	0.35	72	622	7.5	19.0	0.2327
7	25	73	0.12	0.04	2.10	0.24	67	649	7.9	23.0	0.0674
8	7	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 19.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.08	1.98	0.45	24	733	7.6	1.0	0.0218
3	15	71	*****	0.12	1.47	0.63	29	385	7.3	1.0	0.2320
3	27	71	*****	0.07	3.32	0.36	7	733	7.6	3.0	0.0237
4	1	71	*****	0.11	2.23	0.48	16	472	7.5	2.0	0.1447
4	6	71	*****	0.07	2.47	0.30	5	692	7.5	5.0	0.0773
4	12	71	*****	0.07	3.93	0.25	13	714	7.8	8.0	0.0356
4	17	71	*****	0.04	3.80	0.27	8	708	7.9	9.0	0.0262

STATION 19.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	29	71	*****	0.05	4.68	0.37	11	746	7.8	8.0	0.0277
5	5	71	*****	0.04	2.84	0.43	15	741	7.9	9.0	0.0177
5	17	71	*****	0.05	4.47	0.38	9	725	7.7	13.0	0.0135
5	21	71	*****	0.06	3.25	0.63	44	718	7.7	12.0	0.0112
6	4	71	*****	0.07	4.53	0.41	22	650	7.7	14.0	0.0261
6	7	71	*****	0.12	5.98	0.54	62	697	7.4	12.5	0.4253
6	10	71	*****	0.07	3.98	0.38	15	756	7.6	13.5	0.0080
6	15	71	*****	0.05	7.50	0.13	11	746	7.5	12.0	0.0050
6	25	71	*****	0.06	5.00	0.45	13	751	7.6	15.0	0.0289
6	30	71	*****	0.07	8.00	0.43	38	808	7.7	23.0	0.0175
7	6	71	*****	0.05	6.97	0.22	15	807	7.8	19.0	0.0275
7	13	71	*****	0.05	2.97	0.05	21	766	7.7	18.0	0.0151
7	20	71	*****	0.09	4.25	0.16	10	799	7.5	18.0	0.0029
7	26	71	*****	0.14	2.44	0.28	15	735	8.0	21.0	0.0015
8	2	71	*****	0.21	2.14	0.29	12	1034	7.6	15.0	0.0006
8	9	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	27	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	71	4.65	0.12	1.80	1.25	440	338	7.4	6.0	0.0575
11	2	71	0.35	0.28	0.30	0.20	0	831	7.2	6.0	0.0014
11	17	71	0.14	0.09	0.33	0.21	7	903	7.1	7.0	0.0024
11	23	71	0.29	0.20	0.03	0.40	2	1055	7.1	3.0	0.0026
12	8	71	0.23	0.14	0.05	0.65	5	1075	7.1	0.0	0.0009
1	19	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	0.69	0.28	1.80	1.59	68	433	7.2	0.0	******
3	8	72	*****	0.37	2.10	1.31	25	436	7.3	1.0	0.0223
3	14	72	0.28	0.13	2.90	0.38	13	472	7.1	1.0	0.0632
3	21	72	0.16	0.08	2.10	0.27	19	650	7.3	4.0	0.0525
4	7	72	0.05	0.03	0.10	0.12	2	699	7.6	4.0	0.0051
4	12	72	0.07	0.03	0.61	0.18	0	811	7.5	6.0	0.0056
4	21	72	0.29	0.10	4.60	0.84	45	735	7.3	5.0	0.0377

STATION 19.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	15	72	0.07	0.03	5.60	0.20	49	721	7.7	11.0	0.0400
5	22	72	0.07	0.06	3.50	0.10	12	751	7.9	19.0	0.0235
6	2	72	0.07	0.04	7.50	0.24	2	737	7.5	18.0	0.0061
6	21	72	0.11	0.06	6.20	0.23	5	740	7.7	13.0	0.0144
7	7	72	0.05	0.03	7.60	0.13	0	720	8.3	17.0	0.0031
8	2	72	*****	0.06	4.40	0.21	9	792	7.8	18.0	0.0200
8	16	72	0.25	0.13	3.60	0.47	11	782	7.5	22.0	0.0033
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	0.08	0.04	1.64	0.36	6	909	7.1	7.5	0.0034
11	17	72	0.08	0.07	4.70	0.14	2	804	7.6	2.0	0.0078
12	20	72	0.13	0.12	1.60	0.48	0	889	6.8	0.0	******
1	2	73	0.44	0.36	4.70	1.06	19	582	7.3	0.0	0.0000
3	15	73	0.18	0.13	7.70	0.33	2	657	7.3	3.0	0.1065
3	27	73	0.08	0.07	7.70	0.17	2	733	7.4	4.0	0.0293
4	6	73	0.05	0.04	5.80	0.13	3	746	7.6	6.0	0.0277
4	20	73	0.05	0.04	6.20	0.17	3	769	7.6	6.0	0.0404
4	27	73	0.05	0.05	5.95	0.25	4	756	7.9	9.0	0.0181
5	7	73	0.05	0.04	7.10	0.16	3	781	7.8	9.0	0.0239
5	21	73	0.09	0.04	4.40	0.29	21	765	7.6	15.0	0.0158
5	28	73	0.14	0.10	13.50	0.22	16	784	7.4	10.0	0.1560
6	2	73	0.06	0.05	5.20	0.12	6	791	7.8	13.0	0.0225
6	14	73	0.08	0.06	9.10	0.28	2	782	7.8	14.0	0.0165
6	23	73	0.08	0.06	6.20	0.08	8	794	7.8	16.0	0.0233
7	18	73	0.07	0.07	9.30	0.22	15	779	7.5	19.0	0.0030
7	27	73	0.10	0.07	7.80	0.10	16	748	8.4	17.0	0.0005
8	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	21	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 20.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	15	71	*****	0.10	1.45	0.67	39	364	7.2	1.0	0.1960
3	27	71	*****	0.07	2.85	0.27	5	735	7.4	3.0	0.0385
4	1	71	*****	0.11	1.82	0.46	13	503	7.4	2.0	0.1181
4	6	71	*****	0.07	4.19	0.25	11	733	7.2	3.0	0.0956
4	12	71	*****	0.07	3.73	0.30	10	734	7.1	4.0	0.0392
4	17	71	*****	0.06	3.88	0.55	5	726	7.2	5.0	0.0341
4	29	71	*****	0.06	5.30	0.27	3	762	7.3	6.0	0.0231
5	5	71	*****	0.06	3.65	0.29	3	756	7.3	6.0	0.0207
5	17	71	*****	0.05	7.00	0.20	5	730	7.4	8.0	0.0205
5	21	71	*****	0.06	4.94	0.18	1	730	7.5	9.0	0.0113
6	4	71	*****	0.07	3.63	0.26	3	639	7.2	10.0	0.0288
6	7	71	*****	0.12	7.89	0.47	32	697	7.0	11.0	0.2680
6	10	71	*****	0.08	5.99	0.30	5	769	7.0	11.0	0.0545
6	15	71	*****	0.05	6.80	0.00	0	752	7.2	12.0	0.0256
6	25	71	*****	0.04	5.00	0.14	0	765	7.1	13.0	0.0150
6	30	71	*****	0.06	8.80	0.00	5	823	7.3	15.0	0.0270
7	6	71	*****	0.04	8.50	0.00	2	807	7.1	14.0	0.0364
7	13	71	*****	0.05	3.05	0.00	8	775	7.1	15.0	0.0228
7	20	71	*****	0.03	6.90	0.00	5	785	7.5	15.0	0.0052
7	26	71	*****	0.05	5.00	0.00	5	753	8.0	15.0	0.0029
8	2	71	*****	0.03	8.00	0.00	2	858	7.6	14.0	0.0009
8	9	71	*****	0.02	8.00	0.00	5	745	7.9	14.0	0.0008
8	18	71	*****	0.01	6.40	0.00	2	728	8.0	16.0	0.0005
8	31	71	*****	0.01	5.79	*****	8	713	8.0	13.0	0.0002
9	8	71	0.08	0.01	3.60	0.13	9	631	8.2	17.0	0.0006
9	14	71	0.22	0.04	4.80	0.43	41	704	****	18.0	0.0005
9	21	71	*****	0.13	5.01	0.38	20	727	7.8	10.0	0.0005
9	27	71	0.19	0.13	3.65	0.43	28	797	7.8	15.0	0.0002
10	5	71	0.03	0.02	3.93	0.02	28	753	7.9	14.0	0.0004
10	13	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 20.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
10	18	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	27	71	0.40	0.07	2.10	2.20	247	732	7.4	13.0	0.0064
11	2	71	0.05	0.03	1.25	0.00	0	992	7.9	9.0	0.0015
11	17	71	0.08	0.03	2.60	0.34	26	857	7.1	8.0	0.0031
11	23	71	0.04	0.03	0.80	0.18	0	978	7.4	7.0	0.0013
12	8	71	0.05	0.03	1.00	0.50	0	1009	7.8	5.0	0.0013
12	16	71	0.02	0.01	0.90	0.18	1	969	7.8	4.0	0.0008
1	19	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	0.12	0.06	1.75	0.00	5	767	7.3	2.0	0.0023
3	8	72	*****	0.22	2.30	0.81	17	418	7.2	1.0	0.0204
3	14	72	0.26	0.12	2.20	0.19	13	484	7.0	1.0	0.0233
3	21	72	0.16	0.09	3.70	0.29	19	711	7.2	3.0	0.0304
4	7	72	0.05	0.03	2.40	0.00	0	802	7.6	3.0	0.0030
4	25	72	0.06	0.04	2.80	0.15	0	296	7.3	5.0	0.0063
5	15	72	0.07	0.06	5.90	0.00	0	754	7.2	8.0	0.0458
6	2	72	0.06	0.05	8.80	0.08	0	740	7.2	10.0	0.0119
6	21	72	0.09	0.06	9.00	0.09	0	701	7.6	13.0	0.0117
7	7	72	0.10	0.05	7.20	0.14	2	755	7.5	14.0	0.0045
7	12	72	0.12	0.11	4.30	0.74	76	641	6.9	16.0	0.0074
8	2	72	*****	0.04	6.50	0.09	3	811	7.0	16.0	0.0127
8	16	72	0.05	0.02	6.20	0.05	2	779	7.3	16.5	0.0032
8	31	72	0.07	0.03	6.70	0.06	0	827	7.9	16.5	0.0011
9	20	72	0.15	0.02	6.60	0.28	3	714	7.8	16.5	0.0002
10	3	72	0.05	0.02	3.80	0.09	3	829	7.7	14.0	0.0009
10	30	72	0.08	0.06	3.40	0.19	4	807	7.6	10.5	0.0047
11	17	72	0.06	0.06	5.40	0.06	0	786	7.4	8.5	0.0194
12	20	72	0.05	0.04	7.80	0.10	0	803	7.8	4.0	0.0025
1	2	73	0.06	0.05	4.60	0.11	0	699	7.6	4.0	0.0084
1	16	73	0.08	0.07	*****	0.34	4	878	7.6	****	******
1	23	73	0.08	0.06	6.00	0.11	3	679	7.4	3.5	0.0159

STATION 20.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
2	5	73	0.16	0.12	5.60	0.32	6	648	7.1	4.5	0.0078
2	13	73	0.06	0.05	5.90	0.08	0	747	7.5	3.5	0.0034
2	19	73	0.29	0.05	5.50	0.13	0	811	7.6	3.0	0.0026
2	24	73	0.45	0.28	3.75	1.47	66	297	6.8	1.0	0.0665
3	3	73	0.64	0.43	3.50	1.75	17	359	6.8	1.0	0.0840
3	9	73	0.24	0.15	5.20	0.19	4	574	7.0	2.0	0.0437
3	15	73	0.18	0.13	8.70	0.29	0	693	7.0	3.0	0.1347
3	27	73	0.08	0.07	9.70	0.08	1	770	7.1	4.0	0.0380
4	6	73	0.06	0.06	7.10	0.02	1	771	7.2	4.0	0.0293
4	20	73	0.05	0.05	8.10	0.11	2	807	7.1	5.5	0.0362
4	27	73	0.04	0.04	8.30	0.03	1	767	7.2	5.0	0.0293
5	7	73	0.05	0.05	9.20	0.03	0	786	7.2	6.0	0.0261
5	21	73	0.06	0.05	6.20	0.24	1	759	7.5	8.0	0.0164
5	28	73	0.13	0.09	11.00	0.16	8	789	7.1	9.0	0.1500
6	2	73	0.05	0.05	3.35	0.04	5	816	7.2	9.0	0.0457
6	23	73	0.05	0.05	7.90	0.01	3	798	7.2	13.0	0.0162
7	18	73	0.05	0.05	12.25	0.03	0	795	7.2	15.0	0.0043
7	27	73	0.04	0.04	12.25	0.06	0	783	7.4	15.0	0.0019
8	10	73	0.09	0.04	11.00	0.05	10	733	8.4	16.0	0.0008
8	21	73	0.04	0.03	9.50	0.00	2	747	7.9	16.0	0.0005
8	30	73	0.06	0.03	10.50	0.00	3	736	7.7	17.0	0.0001

STATION 21.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	15	71	*****	1.08	0.64	5.80	52	415	7.4	0.0	0.0088
6	7	71	*****	0.68	1.09	0.80	68	713	7.1	16.0	******
3	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	25	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	21	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	5	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	16	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	24	73	1.79	1.11	2.40	6.20	63	289	6.9	0.0	******
3	3	73	1.65	1.01	1.30	5.60	114	230	7.0	1.0	******
6	14	73	0.05	0.04	12.50	0.11	0	785	7.2	11.0	0.0141

STATION 21.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	18	71	*****	0.02	3.62	0.00	0	733	7.9	14.0	0.0001
8	24	71	0.31	0.24	3.04	0.93	15	831	7.6	15.0	******
8	31	71	*****	0.17	2.06	*****	6	865	7.6	15.0	0.0001
10	27	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	8	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	2	71	0.56	0.34	2.40	0.60	2	745	7.5	10.0	0.0003
11	17	71	0.29	0.17	1.55	0.51	18	602	7.2	8.0	0.0018
11	23	71	0.07	0.06	6.30	0.15	0	706	7.2	9.0	0.0016
12	8	71	0.06	0.04	7.50	0.19	0	694	7.2	8.0	0.0022
12	16	71	0.07	0.04	7.00	0.21	1	684	7.2	8.0	0.0020

STATION 21.1 CONTINUED

CATE			TOTAL P	PO4-P	NC3-N	NH3-N	TURB	SP COND	PH	TEMP	FLOW CUBIC M /SEC
MO	CAY	YR	MG/L	MG/L	MG/L	MG/L	JTU			C	
1	19	72	0.03	0.03	5.80	0.18	3	686	7.2	5.0	0.0014
3	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	14	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	28	72	0.03	0.03	6.00	0.00	0	670	7.5	2.0	0.0025
4	7	72	0.04	0.03	5.70	0.03	0	662	7.7	2.0	0.0021
4	17	72	0.08	0.05	5.80	0.08	0	666	7.4	6.0	0.0020
4	25	72	0.07	0.03	5.60	0.08	0	666	7.3	6.0	0.0036
5	15	72	0.05	0.04	6.50	0.00	0	634	7.3	7.0	0.0280
5	22	72	0.06	0.04	4.00	0.00	0	699	7.3	8.0	0.0241
6	2	72	0.03	0.03	9.80	0.11	0	682	7.2	9.0	0.0070
6	21	72	0.05	0.03	8.50	0.11	0	656	7.3	12.0	0.0078
7	7	72	0.05	0.03	9.00	0.05	0	659	7.1	13.0	0.0023
7	12	72	0.07	0.06	7.50	0.11	9	644	6.9	14.0	0.0038
8	2	72	*****	0.02	8.30	0.03	1	714	6.8	15.0	0.0046
8	16	72	0.04	0.02	6.60	0.08	0	673	6.7	16.0	0.0020
8	31	72	0.05	0.03	8.90	0.04	0	755	7.0	16.0	0.0010
9	20	72	0.08	0.02	6.90	0.20	0	767	7.1	17.0	0.0005
10	3	72	0.10	0.08	5.90	0.14	7	741	7.5	14.0	0.0009
10	30	72	0.07	0.06	6.40	0.26	1	694	7.8	11.0	0.0006
11	17	72	0.04	0.04	9.50	0.04	0	720	7.5	9.0	0.0022
12	20	72	0.04	0.04	12.00	0.02	2	692	7.8	3.0	0.0014
1	2	73	0.05	0.05	16.80	0.07	0	634	7.5	5.0	0.0025
2	13	73	0.06	0.06	0.06	0.44	10	683	6.9	6.0	0.0010
3	15	73	0.06	0.05	9.20	0.06	2	635	7.1	3.0	0.0200
3	27	73	0.03	0.03	11.00	0.06	1	654	7.2	3.0	0.0272
4	6	73	0.03	0.03	8.30	0.00	2	678	7.2	4.0	0.0200
4	20	73	0.03	0.03	11.50	0.13	1	686	7.3	5.0	0.0130
5	7	73	0.02	0.02	9.70	0.05	1	684	7.4	6.0	0.0233
5	21	73	0.04	0.03	6.95	0.10	0	686	7.4	7.0	0.0075

STATION 21.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	28	73	0.04	0.03	13.50	0.04	2	699	7.1	8.0	0.1440
6	2	73	0.03	0.03	5.90	0.01	0	708	7.3	9.0	0.0299
6	14	73	0.03	0.03	12.00	0.12	0	701	7.1	10.0	0.0068
6	23	73	0.03	0.03	6.60	0.02	1	709	7.3	12.0	0.0178
7	2	73	0.10	0.07	13.00	0.17	2	659	7.2	13.0	0.0549
7	9	73	0.04	0.04	13.00	0.00	0	735	7.0	14.0	0.0087
7	13	73	0.03	0.03	8.50	0.00	3	758	7.1	14.0	0.0055
7	18	73	0.03	0.03	7.00	0.03	3	744	7.2	14.0	0.0057
7	24	73	0.04	0.04	8.25	0.07	0	749	7.3	14.0	0.0018
7	27	73	0.04	0.04	12.25	0.06	0	742	7.2	14.0	0.0034
8	7	73	0.04	0.04	8.60	0.10	1	744	7.3	13.0	0.0005
8	21	73	0.05	0.03	7.25	0.00	3	728	7.7	15.0	0.0005
8	30	73	0.02	0.02	2.00	0.00	1	634	7.8	17.0	0.0004

STATION 22.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.14	2.88	0.67	18	632	7.4	1.0	0.0955
3	15	71	*****	0.16	1.95	1.00	57	339	7.3	0.0	0.2240
3	27	71	*****	0.12	5.07	0.52	21	557	7.6	3.0	0.1413
4	1	71	*****	0.10	2.82	0.50	17	447	7.5	2.0	0.4695
4	6	71	*****	0.09	4.77	0.36	12	605	7.5	5.0	0.1231
4	12	71	*****	0.09	7.19	0.32	17	709	7.8	9.0	0.1181
4	17	71	*****	0.06	3.48	0.36	19	723	8.2	12.0	0.0798
4	29	71	*****	0.04	5.98	0.38	17	735	8.2	8.0	0.0602
5	5	71	*****	0.02	4.65	0.57	20	723	8.1	11.0	0.0226
5	17	71	*****	0.01	5.64	0.59	49	656	8.0	16.0	0.0247

STATION 22.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	21	71	*****	0.02	1.25	0.68	63	642	8.2	14.0	0.0157
6	4	71	*****	0.02	4.40	0.51	40	551	7.9	17.0	0.0478
6	7	71	*****	0.04	4.15	0.48	60	667	7.5	14.5	0.2804
6	10	71	*****	0.07	7.48	0.45	32	744	7.5	13.5	0.2224
6	15	71	*****	0.01	8.20	0.23	12	752	7.4	15.0	0.0420
6	25	71	*****	0.03	4.25	0.40	9	726	7.4	19.0	0.0216
6	30	71	*****	0.03	8.78	0.47	17	763	7.7	21.0	0.0517
7	6	71	*****	0.05	7.93	0.40	45	645	7.4	19.5	0.2583
7	13	71	*****	0.00	3.30	0.02	25	732	7.6	18.0	0.0990
7	20	71	*****	0.04	5.34	0.28	20	735	7.6	18.5	0.0097
7	26	71	*****	0.04	5.23	0.33	18	735	7.8	21.0	0.0069
8	2	71	*****	0.03	1.90	0.00	8	852	7.9	16.0	0.0006
8	9	71	*****	0.01	0.58	0.08	8	745	7.9	19.0	******
8	18	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	24	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	71	*****	0.08	0.08	*****	26	607	8.1	18.0	0.0002
9	8	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	18	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	27	71	0.09	0.06	0.00	0.19	0	653	7.3	12.0	0.0040
11	2	71	0.06	0.04	1.75	0.00	0	772	7.2	9.0	0.0035
11	17	71	0.07	0.03	1.95	0.08	0	753	7.2	8.0	0.0019
11	23	71	0.05	0.03	2.85	0.06	5	728	7.6	5.0	0.0049
12	8	71	0.14	0.02	3.70	0.28	2	660	7.8	1.0	0.0113
12	16	71	0.09	0.02	4.00	0.21	5	706	7.6	1.0	0.0109
1	19	72	0.13	0.07	4.50	0.49	10	767	7.5	0.0	0.0017
3	2	72	0.31	0.15	2.05	0.71	26	381	7.3	0.0	0.0135
3	8	72	*****	0.16	2.50	1.01	41	286	7.1	1.0	0.0473
3	14	72	0.48	0.21	3.70	0.70	21	408	7.1	2.0	0.1001
3	28	72	0.14	0.07	4.80	0.19	0	615	7.4	2.0	0.0181
4	7	72	0.09	0.03	3.90	0.01	9	623	8.0	4.0	0.0109

STATION 22.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	17	72	0.06	0.02	3.90	0.22	0	613	8.0	10.0	0.0087
4	25	72	0.09	0.01	4.20	0.19	8	677	7.8	9.0	0.0353
5	15	72	0.09	0.05	4.00	0.14	0	716	7.7	11.0	0.0375
5	22	72	0.04	0.04	5.90	0.15	18	734	7.7	18.0	0.0395
6	8	72	0.09	0.02	6.10	0.36	29	714	7.6	14.0	0.0932
6	21	72	0.18	0.00	6.70	0.42	11	572	7.7	16.0	0.0429
7	7	72	0.14	0.00	6.30	0.44	28	582	7.9	18.0	0.0269
7	12	72	0.03	0.02	5.20	0.68	65	507	7.5	21.0	0.4507
7	17	72	0.13	0.02	7.60	0.44	15	737	7.5	19.0	0.2452
8	2	72	*****	0.00	7.70	0.27	11	706	7.7	21.0	0.0733
8	16	72	0.16	0.07	3.40	0.45	12	696	7.4	21.0	0.0045
8	31	72	0.16	0.05	3.10	0.20	16	781	7.4	****	0.0032
9	20	72	0.14	0.02	2.70	0.35	9	735	7.6	20.0	0.0050
10	3	72	0.10	0.03	2.40	0.20	9	694	7.5	14.0	0.0073
10	30	72	0.05	0.01	2.30	0.32	6	692	7.6	8.0	0.0200
11	17	72	0.09	0.08	7.60	0.16	6	789	7.7	1.0	0.0304
12	9	72	0.06	0.02	9.60	0.09	3	660	7.5	1.0	0.0207
12	20	72	0.06	0.04	12.50	0.27	14	792	7.9	1.0	0.0058
1	2	73	1.05	1.05	12.00	1.56	17	514	7.3	1.0	0.0454
1	16	73	0.21	0.17	*****	0.45	0	808	7.6	0.0	0.0160
1	18	73	0.87	0.61	*****	1.74	44	227	7.1	1.0	0.2846
1	23	73	0.36	0.22	6.30	0.72	16	511	7.2	0.0	0.0389
2	5	73	0.45	0.34	4.20	1.15	23	441	7.2	2.0	0.0450
2	13	73	0.16	0.12	7.10	0.34	4	704	7.6	2.0	0.0138
2	19	73	0.36	0.09	7.80	0.37	5	612	7.5	1.0	0.0104
2	24	73	0.56	0.39	2.75	1.84	62	269	7.0	1.0	0.1164
3	3	73	0.62	0.40	3.10	1.69	32	323	7.1	1.0	0.1882
3	9	73	0.23	0.14	5.30	0.39	9	493	7.1	3.0	0.1350
3	15	73	0.17	0.12	8.40	0.38	9	644	7.3	4.0	0.1911
3	27	73	0.09	0.08	9.80	0.12	2	717	7.6	6.0	0.1242

STATION 22.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	6	73	0.05	0.05	7.80	0.08	0	718	7.9	7.0	0.0618
4	20	73	0.05	0.03	11.00	0.16	6	715	7.8	10.0	0.1187
4	27	73	0.02	0.01	7.90	0.33	5	695	8.1	9.0	0.0516
5	7	73	0.03	0.01	8.20	0.14	3	722	7.9	10.0	0.0665
5	21	73	0.06	0.01	6.10	0.23	11	681	8.0	16.0	0.0531
5	28	73	0.18	0.10	9.30	0.38	19	743	7.4	10.0	0.2893
6	2	73	0.04	0.04	4.90	0.11	6	779	7.8	15.0	0.0768
6	14	73	0.06	0.02	10.50	0.23	0	730	7.7	18.0	0.0519
6	25	73	0.05	0.01	11.50	0.17	8	735	7.8	18.0	0.0646
7	18	73	0.12	0.07	0.00	0.44	23	682	8.0	21.0	0.0038
7	27	73	0.13	0.09	4.45	0.38	17	634	7.8	19.0	0.0074
8	10	73	0.16	0.11	0.10	0.19	300	714	7.6	14.0	0.0005
8	21	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 22.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	15	72	0.03	0.02	0.00	0.00	0	673	7.4	11.0	0.0025
5	22	72	0.04	0.04	0.00	0.00	0	721	7.4	15.0	0.0023
6	8	72	0.07	0.03	0.00	0.29	20	677	7.5	11.0	0.0009
6	21	72	0.06	0.02	0.01	0.17	0	649	7.4	11.0	0.0011
7	7	72	0.01	0.01	0.00	0.10	0	661	7.8	15.0	0.0051
7	12	72	0.06	0.06	0.02	0.09	8	608	7.6	14.0	0.0009
8	2	72	*****	0.03	0.04	0.32	18	689	7.4	14.0	0.0027
8	16	72	0.03	0.02	0.02	0.11	1	681	7.4	16.0	0.0033
8	31	72	0.06	0.09	0.09	0.46	45	709	7.3	****	0.0060
9	20	72	0.37	0.18	0.03	0.21	230	659	7.3	13.0	0.0043

STATION 22.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
10	3	72	0.04	0.06	0.02	0.17	18	701	7.5	11.0	0.0011
10	30	72	0.06	0.06	0.04	0.23	15	674	7.4	9.0	0.0017
11	17	72	0.02	0.02	0.00	0.19	4	684	7.3	7.5	0.0012
12	20	72	0.05	0.05	0.03	0.28	7	684	7.1	2.0	0.0021
1	2	73	0.02	0.02	0.11	0.35	10	609	7.1	4.0	0.0015
1	16	73	0.03	0.03	*****	0.26	4	699	7.4	6.0	0.0015
1	23	73	0.09	0.04	0.03	0.32	9	653	7.1	6.0	0.0022
2	5	73	0.05	0.04	0.03	0.37	8	691	7.1	7.0	0.0013
2	19	73	0.26	0.03	0.20	0.26	7	704	7.2	6.0	0.0010
3	3	73	0.03	0.03	0.02	0.26	14	664	7.3	8.0	0.0006
3	9	73	0.03	0.03	0.02	0.19	5	663	7.3	8.0	0.0015
3	15	73	0.02	0.02	0.00	0.31	3	685	7.2	7.0	0.0012
3	27	73	0.01	0.01	0.01	0.19	1	669	7.3	9.0	0.0008
4	6	73	0.01	0.01	0.01	0.13	1	685	7.3	9.0	0.0015
4	20	73	*****	0.00	0.01	0.18	2	688	7.2	11.0	0.0012
5	7	73	*****	0.00	0.00	0.17	1	699	7.1	9.0	0.0023
5	21	73	0.04	0.02	0.00	0.26	5	719	7.2	11.0	0.0043
5	28	73	0.04	0.04	1.25	0.28	33	717	7.2	9.0	0.0013
6	2	73	0.02	0.02	0.01	0.22	9	713	7.3	9.0	0.0018
6	14	73	0.03	0.01	0.00	0.17	6	701	7.2	9.0	0.0016
6	25	73	0.03	0.01	0.00	0.08	8	674	7.3	10.0	0.0011
7	18	73	0.06	0.04	0.00	0.38	52	701	7.6	10.0	0.0012
7	27	73	0.06	0.04	0.00	0.22	47	706	7.4	10.0	0.0011
8	10	73	0.37	0.27	0.52	0.28	22	821	8.2	18.0	0.0001
8	21	73	0.04	0.03	0.01	0.22	0	708	7.6	13.0	0.0010
8	30	73	0.02	0.02	0.00	0.03	7	699	7.6	12.0	0.0007

STATION 22.2

CATE MO	CAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	15	72	0.09	0.06	5.50	0.00	0	588	7.7	7.0	0.0059
5	22	72	0.09	0.07	6.00	0.00	0	616	7.7	10.0	0.0051
6	8	72	0.06	0.05	7.40	0.00	8	578	7.8	9.0	0.0025
6	21	72	0.06	0.04	6.30	0.11	0	570	7.8	12.0	0.0008
7	7	72	0.06	0.05	5.70	0.01	0	573	8.1	14.0	0.0008
7	12	72	0.08	0.08	6.40	0.01	5	549	7.4	14.0	0.0152
8	2	72	*****	0.04	5.70	0.16	2	629	7.8	15.5	0.0023
8	16	72	0.07	0.04	5.70	0.04	2	536	7.8	17.0	0.0008
8	31	72	0.07	0.04	6.60	0.09	0	661	7.9	****	******
9	20	72	1.84	0.11	2.60	1.30	1200	209	7.4	19.0	0.0020
10	3	72	0.07	0.06	3.90	0.11	3	643	7.8	14.5	0.0004
10	30	72	0.07	0.05	2.40	0.17	8	606	7.9	11.0	0.0002
11	17	72	0.07	0.06	6.40	0.05	1	613	7.9	9.0	0.0006
12	20	72	0.05	0.04	8.40	0.03	0	606	8.0	5.0	0.0006
1	2	73	0.08	0.07	6.10	0.04	0	500	7.7	5.5	0.0037
1	16	73	0.05	0.05	*****	0.04	0	590	7.7	4.5	0.0004
1	23	73	0.09	0.07	6.70	0.13	3	541	7.7	4.0	0.0016
2	5	73	0.25	0.19	6.30	0.44	9	488	7.4	3.0	0.0030
2	19	73	0.25	0.06	6.20	0.00	2	607	7.8	4.0	0.0010
3	3	73	0.49	0.32	2.70	1.27	21	252	7.0	1.0	0.0120
3	9	73	0.11	0.09	6.50	0.03	2	529	7.6	3.5	0.0018
3	15	73	0.09	0.08	8.20	0.12	0	577	7.5	4.0	0.0030
3	27	73	0.07	0.06	7.20	0.02	0	585	7.5	4.0	0.0030
4	6	73	0.06	0.06	6.80	0.00	0	595	7.6	5.0	0.0011
4	20	73	0.07	0.07	9.40	0.07	2	601	7.6	6.0	0.0036
5	7	73	0.05	0.05	8.20	0.00	0	601	7.8	6.0	0.0004
5	21	73	0.08	0.06	5.65	0.07	1	606	7.8	8.0	0.0014
5	28	73	0.07	0.06	9.90	0.07	0	611	7.4	8.0	0.0088
6	2	73	0.05	0.04	2.80	0.02	6	619	7.6	8.0	0.0011
6	14	73	0.05	0.04	8.90	0.11	1	615	7.9	10.0	0.0011

STATION 22.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	25	73	0.05	0.04	8.10	0.00	0	555	7.8	11.0	0.0013
7	9	73	0.11	0.11	4.35	0.38	98	345	7.4	18.0	0.0044
7	18	73	0.04	0.04	9.70	0.00	4	656	8.0	14.0	0.0018
7	27	73	0.04	0.04	8.30	0.07	1	652	8.0	15.0	0.0011
8	7	73	0.07	0.07	8.20	0.09	0	667	8.0	17.0	0.0003

STATION 23.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	15	71	*****	0.12	1.28	0.55	14	356	7.5	1.0	0.1080
3	27	71	*****	0.06	2.58	0.30	9	557	7.4	2.0	******
4	1	71	*****	0.10	2.65	0.41	7	393	7.7	2.0	0.1140
4	6	71	*****	0.00	2.13	0.23	11	458	7.6	7.0	0.0373
4	12	71	*****	0.07	3.17	0.25	10	561	7.8	11.0	0.0092
4	17	71	*****	0.07	2.41	0.25	7	597	7.7	12.0	0.0111
4	29	71	*****	0.03	1.76	0.34	6	618	7.8	12.0	0.0127
5	6	71	*****	0.03	0.34	0.24	7	642	7.8	9.0	0.0118
5	11	71	*****	0.04	0.01	0.49	8	644	7.9	13.0	0.0090
5	21	71	*****	0.06	0.03	0.43	8	677	7.9	14.0	0.0051
6	3	71	*****	0.07	0.03	0.37	20	688	7.8	18.0	0.0050
6	10	71	*****	0.07	3.69	0.35	12	603	7.7	13.5	0.0536
6	15	71	*****	0.07	4.73	0.15	9	597	7.7	14.0	0.0233
6	25	71	*****	0.06	3.98	0.50	11	679	7.7	16.0	0.0095
6	30	71	*****	0.13	2.64	0.45	10	740	7.5	17.0	0.0112
7	6	71	*****	0.08	5.79	0.65	92	532	7.7	18.5	0.0719
7	13	71	*****	0.07	3.58	0.33	11	603	7.7	18.0	0.0168
7	20	71	*****	0.04	3.28	0.08	6	550	7.9	18.0	0.0075

STATION 23.0 CONTINUED

DATE MO	DATE DAY	DATE YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	26	71	*****	0.07	0.00	0.20	8	817	7.7	18.0	0.0015
8	2	71	*****	0.07	0.04	0.33	10	964	7.7	15.0	******
8	9	71	*****	0.08	0.08	0.33	18	864	7.7	18.0	******
8	18	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	27	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	71	0.22	0.10	0.00	0.21	0	706	7.4	7.0	0.0087
11	3	71	0.07	0.03	0.10	0.27	0	876	7.2	4.0	0.0024
11	17	71	0.09	0.07	0.00	0.11	0	803	7.3	8.0	0.0019
11	23	71	0.04	0.03	0.00	0.20	3	785	7.3	2.0	0.0011
12	8	71	0.05	0.02	0.00	0.06	0	746	7.3	1.0	0.0010
1	19	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	0.29	0.16	1.70	0.31	14	670	7.2	0.0	******
3	8	72	*****	0.10	2.80	0.45	20	377	7.1	0.0	******
3	14	72	0.16	0.08	3.50	0.13	2	402	7.1	0.0	0.0143
3	21	72	0.21	0.05	0.85	0.28	11	589	7.2	2.0	0.0141
4	7	72	0.03	0.03	0.01	0.03	0	683	7.5	1.0	0.0088
4	17	72	0.03	0.02	0.00	0.06	0	706	7.4	10.0	0.0062
4	21	72	0.08	0.04	0.25	0.20	0	609	7.3	3.0	0.0282
5	19	72	0.05	0.03	2.30	0.00	0	640	7.6	12.0	0.0143
6	8	72	0.13	0.06	3.70	0.22	20	631	7.5	16.0	0.0285
6	19	72	0.13	0.06	2.20	0.18	0	690	7.5	16.0	0.0225
7	7	72	0.07	0.04	0.07	0.36	1	711	7.6	13.0	0.0054
8	2	72	*****	0.05	2.60	0.25	0	689	7.6	16.0	0.0175
8	18	72	0.01	0.09	0.20	0.55	12	772	7.5	19.0	0.0018
9	1	72	0.10	0.06	0.20	0.21	5	788	7.5	14.0	0.0030
9	20	72	0.19	0.03	0.18	0.70	8	654	7.3	19.0	0.0043
10	6	72	0.14	0.11	0.10	0.34	6	697	7.3	10.5	0.0058
11	6	72	0.09	0.08	3.35	0.17	2	678	7.5	9.0	0.0115
11	21	72	0.06	0.04	3.70	0.06	1	706	7.6	2.0	0.0082
12	9	72	0.03	0.01	0.38	0.27	2	624	7.6	0.0	******

STATION 23.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
12	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	16	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	13	73	0.08	0.05	2.20	0.36	4	645	7.2	0.0	0.0017
2	19	73	0.18	0.05	0.40	0.17	1	704	7.2	1.0	******
3	7	73	0.12	0.08	2.60	0.22	5	443	7.1	3.0	0.0398
3	15	73	0.09	0.07	3.60	0.17	2	546	7.2	3.0	0.0298
3	27	73	0.06	0.06	4.40	0.13	3	610	7.6	5.0	0.0270
4	4	73	0.05	0.05	4.60	0.11	2	637	7.6	5.0	0.0215
4	17	73	0.04	0.04	4.70	0.08	1	601	7.8	7.0	0.0242
4	30	73	0.02	0.02	3.80	0.12	3	654	7.4	7.5	0.0127
5	7	73	0.03	0.03	3.60	0.08	2	635	7.6	9.5	0.0113
5	22	73	0.08	0.06	1.10	0.25	6	589	7.7	15.0	0.0079
5	28	73	0.15	0.11	7.20	0.33	16	646	7.6	10.0	0.0967
6	2	73	0.08	0.07	1.80	0.12	2	701	7.7	13.0	0.0196
6	13	73	0.10	0.07	3.45	0.19	4	691	7.6	16.0	0.0067
6	25	73	0.09	0.08	4.90	0.05	2	605	7.7	16.0	0.0114
7	18	73	0.10	0.10	0.00	0.23	7	727	7.8	18.0	0.0018
7	26	73	0.10	0.08	0.03	0.39	0	749	7.7	17.0	0.0017
8	10	73	0.11	0.11	0.01	0.33	12	824	7.7	15.0	0.0001

STATION 23.2

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	1	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	6	71	*****	0.12	0.19	0.32	26	354	7.6	6.0	0.0200
4	12	71	*****	0.37	0.02	0.49	13	671	8.2	12.0	0.0020

STATION 23.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	17	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	7	71	*****	0.33	0.52	0.62	25	450	7.4	16.0	0.0051
6	10	71	*****	0.33	0.13	*****	12	637	7.5	17.0	0.0025
6	15	71	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
7	6	71	*****	0.00	0.0C	0.00	0	0	0.0	0.0	0.0000
7	13	71	*****	0.27	0.54	0.38	14	824	7.2	15.0	0.0005
7	20	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	19	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	5	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	C.0000
8	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	18	72	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
9	1	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	6	72	*****	0.00	0.00	0.00	0	0	0.C	0.0	0.0000
12	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	19	73	0.31	0.23	0.98	0.28	8	517	7.3	1.0	0.0038
3	27	73	0.20	0.14	0.07	0.28	8	490	7.7	6.0	0.0147
4	4	73	0.25	0.22	0.01	0.19	3	616	7.5	4.0	0.0018
4	17	73	0.26	0.22	0.01	0.29	3	713	7.8	9.0	0.0027
5	7	73	0.32	0.25	0.00	0.37	7	821	7.5	10.0	0.0005
5	28	73	0.49	0.41	1.15	0.53	12	697	7.4	11.0	0.0057
6	2	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	25	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 24.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	15	71	*****	0.74	0.23	1.98	41	153	7.2	0.0	******
4	1	71	*****	0.09	0.23	0.82	28	304	7.6	0.0	******
4	6	71	*****	0.00	0.01	0.38	27	268	7.4	6.0	******
4	12	71	*****	0.03	0.05	0.63	37	275	7.7	10.0	******
4	17	71	*****	0.02	0.00	0.41	20	309	7.7	14.0	******
4	29	71	*****	0.04	0.00	0.53	11	420	7.8	8.0	******
5	6	71	*****	0.04	0.00	0.40	13	379	7.7	11.0	******
5	11	71	*****	0.02	0.02	0.62	112	365	8.3	14.0	******
5	24	71	*****	0.03	0.00	0.33	9	273	9.8	13.0	******
6	3	71	*****	0.09	0.01	0.40	25	282	9.6	22.0	******
6	8	71	*****	0.09	0.60	0.72	86	282	7.2	17.0	******
6	15	71	*****	0.06	0.00	0.55	40	278	8.5	22.0	******
6	25	71	*****	0.04	0.00	0.43	15	219	9.9	22.0	******
6	30	71	*****	0.06	0.00	0.40	10	254	8.7	21.0	******
7	6	71	*****	0.06	0.04	0.60	25	327	7.0	21.0	******
7	13	71	*****	0.08	0.02	0.66	22	420	7.9	22.0	******
7	20	71	*****	0.11	0.01	0.55	15	437	8.3	22.0	******
7	26	71	*****	0.05	0.02	0.60	20	392	8.3	25.0	******
8	2	71	*****	0.08	0.03	0.63	32	446	8.0	21.0	******
8	9	71	*****	0.07	0.02	0.56	28	319	8.2	25.0	******
8	18	71	*****	0.22	0.03	0.56	36	355	8.0	23.0	******
8	24	71	0.20	0.13	0.04	1.11	37	375	8.7	24.0	******
11	3	71	0.11	0.03	2.75	0.40	3	573	7.6	3.0	******
11	17	71	0.07	0.03	0.08	0.37	6	440	7.4	7.0	******
3	21	72	0.35	0.08	0.00	0.38	19	257	7.1	4.0	******
4	6	72	0.13	0.02	0.05	0.31	0	493	9.2	6.0	******
4	21	72	0.19	0.04	0.21	0.51	16	592	7.3	5.0	******
5	11	72	0.12	0.04	0.01	0.21	5	538	7.4	15.0	******
5	19	72	0.11	0.06	0.02	0.30	1	525	7.7	21.0	******
6	8	72	0.37	0.15	0.00	0.82	26	431	7.5	18.0	******

STATION 24.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	19	72	0.15	0.08	0.06	0.70	8	380	7.8	19.0	******
7	5	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	2	72	*****	0.09	0.05	0.87	17	391	7.3	21.5	0.0178
8	18	72	0.28	0.23	0.07	2.30	28	452	7.5	24.0	0.0390
9	1	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	20	72	0.28	0.04	5.70	0.52	31	773	7.2	19.0	0.0011
11	6	72	0.13	0.07	0.01	0.58	16	482	7.4	8.0	0.0087
3	27	73	0.07	0.07	0.02	0.54	12	427	7.2	7.0	******
4	4	73	0.09	0.02	0.01	0.48	11	442	7.6	5.0	******
5	7	73	0.09	0.00	0.01	0.32	81	423	8.2	11.0	******
5	22	73	0.19	0.19	0.00	1.57	41	468	7.3	18.0	******
6	13	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 24.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	9	71	*****	0.14	4.59	0.16	3	638	7.2	4.0	0.0109
4	13	71	*****	0.15	4.22	0.35	8	612	7.1	4.0	0.0076
4	17	71	*****	0.16	4.57	0.45	7	616	7.2	5.0	0.0066
4	29	71	*****	0.15	3.00	0.29	5	627	7.1	6.0	0.0057
5	6	71	*****	0.14	4.00	0.22	0	640	7.2	7.0	0.0040
5	11	71	*****	0.14	4.40	0.06	1	636	7.3	7.0	0.0045
5	20	71	*****	0.14	5.14	0.21	1	635	7.3	8.0	0.0024
6	4	71	*****	0.16	2.24	0.21	8	624	7.2	9.5	0.0041
6	8	71	*****	0.09	*****	0.17	11	648	6.9	11.0	0.0240
6	17	71	*****	0.13	3.23	0.00	8	666	7.4	12.0	0.0076
6	24	71	*****	0.14	3.40	0.00	5	631	7.1	12.0	0.0032

STATION 24.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	30	71	*****	0.15	6.94	0.11	1	693	7.3	14.0	0.0057
7	7	71	*****	0.13	4.50	0.00	5	533	7.3	14.0	0.0098
7	13	71	*****	0.12	4.30	0.00	0	395	7.2	16.0	0.0110
7	19	71	*****	0.14	5.20	0.00	1	646	7.1	14.0	0.0024
7	27	71	*****	0.13	7.50	0.00	5	692	7.4	15.0	0.0018
8	3	71	*****	0.12	7.50	0.00	1	711	7.0	14.5	0.0008
8	9	71	*****	0.11	6.99	0.00	2	732	7.4	15.0	0.0004
8	18	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	13	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	27	71	0.59	0.41	3.02	0.78	52	280	7.1	15.0	0.0008
11	2	71	0.19	0.14	3.64	0.00	0	680	7.6	11.0	0.0012
11	17	71	0.24	0.16	5.20	0.17	3	559	7.7	9.0	0.0018
11	23	71	0.17	0.13	5.30	0.13	0	662	7.6	9.0	0.0023
12	8	71	0.25	0.12	6.70	0.19	0	658	7.9	7.0	0.0020
1	19	72	0.14	0.14	7.40	0.01	2	650	7.6	6.0	0.0018
3	2	72	0.21	0.11	5.95	0.00	0	558	7.6	2.0	0.0021
3	8	72	*****	0.11	3.70	0.10	0	569	7.2	3.0	0.0014
3	21	72	0.21	0.11	4.60	0.02	10	558	7.2	3.0	0.0028
4	7	72	0.20	0.12	4.80	0.00	0	611	7.4	3.0	0.0024
4	12	72	0.20	0.13	4.20	0.02	0	666	7.5	4.0	0.0013
4	21	72	0.19	0.11	3.00	0.05	1	560	7.3	4.0	0.0026
5	2	72	0.16	0.12	6.00	0.08	1	596	7.1	6.0	0.0211
5	19	72	0.14	0.10	3.80	0.00	0	665	7.3	8.0	0.0191
6	2	72	0.14	0.12	5.70	0.13	0	640	7.3	10.0	0.0087
6	14	72	0.20	0.11	0.75	0.12	0	636	7.3	13.0	0.0044
8	2	72	*****	0.11	6.20	0.14	1	654	7.1	15.5	0.0074
8	18	72	0.14	0.12	6.20	0.06	1	662	7.4	16.0	0.0005
8	30	72	0.18	0.13	8.30	0.00	2	669	7.9	17.0	0.0007
10	3	72	0.18	0.16	4.60	0.11	2	692	7.6	14.5	0.0008
11	6	72	0.19	0.15	5.30	0.18	1	668	7.2	11.0	0.0036

STATION 24.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
11	21	72	0.17	0.15	7.70	0.03	0	710	7.6	8.5	0.0026
12	9	72	0.18	0.15	8.30	0.00	0	549	7.0	6.0	0.0031
12	20	72	0.17	0.15	11.50	0.04	0	667	7.4	3.0	0.0007
1	2	73	0.16	0.14	4.20	0.02	0	572	7.1	3.0	0.0018
1	16	73	0.16	0.12	*****	0.05	2	678	7.3	5.0	0.0040
1	23	73	0.26	0.14	0.56	0.32	4	541	7.1	4.0	0.0052
2	5	73	0.18	0.12	4.80	0.16	5	522	7.3	4.0	0.0033
2	13	73	0.20	0.14	6.80	0.12	2	601	7.6	4.0	0.0015
2	19	73	0.40	0.15	7.30	0.06	2	645	7.6	4.0	0.0021
2	24	73	0.20	0.15	3.70	0.48	13	361	7.0	3.0	0.0115
3	6	73	0.19	0.14	3.60	0.37	8	421	7.1	3.0	0.0175
3	12	73	0.15	0.12	6.05	0.09	4	569	7.2	3.0	0.0117
3	15	73	0.14	0.12	5.70	0.05	0	583	7.1	3.5	0.0133
3	27	73	0.13	0.13	6.50	0.04	0	602	7.3	5.0	0.0096
4	4	73	0.13	0.13	6.70	0.04	0	616	7.3	4.5	0.0105
4	17	73	0.14	0.12	7.40	0.02	0	598	7.3	5.5	0.0100
4	27	73	0.13	0.12	6.90	0.08	0	613	7.4	7.0	0.0053
5	3	73	0.14	0.12	8.50	0.07	3	642	7.4	8.0	0.0075
5	22	73	0.15	0.13	5.80	0.10	0	577	7.4	8.5	0.0033
5	29	73	0.11	0.10	6.70	0.21	0	653	7.4	9.0	0.0132
6	5	73	0.12	0.11	6.50	0.10	0	688	7.5	9.0	0.0049
6	25	73	0.10	0.07	7.40	0.00	0	609	7.4	12.0	0.0019
6	29	73	0.12	0.08	11.00	0.06	0	719	7.4	12.0	0.0014
7	6	73	0.09	0.09	7.90	0.02	11	696	8.0	14.0	0.0008
7	17	73	0.10	0.10	8.35	0.00	0	676	8.0	15.0	0.0008
8	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 25.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.21	0.42	1.02	25	510	7.5	1.0	0.5410
3	16	71	*****	0.17	0.45	1.14	42	282	7.3	0.0	1.3584
3	29	71	*****	0.15	0.24	0.62	30	479	7.7	3.0	7.0040
4	2	71	*****	0.13	0.44	0.55	21	429	7.9	1.0	5.3460
4	7	71	*****	0.00	0.42	0.25	23	441	8.1	5.0	4.6695
4	13	71	*****	0.07	0.14	0.54	40	485	8.4	8.0	5.3490
4	19	71	*****	0.01	0.02	0.47	32	437	9.0	13.0	4.3016
4	30	71	*****	0.05	0.05	0.41	25	461	9.0	11.0	3.9337
5	6	71	*****	0.06	0.10	0.53	24	471	8.7	12.0	3.2262
5	18	71	*****	0.06	0.09	0.56	24	471	8.5	16.0	1.6414
5	24	71	*****	0.07	0.11	0.49	30	472	8.4	14.0	1.1886
6	3	71	*****	0.06	0.13	0.61	40	512	8.2	17.0	0.4245
6	11	71	*****	0.10	0.39	0.50	61	472	8.1	21.0	0.1415
6	17	71	*****	0.04	0.04	0.50	45	470	8.5	24.0	1.6131
6	24	71	*****	0.10	0.10	0.80	45	459	8.2	24.5	3.2262
6	30	71	*****	0.05	0.04	0.63	45	460	8.9	24.0	2.8866
7	7	71	*****	0.01	0.10	0.48	52	403	9.4	24.0	1.9810
7	19	71	*****	0.01	0.06	0.51	40	394	9.3	22.5	1.2452
7	27	71	*****	0.01	0.12	0.25	50	397	9.8	21.0	2.7734
8	3	71	*****	0.01	0.01	0.63	42	393	9.7	20.0	0.0424
8	11	71	*****	0.09	0.25	1.12	41	414	9.4	24.0	0.0000
8	18	71	*****	0.16	0.03	1.45	41	442	8.9	23.5	0.0000
8	24	71	0.21	0.06	0.05	1.09	34	426	8.7	24.0	0.0000
9	8	71	0.20	0.06	0.80	1.42	42	468	8.2	21.0	0.0054
9	17	71	*****	0.02	0.07	0.73	60	469	8.7	11.0	0.0000
9	23	71	0.17	0.05	0.07	0.90	40	477	8.2	9.0	0.0000
10	5	71	0.28	0.19	0.11	1.92	83	473	7.5	13.5	0.0054
10	14	71	0.20	0.07	0.17	0.96	29	490	7.9	9.0	0.0100
10	29	71	*****	0.13	0.21	3.26	22	492	7.6	8.0	0.0000
11	4	71	0.26	0.13	0.00	2.15	12	463	7.6	2.0	0.0178

STATION 25.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
12	7	71	0.18	0.10	0.08	2.60	1	571	7.1	0.0	0.0000
12	22	71	0.36	0.13	0.05	3.50	8	706	7.0	0.0	0.0000
2	3	72	0.08	0.05	0.13	5.00	9	1431	7.1	0.0	0.0000
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	16	72	0.17	0.06	0.29	0.90	5	239	7.2	2.0	0.1972
3	28	72	0.18	0.01	0.10	1.00	50	325	8.4	1.0	0.0156
4	10	72	0.17	0.02	0.09	0.00	32	323	8.4	9.0	0.0132
5	11	72	0.10	0.03	0.38	0.21	11	436	8.3	14.0	0.8710
6	14	72	0.17	0.03	0.18	1.20	50	461	8.2	21.0	1.0445
6	21	72	0.19	0.02	0.18	0.77	52	449	8.5	16.0	0.5657
7	7	72	0.22	0.06	0.18	1.13	66	381	8.2	19.0	0.1248
7	27	72	0.18	0.04	0.19	0.52	40	397	9.0	24.0	1.5043
8	22	72	0.24	0.07	0.09	0.86	41	472	8.7	23.0	0.1430
9	1	72	0.18	0.07	0.10	1.15	15	483	8.0	18.0	0.0171
9	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	6	72	0.29	0.05	0.09	0.95	77	436	8.6	13.0	0.1383
11	6	72	0.13	0.06	0.32	0.94	23	475	8.4	8.0	0.0221
12	8	72	0.11	0.07	0.85	0.97	15	745	7.9	0.0	0.0225
12	27	72	0.16	0.02	*****	2.80	41	995	7.9	0.0	0.0207
1	11	73	0.18	0.13	*****	1.48	8	699	7.4	0.0	0.0698
1	25	73	0.32	0.21	0.85	1.38	15	643	7.4	2.0	0.1786
2	5	73	0.20	0.14	0.55	1.27	7	558	7.3	3.0	0.4989
2	21	73	0.17	0.11	0.40	0.98	11	551	7.3	1.0	0.7324
2	28	73	0.24	0.13	0.70	1.21	19	522	7.4	2.0	0.6930
3	8	73	0.23	0.12	1.05	1.06	14	433	7.2	3.0	1.9457
3	14	73	0.12	0.05	0.73	0.37	17	358	8.0	4.0	3.4542
3	19	73	0.10	0.01	0.56	0.29	18	361	8.4	3.0	3.1584
3	27	73	0.11	0.01	0.23	0.61	52	432	8.4	7.0	0.3035
4	4	73	0.08	0.01	0.18	0.39	21	446	8.7	5.0	3.5234
4	16	73	0.08	0.02	0.81	0.46	29	479	8.5	6.0	2.8943

STATION 25.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	25	73	0.05	0.02	0.52	0.56	12	466	8.5	11.0	3.0430
5	22	73	0.15	0.03	0.46	0.57	56	441	8.5	18.0	1.5496
5	26	73	0.07	0.02	0.29	0.53	16	512	8.6	14.0	1.5328
6	8	73	0.15	0.01	0.53	0.60	78	499	8.4	19.0	1.6181
6	25	73	0.13	0.02	0.85	0.12	53	463	8.5	21.0	0.9426
7	6	73	0.12	0.04	0.34	0.19	52	464	8.7	24.0	******
7	17	73	0.08	0.02	0.00	0.20	37	423	8.8	21.0	******
7	26	73	0.19	0.03	0.03	0.78	116	430	8.6	21.0	******
8	10	73	0.13	0.03	0.00	0.52	42	420	8.8	22.0	******
8	21	73	0.20	0.01	0.03	0.49	74	422	8.6	20.0	******
8	29	73	0.17	0.02	0.06	1.07	34	562	8.3	24.0	******

STATION 25.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	2.07	1.87	2.50	25	609	7.4	4.0	0.8930
3	16	71	*****	1.47	0.95	1.62	33	458	7.3	2.0	1.3410
3	29	71	*****	0.51	1.20	1.21	26	513	7.7	5.0	4.6810
4	2	71	*****	0.38	0.70	0.91	22	471	7.8	1.0	5.0480
4	7	71	*****	0.00	0.83	0.62	17	490	8.0	6.0	7.0110
4	13	71	*****	0.65	0.63	0.87	45	507	8.6	7.0	7.8070
4	19	71	*****	0.42	0.33	0.88	27	523	8.9	14.0	4.8080
4	30	71	*****	1.07	0.76	1.33	22	529	8.4	11.0	5.9830
5	6	71	*****	0.87	1.03	1.47	25	529	8.5	12.0	3.7600
5	18	71	*****	1.70	1.42	1.44	38	572	8.1	14.0	2.3143
5	24	71	*****	1.50	1.51	0.78	19	540	8.1	13.0	1.8480
6	3	71	*****	2.64	1.95	1.79	48	646	7.6	18.0	0.9164

STATION 25.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	11	71	*****	0.88	1.17	1.19	40	546	8.0	20.0	4.2400
6	17	71	*****	0.75	1.54	0.80	60	544	8.0	22.0	******
6	24	71	*****	0.78	0.99	1.28	38	505	8.0	23.0	2.5530
6	30	71	*****	0.85	2.12	0.85	45	510	8.2	22.0	3.9600
7	7	71	*****	0.73	1.45	0.78	55	482	8.9	23.C	0.0000
7	19	71	*****	1.50	3.58	2.48	35	521	8.7	21.0	4.2550
7	27	71	*****	1.39	5.57	2.80	30	704	7.6	19.0	******
8	3	71	*****	1.53	3.94	1.88	21	755	7.6	20.0	******
8	11	71	*****	5.35	6.50	4.20	18	780	7.8	23.0	******
8	18	71	*****	7.89	6.33	5.30	38	775	8.0	24.0	******
8	24	71	7.91	6.81	5.18	4.10	22	688	7.4	21.0	******
9	23	71	14.15	5.88	6.80	2.90	21	755	7.3	12.0	******
10	5	71	8.33	7.79	7.80	1.25	21	722	7.3	15.0	0.0668
10	14	71	9.01	5.22	14.50	3.55	13	726	7.3	11.0	******
11	4	71	6.99	4.56	8.30	1.28	8	794	7.4	7.0	******
3	9	72	6.24	4.40	8.50	6.85	5	820	7.3	****	******
3	28	72	7.81	4.27	5.10	4.95	4	843	7.3	6.C	******
5	11	72	2.03	1.30	2.40	1.36	9	656	7.6	15.0	******
5	3	73	0.07	0.05	0.78	0.67	10	480	8.7	8.0	******

STATION 26.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.41	0.46	1.33	30	529	7.5	1.0	0.5755
3	16	71	*****	0.23	0.36	1.17	47	311	7.5	0.0	1.8400
3	29	71	*****	0.16	0.26	0.67	32	442	7.6	3.0	6.8610
4	2	71	*****	0.18	0.41	0.59	24	436	8.1	0.0	2.1420

STATION 26.0 CONTINUED

DATE			TOTAL P	PO4-P	NO3-N	NH3-N	TURB	SP COND	PH	TEMP	FLOW CUBIC M
MO	DAY	YR	MG/L	MG/L	MG/L	MG/L	JTU			C	/SEC
4	7	71	*****	0.00	0.63	0.25	18	449	8.1	5.0	3.1210
4	13	71	*****	0.10	0.27	0.56	47	429	8.6	8.0	3.2800
4	19	71	*****	0.04	0.06	0.46	28	439	9.0	14.0	2.5790
4	30	71	*****	0.10	0.09	0.41	11	461	9.0	10.0	3.0060
5	6	71	*****	0.11	0.12	0.60	17	479	8.7	12.0	3.6887
5	18	71	*****	0.20	0.24	0.68	37	479	8.5	15.0	1.9145
5	24	71	*****	0.22	0.34	0.57	47	482	8.3	13.0	1.4210
6	3	71	*****	0.36	0.38	0.72	55	515	8.4	19.0	0.7696
6	11	71	*****	0.25	0.46	0.65	48	489	8.2	20.0	2.2100
6	17	71	*****	0.24	0.53	0.72	30	505	8.1	23.0	******
6	24	71	*****	0.21	0.69	0.69	38	469	7.8	24.0	2.5640
6	30	71	*****	0.22	0.45	0.50	62	471	8.4	24.0	1.3250
7	7	71	*****	0.16	4.36	0.56	50	430	9.2	23.0	0.9880
7	19	71	*****	0.18	0.49	0.58	32	419	9.2	22.5	1.0120
7	27	71	*****	0.68	0.85	0.83	48	447	8.3	20.0	0.1480
8	3	71	*****	1.40	1.08	2.10	28	526	7.9	19.5	0.0580
8	11	71	*****	4.81	0.08	6.45	32	652	8.1	22.0	0.0105
8	18	71	*****	7.43	1.15	11.75	63	793	7.4	22.0	0.0568
8	24	71	9.54	8.70	1.21	10.10	53	720	7.5	20.5	0.0195
9	8	71	3.35	8.96	2.80	8.65	39	820	8.0	19.0	0.0738
9	17	71	*****	7.82	7.20	8.50	28	803	7.3	8.0	0.0381
9	23	71	14.60	6.03	6.90	6.80	30	832	7.3	7.0	0.0324
10	5	71	8.33	7.09	7.80	2.50	38	755	7.2	11.5	0.0448
10	14	71	8.67	5.46	12.00	5.00	20	754	7.4	8.0	0.0312
10	29	71	*****	4.97	8.80	6.40	18	749	7.4	4.0	0.0843
11	4	71	6.72	4.56	8.80	7.60	16	847	7.4	2.0	0.0424
12	7	71	8.38	5.05	10.00	2.95	18	787	7.3	2.0	0.0560
12	22	71	7.93	4.37	11.50	5.00	20	733	7.2	0.0	0.0520
2	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 26.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	10	72	6.94	3.55	3.80	9.25	18	820	7.1	0.0	******
3	16	72	5.90	3.34	2.60	14.25	11	756	7.3	2.0	******
3	28	72	8.39	3.77	3.40	6.50	10	826	7.4	2.0	0.0514
4	10	72	8.68	5.05	2.90	5.50	10	817	7.7	9.0	0.0683
5	11	72	0.35	0.20	0.60	0.48	9	464	7.9	14.0	1.1790
6	14	72	1.01	0.80	0.70	2.25	20	497	7.6	21.0	0.8707
6	21	72	1.33	0.85	1.90	3.50	39	519	7.6	16.0	0.0000
7	6	72	5.53	5.51	6.20	10.75	26	798	7.4	17.0	0.0869
7	27	72	0.34	0.14	0.60	0.68	47	328	8.8	23.0	8.8905
8	22	72	1.84	1.73	1.48	2.40	60	570	8.0	22.0	0.4244
9	1	72	2.55	0.71	6.10	3.55	20	791	7.3	13.5	0.0492
9	20	72	3.47	0.67	3.10	7.00	42	360	7.6	21.0	0.0565
10	6	72	1.26	1.17	0.35	2.55	62	475	8.2	13.0	1.0425
12	8	72	5.48	5.46	6.80	7.90	21	853	7.2	0.0	******
12	27	72	6.86	6.52	*****	11.50	19	829	7.4	0.0	******
1	11	73	1.92	1.29	*****	4.20	4	753	7.0	0.0	******
1	25	73	0.98	0.68	1.20	2.45	17	633	7.3	2.0	******
2	5	73	3.39	2.18	0.90	1.75	15	584	7.4	3.5	******
2	21	73	0.57	0.52	0.65	2.40	27	573	7.5	1.0	******
3	8	73	0.36	0.22	0.70	1.37	26	436	7.3	3.5	******
4	4	73	0.39	0.07	0.40	0.60	18	472	8.6	5.5	******
4	25	73	0.15	0.11	0.69	0.64	17	479	8.5	11.0	******
5	22	73	0.33	0.17	0.58	0.62	64	450	8.4	18.0	******
6	8	73	0.34	0.19	0.78	0.66	59	516	8.3	19.0	******
6	25	73	0.41	0.25	2.10	0.14	41	476	8.3	20.0	******
7	6	73	0.55	0.55	1.20	0.55	54	498	8.2	23.0	******
7	17	73	4.23	3.68	2.55	7.30	8	618	7.6	20.0	******
7	26	73	4.19	4.19	0.90	10.20	16	659	7.4	19.0	******
8	10	73	7.70	7.70	0.39	14.50	29	893	7.5	17.0	******
8	21	73	10.68	8.80	0.69	13.00	51	899	7.5	17.0	******

STATION 26.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	29	73	8.15	8.15	1.35	12.60	44	886	8.5	21.0	******

STATION 26.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
12	22	71	5.88	3.23	10.50	2.05	15	694	7.2	0.0	******
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	10	72	4.43	2.40	3.60	6.60	16	662	7.1	0.0	******
3	16	72	4.27	3.11	2.80	8.75	9	690	7.3	0.0	******
3	28	72	5.00	2.75	2.80	4.60	9	741	8.1	1.0	******
4	10	72	6.47	2.85	2.80	2.00	59	738	9.1	11.0	******
5	11	72	0.42	0.25	0.80	0.42	10	474	7.8	14.0	******
5	23	72	0.53	0.33	0.36	0.65	11	495	8.0	19.0	******
6	14	72	2.36	1.19	1.30	3.90	10	566	7.5	20.0	******
6	21	72	1.45	1.06	2.20	2.85	160	520	7.7	17.0	0.0000
7	6	72	4.02	3.50	6.30	6.80	21	662	7.5	18.0	******
7	27	72	0.50	0.19	0.60	0.85	71	428	8.4	23.0	******
8	22	72	2.90	2.69	1.95	4.45	29	654	8.1	22.0	******
9	1	72	1.80	0.64	6.10	1.30	30	699	7.5	15.0	******
9	20	72	2.02	0.37	3.80	1.90	52	727	7.8	21.5	******
11	6	72	1.62	1.58	0.65	2.75	64	496	7.9	13.0	******
12	8	72	4.60	4.48	6.80	4.80	12	802	7.1	0.0	******
12	27	72	4.85	4.56	*****	9.00	11	768	7.2	0.0	******
1	11	73	2.02	1.43	*****	5.20	10	756	7.1	0.0	******
1	25	73	1.07	0.77	1.25	2.85	13	660	7.3	0.0	******
2	5	73	3.59	2.35	0.85	1.75	13	589	7.5	3.0	******
2	21	73	0.60	0.55	0.95	2.15	18	581	7.6	1.0	******

STATION 26.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	8	73	0.34	0.26	0.65	1.51	19	444	7.3	3.0	******
4	4	73	0.43	0.10	0.35	0.60	18	475	8.7	5.5	******
4	25	73	0.20	0.14	0.77	0.72	17	486	8.5	11.0	******
5	22	73	0.40	0.22	0.68	0.64	58	454	8.3	18.0	******
6	8	73	0.33	0.20	0.87	0.63	70	518	8.2	19.0	******
6	25	73	0.59	0.38	2.55	0.23	22	489	8.1	20.0	******
7	6	73	0.52	0.52	1.70	0.58	24	513	7.6	23.0	******
7	17	73	4.40	4.17	6.40	9.20	1	728	7.7	21.0	******
7	26	73	2.73	2.73	3.75	2.60	11	640	7.4	21.0	******
8	10	73	6.42	6.42	0.25	9.80	9	807	7.7	19.0	******
8	21	73	6.94	6.94	1.45	9.80	18	840	7.6	19.0	******
8	29	73	7.02	7.02	0.50	14.80	26	911	7.9	23.0	******

STATION 27.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.42	0.97	1.18	41	554	7.4	1.0	1.0200
3	16	71	*****	0.28	0.43	1.23	46	322	7.6	0.0	2.9930
3	29	71	*****	0.19	0.30	0.68	38	441	7.7	3.0	9.0750
4	2	71	*****	0.16	0.35	0.60	24	447	7.7	0.0	4.0040
4	7	71	*****	0.00	0.42	0.23	16	460	8.0	5.0	5.6100
4	13	71	*****	0.11	0.32	0.54	43	427	8.5	7.0	6.6000
4	19	71	*****	0.06	0.06	0.43	23	447	9.0	13.0	6.7650
4	30	71	*****	0.12	0.13	0.43	12	429	8.8	10.0	6.1950
5	6	71	*****	0.13	0.21	0.60	30	481	8.4	12.0	4.0988
5	18	71	*****	0.29	0.34	0.89	39	492	8.3	15.0	2.5313
5	24	71	*****	0.30	0.55	0.66	48	501	8.1	13.0	2.3440

STATION 27.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	3	71	*****	0.49	0.45	0.62	50	535	8.3	19.0	1.6560
6	11	71	*****	0.27	0.79	0.58	46	502	8.0	21.0	3.1650
6	17	71	*****	0.31	0.85	0.75	43	558	7.8	23.0	******
6	24	71	*****	0.27	1.09	0.58	46	481	7.7	23.5	4.3840
6	30	71	*****	0.29	0.27	0.48	69	385	7.9	23.5	4.0630
7	7	71	*****	0.20	0.27	0.56	55	319	8.8	23.5	4.4910
7	19	71	*****	0.23	0.77	0.71	38	430	8.5	22.0	2.9270
7	27	71	*****	0.98	1.16	1.69	40	493	8.1	19.0	1.0470
8	3	71	*****	0.73	0.92	3.70	16	633	7.7	20.0	0.4583
8	11	71	*****	2.00	3.39	2.09	19	647	8.0	22.0	0.1470
8	18	71	*****	5.18	4.30	1.89	32	793	8.0	23.0	0.8553
8	24	71	5.30	4.53	2.25	2.90	38	695	7.7	22.0	0.1704
9	8	71	1.89	4.07	4.90	1.15	40	787	8.4	20.0	0.0712
9	17	71	*****	3.99	5.40	0.69	32	728	7.8	9.0	0.0224
9	23	71	10.11	4.68	3.40	1.35	37	730	7.8	7.0	0.1578
10	5	71	4.87	3.83	3.90	1.02	47	733	7.7	11.0	0.1337
10	14	71	4.52	2.77	6.00	1.48	28	702	7.9	9.0	0.1467
10	29	71	*****	3.34	5.90	4.10	13	710	7.5	4.0	0.1960
11	4	71	3.88	2.56	5.20	4.55	12	759	7.6	1.0	0.1678
12	7	71	4.21	3.13	6.90	1.35	10	733	7.6	1.0	0.1850
12	22	71	5.30	3.21	8.00	1.40	16	728	7.3	0.0	0.1820
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	28	72	3.52	1.60	1.80	3.50	10	681	7.8	0.0	0.3103
4	10	72	5.26	2.20	2.30	1.40	71	718	9.2	10.0	0.2851
5	11	72	0.40	0.26	0.90	0.68	30	493	7.7	14.0	******

STATION 28.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	15	71	*****	0.55	2.74	2.90	15	565	7.2	0.0	0.0060
3	27	71	*****	0.52	7.12	1.69	8	886	7.5	1.0	0.0030
4	1	71	*****	0.37	4.32	1.46	2	642	7.5	0.0	0.0051
4	6	71	*****	0.50	8.10	0.88	4	866	7.7	1.0	0.0035
4	12	71	*****	0.55	7.60	0.76	8	883	7.4	6.0	0.0029
4	17	71	*****	0.55	4.87	0.59	8	843	7.4	7.0	0.0030
4	29	71	*****	0.52	4.62	0.73	7	927	7.4	5.0	0.0009
5	5	71	*****	0.51	1.77	0.75	8	612	7.5	9.0	0.0009
5	17	71	*****	0.70	2.54	0.84	12	959	7.6	14.0	0.0008
5	21	71	*****	0.72	2.87	0.82	19	999	7.4	11.0	0.0002
6	4	71	*****	0.85	1.39	1.19	65	900	7.5	16.0	0.0005
6	7	71	*****	0.29	4.34	0.56	30	697	7.6	14.0	0.0077
6	9	71	*****	0.31	5.53	0.60	185	769	7.5	13.0	0.0044
6	15	71	*****	0.43	5.64	0.86	180	804	7.7	16.0	0.0010
6	25	71	*****	1.14	3.00	1.48	104	907	7.6	21.0	0.0002
6	30	71	*****	1.21	1.14	1.59	58	1090	7.6	19.0	0.0003
7	6	71	*****	0.54	6.90	0.55	76	869	7.8	22.0	0.0006
7	13	71	*****	0.62	4.49	0.48	44	321	7.8	21.0	0.0009
7	20	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	13	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	18	71	4.89	2.44	1.30	4.28	475	191	****	16.0	0.0004
10	27	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	8	72	1.48	0.81	11.50	2.55	18	892	7.1	0.0	0.0004
3	14	72	0.92	0.51	5.80	1.22	3	609	7.2	0.0	0.0087
3	21	72	1.06	0.64	9.80	0.60	3	1016	7.2	4.0	0.0026
4	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	12	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	21	72	0.92	0.49	6.30	0.60	5	896	7.4	6.0	0.0076

STATION 28.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	2	72	0.50	0.30	7.30	0.14	9	808	7.3	8.0	0.0106
5	15	72	0.45	0.29	7.10	0.14	4	789	7.5	12.0	0.0030
5	19	72	0.58	0.37	5.10	0.16	8	975	7.7	18.0	0.0018
6	14	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	2	72	0.67	0.52	4.80	0.68	21	957	7.6	18.0	0.0005
7	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	12	72	0.50	0.40	4.60	1.28	114	568	7.5	19.5	0.0015
8	7	72	0.68	0.51	6.80	0.95	20	1234	7.8	16.5	0.0008
8	16	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	21	72	1.01	0.98	3.80	0.41	3	1261	7.0	3.0	0.0001
12	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	19	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	6	73	1.16	0.83	3.80	4.95	55	548	6.9	1.0	0.0100
3	12	73	1.09	0.72	5.70	2.95	29	746	7.1	1.0	0.0040
3	15	73	0.79	0.52	5.30	2.45	8	852	7.4	3.0	0.0039
3	27	73	0.63	0.51	5.90	1.39	3	908	7.5	8.0	0.0021
4	6	73	0.70	0.56	5.80	0.99	6	933	7.6	6.0	0.0002
4	20	73	0.52	0.45	5.60	0.41	4	819	7.7	18.0	0.0014
4	27	73	0.59	0.52	5.95	0.36	3	880	7.8	10.0	0.0012
5	11	73	0.73	0.61	4.40	0.46	12	915	7.8	10.0	0.0004
5	21	73	0.85	0.68	2.90	0.88	17	906	7.8	21.0	0.0011
5	29	73	0.40	0.34	5.40	0.67	14	818	7.8	11.5	0.0051
6	6	73	0.47	0.43	3.20	0.41	19	839	8.3	28.0	0.0014
6	14	73	0.54	0.41	5.00	0.46	18	782	8.1	22.0	0.0004
6	23	73	0.42	0.29	3.90	0.26	30	763	8.4	23.0	0.0007
7	2	73	0.38	0.34	7.40	0.30	13	736	8.0	20.0	0.0017
7	18	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 28.0 CONTINUED

DATE MO DAY YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8 10 73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 28.1

DATE MO DAY YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4 21 72	0.24	0.10	0.30	0.52	10	304	7.1	5.0	0.0100
5 2 72	0.16	0.07	0.10	0.34	14	387	7.0	7.0	0.0097
5 15 72	0.07	0.06	0.11	0.06	0	591	7.1	13.0	0.0062
5 19 72	0.11	0.06	0.25	0.00	0	785	7.2	12.0	0.0031
6 2 72	0.11	0.07	0.20	0.24	0	866	7.0	11.0	0.0062
6 14 72	0.12	0.07	0.52	0.10	0	937	7.2	13.0	0.0023
7 10 72	0.12	0.09	0.38	0.39	0	924	7.2	15.0	0.0016
7 12 72	0.16	0.14	0.24	1.08	117	110	7.3	20.0	0.0948
8 7 72	0.12	0.07	0.23	0.15	0	829	6.8	17.0	0.0070
8 16 72	0.13	0.08	0.24	0.45	0	893	7.5	18.0	0.0022
8 31 72	0.14	0.10	0.21	0.37	0	989	7.5	18.0	0.0013
9 20 72	0.18	0.04	0.27	0.71	0	967	7.6	17.0	0.0012
10 3 72	0.14	0.11	0.20	0.42	0	991	7.1	15.5	0.0010
10 30 72	0.13	0.12	0.16	0.29	8	917	6.9	12.5	0.0021
11 21 72	0.11	0.11	2.40	0.04	0	951	6.9	9.5	0.0011
12 9 72	0.12	0.10	0.26	0.27	1	731	7.4	8.0	0.0375
12 20 72	0.12	0.12	0.29	0.16	0	889	7.6	5.0	0.0011
1 2 73	0.19	0.16	0.00	0.16	1	646	6.8	5.0	0.0025
1 16 73	0.13	0.12	*****	0.27	3	903	7.2	5.0	0.0013
1 23 73	0.22	0.11	0.20	0.23	4	774	7.3	2.0	0.0023
2 5 73	0.14	0.11	0.35	0.18	0	833	7.0	5.0	0.0016
2 13 73	0.14	0.10	0.10	0.34	0	891	7.2	5.0	0.0002

STATION 28.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
2	19	73	0.32	0.10	0.40	0.29	5	951	7.3	4.0	0.0007
2	24	73	0.66	0.42	1.30	2.05	28	255	6.5	1.0	0.0600
3	6	73	0.33	0.19	0.25	0.77	16	316	6.6	1.0	0.1012
3	12	73	0.18	0.10	0.27	0.85	12	379	6.6	1.0	0.0120
3	15	73	0.17	0.09	0.05	0.49	14	353	7.0	3.5	0.0269
3	27	73	0.07	0.05	0.11	0.29	6	509	6.9	8.0	0.0075
4	6	73	0.07	0.06	0.18	0.12	2	629	6.8	7.0	0.0065
4	20	73	0.07	0.04	0.14	0.48	13	479	7.0	12.0	0.0077
4	27	73	0.09	0.09	0.37	0.16	0	764	6.7	7.0	0.0048
5	11	73	0.12	0.08	0.36	0.12	6	773	7.3	10.0	0.0044
5	22	73	0.09	0.08	0.40	0.07	2	717	7.1	10.0	0.0048
5	29	73	0.08	0.06	0.10	0.38	8	619	6.8	13.5	0.0107
6	6	73	0.10	0.08	0.28	0.18	0	864	7.2	11.0	0.0034
6	14	73	0.10	0.08	0.52	0.41	0	930	7.3	12.0	0.0030
6	23	73	0.10	0.09	0.24	0.02	1	917	7.2	13.0	0.0024
7	18	73	0.10	0.10	0.27	0.00	0	977	7.6	16.0	0.0024
7	27	73	0.10	0.10	0.26	0.47	0	968	7.5	15.0	0.0044
8	10	73	0.09	0.09	0.16	0.00	0	970	7.8	16.0	0.0027
8	21	73	0.11	0.10	0.06	0.00	2	979	7.6	17.0	0.0006
8	29	73	0.11	0.11	0.02	0.76	0	1052	7.9	17.0	0.0001

STATION 29.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	15	71	*****	0.30	0.20	1.62	25	565	7.6	0.0	0.6300
3	27	71	*****	0.13	0.15	1.07	19	553	7.0	0.0	******
4	1	71	*****	0.05	0.81	0.67	9	443	7.7	0.0	0.6560
4	6	71	*****	0.02	0.08	0.27	10	429	7.4	1.0	0.3105
4	12	71	*****	0.04	0.05	0.53	13	417	7.2	8.0	0.1974
4	17	71	*****	0.02	0.00	0.40	12	443	7.3	10.0	0.1447
4	20	71	*****	0.03	0.00	0.22	10	483	7.5	14.0	0.1480
4	29	71	*****	0.03	0.00	0.46	4	491	7.4	6.0	0.1260
5	5	71	*****	0.04	0.01	0.49	10	527	7.2	12.0	0.0687
5	17	71	*****	0.14	0.01	0.66	13	540	7.2	16.0	0.0192
5	21	71	*****	0.06	0.02	0.54	11	528	7.2	13.0	0.0380
6	4	71	*****	0.14	0.02	0.75	23	551	7.2	18.5	0.0290
6	7	71	*****	0.10	0.02	0.62	15	493	7.1	16.5	0.0821
6	9	71	*****	0.07	0.21	0.48	25	513	7.2	16.5	0.1577
6	15	71	*****	0.14	0.00	0.53	13	503	7.3	19.0	0.0447
6	25	71	*****	0.16	0.00	0.83	12	526	7.2	21.0	******
6	30	71	*****	0.19	0.00	0.83	20	572	7.2	22.0	******
7	6	71	*****	0.11	0.03	0.52	12	513	7.3	21.0	0.0563
7	13	71	*****	0.10	0.00	0.43	13	497	7.2	21.0	0.0396
7	20	71	*****	0.05	0.02	0.56	12	529	7.2	20.0	******
7	26	71	*****	0.09	0.02	0.60	15	711	7.3	22.0	******
8	2	71	*****	0.11	0.04	1.02	25	764	7.5	21.0	******
8	9	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	27	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	71	0.57	0.37	0.10	0.51	33	331	7.2	5.0	0.0079
11	2	71	0.63	0.43	0.78	0.33	10	640	7.3	6.0	******
11	17	71	0.32	0.17	0.00	0.77	25	772	7.3	9.0	0.0091
11	23	71	0.28	0.17	0.12	0.48	2	850	7.1	2.0	0.0079
12	8	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 29.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
12	16	71	0.23	0.12	0.12	0.88	28	1045	7.2	0.0	******
1	19	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	0.62	0.54	0.95	4.05	30	213	6.7	0.0	******
3	8	72	0.87	0.42	1.20	1.28	13	275	6.9	0.0	******
3	14	72	0.37	0.17	0.70	0.35	3	302	7.0	0.0	0.0373
3	21	72	0.13	0.04	0.00	0.19	2	505	7.2	4.0	0.0317
4	7	72	0.04	0.01	0.01	0.10	0	561	7.4	1.0	0.0167
4	12	72	0.03	0.03	0.00	0.10	0	646	7.4	5.0	0.0152
4	21	72	0.10	0.04	0.08	0.39	0	560	7.4	6.0	0.0416
5	2	72	0.08	0.04	0.22	0.21	0	505	7.5	8.0	0.1290
5	15	72	0.07	0.03	0.01	0.28	7	571	7.3	13.0	0.0647
5	19	72	0.07	0.06	0.03	0.41	8	630	7.4	18.0	0.0521
6	2	72	0.10	0.09	0.00	0.64	3	499	7.2	19.0	0.0338
6	14	72	0.18	0.09	0.03	0.52	0	495	7.3	20.0	0.0300
7	10	72	0.18	0.11	0.02	0.56	2	558	7.2	23.0	0.0000
7	12	72	0.21	0.21	0.25	1.10	72	250	7.2	19.5	0.1105
8	8	72	0.09	0.06	0.03	0.53	10	552	7.0	17.0	0.0230
8	31	72	0.17	0.08	0.02	0.40	8	682	7.7	20.0	0.0000
9	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	0.14	0.11	0.00	0.57	11	711	7.3	5.5	0.0027
11	21	72	0.07	0.04	0.19	0.32	4	717	7.3	0.0	0.0122
12	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	16	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	18	73	0.57	0.38	*****	1.23	23	204	7.2	0.0	0.1700
1	23	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	19	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	24	73	0.38	0.25	1.90	2.10	33	354	7.1	0.0	0.0300
3	3	73	0.42	0.31	1.10	1.33	24	353	7.3	1.0	0.2700
3	9	73	0.11	0.04	0.08	0.69	8	490	7.3	0.0	0.3000

STATION 29.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	12	73	0.14	0.04	0.44	0.64	11	461	7.3	0.0	0.4244
3	15	73	0.14	0.04	0.23	0.47	12	430	7.2	4.0	0.2652
3	26	73	0.04	0.02	0.03	0.38	5	452	7.5	5.5	0.1866
4	6	73	0.04	0.01	0.02	0.32	3	476	7.5	7.0	0.2271
4	20	73	0.02	0.02	0.01	0.37	5	497	7.6	11.0	0.1575
4	24	73	0.03	0.02	0.01	0.46	7	519	7.4	10.0	0.1347
5	12	73	0.08	0.04	0.02	0.43	3	509	7.3	10.0	0.0867
5	21	73	0.11	0.08	0.04	0.67	13	515	7.3	17.0	0.0650
5	28	73	0.09	0.06	0.81	0.52	11	491	7.3	12.0	0.2625
6	8	73	0.12	0.10	0.03	0.58	2	503	7.2	19.0	0.0685
6	14	73	0.15	0.12	2.50	0.67	8	496	7.1	20.0	0.0376
6	23	73	0.12	0.10	0.04	0.47	9	487	7.2	19.0	0.1272
7	2	73	0.20	0.18	0.08	1.00	16	362	7.0	20.0	0.0780
7	9	73	0.19	0.19	0.03	1.27	13	498	7.1	22.0	0.0297
7	18	73	0.08	0.08	0.03	1.25	23	597	7.2	21.0	0.0073
7	25	73	0.08	0.08	0.04	1.16	19	662	7.3	22.0	0.0061
8	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	14	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 29.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
11	2	71	0.35	0.24	0.69	0.10	2	690	7.5	6.0	******
11	17	71	0.29	0.18	0.00	0.28	0	704	7.3	7.0	0.0048
11	23	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	8	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	16	71	0.14	0.07	0.12	0.28	1	727	7.3	0.0	******

STATION 29.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
1	19	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	0.81	0.40	1.95	0.45	10	558	7.2	0.0	******
3	8	72	0.74	0.36	1.05	0.79	14	236	6.9	1.0	0.0260
3	14	72	0.28	0.14	2.05	0.16	2	355	6.9	0.0	0.0275
3	21	72	0.14	0.05	0.50	0.11	2	446	7.1	4.0	0.0292
4	7	72	0.06	0.02	0.03	0.03	0	526	7.3	1.0	0.0599
4	12	72	0.05	0.03	0.18	0.10	0	609	7.3	5.0	0.0361
5	2	72	0.08	0.06	0.38	0.20	0	511	7.3	8.0	0.1494
5	19	72	0.07	0.03	0.02	0.40	9	600	7.5	20.0	0.0747
6	2	72	0.09	0.06	0.02	0.62	4	485	7.3	18.0	0.0880
6	14	72	0.13	0.07	0.17	0.59	6	472	7.5	20.0	0.0377
7	12	72	0.18	0.11	1.35	1.37	28	428	7.4	20.0	******
8	8	72	0.07	0.04	0.26	0.50	7	538	7.4	16.0	0.0207
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	21	72	0.07	0.04	0.26	0.32	5	678	7.0	1.0	0.0000
12	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	2	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	24	73	0.01	0.01	0.02	0.48	8	517	7.6	10.0	******
5	21	73	0.12	0.07	0.08	0.82	19	508	7.4	17.0	******
6	6	73	0.12	0.07	0.01	0.62	21	478	7.6	24.0	0.1141
6	14	73	0.17	0.10	0.18	0.65	27	473	7.6	****	******
7	2	73	0.19	0.12	0.23	0.79	45	434	7.4	21.0	******
7	9	73	0.24	0.19	0.22	0.92	42	476	7.3	20.0	******
7	25	73	0.20	0.12	0.32	0.93	144	636	7.8	24.0	******
8	14	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 29.2

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
11	2	71	1.14	0.96	0.75	0.47	11	524	6.8	5.0	******
11	17	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	19	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	7	72	0.05	0.00	0.00	0.18	0	533	7.3	1.0	0.0104
4	12	72	0.05	0.02	0.00	0.27	0	627	7.2	5.0	0.0127
4	21	72	0.07	0.03	0.00	0.42	0	540	7.3	5.0	0.0192
5	2	72	0.05	0.03	0.34	0.27	0	574	7.4	8.0	0.0864
5	19	72	0.05	0.05	0.05	0.50	8	588	7.2	20.0	0.0317
6	2	72	0.07	0.05	0.00	0.63	26	454	7.2	20.0	0.0250
6	14	72	0.14	0.06	0.03	0.64	1	420	7.1	21.0	0.0161
7	10	72	0.22	0.14	0.04	0.86	9	426	7.3	23.0	0.0020
7	12	72	0.14	0.11	0.07	0.93	29	338	6.9	21.0	0.0196
8	8	72	0.11	0.06	0.03	0.75	18	475	7.1	16.0	0.0133
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	0.18	0.12	0.01	0.83	12	666	7.3	6.0	0.0017
11	21	72	0.06	0.03	0.04	0.46	6	717	7.0	0.0	0.0041
12	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	2	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	24	73	0.02	0.01	0.00	0.56	4	529	7.6	12.0	0.0750
5	21	73	0.07	0.05	0.02	0.84	7	495	7.3	18.0	0.0270
6	6	73	0.09	0.06	0.00	0.59	8	451	7.2	21.0	0.0519
6	14	73	0.13	0.08	0.03	0.84	14	436	7.1	19.0	0.0160
7	2	73	0.16	0.14	0.55	0.94	17	379	7.0	21.0	0.0570
7	9	73	0.10	0.10	0.07	1.33	34	423	7.0	21.0	0.0198
7	25	73	0.44	0.18	0.04	1.17	435	493	7.5	26.0	0.0013
8	14	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 29.3

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
11	2	71	0.19	0.03	0.10	0.29	20	421	8.9	6.0	******
11	17	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	8	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	16	71	0.09	0.01	0.08	0.30	14	440	8.3	0.0	******
4	7	72	0.08	0.01	0.05	0.10	5	411	9.1	3.0	******
4	12	72	0.09	0.02	0.01	0.15	0	449	8.9	6.0	******
4	21	72	0.08	0.02	0.00	0.13	0	387	8.9	7.0	******
5	2	72	0.07	0.03	0.02	0.13	8	413	8.8	10.0	0.0003
5	19	72	0.07	0.03	0.07	0.14	8	435	9.0	19.0	0.0031
6	2	72	0.09	0.00	0.05	0.46	23	423	9.0	20.0	0.0014
6	14	72	0.08	0.00	0.08	0.32	10	431	9.0	22.0	0.0012
7	12	72	3.02	0.03	0.00	1.50	2200	347	9.2	21.0	0.0001
8	8	72	0.35	0.00	0.08	0.66	87	421	9.1	20.0	0.0001
8	31	72	0.41	0.13	0.10	4.00	19	507	7.6	20.0	0.0001
9	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	2	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	24	73	0.05	0.01	0.01	0.44	12	449	9.0	12.0	0.0165
5	21	73	0.10	0.01	0.05	0.54	31	446	8.8	17.0	0.0292
6	6	73	0.09	0.03	0.02	0.38	20	458	6.5	19.0	0.0385
6	14	73	0.12	0.01	0.00	0.22	42	454	9.1	22.0	0.0189
7	2	73	0.18	0.01	0.02	0.44	74	427	9.1	18.0	0.0115
7	9	73	0.12	0.03	0.11	0.42	43	435	8.9	23.0	0.0145
7	25	73	0.36	0.04	0.04	0.58	114	460	8.9	24.0	0.0005
8	14	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 29.4

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
11	2	71	0.06	0.03	0.20	0.52	16	686	7.7	4.0	******
4	12	72	0.11	0.03	0.02	0.49	9	558	7.6	6.0	******

STATION 30.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.04	1.45	0.33	7	546	7.2	2.0	0.0003
3	15	71	*****	0.05	1.49	0.21	9	487	7.2	3.0	0.0032
3	27	71	*****	0.04	1.90	0.29	18	609	7.3	4.0	0.0012
4	1	71	*****	0.04	2.18	0.16	0	481	7.2	3.0	0.0052
4	6	71	*****	0.04	1.78	0.13	2	536	7.3	4.0	0.0020
4	12	71	*****	0.04	1.76	0.21	3	535	7.1	5.0	0.0030
4	17	71	*****	0.03	1.32	0.23	3	537	7.0	6.0	0.0004
4	29	71	*****	0.04	1.02	0.14	0	547	7.0	7.0	0.0009
5	5	71	*****	0.02	1.18	0.17	1	557	7.1	7.0	0.0007
6	4	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	7	71	*****	0.03	1.44	0.08	5	558	7.1	10.5	0.0016
6	10	71	*****	0.02	1.18	0.10	2	579	7.0	11.0	0.0021
6	15	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	8	72	0.08	0.04	1.50	0.07	3	455	7.2	3.0	0.0006
3	14	72	0.05	0.03	1.30	0.00	0	472	7.1	3.0	0.0008
3	21	72	0.08	0.03	1.10	0.00	6	496	7.2	4.0	0.0008
4	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	21	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	2	72	0.04	0.04	1.10	0.00	0	495	7.2	9.0	0.0037
5	15	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 30.0 CONTINUED

CATE MO	CAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	12	72	0.13	0.11	0.47	0.38	29	421	7.0	15.0	0.0012
8	7	72	0.05	0.02	0.29	0.16	3	603	8.0	15.5	0.0001
8	16	72	0.10	0.04	0.70	0.15	10	382	8.0	19.5	0.0020
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	20	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	2	73	1.49	1.43	17.50	2.10	48	490	6.9	5.0	0.0003
1	16	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	19	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	23	73	0.05	0.03	0.50	0.05	3	494	7.2	4.0	0.0001
2	5	73	0.38	0.27	0.90	0.75	14	391	7.1	4.0	0.0004
2	13	73	0.05	0.03	0.60	0.08	4	499	7.3	3.5	0.0001
2	24	73	0.45	0.30	1.25	1.03	14	280	6.7	2.0	0.0016
3	3	73	0.56	0.38	0.45	1.36	17	225	7.1	1.0	0.0070
3	9	73	0.04	0.04	1.10	0.05	4	451	7.1	4.0	0.0022
3	15	73	0.03	0.03	0.95	0.03	0	503	7.2	3.0	0.0018
3	26	73	0.03	0.02	0.95	0.03	0	524	7.1	5.0	0.0017
4	6	73	0.04	0.04	0.55	0.04	2	536	7.7	6.0	0.0009
4	20	73	0.01	0.01	0.75	0.05	0	654	7.1	10.0	0.0020
4	27	73	0.01	0.01	0.97	0.04	1	513	7.1	5.5	0.0004
5	7	73	0.01	0.01	0.75	0.05	1	523	7.1	9.0	0.0008
5	21	73	0.05	0.03	0.46	0.14	2	505	7.2	15.0	0.0004
5	29	73	0.02	0.01	0.35	0.03	3	529	7.2	9.5	0.0008
6	6	73	*****	0.00	0.00	0.00	0	0	0.0	0.C	0.0000
6	14	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	23	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	2	73	*****	0.00	0.0C	0.00	0	0	0.0	0.0	0.0000
7	9	73	0.14	0.08	1.2C	0.49	36	518	7.9	18.0	0.0001

STATION 30.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	18	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 31.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.16	3.47	0.44	9	685	7.7	0.0	0.0022
3	15	71	*****	0.18	2.64	0.56	33	388	7.2	0.0	0.0127
3	27	71	*****	0.09	5.49	0.23	7	720	7.9	3.0	0.0022
4	1	71	*****	0.11	4.18	0.17	1	529	7.6	3.0	0.0090
4	6	71	*****	0.11	6.49	0.13	3	667	7.7	3.0	0.0039
4	12	71	*****	0.11	7.89	0.29	6	665	7.7	6.0	0.0033
4	17	71	*****	0.08	6.24	0.17	5	656	7.8	7.0	0.0034
4	20	71	*****	0.07	6.89	0.08	9	679	8.2	12.0	0.0035
4	29	71	*****	0.09	6.98	0.23	3	675	7.8	6.0	0.0026
5	5	71	*****	0.06	5.93	0.26	2	685	7.9	8.0	0.0022
5	17	71	*****	0.09	7.75	0.21	4	699	7.8	11.0	0.0008
5	21	71	*****	0.10	7.30	0.23	3	685	8.1	11.0	0.0012
6	4	71	*****	0.11	6.10	0.23	13	700	7.8	12.5	0.0018
6	7	71	*****	0.14	8.39	0.13	3	732	7.4	10.0	0.0087
6	10	71	*****	0.12	7.39	0.20	2	744	7.6	11.0	0.0040
6	15	71	*****	0.10	8.69	0.06	10	723	7.7	12.0	0.0020
6	25	71	*****	0.11	11.12	0.38	15	751	7.9	15.0	0.0017
6	30	71	*****	0.11	11.20	0.22	10	289	8.0	17.0	0.0006
7	6	71	*****	0.12	10.98	0.05	5	822	8.0	16.0	0.0025
7	13	71	*****	0.09	6.18	0.07	45	746	7.9	17.0	0.0009

STATION 31.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	20	71	*****	0.17	12.00	0.00	0	815	8.3	17.5	******
7	26	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	14	72	0.23	0.12	6.00	0.00	0	613	7.4	3.0	0.0013
3	21	72	0.17	0.09	5.80	0.00	0	666	7.4	3.0	0.0022
4	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	12	72	0.11	0.08	6.20	0.00	0	723	7.6	5.0	0.0004
4	21	72	0.15	0.09	5.60	0.00	0	631	7.5	4.0	0.0021
5	2	72	0.11	0.09	7.10	0.00	0	694	7.6	8.0	0.0069
5	15	72	0.12	0.08	5.90	0.00	0	680	7.6	10.0	0.0012
6	2	72	0.13	0.09	9.50	0.20	0	709	7.7	13.0	0.0022
6	14	72	0.17	0.08	1.20	0.19	5	724	7.9	14.0	0.0006
7	7	72	0.10	0.08	9.50	0.18	1	709	8.3	17.0	0.0008
7	12	72	0.14	0.11	8.30	0.22	11	679	7.8	16.0	0.0024
8	7	72	0.12	0.08	11.00	0.18	0	747	7.7	16.0	0.0005
8	16	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	17	72	0.11	0.09	7.70	0.09	1	669	7.6	3.5	0.0007
12	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	19	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	24	73	0.33	0.22	6.50	0.59	37	424	7.1	1.0	0.0070
3	3	73	0.59	0.43	5.20	0.96	17	378	7.0	2.0	0.0112
3	9	73	0.13	0.09	7.90	0.09	1	568	7.4	3.0	0.0018
3	15	73	0.12	0.12	8.60	0.09	1	608	7.5	3.5	0.0026
3	26	73	0.09	0.11	8.20	0.07	1	638	7.7	5.5	0.0012
4	6	73	0.10	0.09	8.20	0.06	1	651	7.8	5.5	0.0014
4	20	73	0.09	0.08	9.60	0.07	1	613	7.8	11.0	0.0036
4	27	73	0.06	0.06	8.40	0.07	1	644	7.8	9.0	0.0012

STATION 31.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	7	73	0.08	0.07	8.70	0.07	0	682	8.0	11.0	0.0025
5	21	73	0.09	0.07	5.95	0.19	1	671	7.9	14.0	0.0012
5	29	73	0.13	0.11	9.80	0.14	2	697	7.9	9.0	0.0045
6	2	73	0.14	0.12	6.20	0.07	3	726	7.8	10.0	0.0036
6	14	73	0.15	0.10	12.00	0.18	3	704	8.0	13.0	0.0011
6	23	73	0.13	0.10	7.20	0.03	1	706	7.9	15.0	0.0036
7	2	73	0.15	0.15	12.50	0.02	7	714	7.9	16.0	0.0028
7	9	73	0.21	0.18	8.90	0.37	24	670	7.8	17.0	0.0021
7	18	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 32.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	15	71	*****	0.19	0.04	0.42	6	523	7.4	0.0	0.0013
3	27	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	1	71	*****	0.09	0.26	0.34	3	557	7.3	0.0	0.0099
4	6	71	*****	0.07	0.01	0.19	4	662	7.2	1.0	0.0122
4	12	71	*****	0.09	0.04	0.32	10	647	7.4	8.0	0.0071
4	17	71	*****	0.10	0.00	0.29	4	649	7.6	10.0	0.0061
4	20	71	*****	0.12	0.01	0.18	12	660	7.6	18.0	0.0033
4	29	71	*****	0.10	0.00	0.32	5	646	7.7	7.0	0.0033
5	5	71	*****	0.12	0.00	0.40	8	683	7.5	11.0	0.0015
5	17	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	21	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 32.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	4	71	*****	0.22	0.01	0.51	17	468	7.6	17.5	0.0065
6	7	71	*****	0.17	0.02	0.54	15	576	7.4	15.0	0.0193
6	10	71	*****	0.16	0.03	0.55	45	676	7.5	15.5	0.0040
6	15	71	*****	0.29	0.00	0.45	10	721	7.8	19.0	0.0050
6	25	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	8	72	*****	0.49	0.01	1.57	42	253	7.1	0.0	0.0005
3	14	72	0.44	0.23	0.15	0.20	0	512	7.2	0.0	0.0010
3	21	72	0.22	0.13	0.00	0.07	0	644	7.4	3.0	0.0066
4	7	72	0.13	0.09	0.00	0.00	0	699	7.6	1.0	0.0003
4	12	72	0.14	0.10	0.02	0.03	0	762	7.5	5.0	0.0006
4	21	72	0.41	0.22	0.00	0.38	0	495	7.5	5.0	0.0067
5	2	72	0.17	0.11	0.00	0.08	1	544	7.6	8.0	0.0063
5	15	72	0.12	0.10	0.02	0.08	0	609	7.4	12.0	0.0018
6	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	5	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	12	72	0.57	0.44	0.17	1.30	49	370	7.6	20.0	0.0009
8	7	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	16	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	17	72	0.24	0.19	0.04	0.21	11	750	7.4	0.0	0.0005
12	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	19	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	3	73	0.57	0.38	0.15	0.84	18	325	6.7	1.0	0.0044
3	9	73	0.21	0.14	0.05	0.28	5	583	7.1	0.0	0.0053
3	15	73	0.15	0.12	0.09	0.28	2	614	7.4	3.5	0.0225
3	26	73	0.09	0.09	0.02	0.12	2	612	7.6	7.0	0.0040
4	6	73	0.12	0.10	0.00	0.16	3	645	7.5	7.0	0.0031
4	20	73	0.13	0.12	0.02	0.29	2	611	7.6	15.0	0.0072

STATION 32.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	27	73	0.18	0.16	0.00	0.23	3	669	7.6	12.0	0.0012
5	7	73	0.19	0.15	0.01	0.24	4	660	7.5	12.0	0.0011
5	21	73	0.54	0.41	0.50	1.33	32	608	7.5	19.0	0.0016
5	29	73	0.24	0.21	0.02	0.39	11	671	7.7	12.0	0.0029
6	2	73	0.42	0.36	0.03	0.47	12	753	7.8	19.0	0.0002
6	14	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	23	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	2	73	0.46	0.46	0.08	1.02	18	488	7.7	20.0	0.0010
7	18	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	27	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 33.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.06	2.19	0.20	0	638	7.4	1.0	0.0022
3	16	71	*****	0.17	1.92	0.57	37	365	7.4	1.0	0.0850
3	29	71	*****	0.09	2.84	0.31	18	504	7.3	3.0	0.0396
4	2	71	*****	0.09	2.59	0.32	16	494	7.5	1.0	0.0660
4	7	71	*****	0.00	2.58	0.05	0	642	7.4	5.0	0.0303
4	13	71	*****	0.06	3.82	0.24	4	631	7.4	5.0	0.0122
4	19	71	*****	0.04	3.59	0.15	2	635	7.5	8.0	0.0169
4	27	71	*****	0.07	3.40	0.28	8	652	7.4	6.0	0.0206
5	6	71	*****	0.04	3.37	0.17	1	656	7.4	7.0	0.0106
5	17	71	*****	0.04	3.75	0.18	2	666	7.4	9.0	0.0064
5	21	71	*****	0.04	3.62	0.19	2	656	7.4	8.0	0.0069

STATION 33.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	2	71	*****	0.04	2.73	0.16	0	656	7.5	10.0	0.0113
6	8	71	*****	0.06	2.93	0.08	9	642	7.3	11.5	0.0410
6	17	71	*****	0.04	4.14	0.02	5	695	7.4	13.0	0.0134
6	24	71	*****	0.04	3.69	0.00	3	678	7.4	13.0	0.0108
6	30	71	*****	0.03	4.39	0.00	0	688	7.4	14.0	0.0075
7	7	71	*****	0.04	2.99	0.00	0	694	7.5	15.0	0.0172
7	19	71	*****	0.03	3.78	0.12	15	664	7.2	13.5	0.0122
7	27	71	*****	0.02	3.77	0.00	10	711	7.3	14.0	0.0051
8	3	71	*****	0.02	3.88	0.05	3	711	7.2	12.0	0.0043
8	11	71	*****	0.03	2.04	0.22	2	717	9.1	14.5	0.0010
8	18	71	*****	0.04	2.49	0.00	5	715	7.3	14.0	0.0010
8	24	71	0.02	0.02	3.05	0.35	8	697	7.5	17.5	0.0020
9	8	71	0.02	0.01	2.10	0.00	1	673	7.2	15.0	0.0003
9	17	71	*****	0.01	0.06	0.00	8	669	7.4	10.0	0.0018
9	23	71	0.03	0.02	1.70	0.09	2	678	7.3	8.0	0.0016
10	6	71	0.04	0.01	2.12	0.00	18	652	7.3	10.0	0.0016
10	13	71	0.06	0.03	2.40	0.19	43	662	7.3	10.0	0.0016
10	28	71	0.08	0.01	2.90	0.11	9	644	7.4	9.0	0.0016
11	1	71	0.04	0.02	2.45	0.09	0	647	7.4	7.0	0.0007
11	16	71	0.14	0.06	3.80	0.31	8	680	7.3	8.0	0.0014
11	22	71	0.10	0.06	2.90	0.37	3	606	7.2	3.0	0.0012
12	9	71	0.07	0.04	3.30	0.18	3	646	7.2	3.0	0.0013
1	19	72	0.16	0.03	3.20	0.70	98	645	7.2	3.0	0.0010
3	6	72	0.06	0.06	2.00	0.12	10	662	7.3	3.0	0.0014
3	10	72	0.29	0.14	1.80	0.42	18	396	7.1	3.0	0.0115
3	16	72	0.06	0.03	2.00	0.00	4	596	7.3	5.0	0.0072
3	25	72	0.06	0.03	2.90	0.00	0	607	7.4	2.0	0.0018
4	6	72	0.05	0.02	2.90	0.00	0	618	7.4	4.0	0.0032
4	17	72	0.03	0.02	3.20	0.05	2	650	7.8	11.0	0.0035
4	25	72	0.04	0.02	2.90	0.01	0	644	7.4	9.0	0.0060

STATION 33.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	11	72	0.12	0.03	4.80	0.00	0	668	7.3	9.0	0.0134
5	23	72	0.04	0.03	3.00	0.03	0	646	7.5	11.0	0.0114
6	8	72	0.09	0.04	5.30	0.04	10	674	7.4	12.0	0.0166
6	19	72	0.07	0.02	4.40	0.00	0	675	7.5	13.0	0.0034
7	10	72	0.05	0.03	3.00	0.16	9	629	7.4	14.0	0.0083
8	2	72	*****	0.02	3.40	0.18	1	681	7.2	16.0	0.0099
8	11	72	0.05	0.04	4.40	0.30	2	688	7.3	16.0	0.0135
8	31	72	0.05	0.02	4.10	0.11	1	696	7.3	15.5	0.0094
9	20	72	0.12	0.02	3.90	0.32	5	615	7.2	16.0	0.0127
10	3	72	0.04	0.03	2.70	0.13	0	694	7.4	13.0	0.0023
11	13	72	0.05	0.04	4.00	0.03	0	704	7.3	6.5	0.0045
12	8	72	0.03	0.03	8.80	0.00	0	694	7.3	5.0	0.0090
12	28	72	0.03	0.02	*****	0.03	0	615	7.5	4.0	0.0041
1	11	73	0.03	0.03	*****	0.15	2	616	7.6	2.0	0.0068
1	16	73	0.03	0.02	*****	0.08	0	664	7.6	5.0	0.0048
1	23	73	0.14	0.07	0.51	0.24	5	539	7.4	3.5	0.0100
2	5	73	0.06	0.05	4.30	0.17	3	569	7.4	3.5	0.0113
2	21	73	0.03	0.03	4.70	0.09	0	587	7.7	2.0	0.0040
3	6	73	0.10	0.07	3.90	0.32	3	514	7.2	3.0	0.0754
3	12	73	0.11	0.08	4.80	0.16	3	543	7.5	3.5	0.0357
3	19	73	0.06	0.06	5.70	0.08	2	618	7.6	4.0	0.0336
3	28	73	0.05	0.05	5.50	0.12	2	646	7.5	7.0	0.0330
4	4	73	0.05	0.04	4.90	0.03	0	650	7.7	8.0	0.0110
4	17	73	0.04	0.04	5.60	0.04	1	645	7.6	9.0	0.0351
4	27	73	0.04	0.04	6.40	0.14	3	656	7.7	8.0	0.0136
5	3	73	0.07	0.05	6.20	0.22	9	671	7.5	8.5	0.0287
5	11	73	0.08	0.04	4.45	0.12	6	662	7.5	9.0	0.0261
5	22	73	0.05	0.03	4.10	0.10	2	584	7.6	12.0	0.0088
5	29	73	0.07	0.06	5.10	0.18	5	673	7.5	11.0	0.0427
6	8	73	0.04	0.03	4.60	0.11	3	696	7.5	11.0	0.0183

STATION 33.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	18	73	0.19	0.11	5.90	0.45	38	593	7.3	14.0	0.2044
6	29	73	0.03	0.02	6.50	0.04	1	701	7.4	13.0	0.0020
7	6	73	0.03	0.03	5.80	0.05	4	698	7.4	14.0	0.0021
7	17	73	0.04	0.03	5.25	0.00	3	683	7.4	13.0	0.0063
7	31	73	0.03	0.03	4.75	0.14	0	694	7.3	13.0	0.0063
8	9	73	0.03	0.03	4.00	0.07	1	709	7.3	14.0	0.0030
8	21	73	0.02	0.02	2.95	0.02	3	716	7.3	14.0	0.0042
8	29	73	0.04	0.04	0.84	0.01	4	844	7.5	14.0	0.0034

STATION 34.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	16	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	29	71	*****	0.16	2.98	0.68	52	294	7.2	2.0	0.0281
4	2	71	*****	0.08	4.16	0.31	13	497	7.5	2.0	0.0107
4	7	71	*****	0.00	4.34	0.07	1	628	7.8	7.0	0.0033
4	13	71	*****	0.04	5.09	0.27	9	643	8.4	6.0	0.0022
4	19	71	*****	0.02	5.04	0.22	13	622	8.2	10.0	0.0041
4	27	71	*****	0.03	4.99	0.25	4	650	8.2	5.0	0.0027
5	6	71	*****	0.02	5.69	0.14	0	646	8.2	7.0	0.0009
5	17	71	*****	0.02	6.87	0.17	3	662	8.2	12.0	0.0004
5	21	71	*****	0.03	7.02	0.20	0	656	8.2	10.0	0.0003
6	2	71	*****	0.05	3.13	0.28	0	656	8.2	12.0	0.0016
6	8	71	*****	0.05	6.20	0.09	14	645	7.5	10.5	0.0137
6	17	71	*****	0.03	8.20	0.02	17	702	7.9	14.0	0.0061
6	24	71	*****	0.03	7.99	0.00	8	678	7.9	15.0	0.0042

STATION 34.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	30	71	*****	0.04	10.43	0.00	5	694	7.9	16.0	0.0015
7	7	71	*****	0.04	11.99	0.00	18	439	7.7	17.0	0.0061
7	19	71	*****	0.03	9.97	0.03	10	684	7.9	17.0	0.0010
7	27	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	25	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	17	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	25	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	11	72	0.06	0.03	5.80	0.00	0	646	7.7	9.0	0.0014
5	23	72	0.06	0.02	7.70	0.00	0	627	7.8	12.0	0.0014
6	8	72	0.05	0.02	11.50	0.00	10	647	8.3	14.0	0.0040
6	19	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	2	72	*****	0.03	6.50	0.30	4	681	7.9	18.0	0.0010
8	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	13	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	12	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	19	73	0.07	0.06	9.10	0.19	3	572	7.4	3.5	0.0025
3	28	73	0.04	0.04	9.60	0.06	1	641	7.6	5.0	0.0328
4	4	73	0.05	0.05	8.80	0.03	1	643	7.8	5.0	0.0050
4	17	73	0.03	0.03	9.80	0.02	0	637	7.8	8.0	0.0128
4	27	73	0.02	0.02	8.40	0.08	1	644	7.8	7.0	0.0060
5	3	73	0.05	0.02	12.50	0.05	0	667	7.9	9.0	0.0112
5	11	73	0.04	0.02	9.20	0.11	3	666	7.7	8.0	0.0062
5	22	73	0.03	0.02	8.65	0.11	3	579	7.8	15.0	0.0014
5	29	73	0.04	0.04	9.70	0.14	3	686	7.7	9.5	0.0195
6	8	73	0.04	0.04	9.90	0.09	0	701	7.8	11.0	0.0041
6	18	73	0.08	0.05	13.50	0.22	7	680	7.3	12.0	0.0145

STATION 34.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	29	73	0.05	0.04	12.00	0.09	0	721	7.8	13.0	0.0019
7	6	73	0.04	0.04	11.50	0.03	5	722	7.8	16.0	0.0027
7	17	73	0.06	0.05	9.00	0.05	5	717	7.9	17.0	0.0005
7	31	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 35.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	16	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	29	71	*****	0.12	1.28	0.63	18	392	7.1	1.0	0.0007
4	2	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	7	71	*****	0.00	1.32	0.18	11	479	7.1	7.0	0.0003
4	13	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	13	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	17	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	11	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	29	73	0.20	0.10	0.15	0.78	38	436	8.2	10.0	0.0003
6	29	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	6	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	17	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	31	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 36.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	16	71	*****	0.05	1.56	0.32	4	632	6.9	4.0	******
3	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	19	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	4	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	2	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	31	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	13	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	28	73	0.13	0.07	0.14	0.44	13	460	7.9	8.0	0.0050
4	17	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	3	73	0.28	0.16	0.46	0.61	154	317	7.4	7.0	0.0037
5	11	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	29	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	6	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	17	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	31	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 36.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	19	73	0.22	0.15	5.70	1.02	26	544	7.3	3.0	0.0081
3	28	73	0.15	0.10	5.70	0.33	4	584	7.4	5.0	0.0436
4	4	73	0.12	0.11	6.80	0.21	3	600	7.6	6.0	0.0068
4	17	73	0.10	0.05	6.60	0.18	2	589	7.5	7.5	0.0095
4	27	73	0.13	0.11	8.70	0.15	2	654	7.8	7.5	0.0056

STATION 36.1 CONTINUED

DATE MO DAY YR			TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	3	73	0.09	0.07	8.70	0.24	9	633	7.4	7.0	0.0119
5	11	73	0.13	0.10	9.10	0.26	8	681	7.5	8.0	0.0037
5	22	73	0.22	0.18	8.50	0.33	12	633	7.7	12.0	0.0022
5	29	73	0.34	0.16	6.30	0.32	84	553	7.4	13.0	0.0742
6	8	73	0.11	0.09	12.50	0.18	10	706	7.8	12.0	0.0206
6	29	73	0.22	0.12	14.00	0.00	31	762	7.9	15.0	0.0016
7	6	73	0.84	0.31	5.50	0.94	920	770	7.6	18.0	0.0012
7	17	73	0.18	0.15	14.25	1.36	131	792	7.9	18.0	0.0013
7	31	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	10	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 38.0

DATE MO DAY YR			TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.28	2.05	0.41	5	730	7.5	1.0	0.0622
3	16	71	*****	0.53	1.42	1.19	50	302	7.3	1.0	0.4635
3	29	71	*****	0.28	1.89	0.82	57	338	7.0	2.0	0.3159
4	2	71	*****	0.35	3.86	0.85	55	504	7.2	2.0	0.3602
4	7	71	*****	0.00	2.52	0.28	8	728	7.3	6.0	0.0800
4	13	71	*****	0.17	4.52	0.45	11	780	7.5	5.0	0.0853
4	19	71	*****	0.14	3.22	0.29	2	772	7.6	7.0	0.0765
4	27	71	*****	0.21	4.25	0.59	43	679	7.4	6.0	0.0817
5	6	71	*****	0.17	5.37	0.32	3	782	7.6	7.0	0.0370
5	17	71	*****	0.17	4.47	0.43	8	805	7.5	10.0	0.0380
5	21	71	*****	0.17	4.57	0.37	8	779	7.6	10.0	0.0384
6	2	71	*****	0.15	2.67	0.37	10	772	7.6	11.0	0.0513
6	8	71	*****	0.16	5.38	0.36	23	674	7.2	12.0	0.1595

STATION 38.0 CONTINUED

CATE MC	CAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	17	71	*****	0.13	4.56	0.02	18	829	7.6	14.0	0.0494
6	24	71	*****	0.15	4.43	0.05	10	771	7.5	14.0	0.0598
6	30	71	*****	0.12	4.53	0.35	35	326	7.3	16.0	0.0244
7	7	71	*****	0.16	3.96	0.20	5	797	7.5	16.0	0.0750
7	19	71	*****	0.16	5.13	0.23	20	763	7.7	15.5	0.0340
7	27	71	*****	0.25	1.67	0.58	25	781	7.4	****	******
8	3	71	*****	0.38	1.91	0.45	8	711	7.3	13.0	******
8	11	71	*****	0.21	0.75	1.57	32	715	8.0	15.5	0.0044
8	18	71	*****	0.25	0.45	1.24	62	673	8.0	13.0	0.0095
8	24	71	0.20	0.19	0.71	0.89	48	720	7.3	19.0	******
9	8	71	0.45	0.36	0.30	0.85	25	576	7.1	17.0	0.0124
9	17	71	*****	0.48	3.62	0.76	57	557	7.0	10.0	0.0052
9	23	71	0.33	0.15	0.09	2.10	14	507	7.4	10.0	0.0051
10	6	71	0.18	0.14	0.10	0.77	17	669	7.2	11.0	0.0095
10	13	71	0.18	0.12	0.00	0.23	10	555	7.1	10.0	0.0074
10	28	71	0.57	0.25	1.80	1.67	175	399	7.1	9.0	0.0325
11	1	71	0.36	0.26	2.30	0.61	12	747	7.4	8.0	0.0218
11	16	71	0.22	0.16	1.20	0.96	40	636	7.1	10.0	0.0220
11	22	71	0.27	0.19	2.90	0.84	13	963	7.5	3.0	0.0179
12	9	71	0.18	0.11	1.40	0.87	12	901	7.3	1.0	0.0165
1	19	72	0.29	0.07	1.70	1.13	25	834	7.3	0.0	******
3	6	72	0.34	0.24	1.80	1.42	7	900	7.3	0.0	******
3	10	72	0.56	0.27	2.50	0.88	20	431	7.1	0.0	0.0500
3	16	72	0.47	0.23	3.30	0.58	9	563	7.1	3.0	0.0973
3	25	72	0.31	0.18	2.90	0.30	0	811	7.2	2.0	0.0174
4	6	72	0.35	0.17	2.20	0.38	0	846	7.3	3.0	0.0169
4	17	72	0.43	0.22	3.10	0.68	8	461	7.7	8.0	0.0131
5	2	72	0.55	0.29	4.30	0.66	42	625	7.1	7.0	0.3600
5	11	72	0.22	0.11	4.70	0.08	0	784	7.3	8.0	0.0687
5	23	72	0.21	0.12	5.20	0.21	5	846	7.4	10.0	0.0673

STATION 38.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	9	72	0.19	0.12	9.10	0.32	21	813	7.3	12.5	0.0526
6	19	72	0.34	0.12	6.50	0.44	10	797	7.4	14.0	0.0316
7	10	72	0.34	0.21	4.70	0.52	9	808	7.5	18.0	0.0188
8	2	72	*****	0.12	6.00	0.49	6	791	7.3	17.0	0.0550
8	11	72	0.22	0.15	5.40	0.55	6	794	7.3	17.5	0.0243
8	30	72	0.74	0.45	0.20	1.20	23	777	7.3	18.0	0.0039
9	20	72	0.51	0.07	0.98	1.40	30	752	7.2	19.0	0.0079
10	3	72	0.34	0.24	2.00	0.78	59	889	7.4	14.0	0.0093
11	13	72	0.23	0.18	5.40	0.24	3	847	7.4	6.0	0.0476
12	8	72	0.25	0.18	7.70	0.22	16	810	7.6	6.0	0.0237
12	28	72	0.26	0.16	*****	0.48	12	829	7.6	2.0	0.0159
1	11	73	0.30	0.18	*****	0.58	14	708	7.6	0.0	0.0142
1	16	73	0.26	0.17	*****	0.84	15	1162	7.5	4.0	0.0180
1	23	73	0.72	0.48	0.54	0.78	17	708	7.5	3.5	0.0351
2	5	73	0.30	0.21	4.60	0.43	8	654	7.3	4.0	0.0376
2	21	73	0.33	0.25	3.60	0.82	23	1019	7.8	0.0	0.0012
3	6	73	0.76	0.50	4.40	1.08	32	505	6.9	2.0	0.1825
3	12	73	0.46	0.23	6.75	0.69	33	604	7.0	3.0	0.1898
3	19	73	0.23	0.16	7.90	0.42	5	764	7.2	3.5	0.0850
3	28	73	0.20	0.15	7.70	0.32	6	783	7.1	5.0	0.0847
4	4	73	0.20	0.15	7.80	0.19	1	783	7.4	6.0	0.0754
4	17	73	0.18	0.15	7.20	0.32	2	765	7.4	6.0	0.1064
4	27	73	0.19	0.17	7.80	0.26	6	772	7.5	7.0	0.0554
5	3	73	0.20	0.14	7.90	0.31	8	779	7.3	6.5	0.1142
5	11	73	0.22	0.16	8.10	0.34	7	814	7.3	11.0	0.0611
5	22	73	0.22	0.14	5.80	0.37	12	731	7.6	11.0	0.0488
5	29	73	0.23	0.18	5.40	0.48	11	704	7.2	11.0	0.2026
6	8	73	0.18	0.14	8.70	0.19	4	779	7.4	11.0	0.0592
6	18	73	0.54	0.30	11.00	0.33	192	643	7.0	14.0	0.2063
6	29	73	0.22	0.12	14.00	0.11	6	811	7.6	13.0	0.0260

STATION 38.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	6	73	0.16	0.16	9.00	0.28	11	840	7.5	15.0	0.0257
7	17	73	0.30	0.27	6.65	0.45	14	812	7.6	16.0	0.0134
7	31	73	0.26	0.26	2.65	1.03	26	760	7.5	16.0	0.0116
8	10	73	0.62	0.54	1.20	0.94	8	835	7.5	16.0	0.0043
8	21	73	0.75	0.75	0.98	0.95	34	837	7.5	17.0	0.0036
8	29	73	1.10	1.08	3.75	0.03	19	813	7.6	19.0	0.0042

STATION 38.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	14	71	*****	0.03	0.13	0.27	9	359	8.1	5.0	******
4	19	71	*****	0.01	0.02	0.33	17	441	8.9	10.0	******
4	28	71	*****	0.21	0.02	0.54	4	508	8.8	9.0	******
4	29	71	*****	0.06	0.04	0.64	3	465	8.7	11.0	******
5	5	71	*****	0.04	0.05	0.57	9	468	8.8	13.0	******
5	11	71	*****	0.04	0.04	0.47	7	463	8.6	14.0	******
5	20	71	*****	0.06	0.03	0.52	7	460	8.4	14.0	******
6	3	71	*****	0.05	0.09	0.48	9	454	8.4	17.0	******
6	8	71	*****	0.02	0.10	0.22	19	434	8.9	17.5	******
6	17	71	*****	0.01	0.00	0.12	9	465	8.4	22.0	******
6	24	71	*****	0.01	0.01	0.08	11	444	8.7	24.5	******
6	30	71	*****	0.06	0.02	0.15	10	451	8.8	24.0	******
7	7	71	*****	0.01	0.01	0.05	3	449	8.7	24.0	******
7	19	71	*****	0.04	0.02	0.33	10	424	8.8	23.5	******
7	27	71	*****	0.02	0.02	0.06	15	457	8.9	23.0	******
8	3	71	*****	0.05	0.01	0.36	45	454	9.1	22.0	******
8	11	71	*****	0.14	0.09	0.98	15	467	8.9	25.0	******

STATION 38.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	18	71	*****	0.06	0.00	0.43	11	474	8.4	23.0	******
8	24	71	0.16	0.11	0.05	1.16	16	479	8.3	26.0	******
8	30	71	*****	0.15	0.06	*****	13	484	8.2	23.4	******
9	8	71	*****	0.10	0.19	0.52	18	458	9.1	23.0	******
9	23	71	0.22	0.05	0.13	0.52	85	443	8.8	14.0	******
10	6	71	0.16	0.09	0.10	0.33	18	450	8.8	15.0	******
10	14	71	0.12	0.04	0.00	0.01	0	446	8.8	11.0	******
10	29	71	*****	0.10	0.20	0.61	0	467	8.1	10.0	******
11	4	71	0.15	0.06	0.09	0.62	8	439	8.0	7.0	******
12	7	71	0.14	0.07	0.24	0.69	9	455	7.9	1.0	******
12	22	71	0.16	0.06	0.25	0.55	0	460	7.9	1.0	******
2	3	72	0.08	0.06	0.11	0.48	0	477	8.1	0.0	******
3	6	72	0.11	0.05	0.27	0.13	0	495	7.6	1.0	******
3	10	72	0.16	0.07	0.66	0.27	2	508	7.3	1.0	******
3	16	72	0.14	0.07	0.49	0.28	0	361	7.3	2.0	******
3	25	72	0.18	0.05	3.30	0.02	0	323	7.5	3.0	******
4	6	72	0.13	0.02	0.03	0.11	2	402	9.0	6.0	******
4	17	72	0.06	0.02	0.01	0.15	9	453	8.8	8.0	******
5	11	72	0.07	0.02	0.08	0.12	0	445	8.6	12.0	******
5	23	72	0.05	0.02	0.01	0.01	0	444	8.5	17.0	******
6	14	72	0.12	0.05	0.09	0.41	2	461	8.4	21.0	******
6	19	72	0.14	0.04	0.05	0.28	13	461	8.8	21.0	******
7	10	72	0.11	0.05	0.07	0.73	6	418	8.5	24.0	******
8	1	72	0.09	0.04	0.05	0.69	2	425	8.5	23.8	******
8	11	72	0.14	0.07	0.14	0.93	10	437	8.5	22.5	******
8	24	72	0.17	0.07	0.07	0.40	8	438	8.3	22.3	******
8	30	72	0.08	0.03	0.00	0.21	5	422	8.6	23.0	******
9	6	72	0.14	0.06	0.07	0.55	9	451	8.3	19.7	******
9	13	72	0.16	0.06	0.16	0.40	8	443	8.4	20.0	******
11	13	72	0.24	0.15	0.27	0.98	24	463	8.2	3.5	******

STATION 38.1 CONTINUED

DATE MO DAY YR			TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	19	73	0.07	0.01	0.04	0.09	4	297	8.4	3.0	******
3	28	73	0.05	0.02	0.17	0.28	7	459	8.3	5.5	******
4	6	73	0.07	0.02	0.23	0.22	5	442	8.6	6.0	******
4	17	73	0.03	0.01	0.10	0.17	1	421	8.6	6.0	******
4	24	73	0.07	0.04	0.41	0.43	2	460	8.5	12.0	******
5	22	73	0.06	0.01	0.26	0.26	11	402	8.4	16.0	******
6	5	73	0.03	0.01	0.29	0.24	9	463	8.6	16.0	******
6	12	73	0.07	0.03	0.38	0.27	6	488	8.3	20.0	******
6	22	73	0.07	0.02	0.09	0.18	5	444	8.4	19.7	******
7	6	73	0.06	0.06	0.17	0.29	9	463	8.6	24.0	******
7	16	73	0.06	0.02	0.00	0.12	8	440	8.7	23.7	******
7	20	73	0.11	0.04	0.00	0.15	24	442	8.9	23.8	******
8	2	73	0.19	0.06	0.01	0.15	39	481	8.9	24.0	******
8	8	73	0.10	0.05	0.02	0.34	12	445	8.7	24.0	******
8	14	73	0.13	0.07	0.00	0.41	16	459	8.4	24.0	******
8	20	73	0.14	0.11	0.03	0.68	7	466	8.3	24.2	******
8	31	73	0.11	0.07	0.03	0.53	5	512	8.4	23.0	******

STATION 38.2

DATE MO DAY YR			TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	14	71	*****	0.11	0.13	0.36	14	448	8.3	7.0	2.3670
4	19	71	*****	0.02	0.04	0.45	22	454	9.1	10.0	1.9850
4	28	71	*****	0.05	0.04	0.57	3	508	8.9	10.0	2.9380
5	3	71	*****	0.06	0.05	0.60	9	440	8.9	12.0	1.4607
5	11	71	*****	0.06	0.05	0.52	20	468	8.6	14.0	******
5	20	71	*****	0.06	0.05	0.52	8	460	8.7	16.0	1.0155

STATION 38.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	4	71	*****	0.06	0.11	0.49	9	324	8.4	17.0	0.9063
6	8	71	*****	0.02	0.02	0.24	48	434	9.0	19.0	1.3220
6	17	71	*****	0.02	0.00	0.31	18	472	8.5	22.0	******
6	24	71	*****	0.03	0.01	0.05	10	444	8.7	24.0	******
6	30	71	*****	0.03	0.03	0.08	12	451	8.9	24.0	******
7	7	71	*****	0.03	0.02	0.23	5	439	8.9	24.0	******
7	19	71	*****	0.05	0.04	0.41	15	422	9.1	24.0	******
7	27	71	*****	0.03	0.07	0.13	35	438	9.3	22.5	******
8	3	71	*****	0.00	0.00	0.36	95	442	9.2	22.0	******
8	11	71	*****	0.04	0.07	0.48	34	433	9.4	25.0	******
8	18	71	*****	0.14	0.01	0.94	23	477	8.8	23.5	******
8	24	71	0.21	0.15	0.14	1.30	14	484	8.3	25.0	******
9	8	71	*****	0.14	0.21	0.68	32	475	8.6	21.0	******
9	23	71	0.21	0.09	0.11	0.45	33	461	8.8	12.0	******
10	6	71	0.42	0.16	0.26	0.82	45	459	8.9	13.0	******
10	14	71	0.24	0.10	0.13	0.33	10	464	8.4	10.0	******
10	29	71	*****	0.14	0.19	1.49	1	478	7.8	7.0	******
11	4	71	0.23	0.13	0.25	1.05	8	473	7.9	4.0	******
12	7	71	0.24	0.13	0.38	1.04	4	476	7.9	0.0	******
12	22	71	0.22	0.09	0.29	0.83	2	504	7.8	1.0	******
2	3	72	0.31	0.19	0.39	1.71	4	591	7.4	0.0	******
3	6	72	0.32	0.16	0.56	1.20	0	584	7.2	0.0	******
3	10	72	0.37	0.16	0.60	1.30	10	547	7.2	1.0	******
3	16	72	0.32	0.14	0.55	1.19	11	418	7.1	1.0	******
3	25	72	0.10	0.03	1.95	0.04	0	174	7.9	1.0	******
4	6	72	0.14	0.01	0.02	0.13	4	434	9.1	5.0	******
4	17	72	0.12	0.03	0.03	0.27	24	453	9.0	9.0	******
5	11	72	0.11	0.04	0.10	0.40	0	460	8.5	14.0	******
5	23	72	0.07	0.03	0.11	0.10	1	464	8.6	19.0	******
6	14	72	0.15	0.05	0.08	0.44	14	460	8.9	21.0	******

STATION 38.2 CONTINUED

DATE MO DAY YR			TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	21	72	0.80	0.04	0.05	0.39	225	438	9.1	19.0	******
7	10	72	0.15	0.04	0.12	1.03	50	407	8.8	25.0	******
7	27	72	0.35	0.03	0.18	0.15	68	409	9.2	25.5	******
8	30	72	0.24	0.04	0.05	0.45	42	431	9.0	24.0	******
9	13	72	1.47	0.08	0.26	0.27	98	441	8.6	19.0	******
10	11	72	0.20	0.10	0.98	0.57	21	450	8.7	13.5	******
11	13	72	0.21	0.13	0.23	1.15	14	480	8.1	2.5	******
3	19	73	0.08	0.01	0.23	0.27	9	356	8.5	4.0	******
4	2	73	0.12	0.04	0.46	0.23	15	474	8.4	5.0	******
4	24	73	0.06	0.04	0.36	0.41	3	460	8.5	12.0	******
5	22	73	0.10	0.01	0.37	0.34	27	417	8.6	17.0	******
6	5	73	0.04	0.01	0.41	0.28	9	465	8.7	18.0	******
6	12	73	0.08	0.03	0.38	0.28	9	494	8.5	20.0	******
7	6	73	0.08	0.04	0.29	0.28	18	491	8.6	24.0	******
8	2	73	0.18	0.05	0.00	0.25	34	471	8.9	23.0	******
8	14	73	0.18	0.03	0.00	0.23	58	445	8.8	24.0	******
8	31	73	0.11	0.06	0.00	0.23	38	512	8.7	24.0	******

STATION 38.3

DATE MO DAY YR			TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	25	71	*****	0.15	0.09	0.68	1	529	7.0	2.0	******
4	14	71	*****	0.07	0.09	0.40	22	461	8.3	7.0	2.0630
4	19	71	*****	0.01	0.01	0.40	29	457	9.2	12.0	1.2820
4	28	71	*****	0.05	0.03	0.56	7	509	8.9	9.0	4.4850
5	3	71	*****	0.07	0.06	0.59	8	462	8.9	11.0	2.3333
5	11	71	*****	0.06	0.06	0.55	14	474	8.3	14.0	5.8744

STATION 38.3 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	20	71	*****	0.07	0.06	0.56	5	459	8.6	14.0	1.5880
6	4	71	*****	0.07	0.10	0.61	22	449	8.6	18.0	2.3470
6	8	71	*****	0.03	0.06	0.27	35	439	8.9	18.5	3.3010
6	17	71	*****	0.04	0.00	0.38	18	744	8.5	24.0	******
6	24	71	*****	0.05	0.02	0.25	22	447	8.7	25.0	******
6	30	71	*****	0.06	0.02	0.52	34	452	8.9	24.0	******
7	7	71	*****	0.02	0.04	0.51	28	376	8.9	24.0	******
7	19	71	*****	0.03	0.05	0.30	18	420	9.1	23.0	******
7	27	71	*****	0.03	0.15	0.25	89	433	9.3	23.0	******
8	3	71	*****	0.00	0.00	0.32	50	437	9.4	21.0	******
8	11	71	*****	0.03	0.03	0.58	23	431	9.4	25.0	******
8	18	71	*****	0.05	0.03	0.52	57	431	9.5	23.0	******
8	24	71	0.14	0.03	0.05	0.89	32	441	9.3	27.5	******
9	8	71	0.23	0.06	0.05	0.70	51	443	9.1	21.0	******
9	23	71	0.38	0.12	0.04	0.71	38	440	8.7	12.0	******
10	6	71	0.27	0.17	0.12	1.52	24	453	7.9	15.0	******
10	14	71	0.38	0.17	0.27	1.46	20	462	7.9	11.0	******
10	29	71	*****	0.19	0.19	2.22	5	480	7.7	8.0	******
11	4	71	0.47	0.20	0.36	1.94	10	473	7.7	5.0	******
12	7	71	0.34	0.16	0.41	2.35	9	490	7.4	1.0	******
12	22	71	0.35	0.18	0.44	2.35	3	503	7.4	1.0	******
2	3	72	0.35	0.22	0.41	2.90	8	573	7.2	0.0	******
3	6	72	0.36	0.18	0.72	1.90	6	570	7.2	0.0	******
3	10	72	0.46	0.23	0.70	1.82	8	508	7.1	0.0	******
3	16	72	0.43	0.06	0.39	0.58	10	227	7.3	2.0	******
3	25	72	0.14	0.03	1.80	0.18	0	150	8.1	3.0	******
4	6	72	0.20	0.00	0.02	0.30	18	374	9.2	5.0	******
4	17	72	0.14	0.03	0.05	0.40	38	422	8.9	9.0	******
5	23	72	0.13	0.05	0.12	0.18	0	458	8.5	20.0	******
6	14	72	0.19	0.04	0.08	0.58	34	460	8.8	23.0	******

STATION 38.3 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	21	72	0.38	0.07	0.04	0.33	49	430	8.9	19.0	******
7	10	72	0.19	0.03	0.03	0.73	45	373	9.8	24.0	******
7	27	72	0.14	0.04	0.07	0.32	31	421	9.2	25.0	******
8	30	72	0.38	0.06	0.07	0.40	30	429	8.9	23.0	******
9	13	72	0.14	0.04	0.08	0.25	16	431	8.8	20.5	******
11	13	72	0.20	0.15	0.32	1.25	15	478	8.1	3.0	******
3	19	73	0.09	0.01	0.19	0.26	19	372	8.3	4.0	******
4	2	73	0.11	0.02	0.26	0.28	19	479	8.6	5.5	******
4	24	73	0.07	0.04	0.29	0.38	2	469	8.7	13.0	******
5	22	73	0.10	0.01	0.26	0.38	27	419	8.5	17.0	******
7	6	73	0.12	0.07	0.17	0.33	11	487	8.7	25.0	******
8	2	73	0.54	0.07	0.03	0.36	235	454	9.2	****	******
8	31	73	0.14	0.06	0.04	0.48	60	479	9.0	24.0	******

STATION 39.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	17	71	*****	1.55	2.88	2.58	32	479	7.0	0.0	0.0360
3	30	71	*****	1.70	5.95	2.98	60	516	7.3	2.0	0.0203
4	3	71	*****	0.78	4.92	1.10	11	423	7.2	0.0	0.0018
4	8	71	*****	1.57	1.77	2.08	25	418	7.2	3.0	0.0022
4	14	71	*****	0.50	2.15	1.15	32	304	7.3	9.0	0.0006
4	22	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	8	71	*****	0.95	9.89	0.85	65	1027	7.8	14.5	0.0005
6	11	71	*****	0.00	*****	0.82	86	1017	8.1	17.0	0.0003

STATION 39.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	16	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	28	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	71	10.63	3.49	6.40	10.16	1450	923	7.6	6.0	0.0023
11	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	18	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	1	72	9.36	5.05	8.00	*****	2250	892	7.6	8.0	0.0061
5	24	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	6	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	26	72	0.90	0.56	10.00	1.02	79	1086	8.0	20.0	0.0003
8	18	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	11	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	10	72	0.64	0.43	13.50	0.81	62	1148	7.7	5.5	0.0001
11	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	******
1	11	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	18	73	3.24	1.40	*****	13.50	178	635	7.2	0.0	0.0150
1	25	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	8	73	4.14	2.62	2.60	8.10	52	761	7.1	1.0	0.0022
3	23	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	14	73	2.85	2.67	2.70	4.80	55	576	7.2	8.0	0.0028
4	2	73	0.95	0.83	14.50	2.59	13	1064	7.7	4.0	0.0001
4	16	73	2.26	1.83	11.50	2.90	54	1328	7.8	8.0	0.0024
4	25	73	1.20	1.11	11.00	0.85	23	1149	7.8	12.0	0.0008
5	1	73	3.60	2.64	14.50	3.55	117	1204	7.5	7.0	0.0028
5	3	73	2.22	1.71	16.00	0.92	23	1256	7.7	5.0	0.0009
5	19	73	1.28	1.17	1.65	0.56	205	1092	7.9	11.0	0.0002
5	25	73	1.44	1.22	2.30	0.96	36	1122	7.7	11.0	0.0004
6	1	73	1.63	1.17	5.90	0.67	51	1302	8.1	15.0	0.0009
6	12	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 39.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	18	73	4.85	4.63	4.40	8.40	330	1811	7.6	17.0	0.0026
6	20	73	1.76	1.76	0.38	0.83	49	1423	8.1	17.0	0.0002
6	25	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	2	73	2.86	2.38	0.40	2.65	103	1662	7.9	18.0	0.0007
7	9	73	6.20	4.30	5.40	6.55	480	1960	7.6	22.0	0.0068
7	11	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	24	73	3.10	2.90	2.25	3.40	260	2111	7.7	20.0	0.0017
7	31	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	6	73	3.26	1.26	1.80	1.06	73	2215	8.0	18.0	0.0002
8	7	73	1.48	1.48	0.12	1.22	64	2175	8.1	19.0	0.0001
8	23	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 39.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	14	71	*****	0.02	0.03	0.43	32	389	9.1	11.0	3.1200
4	22	71	*****	0.01	0.19	0.36	81	457	8.9	13.0	******
4	28	71	*****	0.02	0.01	0.46	28	493	8.8	8.0	1.9910
5	7	71	*****	0.02	0.02	0.42	40	481	8.5	14.0	******
5	11	71	*****	0.02	0.02	0.33	57	472	8.3	14.0	******
5	20	71	*****	0.02	0.03	0.44	18	491	8.4	14.0	1.8533
6	2	71	*****	0.01	0.03	0.48	0	473	9.0	16.0	1.2670
6	8	71	*****	0.01	0.10	0.30	45	447	8.8	20.0	******
6	16	71	*****	0.01	0.21	0.45	47	431	9.1	26.5	******
6	24	71	*****	0.02	0.06	0.25	35	464	8.9	25.0	******
6	30	71	*****	0.00	0.06	0.70	55	451	8.9	23.5	******
7	7	71	*****	0.01	0.10	0.95	58	425	9.2	24.0	******

STATION 39.1 CONTINUED

CATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	19	71	*****	0.05	0.05	0.62	48	435	9.1	22.5	******
7	27	71	*****	0.03	0.11	0.30	80	452	8.4	22.0	******
8	3	71	*****	0.00	0.16	0.45	85	438	9.4	20.5	******
8	24	71	0.25	0.14	0.07	1.25	45	462	8.9	26.0	******
10	6	71	0.35	0.09	0.20	0.50	30	491	8.7	13.0	******
10	14	71	0.81	0.05	0.00	0.48	230	468	9.0	11.0	******
10	29	71	*****	0.12	0.16	1.18	2	504	8.0	6.0	******
11	4	71	0.26	0.14	0.18	1.47	14	492	7.9	4.0	******
12	7	71	0.21	0.11	0.40	1.30	1	536	7.8	1.0	******
12	22	71	0.24	0.10	0.34	1.28	1	580	7.6	2.0	******
2	3	72	0.28	0.16	0.33	1.26	4	735	7.4	0.0	******
3	6	72	0.33	0.17	0.19	1.18	4	762	7.2	1.0	******
3	10	72	0.34	0.13	0.48	1.18	16	435	7.0	0.0	******
4	8	72	0.17	0.01	0.08	0.44	37	382	8.4	3.0	******
4	17	72	0.08	0.03	0.04	0.20	10	395	9.2	11.0	******
4	25	72	0.09	0.01	0.02	0.31	40	418	9.0	8.0	******
5	10	72	0.06	0.00	0.24	0.26	18	439	8.9	12.0	******
5	23	72	0.08	0.02	0.31	0.47	3	474	7.8	22.0	******
6	8	72	0.16	0.01	0.12	0.74	65	432	8.7	21.0	******
6	19	72	0.06	0.01	0.08	0.72	61	437	9.1	20.0	******
8	11	72	0.22	0.06	0.15	1.05	47	411	9.1	22.0	******
9	1	72	0.95	0.11	0.27	1.20	90	445	8.1	19.0	******
9	11	72	0.29	0.05	0.08	0.42	39	429	9.1	19.5	******
9	25	72	0.22	0.03	0.10	0.22	65	414	9.5	14.5	******
11	9	72	0.18	0.08	0.34	1.26	16	470	8.5	4.5	******
11	11	72	0.20	0.03	0.05	0.47	45	396	9.4	12.5	******
11	28	72	0.18	0.11	0.22	1.24	11	504	8.0	0.0	******
3	23	73	0.07	0.02	0.17	0.32	11	417	8.5	5.5	******
4	24	73	0.03	0.02	0.17	0.43	4	474	8.6	12.0	******
5	11	73	0.04	0.01	0.21	0.54	27	493	8.4	14.0	******

STATION 39.1 CONTINUED

DATE MO DAY YR			TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5	25	73	0.06	0.01	1.20	0.56	17	502	8.5	16.0	******
6	1	73	0.08	0.01	0.23	0.38	28	490	8.5	18.0	******
6	12	73	0.07	0.02	0.23	0.36	24	517	8.3	21.0	******
6	20	73	0.07	0.00	0.23	0.22	15	498	8.4	17.0	******
8	14	73	0.07	0.01	0.00	0.42	28	459	8.7	23.0	******
8	31	73	0.10	0.03	0.01	0.43	55	496	9.1	24.0	******

STATION 40.0

CATE			TOTAL P	PO4-P	NC3-N	NH3-N	TURB	SP COND	PH	TEMP	FLOW CUBIC M /SEC
MO	DAY	YR	MG/L	MG/L	MG/L	MG/L	JTU			C	
3	17	71	*****	0.54	0.79	2.37	112	316	7.4	0.0	0.6940
3	30	71	*****	0.22	2.89	1.30	82	504	7.6	2.0	0.6945
4	3	71	*****	0.13	3.66	0.57	29	593	7.6	0.0	******
4	8	71	*****	0.11	4.23	0.39	21	670	7.6	6.0	0.1940
4	14	71	*****	0.07	3.93	0.35	12	669	7.7	7.0	0.1728
4	22	71	*****	0.03	3.43	0.39	17	740	8.0	7.0	0.1181
4	28	71	*****	0.03	4.33	0.34	5	831	8.0	5.0	0.0938
5	7	71	*****	0.04	4.17	0.39	18	759	7.8	9.0	0.0622
5	18	71	*****	0.10	3.13	0.58	11	762	7.9	11.0	0.0504
5	24	71	*****	0.11	4.14	0.44	19	766	7.8	11.0	0.0527
6	3	71	*****	0.11	2.94	0.37	44	778	7.8	12.0	0.0579
6	7	71	*****	0.23	5.20	0.66	250	571	7.6	14.0	0.6231
6	11	71	*****	0.07	8.02	0.33	40	771	7.9	14.0	0.2352
6	16	71	*****	0.06	7.45	0.26	38	738	7.9	15.5	0.0785
6	23	71	*****	0.07	6.41	0.33	39	788	7.9	15.0	0.0522
6	29	71	*****	0.09	9.76	0.32	45	842	7.8	19.0	0.0520
7	9	71	*****	0.09	6.30	0.43	65	809	7.7	15.0	0.0257
7	15	71	*****	0.07	5.87	0.33	29	809	7.9	15.0	0.0574
7	21	71	*****	0.08	2.82	0.41	23	809	7.7	16.0	0.0185
7	30	71	*****	0.07	1.18	0.31	39	815	7.8	10.0	0.0157
8	4	71	*****	0.07	1.06	0.43	16	797	7.8	13.0	0.0173
8	12	71	*****	0.08	1.22	0.43	12	777	7.7	17.0	0.0064
8	17	71	*****	0.11	0.84	0.25	25	775	7.7	19.0	0.0080
8	24	71	*****	0.17	0.82	0.97	28	778	7.8	18.5	0.0125
9	8	71	0.13	0.10	0.35	0.17	11	753	7.8	18.0	0.0132
9	17	71	*****	0.06	2.62	0.09	11	747	7.5	7.0	0.0041
9	22	71	0.13	0.07	0.49	0.12	20	746	****	9.0	0.0171
10	6	71	0.08	0.08	2.25	0.09	12	724	7.8	9.0	0.0140
10	13	71	0.08	0.04	1.50	0.29	12	728	7.6	8.0	0.0070
10	28	71	0.12	0.06	1.50	0.40	0	757	7.4	5.0	0.0156

STATION 40.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
11	3	71	0.09	0.05	1.30	0.32	0	779	7.6	3.0	0.0195
11	18	71	0.09	0.06	0.20	0.45	5	714	7.4	4.0	0.0294
11	24	71	0.06	0.05	1.10	0.36	4	770	7.4	3.0	0.0126
12	14	71	0.05	0.03	1.00	0.14	1	694	7.3	0.0	0.0119
1	21	72	*****	0.03	1.50	0.30	8	716	7.5	0.0	******
3	3	72	0.37	0.18	2.20	0.88	2	515	7.2	0.0	0.0096
3	9	72	0.64	0.31	1.95	1.45	30	320	7.1	1.0	0.0525
3	15	72	0.26	0.13	2.50	0.47	3	463	7.3	0.0	0.1723
3	27	72	0.09	0.06	3.50	0.37	5	737	7.5	1.0	0.0240
4	8	72	0.05	0.03	1.60	0.06	5	716	7.3	0.0	0.0128
4	18	72	0.06	0.03	1.60	0.01	0	662	7.7	6.0	0.0310
5	1	72	0.31	0.12	3.20	3.10	160	683	7.4	8.0	0.3269
5	12	72	0.06	0.03	5.20	0.02	1	735	8.0	11.0	0.0663
5	24	72	0.08	0.04	4.80	0.11	8	740	7.9	15.0	0.0641
6	9	72	0.13	0.08	11.50	0.57	36	737	7.9	17.0	0.0712
6	20	72	0.14	0.09	8.60	0.50	22	751	7.9	14.0	0.0450
7	5	72	0.11	0.07	6.00	0.35	8	742	7.8	12.0	0.0169
7	26	72	0.08	0.06	7.20	0.37	43	788	7.8	18.0	0.1662
8	18	72	0.11	0.08	1.70	0.85	112	751	7.6	19.0	0.0296
8	29	72	0.18	0.11	0.80	0.71	12	754	7.6	14.5	0.0157
9	11	72	0.13	0.08	1.00	0.42	13	726	7.6	16.0	0.0201
9	29	72	0.13	0.09	2.20	0.38	19	738	7.5	8.0	0.0193
10	11	72	0.15	0.10	2.58	0.41	23	701	7.8	12.5	0.0216
11	9	72	0.09	0.06	9.20	0.19	16	843	7.7	5.0	0.0731
11	28	72	0.07	0.06	2.80	0.22	7	812	7.7	0.0	0.0413
12	27	72	0.05	0.05	*****	0.29	3	726	7.7	2.0	0.0254
1	11	73	0.07	0.06	*****	0.44	3	814	6.5	3.0	0.0107
1	18	73	0.85	0.52	*****	2.20	56	167	7.0	0.0	0.3126
1	25	73	0.15	0.11	5.60	0.64	3	723	7.6	1.5	0.0686
2	7	73	0.13	0.11	6.50	0.47	0	733	7.5	0.0	0.0191

STATION 40.0 CONTINUED

DATE			TOTAL P	PO4-P	NO3-N	NH3-N	TURB	SP COND	PH	TEMP	FLOW CUBIC M /SEC
MO	DAY	YR	MG/L	MG/L	MG/L	MG/L	JTU			C	
2	21	73	0.11	0.09	4.30	0.48	5	635	7.5	1.0	0.0133
2	28	73	0.78	0.52	5.80	1.06	22	710	7.5	2.0	0.0500
3	8	73	0.21	0.12	4.60	0.58	14	572	7.5	4.0	0.1870
3	14	73	0.17	0.06	6.60	0.99	18	534	7.4	5.0	0.3545
3	23	73	0.10	0.08	8.50	0.29	3	751	7.7	4.5	0.0931
3	29	73	0.07	0.06	9.90	0.27	4	751	7.8	3.0	0.1044
4	16	73	0.09	0.06	9.70	0.23	17	791	7.8	6.0	0.2468
4	27	73	0.03	0.02	9.30	0.18	6	761	7.9	4.0	0.0815
5	2	73	0.05	0.02	10.50	0.33	16	778	7.7	4.5	0.2350
5	19	73	0.05	0.03	10.10	0.21	11	781	7.8	9.0	0.0719
5	25	73	0.10	0.07	9.80	0.36	13	792	7.6	9.0	0.0622
6	4	73	0.08	0.02	9.20	0.05	43	817	7.8	11.0	0.1455
6	13	73	0.08	0.05	13.00	0.43	28	838	7.9	12.0	0.0830
6	20	73	0.13	0.03	8.90	0.18	51	831	7.9	15.0	0.1248
6	25	73	0.08	0.04	11.50	0.05	81	693	8.2	16.0	0.1107
7	3	73	0.13	0.11	2.85	0.11	49	831	8.0	18.0	0.1734
7	11	73	0.15	0.11	8.70	0.23	72	835	7.9	19.0	0.0438
7	24	73	0.08	0.08	4.85	0.23	34	804	7.9	18.0	0.0213
7	31	73	0.13	0.09	2.45	0.44	8	760	7.9	14.0	0.0111
8	9	73	0.09	0.09	1.20	0.26	65	762	7.9	15.0	0.0102
8	17	73	0.14	0.12	0.95	0.65	11	714	7.8	15.0	0.0111
8	30	73	0.15	0.13	0.35	0.38	6	728	7.9	17.0	0.0052

STATION 40.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
10	6	71	0.19	0.13	1.45	0.16	34	637	7.4	9.0	0.0034
10	13	71	0.15	0.08	0.20	0.38	30	647	7.8	8.0	0.0016
10	28	71	0.23	0.14	0.30	0.43	5	599	7.4	4.0	0.0031
11	3	71	0.22	0.12	0.10	1.74	61	640	7.4	2.0	0.0026
11	18	71	0.24	0.12	0.10	1.20	46	584	7.4	4.0	0.0017
11	24	71	0.11	0.09	0.23	0.54	10	654	7.5	1.0	0.0020
12	14	71	0.11	0.07	0.20	0.50	6	672	7.4	0.0	0.0006
1	21	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	15	72	0.37	0.19	0.70	0.97	0	346	7.3	0.0	0.0282
3	27	72	0.09	0.03	0.10	0.23	2	570	7.5	0.0	0.0026
4	8	72	0.06	0.04	0.04	0.01	2	711	7.1	0.0	0.0003
4	18	72	0.05	0.03	0.04	0.00	0	683	7.1	6.0	0.0003
5	1	72	1.03	0.29	0.50	*****	1000	374	7.6	9.0	0.0227
6	9	72	0.13	0.07	6.80	0.63	41	534	7.7	21.0	0.0105
6	20	72	0.16	0.03	4.90	0.56	41	562	8.2	15.0	0.0046
7	5	72	0.19	0.11	0.18	0.32	21	606	7.7	14.0	0.0002
7	26	72	0.33	0.01	4.80	0.59	51	530	7.8	21.0	0.0275
8	18	72	0.10	0.08	1.30	1.06	110	693	7.9	24.0	0.0009
8	29	72	0.22	0.09	1.30	0.69	51	701	7.7	18.0	0.0010
9	11	72	0.16	0.07	0.66	0.50	26	696	7.7	18.0	0.0018
9	29	72	0.14	0.12	2.00	0.39	19	686	7.9	8.0	0.0052
10	11	72	0.27	0.09	1.25	0.46	79	690	7.8	12.5	0.0023
11	9	72	0.14	0.01	4.30	0.54	44	597	7.8	4.0	0.0107
11	28	72	0.04	0.01	2.85	0.27	9	646	7.7	0.0	0.0018
1	11	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	25	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	18	73	1.16	0.75	*****	2.30	55	217	7.2	0.0	0.1808
2	7	73	0.36	0.21	2.50	1.46	11	496	7.1	0.0	0.0025

STATION 40.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
2	21	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	28	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	8	73	0.41	0.21	2.30	1.31	11	383	7.3	1.0	0.0250
3	14	73	0.39	0.16	7.90	0.81	44	621	7.4	5.5	0.1200
3	23	73	0.07	0.01	7.20	0.32	3	636	7.7	5.0	0.0098
3	29	73	0.08	0.01	10.50	0.29	6	655	8.0	3.0	0.0255
4	16	73	0.14	0.01	13.50	0.43	44	713	8.2	9.0	0.0243
4	27	73	0.06	0.00	9.80	0.37	19	617	8.0	6.0	0.0100
5	2	73	0.09	0.01	9.60	0.29	49	617	8.5	5.0	0.0187
5	19	73	0.06	0.01	9.90	0.47	47	597	7.7	11.0	0.0038
5	25	73	0.07	0.01	7.60	0.46	18	612	7.8	10.0	0.0038
6	4	73	0.15	0.01	8.90	0.19	124	688	8.0	15.0	0.0095
6	13	73	0.07	0.01	14.00	0.64	47	662	7.9	16.0	0.0066
6	20	73	0.21	0.00	12.50	0.25	92	689	8.0	19.0	0.0189
6	25	73	0.10	3.26	14.50	0.26	97	557	8.0	19.0	0.0081
7	3	73	0.14	0.03	2.90	0.13	61	620	7.8	19.0	******
7	11	73	0.11	0.11	2.00	0.28	47	667	7.9	20.0	0.0023
7	24	73	0.07	0.07	0.85	0.34	25	730	8.1	19.0	0.0007
7	31	73	0.19	0.15	0.65	0.34	26	709	8.3	16.0	0.0003
8	9	73	0.20	0.19	1.25	0.40	17	741	8.3	19.0	0.0002
8	17	73	0.22	0.21	0.45	0.66	18	689	8.2	19.0	0.0003
8	30	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 41.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.58	3.14	0.63	20	879	7.5	0.0	0.0567
3	16	71	*****	0.52	3.02	0.87	46	336	7.4	1.0	0.0597
3	30	71	*****	0.40	4.00	1.04	139	384	7.4	2.0	0.3280
4	3	71	*****	0.20	4.23	0.49	18	514	7.6	1.0	0.1388
4	8	71	*****	0.12	4.93	0.31	16	572	7.7	5.0	0.1223
4	14	71	*****	0.07	7.72	0.32	15	583	8.3	9.0	0.0720
4	22	71	*****	0.02	7.15	0.41	17	650	8.5	13.0	0.0770
4	27	71	*****	0.01	8.90	0.37	4	633	8.4	10.0	0.0858
5	7	71	*****	0.01	6.93	0.22	8	642	8.3	13.0	0.0708
5	18	71	*****	0.01	7.54	0.33	3	609	8.1	16.0	0.0464
5	24	71	*****	0.01	7.44	0.20	5	632	8.2	14.0	0.0555
6	3	71	*****	0.04	6.88	0.33	10	648	7.9	15.0	0.0753
6	7	71	*****	0.20	10.13	1.07	250	598	7.6	12.5	
6	11	71	*****	0.07	11.92	0.35	25	726	8.1	16.0	0.3290
6	16	71	*****	0.06	10.46	0.11	10	746	8.0	17.5	0.0960
6	23	71	*****	0.01	9.89	0.05	11	671	8.4	20.0	0.0942
6	29	71	*****	0.01	13.35	0.15	5	454	8.0	22.5	0.0265
7	9	71	*****	0.05	10.41	0.15	16	708	7.8	19.0	0.0270
7	15	71	*****	0.01	7.83	0.08	5	736	8.0	19.5	0.0350
7	21	71	*****	0.02	12.84	0.18	0	738	7.9	21.0	0.0154
7	30	71	*****	0.03	6.78	0.13	18	760	7.7	16.0	0.0020
8	4	71	*****	0.03	8.91	0.53	3	736	7.7	17.0	0.0027
8	12	71	*****	0.08	0.50	1.48	38	829	7.1	15.0	******
8	17	71	*****	0.15	0.10	2.35	115	930	7.0	17.0	******
8	24	71	*****	0.17	0.06	1.57	83	906	6.7	11.0	******
8	31	71	*****	0.19	0.06	*****	92	984	6.7	16.0	******
9	22	71	0.21	0.14	0.06	1.20	43	861	****	10.0	0.0023
10	13	71	0.31	0.26	0.00	2.40	23	857	6.8	10.0	0.0016
10	28	71	0.62	0.19	0.20	1.75	20	810	6.8	8.0	0.0006
11	3	71	0.31	0.16	0.00	0.96	5	792	7.0	7.0	0.0016

STATION 41.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
11	18	71	0.15	0.07	0.10	0.72	5	591	7.2	5.0	0.0038
11	24	71	0.10	0.04	0.69	0.60	15	665	7.4	2.0	0.0029
12	14	71	0.05	0.03	0.96	0.42	0	670	7.3	1.0	0.0031
1	21	72	*****	0.13	0.15	1.00	8	681	6.4	2.0	0.0025
3	3	72	0.68	0.26	2.10	1.82	41	280	7.0	0.0	0.0026
3	9	72	0.65	0.29	3.50	2.22	91	214	6.9	1.0	0.0136
3	15	72	0.42	0.18	0.27	0.85	23	344	7.2	0.0	0.0592
3	27	72	0.18	0.10	4.40	0.82	6	566	7.5	2.0	0.0179
4	8	72	0.11	0.05	4.80	0.30	4	606	7.6	4.0	0.0047
4	18	72	0.07	0.02	3.00	0.17	2	516	8.1	8.0	0.0050
5	1	72	0.07	0.03	8.20	0.06	0	690	7.9	8.0	0.1547
5	12	72	0.05	0.03	9.90	0.00	1	699	8.0	14.0	0.0756
5	24	72	0.05	0.01	9.50	0.11	4	650	8.0	18.0	0.0611
6	9	72	0.03	0.01	13.00	0.26	10	682	8.0	21.0	0.0737
6	20	72	0.06	0.02	13.00	0.50	9	684	8.0	17.0	0.0579
7	5	72	0.06	0.01	14.00	0.27	2	604	8.1	17.0	0.0105
7	26	72	0.07	0.04	11.50	0.00	6	766	8.1	19.0	0.1308
8	18	72	0.00	0.01	10.10	0.29	6	678	8.1	26.0	0.0306
8	29	72	0.04	0.03	8.70	0.23	3	703	8.2	20.0	0.0202
9	11	72	0.04	0.01	6.40	0.35	2	682	7.8	18.5	0.0130
9	29	72	0.09	0.05	6.10	0.41	7	662	8.1	12.0	0.0259
10	11	72	0.07	0.03	5.40	0.24	8	675	7.9	12.0	0.0217
11	10	72	0.07	0.06	9.90	0.22	4	815	7.8	6.0	0.0803
12	8	72	0.04	0.04	13.50	0.08	2	833	7.7	3.0	0.0292
12	27	72	0.02	0.01	*****	0.28	1	774	7.9	1.0	0.0195
1	11	73	0.08	0.07	*****	0.53	4	764	7.6	0.0	0.0140
1	18	73	0.59	0.37	*****	2.10	85	214	7.0	0.0	0.4400
1	25	73	0.20	0.12	13.50	0.53	14	662	7.5	1.0	0.0317
2	7	73	0.29	0.21	7.80	1.14	20	542	7.4	0.5	0.0228
2	21	73	0.08	0.06	8.10	0.37	1	742	7.6	0.0	0.0094

STATION 41.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
2	28	73	0.52	0.28	5.30	2.20	37	387	7.1	2.0	0.0245
3	8	73	0.27	0.18	8.50	0.66	17	534	7.4	2.5	0.0869
3	14	73	0.50	0.24	9.50	1.13	68	570	7.3	3.0	0.3775
3	23	73	0.10	0.07	8.50	0.36	1	727	7.8	5.0	0.0495
4	2	73	0.05	0.05	11.00	0.19	7	782	8.0	4.0	0.0834
4	16	73	0.19	0.11	14.00	0.62	34	764	7.7	5.0	0.2834
4	25	73	0.02	0.02	14.50	0.14	3	745	8.1	10.0	0.1066
5	2	73	0.06	0.04	10.30	0.31	7	761	7.9	6.0	0.1796
5	19	73	0.02	0.01	9.95	0.24	1	719	8.2	14.0	0.0560
5	25	73	0.03	0.01	11.00	0.28	4	753	7.9	12.0	0.0550
6	4	73	0.04	0.03	7.20	0.08	1	823	8.2	13.0	0.1089
6	13	73	0.02	0.01	13.00	0.33	0	744	8.3	17.0	0.0495
6	22	73	0.04	0.02	15.50	0.04	7	810	8.1	15.0	0.0839
7	4	73	0.07	0.06	15.00	0.44	3	773	8.1	19.0	0.0447
7	13	73	0.05	0.03	11.00	0.32	2	804	8.2	23.0	0.0313
7	31	73	0.04	0.03	10.50	0.34	2	738	8.3	20.0	0.0173
8	9	73	0.05	0.04	9.80	0.24	6	691	8.4	23.0	0.0043
8	22	73	0.05	0.03	1.50	0.23	6	675	8.2	20.0	0.0044

STATION 41.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
10	6	71	0.07	0.04	12.50	0.07	45	715	7.9	11.0	0.0004
10	28	71	0.14	0.10	0.30	0.19	0	836	7.8	5.0	0.0006
11	3	71	0.08	0.05	0.00	0.19	0	953	7.8	2.0	0.0008
11	18	71	0.08	0.06	0.00	0.20	0	783	7.6	3.0	0.0046
11	24	71	0.05	0.04	0.35	0.22	8	846	7.5	0.0	0.0038

STATION 41.1 CONTINUED

DATE			TOTAL P	PO4-P	NO3-N	NH3-N	TURB	SP COND	PH	TEMP	FLOW CUBIC M
MO	DAY	YR	MG/L	MG/L	MG/L	MG/L	JTU			C	/SEC
3	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	15	72	0.37	0.16	2.80	0.69	12	318	7.2	0.0	0.0259
3	27	72	0.12	0.07	3.00	0.59	1	680	7.5	0.0	0.0164
4	8	72	0.08	0.04	2.60	0.01	0	728	7.7	0.0	0.0093
4	18	72	0.09	0.02	1.80	0.10	2	670	7.7	7.0	0.0100
5	1	72	0.12	0.04	6.70	0.42	45	668	7.7	9.0	0.1633
5	12	72	0.06	0.02	9.10	0.08	2	699	8.1	13.0	0.0654
5	24	72	0.04	0.03	9.30	0.12	10	677	8.0	18.0	0.0496
6	9	72	0.07	0.03	13.50	0.30	10	685	8.2	21.0	0.0360
6	20	72	0.05	0.02	12.50	0.30	5	694	8.1	15.0	0.0310
7	5	72	0.07	0.04	9.40	0.27	10	676	8.2	15.0	0.0099
7	26	72	0.08	0.05	11.50	0.02	8	772	8.1	19.5	0.0889
8	18	72	0.05	0.05	7.80	0.28	13	745	8.1	23.0	0.0065
8	29	72	0.08	0.05	5.80	0.21	5	778	8.0	18.0	0.0034
9	11	72	0.06	0.04	2.90	0.41	2	771	8.1	17.5	0.0045
9	29	72	0.06	0.05	4.40	0.28	7	708	8.1	9.0	0.0161
10	11	72	0.07	0.04	4.10	0.18	12	670	7.8	13.0	0.0156
11	10	72	0.06	0.06	9.70	0.20	2	833	7.5	5.5	0.0535
12	8	72	0.03	0.03	13.00	0.08	0	881	7.5	0.0	******
3	23	73	0.10	0.07	12.50	0.34	3	739	7.9	4.5	0.0642
4	2	73	0.05	0.05	11.50	0.18	6	791	8.2	4.0	0.1214
4	16	73	0.15	0.08	14.50	0.52	27	764	8.1	6.0	0.1615
4	25	73	0.02	0.02	9.30	0.22	1	727	8.3	11.0	0.0937
5	2	73	0.06	0.03	9.80	0.30	9	763	7.6	6.0	0.2175
5	19	73	0.02	0.01	9.80	0.14	2	738	8.2	13.0	0.0696
5	25	73	0.05	0.03	12.50	0.31	2	772	8.0	11.0	0.0692
6	4	73	0.05	0.04	9.30	0.11	8	814	8.3	14.0	0.0863
6	13	73	0.04	0.02	14.50	0.28	6	756	8.4	16.0	0.0670
6	22	73	0.05	0.03	15.00	0.11	3	810	7.2	15.0	0.0886

STATION 41.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	4	73	0.07	0.06	13.00	0.29	8	780	8.2	19.0	0.0875
7	13	73	0.07	0.06	11.50	0.10	13	817	8.2	21.0	0.0252
7	31	73	0.07	0.07	5.50	0.22	7	778	8.4	17.0	0.0084
8	9	73	0.10	0.09	5.90	0.25	14	768	8.3	19.0	0.0016
8	22	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	30	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 41.2

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
9	22	71	0.30	0.06	10.10	0.31	122	746	****	10.0	0.0004
10	13	71	0.09	0.07	12.50	0.19	24	710	7.9	9.0	0.0002
10	28	71	0.11	0.04	14.80	0.27	7	714	7.8	7.0	0.0003
11	3	71	0.09	0.04	10.00	0.10	2	736	7.9	9.0	0.0017
11	18	71	0.59	0.35	10.30	0.79	9	679	7.8	7.0	0.0023
11	24	71	0.06	0.05	13.50	0.13	2	755	7.9	7.0	0.0019
12	14	71	0.04	0.03	14.00	0.05	2	690	7.9	6.0	0.0023
1	21	72	*****	0.02	14.00	0.02	3	683	8.0	2.0	0.0020
3	3	72	0.16	0.07	10.00	0.02	0	606	7.7	1.0	0.0029
3	9	72	0.58	0.50	5.90	2.20	13	472	7.1	0.0	0.0260
3	15	72	0.41	0.20	3.60	0.27	8	330	7.2	3.0	0.1066
3	27	72	0.13	0.08	8.20	0.36	7	668	7.7	7.7	0.0156
4	8	72	0.09	0.06	9.80	0.00	0	688	7.9	2.0	0.0113
4	18	72	0.09	0.07	11.50	0.01	0	697	7.6	5.0	0.0125
5	1	72	1.59	0.60	12.50	2.20	155	790	7.3	5.0	0.1400
5	12	72	0.07	0.06	8.40	0.02	0	735	7.3	6.0	0.0628
5	24	72	0.07	0.04	8.40	0.00	0	763	7.3	11.0	0.0581

STATION 41.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	9	72	0.05	0.04	15.00	0.00	7	794	7.0	9.0	0.0691
6	20	72	0.13	0.04	15.00	0.25	0	765	7.9	12.0	0.0385
7	6	72	0.07	0.05	19.75	0.19	0	748	7.2	12.0	0.0206
7	26	72	0.05	0.04	14.90	0.00	0	804	6.7	14.5	0.1310
8	18	72	0.06	0.05	14.50	0.07	0	778	6.9	15.0	0.0114
8	29	72	0.06	0.05	14.00	0.17	0	791	7.1	15.0	0.0068
9	11	72	0.05	0.04	11.00	0.26	0	798	7.1	15.0	0.0078
9	29	72	0.08	0.07	18.00	0.16	0	787	7.7	13.5	0.0115
10	11	72	0.09	0.07	7.40	0.11	3	762	7.6	13.0	0.0175
11	10	72	0.07	0.06	10.00	0.06	1	842	7.2	10.0	0.0482
12	8	72	0.05	0.05	22.50	0.02	0	885	7.7	8.0	0.0157
12	27	72	0.07	0.06	*****	0.10	1	768	7.9	6.0	0.0089
1	11	73	0.07	0.07	*****	0.13	3	753	7.8	4.0	0.0100
1	18	73	0.36	0.25	*****	1.62	47	253	6.9	1.0	0.2210
1	25	73	0.12	0.08	10.10	0.13	4	764	7.4	4.0	0.0170
2	7	73	0.09	0.07	7.50	0.00	4	738	7.8	3.0	0.0100
2	21	73	0.10	0.08	8.80	0.09	0	701	8.0	3.0	0.0060
2	28	73	0.36	0.10	11.00	0.25	3	681	7.5	3.0	0.0158
3	8	73	0.22	0.14	10.10	0.42	7	592	7.1	3.0	0.0979
3	14	73	0.32	0.19	9.60	0.51	23	693	7.0	3.5	0.2857
3	23	73	0.09	0.07	8.60	0.06	0	774	7.2	3.0	0.0648
4	2	73	0.07	0.07	9.50	0.09	1	838	7.2	3.0	0.1116
4	16	73	0.07	0.06	11.00	0.17	4	839	7.1	4.0	0.1329
4	25	73	0.05	0.05	9.50	0.15	0	794	7.2	6.0	0.1110
5	2	73	0.09	0.07	11.00	0.27	3	822	7.1	5.0	0.1833
5	19	73	0.05	0.05	10.50	0.12	1	791	7.3	8.0	0.0600
5	25	73	0.06	0.06	10.10	0.13	1	831	7.3	7.0	0.0704
6	4	73	0.05	0.05	11.10	0.06	0	850	7.2	8.0	0.0987
6	13	73	0.04	0.04	17.00	0.21	0	868	7.1	10.0	0.0689
6	22	73	0.06	0.04	18.00	0.04	1	847	7.1	12.0	0.0950

STATION 41.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	4	73	0.06	0.06	16.00	0.04	1	851	7.1	13.0	0.0708
7	13	73	0.06	0.06	15.00	0.01	1	887	7.0	13.0	0.0246
7	31	73	0.06	0.06	16.00	0.11	0	849	7.4	14.0	0.0099
8	9	73	0.05	0.05	17.00	0.00	0	841	7.4	14.0	0.0060
8	22	73	0.05	0.05	7.25	0.00	4	785	8.3	14.0	0.0042
8	30	73	0.04	0.04	9.00	0.00	3	821	7.9	14.0	0.0028

STATION 42.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	16	71	*****	0.51	2.76	1.23	10	821	7.5	2.0	******
3	30	71	*****	3.16	2.96	8.50	305	683	7.2	2.0	0.0131
4	3	71	*****	0.43	3.46	0.71	6	865	7.5	2.0	0.0026
4	8	71	*****	0.63	3.18	1.64	12	959	7.4	3.0	0.0041
4	14	71	*****	0.40	3.02	1.51	10	840	7.2	4.0	0.0004
4	22	71	*****	0.28	3.01	0.67	11	971	7.4	5.0	0.0025
4	27	71	*****	0.99	3.67	4.22	37	1027	7.3	6.0	0.0032
5	7	71	*****	0.25	3.65	0.32	3	990	7.4	7.0	0.0009
5	18	71	*****	0.27	3.27	0.46	4	1009	7.6	9.0	0.0004
5	24	71	*****	0.24	3.76	0.27	4	944	7.6	9.0	0.0003
6	3	71	*****	0.24	1.52	0.22	10	958	7.6	10.0	0.0007
6	7	71	*****	0.47	1.46	0.70	65	861	7.1	12.0	0.0070
6	11	71	*****	0.34	3.08	0.71	8	957	7.5	11.5	0.0022
6	16	71	*****	0.14	4.69	0.25	5	995	7.5	12.5	0.0009
6	23	71	*****	0.11	2.98	0.28	13	1050	7.7	13.5	0.0006
6	29	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 42.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7	9	71	*****	0.44	3.44	1.55	18	987	7.5	14.0	0.0003
7	15	71	*****	0.19	3.17	0.45	3	977	7.7	15.0	******
7	21	71	*****	0.28	2.88	0.58	3	726	7.7	16.5	******
7	30	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	28	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	71	4.89	2.53	21.50	5.40	560	1334	6.9	7.0	0.0024
11	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	9	72	0.91	0.33	5.70	1.45	55	723	7.5	1.0	0.0003
3	15	72	2.91	0.99	4.60	9.55	450	853	7.2	2.0	0.0007
3	27	72	0.32	0.19	4.40	0.43	4	903	7.4	2.0	0.0013
4	8	72	0.28	0.17	3.50	0.09	0	885	7.6	1.0	0.0014
4	18	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	1	72	25.92	0.00	*****	*****	9999	735	7.6	6.0	0.0250
5	12	72	0.21	0.15	4.10	0.19	1	974	7.2	9.0	0.0046
5	24	72	0.21	0.15	2.70	0.15	3	942	7.3	11.0	0.0049
6	9	72	0.28	0.19	5.10	0.58	10	957	7.3	12.0	0.0009
6	20	72	0.34	0.32	3.70	0.65	12	960	7.9	13.0	0.0002
7	5	72	2.43	3.50	8.60	36.75	107	1564	7.3	13.0	0.0001
7	27	72	0.34	0.21	6.10	0.66	0	1063	7.3	16.0	0.0009
8	18	72	0.84	0.56	3.80	4.05	5	1184	7.4	17.5	0.0013
8	30	72	0.51	0.39	3.40	2.10	3	1063	7.6	17.0	0.0009
9	13	72	0.24	0.16	2.50	0.71	1	953	7.6	16.0	0.0004
9	29	72	0.19	0.19	3.20	0.53	1	1020	7.6	14.0	0.0007
10	11	72	0.22	0.18	1.90	0.31	1	987	7.8	13.5	0.0005
11	10	72	0.22	0.19	4.20	0.53	0	1115	7.4	9.0	0.0014
12	8	72	0.23	0.19	8.20	1.67	2	1139	7.5	7.0	0.0003
12	27	72	0.15	0.15	*****	3.80	13	1112	7.5	2.0	0.0001
1	18	73	3.02	2.39	*****	9.35	138	300	7.0	0.0	0.0152
1	25	73	0.60	0.47	3.60	2.85	11	1084	7.2	2.5	0.0002

STATION 42.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
2	7	73	0.37	0.26	3.40	2.20	3	1050	7.5	0.0	0.0001
2	21	73	0.79	0.64	2.70	4.70	9	1187	7.2	0.0	0.0002
2	28	73	0.40	0.29	4.30	1.72	6	990	7.1	2.0	0.0015
3	8	73	0.90	0.68	3.80	1.98	21	950	7.1	4.0	0.0006
3	14	73	0.83	0.78	6.90	3.00	1300	848	7.1	5.0	0.0035
3	23	73	0.39	0.33	5.20	1.33	2	1016	7.3	3.0	0.0009
4	2	73	0.37	0.30	5.30	1.09	9	998	7.6	3.0	0.0022
4	16	73	3.32	1.09	5.50	10.50	248	1150	7.3	4.5	0.0030
4	25	73	0.29	0.25	7.10	1.37	2	1029	7.7	7.0	0.0037
5	2	73	3.70	1.45	5.90	8.85	489	1077	7.2	6.0	0.0078
5	19	73	0.32	0.32	9.90	1.66	0	1041	7.6	11.0	0.0012
5	25	73	0.27	0.25	6.30	0.80	4	992	7.6	8.0	0.0016
6	4	73	0.23	0.22	7.10	0.56	0	1111	7.3	9.0	0.0011
6	13	73	0.20	0.16	7.90	0.97	0	1081	7.0	12.0	0.0006
6	20	73	0.31	0.17	6.20	0.31	9	955	7.1	16.0	0.0036
7	2	73	4.29	2.72	6.80	6.75	230	1041	7.0	15.0	0.0040
7	9	73	5.91	3.39	7.20	8.10	138	1362	6.9	18.0	0.0033
7	13	73	0.42	0.42	4.95	3.04	4	1099	7.3	16.0	0.0012
7	19	73	0.26	0.22	7.50	0.88	6	1038	7.4	16.0	0.0009
7	24	73	0.23	0.23	6.40	0.95	1	1039	7.3	17.0	0.0003
7	31	73	0.27	0.22	7.10	1.03	19	1035	7.5	15.0	0.0003
8	6	73	0.45	0.38	4.40	2.65	10	1083	7.4	16.0	0.0003
8	17	73	0.64	0.64	9.45	2.77	19	907	7.1	18.0	0.0019
8	22	73	0.29	0.29	4.90	1.26	4	1004	7.9	17.0	0.0002
8	30	73	0.52	0.49	0.54	2.70	13	1054	7.8	18.0	0.0001

STATION 43.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	7	71	*****	0.02	3.99	0.17	33	655	7.7	11.0	0.0093
6	11	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	1	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	24	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	5	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
7	27	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
8	18	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
9	13	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	10	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
2	28	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	2	73	0.93	0.75	9.90	1.43	13	870	7.8	5.0	0.0028
5	2	73	5.00	2.87	12.70	7.70	117	1034	7.5	6.0	0.0017
5	19	73	0.14	0.13	10.00	0.41	11	814	7.8	11.0	0.0007
5	26	73	0.21	0.12	13.00	0.62	34	867	7.6	10.0	0.0007
6	4	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
6	13	73	0.08	0.03	16.50	0.38	33	810	7.9	14.0	0.0006
7	11	73	0.13	0.12	14.00	0.19	1	869	8.0	20.0	0.0002
7	31	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 44.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.03	3.18	0.18	2	683	7.9	1.0	0.0017
3	16	71	*****	0.02	3.55	0.28	3	632	7.8	2.0	0.0034
3	30	71	*****	0.03	4.49	0.38	21	557	7.8	3.0	0.0097
4	3	71	*****	0.03	5.18	0.19	15	574	7.8	1.0	0.0037
4	8	71	*****	0.04	4.09	0.14	7	603	7.7	5.0	0.0039
4	14	71	*****	0.02	3.89	0.31	9	545	7.9	8.0	0.0021
4	22	71	*****	0.01	4.63	0.40	10	631	7.9	7.0	0.0024
4	27	71	*****	0.01	5.34	0.29	2	617	7.8	5.0	0.0040
5	7	71	*****	0.02	2.69	0.10	2	627	8.2	8.0	0.0014
5	18	71	*****	0.01	4.52	0.14	1	642	7.9	11.0	0.0007
5	24	71	*****	0.02	5.29	0.02	6	587	8.1	10.0	0.0007
6	3	71	*****	0.02	1.98	0.10	10	667	8.1	12.0	0.0013
6	7	71	*****	0.11	6.27	0.38	95	615	7.6	12.0	0.0756
6	11	71	*****	0.03	3.46	0.10	12	668	7.8	13.0	0.0035
6	16	71	*****	0.02	5.08	0.05	10	663	8.1	14.5	0.0020
6	23	71	*****	0.01	3.99	0.00	15	682	7.9	14.0	0.0017
6	29	71	*****	0.02	6.98	0.00	8	456	8.2	17.5	0.0018
7	9	71	*****	0.02	6.49	0.00	15	711	8.0	16.0	0.0016
7	15	71	*****	0.01	8.99	0.03	8	752	7.9	14.5	0.0023
7	21	71	*****	0.02	5.49	0.00	2	746	7.9	16.0	0.0012
7	30	71	*****	0.01	6.89	0.02	18	812	7.9	11.0	0.0002
8	4	71	*****	0.02	16.98	0.00	0	911	7.9	13.5	******
8	12	71	*****	0.02	21.98	0.06	2	880	7.9	21.0	******
8	17	71	*****	0.01	3.48	0.00	12	720	8.0	18.0	******
8	24	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	13	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	28	71	0.05	0.01	3.10	0.13	0	767	7.4	6.0	0.0007
11	3	71	0.07	0.02	5.05	0.22	44	769	7.6	3.0	0.0006
11	18	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	24	71	0.13	0.03	7.30	0.27	11	770	7.5	1.0	0.0003

STATION 44.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
12	14	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	15	72	0.25	0.09	0.20	0.40	21	129	7.7	0.0	0.0004
3	27	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	18	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
5	1	72	0.08	0.03	3.90	0.44	25	573	7.5	8.0	0.0083
5	12	72	0.04	0.01	4.60	0.01	0	627	7.7	11.0	0.0038
5	24	72	0.02	0.01	4.80	0.02	5	618	7.8	13.0	0.0021
6	9	72	0.10	0.09	11.00	0.83	89	724	8.3	14.0	0.0033
6	20	72	0.05	0.02	9.30	0.50	0	740	8.1	12.0	0.0025
7	5	72	0.04	0.02	10.50	0.09	0	722	8.1	12.0	0.0008
7	27	72	0.03	0.02	9.80	0.02	0	772	8.0	15.5	0.0021
8	18	72	0.00	0.02	11.00	0.30	5	791	7.9	19.5	0.0011
8	30	72	0.04	0.04	13.50	0.11	3	783	8.1	17.5	0.0002
9	13	72	0.03	0.02	10.50	0.32	4	806	7.7	17.0	0.0015
9	29	72	0.04	0.03	9.00	0.34	5	756	7.7	9.0	0.0025
10	11	72	1.09	1.04	5.10	2.61	29	885	7.8	12.5	0.0012
11	10	72	0.03	0.02	9.90	0.14	1	787	7.5	6.0	0.0050
12	8	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	27	72	0.03	0.03	*****	0.25	4	757	7.5	1.0	0.0007
1	11	73	0.03	0.03	*****	0.23	4	860	6.5	0.0	0.0001
1	18	73	0.30	0.20	*****	0.98	28	270	7.1	0.0	0.0180
1	25	73	0.03	0.02	9.50	0.09	4	758	7.5	1.0	0.0015
2	7	73	0.04	0.03	7.50	0.14	3	743	7.5	0.0	0.0011
2	21	73	0.03	0.03	10.50	0.08	0	720	7.6	0.0	0.0001
2	28	73	0.04	0.03	9.50	0.43	12	715	7.5	0.0	0.0020
3	8	73	0.04	0.04	10.50	0.14	1	665	7.6	4.0	0.0036
3	14	73	0.07	0.05	9.70	0.13	7	584	7.6	5.0	0.0090
3	23	73	0.02	0.02	8.40	0.12	2	699	7.7	5.0	0.0035

STATION 44.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NC3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	2	73	0.02	0.02	11.00	0.03	1	710	7.9	4.0	0.0045
4	16	73	0.03	0.01	14.50	0.07	5	715	7.7	5.5	0.0072
4	25	73	0.02	0.02	13.50	0.15	2	699	7.7	9.0	0.0033
5	2	73	0.00	0.00	10.50	0.11	2	659	7.8	5.0	0.0057
5	19	73	0.02	0.01	9.70	0.13	0	732	7.7	11.0	0.0028
5	26	73	25.66	0.04	15.00	0.20	7625	741	7.5	9.0	0.0209
6	4	73	0.06	0.01	13.50	0.15	21	787	8.1	12.0	0.0043
6	13	73	0.05	0.02	12.00	0.35	12	799	8.2	13.0	0.0009
6	22	73	0.09	0.02	13.00	0.02	50	803	8.0	13.0	0.0031
7	3	73	0.12	0.04	3.55	0.05	64	794	8.0	17.0	0.0021
7	31	73	0.03	0.01	17.00	0.19	3	804	8.4	15.0	0.0002
8	9	73	0.03	0.03	19.00	0.12	4	823	8.4	17.0	0.0004

STATION 46.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.07	7.80	0.19	2	762	7.3	2.0	0.0006
3	16	71	*****	0.16	2.65	0.40	15	392	7.5	1.0	0.0294
3	30	71	*****	0.14	2.54	0.45	30	441	7.5	2.0	0.0660
4	3	71	*****	0.14	2.74	0.21	11	490	7.7	1.0	0.0285
4	8	71	*****	0.11	5.64	0.20	8	646	7.8	4.0	0.0172
4	14	71	*****	0.08	7.59	0.26	11	615	7.9	7.0	0.0075
4	22	71	*****	0.06	9.04	0.27	5	692	7.8	6.0	0.0066
4	27	71	*****	0.07	7.59	0.27	8	686	7.9	6.0	0.0064
5	7	71	*****	0.06	10.68	0.15	2	711	8.2	7.0	0.0051
5	18	71	*****	0.06	7.70	0.20	1	713	8.2	10.0	0.0037
5	24	71	*****	0.09	8.66	0.09	4	708	8.0	10.0	0.0043

STATION 46.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
6	3	71	*****	0.08	8.21	0.10	10	722	8.1	12.0	0.0077
6	11	71	*****	0.08	7.89	0.13	10	718	7.7	12.0	0.0180
6	16	71	*****	0.07	13.24	0.15	10	721	8.1	15.0	0.0066
6	23	71	*****	0.06	8.49	0.00	9	731	8.2	16.0	0.0082
6	29	71	*****	0.07	15.48	0.00	5	755	7.9	18.0	0.0030
7	9	71	*****	0.07	12.29	0.00	10	739	7.9	16.0	0.0044
7	15	71	*****	0.06	10.37	0.06	2	758	8.3	16.5	0.0050
7	21	71	*****	0.06	13.48	0.18	0	800	8.0	17.5	0.0012
7	30	71	*****	0.02	0.00	1.08	25	980	7.5	11.5	0.0002
8	4	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	28	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	30	71	0.33	0.15	0.50	1.02	135	415	7.1	8.0	0.0020
11	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	18	71	0.11	0.06	8.60	0.24	0	788	7.4	5.0	0.0022
11	24	71	0.04	0.03	4.20	0.73	18	1038	7.3	2.0	0.0004
1	21	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	3	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	9	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	15	72	0.37	0.19	4.30	0.28	1	426	7.1	2.0	0.0097
3	28	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
4	10	72	0.09	0.05	2.20	0.02	0	811	7.6	8.0	0.0005
4	18	72	0.10	0.05	0.78	0.35	5	840	7.7	5.0	0.0005
5	1	72	0.18	0.09	5.10	0.32	33	627	7.3	8.0	0.0308
5	12	72	0.09	0.06	10.00	0.01	0	686	7.6	9.0	0.0096
5	24	72	0.08	0.06	10.10	0.00	0	659	7.7	11.0	0.0087
6	9	72	0.09	0.07	14.80	0.09	8	747	8.1	14.0	0.0108
6	20	72	0.13	0.08	14.90	0.15	52	719	8.0	12.0	0.0043
7	6	72	0.17	0.01	3.50	0.33	0	408	8.4	19.0	0.0042
7	27	72	0.09	0.07	13.00	0.00	0	786	8.0	16.0	0.0116
8	18	72	0.05	0.05	8.80	0.23	5	887	8.1	21.0	0.0003

STATION 46.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	30	72	0.04	0.04	2.90	0.28	4	1029	7.8	18.0	0.0003
9	13	72	0.17	0.04	4.70	0.55	5	991	8.0	17.5	0.0019
9	29	72	0.08	0.09	9.00	0.40	2	863	7.8	9.0	0.0012
10	11	72	0.13	0.11	8.60	0.20	2	843	7.8	12.5	0.0028
11	10	72	0.09	0.08	14.80	0.08	3	839	7.7	8.0	0.0070
12	8	72	0.08	0.07	20.50	0.09	3	856	7.5	5.0	0.0030
12	27	72	0.07	0.05	*****	0.08	4	826	7.6	0.0	0.0016
1	11	73	0.07	0.07	*****	0.39	4	850	7.4	0.0	0.0006
1	18	73	1.34	1.03	*****	1.67	27	366	6.9	1.0	0.0372
1	25	73	0.18	0.15	11.00	0.11	6	758	7.8	2.0	0.0050
2	7	73	0.18	0.13	7.80	0.10	4	706	7.7	0.0	0.0056
2	21	73	0.17	0.11	8.00	0.43	7	597	7.4	0.0	0.0020
2	28	73	0.27	0.26	9.70	0.56	7	583	7.7	1.5	0.0055
3	9	73	0.22	0.14	7.10	0.29	6	454	7.2	2.0	0.0250
3	14	73	0.23	0.17	9.30	0.24	12	606	7.3	5.0	0.0500
3	23	73	0.11	0.09	8.60	0.11	1	706	7.8	4.0	0.0089
4	2	73	0.08	0.08	14.50	0.02	1	727	7.8	4.0	0.0236
4	16	73	0.07	0.07	14.00	0.10	3	761	7.6	5.0	0.0625
4	25	73	0.07	0.07	9.20	0.14	1	742	7.9	8.0	0.0250
5	2	73	0.07	0.07	9.40	0.16	0	761	7.6	5.5	0.0286
5	19	73	0.07	0.07	9.90	0.11	3	735	7.9	10.0	0.0100
5	26	73	0.08	0.07	14.50	0.15	2	785	7.7	9.0	0.0136
6	4	73	0.08	0.07	13.50	0.01	2	802	7.9	9.0	0.0177
6	13	73	0.08	0.06	16.50	0.18	6	813	7.8	13.0	0.0090
6	22	73	0.08	0.07	16.00	0.02	2	783	7.9	13.0	0.0155
7	11	73	0.08	0.08	19.00	0.24	0	824	8.3	17.0	0.0029
7	19	73	0.08	0.08	17.00	0.03	0	835	8.4	18.0	0.0008
7	31	73	0.10	0.08	11.00	0.19	4	903	8.4	14.0	0.0007
8	9	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 46.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	8	72	0.09	0.03	0.20	0.19	3	474	7.9	1.0	0.0003
4	10	72	0.13	0.01	0.02	0.00	19	487	7.8	8.0	0.0003
4	18	72	0.07	0.01	0.00	0.10	2	516	7.6	8.0	0.0003
5	1	72	0.13	0.01	0.00	0.23	20	509	8.0	9.0	0.0185
5	12	72	0.07	0.03	2.10	0.20	11	508	8.0	16.0	0.0052
6	9	72	0.05	0.01	9.00	0.32	15	521	8.3	24.0	0.0125
6	20	72	0.04	0.00	5.80	0.26	2	494	8.0	18.0	0.0038
7	27	72	0.05	0.00	7.70	0.03	8	552	8.1	22.0	0.0193
8	18	72	0.03	0.02	4.10	0.46	21	503	8.1	26.0	0.0037
8	30	72	0.05	0.01	1.30	0.26	5	526	7.9	22.0	0.0007
9	13	72	0.04	0.01	0.07	0.61	43	465	8.0	20.0	0.0005
9	29	72	0.08	0.01	0.04	0.31	22	509	8.2	12.0	0.0007
10	11	72	0.09	0.00	0.42	0.38	19	517	8.1	13.0	0.0003
11	10	72	0.05	0.04	6.60	0.32	14	677	8.2	5.5	0.0097
4	2	73	0.05	0.01	12.50	0.13	12	640	8.5	4.0	0.0087
4	25	73	0.03	0.01	10.50	0.27	15	528	8.8	13.0	0.0056
5	2	73	0.06	0.01	8.70	0.17	24	598	8.6	7.0	0.0112
5	19	73	0.07	0.01	9.95	0.23	6	509	8.6	16.0	0.0026
5	26	73	0.07	0.00	11.50	0.38	21	530	8.7	14.0	0.0022
6	4	73	0.04	0.01	7.10	0.18	12	552	8.8	12.0	0.0085
6	13	73	0.04	0.00	13.00	0.26	9	517	8.8	21.0	0.0063
6	22	73	0.13	0.01	14.00	0.11	34	545	8.4	17.0	0.0106
7	11	73	0.05	0.02	5.00	0.32	3	478	8.5	25.0	0.0016
7	19	73	0.05	0.04	6.40	0.24	4	437	8.8	24.0	0.0002
7	31	73	0.06	0.03	3.00	0.36	1	473	8.4	19.0	0.0001
8	9	73	0.06	0.04	0.45	0.28	9	493	8.3	20.0	0.0002

STATION 47.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.11	3.09	0.18	1	672	7.5	3.0	0.0046
3	16	71	*****	0.11	2.69	0.34	10	560	7.4	3.0	0.0188
3	29	71	*****	0.10	3.88	0.64	730	329	7.2	4.0	0.0521
4	2	71	*****	0.10	4.21	0.30	13	603	7.4	3.0	0.0162
4	7	71	*****	0.00	8.00	0.11	3	646	7.2	3.0	0.0067
4	13	71	*****	0.10	9.00	0.27	6	651	7.3	5.0	0.0093
4	19	71	*****	0.11	5.90	0.14	0	665	7.6	5.0	0.0120
4	30	71	*****	0.10	5.35	0.08	3	668	7.4	6.0	0.0092
5	7	71	*****	0.10	6.40	0.12	0	679	7.3	6.0	0.0067
5	18	71	*****	0.09	6.20	0.03	0	681	7.6	7.0	0.0052
5	24	71	*****	0.10	6.85	0.08	0	677	7.6	8.0	0.0063
6	3	71	*****	0.09	6.39	0.03	4	706	7.5	9.0	0.0075
6	7	71	*****	0.11	8.10	0.40	75	592	7.2	10.5	0.0624
6	11	71	*****	0.14	6.95	0.08	4	679	7.4	10.0	0.0200
6	17	71	*****	0.08	7.90	0.00	8	720	7.5	11.0	0.0070
6	23	71	*****	0.07	5.50	0.00	9	718	7.4	12.0	0.0072
6	29	71	*****	0.08	11.00	0.00	2	456	7.4	13.0	0.0078
7	15	71	*****	0.08	7.46	0.02	2	726	7.1	14.0	0.0078
7	21	71	*****	0.08	10.00	0.00	0	771	7.1	14.0	0.0068
7	30	71	*****	0.10	8.90	0.02	4	765	7.9	14.0	0.0030
8	4	71	*****	0.09	11.00	0.05	0	780	7.2	14.0	0.0012
8	11	71	*****	0.08	9.00	0.08	1	783	7.5	16.0	0.0004
8	17	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	3	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	18	71	0.21	0.14	5.90	0.13	0	636	7.5	9.0	0.0003
11	24	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
12	14	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1	21	72	*****	0.07	8.00	0.02	3	664	8.0	2.0	0.0003
3	3	72	0.13	0.07	5.20	0.00	0	646	7.7	2.0	0.0006
3	9	72	0.46	0.13	5.40	0.01	0	596	7.6	2.0	0.0014

STATION 47.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	15	72	0.25	0.13	5.80	0.02	4	540	7.3	3.0	0.0031
3	27	72	0.20	0.13	4.90	0.16	0	631	7.6	3.0	0.0033
4	8	72	0.14	0.11	4.80	0.00	1	633	7.6	2.0	0.0030
4	18	72	0.21	0.12	6.00	0.00	0	623	7.9	3.0	0.0026
5	1	72	0.17	0.10	7.60	0.10	10	650	7.4	6.0	0.0085
5	12	72	0.09	0.07	6.20	0.00	0	656	7.4	7.0	0.0169
5	24	72	0.08	0.07	6.80	0.03	0	610	7.3	9.0	0.0225
6	9	72	0.12	0.06	12.00	0.00	9	694	7.2	10.0	0.0158
6	20	72	0.10	0.06	8.90	0.05	0	528	7.1	14.0	0.0071
7	6	72	0.11	0.08	9.40	0.02	0	678	7.1	14.0	0.0037
7	27	72	0.09	0.07	8.00	0.00	0	725	6.8	15.5	0.0208
8	22	72	0.12	0.07	8.80	0.19	5	770	7.6	15.5	0.0008
8	30	72	0.11	0.06	10.50	0.07	1	759	7.3	16.0	0.0008
9	13	72	0.09	0.07	8.90	0.19	0	457	7.2	15.0	0.0010
9	29	72	0.12	0.12	12.50	0.23	1	756	7.7	14.0	0.0042
10	6	72	0.12	0.10	1.62	0.13	3	711	7.5	14.0	0.0068
11	6	72	0.15	0.12	10.15	0.18	1	762	7.4	10.5	0.0057
11	21	72	0.14	0.12	9.80	0.07	8	791	7.4	8.5	0.0052
12	16	72	0.16	0.13	16.50	0.04	3	748	8.1	5.0	0.0009
12	27	72	0.16	0.14	*****	0.35	150	723	7.6	5.0	0.0017
1	11	73	0.16	0.15	*****	0.17	4	688	8.0	3.0	0.0019
1	18	73	0.46	0.32	*****	1.28	32	292	7.2	2.0	0.0514
1	25	73	0.16	0.15	7.70	0.09	7	662	7.3	4.5	0.0054
2	7	73	0.20	0.15	7.30	0.00	2	689	7.6	3.5	0.0027
2	21	73	0.18	0.15	8.20	0.03	2	641	7.9	2.5	0.0024
2	28	73	0.18	0.16	10.50	0.10	2	605	7.4	3.0	0.0024
3	9	73	0.14	0.11	9.10	0.04	3	619	7.2	3.0	0.0077
3	14	73	0.16	0.12	12.10	0.12	3	623	7.2	3.0	0.0330
3	23	73	0.11	0.11	9.10	0.05	1	693	7.4	4.0	0.0059
4	4	73	0.11	0.10	9.70	0.04	0	695	7.3	4.0	0.0115

STATION 47.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	16	73	0.11	0.10	13.00	0.09	2	713	7.2	4.5	0.0209
4	25	73	0.07	0.07	11.00	0.07	1	701	7.3	6.0	0.0100
5	3	73	0.09	0.09	9.60	0.09	1	726	7.3	7.0	0.0334
5	19	73	0.09	0.08	9.60	0.11	1	701	7.4	7.5	0.0118
5	26	73	0.09	0.09	9.10	0.13	3	741	7.3	8.0	0.0147
6	5	73	0.07	0.07	2.85	0.13	1	739	7.2	9.0	0.0236
6	15	73	0.09	0.08	12.50	0.08	2	743	7.1	11.0	0.0170
6	20	73	0.10	0.09	13.50	0.05	0	735	7.1	15.0	0.0169
7	3	73	0.11	0.11	7.10	0.08	3	730	7.2	15.0	0.0145
7	6	73	0.10	0.10	8.50	0.01	1	755	7.0	16.0	0.0125
7	10	73	0.08	0.08	12.00	0.00	0	776	7.0	14.0	0.0110
7	13	73	0.10	0.10	9.00	0.00	0	785	7.0	14.0	0.0076
7	18	73	0.10	0.10	13.00	0.02	0	761	7.2	16.0	0.0088
7	23	73	0.08	0.08	7.60	0.01	2	746	7.1	17.0	0.0069
7	30	73	0.08	0.08	9.00	0.05	5	743	7.3	14.0	0.0028
8	6	73	0.07	0.07	8.20	0.08	2	773	7.3	14.0	0.0013
8	13	73	0.04	0.04	7.80	0.00	1	765	7.2	14.0	0.0006
8	17	73	0.04	0.04	9.25	0.07	0	769	7.3	14.0	0.0005
8	22	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

STATION 48.0

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	4	71	*****	0.26	1.16	0.75	21	523	7.2	0.0	0.2865
3	16	71	*****	0.22	0.80	0.99	46	238	7.3	0.0	0.1206
3	29	71	*****	0.10	0.73	0.87	74	278	7.5	1.0	1.6000
4	2	71	*****	0.07	1.84	0.54	49	352	7.4	1.0	******

STATION 48.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	7	71	*****	0.00	1.19	0.29	19	404	7.7	8.0	0.6831
4	13	71	*****	0.03	1.31	0.56	22	455	8.0	9.0	0.2983
4	19	71	*****	0.41	1.23	0.58	17	509	8.0	15.0	0.0502
4	30	71	*****	0.04	1.06	0.47	18	527	8.1	11.0	0.2280
5	7	71	*****	0.06	1.51	0.53	11	557	7.8	9.0	0.1508
5	18	71	*****	0.09	3.40	0.64	22	602	7.9	11.0	0.0648
5	24	71	*****	0.09	16.23	0.61	41	584	7.8	11.0	0.0745
6	3	71	*****	0.09	1.98	0.60	43	646	7.8	14.0	0.0720
6	7	71	*****	0.14	4.79	0.52	105	554	7.5	13.0	******
6	11	71	*****	0.08	2.62	0.55	52	599	7.7	17.5	0.3007
6	17	71	*****	0.08	2.29	0.42	32	676	7.9	18.0	0.2052
6	23	71	*****	0.12	2.88	0.72	71	640	7.8	19.0	0.1664
6	29	71	*****	0.13	6.74	0.48	55	706	7.8	20.0	0.0647
7	15	71	*****	0.10	3.67	0.53	28	621	7.9	18.0	0.0793
7	21	71	*****	0.12	5.04	0.96	270	701	7.6	19.5	0.0353
7	30	71	*****	0.09	5.62	0.22	32	737	7.6	11.0	0.0113
8	4	71	*****	0.09	5.33	0.38	22	715	7.8	16.0	0.0083
8	11	71	*****	0.12	3.30	0.83	21	724	8.1	20.0	0.0048
8	24	71	*****	0.18	1.52	1.38	35	723	7.6	18.5	0.0045
8	31	71	*****	0.15	0.95	*****	23	694	7.7	18.0	0.0050
9	8	71	0.20	0.13	0.60	0.43	51	688	7.5	19.0	0.0032
9	17	71	*****	0.11	0.95	0.28	39	669	7.4	8.0	0.0033
9	22	71	0.25	0.15	0.71	0.28	50	686	****	9.0	0.0043
10	13	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
10	28	71	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
11	3	71	0.21	0.13	1.80	0.49	22	609	7.4	3.0	0.0088
11	18	71	0.16	0.09	0.00	0.39	14	598	7.3	4.0	0.0290
11	24	71	0.12	0.07	2.80	0.44	20	734	7.3	1.0	0.0164
12	14	71	0.10	0.07	2.60	0.30	10	726	7.2	1.0	0.0145
1	21	72	*****	0.09	1.30	0.40	10	699	7.2	0.0	0.0139

STATION 48.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
3	3	72	0.30	0.14	1.60	0.87	28	474	7.2	0.0	0.0151
3	9	72	0.97	0.19	1.80	1.25	30	214	7.0	2.0	0.2675
3	15	72	0.39	0.17	1.20	0.60	20	268	7.1	2.0	0.2717
3	27	72	0.09	0.04	0.80	0.37	3	504	7.5	0.0	0.0596
4	8	72	0.07	0.04	0.52	0.14	0	561	7.4	0.0	0.0493
4	18	72	0.12	0.06	0.39	0.45	7	627	7.6	7.0	0.0485
5	12	72	0.07	0.03	1.30	0.20	10	560	7.6	7.0	0.2282
5	24	72	0.11	0.05	1.90	0.47	18	565	7.5	14.0	0.1718
6	9	72	0.12	0.07	4.80	0.74	31	604	8.0	19.0	0.2317
6	20	72	0.14	0.07	4.50	0.68	22	617	7.8	13.0	0.0694
7	6	72	0.20	0.11	4.70	0.78	51	562	7.6	14.0	0.1213
7	27	72	0.16	0.09	2.80	0.55	30	532	7.5	19.5	1.7900
8	22	72	0.18	0.14	1.60	0.85	65	646	7.6	19.0	0.0527
9	1	72	0.20	0.09	1.50	0.45	29	624	7.6	14.0	0.0699
9	13	72	0.16	0.08	1.30	0.52	20	611	7.6	18.0	0.1330
10	6	72	0.24	0.15	0.28	0.73	54	516	7.5	11.0	0.1508
11	6	72	0.16	0.10	2.95	0.49	18	652	7.7	8.0	0.2828
11	21	72	0.06	0.04	2.70	0.26	4	732	7.7	1.0	0.1776
12	16	72	0.13	0.11	6.70	0.57	9	810	8.0	1.0	0.0357
12	27	72	0.10	0.07	*****	0.51	3	749	7.7	2.0	0.0183
1	11	73	0.16	0.14	*****	0.86	6	713	7.7	1.0	0.0189
1	18	73	0.55	0.49	*****	2.30	57	196	7.1	0.0	0.4331
1	25	73	0.34	0.29	2.60	1.28	22	664	7.3	2.0	0.0734
2	7	73	0.18	0.12	2.70	0.65	7	689	7.6	0.5	0.0588
2	21	73	0.30	0.24	2.80	0.87	8	688	7.5	1.0	0.0264
2	28	73	0.25	0.19	2.70	1.57	17	559	7.3	1.0	0.0553
3	9	73	0.18	0.09	1.90	0.67	12	415	7.3	1.0	0.4329
3	14	73	0.19	0.10	2.90	0.66	28	376	7.3	3.5	1.2500
3	23	73	0.07	0.04	1.75	0.36	8	477	7.6	3.0	0.3807
4	4	73	0.03	0.03	2.20	0.29	7	534	7.8	5.0	0.4314

STATION 48.0 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
4	16	73	0.07	0.04	3.70	0.38	13	547	7.6	4.0	0.5656
4	25	73	0.04	0.03	2.70	0.49	6	555	7.8	8.0	0.3836
5	3	73	0.07	0.03	3.90	0.39	7	573	7.7	5.5	0.5988
5	19	73	0.07	0.05	2.90	0.53	8	587	7.9	14.0	0.1961
5	26	73	0.08	0.06	4.30	0.54	6	648	7.7	10.0	0.1677
6	5	73	0.08	0.08	0.55	0.42	16	609	7.7	13.0	0.2422
6	15	73	0.10	0.10	3.50	0.47	18	653	7.7	17.0	0.0863
6	18	73	0.31	0.18	4.70	0.48	171	509	7.4	18.0	0.4760
6	20	73	0.15	0.10	3.80	0.52	11	594	7.7	17.0	0.2578
6	28	73	0.16	0.11	3.65	0.30	18	629	8.0	19.0	0.0970
7	3	73	0.17	0.17	3.25	0.62	27	601	7.7	19.0	0.1929
7	6	73	0.17	0.17	5.40	0.57	18	647	7.7	18.0	0.1009
7	10	73	0.24	0.19	7.30	0.52	45	672	7.8	19.0	0.0722
7	16	73	0.19	0.15	5.25	0.46	23	691	7.8	17.0	0.0233
7	23	73	0.19	0.17	3.60	0.48	35	687	7.7	19.0	0.0330
7	30	73	0.16	0.13	4.70	0.26	36	695	7.7	16.0	0.0265
8	6	73	0.17	0.13	1.85	0.28	20	714	7.5	16.0	0.0211
8	13	73	0.06	0.06	1.85	0.43	32	706	7.6	17.0	0.0084
8	17	73	0.16	0.15	0.55	0.51	22	659	7.5	14.0	0.0084
8	22	73	0.14	0.12	1.57	0.21	23	704	7.6	16.0	0.0133
8	31	73	0.15	0.15	0.60	0.28	15	789	7.5	16.0	0.0179

STATION 48.1

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	31	71	*****	0.09	5.12	*****	28	744	7.9	19.0	0.0020
9	8	71	0.18	0.08	1.00	2.05	159	735	7.2	20.0	0.0030
9	17	71	*****	0.06	1.35	0.38	19	662	7.8	8.0	0.0003
9	22	71	0.14	0.06	3.34	0.52	29	603	****	9.0	0.0009
10	6	71	0.08	0.07	8.20	0.06	35	610	8.0	12.0	0.0001
10	13	71	0.12	0.11	7.00	0.33	107	635	7.9	10.0	0.0003
10	28	71	0.82	0.50	6.20	0.39	8	651	8.2	8.0	0.0002
11	3	71	0.51	0.36	4.00	0.20	15	632	8.1	9.0	0.0003
11	18	71	0.42	0.30	4.50	0.30	28	636	7.2	10.0	0.0015
11	24	71	0.34	0.25	3.30	0.21	1	706	7.4	8.0	0.0008
12	14	71	0.30	0.22	5.00	0.10	0	672	8.2	6.0	0.0006
1	21	72	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
3	3	72	0.46	0.19	3.25	1.31	9	435	7.8	0.0	0.0005
3	9	72	1.73	1.04	3.80	2.05	20	312	7.1	0.0	0.0038
3	15	72	0.86	0.45	2.30	0.77	18	272	7.1	3.0	0.0122
3	27	72	0.25	0.21	4.10	1.20	62	590	7.7	4.0	0.0082
4	8	72	0.37	0.23	4.60	0.00	0	607	7.9	0.0	0.0033
4	18	72	0.88	0.33	4.00	0.42	0	648	7.8	5.0	0.0026
5	12	72	0.23	0.16	4.90	0.05	0	623	7.4	7.0	0.0092
5	24	72	0.25	0.16	5.00	0.07	0	638	7.5	9.0	0.0098
6	9	72	0.23	0.14	8.60	0.00	15	652	8.0	9.0	0.0055
6	20	72	0.21	0.14	8.30	0.19	0	647	7.8	10.0	0.0018
7	6	72	0.20	0.14	8.50	0.08	0	627	7.8	12.0	0.0021
7	27	72	0.27	0.17	8.50	0.00	0	635	7.0	14.0	0.0200
8	22	72	0.16	0.08	8.10	0.17	2	677	7.9	15.0	0.0024
9	1	72	0.29	0.08	8.10	0.02	1	659	7.6	13.0	0.0016
9	13	72	0.16	0.10	9.00	0.13	6	664	7.4	15.0	0.0008
10	6	72	0.43	0.43	1.54	0.26	8	618	7.9	13.0	0.0028
11	6	72	0.30	0.26	5.60	0.10	4	688	7.4	11.0	0.0075
11	21	72	0.25	0.22	5.70	0.00	6	706	7.7	10.0	0.0027

STATION 48.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
12	27	72	0.12	0.09	*****	0.03	1	692	8.5	6.0	0.0123
1	11	73	0.22	0.19	*****	0.18	3	609	8.0	2.0	0.0010
1	18	73	1.31	1.14	*****	4.55	47	258	7.0	10.0	0.1118
1	25	73	1.35	1.30	4.40	1.24	13	620	7.5	5.0	0.0020
2	7	73	0.56	0.35	5.10	0.44	7	593	7.7	4.0	0.0017
2	28	73	1.11	0.91	3.60	1.02	13	532	7.5	4.0	0.0018
3	9	73	0.58	0.37	3.15	0.62	11	415	6.8	3.0	0.0081
3	14	73	0.62	0.39	3.90	0.96	28	353	6.7	4.0	0.0296
3	23	73	0.37	0.31	5.70	0.31	3	595	7.2	4.0	0.0062
4	4	73	0.28	0.25	6.40	0.15	2	606	7.3	4.5	0.0065
4	16	73	0.30	0.23	7.95	0.29	8	578	7.1	5.0	0.0167
4	25	73	0.22	0.21	7.60	0.12	0	639	7.8	5.5	0.0077
5	3	73	0.23	0.19	8.10	0.10	2	624	7.3	6.C	0.0135
5	19	73	0.18	0.18	8.80	0.07	2	652	7.4	8.0	0.0408
5	26	73	0.18	0.17	11.50	0.14	0	700	7.8	7.0	0.0034
6	5	73	0.17	0.15	2.40	0.11	1	674	7.4	7.0	0.0061
6	7	73	0.17	0.15	7.90	0.02	0	693	7.3	8.0	0.0062
6	15	73	0.15	0.14	12.50	0.02	0	695	7.2	9.0	0.0041
6	18	73	0.22	0.13	8.10	0.18	57	610	7.2	15.0	0.0450
6	21	73	0.16	0.14	10.30	0.03	0	738	7.3	10.0	0.0096
6	28	73	0.15	0.13	8.50	0.00	3	691	7.3	10.0	0.0064
7	2	73	0.19	0.15	13.00	0.02	8	679	7.2	11.0	0.0155
7	6	73	0.15	0.15	6.50	0.00	3	689	7.6	12.0	0.0074
7	10	73	0.14	0.14	4.4C	0.00	1	716	7.4	11.0	0.0029
7	16	73	0.11	0.11	10.00	0.00	0	686	7.6	11.0	0.0031
7	23	73	0.11	0.11	8.25	0.00	2	691	7.5	11.0	0.0018
7	30	73	0.10	0.10	14.0C	0.04	3	678	7.5	12.0	0.0021
8	6	73	0.09	0.09	8.00	0.11	2	701	7.8	10.0	0.0017
8	13	73	0.1C	0.09	9.50	0.00	8	688	7.6	13.0	0.0012
8	17	73	0.10	0.10	9.10	0.08	4	691	7.8	12.0	0.0012

STATION 48.1 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
8	22	73	0.08	0.08	9.90	0.00	0	679	7.8	13.0	0.0012
8	31	73	0.06	0.06	7.50	0.00	0	724	7.8	13.0	0.0023

STATION 48.2

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
10	6	71	0.47	0.33	7.50	0.88	63	685	7.3	11.0	0.0005
10	13	71	0.26	0.16	5.40	1.25	32	681	7.6	9.0	0.0004
10	28	71	0.33	0.11	9.90	0.99	18	661	7.6	5.0	0.0005
11	3	71	0.26	0.16	7.95	0.20	1	667	7.9	8.0	0.0030
11	18	71	0.61	0.34	8.30	0.72	20	660	8.1	8.0	0.0055
11	24	71	0.08	0.07	6.80	0.12	1	676	7.8	7.0	0.0040
12	14	71	0.07	0.06	9.00	0.17	8	655	8.0	5.0	0.0037
1	21	72	*****	0.06	9.80	0.04	0	652	8.0	3.0	0.0029
3	3	72	0.31	0.15	4.70	0.40	5	453	7.7	2.0	0.0032
3	9	72	0.35	0.15	2.80	0.98	22	255	7.2	3.0	0.0315
3	15	72	0.53	0.25	2.50	0.70	30	330	7.1	2.0	0.0945
3	27	72	0.13	0.10	5.00	0.76	38	573	7.7	4.0	0.0864
4	8	72	0.35	0.15	5.00	0.00	0	613	7.9	0.0	0.0059
4	18	72	0.30	0.14	4.20	0.20	8	609	8.0	4.0	0.0051
5	12	72	0.12	0.07	5.30	0.00	0	633	7.4	7.0	0.0640
5	24	72	0.09	0.06	5.70	0.04	3	618	7.4	10.0	0.0653
6	9	72	0.14	0.07	12.50	0.20	29	671	7.2	10.0	0.0727
6	20	72	0.15	0.09	11.50	0.18	0	660	8.4	12.0	0.0362
7	6	72	0.11	0.07	13.00	0.03	0	644	7.5	14.0	0.0424
7	27	72	0.09	0.06	7.70	0.00	0	646	7.1	15.5	0.1225
8	22	72	0.15	0.09	6.40	0.13	1	706	8.0	16.0	0.0263

STATION 48.2 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
9	1	72	0.09	0.06	9.80	0.03	0	694	8.1	14.0	0.0152
9	13	72	0.07	0.06	10.50	0.16	1	711	7.5	16.0	0.0044
10	6	72	0.48	0.41	0.85	0.41	11	723	8.0	14.0	0.0189
11	6	72	0.13	0.09	9.20	0.12	2	724	7.5	11.0	0.0847
11	21	72	0.10	0.09	12.50	0.09	3	756	8.0	6.5	0.0396
12	27	72	0.32	0.25	*****	0.04	5	643	8.2	7.0	0.0022
1	11	73	0.13	0.12	*****	0.09	4	688	8.3	4.0	0.0099
1	18	73	0.52	0.43	*****	2.20	46	165	6.9	10.0	0.1571
1	25	73	0.24	0.19	5.70	0.32	12	644	7.8	5.0	0.0270
2	7	73	0.17	0.11	6.50	0.12	3	600	7.8	2.5	0.0172
2	28	73	0.26	0.18	5.60	0.39	4	539	7.5	3.0	0.0180
3	9	73	0.27	0.15	4.30	0.42	7	399	7.0	2.5	0.1368
3	14	73	0.30	0.18	8.10	0.57	34	442	7.0	4.0	0.2318
3	23	73	0.11	0.09	8.80	0.13	2	610	7.4	4.0	0.0650
4	4	73	0.08	0.07	9.90	0.08	0	652	7.5	5.0	0.0628
4	16	73	0.14	0.10	12.50	0.18	7	658	7.1	5.0	0.1562
4	25	73	0.09	0.08	12.00	0.19	6	667	7.6	9.0	0.0525
5	3	73	0.07	0.07	12.50	0.11	0	673	7.2	6.0	0.1193
5	19	73	0.09	0.07	10.50	0.11	1	677	7.6	9.0	0.0657
5	26	73	0.09	0.08	8.90	0.16	3	718	7.5	8.0	0.0833
6	5	73	0.07	0.06	2.80	0.09	0	694	7.4	8.0	0.0956
6	7	73	0.07	0.07	9.20	0.01	0	709	7.3	9.0	0.1255
6	15	73	0.07	0.07	13.00	0.02	2	709	7.3	11.0	0.0837
6	18	73	0.33	0.25	12.00	0.46	51	604	7.1	13.0	0.2610
6	21	73	0.08	0.07	10.50	0.04	2	759	7.3	12.0	0.1554
6	28	73	0.07	0.07	11.00	0.00	2	698	7.6	13.0	0.0556
7	2	73	0.13	0.09	14.00	0.12	12	684	7.2	13.0	0.1961
7	6	73	0.08	0.08	11.50	0.01	0	716	7.2	15.0	0.0441
7	10	73	0.08	0.08	13.00	0.00	0	733	7.3	13.0	0.0454
7	16	73	0.10	0.10	8.50	0.00	0	717	7.5	13.0	0.0212

STATION 48.2 CONTINUED

DATE MO DAY YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
7 23 73	0.09	0.09	6.60	0.01	0	716	7.4	15.0	0.0163
7 30 73	0.10	0.10	13.50	0.08	2	714	7.8	15.0	0.0086
8 6 73	0.15	0.15	8.00	0.09	0	776	7.6	14.0	0.0090
8 13 73	0.15	0.15	8.00	0.00	5	762	7.5	15.0	0.0059
8 17 73	0.22	0.22	13.00	0.13	7	757	7.7	16.0	0.0071
8 22 73	0.28	0.28	13.00	0.01	2	740	8.3	16.0	0.0011
8 31 73	0.19	0.17	8.00	0.17	14	828	7.7	17.0	0.0011

STATION 48.3

DATE MO DAY YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
5 24 72	0.06	0.04	0.09	0.68	3	534	7.3	18.0	0.0956
6 9 72	0.16	0.08	0.20	1.08	22	540	7.2	23.0	0.1186
6 20 72	0.16	0.09	0.39	0.93	15	571	7.4	17.0	0.0500
7 6 72	0.12	0.06	0.49	0.72	8	532	7.4	16.0	0.0269
7 27 72	0.10	0.09	0.18	0.85	16	476	7.0	21.0	1.6022
8 22 72	0.19	0.17	0.16	0.68	18	600	7.0	21.0	0.0500
9 1 72	0.19	0.12	0.18	0.66	9	563	7.1	16.0	0.0263
9 13 72	0.23	0.13	0.14	0.55	11	535	7.1	19.0	0.0492
10 6 72	0.18	0.11	0.05	0.72	38	501	7.1	11.0	0.0329
11 6 72	0.13	0.08	1.20	0.52	11	635	7.2	7.5	0.1782
11 21 72	0.05	0.03	0.69	0.39	6	737	7.1	0.0	0.0932
12 27 72	0.32	0.23	*****	2.60	13	290	7.0	1.0	******
1 18 73	0.72	0.42	*****	2.10	37	259	7.0	0.0	0.1375
1 11 73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000
1 25 73	0.52	0.38	1.80	2.10	26	738	6.8	0.0	0.0471
2 7 73	0.26	0.15	0.30	1.21	12	755	7.0	0.0	0.0542

STATION 48.3 CONTINUED

DATE MO	DAY	YR	TOTAL P MG/L	PO4-P MG/L	NO3-N MG/L	NH3-N MG/L	TURB JTU	SP COND	PH	TEMP C	FLOW CUBIC M /SEC
2	28	73	0.39	0.26	0.10	2.70	24	534	6.6	0.0	0.0194
3	9	73	0.17	0.07	0.45	0.76	10	412	7.2	0.0	0.2800
3	14	73	0.14	0.06	0.75	0.65	16	338	7.3	3.0	1.0300
3	23	73	0.06	0.01	0.27	0.44	8	441	7.5	4.0	0.3017
4	4	73	0.02	0.01	0.26	0.38	4	501	7.9	6.0	0.3577
4	16	73	0.03	0.01	0.33	0.42	10	510	7.6	4.5	0.5448
4	25	73	0.03	0.01	0.10	0.59	4	519	7.5	10.0	0.3233
5	3	73	0.04	0.01	0.29	0.56	9	532	7.6	7.0	0.4509
5	19	73	0.06	0.03	0.22	0.77	11	547	7.4	16.0	0.1225
5	26	73	0.12	0.07	0.31	0.89	12	598	7.2	11.0	0.1342
6	5	73	0.08	0.06	0.20	0.70	9	565	7.3	16.0	0.0996
6	15	73	0.37	0.25	0.34	0.63	12	596	7.3	21.0	0.0761
6	18	73	0.30	0.20	0.60	0.69	21	528	7.3	20.0	0.1953
6	21	73	0.08	0.04	0.24	0.42	11	606	7.5	21.0	0.0923
6	28	73	0.10	0.06	0.33	0.69	11	578	7.5	22.0	0.0631
7	4	73	0.29	0.29	0.25	1.02	31	555	7.1	21.0	0.1544
7	16	73	0.40	0.35	1.80	1.88	25	634	7.4	19.0	0.0230
7	23	73	0.56	0.56	1.45	3.50	25	682	7.5	20.0	0.0103
8	6	73	0.32	0.20	5.90	4.15	67	719	7.6	18.0	0.0005
8	13	73	*****	0.00	0.00	0.00	0	0	0.0	0.0	0.0000

Appendix C

Total area, land use, soil type and soil slope in hectares as well as number of animal units in metered watersheds around Lake West Okoboji, Lake East Okoboji, Spirit Lake, and Lower Gar Lake.

West Okoboji Metered Watersheds

Station #	17	18	19	20	21.1	22	22.2	23
Total Area	60.6	1175.3	276.6	250.2	109.7	732.3	30.3	124.5
Animal Units	36	595	25.2	10	32.8	268	0	21
Land Use Corn	18.4	471.3	118.6	118.6	63.4	273.4	16.2	59.9
Beans	11.3	247.7	70.9	70.9	20.6	168.6	16.9	18.2
Oats	0	34.0	2.8	2.8	3.6	5.1	0	0
Set Aside	0	109.6	13.5	13.5	3.9	84.7	2.0	7.4
Conserving Base	1.8	33.5	16.8	16.2	10.1	22.2	0	0
Pastured Grassland	18.6	168.3	11.2	2.6	7.4	90.2	0	17.5
Non Pastured Grassland	4.1	24.0	0	0	0	54.5	0	9.6
Urban	0	5.9	27.1	11.5	0	0	4.5	0
Woodland	0	0	0	0	0	0	0	0
Marsh	3.0	34.3	1.1	0	0	1.3	0	0
Permanent Water	0	0	0	0	0	2.6	0	0
Soil Type Clarion-Storden-Glencoe	0	1082.8	276.2	250.2	109.7	732.3	30.3	124.5
Clarion-Nicollet-Webster	60.6	92.4	0	0	0	0	0	0
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0
Soil Slope 0%	3.0	34.3	1.1	0	0	3.9	0	0
0+ - 5%	0	36.4	138.2	138.2	69.9	91.2	1.7	71.7
Trapped 0+ - 5%	0	37.5	0	0	0	0	0	0
5 + %	54.5	1067.1	137.2	112.0	39.8	637.2	28.6	52.8
Trapped 5 + %	3.0	0	0	0	0	0	0	0

West Okoboji Metered Watersheds (cont.)

Station #	23.1	23.2	24	24.1	28	28.1	29	29.1	29.2
Total Area	22.7	128.0	202.4	36.4	12.1	91.0	1340.6	1304.5	806.6
Animal Units	1.4	77.7	179.9	0	50	0	386.5	358.5	268.1
Land Use Corn	12.9	42.5	62.5	5.3	5.5	18.2	457.2	441.0	272.3
Beans	6.7	15.2	25.1	5.3	1.2	12.6	192.3	192.3	148.7
Oats	0	6.9	0	0	0	0	22.9	22.9	13.7
Set Aside	0.7	18.9	11.6	3.1	0.8	3.2	82.6	79.5	54.3
Conserving Base	0.8	2.4	53.5	12.5	0	4.0	91.8	73.2	44.5
Pastured Grassland	1.1	35.9	40.4	0	0	0	101.4	101.4	81.8
Non Pastured Grassland	0	0	2.3	2.7	0	26.7	77.4	77.4	69.9
Urban	0	0	0	3.8	4.5	22.4	60.0	60.0	0
Woodland	0	0	0	0	0	0	0	0	0
Marsh	0	2.1	4.1	3.5	0	3.8	14.6	13.6	13.3
Permanent Water	0	2.4	0	0	0	0	202.5	202.5	88.2
Soil Type Clarion-Storden-Glencoe	22.7	128.0	26.3	36.4	0	0	133.3	133.3	133.3
Clarion-Nicollet-Webster	0	0	0	0	12.1	91.0	1207.3	1171.2	673.3
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	176.1	0	0	0	0	0	0
Soil Slope 0%	0	4.5	4.1	3.5	0	3.8	217.1	216.1	89.1
0+ - 5%	0	0	137.7	0	0	9.7	154.6	154.6	69.5
Trapped 0+ - 5%	0	0	0	0	0	0	9.0	9.0	9.0
5 + %	14.7	2.8	0	1.9	8.1	15.2	596.9	562.5	353.4
Trapped 5 + %	8.0	120.7	60.5	31.1	4.0	62.4	362.9	362.2	285.7

West Okoboji Metered Watersheds (cont.)

Station #	29.3	29.4	30	31	32
Total Area	398.9	708.9	5.7	24.9	48.0
Animal Units	74.4	184.3	0	0	4.2
Land Use Corn	131.3	209.9	0	5.2	1.6
Beans	41.7	148.7	0	2.8	0.8
Oats	0.5	13.7	0	3.6	0
Set Aside	12.9	52.5	0	6.9	1.2
Conserving Base	6.5	43.7	0	0.4	2.0
Pastured Grassland	6.6	63.7	3.9	3.9	5.8
Non Pastured Grassland	7.5	69.9	0	0	23.7
Urban	60.0	0	1.7	1.7	5.4
Woodland	0	0	0	0	0
Marsh	0.4	6.9	0	0	0
Permanent Water	114.3	82.1	0	0	6.2
Soil Type Clarion-Storden-Glencoe	0	133.3	0	0	0
Clarion-Nicollet-Webster	398.9	575.6	5.7	24.9	48.0
Webster-Clarion-Nicollet	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0
Soil Slope 0%	114.7	89.0	0	0	6.2
0+ - 5%	85.1	69.5	0	0	0
Trapped 0+ - 5%	0	9.0	0	0	0
5 + %	122.5	283.7	5.6	24.9	29.5
Trapped 5 + %	76.5	257.7	0	0	12.3

East Okoboji Metered Watersheds

Station #	13	13.2	14	15	16	33	34	35	36	37
Total Area	66.1	75.4	32.7	33.9	16.7	144.9	167.6	17.0	5.3	5.0
Animal Units	13	21.7	0	0	0	7.1	5	3.2	5.5	5.9
Land Use Corn	22.1	14.4	21.4	29.5	15.7	59.5	87.4	2.4	0	0
Beans	25.0	32.4	6.9	0	0	9.7	46.9	1.6	0.8	0
Oats	4.8	3.6	1.2	0	0	0	0	0	0	0
Set Aside	6.1	4.8	0	3.4	0	10.6	18.2	0	0	0
Conserving Base	0	4.4	0	0	0	14.0	4.0	9.9	0	0
Pastured Grassland	0	0	0	0	0	1.6	4.1	2.6	4.5	4.8
Non Pastured Grassland	0	0	0	0	0	0	0	0	0	0
Urban	0	14.3	0	0	0	42.4	0	0	0	0.2
Woodland	0	0	0	0	0	0	0	0	0	0
Marsh	0	0	0	0	0	0	0	0	0	0
Permanent Water	0	0	0	0	0	0	0	0	0	0
Soil Type Clarion-Storden-Glencoe	0	0	0	0	0	0	0	0	0	0
Clarion-Nicollet-Webster	66.1	75.4	32.7	33.9	16.7	144.9	167.6	17.0	5.3	5.0
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0	0	0
Soil Slope 0%	0	0	0	0	0	0	0	0	0	0
0+ - 5%	34.6	63.2	23.0	33.9	15.4	113.4	132.9	10.3	4.6	2.3
Trapped 0+ - 5%	0	0	0	0	0	0	0	0	0	0
5 + %	31.5	12.3	9.7	0	1.3	31.5	34.7	6.7	0.7	2.7
Trapped 5 + %	0	0	0	0	0	0	0	0	0	0

East Okoboji Metered Watersheds (cont.)

Station #	38	39	40	40.1	41	41.1	41.2	42	43
Total Area	702.0	13.2	1164.3	118.0	742.3	766.1	577.5	19.1	5.2
Animal Units	273.1	49	778.9	735.6	735.6	780.1	732.4	50	10.8
Land Use Corn	337.5	5.7	543.1	37.3	430.7	430.7	343.6	12.5	2.8
Beans	70.1	0	238.6	23.7	159.3	159.3	141.4	0	0
Oats	5.1	0	31.4	0	13.3	13.3	0	0.2	0
Set Aside	90.2	2.4	106.6	10.5	67.5	69.5	48.5	0.1	2.4
Conserving Base	19.6	0.4	39.8	0	14.2	16.5	2.4	5.1	0
Pastured Grassland	46.6	3.9	107.2	32.9	13.0	13.0	0	0	0
Non Pastured Grassland	7.2	0	0	0	0	0	0	0	0
Urban	90.9	0	0	0	0	0	0	0	0
Woodland	0	0	0	0	1.4	19.3	0	1.1	0
Marsh	0	0	3.9	0	0	0	0	0	0
Permanent Water	0	0	0	0	0.1	0.1	0	0	0
Soil Type Clarion-Storden-Glencoe	0	13.2	487.8	67.8	110.6	134.7	28.3	9.8	5.1
Clarion-Nicollet-Webster	702.0	0	676.6	50.2	631.7	631.7	549.2	9.2	0.1
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0	0
Soil Slope 0%	0	0	3.9	0	0.1	0.1	0	0	0
0+ - 5%	420.0	1.1	714.6	60.6	567.1	574.5	459.8	19.1	5.2
Trapped 0+ - 5%	0	0	41.6	5.9	42.5	42.5	36.6	0	0
5 + %	243.9	12.1	398.7	46.0	109.7	126.1	63.7	0	0
Trapped 5 + %	38.1	0	5.5	5.5	22.9	22.9	17.4	0	0

East Okoboji Metered Watersheds (cont.)

Station #	44	45	46
Total Area	36.8	17.5	59.3
Animal Units	0	0	0
Land Use Corn	14.6	6.9	28.5
Beans	11.3	9.3	14.0
Oats	0	0	0
Set Aside	5.7	1.2	0
Conserving Base	4.8	0	13.7
Pastured Grassland	0	0	0
Non Pastured Grassland	0	0	0
Urban	0	0	0
Woodland	0	0	0
Marsh	0	0	0
Permanent Water	0	0	0
Soil Type Clarion-Storden-Glencoe	12.0	6.9	31.1
Clarion-Nicollet-Webster	24.7	10.5	28.2
Webster-Clarion-Nicollet	0	0	0
Wadena-Esterville	0	0	0
Soil Slope 0%	0	0	0
0+ - 5%	4.8	9.4	8.2
Trapped 0+ - 5%	12.4	5.3	1.1
5 + %	0	0	12.6
Trapped 5 + %	9.5	2.7	37.4

Lower Gar Metered Watersheds

Station #	47	48	48.1	48.2	48.3
Total Area	78.2	3917.3	145.5	1077.7	2476.1
Animal Units	0	1027.4	31.1	255.1	461.7
Land Use Corn	26.7	1412.5	45.9	403.4	919.9
Beans	37.1	980.8	64.7	414.8	465.6
Oats	0	125.5	3.6	17.8	102.9
Set Aside	4.7	322.1	8.4	120.0	181.6
Conserving Base	0	119.3	0	0	58.2
Pastured Grassland	0	326.0	9.7	61.5	248.0
Non Pastured Grassland	4.7	56.0	0	0	56.0
Urban	0	0	0	0	0
Woodland	0	0	0	0	0
Marsh	0	285.0	0	0	281.3
Permanent Water	0	110.3	0	0	110.3
Soil Type Clarion-Storden-Glencoe	72.8	1952.0	0	0	1734.0
Clarion-Nicollet-Webster	0	1298.7	145.5	417.9	735.3
Webster-Clarion-Nicollet	0	666.6	0	659.8	6.8
Wadena-Esterville	0	0	0	0	0
Soil Slope 0%	0	395.3	0	0	391.7
0+ - 5%	12.7	1451.4	140.5	1063.6	107.9
Trapped 0+ - 5%	0	0	0	0	0
5 + %	60.2	2070.5	5.0	14.1	1061.3
Trapped 5 + %	0	0	0	0	0

Big Spirit Lake Metered Watersheds

Station #	1	1.1	2	3	4	5	6	7
Total Area	136.2	1100.2	10.2	72.6	7935.2	109.4	142.3	71.7
Animal Units	259.8	324.1	8.5	25.0	2088.5	0	20	0
Land Use Corn	51.6	266.9	10.2	28.3	3066.3	41.3	41.6	28.4
Beans	36.4	147.1	0	4.8	1843.2	48.1	43.7	28.7
Oats	0	14.6	0	0	134.4	0	0	0
Set Aside	13.4	144.2	0	10.5	1250.4	10.6	27.3	9.0
Conserving Base	0	49.4	0	6.5	151.7	0	1.2	0
Pastured Grassland	20.0	91.3	0	21.6	211.0	0	0	0
Non Pastured Grassland	0.9	0	0	0	180.2	0	4.9	0
Urban	0	8.6	0	0	0	0	0	0
Woodland	0	41.6	0	0	0	0	0	0
Marsh	0	24.0	0	0	84.2	4.1	22.4	5.4
Permanent Water	0.2	292.0	0	0	489.4	0	0	0
Soil Type Clarion-Storden-Glencoe	76.1	88.4	10.2	72.6	1228.8	88.4	0	0
Clarion-Nicollet-Webster	60.0	0	0	0	5802.0	0	0	0
Webster-Clarion-Nicollet	0	1011.7	0	0	904.4	21.0	142.3	71.7
Wadena-Esterville	0	0	0	0	0	0	0	0
Soil Slope 0%	0.2	316.0	0	0	573.6	4.1	22.4	5.4
0+ - 5%	36.7	19.9	0	0	5166.2	0	0	0
Trapped 0+ - 5%	0	20.8	0	0	173.0	0	0	0
5 + %	99.3	543.1	10.2	72.6	2022.3	105.3	119.9	66.3
Trapped 5 + %	0	200.3	0	0	0	0	0	0

Big Spirit Lake Metered Watersheds (cont.)

Station #	8	9.1	10	11	12
Total Area	494.7	656.1	198.6	650.6	67.8
Animal Units	392.5	526.1	58.1	624.6	28.5
Land Use Corn	209.5	318.9	71.2	340.7	38.6
Beans	110.6	187.1	25.4	136.0	13.8
Oats	23.1	30.5	2.0	24.4	0
Set Aside	77.3	66.5	25.1	51.0	3.5
Conserving Base	22.1	5.7	17.8	8.9	3.0
Pastured Grassland	12.5	0	12.0	5.1	0
Non Pastured Grassland	2.7	0	10.8	14.5	0
Urban	0	0	0	6.7	2.1
Woodland	0	0	0	0	0
Marsh	0	0	0.1	0.5	0
Permanent Water	0	0	0	0	0
Soil Type Clarion-Storden-Glencoe	311.7	96.2	0	53.1	0
Clarion-Nicollet-Webster	183.1	559.8	198.6	597.5	67.8
Webster-Clarion-Nicollet	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0
Soil Slope 0%	0	0	0.1	0.5	0
0+ - 5%	220.2	452.6	105.3	446.0	63.9
Trapped 0+ - 5%	76.5	17.9	0	56.7	0
5 + %	198.1	185.6	93.2	147.5	3.9
Trapped 5 + %	0	0	0	0	0

Appendix D

Total area, land use, soil type and soil slope in hectares as well as number of animal units in unmetered watersheds around Lake West Okoboji, Lake East Okoboji, Spirit Lake and Lower Gar Lake.

West Okoboji Unmetered Areas

Station #	201	202	203	204	205	206	207	208	209
Total Area	154.2	111.1	37.0	119.7	27.5	33.4	38.0	65.0	44.0
Animal Units	16.4	89.2	21.7	0	0	0	0	0	16
Land Use									
Corn	62.2	28.3	0.8	0	0	2.4	4.0	2.4	4.1
Beans	37.4	8.9	6.1	0	0	2.6	0	14.2	2.4
Oats	0	0	0	0	0	0	0	0	1.4
Set Aside	12.5	5.8	0.4	0	3.1	6.1	4.8	1.7	1.7
Conserving Base	6.0	4.4	4.4	0	3.2	2.0	4.8	8.5	3.6
Pastured Grassland	13.9	9.7	0	0	0	0	0	0	0.9
Non Pastured Grassland	4.0	0	9.6	25.5	0	4.4	0	0	0
Urban	8.0	46.1	13.9	90.1	20.1	13.4	21.4	33.1	29.2
Woodland	0	0	0	0	0	0	0	0	0
Marsh	5.1	0	0	1.5	0	0	0	1.7	0
Permanent Water	0	0	0	0	0	0	0	0	0
Soil Type									
Clarion-Storden-Glencoe	111.8	111.1	37.0	119.7	0	0	0	0	0
Clarion-Nicollet-Webster	0	0	0	0	27.5	33.4	37.9	65.0	44.0
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0	0
Wadena-Esterville	42.4	0	0	0	0	0	0	0	0
Soil Slope									
0%	5.1	0	0	1.5	0	0	0	1.7	0
0+ - 5%	84.9	58.3	0	0	3.6	21.9	0	0	0
Trapped									
0+ - 5%	0	0	0	0	0	0	0	0	0
5 + %	17.8	52.8	33.4	118	23.9	11.0	16.7	35.8	44.0
Trapped									
5 + %	46.4	0	3.6	0	0	0.6	21.2	27.5	0

West Okoboji Unmetered Areas

Station #	210	211	212	213	214	215	216	217	218	219
Total Area	55.7	66.7	63.7	49.2	175.6	27.3	16.0	74.9	17.8	26.2
Animal Units	25	0	100	0	19.2	0	5.6	10.2	0	0
Land Use Corn	8.4	0	34.2	10.9	54.2	1.6	2.0	31.2	0	5.6
Beans	0	4.8	14.2	0	63.0	4.0	0	14.1	0	6.4
Oats	1.4	0	0	3.6	2.4	1.4	3.8	13.7	0	0
Set Aside	2.4	2.4	1.8	2.1	11.9	5.0	2.5	1.5	0	0
Conserving Base	6.1	0	2.4	2.4	2.8	0	0	0	0	0
Pastured Grassland	21.0	0	4.6	0	16.0	0	4.7	8.6	0	0
Non Pastured Grassland	3.9	0	0	1.7	0	0	0	0	17.8	11.8
Urban	6.5	50.9	1.7	26.6	19.1	14.7	2.7	0	0	0
Woodland	0	0	0	0	0	0	0	0	0	0
Marsh	0	3.9	0	0	0	0	0	0	0	0
Permanent Water	0	0	0	0	0	0	0	0	0	0
Soil Type Clarion-Storden-Glencoe	0	43.2	63.7	49.2	175.6	27.3	16.0	74.9	17.8	26.2
Clarion-Nicollet-Webster	55.7	23.5	0	0	0	0	0	0	0	0
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0	0	0
Soil Slope 0%	0	3.9	0	0	0	0	0	0	0	0
0+ - 5%	0	7.9	55.1	2.7	72.1	0	0	30.0	0	0
Trapped 0+ - 5%	0	0	0	0	12.8	0	0	0	0	0
5 + %	55.7	54.8	8.6	46.6	90.6	27.3	16.0	44.9	17.8	26.2
Trapped 5 + %	0	0	0	0	0	0	0	0	0	0

West Okoboji Unmetered Areas

Station #	220	221	222	223	224	225	226	227	228
Total Area	22.1	6.1	6.3	22.1	40.9	142.9	38.5	153.5	101.1
Animal Units	0	0	0	0	0	0	55.7	9.3	8.8
Land Use									
Corn	8.2	0	0	3.6	2.6	0	4.0	65.6	1.0
Beans	7.8	0	0	3.8	5.7	1.6	4.3	27.9	9.7
Oats	0	0	0	0	0	0	0	4.8	0
Set Aside	0	0	0	0.6	16.6	0	0.8	11.2	3.2
Conserving Base	0	0	0	0	0	0	0	3.6	0
Pastured Grassland	0	0	0	0	0	0	0	7.9	7.4
Non Pastured Grassland	2.7	0	3.4	5.7	11.1	46.4	4.7	20.4	42.2
Urban	3.0	6.1	2.8	7.3	1.1	78.4	22.8	0	0
Woodland	0	0	0	0	0	0	0	0	0
Marsh	0	0	0	0	0	3.4	0	9.4	0.8
Permanent Water	0	0	0	0	0	12.3	0	0	30.1
Soil Type									
Clarion-Storden-Glencoe	22.1	6.1	6.3	22.1	40.9	142.9	38.5	153.5	101.1
Clarion-Nicollet-Webster	0	0	0	0	0	0	0	0	0
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0	0
Soil Slope									
0%	0	0	0	0	0	15.7	0	9.4	30.9
0+ - 5%	0	0	0	0	9.4	49.5	0	0	0
Trapped 0+ - 5%	0	0	0	0	2.1	14.2	0	0	0
5 + %	22.1	6.1	6.3	22.1	29.4	63.5	38.5	9.7	6.7
Trapped 5 + %	0	0	0	0	0	0	0	134.3	63.5

East Okoboji Unmetered Areas

Station #	301	302	303	304	305	306	307	308	309	310
Total Area	33.4	48.7	28.6	21.7	21.7	20.4	12.1	36.4	138.2	57.0
Animal Units	9.1	58.4	0.6	18.7	11.6	12.1	11.2	43.1	48.5	29.6
Land Use Corn	5.7	20.2	11.0	4.0	10.5	5.7	2.4	0	32.0	1.2
Beans	0	6.9	8.9	0	0	0	0	0	41.3	16.5
Oats	0	0	0	0	0	0	0	0	0	0
Set Aside	2.8	1.6	1.3	0.4	0.8	1.2	0	0	10.3	4.8
Conserving Base	0	0	0	0	0	0	0	0	0	0
Pastured Grassland	7.6	14.3	0.6	14.3	9.0	9.7	9.1	34.7	38.8	23.7
Non Pastured Grassland	1.8	0	0	0	0	0	0	0	0	0
Urban	10.9	0.5	5.2	2.3	0	2.3	0.6	0.6	1.0	3.4
Woodland	0	0	0	0	0	0	0	0	0	0
Marsh	1.5	0	0	0	0	0	0	1.1	1.3	1.7
Permanent Water	0	0	0	0	0	0	0	0	0	0
Soil Type Clarion-Storden-Glencoe	33.4	48.7	28.6	21.7	21.7	20.4	12.1	36.4	138.2	57.0
Clarion-Nicollet-Webster	0	0	0	0	0	0	0	0	0	0
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0	0	0
Soil Slope 0%	1.5	0	0	0	0	0	0	1.1	1.3	1.7
0+ - 5%	0	0	0	0	0	0	0	0	0.6	16.3
Trapped 0+ - 5%	0	0	0	0	0	0	0	0	0	0
5 + %	31.9	48.7	28.6	21.7	16.7	17.4	11.7	21.1	136.4	39.0
Trapped 5 + %	0	0	0	0	5.0	3.0	0.4	14.2	0	0

East Okoboji Unmetered Areas

Station #	311	312	313	314	315	316	317	318	319
Total Area	42.2	82.9	31.4	65.2	46.1	52.8	100.5	28.0	110.0
Animal Units	35.6	18.1	5.6	302.5	2.1	21.7	31.7	0	16.8
Land Use Corn	0.8	7.3	7.3	0	2.4	10.9	50.1	0	39.7
Beans	12.1	42.5	7.3	1.8	2.0	14.9	19.4	0	28.3
Oats	0	0	0	0	0	0	0	0	0
Set Aside	0	2.0	0	0	3.3	6.9	6.5	0	6.5
Conserving Base	0	0	0	0	0	0	6.5	0	7.3
Pastured Grassland	28.5	9.3	0	0	1.7	16.2	0	0	13.6
Non Pastured Grassland	0	0	0	0	0	0	0	0	0
Urban	0	10.0	0	0	21.5	0	9.4	25.7	8.2
Woodland	0	10.0	16.1	63.2	14.3	0	0	0	0
Marsh	0	0	0	0	0	0	0	2.3	0.6
Permanent Water	0	0	0	0.2	0	0	0	0	0.2
Soil Type Clarion-Storden-Glencoe	42.2	82.9	31.4	65.2	46.1	52.8	100.5	28.0	14.0
Clarion-Nicollet-Webster	0	0	0	0	0	0	0	0	95.9
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0	0
Soil Slope 0%	0	0	0	0.2	0	0	0	2.3	0.8
0+ - 5%	7.6	0	0	24.9	27.1	16.5	55.9	18.7	65.9
Trapped 0+ - 5%	0	0	0	0	0	0	0	0	0
5 + %	34.6	82.5	31.4	40.2	19.0	36.2	44.6	7.0	43.2
Trapped 5 + %	0	0.4	0	0	0	0	0	0	0

East Okoboji Unmetered Areas

Station #	320	322	323	324	325	326	327	328	329
Total Area	55.7	131.9	30.8	14.1	18.8	18.0	71.5	178.2	55.2
Animal Units	13.2	0	0	0	21.7	0	0.8	54.3	11.7
Land Use Corn	23.9	0	0	8.9	3.6	0.8	4.0	43.8	0
Beans	8.9	0	13.7	0	7.3	12.9	4.0	57.0	3.6
Oats	0	0	0	0	0	0	0	0	0
Set Aside	10.3	0	1.8	0	0	0	0	5.9	0
Conserving Base	4.0	0	0	0	0	0	0	9.8	0
Pastured Grassland	0	0	0	0	0	0	0.8	43.7	7.6
Non Pastured Grassland	0	0	0	0	0	0	55.7	9.0	31.9
Urban	3.2	131.9	14.1	5.2	6.9	4.0	2.1	0	11.7
Woodland	0	0	0	0	0	0	0	0	0
Marsh	0	0	0	0	0	0	2.0	0	0
Permanent Water	0.2	0	0	0	0	0	0	0	0
Soil Type Clarion-Storden-Glencoe	0	0	0	0	0	0	0	0	0
Clarion-Nicollet-Webster	55.7	131.9	30.8	14.1	18.8	18.0	71.5	178.2	55.2
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0	0
Soil Slope 0%	0.2	0	0	0	0	0	2.0	0	0
0+ - 5%	39.1	95.6	1.8	6.3	11.3	11.1	32.5	0	14.8
Trapped 0+ - 5%	0	0	0	0	0	0	0	139.7	0
5 + %	16.4	36.3	29.0	7.8	7.4	6.9	37.0	38.5	40.4
Trapped 5 + %	0	0	0	0	0	0	0	0	0

East Okoboji Unmetered Areas

Station #	330	331	332	333	Total
Total Area	18.2	9.8	64.7	85.5	1729.7
Animal Units	0	0	0	0	777.9
Land Use					
Corn	0	0	0	34.4	330.6
Beans	11.3	0.8	0	19.0	340.4
Oats	0	0	0	0	0
Set Aside	0.6	0	0	0	67
Conserving Base	0	0	0	0	27.6
Pastured Grassland	0	0	0	0	283.2
Non Pastured Grassland	1.1	0	6.3	24.3	130.1
Urban	4.0	8.8	57.6	5.9	357
Woodland	0	0	0	0	103.6
Marsh	0	0	0	0.6	11.1
Permanent Water	0	0	0	0	.6
Soil Type					
Clarion-Storden-Glencoe	0	0	64.7	85.5	1009.8
Clarion-Nicollet-Webster	18.2	9.8	0	0	698.1
Webster-Clarion-Nicollet	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0
Soil Slope					
0%	0	0	0	0.6	11.7
0+ - 5%	11.3	3.7	0	71.3	532.3
Trapped 0+ - 5%	0	0	0	0	139.7
5 + %	6.9	6.1	64.7	0	1009.3
Trapped 5 + %	0	0	0	13.6	36.2

Big Spirit Unmetered

Station #	401	402	403	404	405	406	407	408	409
Total Area	78.4	80.1	51.8	50.9	174.5	292.5	560.6	80.6	105.0
Animal Units	0	21.7	45	1.1	143.6	245.6	206.3	35.1	56.4
Land Use Corn	8.1	38.1	14.6	8.1	37.6	70.4	244.1	39.7	27.5
Beans	9.7	22.9	20.2	3.2	2.8	65.1	188.2	17.8	12.1
Oats	0	0	0	12.5	18.2	0	14.6	0	0
Set Aside	9.7	5.7	1.2	7.5	9.9	31.3	55.9	9.2	18.0
Conserving Base	0	1.6	0	6.9	10.1	29.5	10.1	4.0	0
Pastured Grassland	0	0	0	0.9	31.2	18.2	2.4	0	8.6
Non Pastured Grassland	6.1	0	0	0	31.1	18.3	6.9	0	0
Urban	36.9	10.1	12.6	7.2	6.1	13.5	0	4.6	0
Woodland	0	0	0	0	0	0	0	0	0
Marsh	0.6	0	0	0	18.2	20.6	0	0	11.8
Permanent Water	0	0	0	0	0	0	0	0	0
Soil Type Clarion-Storden-Glencoe	21.2	0	0	0	0	0	14.2	0	0
Clarion-Nicollet-Webster	57.2	80.1	51.8	50.9	174.4	292.5	546.3	40.3	1.8
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	40.3	103.1
Wadena-Esterville	0	0	0	0	0	0	0	0	0
Soil Slope 0%	0.6	0	0	0	18.2	20.5	0	0	11.8
0+ - 5%	57.2	49.6	31.6	10.1	98.2	119.6	381.6	35.3	10.7
Trapped 0+ - 5%	0	0	0	0	3.7	146.2	98.5	45.3	22.7
5 + %	20.6	30.4	20.2	40.8	54.3	4.2	74.8	0	59.7
Trapped 5 + %	0	0	0	0	0	1.8	5.7	0	0

Big Spirit Unmetered

Station #	410	411	412	413	414	415	416	417	418
Total Area	73.0	114.3	399.9	537.2	104.8	288.4	842.3	71.1	63.5
Animal Units	7.3	20	47.1	89.1	63.8	194.9	261	0	4
Land Use Corn	28.2	33.2	95.0	163.5	22.7	102.1	125.5	49.4	19.0
Beans	34.0	28.2	20.2	32.4	25.1	29.6	146.3	11.7	5.7
Oats	0	0	6.1	24.5	16.6	24.8	24.3	0	8.5
Set Aside	1.6	11.4	152.0	74.1	4.4	33.4	55.1	2.8	3.2
Conserving Base	0	0	0	48.5	10.4	32.6	18.6	0	3.6
Pastured Grassland	0	0	0	71.3	4.1	26.3	99.0	0	3.2
Non Pastured Grassland	0	0	6.3	5.8	15.8	31.2	72.9	0	20.1
Urban	0	14.5	14.0	0	0	0	15.7	0	0
Woodland	0	0	0	0	0	0	25.7	6.3	0
Marsh	0	17.6	81.4	9.7	0	0	36.1	0	0
Permanent Water	0	0	0	99.0	0	0	197.0	0	0
Soil Type Clarion-Storden-Glencoe	0	0	68.6	537.2	104.8	288.4	842.3	71.2	63.5
Clarion-Nicollet-Webster	0	0	200.1	0	0	0	0	0	0
Webster-Clarion-Nicollet	73.0	114.3	131.1	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0	0
Soil Slope 0%	0	17.6	81.4	108.8	0	0	233.1	0	0
0+ - 5%	31.5	81.7	11.5	23.4	0	0	29.6	0	0
Trapped 0+ - 5%	0	0	0	3.6	2.9	62.1	30.9	9.0	1.3
5 + %	41.5	14.9	307.0	401.4	86.1	224.9	216.9	62.1	62.2
Trapped 5 + %	0	0	0	0	15.9	1.3	331.7	0	0

Big Spirit Unmetered

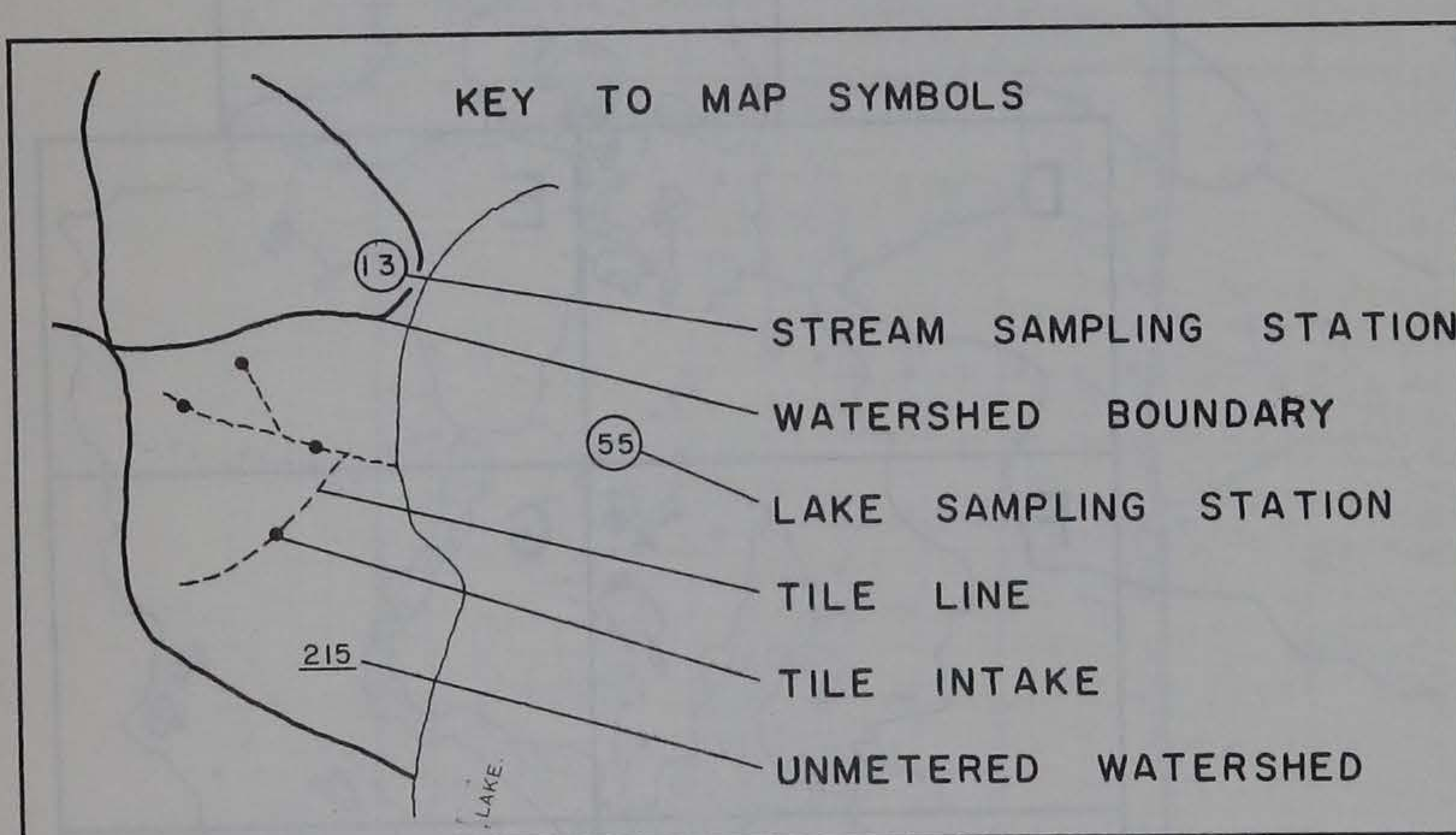
Station #	419	Total
Total Area	115.0	4083.9
Animal Units	40.5	1482.5
Land Use Corn	32.8	1159.6
Beans	40.5	715.7
Oats	0	150.1
Set Aside	4.8	491.2
Conserving Base	6.1	182.0
Pastured Grassland	7.4	272.6
Non Pastured Grassland	8.2	222.7
Urban	0.3	135.5
Woodland	0	32.0
Marsh	0	196.0
Permanent Water	0.2	296.2
Soil Type Clarion-Storden-Glencoe	99.1	2110.5
Clarion-Nicollet-Webster	15.9	1511.3
Webster-Clarion-Nicollet	0	461.8
Wadena-Esterville	0	0
Soil Slope 0%	0.2	491.6
0+ - 5%	63.7	1035.3
Trapped 0+ - 5%	0	426.2
5 + %	51.1	1773.1
Trapped 5 + %	0	356.4

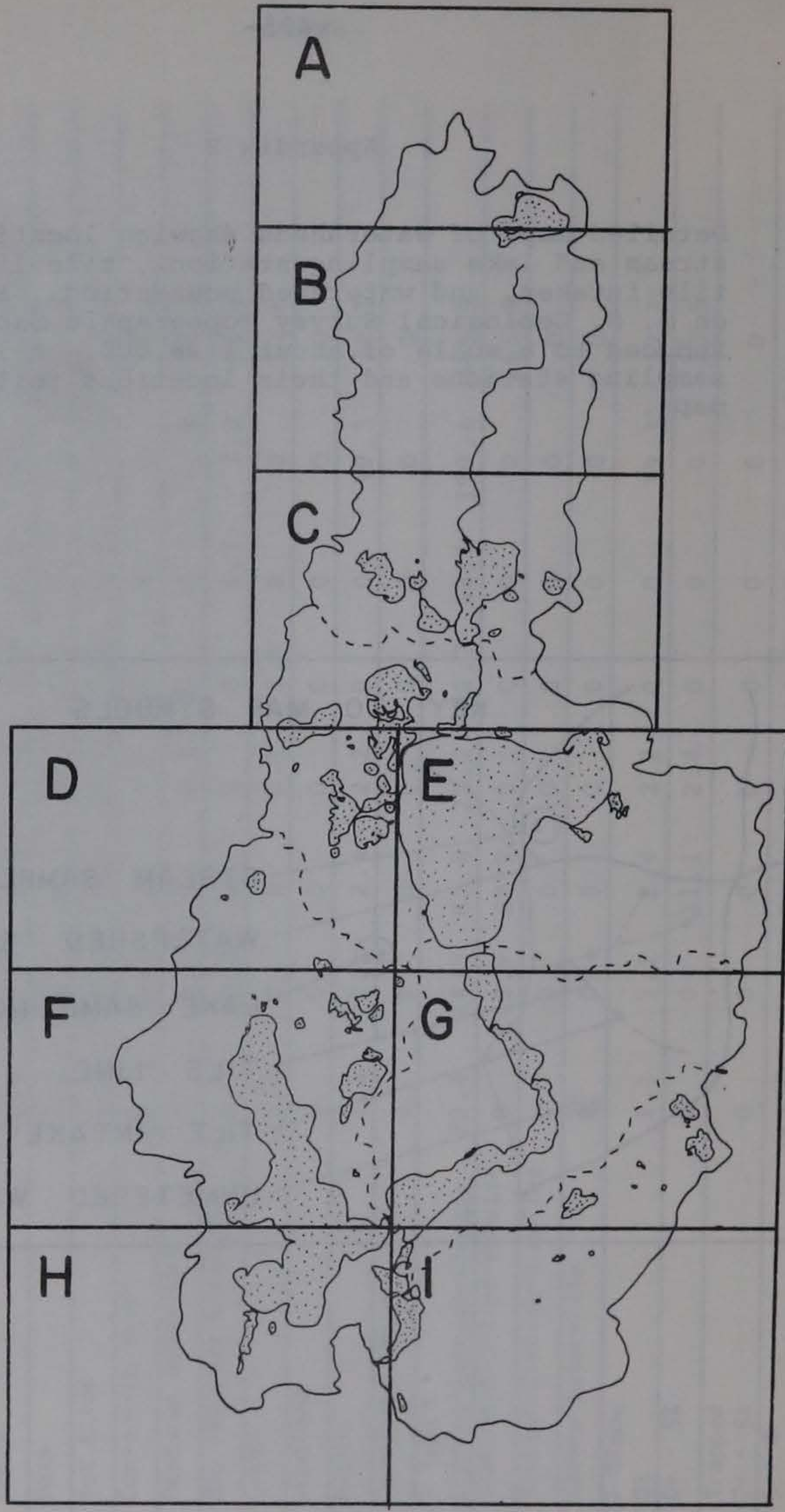
Lower Gar Unmetered Areas

Station #	501	502	503	504	505	506	507	Total
Total Area	89.4	165.2	87.7	23.2	18.8	48.1	199.4	631.8
Animal Units	0	52.7	11.2	3	21.7	0	86	174.6
Land Use								
Corn	7.3	52.9	67.6	0.8	10.6	24.7	53.6	217.5
Beans	48.6	46.0	2.0	3.2	4.0	14.6	20.6	139.0
Oats	3.2	0	0	0	0	0	0	3.2
Set Aside	15.0	8.9	9.7	10.9	1.0	6.6	20.3	72.4
Conserving Base	0	12.3	0	0	0	0	0	12.3
Pastured Grassland	0	0	0	2.4	0	0	71.8	74.2
Non Pastured Grassland	0	26.3	0	0	0	1.7	3.8	31.8
Urban	12.6	0	0	2.1	2.9	0	0	17.6
Woodland	0	0	0	0	0	0	0	0
Marsh	1.1	7.1	2.4	2.2	0	0	19.3	32.1
Permanent Water	0	0	0	0	0	0	0	0
Soil Type								
Clarion-Storden-Glencoe	89.4	24.3	62.8	23.2	18.7	48.1	199.4	465.9
Clarion-Nicollet-Webster	0	140.9	24.9	0	0	0	0	165.8
Webster-Clarion-Nicollet	0	0	0	0	0	0	0	0
Wadena-Esterville	0	0	0	0	0	0	0	0
Soil Slope								
0%	1.1	7.1	2.4	2.2	0	0	19.3	32.1
0+ - 5%	0	0	11.1	2.4	0	0	0	13.5
Trapped 0+ - 5%	0	0	0	0	0	0	0	0
5 + %	63.6	83.4	74.2	18.6	18.8	48.1	180.1	486.8
Trapped 5 + %	24.6	74.7	0	0	0	0	0	99.3

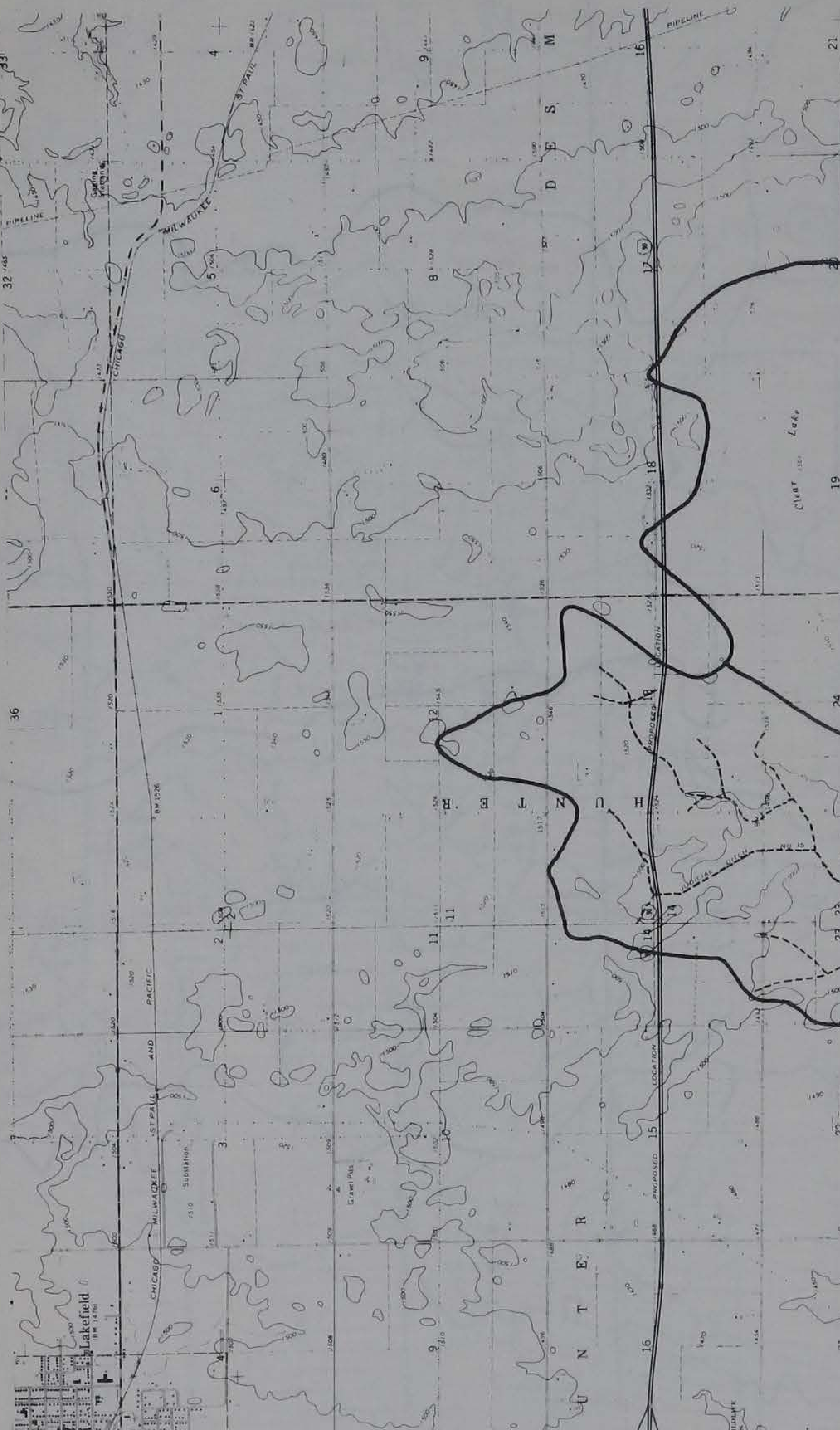
Appendix E

Detailed maps of watersheds showing locations of stream and lake sampling stations, tile lines, tile intakes, and watershed boundaries. Based on U. S. Geological Survey Topographic maps. Reduced to a scale of about 1:48,000. A list of sampling stations and their locations follows the maps.



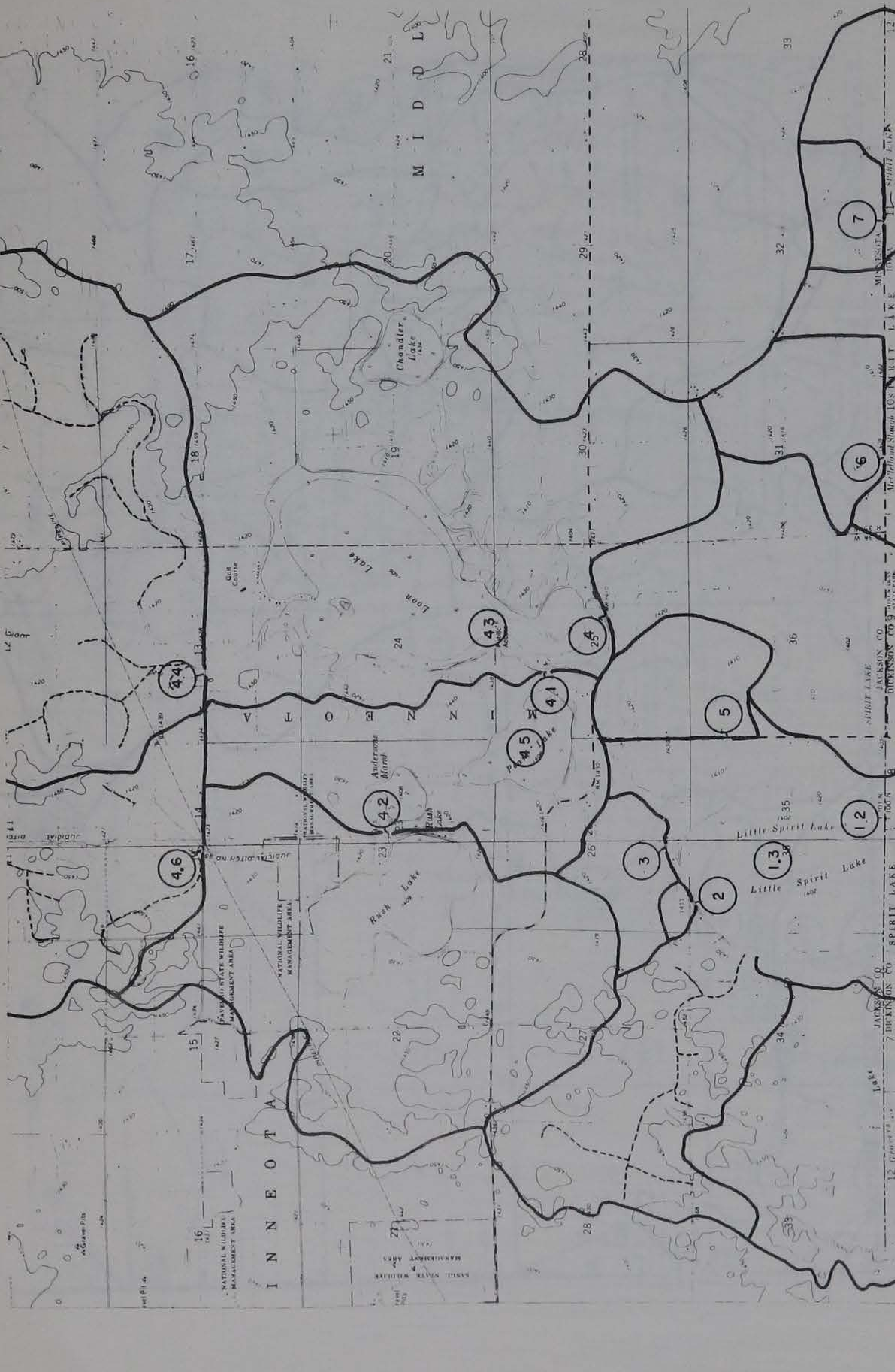


INDEX TO DETAILED MAPS

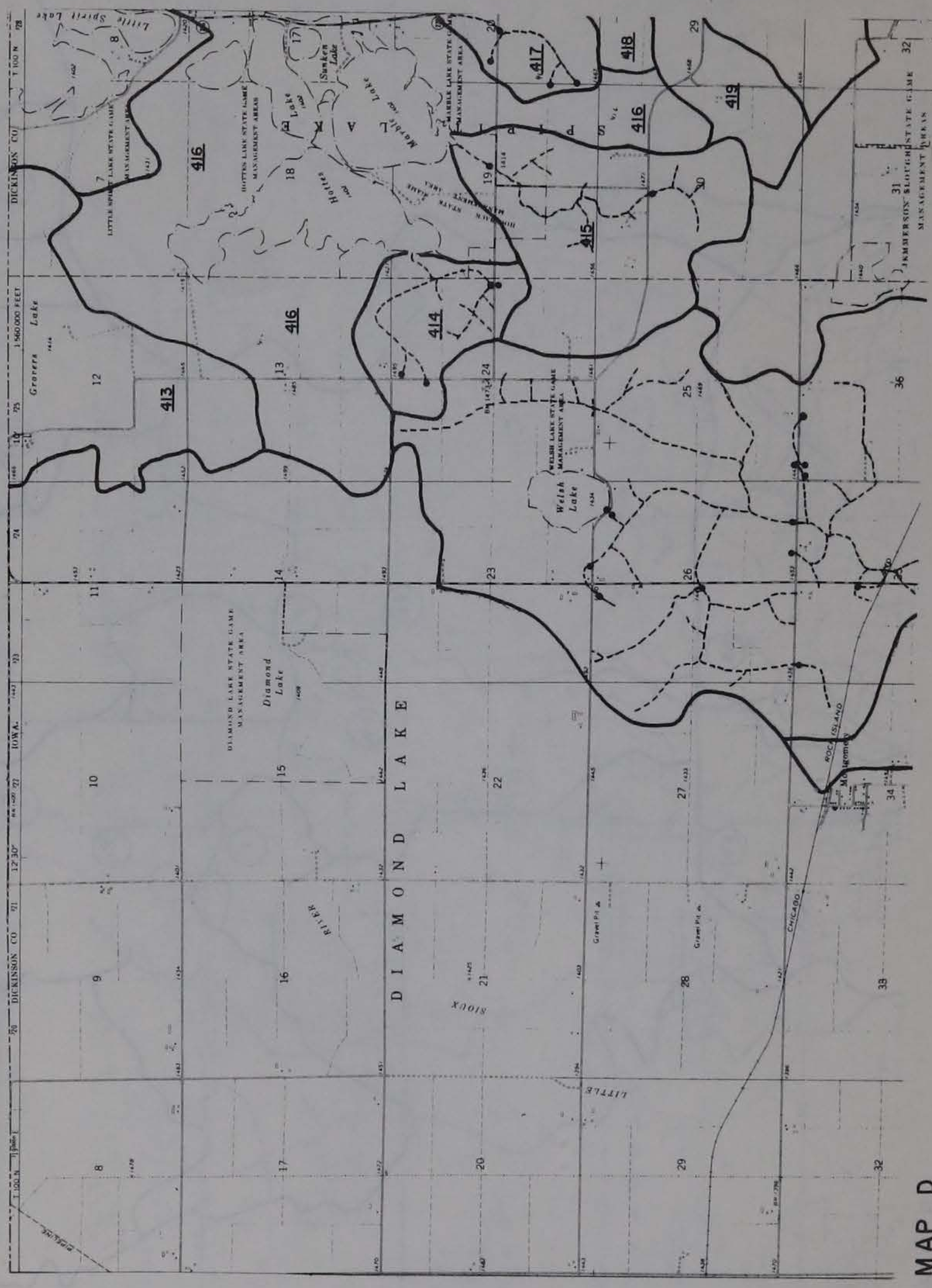

Lakefield
CHICAGO
MILWAUKEE
ST PAUL
AND
PACIFIC
PIPELINE
PROPOSED
LOCATION
Clear Lake
Substation
Gravel Pits

MAP A

MAP B


Chandler Lake
Loon Lake
Anderson Marsh
Rush Lake
Little Spirit Lake
JACKSON CO
DICKINSON CO
SPIRIT LAKE
Golf Course
NATIONAL WILDLIFE MANAGEMENT AREA
4.6
4.4
4.2
4.3
4.1
4.5
4
5
3
2
1.3
1.2
6
7

MAP C


DICKINSON CO
IOWA
DIAMOND LAKE
Diamond Lake
DIAMOND LAKE STATE GAME MANAGEMENT AREA
Welsh Lake
WELSH LAKE STATE GAME MANAGEMENT AREA
Grovers Lake
Little Spirit Lake
LITTLE SPIRIT LAKE STATE GAME MANAGEMENT AREA
Sunken Lake
Hottes Lake
HOTTES LAKE STATE GAME MANAGEMENT AREA
Marble Lake
MARBLE LAKE STATE GAME MANAGEMENT AREA
JEMMERSON SLOUGH STATE GAME MANAGEMENT AREAS
413
414
415
416
417
418
419
SIOUX
RIVER
LITTLE
CHICAGO
ROCK ISLAND
Montgomery
1 560 000 FEET
T 100 N

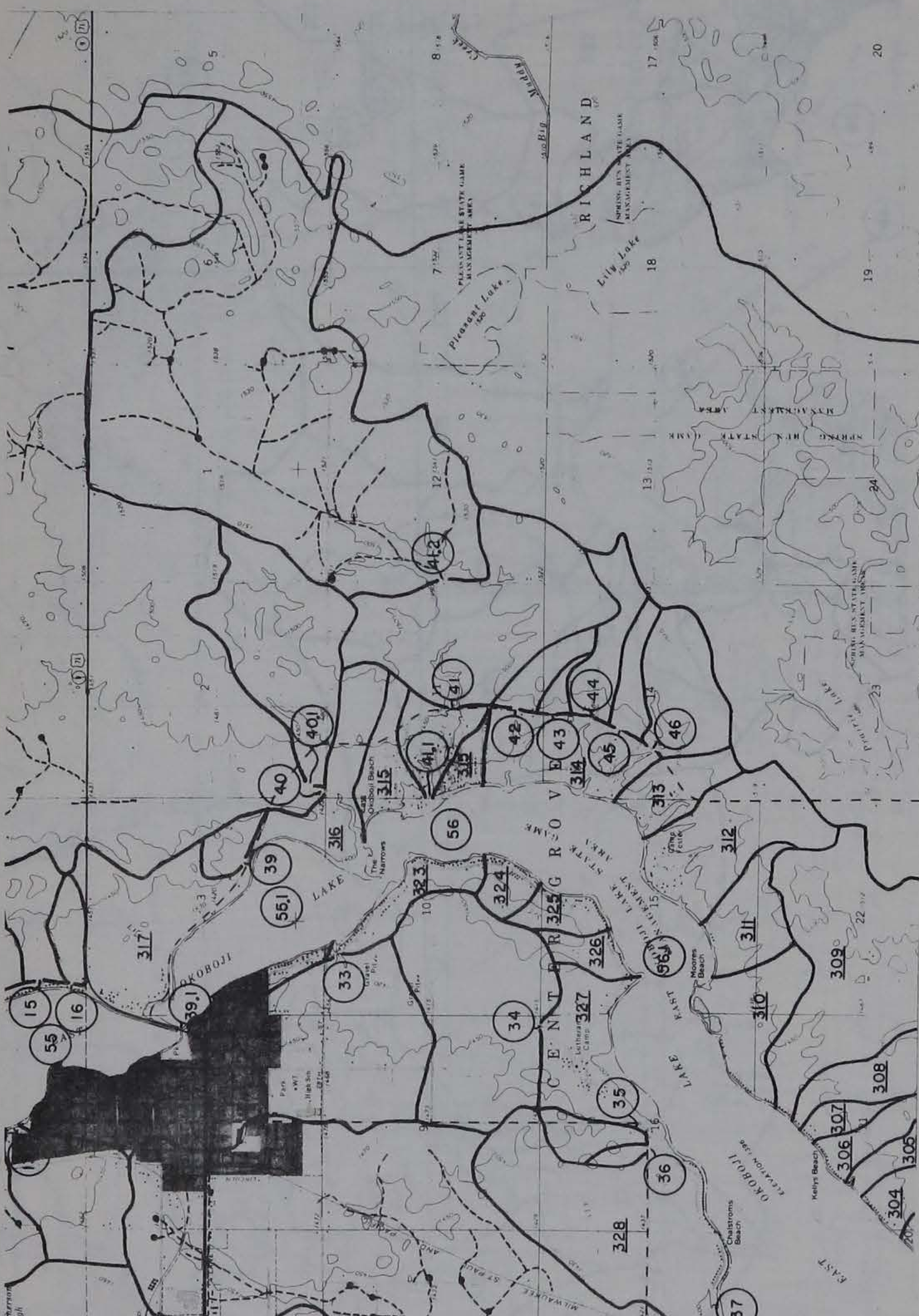
MAP D


Little Spirit Lake
412
DICKINSON CO
MINI WAKAN STATE PARK
McClelland Slough
410
IOWA
411
McClelland Beach
Trickle Slough
409
408
Cottonwood Point
1.1
Crandalls Beach
54.3
54.2
54.1
Bakers Point
Anglers Bay
SPIRIT LAKE GAME MANAGEMENT AREA
406
Sandbar Slough
407
East Bay
Big Stony Point
9.1
8
Hale Slough
9
SUPERIOR
54
SPIRIT LAKE
404
405
10
Red Nose Point
Marble Beach
Gaging Station
Campground
Gravel Pits
Gravel Pit
403
SPIRIT LAKE STATE GAME
SPIRIT LAKE
11
418
419
54.4
1
402
12
Orleans Beach
Orleans
13.1
401
St Margaret Cem
318
Fish Hatchery
13
319
14
320
CHICAGO ROCK ISLAND AND PACIFIC

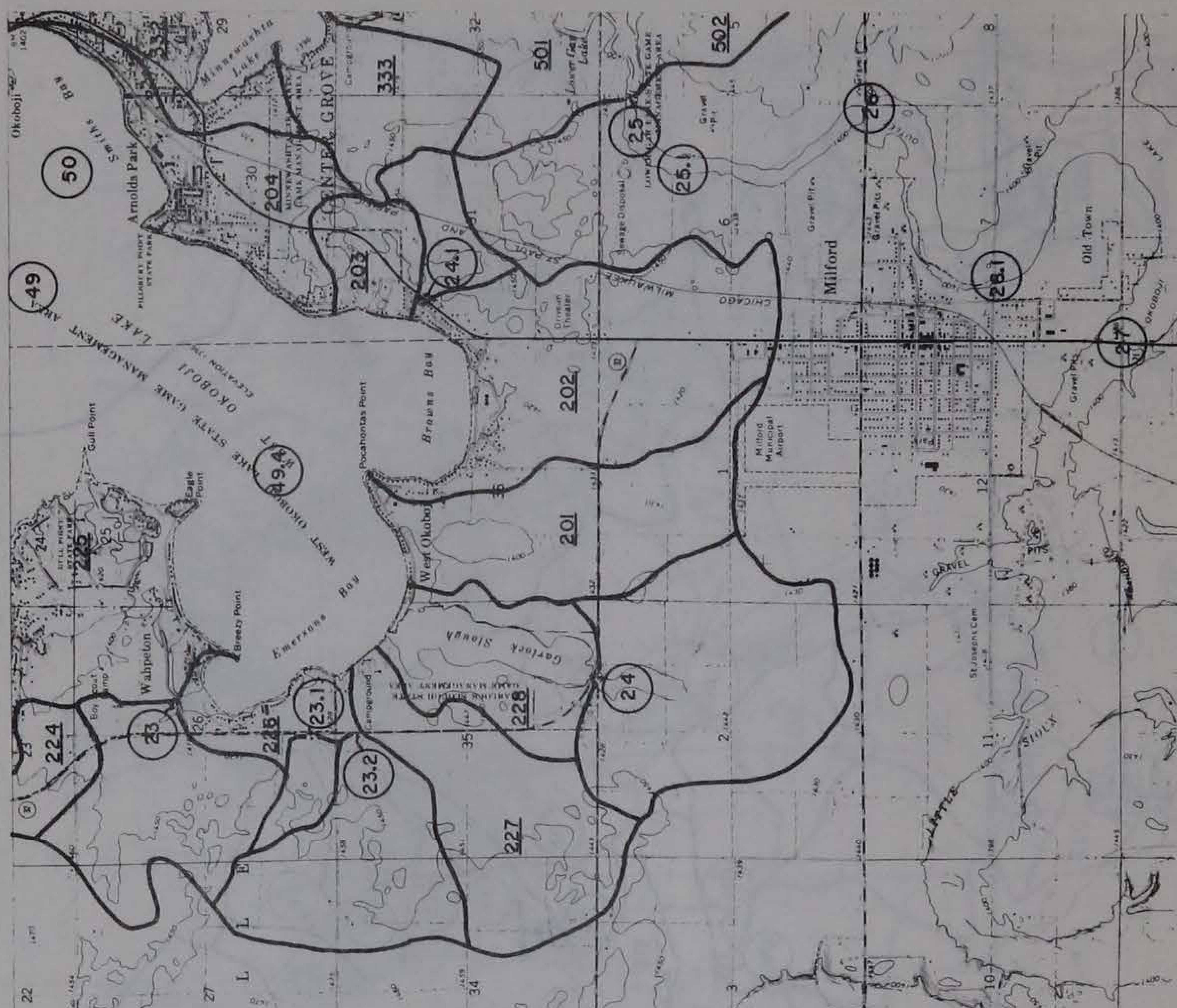
MAP E


EAST OKOBOJI LAKE STATE GAME MANAGEMENT AREA
WEST OKOBOJI
CENTER GROVE
LAKEVILLE
Center Lake
Spirit Lake
Hayward's Bay
Millers Bay
LITTLE SIOUX RIVER

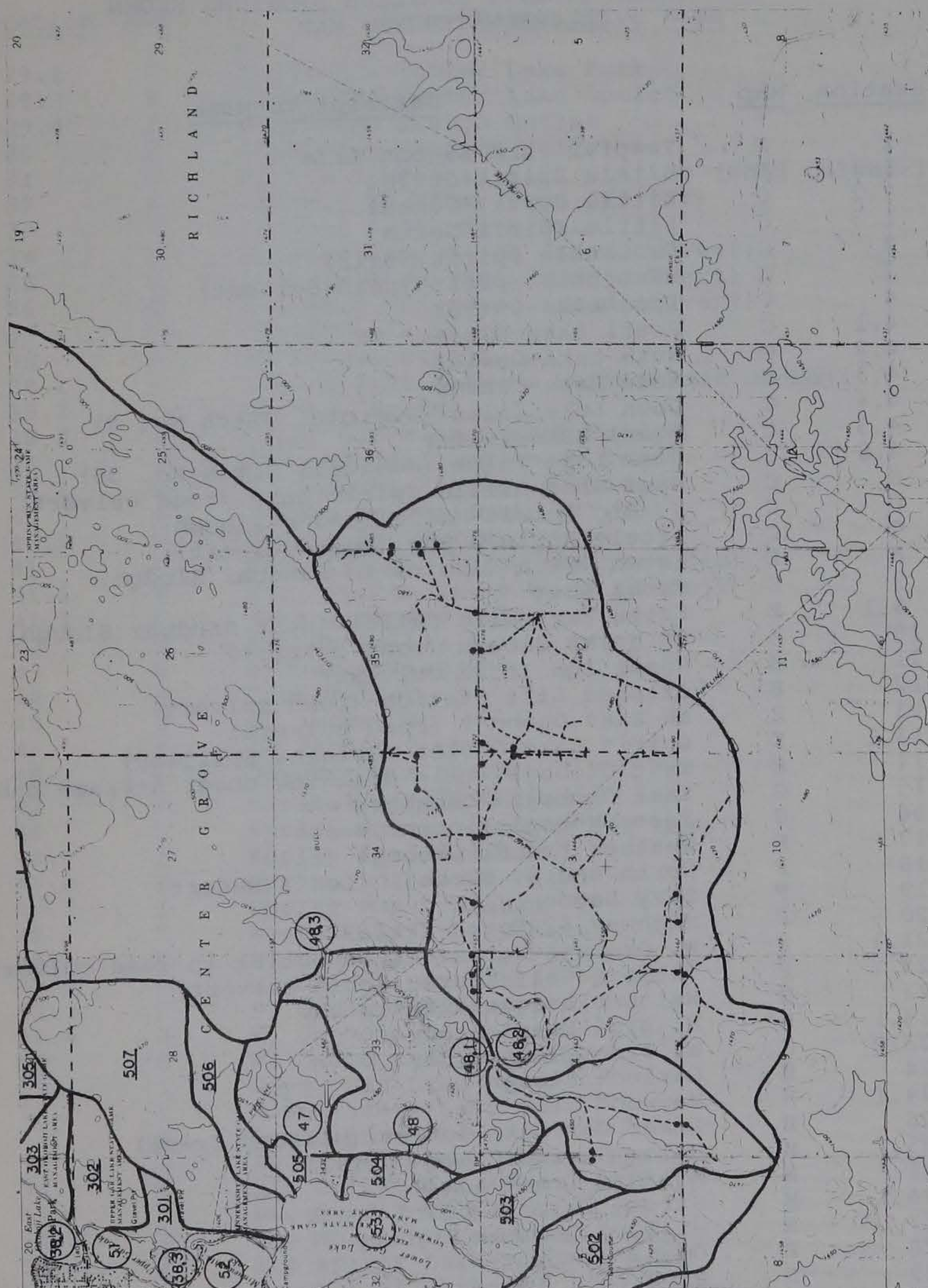
MAP F


RICHLAND
CENTER GROVE
Pleasant Lake
Lily Lake
The Narrows
Okoboji Beach
Moores Beach
Kellys Beach
Chalstroms Beach
Lutheran Camp
LAKE
EAST
OKOBOJI

MAP G


Okoboji
Arnolds Park
Minnewashta Lake
CENTER GROVE
West Okoboji
WEST OKOBOJI LAKE
Browns Bay
Emersons Bay
Garlock Slough
Pocahontas Point
Gull Point
Eagle Point
Breezy Point
Wahpeton
Lower Gar Lake
Milford
Milford Municipal Airport
Old Town
LAKEVILLE
LITTLE SIOUX RIVER
49
49.4
50
23
23.1
23.2
24
24.1
25
25.1
26
26.1
27
201
202
203
204
224
225
226
227
228
333
501
502

MAP H


RICHLAND
CENTER GROVE
PIPELINE
303
302
301
305
507
506
505
504
503
502
48.3
48.2
48.1
48
47
53
52
51
38.3
38.2

MAP I

LIST OF WATER QUALITY SAMPLING STATIONS SHOWN ON THE WATERSHED MAP

Station	Map	Descriptive Name
1	E	Templar Park Lagoon Tile
1.1	E	Little Spirit-Outlet
1.2	C	Little Spirit-Center
1.3	C	Little Spirit-North
2	C	NW Little Spirit (tile)
3	C	NW Little Spirit (road culvert)
4	C	Loon Lake-Outlet
4.1	C	Pearl Lake-Outlet
4.2	C	Rush Lake-Outlet
4.3	C	Loon Lake-Center
4.4	C	Loon Lake Inlet (Judicial Ditch No. 8)
4.5	C	Pearl Lake-Center
4.6	C	Rush Lake Inlet (Judicial Ditch No. 35)
5	C	East Side Little Spirit Lake (road culvert)
6	C	N. Big Spirit-McClelland's Slough
7	C	Little Angler's Bay (road culvert)
8	E	Estes Ditch (drains to Sandbar Slough)
9	E	Estes West
9.1	E	Estes West Tile Outlet (near Sandbar Slough)
10	E	SE Hales Slough (road culvert)
11	E	Reed's Run (road culvert)
12	E	Orleans Lift Station (road culvert)
13	E	NE East Okoboji (road culvert)
13.1	E	Spirit Lake-Outlet (Orleans Spillway)
14	E	East Okoboji (tile draining under A-Frame cabin)
15	G	East Okoboji-Rosenberg
16	G	East Okoboji-Pioneer Beach
17	F	Weather End W. Okoboji (tile)
18	F	North end W. Okoboji (Lee's Resort)
19	F	Lazy Lagoon
20	F	Highway 32 North (tile)
21.1	F	W. Okoboji Harbor (tile outlet in road culvert)
22	F	Okoboji Golf Course (road culvert)
23	H	Walther League-Emerson Bay
23.1	H	W. side Emerson Bay
23.2	H	W. side Emerson Bay
24	H	Garlock Slough
24.1	H	Maywood Tile
25	H	Lower Gar Lake-Outlet (Milford Creek)
25.1	H	Below Sewage Plant Outfall
26	H	Milford Creek & A34
26.1	H	Stream Gauge-Milford Creek
27	H	Milford Creek & Highway 71
28	F	Omaha Beach
29	F	Hayward's Bay
29.1	F	Hayward's-County Road

Station	Map	Descriptive Name
29.2	F	Hayward's-Center Lake Fork
29.3	F	Hayward's-Center Lake Outlet
29.4	F	Jemmerson Slough Outlet
30	F	Schaupp's Station (tile)
31	F	Brownell Heights Lift Station (road culvert)
32	F	Rodawig Station (road culvert)
33	G	Francis Sites-Mink Farm
34	G	Luthern Camp-North (road culvert)
35	G	Luthern Camp-West (road culvert)
36	G	Stakeout Underpass (road culvert)
37	G	Chalstrom's Beach
38	G	RR Bridge Station
38.1	F	Interchange between West & East Okoboji
38.2	I	Hinshaw Bridge
38.3	I	Upper Gar-Minnewashta Bridge
39	G	Fodness (culvert under road)
39.1	G	E. Okoboji-Highway 9 Bridge
40	G	Strube Bridge (main stream)
40.1	G	Strube-South Fork
41	G	Karl Bridge (below sediment dam)
41.1	G	Karl Stream Inlet to E. Okoboji
41.2	G	Karl drainage tile
42	G	Arthur Gulley 1
43	G	Arthur Gulley 2
44	G	Cook Gulley
45	G	Ed Arthur 1
46	G	Ed Arthur 2
46.1	G	Nordstrom's Beach
47	I	Maranell (road culvert)
48	I	Spring Run into Lower Gar Lake
48.1	I	Spring Run SW Tile
48.2	I	Spring Run South Tile
48.3	I	Spring Run Drainage
49	H	West Okoboji-Deep Hole
49.1	F	W. Okoboji-Pike's Point
49.2	F	W. Okoboji-Manhattan Point
49.3	F	W. Okoboji-Miller's Bay
49.4	H	W. Okoboji-Pocahontas Point
50	H	W. Okoboji-Smith's Bay
51	I	Upper Gar Lake
52	I	Minnewashta Lake
53	I	Lower Gar Lake
54	E	Big Spirit Lake-Marble Beach
54.1	E	Big Spirit Lake-Stony Point
54.2	E	Big Spirit Lake-State Park
54.3	E	Big Spirit Lake-Buffalo Run
54.4	E	Big Spirit Lake-Templar Park
55	G	Upper East Okoboji
55.1	G	E. Okoboji-Above Narrows
56	G	E. Okoboji-Below Narrows
56.1	G	E. Okoboji-Bend Station
57	G	Lower East Okoboji

Appendix F

Historical chemical data on the Iowa Great Lakes including calcium hardness (mg/l $CaCO_3$), total hardness (mg/l $CaCO_3$), alkalinity (mg/l $CaCO_3$) and chloride (mg/l) measurements of Stoermer (1963), Lang (1970) and Krohn (unpublished) and oxygen concentrations of Lake West Okoboji measured by Stromsten (unpublished), Bardach et al. (1951), Wood (unpublished), Stoermer (1963), Cooke (1963), Smith (unpublished), Dunn (unpublished), and Bachmann (unpublished).

Bachmann, R. W. (unpublished data). Professor at Iowa State University. Data collected while at Iowa Lakeside Laboratory.

Bardach, J. E., J. Morrill, and F. Gambony. 1951. Preliminary report on the distribution of bottom organisms in West Lake Okoboji. Proc. Iowa Acad. Sci. 58:405-414.

Cooke, G. D. 1963. Microcrustacea of four habitats in Lake West Okoboji. Unpublished M.S. Thesis. Iowa City, Iowa, University of Iowa.

Dunn, Stan. (unpublished data). Mr. Dunn studied the temperature and oxygen profiles of Lake West Okoboji from October 1965 to April 1966. Mr. Dunn taught high school science in Milford, Iowa.

Krohn, M. (unpublished data). Mr. Krohn (deceased) taught high school science in Spirit Lake, Iowa and studied biological and chemical characteristics of the lakes.

Lang, K. L. 1970. Distribution and dispersion of the Cladocera of Lake West Okoboji. Unpublished Ph.D. Thesis. Iowa City, Iowa, University of Iowa.

Smith, Paul. (unpublished data). Graduate student at the University of Iowa in 1961.

Stoermer, E. F. 1963. Post-pleistocene diatoms from Lake West Okoboji, Iowa. Unpublished Ph.D. Thesis. Ames, Iowa, Library, Iowa State University of Science and Technology. 214 p.

Stromsten, F. (unpublished data). Dr. Stromsten was a member of the Zoology Department at the University of Iowa and taught at Iowa Lakeside Laboratory. Oxygen data was taken from a notebook borrowed from the Zoology Department, U of I, Iowa City, Iowa.

Wood, Kenneth. Dr. Wood studied the temperature and oxygen profiles of Lake West Okoboji while teaching at Buena Vista College in Storm Lake, Iowa.

E. Stoermer 1963 Thesis

Hardness, chloride and alkalinity measurements made by Stoermer (1963) on West Okoboji between June 15, 1960 and November 28, 1962.

Date	Location	(M) Depth	Total Hardness	Calcium Hardness	Alkalinity	Chloride
6-15-60	Emerson Bay	1	220	70	210	10.0
6-15-60	Emerson Bay	8	215	70	210	7.5
6-20-60	Miller's Bay	0	230	75	210	10.0
7-7-60	Pike's Point	0	210	80	210	12.5
8-10-60	Beck's Canal	0	250	120	220	-
8-11-60	Lazy Lagoon	0	230	100	220	-
10-1-60	Miller's Bay	0	217	69	185	10.0
10-1-60	Lazy Lagoon	0	227	112	211	15.0
10-1-60	Emerson Bay	0	210	66	192	9.0
10-1-60	Beck's Canal	0	210	73	210	10.0
11-5-60	Emerson Bay	0	210	68	198	10.0
11-5-60	Beck's Canal	0	212	75	210	12.5

Date	Location	(M) Depth	Total Hardness	Calcium Hardness	Alkalinity	Chloride
11-6-60	Miller's Bay	0	216	70	215	10.0
11-6-60	Lazy Lagoon	0	232	92	240	11.0
1-14-61	Emerson Bay	0.6	236	80	227	11.0
1-14-61	Beck's Canal	0.6	255	95	250	12.0
1-14-61	Lazy Lagoon	0	246	90	233	13.0
1-14-61	Miller's Bay	0	232	93	230	14.0
2-12-61	Lazy Lagoon	0	240	90	240	12.0
2-12-61	Miller's Bay	0	220	81	225	13.0
2-12-61	Emerson Bay	0	220	72	215	12.0
3-18-61	Emerson Bay	0	240	74	240	11.0
3-18-61	Beck's Canal	0	235	80	230	12.0
4-22-61	Emerson Bay	0	210	80	215	10.0
4-22-61	Beck's Canal	0	217	82	225	11.0
4-22-61	Lazy Lagoon	0	270	135	230	11.0

Date	Location	(M) Depth	Total Hardness	Calcium Hardness	Alkalinity	Chloride
4-22-61	Miller's Bay	0	-	83	222	10.0
4-22-61	Terrace Park	0	217	85	220	11.0
6-1-61	Main Lake	0	218	87	217	11.0
6-1-61	Miller's Bay	0	218	83	218	12.0
6-1-61	Emerson Bay	0	216	83	220	11.0
6-1-61	Beck's Canal	0	225	93	230	10.0
10-16-61	Main Lake	0	225	100	220	10.0
10-16-61	Beck's Canal	0	212	100	230	10.0
10-16-61	Emerson Bay	0	220	85	220	11.0
10-16-61	Miller's Bay	0	225	90	225	10.0
10-16-61	Smith's Bay	0	225	92	220	12.0
1-22-62	Emerson Bay	0	240	125	235	10.0
9-23-62	Main Lake	0	180	100	210	10.0
9-23-62	Emerson Bay	0	225	110	205	10.0

Date	Location	(M) Depth	Total Hardness	Calcium Hardness	Alkalinity	Chloride
9-23-62	Miller's Bay	0	225	105	205	10.0
9-23-62	Browns Bay	0	235	90	215	10.0
10-29-62	Main Lake	0	230	70	190	11.0
10-29-62	Miller's Bay	0	230	80	215	10.0
10-29-62	Emerson Bay	0	230	80	210	11.0
10-29-62	Beck's Canal	0	250	105	220	10.0
11-28-62	Emerson Bay	0	240	80	230	10.0

E. Stoermer 1963 thesis

Hardness, chloride and alkalinity measurements (mg/l) made by Stoermer (1963) of West Okoboji deep hole area between June 24, 1960 and February 11, 1961.

Date	(M) Depth	Total Hardness	Calcium Hardness	Alkalinity	Chloride
6-24-60	0	230	75	210	7.5
6-24-60	5	220	75	205	10.0
6-24-60	10	220	70	215	10.0
6-24-60	15	230	70	215	10.0
6-24-60	23	220	70	200	7.5
6-24-60	27	220	70	220	10.0
7-7-60	0	220	60	190	10.0
7-7-60	10	230	80	180	10.0
7-7-60	20	230	85	220	15.0
7-7-60	23	225	90	225	10.0
7-20-60	0	215	80	210	10.0
7-20-60	10	215	85	-	10.0
7-20-60	15	210	75	210	8.5
7-20-60	20	220	80	210	10.0
7-20-60	25	215	75	210	10.0
7-20-60	30	220	100	220	10.0
8-18-60	0	220	80	220	-
8-18-60	7	210	80	220	-
8-18-60	15	210	80	210	-
8-18-60	25	210	80	210	-

Date	(M) Depth	Total Hardness	Calcium Hardness	Alkalinity	Chloride
8-18-60	34	210	80	220	-
10-1-60	0	210	64	189	10.0
11-5-60	0	203	70	210	10.5
11-5-60	25	208	71	204	9.5
11-25-60	0	222	70	210	10.0
11-25-60	5	212	70	210	12.0
11-25-60	10	215	77	212	12.0
11-25-60	15	218	72	210	12.0
11-25-60	20	212	77	225	11.0
2-11-61	0	245	90	250	15.0
2-11-61	3	227	85	230	12.0
2-11-61	15	217	73	240	14.0
2-11-61	30	240	77	220	12.0

E. Stoermer 1963 Thesis

Hardness, Chloride and Alkalinity measurements (mg/l) made by Stoermer (1963) of West Okoboji at Emerson Bay.

Date	(M) Depth	Total Hardness	Calcium Hardness	Alkalinity	Chloride
6-15-60	1	220	70	210	10.0
6-15-60	8	215	70	210	7.5
10-1-60	0	210	66	192	9.0
11-5-60	0	210	68	198	10.0
1-14-61	0.6	236	80	227	11.0
2-12-61	0	220	72	215	12.0
3-18-61	0	240	74	240	11.0
4-22-61	0	210	80	215	10.0
6-1-61	0	216	83	220	11.0
10-16-61	0	220	85	220	11.0
1-22-62	0	240	125	235	10.0
9-23-62	0	225	110	205	10.0
10-29-62	0	230	80	210	11.0
11-28-62	0	240	80	230	10.0

E. Stoermer 1963 Thesis

Hardness, chloride and alkalinity measurements (mg/l) made by E. Stoermer (1963) of West Okoboji at Miller's Bay (surface samples)

Date	Total Hardness	Calcium Hardness	Alkalinity	Chloride
6-20-60	230	75	210	10
10-1-60	217	69	185	10
11-6-60	216	70	215	10
1-14-61	232	93	230	14
2-12-61	220	81	225	13
4-22-61	-	83	222	10
6-1-61	218	83	218	12
10-16-61	225	90	225	10
9-23-62	225	105	205	10
10-29-62	230	80	215	10

Lang Thesis

Alkalinity measurements (mg/l $CaCO_3$) made by Lang (1970) on West Okoboji during 1968/1969.

Station	Date			
	6-23	8-1	10-26	3-15
Little Millers Bay	225	220	240	230
Millers Bay	240	220	230	230
Little Emerson Bay	250	319	230	225
West Okoboji North	250	230	230	230
Fort Dodge Point	245	230	-	230
Gull Point	220	230	210	225
Main Lake	230	212	220	230

Chemical analyses of Spirit Lake Waters, M. H. Krohn (unpublished). 1,000 yards off Red Nose Point at a depth of 1.0 meter.

Date 1970-1971	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Total Hardness	270	270	220	240	230	220	290	235	245	250	310	300
Calcium Hardness	110	100	90	80	80	75	70	70	80	90	110	120
Alkalinity	220	210	200	180	180	180	175	180	170	180	-	200
Chloride	15.1	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	-	15.0

Dissolved oxygen concentrations (mg/l) taken in a vertical profile at the deep hole area of Lake West Okoboji during past studies. Values in parenthesis next to the oxygen concentration is the actual depth at which the sample was collected if different than the depth indicated in the column heading.

Date	Collector	Sur	5m	10m	15m	20m	25m	30m	35m	40m
7-31-19	Birge & Juday	8.4	8.1	8.1	3.2	2.6	1.3	1.3	(33)1.2	-
8-4-22	Stromsten	10.6	9.3	7.1	-	6.3	-	-	-	-
8-5-22	Stromsten	11.4	9.1	7.0	3.6	3.6	2.5	-	-	-
6-21-23	Stromsten	9.9	8.4	8.2	7.4	6.7	-	-	-	-
6-27-23	Stromsten	(2)9.5	(7)9.1	(11)7.7	(17)7.2	-	-	-	-	-
7-3-23	Stromsten	8.4	8.4	(9)6.7	(14)5.9	-	-	-	-	-
7-6-23	Stromsten	9.0	(4)9.0	(12)7.3	(16)5.9	-	-	-	-	-
7-7-23	Stromsten	9.6	9.1	7.4	5.4	4.6	3.6	3.2	-	-
7-9-23	Stromsten	9.7	9.1	7.7	5.8	-	-	-	-	-
7-17-23	Stromsten	9.5	9.4	7.8	7.3	6.9	4.6	-	-	-
7-24-23	Stromsten	7.8	8.1	8.5	6.4	2.9	2.1	-	-	-
7-25-23	Stromsten	9.1	8.8	7.0	4.5	3.1	-	-	-	-
7-27-23	Stromsten	7.7	-	7.5	4.1	3.3	-	0.5	-	-
7-28-23	Stromsten	7.3	7.0	6.9	5.0	2.2	2.0	0.9	-	(38)0.8
7-30-23	Stromsten	7.4	7.4	6.8	3.1	2.1	0.4	-	-	-
7-31-23	Stromsten	-	7.6	7.1	2.7	1.5	0.5	0.4	-	-
8-1-23	Stromsten	7.6	(7)7.4	(12)7.0	(16)3.1	(18)3.2	1.1	0	0	-
8-2-23	Stromsten	7.6	-	-	3.5	2.4	-	-	-	-
8-3-23	Stromsten	7.3	(8)7.6	(11)6.7	2.8	(18)1.6	0	0	-	-

Date	Collector	Sur	5m	10m	15m	20m	25m	30m	35m	40m
8-6-23	Stromsten	7.5	(8)7.4	(12)4.7	(16)2.0	1.3	(24)0.9	-	-	-
8-7-23	Stromsten	7.7	-	7.7	2.4	(18)1.5	-	1.1	-	0.24
8-8-23	Stromsten	7.4	(8)6.8	(12)6.0	(16)1.6	1.4	-	0.4	-	-
8-9-23	Stromsten	7.1	-	1.9	1.1	0.7	0.4	0.4	0.2	(38)0
8-11-23	Stromsten	7.9	(7)7.5	(13)7.4	4.4	(21)0.7	(26)0.4	(31)0	-	-
8-13-23	Stromsten	8.2	8.2	(14)8.2	2.6	(19)1.2	(24)0	-	-	-
8-14-23	Stromsten	7.8	-	-	1.8	1.0	(26)0.3	(33)0	-	-
8-15-23	Stromsten	8.3	-	(11)7.2	(14)3.4	2.17	-	(28)0.9	(34)0.3	-
8-16-23	Stromsten	8.1	(4)8.7	(9)7.8	3.3	(22)0.4	-	0.3	-	-
8-17-23	Stromsten	7.2	(3)7.6	(11)6.8	(16)1.0	0.5	-	(27)0.4	(34)0.1	-
8-18-23	Stromsten	7.9	(6)7.8	(12)5.1	2.4	1.2	(24)0.4	(28)0	-	-
8-20-23	Stromsten	8.0	-	6.2	1.8	0.5	(23)0.3	0	0	-
6-27-25	Stromsten	8.3	-	7.0	6.4	-	5.2	3.2	-	-
6-29-25	Stromsten	7.8	7.5	-	5.4	4.9	2.9	-	1.4	-
6-30-25	Stromsten	7.6	-	5.5	-	3.9	-	-	-	-
7-1-25	Stromsten	8.3	-	7.0	5.7	5.0	4.6	-	(37)0.8	-
7-3-25	Stromsten	7.1	-	6.3	4.9	4.0	3.1	-	(37)0.8	-
7-6-25	Stromsten	7.7	8.1	6.7	5.3	4.4	3.1	-	(37)0.5	-
7-22-25	Stromsten	6.7	-	6.7	3.8	-	2.8	-	-	-
7-27-25	Stromsten	5.1	6.5	5.8	4.3	0.4	-	0.2	-	-
7-28-25	Stromsten	6.8	6.3	6.4	5.2	0.9	-	0.3	-	-
7-29-25	Stromsten	6.3	6.9	7.5	-	-	-	-	-	-
7-30-25	Stromsten	6.3	-	6.0	5.6	-	2.7	-	(29)0	-
7-31-25	Stromsten	6.3	6.5	6.5	6.6	1.5	-	-	-	-

Date	Collector	Sur	5m	10m	15m	20m	25m	30m	35m	40m
8-1-25	Stromsten	6.3	6.5	6.5	6.6	1.2	1.2	-	-	-
8-4-25	Stromsten	6.4	5.6	4.7	4.6	0.7	0.7	0.3	-	-
8-5-25	Stromsten	7.4	6.6	6.9	6.5	2.1	1.4	0	-	-
8-6-25	Stromsten	6.8	6.9	6.9	5.1	2.4	0.1	0	-	-
8-7-25	Stromsten	7.0	5.6	6.6	6.2	0.6	0	0	-	-
8-8-25	Stromsten	6.8	6.2	5.7	7.6	1.6	0	0	-	-
8-10-25	Stromsten	7.0	6.6	6.7	3.6	2.7	0.2	0	-	-
8-11-25	Stromsten	6.8	6.6	4.9	4.6	1.2	0.4	0	-	-
8-12-25	Stromsten	6.9	6.6	5.2	4.9	1.2	0.4	0	-	-
8-13-25	Stromsten	5.8	6.3	6.3	5.0	1.6	0.2	0	-	-
8-14-25	Stromsten	6.3	7.3	6.1	3.2	0.5	0.1	0	-	-
8-15-25	Stromsten	8.3	8.3	5.7	2.5	0.7	0.3	0	-	-
8-16-25	Stromsten	7.8	8.0	7.8	6.3	0.5	0.1	0	-	-
8-17-25	Stromsten	5.5	-	-	4.6	1.2	0.3	0	-	-
8-18-25	Stromsten	7.0	5.8	6.9	4.8	0.9	0	0	-	-
8-19-25	Stromsten	6.2	6.6	5.0	4.1	0.5	0	0	-	-
8-20-25	Stromsten	4.9	4.6	3.2	3.2	0.5	0	0	-	-
7-6-26	Stromsten	9.5	-	8.8	7.5	7.1	-	0	-	-
7-7-26	Stromsten	11.9	-	-	-	7.5	4.7	-	-	-
7-9-26	Stromsten	8.8	-	8.5	7.6	-	-	-	-	-
7-12-26	Stromsten	8.8	-	8.8	7.9	(23)6.7	-	-	-	-
7-13-26	Stromsten	8.3	-	7.9	7.9	(23)6.0	(27)3.9	-	-	-
7-14-26	Stromsten	8.5	-	7.5	-	-	-	-	-	-
7-15-26	Stromsten	-	-	6.2	(17)5.4	(22)4.7	-	(28)4.2	-	-

Date	Collector	Sur	5m	10m	15m	20m	25m	30m	35m	40m
7-16-26	Stromsten	6.5	6.7	7.2	-	(22)5.0	-	-	-	-
7-17-26	Stromsten	7.8	-	6.3	5.0	-	(23)1.5	-	-	-
7-19-26	Stromsten	6.8	6.7	6.3	4.0	3.2	2.0	-	-	-
7-20-26	Stromsten	6.7	-	6.2	5.0	-	1.7	-	-	-
7-22-26	Stromsten	7.0	-	6.4	5.6	3.0	2.0	-	-	-
7-26-26	Stromsten	7.1	6.7	6.6	5.3	2.4	-	0.3	-	-
7-27-26	Stromsten	-	7.2	-	5.5	-	1.0	-	-	-
7-28-26	Stromsten	7.0	6.6	6.8	6.7	2.2	0.7	-	-	-
7-29-26	Stromsten	7.3	7.1	6.9	5.5	2.3	0	-	-	-
7-30-26	Stromsten	7.0	-	-	5.7	3.6	0.6	-	-	-
7-31-26	Stromsten	7.6	7.6	7.7	6.0	2.0	0.7	0.6	-	-
8-2-26	Stromsten	5.6	5.9	5.9	4.4	3.2	-	0.2	-	-
8-4-26	Stromsten	4.8	-	5.1	5.4	1.9	0.7	-	-	-
8-5-26	Stromsten	-	-	6.8	5.8	0.9	0.8	-	0	-
8-6-26	Stromsten	7.3	-	7.3	5.8	-	0.9	-	-	-
8-7-26	Stromsten	7.3	6.8	6.9	-	-	-	-	-	-
8-9-26	Stromsten	7.0	-	6.8	-	1.2	-	0	-	-
8-10-26	Stromsten	7.0	-	8.0	6.1	4.6	-	-	-	-
8-13-26	Stromsten	6.0	6.2	5.8	3.3	1.03	0.8	0.6	-	-
8-14-26	Stromsten	4.9	6.9	3.9	3.4	1.2	1.0	0.8	-	-
8-16-26	Stromsten	-	5.9	5.8	2.8	1.1	0.8	-	-	-
8-17-26	Stromsten	6.5	5.1	6.8	3.5	-	-	-	-	-
6-15-27	Stromsten	10.6	-	9.7	-	9.0	-	-	-	-
6-17-27	Stromsten	-	-	9.7	9.7	6.9	-	-	-	-

Date	Collector	Sur	5m	10m	15m	20m	25m	30m	35m	40m
6-18-27	Stromsten	8.9	-	8.7	-	8.4	-	-	-	-
6-23-27	Stromsten	9.1	-	-	7.8	7.5	-	-	-	-
7-11-27	Stromsten	8.3	7.1	6.9	-	6.0	3.9	-	-	-
7-14-27	Stromsten	8.1	8.0	8.1	6.5	6.0	-	-	-	-
7-15-27	Stromsten	8.5	8.5	-	-	5.8	2.5	-	-	-
7-19-27	Stromsten	7.7	7.5	7.1	-	2.9	-	-	-	-
7-23-27	Stromsten	7.1	-	-	-	2.2	0.7	0.5	-	-
7-25-27	Stromsten	8.0	7.2	6.5	6.5	2.2	1.5	1.0	0.3	-
7-26-27	Stromsten	7.7	8.0	6.6	4.0	1.7	0.5	0.3	-	-
7-28-27	Stromsten	7.6	7.7	7.8	-	-	0.7	-	-	-
7-29-27	Stromsten	7.6	7.7	7.8	(13)5.6	-	0.7	-	0.7	-
7-30-27	Stromsten	7.0	-	8.0	-	-	(24)1.2	1.0	(37)0.9	-
8-2-27	Stromsten	7.2	7.3	8.0	5.5	2.2	1.6	1.4	1.2	-
8-3-27	Stromsten	-	-	-	-	-	2.3	1.4	(36)0	-
8-5-27	Stromsten	-	-	7.2	4.0	0.8	0.7	0.6	0.2	-
8-9-27	Stromsten	7.0	6.8	7.4	6.4	1.0	0.8	-	0.5	-
8-12-27	Stromsten	8.8	8.1	7.0	-	-	0.9	0.5	-	-
8-15-27	Stromsten	9.2	8.6	6.8	5.0	1.3	0.2	0.2	-	-
6-20-28	Stromsten	8.4	7.3	6.7	6.7	5.9	-	-	-	-
6-28-28	Stromsten	8.4	6.9	6.7	6.6	5.8	5.5	-	-	-
7-3-28	Stromsten	7.8	6.8	6.7	6.5	6.1	5.6	-	-	-
7-13-28	Stromsten	8.1	6.9	5.9	4.7	4.7	-	-	-	-
7-20-28	Stromsten	8.5	-	6.1	-	3.9	-	-	-	-
7-26-50	Bardach et al	8.5	7.7	7.4	6.9	3.2	-	1.6	0.9	-
8-8-50	Bardach et al	8.2	7.7	-	6.8	3.0	0.3	0	0	-

Date	Collector	Sur	5m	10m	15m	20m	25m	30m	35m	40m
8-11-54	Wood	8.6	8.5	8.1	(14)0.1	0.4	0	0	0	-
8-19-54	Wood	-	-	-	(14)2.8	(16)0	-	-	-	-
6-15-55	Wood	9.2	-	8.4	(16)8.1	6.4	(22)4.1	1.8	0.9	-
6-27-55	Wood	-	-	-	-	-	0.8	-	-	-
7-5-55	Wood	-	-	-	-	-	0.8	0.8	0.8	-
8-1-55	Wood	10.2	-	6.2	0.1	0	0	(32)0	-	-
8-15-55	Wood	-	-	8.8	0.3	0	0	-	-	-
6-24-60	Stoermer	6.7	7.5	6.3	6.5	(23)4.0	(27)3.0	-	-	-
7-7-60	Stoermer	7.0	-	5.5	-	1.8	-	-	-	-
7-20-60	Stoermer	7.3	-	6.0	4.3	1.7	1.7	1.7	-	-
8-18-60	Stoermer	6.5	(7)5.0	-	1.5	-	1.5	-	(34)1.2	-
10-1-60	Stoermer	6.3	-	-	-	-	-	-	-	-
11-5-60	Stoermer	7.8	-	-	-	-	-	-	-	-
11-25-60	Stoermer	8.5	7.4	7.4	6.9	7.6	-	-	-	-
2-11-60	Stoermer	9.8	(3)9.4	-	7.8	-	-	6.4	-	-
6-28-61	Cooke	-	8.7	(11)7.8	(13)7.0	-	-	-	-	-
7-5-61	Cooke	-	(6)8.1	-	-	3.4	-	-	-	-
7-16-61	Cooke	-	7.7	(11)3.0	-	1.7	-	-	-	-
7-21-61	Cooke	-	(7)7.4	-	-	1.1	-	-	-	-
7-26-61	Smith	8.1	8.1	5.3	1.1	0.2	-	-	-	-
7-27-61	Cooke	-	7.4	-	(14)1.0	0.1	-	-	-	-
8-3-61	Cooke	-	(6)8.2	-	-	-	-	-	-	-
8-11-61	Cooke	-	(6)7.1	-	(13)0.7	0.1	-	-	-	-
8-15-61	Smith	7.5	7.6	-	0.3	0.2	-	-	-	-

Date	Collector	Sur	5m	10m	15m	20m	25m	30m	35m	40m
8-16-61	Cooke	7.8	(6)7.8	-	(13)0.7	0.2	-	-	-	-
10-28-61	Cooke	9.3	-	-	9.2	-	-	(31)9.1	-	-
3-18-62	Cooke	-	(3)10.0	-	8.5	-	(28)1.0	-	-	-
4-27-62	Cooke	16.1	-	-	14.0	-	13.5	-	-	-
5-18-62	Cooke	13.0	11.7	(9)11.7	-	(18)11.0	-	-	-	-
6-16-62	Cooke	-	(4)9.9	(12)9.0	(13)8.7	-	-	-	-	-
7-7-62	Cooke	8.3	-	6.5	4.3	-	(24)0	-	-	-
8-8-62	Cooke	9.9	9.1	-	(13)3.6	-	0	-	-	-
10-9-65	Dunn	9.2	9.8	9.7	-	-	-	9.3	-	9.2
10-16-65	Dunn	9.7	8.9	9.8	9.8	9.8	9.4	9.2	8.0	8.7
10-30-65	Dunn	10.0	9.6	9.7	9.7	9.8	9.8	9.8	9.7	9.6
11-6-65	Dunn	10.0	9.7	9.9	9.8	9.8	9.8	9.8	9.6	9.6
11-15-65	Dunn	10.5	10.4	10.4	10.4	10.2	10.6	10.5	10.6	10.2
11-20-65	Dunn	10.8	10.9	10.8	11.0	11.0	10.8	11.1	10.9	10.8
1-9-66	Dunn	14.0	-	-	-	14.0	-	-	13.9	(37)13.6
1-16-66	Dunn	14.4	12.9	12.8	12.2	11.9	13.2	12.6	12.7	6.2
2-6-66	Dunn	14.5	14.0	13.9	12.9	12.3	12.3	10.96	10.54	0.4
2-20-66	Dunn	15.2	13.2	13.4	13.3	11.4	-	11.3	7.3	0.5
3-12-66	Dunn	9.6	15.0	14.4	14.0	13.7	10.4	9.4	3.0	0.2
4-16-66	Dunn	13.4	12.6	12.7	12.8	11.7	12.0	11.9	12.5	12.0
6-28-66	Bachmann	9.2	7.4	8.0	5.2	4.1	4.0	3.6	2.3	-
7-7-66	Bachmann	8.1	8.0	6.7	3.9	2.8	2.0	1.5	1.2	-
8-9-66	Bachmann	7.8	7.6	7.7	0.1	0	0	0	0	-
7-31-69	Bachmann	8.6	8.5	7.7	2.0	0.1	0	0	0	-

Appendix G

Calcium hardness (mg/l $CaCO_3$), total hardness (mg/l $CaCO_3$), alkalinity (mg/l $CaCO_3$) and chloride (mg/l) measurements of Lake West Okoboji, Lake East Okoboji, Spirit Lake, Upper Gar Lake, Lake Minnewashta, and Lower Gar Lake between August, 1971 and July, 1973. S represents surface samples and B represents samples collected near the bottom of the water column.

LAKE WEST OKOBOJI

Calcium Hardness #49

Date	Sur	5 M	10 M	15 M	20 M	25 M	30 M	35 M	40 M
5-31-72	75.6	-	75.0	-	76.0	-	75.8	-	75.4
8-21-72	61.4	56.8	60.2	62.0	60.2	74.4	75.8	74.8	-
2-2-73	73.6	72.2	73.2	72.6	73.8	74.2	74.6	75.6	-
5-8-73	73.4	-	72.6	-	73.2	-	72.4	-	72.2
7-20-73	78.0	-	78.6	-	78.2	-	77.2	-	-

LAKE WEST OKOBOJI

Calcium Hardness	49.1		49.2		49.3		49.4		50	
Date	S	B	S	B	S	B	S	B	S	B
2-22-72	87.2	86.0	86.4	82.0	92.8	84.2	99.0	94.6	87.6	91.6
7-20-72	76.4	-	75.8	-	77.2	-	75.6	-	78.6	-

Calcium Hardness	UPPER GAR 51		MINNEWASHTA 52		LOWER GAR 53	
Date	S	B	S	B	S	B
2-16-72	168.4	-	155.8	157.6	192.6	-
9-5-72	88.8	89.0	88.4	88.6	112.6	113.4
7-20-73	84.6	-	96.8	-	79.6	-

SPIRIT LAKE
Calcium
Hardness

Date	54 S	54 B	54.1 S	54.1 B	54.2 S	54.2 B	54.3 S	54.3 B	54.4 S	54.4 B
9-2-71	-	-	57.6	-	58.6	-	-	-	58.2	-
2-23-72	104.6	89.0	108.0	100.6	101.6	87.8	108.6	87.0	126.0	99.0
5-31-72	86.0	80.2	82.0	81.6	79.2	78.0	87.0	85.4	84.4	82.6
9-12-72	81.2	80.4	79.6	78.0	78.2	79.0	81.4	80.8	80.8	-
5-15-73	94.0	93.6	94.8	-	93.8	-	94.4	94.2	94.4	93.8
7-20-73	85.8	-	86.6	-	86.2	-	86.4	-	88.6	-

LAKE EAST OKOBOJI
Calcium
Hardness

Date	55 S	55 B	55.1 S	55.1 B	56 S	56 B	56.1 S	56.1 B	57 S	57 B
2-24-72	164.0	162.6	157.6	154.6	131.2	147.2	164.0	159.8	134.0	151.8
5-31-72	95.0	96.8	100.2	100.8	100.6	98.0	98.6	97.4	97.8	97.6
9-6-72	82.4	81.2	89.0	85.8	-	-	89.0	90.2	90.4	-
5-18-73	103.6	-	102.0	-	103.4	-	104.6	-	107.2	-
7-20-73	92.0	-	80.0	-	89.2	-	84.4	-	90.2	-

LAKE WEST OKOBOJI
Total Hardness #49

Date	Sur	5 M	10 M	15 M	20 M	25 M	30 M	35 M	40 M
8-17-71	180.6	-	180.8	-	187.2	-	191.6	-	-
2-14-72	238.0	218.6	222.0	226.0	221.8	222.6	223.0	225.0	-
5-31-72	213.4	-	212.2	-	211.8	-	212.0	-	212.8
8-21-72	201.4	201.6	204.0	205.0	212.8	216.0	215.8	216.4	-
2-2-73	218.4	215.6	215.2	213.6	215.2	215.8	218.0	218.6	-
5-8-73	209.0	-	208.6	-	209.0	-	209.4	-	209.0
7-20-73	212.0	-	209.6	-	208.8	-	213.2	-	-

LAKE WEST OKOBOJI
Total Hardness

Hardness	49.1		49.2		49.3		49.4		50	
Date	S	B	S	B	S	B	S	B	S	B
8-19-71	180.8	-	178.4	-	174.4	-	173.0	-	173.8	-
2-22-72	238.4	232.0	232.4	225.2	233.2	235.6	250.6	246.4	232.0	244.8
7-20-73	211.8	-	210.2	-	212.4	-	210.6	-	212.6	-

LAKE EAST OKOBOJI

Total Hardness	55		55.1		56		56.1		57	
Date	S	B	S	B	S	B	S	B	S	B
8-20-71	173.0	-	170.8	-	182.0	-	181.4	-	183.8	-
9-9-71	198.8	197.4	187.8	184.2	168.8	191.0	185.8	189.6	188.2	187.0
2-24-72	344.8	347.2	345.2	352.8	283.6	277.6	286.8	280.8	275.2	268.8
5-31-72	227.6	226.4	230.0	229.6	232.0	233.0	230.2	229.8	229.0	226.6
9-6-72	202.8	205.0	212.8	215.0	-	-	219.2	212.8	212.8	-
5-18-73	242.2	-	243.4	-	242.4	-	233.6	-	227.4	-
7-20-73	239.4	-	217.8	-	219.4	-	213.0	-	219.2	-

SPIRIT LAKE

Total Hardness	54		54.1		54.2		54.3		54.4	
Date	S	B	S	B	S	B	S	B	S	B
9-2-71	-	-	172.4	-	173.2	-	-	-	172.6	-
2-23-72	242.4	236.8	247.2	252.8	241.2	234.8	244.4	234.8	256.8	252.0
6-5-72	219.0	220.0	218.4	219.2	219.0	219.0	219.8	219.2	219.6	217.0
9-12-72	221.0	221.2	219.8	221.0	221.8	221.6	220.3	219.8	220.0	-
5-15-73	234.2	234.0	234.2	-	232.2	-	234.0	234.6	236.8	235.8
7-20-73	224.0	-	227.2	-	227.8	-	235.4	-	227.0	

Total Hardness	UPPER GAR 51		MINNEWASHTA 52		LOWER GAR 53	
Date	S	B	S	B	S	B
8-23-71	176.4	175.8	168.2	170.4	156.8	156.8
2-16-72	328.0	-	282.6	280.2	395.2	-
9-5-72	217.8	218.4	212.0	212.0	232.0	232.8
7-20-73	215.0	-	224.8	-	203.0	-

LAKE WEST OKOBOJI
Alkalinity #49

Date	Sur	5 M	10 M	15 M	20 M	25 M	30 M	35 M	40 M
5-31-72	206.4	-	205.8	-	208.0	-	207.6	-	208.2
8-21-72	192.8	193.6	195.2	195.0	205.0	206.2	207.8	209.6	-
2-2-73	205.4	203.8	203.4	204.0	201.8	204.2	207.4	207.8	-
5-8-73	198.4	-	199.6	-	198.2	-	199.0	-	199.6
7-20-73	198.8	-	200.4	-	198.6	-	203.8	-	-

LAKE WEST OKOBOJI
Alkalinity

	49.1		49.2		49.3		49.4		50	
Date	S	B	S	B	S	B	S	B	S	B
2-22-72	211.8	207.0	207.8	204.6	207.0	209.2	214.4	212.0	206.6	212.2
7-20-73	200.4	-	199.2	-	193.0	-	199.0	-	200.6	-

LAKE EAST OKOBOJI Alkalinity	55		55.1		56		56.1		57	
Date	S	B	S	B	S	B	S	B	S	B
9-9-71	211.5	-	196.3	-	200.0	-	197.6	-	196.9	-
2-24-72	276.6	278.0	303.2	296.8	248.8	250.0	243.6	241.2	237.6	236.4
5-31-72	186.0	186.2	190.8	193.6	202.8	207.2	203.6	204.2	200.4	202.0
9-6-72	181.8	182.6	192.0	191.6	-	-	197.2	197.8	197.6	-
5-18-73	190.4	-	192.4	-	196.2	-	193.2	-	197.2	-
7-20-73	190.0	-	175.6	-	186.4	-	178.8	-	185.8	-

SPIRIT LAKE Alkalinity	54		54.1		54.2		54.3		54.4	
Date	S	B	S	B	S	B	S	B	S	B
9-2-71	-	-	152.5	-	153.0	-	-	-	152.2	-
2-23-72	212.6	205.0	224.2	221.8	211.6	206.6	214.8	204.6	221.0	217.4
6-5-72	162.2	163.8	161.6	162.4	161.4	160.6	161.4	163.0	161.8	163.0
9-12-72	171.2	172.6	175.0	174.0	174.6	175.2	172.2	171.8	175.8	-
5-15-73	182.4	182.0	182.2	-	181.6	-	182.0	183.4	182.4	181.6
7-20-73	177.8	-	176.4	-	178.6	-	177.0	-	177.4	-

Alkalinity	UPPER GAR 51		MINNEWASHTA 52		LOWER GAR 53	
Date	S	B	S	B	S	B
8-23-71	185.9	189.1	175.5	175.9	164.2	167.0
2-16-72	273.6	-	235.8	237.2	329.5	-
9-5-72	196.2	191.4	193.4	191.2	214.8	214.8
7-20-73	180.2	-	193.2	-	173.2	-

LAKE WEST OKOBOJI
Chloride Measurements #49

Date	Sur	5 M	10 M	15 M	20 M	25 M	30 M	35 M	40 M
8-17-71	7.00	-	6.85	-	7.05	-	6.80	-	-
2-14-72	7.40	7.50	7.50	7.60	-	-	-	-	-
5-31-72	7.85	7.50	7.95	7.80	7.75	7.90	8.05	8.10	8.25
8-21-72	8.05	7.85	8.30	8.35	7.80	7.90	7.95	7.65	-
2-2-73	8.80	8.40	8.65	8.45	8.60	8.25	8.45	8.60	-
5-8-73	8.25	-	8.15	-	8.30	-	8.10	-	8.20
7-20-73	8.10	-	8.30	-	7.95	-	8.05	-	-

LAKE WEST OKOBOJI
Chloride
Measurements

	49.1		49.2		49.3		49.4		50	
Date	S	B	S	B	S	B	S	B	S	B
8-19-71	7.55	-	7.20	-	7.15	-	7.60	-	7.55	-
2-22-72	7.80	7.90	8.00	8.35	8.15	8.25	7.90	8.00	8.45	8.60
7-20-73	8.30	-	8.40	-	8.25	-	8.40	-	8.20	-

LAKE EAST OKOBOJI
Chloride
Measurements

Date	55 S	55 B	55.1 S	55.1 B	56 S	56 B	56.1 S	56.1 B	57 S	57 B
8-20-71	8.70	-	9.40	-	9.10	-	9.25	-	9.05	-
9-9-71	8.95	8.95	8.65	8.75	9.45	8.60	9.00	9.00	8.80	8.45
2-24-72	13.6	10.6	13.1	10.4	11.65	11.0	11.15	10.95	11.40	11.05
5-31-72	13.80	11.75	11.95	11.45	10.65	10.40	10.35	10.40	10.05	10.25
9-6-72	11.50	11.60	11.85	12.00	-	-	10.90	10.90	10.80	-
7-20-73	11.00	-	11.90	-	11.90	-	11.90	-	12.15	-

SPIRIT LAKE
Chloride
Measurements

Date	54 S	54 B	54.1 S	54.1 B	54.2 S	54.2 B	54.3 S	54.3 B	54.4 S	54.4 B
8-26-71	8.30	8.60	8.95	8.70	8.35	8.40	8.50	8.45	8.50	8.55
2-23-72	10.10	9.75	9.75	9.75	9.20	9.60	9.65	9.45	9.50	9.15
6-5-72	8.85	8.60	9.25	9.05	10.20	8.55	8.75	8.55	8.95	8.90
9-12-72	-	-	8.95	9.00	9.10	9.00	-	-	9.00	-
5-15-73	-	-	-	-	-	-	9.1	9.3	9.2	9.25
7-20-73	9.75	-	9.95	-	9.90	-	9.65	-	9.95	-

Chloride Measurements	UPPER GAR 51		MINNEWASHTA 52		LOWER GAR 53	
Date	S	B	S	B	S	B
8-23-71	9.30	9.25	9.45	9.75	9.60	9.65
2-16-72	11.05	-	10.65	10.30	12.20	-
9-5-72	10.65	10.50	10.75	10.45	10.25	10.45
7-20-73	11.75	-	11.70	-	10.55	-

Appendix H

Silica measurements (mg/l SiO_2) made on the Iowa Great Lakes between August, 1971 and September 1973. Depths in meters. S represents surface samples and B represents samples collected near the bottom of the water column.

Silica Measurements

Station	UPPER GAR 51		MINNEWASHTA 52		LOWER GAR 53	
Date	S	B	S	B	S	B
8-22-71	24.9	23.5	20.4	19.1	27.3	27.0
9-13-71	52	29	22	26	46	55
9-28-71	47	49	32	34	58	55
10-22-71	21	23	24	22	26	24
11-15-71	17.5	20.5	16.5	17.0	24.5	18.5
1-7-72	-	-	24	25	30	26
2-16-72	25	-	20.5	25.0	34	-
4-24-72	6.5	7.0	6.0	6.0	5.0	5.0
5-16-72	9.0	8.5	7.5	7.5	7.5	7.0
6-1-72	9.0	8.5	9.0	10.0	11	10.5
6-16-72	11.0	11.0	9.3	9.0	10.1	8.1
6-29-72	12.0	13.0	11.9	13.0	18.9	17.0
7-31-72	16	15.7	15.3	16.0	16.7	18.2
8-25-72	23	20.2	25	21	36	35
9-5-72	22.5	25.0	27.5	25.0	24.9	34.0
10-4-72	32	33	37	35.5	32.2	34.7
10-25-72	24	24	25.5	24.5	23.5	24.0
11-29-72	23.5	23.5	-	-	-	-
12-19-72	24.5	-	26.5	-	28.0	-
1-26-73	27.8	-	-	-	-	-
4-18-73	11.0	-	10.0	-	7.5	-
5-18-73	9.8	-	10.7	-	10.5	-
5-30-73	3.5	-	4.3	-	5.2	-
6-21-73	7.0	-	8.0	-	8.5	-
6-29-73	7.3	-	7.1	-	0.2	-
7-10-73	0.9	-	5.5	-	1.3	-
7-19-73	1.0	-	7.3	-	5.1	-
8-15-73	7.1	-	10.1	-	7.2	-

West Okoboji Silica Measurements

Station	49.1		49.2		49.3		49.4		50	
Date	S	B	S	B	S	B	S	B	S	B
8-19-71	7.4	6.9	6.6	8.3	6.3	6.8	6.7	6.6	7.2	6.8
9-1-71	4.7	4.4	4.8	5.2	4.8	5.9	4.8	4.2	4.8	4.4
9-15-71	7.6	10.2	7.7	12.0	10.2	14.0	12.9	9.1	-	-
9-16-71	-	-	-	-	-	-	-	-	9.7	8.8
9-20-71	-	-	-	-	-	-	-	-	8.1	-
9-29-71	12	13	13	12	12	13	12	12	13	13
10-21-71	4.5	4.5	5.5	5.0	4.5	5.0	5.5	5.0	5.0	6.0
11-12-71	6.2	6.0	6.0	6.8	6.5	5.8	6.1	5.8	6.4	7.2
1-6-72	5.5	6.0	5.5	5.5	-	-	6.0	6.0	6.0	6.5
1-7-72	-	-	-	-	6.0	5.5	-	-	-	-
2-22-72	6.0	6.5	6.5	8.5	6.5	7.5	7.0	7.0	6.5	7.5
3-23-72	-	-	-	-	1.5	5.5	2.0	5.0	-	-
5-9-72	5.0	5.0	4.0	3.5	5.5	5.0	6.0	6.0	7.5	8.0
5-31-72	3.0	3.5	3.0	4.0	3.5	4.0	3.0	3.0	3.0	3.5
6-26-72	3.5	6.8	3.9	5.5	4.1	6.0	4.0	4.1	4.2	5.8
7-19-72	4.3	3.9	4.4	5.5	3.9	5.5	4.2	4.2	4.7	6.8
8-17-72	4.0	4.1	4.1	4.8	5.4	5.6	5.4	5.2	5.5	5.8
9-5-72	-	-	7.9	9.0	-	-	-	-	5.0	8.0
9-15-72	8.1	7.5	7.9	6.5	8.1	8.0	7.5	7.9	5.9	8.0
10-2-72	8.1	7.6	9.1	8.5	8.5	8.0	8.1	7.4	8.6	8.3
11-16-72	6.8	6.8	7.0	6.5	6.7	6.3	6.6	-	6.9	6.9
4-26-72	-	-	-	-	3.8	-	-	-	4.4	4.4

West Okoboji Silica Measurements

Station #49

Date	Sur	5M	10M	15M	20M	25M	30M	35M	40M
9-2-71	6.8	6.9	6.9	7.3	9.3	10.2	10.4	10.5	
9-16-71	10.2	10.8	10.6	9.9	12.8	9.0	14.5	13.4	
9-20-71	8.5	7.8	-	-	-	-	-	-	
10-15-71	6.0	5.5	5.5	5.5	5.0	5.5	5.0	5.0	
11-9-71	6.5	5.2	5.2	5.2	5.8	6.3	6.1	5.2	
1-5-72	6.5	6.0	6.5	6.5	5.5	6.0	6.0		
2-14-72	6.0	5.5	6.0	6.0	6.0	7.0	7.5	7.5	
3-17-72	5.5	5.5	5.5	6.0	6.0	7.0	7.0	7.5	
5-3-72	4.0	3.5	3.5	3.5	3.5	3.5	3.5	3.0	
5-31-72	3.0	3.0	3.0	4.0	4.5	4.5	4.5	4.0	4.5
6-19-72	4.0	4.0	4.1	4.3	5.0	5.0	5.2	6.5	5.6
7-31-72	4.8	4.5	4.5	5.4	6.2	6.3	6.6	7.0	
8-21-72	5.2	5.2	5.5	5.5	6.8	7.2	7.5	7.5	
9-8-72	8.1	7.5	7.9	6.1	8.1	9.9	11.5	11.0	
9-26-72	9	8	7.8	7.9	7.8	11.5	11.5	11.9	
10-13-72	9.2	9.1	9.3	8.9	9.4	9.3	11.6		
10-20-72	9.0	9.2	9.1	8.9	9.3	9.4	8.9	8.9	9.3
12-22-72	6.2	5.8	5.8	6.1	5.9	6.2	6.0	6.0	
1-8-73	6.4	6.0	6.0	6.2	6.3	6.4	6.8	7.1	
2-2-73	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.1	
2-23-73	5.9	5.9	5.9	5.9	6.1	6.4	6.6	7.3	
4-26-73	3.9	-	-	-	-	-	-	-	
5-8-73	3.9	4.0	4.1	3.8	3.8	3.9	3.9	3.9	4.0
5-23-73	3.8	3.9	3.9	3.8	3.9	4.1	4.0	4.2	4.1
6-7-73	3.1	3.2	3.2	3.7	3.6	3.9	4.0	4.0	4.2
6-16-73	4.0	3.9	3.8	4.1	4.6	5.1	5.0	5.3	
6-30-73	4.1	4.0	3.9	4.1	4.5	5.1	5.6	5.5	
7-15-73	5.0	5.1	4.7	5.3	6.1	7.1	7.0	7.0	
8-3-73	4.8	5.2	4.8	5.4	6.5	6.7	6.8	6.8	
8-16-73	5.7	5.9	6.4	6.4	6.6	7.6	7.8	8.4	
9-15-73	5.9	6.2	5.8	5.5	6.3	7.8	7.8	7.8	

East Okoboji Silica Measurements

Station	55		55.1		56		56.1		57	
Date	Surface	Bottom	S	B	S	B	S	B	S	B
8-20-71	14.5	14.2	13.9	13.8	9.4	9.1	8.7	8.8	7.6	7.8
9-28-71	48	43	63	38	28	32	27	30	31	35
10-20-71	32	27	30	29	21	22	20	22	15	20
11-11-71	22.5	27.5	27.0	25.5	19.5	17.5	18.0	25.5	27.0	18.0
1-10-72	33	32	28.5	29.0	30.5	32	27.5	26	30	29.5
2-24-72	35	32	37	34	21	22	19	21	20	20.5
3-22-72	20.0	-	-	-	18.0	19.5	-	-	3.5	19
5-4-72	10.0	10	7.0	6.5	6.5	7.0	5.5	6.0	8.0	8.0
6-1-72	6.5	7.0	7.0	7.0	6.5	8.0	6.5	7.0	7.5	7.5
6-13-72	-	5.5	7.5	7.0	8.4	8.3	9.8	9.7	8.8	8.4
6-28-72	5.6	8.0	11.0	11.3	11.9	9.5	11.5	12.5	12.5	13.9
8-1-72	16.2	15.0	19.9	19.8	17.4	16.7	16.0	10.0	15.5	13.4
8-24-72	23.9	23.9	25	26	19.9	19.6	19.9	19.7	18.5	17.9
9-6-72	22	23	31	30	-	-	23.5	25.1	23.0	-
9-22-72	33	33	24	31	26	26	27	28	26	26
10-5-72	38.5	39.1	36.0	37.2	34.0	34.0	34.2	33.7	34.5	35.5
10-27-72	25.0	25.5	24.5	24.5	23.0	23.0	22.5	23.0	23.0	22.5
11-29-72	-	-	-	-	-	-	24.0	23.5	22.5	22.0
12-21-72	27.5	27.5	27.5	26.5	23.5	23.0	24.5	23.5	24	23.5
1-26-73	25.0	-	19.0	-	16.5	23.0	20.5	22.5	19.5	-
3-5-73	8.6	-	16.9	-	11.2	-	-	-	14.2	-
4-18-73	6.5	-	7.5	-	9.8	-	10.5	-	11.0	-
5-18-73	7.1	-	7.2	-	7.4	-	9.1	-	9.8	-
5-30-73	3.6	-	1.3	-	2.6	-	2.9	-	3.7	-
6-21-73	3.5	-	4.5	-	6.5	-	6.7	-	6.2	-
6-28-73	0.0	-	0.0	-	2.9	-	5.0	-	6.6	-
7-10-73	0.3	-	1.5	-	0.6	-	1.2	-	0.9	-
7-25-73	6.5	-	6.6	-	1.0	-	5.3	-	5.3	
8-15-73	2.2	-	7.5	-	5.1	-	7.8	-	6.7	-

Big Spirit Silica Measurements

Station	54		54.1		54.2		54.3		54.4	
Date	S	B	S	B	S	B	S	B	S	B
8-26-71	35.7	36.2	35.2	36.0	36.7	35.7	36.7	34.3	36.5	36.0
9-2-71	-	-	37.0	34.5	35.2	-	-	-	35.5	34.5
10-1-71	-	-	54	49	53	52	55	57	49	-
11-19-71	19.5	18.0	-	-	18.0	17.5	-	-	17.5	17.7
1-12-72	16.0	15.5	17.0	15.5	17.0	-	15.5	16	16.5	16
2-23-72	21	20	18	18.5	23	20	18.5	18.5	20	21
3-20-72	11.5	18	9.5	17	-	-	-	-	14.5	18
5-18-72	5.5	4.5	-	-	-	-	5.5	5.5	5.0	5.5
6-5-72	1.8	2.0	1.5	2.0	1.5	2.0	1.5	1.5	1.8	2.1
6-27-72	1.9	1.9	1.6	1.6	1.5	2.5	1.4	1.5	1.5	1.5
7-18-72	2.1	2.2	3.2	3.0	3.2	3.0	3.0	3.2	3.2	2.9
8-7-72	1.8	1.5	2.7	2.7	2.5	1.9	2.1	2.0	1.8	1.8
8-23-72	2.5	2.7	3.2	2.4	3.2	3.0	2.7	3.0	3.1	2.9
9-12-72	1.3	1.3	1.3	1.3	1.8	1.8	1.5	2.0	1.5	1.3
9-27-72	3.1	3.5	3.7	3.9	3.6	3.6	3.9	3.5	4.2	2.9
10-18-72	-	-	6.8	6.7	6.2	6.9	6.1	6.5	6.6	6.4
10-31-72	5.4	5.3	-	-	-	-	5.5	5.6	5.8	5.9
11-20-72	5.8	5.6	-	-	-	-	5.5	5.5	5.5	6.1
12-18-72	6.1	5.9	6.3	6.3	6.3	5.8	6.2	6.3	6.0	6.1
1-15-73	6.5	6.5	6.0	6.0	5.8	5.9	6.3	5.5	6.5	6.5
3-1-73	6.5	7.1	-	-	-	-	-	-	6.8	7.0
5-4-73	6.0	6.1	-	-	-	-	5.9	5.9	6.0	6.1
5-15-73	6.3	6.4	-	-	-	-	6.2	6.9	5.8	5.9
6-26-73										
7-18-73	3.3	-	3.0	-	2.5	-	2.9	-	2.8	-
7-26-73	2.9	-	2.8	-	3.2	-	3.1	-	3.4	-
8-3-73	3.3	-	3.2	-	3.3	-	3.3	-	3.2	-
8-16-73	5.0	-	5.8	-	5.0	-	5.2	-	5.6	-
8-30-73	5.7	-	6.8	-	7.0	-	6.8	-	7.3	-
9-15-73	7.8	-	7.0	-	7.2	-	7.1	-	7.8	-

Appendix I

Total iron measurements (mg/l) made on the Iowa Great Lakes between August, 1971 and May, 1973. Depths in meters. S represents surface samples and B represents samples collected near the bottom of the water column.

Lake West Okoboji - Deep Hole Iron Measurements

Date	Sur	5	10	15	20	25	30	35	40
8-17-71	.07	.05	.06	.06	.09	.08	.08	.09	
8-26-71	.04	.03	-	-	-	-	-	-	-
9-2-71	.03	.03	.04	.04	.04	.05	.05	.07	
9-16-71	.06	.02	.04	.06	.05	.05	.10	.08	
10-15-71	.04	.03	.03	.03	.04	.03	.03	.02	
11-9-71	.04	.03	.00	.01	.00	.01	.02	.01	
1-5-72	.09	.09	.09	.09	.05	.02	.07		
2-14-72	.05	.05	.04	.02	.01	.02	.04	.05	
3-17-72	.06	.03	.00	.02	.02	.00	.02	.02	
5-3-72	.04	.04	.04	.04	.04	.04	.04	.09	
5-31-72	.02	.02	.01	.02	.01	.01	.03	.04	.04
6-19-72	.03	.02	.06	.03	.04	.04	.04	.03	.04
7-31-72	.05	.05	.06	.06	.06	.03	.05	.03	
8-21-72	.04	.03	.03	.03	.04	.06	.05	.03	
9-8-72	.06	.07	.04	.05	.07	.07	.06	.05	
9-26-72	.07	.07	.07	.07	.00	.01	.03	.00	
10-13-72	.04	.04	.05	.03	.03	.03	.06	-	
10-20-72	.03	.01	.01	.01	.02	.02	.02	.03	.02
12-22-72	.08	.07	.07	.06	.06	.09	.08	.09	
2-2-72	.12	.08	.07	.11	.09	.08	.13	.11	
4-26-72	.07	-	-	-	-	-	-	-	
5-8-72	.08	.07	.07	.06	.07	.07	.07	.08	.07

Lake West Okoboji Iron Measurements

Station	49.1		49.2		49.3		49.4		50	
Date	S	B	S	B	S	B	S	B	S	B
8- -71	.07	.03	.02	.03	.03	.02	.02	.05	.03	.04
9-26-71	-	-	-	-	-	-	-	-	.04	.04
9-1-71	.02	.02	.03	.04	.03	.02	.02	.02	.03	.02
9-15-71	.02	.08	.05	.02	.02	.02	.03	.04	-	-
9-16-71	-	-	-	-	-	-	-	-	.06	.06
9-29-71	.08	.08	.07	.08	.05	.09	.04	.04	.06	.07
10-21-71	0	0	0	0	.01	.01	0	0	.01	.01
11-12-71	.07	.07	.07	.06	.06	.07	.06	.07	.06	.06
1-6-72	.08	.08	.09	.09	-	-	.09	.09	.08	.09
1-7-72	-	-	-	-	.03	.04	-	-	-	-
2-22-72	.04	.04	.03	.05	.05	.03	.04	.04	.04	.06
3-23-72	-	-	-	-	.03	.04	.03	.03	-	-
5-9-72	.03	.03	.04	.03	.04	.04	.03	.04	.09	.09
5-31-72	.02	.02	.02	.04	.02	.03	.02	.02	.02	.03
6-12-72	.08	.08	.07	-	.08	-	.08	.07	.09	-
6-26-72	.04	.04	.05	.03	.01	.03	.05	.02	.01	.05
7-19-72	.13	.21	.09	.23	.18	.18	.16	.16	.26	.20
8-17-72	.04	.03	.05	.06	.03	.06	.03	.04	.04	.04
9-5-72	-	-	.03	.03	-	-	-	-	.01	.01
9-15-72	.04	.06	.11	.07	.07	.06	.08	.07	.13	.07
10-2-72	.01	.01	.00	.00	.00	.00	.00	.01	.00	.01
11-16-72	.10	.08	.08	.12	.07	.06	.08	-	.09	.07
4-26-73	-	-	-	-	.08	-	-	-	.07	.07

Lake East Okoboji Iron Measurements

Station	55		55.1		56.0		56.1		57	
Date	S	B	S	B	S	B	S	B	S	B
8-20-71	.18	.15	.14	.17	.15	.21	.12	.16	.12	.11
9-9-71	.25	.19	.11	.13	.07	.10	.10	.10	.03	.02
9-28-71	.19	.17	.18	.19	.15	.14	.15	.12	.10	.11
10-20-71	.11	.11	.10	.09	.15	.12	.08	.07	.04	.05
11-11-71	.04	.04	.03	.04	.04	.05	.05	.04	.04	.05
1-10-72	.05	.04	.05	.05	.06	.05	.07	.05	.04	.05
2-24-72	.08	.08	.16	.20	.05	.06	.06	.04	.03	.03
3-22-72	-	-	.03	-	.04	.04	-	-	.03	.03
5-4-72	.08	.08	.11	.11	.11	.11	.08	.09	.08	.08
6-1-72	.13	.13	.12	.09	.05	.08	.06	.04	.03	.05
6-13-72	.31	.38	.14	.22	.13	.18	.08	.12	.12	.12
6-28-72	.27	.20	.24	.23	.19	.38	.17	.19	.14	.14
8-1-72	.09	.12	.12	.16	.12	.08	.09	.13	.07	.07
8-24-72	.10	.08	.14	.15	.11	.11	.11	.11	.04	.05
9-6-72	.09	.08	.14	.11	-	-	.07	.07	.09	-
9-22-72	.12	.12	.13	.12	.12	.11	.08	.08	.09	.07
10-5-72	.09	.08	.08	.09	.07	.07	.06	.08	.05	.06
10-27-72	.11	.11	.10	.11	.08	.07	.07	.06	.06	.07
11-29-72	-	-	-	-	-	-	.12	.09	.11	.08
12-21-72	.18	.19	.16	.17	.11	.12	.14	.13	.12	.10
1-26-73	.16	-	.23	-	.11	.22	.07	.14	.18	-
4-18-73	.18	-	.18	-	.27	-	.23	-	.18	-

Spirit Lake Iron Measurements

Station	54		54.1		54.2		54.3		54.4	
Date	S	B	S	B	S	B	S	B	S	B
8-26-71	.05	.05	.04	.05	.03	.04	.05	.03	.05	.04
10-1-71	-	-	.11	.08	.06	.09	.05	.08	.05	-
11-19-71	.08	.09	-	-	.06	.08	-	-	.09	.09
1-21-72	.08	.08	.08	.08	.08	.08	.08	.09	.08	.09
2-23-72	.03	.03	.02	.02	.03	.02	.04	.03	.04	.03
3-20-72	.03	.03	-	-	.03	.03	-	-	.02	.02
5-18-72	.08	.05	-	-	-	-	.08	.05	.07	.05
6-5-72	.05	.03	.05	.05	.04	.05	.06	.03	.03	.05
6-27-72	.02	.02	.02	.06	.06	.03	.01	.02	.02	.04
7-18-72	.29	.30	.11	.28	.25	.21	.12	.24	.17	.29
8-7-72	.07	.10	.07	.11	.05	.09	.06	.07	.07	.08
8-23-72	.06	.05	.06	.06	.06	.04	.06	.06	.06	.06
9-12-72	.08	.08	.13	.11	.07	.07	.11	.10	.11	.09
9-27-72	.03	.03	.03	.03	.02	.03	.01	.00	.07	.04
10-18-72	-	-	.02	.02	.03	.03	.03	.02	.03	.03
10-31-72	.06	.07	-	-	-	-	.07	.06	.06	.06
11-20-72	.14	.13	-	-	-	-	.12	.12	.12	.09
12-18-72	.10	.08	.09	.09	.10	.08	.12	.08	.09	.08
1-15-73	.10	.18	.13	.09	.12	.12	.13	.09	.14	.07
3-1-73	.06	.10	-	-	-	-	-	-	.11	.09
5-4-73	.12	.10	-	-	-	-	.12	.11	.11	.11

Iron Measurements

	UPPER GAR		MINNEWASHTA		LOWER GAR	
Date	S	B	S	B	S	B
8-23-71	.13	.12	.09	.09	.17	.18
9-13-71	.17	.16	.10	.15	.20	.29
9-28-71	.18	.21	.12	.17	.22	.26
10-22-71	.05	.05	.05	.08	.11	.11
11-15-71	.06	.14	.07	.09	.18	.18
1-7-72	-	-	.09	.12	.12	.15
2-16-72	.09	-	.04	.03	.05	-
4-24-72	.08	.09	.10	.12	.22	.20
5-16-72	.08	.08	.08	.08	.04	.05
6-16-72	.10	.11	.07	.05	.41	.49
6-29-72	.22	.27	.22	.19	.68	1.08
7-31-72	.09	.12	.12	.10	.33	.42
8-25-72	.14	.10	.06	.07	.22	.31
9-5-72	.13	.09	.09	.09	.18	.16
10-4-72	.10	.11	.08	.08	.10	.09
10-25-72	.08	.08	.08	.09	.10	.11
11-29-72	.10	.09	-	-	-	-
12-19-72	.17	-	109	-	.12	-
1-26-73	.07	-	-	-	-	-
4-18-73	.15	-	.22	-	.40	-

Appendix J

Chemical analyses of rainwater collected at Iowa Lakeside Laboratory, Miller's Bay, West Okoboji between June, 1971 and August, 1973. Nitrogen and phosphorus values in mg/l and specific conductance in micromhos/cm at 25C.

Date	PO_4 P	Total P	NO_3 N	NH_3 N	Turb. JTU	Spec. Cond.
6-24-71	.08	-	0.47	1.52	20	-
6-29-71	.07	-	0.52	1.06		
7-27-71	.03	-	0.31	0.80	10	-
8-18-71	.26	-	1.18	1.93	-	-
8-19-71	.31	-	0.10	0.28	3	-
9-20-71	.02	.14	0.70	1.62	3	-
9-22-71	.02	.02	0.45	1.40	-	-
9-30-71	.05	.05	0.48	1.23	-	-
10-12-71	.04	.07	0.71	2.00	11	-
10-18-71	.06	.12	0.51	0.88	0	-
10-27-71	.00	.03	0.40	0.09	0	-
10-29-71	.01	-	0.29	0.82	0	-
10-30-71	.00	.03	0.12	0.33	0	-
5-1-72	.03	.05	0.09	0.25	0	8.8
5-5-72	.02	.04	0.08	0.47	0	12.4
6-6-72	.03	.03	0.58	1.40	1	13.2
6-16-72	.04	.09	0.10	0.68	0	-
6-19-72	.00	.03	0.21	0.82	0	97.2
7-8-72	.09	.18	0.58	1.20	4	-
7-12-72	.03	.03	0.24	1.28	7	-
7-14-72	.01	.03	0.28	1.30	0	-
7-20-72	.00	.00	0.12	0.09	0	-
7-25-72	.02	.04	0.18	0.75	2	-
8-2-72	.00	-	4.30	0.72	8	-
8-25-72	.01	.01	0.11	0.78	0	-
8-31-72	.01	.03	0.07	0.31	3	-
9-1-72	.00	.02	0.26	0.38	1	-
9-6-72	.01	.02	0.19	0.42	3	-
9-20-72	.01	.06	0.13	0.29	1	-
9-25-72	.03	.07	0.38	0.51	8	19.2

Date	PO_4 P	Total P	NO_3 N	NH_3 N	Turb. JTU	Spec. Cond.
10-6-72	.05	.07	1.05	0.85	1	-
7-4-73	.08	.08	0.23	0.86	2	23.4
7-11-73	.04	.05	0.26	0.71	9	2.1
7-23-73	.05	.08	0.54	1.17	3	71.4
7-24-73	.02	.04	0.55	0.44	1	15.7
8-7-73	.06	.08	0.34	0.81	5	28.1

Appendix K

Chemical analyses of storm water collected from storm drains in the municipalities of Spirit Lake, Arnolds Park and Okoboji, Iowa between March, 1971 and May, 1973. Nitrogen and phosphorus values in mg/l and specific conductance in micromhos/cm at 25C.

Municipality	Date	PO_4 P	Total P	NO_3 N	NH_3 N	Turb. JTU	Spec. Cond.
Spirit Lake 15th Street	3-4-71	0.50	--	.86	1.06	31	557.8
Arnolds Park	3-11-71	0.25	--	.55	.95	60	451.0
Okoboji	3-11-71	0.33	--	1.01	1.07	59	510.7
Okoboji	3-11-71	.20	--	.97	.59	28	481.7
Spirit Lake 17th Street	3-12-71	.30	--	.84	2.10	87	554.8
Spirit Lake 15th Street	3-12-71	.74	--	.77	2.54	185	540.7
Spirit Lake 12th Street	3-12-71	0.46	--	.94	2.75	270	497.5
Station 13.2	3-12-71	0.32	--	1.78	2.62	119	481.7
Okoboji	5-12-71	0.05	--	.20	.17	2	673.4
Okoboji	5-12-71	0.11	--	.20	.07	5	947.8
Okoboji	5-12-71	0.20	--	1.09	.20	4	697.9
Spirit Lake 15th Street	5-14-71	0.92	--	.26	4.04	13	974.2
Station 13.2	5-14-71	0.19	--	7.02	.52	6	889.0
Okoboji	5-14-71	0.17	--	1.12	.10	3	673.1
Okoboji	10-27-71	.13	.55	.20	1.95	255	105.6
Okoboji	10-27-71	0.9	.33	.00	1.40	161	100
Spirit Lake 15th Street	12-9-71	0.72	1.68	.34	3.50	28	883.1
Arnolds Park (Minnewashta)	8-25-72	0.13	0.91	.56	1.30	720	179.5
Spirit Lake 15th Street	8-25-72	0.19	.55	.36	.98	105	96.5
Arnolds Park (W. Okoboji)	8-25-72	0.07	.75	.41	1.30	565	194.8
Orleans	9-1-72	0.27	0.80	1.10	1.40	198	145.5
Arnolds Park (Minnewashta)	9-1-72	0.17	.34	.80	1.45	2.60	122.1
Spirit Lake (#33 outlet)	11-14-72	0.09	.09	0.75	0.18	7	767.0

Municipality		PO_4 P	Total P	NO_3 N	NH_3 N	Turb. JTU	Spec. Cond.
Spirit Lake 13th Street	4-30-73	.10	.18	.55	1.28	148	91.6
Spirit Lake 17th Street	4-30-73	.15	.25	.75	1.39	179	134.6
Spirit Lake 13th Street	5-1-73	.14	.31	1.60	1.52	242	177.4
Spirit Lake 17th Street	5-1-73	.17	.33	1.90	1.45	237	336.6
Arnolds Park (Minnewashta)	5-7-73	.28	0.74	.47	.78	605	224.9
Arnolds Park (W. Okoboji)	5-7-73	.21	0.95	.42	1.03	660	213.1
Spirit Lake 13th Street	5-7-73	.15	0.47	.36	.89	319	134.2
Spirit Lake 17th Street	5-7-73	.20	0.50	.48	1.07	425	174.6
Arnolds Park (Minnewashta)	5-26-73	.19	0.63	.71	.66	435	315.2
Arnolds Park (W. Okoboji)	5-26-73	.28	1.11	.48	1.53	1575	226.6
Spirit Lake 13th Street	5-26-73	.12	-	.23	.64	250	76.6

Appendix L

Chlorophyll a measurements (mg/m^3) from the Iowa Great Lakes between June, 1971 and September, 1973. Surface samples unless otherwise noted.

Lake West Okoboji-Deep Hole Chlorophyll *a* Measurements

Date	Surface	5 M	10 M	15 M
7-19-71	3.97	-	-	-
8-6-71	4.58	-	-	-
8-17-71	4.42	-	-	-
9-2-71	8.68	-	-	-
9-16-71	6.84	-	-	-
10-15-71	3.52	-	-	-
11-9-71	2.41	-	-	-
2-14-72	0.81	1.02	1.09	0.73
3-17-72	2.14	2.96	3.27	2.78
5-3-72	1.93	-	-	-
5-31-72	2.20	1.51	-	-
6-19-72	3.68	3.86	2.98	-
6-23-72	3.52	-	-	-
7-5-72	2.45	-	-	-
7-13-72	4.72	-	-	-
7-21-72	3.04	-	-	-
7-29-72	3.37	2.83	3.68	-
7-31-72	3.52	3.83	3.44	-
8-11-72	3.39	4.57	4.45	1.76
8-15-72	2.35	-	-	-
8-21-72	2.45	1.43	2.40	2.97
8-26-72	3.60	-	-	-
9-8-72	6.33	5.22	5.87	4.71
9-21-72	6.10	-	-	-
9-26-72	5.13	-	-	-
10-13-72	4.80	3.37	-	-
10-22-72	4.48	-	-	-
12-22-72	4.03	-	-	-
1-8-73	1.53	-	-	-
2-2-73	2.48	-	-	-
2-23-73	7.67	-	-	-

Lake West Okoboji Deep Hole Chlorophyll a measurements

Date	Surface	5 M	10 M	15 M
4-3-73	17.71	-	-	-
4-18-73	3.94	-	-	-
4-26-73	0.91	-	-	-
4-28-73	1.02	0.95	1.01	-
5-8-73	-	0.53	0.39	0.31
5-18-73	0.71	0.95	0.91	-
5-23-73	1.77	1.17	1.07	-
5-29-73	1.58	-	-	-
6-6-73	1.48	-	-	-
6-7-73	2.28	1.50	1.19	-
6-12-73	2.59	-	-	-
6-21-73	2.68	-	-	-
6-30-73	2.12	1.58	1.24	-
7-12-73	2.99	-	-	-
7-15-73	2.68	1.74	1.48	-
7-16-73	2.13	-	-	-
7-20-73	2.76	-	-	-
8-2-73	2.34	-	-	-
8-3-73	3.32	2.94	2.15	-
8-8-73	4.09	-	-	-
8-10-73	3.48	-	-	-
8-16-73	4.83	4.90	4.40	-
8-25-73	6.97	-	-	-
9-15-73	8.20	-	-	-

Lake West Okoboji Chlorophyll a Measurements

Date	49.1	49.2	49.3	49.4	50
6-28-71	5.10	4.37	3.20	-	-
7-15-71	4.08	3.54	4.71	3.44	6.44
7-20-71	4.66	4.50	4.51	4.26	5.16
8-3-71	3.57	4.26	5.21	5.08	4.25
8-13-71	6.29	4.54	4.48	3.92	6.64
8-19-71	9.28	9.22	6.06	5.58	6.50
9-1-71	7.73	7.13	8.77	6.58	8.28
9-15-71	6.71	6.09	6.99	5.81	-
9-29-71	6.14	8.63	4.51	4.73	-
10-21-71	6.89	4.61	5.94	3.99	7.31
11-12-71	3.06	-	2.35	2.43	2.55
1-6-72	2.30	1.29	-	1.55	1.58
2-22-72	1.05	0.54	0.66	0.66	-
3-25-72	-	-	-	4.71	-
5-9-72	-	-	1.67	-	-
5-31-72	2.34	2.44	1.57	2.25	1.54
6-12-72	3.18	3.56	2.52	2.45	3.02
6-26-72	2.41	4.50	7.07	7.41	13.67
7-5-72	3.59	4.38	4.31	-	12.63
7-19-72	4.92	3.39	3.70	3.82	4.92
7-29-72	4.17	3.20	3.45	3.33	2.91
8-12-72	3.47	3.24	2.79	3.74	4.42
8-14-72	-	-	-	-	2.17
8-17-72	2.59	2.45	2.36	2.12	2.60
8-26-72	-	3.67	3.67	-	-
9-1-72	3.71	3.87	4.42	4.52	5.90
9-5-72	-	4.90	-	-	7.17
9-8-72	5.12	5.28	6.87	6.61	5.21
9-11-72	6.71	6.86	6.71	6.15	8.20
9-15-72	6.52	5.84	5.63	5.49	7.39
9-22-72	6.31	5.35	5.68	4.94	4.11
9-26-72	-	5.36	5.23	5.54	4.72

Date	49.1	49.2	49.3	49.4	50
10-2-72	7.39	5.05	4.76	4.94	9.98
10-13-72	5.54	4.80	-	5.23	10.81
10-17-72	6.26	4.73	3.73	4.43	5.08
11-16-72	1.67	1.89	1.66	1.23	3.21
4-3-73	15.78	14.72	16.86	16.10	17.01
4-26-73	-	-	2.93	-	1.81
4-28-73	3.14	2.11	1.66	-	1.02
5-20-73	2.63	1.52	1.05	1.09	0.67
5-29-73	2.73	3.36	1.91	0.95	2.08
6-3-73	3.46	2.71	1.47	1.86	-
6-6-73	-	-	-	-	2.52
6-11-73	2.51	3.21	1.82	4.03	-
6-19-73	2.01	1.98	-	-	-
6-21-73	3.40	2.61	2.83	2.05	4.74
6-29-73	2.59	2.60	2.20	4.00	3.32
7-12-73	5.77	2.36	1.96	5.06	2.83
7-20-73	2.77	4.14	5.65	6.28	2.51
8-2-73	2.17	1.99	2.13	7.23	2.74
8-10-73	2.92	3.38	3.06	8.03	4.92
8-20-73	-	-	-	-	7.19
8-25-73	-	-	-	-	8.26
9-15-73	11.86	10.11	9.31	9.39	9.86

Lake East Okoboji Chlorophyll a Measurements

Date	55	55.1	56	56.1	57
7-8-71	141.76	228.20	321.68	127.00	80.75
7-12-71	174.46	311.57	160.21	62.68	119.61
7-15-71	125.76	191.57	415.32	409.59	383.32
7-21-71	100.43	115.78	179.73	100.88	313.56
7-30-71	302.65	258.09	198.81	434.50	198.27
8-6-71	219.72	270.83	61.30	42.11	50.85
8-10-71	253.16	260.69	353.41	279.49	22.36
8-13-71	244.32	210.11	186.39	81.13	3.59
8-18-71	165.14	415.70	100.45	-	3.49
8-20-71	121.80	400.30	101.98	20.00	4.19
9-9-71	21.36	313.43	203.34	80.67	18.09
9-28-71	49.42	120.79	159.78	20.23	197.90
10-20-71	69.27	466.07	41.89	248.70	63.85
11-11-71	0.64	1.87	-	-	-
11-19-71	16.67	-	-	-	-
1-10-72	3.41	1.83	3.38	3.47	-
2-24-72	0.77	1.25	1.33	0.96	1.12
3-21-72	-	11.41	-	-	-
3-22-72	-	16.94	56.56	-	5.07
5-4-72	1.51	37.80	-	-	-
6-1-72	41.90	84.47	-	11.84	2.52
6-13-72	59.16	214.19	384.06	109.99	29.01
6-19-72	252.45	267.33	166.53	147.94	207.72
6-28-72	200.22	390.70	299.33	361.68	161.21
7-5-72	321.83	496.96	264.10	123.07	71.53
7-16-72	160.27	160.36	43.24	37.54	64.63
7-23-72	125.07	21.49	79.67	175.01	192.52
7-27-72	94.61	371.28	17.93	22.10	45.74
8-1-72	103.65	74.57	72.87	42.40	19.45
8-14-72	39.62	80.87	63.52	52.41	19.61
8-18-72	62.17	47.30	79.72	46.15	39.04
8-24-72	28.75	121.73	63.84	19.43	2.68

Lake East Okoboji Chlorophyll a measurements

Date	55	55.1	56	56.1	57
9-1-72	43.94	129.35	169.97	27.13	15.73
9-6-72	29.27	221.47	-	23.73	10.07
9-13-72	52.05	86.15	16.12	57.11	46.50
9-18-72	146.55	232.43	63.89	56.03	55.38
9-22-72	201.25	134.48	47.77	64.31	31.89
10-5-72	118.81	208.99	24.61	34.88	76.37
10-16-72	125.29	100.21	109.42	120.63	20.04
10-27-72	52.77	73.93	65.81	31.24	8.44
11-29-72	-	-	-	1.57	1.62
12-21-72	0.91	0.82	0.67	1.24	1.06
1-26-73	1.24	4.18	2.87	1.23	0.76
3-5-73	3.54	2.81	6.99	-	1.68
4-5-73	9.12	20.79	71.24	62.18	46.10
4-18-73	1.03	0.99	10.80	11.56	5.07
4-29-73	1.92	8.23	2.16	2.33	1.80
5-18-73	15.83	18.34	27.82	21.13	13.09
5-30-73	20.72	25.72	18.16	19.13	16.94
6-6-73	22.59	11.43	25.25	19.08	14.74
6-12-73	16.57	15.67	6.74	6.28	4.78
6-21-73	17.07	27.57	28.80	11.13	3.77
6-28-73	30.37	59.09	63.60	60.25	16.29
7-10-73	16.64	118.04	32.01	58.64	42.53
7-19-73	20.22	107.13	26.84	170.96	71.72
7-25-73	24.02	40.57	184.70	248.23	46.39
8-4-73	26.88	31.14	65.47	99.73	103.06
8-8-73	47.82	75.88	295.31	392.56	32.45
8-15-73	44.65	129.66	75.85	243.53	81.05
8-25-73	-	-	-	-	40.86
9-15-73	48.18	195.43	45.89	81.36	13.95

Spirit Lake Chlorophyll a Measurements

Date	54	54.1	54.2	54.3	54.4
7-29-71	123.64	117.83	98.56	84.72	87.69
8-10-71	130.34	46.66	105.96	39.36	65.16
8-26-71	9.63	10.12	7.46	12.27	6.51
9-2-71	-	30.15	48.50	-	17.49
10-1-71	-	44.35	59.50	407.81	-
11-19-71	0.84	-	-	-	-
1-21-72	1.58	0.85	0.90	1.37	1.72
2-23-72	0.87	0.88	0.74	1.59	0.39
3-20-72	1.65	-	1.97	-	3.16
6-5-72	3.09	3.16	4.25	4.12	2.95
6-27-72	3.71	6.32	5.19	2.42	3.78
7-5-72	3.45	2.88	5.92	12.23	8.30
7-18-72	4.16	-	3.28	2.88	3.40
7-30-72	9.76	14.41	5.73	5.74	9.13
8-7-72	6.07	17.20	16.59	14.81	13.08
8-16-72	9.34	13.14	20.35	9.77	5.52
8-23-72	8.85	9.97	9.93	8.33	11.46
9-4-72	29.43	-	-	17.79	29.16
9-12-72	13.17	13.97	11.50	13.25	10.95
9-27-72	12.58	7.97	8.79	13.02	23.05
10-18-72	8.88	7.78	9.98	-	7.47
10-31-72	5.54	-	-	4.89	2.32
11-20-72	1.55	-	-	1.84	1.95
12-18-72	6.50	5.44	6.22	6.76	8.61
1-15-73	3.21	5.04	4.70	3.68	2.86
3-1-73	5.86	-	-	-	6.00
4-16-73	-	-	-	14.27	11.81
5-4-73	9.12	10.08	9.64	9.77	8.85
5-11-73	5.30	6.06	6.02	5.05	5.17
5-15-73	5.85	6.00	6.08	6.04	4.70
5-23-73	3.52	3.66	3.95	2.91	2.90

Spirit Lake chlorophyll a measurements

Date	54	54.1	54.2	54.3	54.4
5-29-73	6.25	-	-	-	-
6-6-73	8.72	9.98	8.64	9.27	8.34
6-13-73	14.74	8.91	8.05	34.80	35.60
6-21-73	9.22	8.50	11.40	9.83	8.03
6-26-73	5.56	4.52	6.26	6.65	7.67
7-3-73	5.09	6.34	7.54	6.51	6.76
7-18-73	8.36	7.21	8.81	9.51	6.16
7-25-73	13.44	9.78	11.46	11.61	13.46
8-3-73	6.82	7.88	7.73	6.97	7.16
8-16-73	9.66	8.96	10.34	9.87	9.59
8-30-73	15.69	14.59	21.43	26.70	14.40
9-15-73	27.66	19.70	17.47	22.89	44.13

Chlorophyll a Measurements	UPPER GAR	MINNEWASHTA	LOWER GAR
Date	51	52	53
7-8-71	66.27	129.17	-
7-12-71	21.33	106.25	-
7-15-71	34.34	139.27	239.49
7-22-71	71.14	185.21	406.39
7-30-71	174.18	118.21	334.22
8-2-71	226.59	284.07	367.96
8-6-71	226.52	107.58	545.08
8-13-71	120.21	279.34	303.79
8-16-71	179.22	215.70	243.61
8-18-71	152.09	203.88	304.10
8-23-71	117.84	267.17	221.07
9-13-71	270.45	21.66	220.16
9-28-71	75.56	33.23	538.10
10-22-71	11.23	3.76	4.53
11-14-71	-	-	3.77
1-7-72	-	0.35	3.98
2-16-72	3.84	1.06	1.76
5-16-72	1.49	-	-
6-1-72	5.43	7.29	33.31
6-16-72	121.14	72.41	149.05
6-29-72	359.91	268.20	160.29
7-5-72	59.55	52.47	166.35
7-23-72	17.26	67.26	10.27
7-27-72	80.47	53.91	225.86
7-31-72	33.05	73.85	79.37
8-12-72	20.60	70.53	87.34
8-18-72	43.83	114.93	309.03
8-25-72	74.16	58.57	53.88

Chlorophyll a Measurements Date	UPPER GAR 51	MINNEWASHTA 52	LOWER GAR 53
9-1-72	110.02	25.31	51.34
9-5-72	209.09	56.38	217.41
9-13-72	78.64	50.94	60.79
9-22-72	62.70	40.25	30.08
10-4-72	80.07	113.98	79.84
10-25-72	12.98	7.30	-
11-29-72	1.66	-	-
12-19-72	0.89	1.05	1.05
1-21-73	1.33	-	-
4-5-73	57.71	70.00	61.73
4-18-73	3.54	16.94	27.29
5-18-73	12.53	8.71	16.43
5-30-73	24.31	16.76	19.30
6-6-73	18.11	29.79	28.85
6-12-73	5.20	-	-
6-21-73	5.65	5.34	13.13
6-29-73	33.27	11.40	57.98
7-10-73	28.28	331.05	59.28
7-19-73	57.73	26.04	118.46
8-4-73	86.20	174.59	223.10
8-15-73	145.85	74.70	470.52
9-15-73	126.50	18.71	218.31

Loon Lake Chlorophyll a Measurements

Date	4.3	Date	4.0
7-16-71	180.23	7-11-72	116.86
7-22-71	153.27	8-4-72	262.98
8-25-71	198.23	8-10-72	307.84
2-17-72	7.04	8-28-72	292.23
		9-7-72	159.62
		9-25-72	162.61
		10-10-72	182.42
		11-8-72	32.60
		12-15-72	69.67
		12-28-72	23.11
		1-10-73	19.94
		1-17-73	20.85
		2-6-73	64.89
		2-27-73	43.58
		3-6-73	26.04
		3-21-73	13.31
		4-7-73	50.60
		4-23-73	83.98
		4-30-73	70.25
		5-12-73	121.78
		5-24-73	84.39
		5-31-73	50.56
		8-13-73	143.21
		8-28-73	153.72

Appendix M

Some common diatoms often found in the plankton of Spirit Lake (Krohn et al., 1974). Most of the taxa from Spirit Lake are also found in Lake West Okoboji.

Krohn, M., M. Edwards, and J. D. Dodd. 1974. Notes on Iowa Diatoms. XII. Common diatoms of Spirit Lake, Iowa. Proc. Iowa Acad. Sci. (In Press).

Spirit Lake Diatoms

Achnanthes lanceolata

exigua var. heterovalva

Amphipleura pellucida

Amphiprora ornata

Amphora ovalis var. affinis

var. pediculus

veneta

Anomoeoneis sphaerophora

Asterionella formosa

Caloneis amphisbaena

bacillum

lewisii

lewisii var. inflata

silicula

Campylodiscus noricus var. hibernicus

Cocconeis disculus

placentula var. euglypta

placentula var. lineata

Cyclotella atomus

meneghiniana

Cymatopleura

elliptica

solea

Cymbella affinis
prostrata
sinuata
turgida
ventricosa
Diatoma vulgare
Diploneis elliptica
Epithemia sorex
turgida
zebra
Fragilaria capucina var. mesolepta
construens
crotonensis
vaucheriae
Gomphoneis eriense var. apiculata
Gomphonema acuminatum
acuminatum var. coronata
angustatum
gracile var. naviculoides
olivaceum
parvulum
Gyrosigma acuminatum
sciotense
Hantzschia amphioxys

Mastogloia grevillei

smithii var. lacustris

Melosira granulata

granulata var. angustissima

varians

Meridion circulare

Navicula capitata

cryptocephala

cuspidata

decussis

gastrum

heufleri

lanceolata

laevissima

menisculus var. upsaliensis

mutica

pelliculosa

pseudoreinhardtii

pupula

pupula var. rectangularis

radiosa var. tenella

reinhardtii

salinarum var. intermedia

scutelloides

tripunctata var. schizonemoides

Navicula tuscula

viridula var. rostellata

Neidium affine

Nitzschia acicularis

amphibia

angustata

apiculata

dissipata

frustulum

hungarica

linearis

palea

sigmoidea

tryblionella var. levidensis

Opephora martyi

Pinnularia brebissonii

viridis

Rhoicosphenia curvata

Rhopalodia gibba

gibberula

Stauroneis acuta

anceps

phoenicenteron

Stephanodiscus astraea

astraea var. minutula

hantzschii

Surirella angusta

linearis

ovata

ovata var. pinnata

tenera

Synedra acus

cyclopum

parasitica

rumpens var. fragilarivides

ulna