WATER QUALITY OF SOMERVILLE LAKE SOUTH-CENTRAL TEXAS

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METRIC CONVERSIONS

From	Multiply by	To obtain	
acre	4,047	square meter	
acre-foot	1,233	cubic meter	
cubic foot per second (ft ³ /s)	.02832	cubic meter per second	
foot	.3048	meter (m)	
mile	1.609	kilometer	
square mile	2.590	square kilometer	
ton	.9072	tonne	

Factors for converting inch-pound units to metric equivalents are given in the following table:

<u>National Geodetic Vertical Datum of 1929 (NGVD of 1929</u>): A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "mean sea level."

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WATER QUALITY OF SOMERVILLE LAKE

SOUTH-CENTRAL TEXAS

Bу

Emma McPherson and H. B. Mendieta

ABSTRACT

Somerville Lake in south-central Texas is a shallow lake, with a mean depth of 14 feet. The maximum depth of the submerged channel of Yegua Creek is usually less than 35 feet and in most areas of the lake the depth is less than 10 feet.

Several factors including thermal circulation resulting from the cooling of surface water, wind action, and the large inflow volume in realtion to the lake volume combine to keep the lake well mixed throughout the year. The oxygen concentrations remain high areally and at depth because of good circulation of lake waters during most of the year. Even in summer most bottom oxygen concentrations were in excess of 50 percent of saturation.

Due to year-round high percent oxygen saturation from surface to bottom in most parts of the lake, caused by the frequent periods of circulation that occur during all seasons, concentrations of dissolved iron, and manganese reamin low. Dissovled iron concentrations were less than 50 micrograms per liter and dissolved manganese concentrations were less than 40 micrograms per liter. The total inorganic nitrogen concentrations varied little throughout the lake. During the summer, concentrations were 0.01 milligram per liter at the surface to 0.02 milligram per liter at the bottom; and during the winter 0.11 milligram per liter at the surface and 0.10 milligram per liter at the bottom. Concentrations in the headwaters were about double those in the lake. Surface and bottom total phosphorus concentrations, during summer and winter averaged about the same, 0.04 and 0.06 milligram per liter throughout the lake, except in the headwaters where the concentrations were about double those in the lake.

Homogeneous or near homogeneous concentrations of total phosphorus and inorganic nitrogen can occur at any time of the year throughout the lake. Total phosphorus concentrations did not increase during the year or during the study period. On the other hand total inorganic nitrogen concentrations did show an annual cycle and were highest in the spring and lowest in late summer or fall. During periods of large releases of water, the more soluble total inorganic nitrogen was flushed from the lake.

The concentration of dissolved solids ranged from 139 to 292 milligrams per liter and averaged about 220 milligrams per liter. Dissolved chloride concentrations ranged from 20 to 68 milligrams per liter and averaged 43 milligrams per liter. Dissolved sulfate concentrations ranged from 30 to 130 milligrams per liter and averaged 63 milligrams per liter. The total hardness of the water ranged from 75 to 140 milligrams per liter, expressed as calcium carbonate, placing it in the moderately hard to hard (61 to 180 milligrams per liter) classification. The concentrations of principal dissolved constituents indicate that Somerville Lake is an excellent source of water for municipal, industrial, or agricultural use.

INTRODUCTION

The U.S. Geological Survey periodically has made comprehensive waterquality surveys of selected lakes and reservoirs in Texas since October 1961 as part of a continuing cooperative program with State, Federal and local agencies to inventory the surface-water resources of the State. During the 1975 water year, the program was expanded in cooperation with the U.S. Army Corps of Engineers to include more lakes for the number of years required to define a range of hydrologic conditions. Water-quality surveys during the spring, summer, and winter on Somerville Lake included onsite measurements of dissolved oxygen, specific conductance, pH, and temperature. Water samples also were collected and analyzed for dissolved chemical constituents and nutrients.

Purpose of This Report

This report summarizes the variations of selected water-quality constituents and properties for Somerville Lake based on water-quality records collected from August 1975 to August 1980. The report also contains information on the watershed environment in relation to the quality of water in the impoundment.

Description of Somerville Lake and Its Environment

Somerville Dam, at the southwest edge of the city limits of Somerville in south-central Texas, is on Yegua Creek 20.0 miles upstream from its junction with the Brazos River. The impoundment formed by the dam is Somerville Lake, which is located in the south-central part of Burleson County and the northcentral part of Washington County, with the upper reaches extending into Lee County. The submerged channel of Yegua Creek is the boundary between Burleson and Washington Counties, dividing the main body of the lake surface almost equally between the two counties. In the upstream part of the lake, Yegua Creek also forms the boundary between Burleson and Lee Counties. The largest part of the watershed is in Lee County, but only a small part of the lake lies in that county (figs. 1 and 2).

Yegua Creek, one of the principal tributaries of the Brazos River, is formed by the confluence of the East and Middle Yegua Creeks at a point about 14 miles west of Somerville. The Yegua Creek watershed is about 62 miles long and 32 miles wide and has a drainage area of 1,320 square miles. About 76 percent of this drainage area is upstream from Somerville Dam (fig. 2).





Figure 2.-Location of the Somerville Lake watershed and stream-gaging stations

Somerville Lake was constructed and is operated by the Corps of Engineers for flood control, conservation storage, and other beneficial uses for the surrounding area. Construction of Somerville Dam began June 4, 1962, and was completed on October 27, 1967. The following data regarding the dam and lake were compiled by Dowell and Petty (1973, p. 12-29.0-A):

Feature	Elevation (feet above NGVD of 1929)	Capacity (acre-feet)	Surface area (acres)
Top of dam	280.0		
Maximum design water surface	274.5	1,028,800	39,800
Spillway crest	258.0	507,500	24,400
Top of conservation storage space	238.0	160,100	11,460
Maximum tailwater	243.8		
Streambed	200.0	0	0
Sediment reserve below	238.0	16,200	
Sediment reserve above	238.0	9,700	
Usable conservation storage space		143,900	

Deliberate impoundment of water began on January 3, 1967. The conservation storage space reached its capacity for the first time on May 11, 1968. Somerville Lake is a shallow lake with a mean depth of 14 feet. The depth in the main channel usually is less than 35 feet, and in most other areas of the lake, depths less than 10 feet.

The lake as well as the entire drainage area of 1,007 square miles upstream from the dam is located on gently rolling terrain in the south-central section of Texas, which is part of the West Gulf Coastal Plain (Fenneman, 1938, p. 102). Locally the area is recognized as the Post Oak Belt, the western part of the East Texas Timber Belt. The land surface rises from the southeast to the northwest, ranging from 200 feet above sea level on the streambed at the dam to 760 feet above sea level in the Yegua Knobs area, 12 miles west-southwest of Lexington.

The soils of the drainage area are mostly sandy loams with smaller amounts of clay loams and gravelly clay loams. The soils are weathered Tertiary deposits. Several physiographic features trend northeastward to southwestward across the drainage area in conformance with the geological outcrops.

The geologic units range from the oldest in the west to the youngest in the east. All are of the Eocene Series except the youngest formation which is Miocene. The Wilcox Group, undifferentiated, crops out in the headwaters of the East, Middle, and West Yegua Creeks. Eastward, seven outcrops of the Claiborne Group follow in sequence: the Carrizo Sand, the Reklaw Formation, the Queen City Sand, the Weches Greensand, the Sparta Sand, the Cook Mountain Formation, and the Yegua Formation. The Jackson Group, undifferentiated, crops out parallel to both sides of the main stem of Yegua Creek. The Catahoula Sandstone, which borders the eastern boundary of the watershed, is the last and youngest unit in the sequence.

Development in the watershed is predominantly rural. The loamy, gently rolling terrain is used mostly by small family farms and stock ranches. About two-thirds of the area is used for cropland or improved pasture. Cattle, hogs, and poultry lead in livestock production. Peanuts, which grow well in sandy loams, are the chief cash crop. Wheat, oats, cotton, corn, grain sorghum, hay and watermelons also contribute to the economy of the area.

There are only three centers of population within the watershed. Giddings (population 12,000) lies on the southern boundary of the watershed while almost all of Rockdale (population 5,611) is within the northern boundary. Lexington (population 1,065) lies in the central part of the watershed.

In the northwest part of the watershed, near Rockdale, the Alcoa aluminum plant has been strip mining about 2 million tons of lignite per year since 1952 for its powerplant fuel (W. E. Michalke, Aluminum Company of America, oral commun., 1981). Lignite has been mined intermittently at this site since the turn of the century. Mining was continuous from 1920 to 1940, when cheap natural gas became available.

Since 1975, oil development in the Austin Group, which underlies the study area, has made a drastic impact on the economy of the area. The environmental changes now taking place may result in significant changes in the quality of water draining into Somerville Lake in the future. The number of producing oil wells increased from 1 in 1974 to 150 by the end of 1978. More than 2,500 wells were drilled between 1978-81. In 1981 there were 120 drilling rigs operating in the "Giddings trend," most of which lies within the Somerville Lake watershed. As a result of the oil boom, the population of the city of Giddings has grown from 3,200 in 1975 to an estimate of more than 12,000 in 1981. Thousands of oilfield workers, who live in trailers and follow the drilling rigs, are also dispersed in the Yegua watershed (J. Socha, Giddings Chamber of Commerce, oral commun., 1981).

HYDROLOGIC DATA

Streamflow Records

Daily streamflow stations on Middle Yegua Creek near Dime Box (station 08109700) at mile 17.5 and on East Yegua Creek near Dime Box (station 08109800) at mile 12.2 have been operated by the Geological Survey since August 1962. Mean-annual discharges for these stations for 1962-80 were 53.7 ft³/s for Middle Yegua Creek near Dime Box (fig. 3) and 59.9 ft³/s for East Yegua Creek near Dime Box (fig. 4). No water-quality data have been collected at these stations. A streamflow station on Yegua Creek near Somerville (station 08110000) 1.0 mile downstream from Somerville Dam has been in operation since May 1924.





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Unregulated mean-annual discharge for 1924-65 was $290 \text{ ft}^3/\text{s}$. Regulated meanannual discharge for 1965-80 was $314 \text{ ft}^3/\text{s}$ (fig. 5). Water-quality data for this station have been collected from September 1961 to September 1967 and from October 1968 to the present and table 1 shows a statistical summary.

From October 1971 through September 1980, the combined discharge at the two upstream streamflow stations was about 38 percent of the discharge at Yegua Creek near Somerville. The mean-annual discharge at Yegua Creek near Somerville is greater than the combined flow of the Salt and Double Mountain Forks of the upper Brazos River watershed, both tributaries having much larger drainage areas. Streamflow and water-quality data collected by the Geological Survey are published annually in the Geological Survey series, "Water Resources Data for Texas."

Somerville Lake was proposed and construction started with minimal waterquality data available. In "Chemical Quality of Surface Waters in the Brazos River basin in Texas" (Irelan and Mendieta, 1964), the following statement was made about Yequa Creek: "The quality-of-water record for this stream consists of the analysis of only two samples-one in 1942 and another in 1959. Both of these samples were taken at low flow, and the water was of only fair quality. Much better water could be expected during high flows, and water stored in a reservoir on Yequa Creek probably would contain less than 500 mg/L (milligrams per liter) of dissolved solids. Water in Yegua Creek should be similar to that of the Navasota River, whose drainage area is directly across the Brazos, and is underlain by similar rocks. Available chemical-quality data indicate that all streams draining the belt of Tertiary rocks, which extends along the Texas gulf coast, have produced water of good quality." At. that time U.S. Public Health Service "Drinking Water Standards" (1962) specified that the total dissolved solids should not exceed 500 mg/L if more suitable supplies were available.

The average total dissolved solids concentration for Somerville Lake during the 1975-80 study was 220 mg/L. This compares favorably with an average total dissolved solids concentration of 278 mg/L for Navasota River near Bryan during the 1959-60 records that were available at the time of the water-quality projection. The conservative "less than 500 mg/L of dissolved solids" statement was used because that was the criteria set for a public supply.

Water Quality of Lake Somerville

Thermal Stratification

Impoundment of water in a lake or reservoir may result in significant changes in water quality. Some of the changes may be beneficial; other changes may be detrimental. Many of the detrimental changes can be related to thermal stratification--layering of the water due to temperatureinduced density differences.



The following table (Weast, 1975, p. F-5) shows that pure water reaches its maximum density at a temperature of about $4^{\circ}C$ (degrees Celsius) and that the difference in density per $1^{\circ}C$ is much greater at warmer temperatures than at cooler temperatures.

Temperature	Density
(degrees	(grams per
cersius)	milliller)
0.0	0.999868
4.0	1.000000
5.0	.999992
10.0	.999728
15.0	.999129
20.0	.998234
25.0	.997075
30.0	.995678
35.0	.994063

For example, a change in temperature from 29° to 30° C results in a change in density of about 0.0003 g/mL (gram per milliliter). A change in temperature from 10° to 11° C results in a density change of about 0.0001 g/mL. Stable stratification is common in lakes and reservoirs where the density of the upper and lower strata of water differs by as little as 0.0001 to 0.002 g/mL. Thus, temperature differences of 3° to 4° C during the summer may result in stable stratification.

Thermal stratification assumes many patterns, depending upon the geographical location, climatological conditions, depth, surface area, and configuration of the lake or reservoir. During the winter, many deep lakes or reservoirs in the temperate zone are characteristically isothermal--that is, the water has a uniform temperature and density, and circulates freely. With the onset of spring, solar heating warms the incoming water and the water at the lake or reservoir surface causing a decrease in density. This warm surface water floats on the colder and denser water. As the surface water becomes progressively warmer, the density gradient increases and the depth to which wind can mix the water is diminished. Thus, water in the lake or reservoir commonly is separated into three fairly distinct strata:

- (1) the epilimnion--a warm freely circulating surface stratum,
- (2) the metalimnion--a middle stratum characterized by a rapid decrease in temperature with increases in depth, and
- (3) the hypolimnion--a cold, stagnant lower stratum.

Thermal stratification in deep lakes or reservoirs usually persists until fall, when a decrease in atmospheric temperature cools both the surface water in the reservoir and the inflow from streams. When the temperatures and densities of the epilimnion and metalimnion approach those of the hypolimnion, the resistance to mixing is reduced and complete mixing or overturn of the water occurs.

Incoming water to a lake or water already stored will flow into a layer where the water is most similar to its density. The water density is governed by the temperature, dissolved solids, and suspended solids. The movement of water to achieve density equilibrium is referred to as a density current. Density currents may move water as an overflow on top of the water in storage, as an underflow at the bottom of the lake, or as an interflow plume at an intermediate depth.

Many shallow lakes become stratified during periods of calm but may be completely mixed by moderate winds. Moreover, shallow lakes are more quickly heated or cooled by atmospheric influences than deep lakes. Because Somerville Lake is shallow and probably easily mixed by moderate winds, the classical three-layered stratification pattern was not observed on any occasion during the 16 water-quality surveys made.

On May 27, 1977, March 13, 1978, June 19, 1979, and May 21, 1980, there was a temperature gradient in the lower depths of the lake caused by cold inflows. Discharges, both inflow and outflow, were much higher during those surveys than at other times. The maximum temperature difference, 7° C, occurred on June 19, 1979, when the lake water surface was at a record elevation of 246.09 feet, with a depth of 37 feet at site A_C.

The lake can be completely mixed at any time of the year, and was completely mixed during 8 of the 16 surveys. Isothermal conditions have been observed during all four seasons of the year. Wind action is the predominant mixing force all year; wind-induced waves mix the water from top to bottom. Water-temperature data at sites A_C and F_C at the time of the surveys are shown in figure 6. Monthly mean air-temperature data for Somerville Dam also are shown in figure 6. These data show that the air and water temperatures are very similar for the same time period, varying by less than 3°C most of the time.

Dissolved Oxygen

Fish and other aquatic organisms require oxygen to maintain the metabolic processes that produce energy for egg and larvae development and normal activities. Moreover, some of the chemical constituents dissolved in water are related to dissolved-oxygen concentrations; therefore, dissolved oxygen is one of the most important factors that influence the quality of water in a lake or reservoir.

Water entering a lake or reservoir contains organic material derived from both natural sources and from man's waste. Bacterial stabilization of this organic material requires oxygen. Decaying trees, brush, and other oxidizable



Figure 6.-Variations in monthly mean air temperatures at Somerville Dam and water temperatures at sites Ac and F_C during surveys

material within the area inundated by a reservoir as well as decaying algae and other organic material produced within the reservoir exert an oxygen demand.

The distribution of dissolved oxygen in a lake or reservoir is related to thermal stratification. Oxygen enters the surface stratum by plant photosynthesis and by absorption from the atmosphere. During winter circulation, the water is continually circulated to the atmosphere, and dissolved oxygen used in the decomposition of organic matter is replenished. However, during spring and summer, thermal stratification results in a reduction of vertical circulation of the water. Oxygen used in the decomposition of organic material is not replaced in the hypolimnion, and a vertical dissolved-oxygen gradient develops.

Dissolved-oxygen data for Somerville Lake are given in figures 7 and 8 and in tables 2-17. The concentration of dissolved oxygen varied seasonally and areally as in most lakes in the temperate zone. The lake also follows a common pattern of rather high oxygen saturation during the winter. Even as spring approached during the survey of March 13, 1978, no sample of water at any site, surface or bottom, showed less than 72-percent saturation with oxygen.

During the summer, especially in stratified lakes, it is common to observe high oxygen concentrations at the surface, a decline in the middle layer, and almost complete oxygen depletion at the bottom. All surveys in Somerville Lake showed a decline in oxygen concentrations from surface to bottom during the summer, and the rate of decline in the profiles varied considerably during each survey. However, most concentrations of dissolved oxygen at the bottom were in excess of 50-percent saturation during the summer surveys.

On August 20, 1976, at site A_C , the deepest sampling location on the lake, water near the surface had a dissolved oxygen concentration of 4.8 mg/L (62-percent saturation) while water near the bottom had a dissolved oxygen concentration of 4.4 mg/L (56-percent saturation). The temperature was 28°C from surface to bottom. This profile is similar to those obtained for the winter months.

The depth-averaged concentration of dissolved oxygen at site A_C, near the dam, was about 5.7 mg/L during the summer and about 10.6 mg/L during the winter. The depth-averaged concentrations of dissolved oxygen at site F_C, at the headwaters, were about 5.8 mg/L during the summer and 10.0 mg/L during the winter.

The varied, yet high dissolved oxygen concentrations show Somerville Lake to be a dynamic impoundment. During the winter the cooling of the upper layer creates density currents that result in circulation and aeration of the entire body of water. Wind action on the shallow lake, density currents caused by the daily heating and cooling of surface water, and the circulation of inflow and outflow water promote mixing in the lake during the entire year. The yearly volume of water flowing through the lake averages one and one-half times the volume of the lake.





Dissolved Iron and Dissolved Manganese

The occurrence and distribution of dissolved iron and dissolved manganese in lake waters are inversely related to the dissolved oxygen concentrations. During thermal stratification, the oxygen utilized in the decomposition of organic material is not replenished, thus in the period of anaerobic decomposition that follows, reducing conditions often result in the dissolution of large amounts of iron and manganese. The concentrations of iron and manganese in the bottom waters of Lake Somerville increased during periods of reduced circulation but decreased as soon as circulation increased. In any season throughout the year, water near the surface of the lake and water near the bottom during periods of circulation at all sites, except the headwaters at site F_{C} , usually contain less than 50 μ g/L (micrograms per liter) of dissolved iron and 40 μ g/L of dissolved manganese (figs. 9-11). However, during short periods of stagnation, the concentrations of both constituents near the bottom of the lake increased in the upstream direction in response to decreases in the concentration of dissolved oxygen. For example, on rare occasions at site F_{C} when the dissolved oxygen concentration decreased significantly, as on August 29, 1975 (1.7 mg/L) and July 14, 1978 (2.8 mg/L), the dissolved iron concentrations were 790 μ g/L and 1,100 μ g/L, and the dissolved manganese concentrations were 820 μ g/L and 520 μ g/L. The concentration of oxygen decreases in the upstream direction probably when small amounts of organic material, brought by inflow water, are oxidized. The amounts are small enough that the oxygen demand is satisfied soon after entry into the lake.

The dissolved iron concentrations near the bottom at site F_C , a shallow site in the headwaters of the lake, ranged from 0 to 1,100 μ g/L and averaged about 250 μ g/L. Dissolved manganese concentrations near the bottom at this site ranged from 0 to 820 μ g/L and averaged about 180 μ g/L. These are the highest averages of all sites observed on this lake. The organic material in the slow moving inflow probably used most of the oxygen; under these reducing conditions, the iron and manganese at the bottom become soluble.

At site A_C near Somerville Dam, the concentrations of dissolved iron in water near the bottom ranged from 0 to 230 μ g/L and averaged about 50 μ g/L. The concentrations of dissolved manganese ranged from 0 to 440 μ g/L and averaged about 90 μ g/L. There was no buildup of concentrations of dissolved iron or dissolved manganese at site A_C during the period of record (fig. 12).

Total Inorganic Nitrogen and Total Phosphorus

The average summer concentrations of total inorganic nitrogen $(NO_2+NO_3+NH_4$ as N) varied little throughout the reservoir (fig. 13). At site A_C, the average surface concentration was 0.01 mg/L and the average bottom concentration was 0.02 mg/L. At site D_C in the central part of the lake, the average concentrations increased slightly to 0.03 mg/L at the surface and 0.04 mg/L at the bottom. At site F_C, the average concentrations were about the same as for the site near the dam, 0.01 mg/L at the surface and 0.02 mg/L at the bottom.

There also was little difference in the average concentration of total inorganic nitrogen between the winter surface and bottom samples; however,



Figure 9.-Seasonal profiles of dissolved oxygen, dissolved iron, and dissolved manganese for site A_C

2 یم ۳ ۳ი ß თ -Bottom -Surface RIVER KILOMETERS UPSTREAM FROM SOMERVILLE DAM 3 6 9 12 œ RIVER MILES UPSTREAM FROM SOMERVILLE DAM ∾. Surface DATA-COLLECTION SITE DATA-COLLECTION SITE ശ TRIBUTARY ARM Bottom ---- TRIBUTARY ARM ഗ 4 cc Bc Dc AC 1 DC မ္မ ۹_{C o} 0 М رد رر οò 2 SUMMER WINTER AC AC 0 0 0 120 500 300 80 80 40 80 40 0 AVERAGE DISSOLVED-IRON CONCENTRATION, IN MICROGRAMS PER LITER





manganese at site A_C, August 1975-August 1980



winter concentrations generally were larger than summer concentrations. During the winter, the average concentration of total inorganic nitrogen was 0.11 mg/L for surface samples and 0.10 mg/L for bottom samples at site A_C . The trends were reversed at site D_C with concentrations of 0.10 mg/L at the surface and 0.15 mg/L at the bottom. At site F_C , the concentrations were somewhat higher and averaged 0.21 mg/L for the surface samples and 0.25 mg/L for the bottom samples.

There was little seasonal variation in the average concentration of total phosphorus from Somerville Lake waters (fig. 14). Surface and bottom total phosphorus concentrations during summer and winter averaged about the same, 0.04 and 0.06 mg/L, near the dam, in the central body of the lake, and in the lower tributary arms. During the summer, the surface total phosphorus concentrations in this downstream area averaged 0.04 mg/L and the bottom average was 0.05 mg/L. At site F_C , the surface concentrations averaged 0.09 mg/L and the bottom total to concentrations averaged 0.11 mg/L during the summer, while during the winter, the surface concentrations averaged 0.12 mg/L and the bottom concentrations averaged 0.13 mg/L. These concentrations are about double the concentrations that were found at site A_C .

Homogeneous or nearly homogeneous total inorganic nitrogen and total phosphorus concentrations (usually less than 0.03 mg/L) can occur at any time of the year, from surface to bottom, either at the deepest water near the dam, site A_C , or at the shallow inflow site F_C . For example, on January 9, 1979, at site A_C , total inorganic nitrogen was 0.11 mg/L at surface and bottom, and total phosphorus was 0.04 mg/L at surface and bottom. At the same site on August 3, 1979, the concentration of total inorganic nitrogen was 0.00 mg/L at surface and 0.01 mg/L at the bottom, while the concentration of total phosphorus was 0.04 mg/L at surface and bottom.

At site A_C from August 1975 to March 1978 there was an apparent trend of slightly increasing total phosphorus concentrations to about 0.10 mg/L. There was a slight decrease from March 1978 to August 1980 to about 0.05 mg/L. The apparent trend at site F_C was a gradual increase of total phosphorus concentration to about 0.17 mg/L during the whole study except for one temporary decrease as inflow increased during the record elevation in the lake in June and July 1979.

Concentrations of total inorganic nitrogen fluctuated from zero to near zero in late summer or early fall to peaks of 0.1, 0.2 and 0.3 mg/L in the spring, while concentrations of total phosphorus showed little change from one season to the next, usually less than 0.03 mg/L. Though some of the changes in concentration of the nutrients can be attributed to plant assimilation and release, other changes may be attributed to their relative solubilities in well oxygenated water. Phosphorus compounds are less soluble, tend to absorb on the sediment, and remain available to go back into solution when the dissolved-oxygen concentration is low. Their low solubilities in oxygen-rich water tend to keep concentrations at relatively low levels. On the other hand, nitrogen compounds are more abundant and more soluble in oxygenated water. During periods of large releases from the lake, most of the total inorganic nitrogen, being in solution, is flushed out through the gates, while phosphorus is trapped in the bottom sediments of the lake.

0 Ъ С Q Г С ß თ RIVER KILOMETERS UPSTREAM FROM SOMERVILLE DAM œ RIVER MILES UPSTREAM FROM SOMERVILLE DAM - Surface 2 Bottom -Surface Bottom---ഗ თ DATA-COLLECTION SITE ŝ DATA-COLLECTION SITE đ ശ പ്പ С С BC BC о СС ပပ Ac_o 2 M ACo SUMMER WINTER AC د ∧ 00 0 0.0 0.30 0.20 0.0 0.30 0.20 0 CONCENTRATION, IN MILLIGRAMS PER LITER SUROHASOHA JATOT BOARAVA

average concentrations of total phosphorus

during summer and winter surveys

Figure 14.-Variations in



Figure 15.-Seasonal profiles of water temperatures, total inorganic nitrogen, and total phosphorus for site A_C



Figure 16.-Seasonal profiles of water temperatures, total inorganic nitrogen, and total phosphorus for site F_C







phosphorus at site FC, August 1975-August 1980

Dissolved Solids, Dissolved Chloride, Dissolved Sulfate, and Hardness

Some of the more important properties or constituents that affect the utility of a lake or reservoir as a public water supply include dissolved solids, dissolved chloride, dissolved sulfate, and hardness. Because dissolved constituents are in the ionic state, they conduct electricity. Therefore, a correlation can be made between the dissolved solids and the specific conductance of the water (Hem, 1970, p. 96-103). Over short time periods and in the absence of outside influences, the relative concentrations of the major constituents maintain a nearly constant ratio to specific conductance. Therefore specific conductance can be used to detect and document variations of selected constituents in the water of a lake. During each lake survey, the specific conductance of water at each data-collection site was determined at depth intervals of 5 to 10 feet. From these data and from results of analyses for dissolved solids, dissolved chloride, dissolved sulfate, and hardness for samples collected near the surface and bottom at selected sites (tables 2-17). linear-regression equations were developed to estimate the volume-weighted average concentration of dissolved constituents. Data in figure 19 show that volume-weighted average concentrations of the total hardness in Somerville Lake ranged from 75 to 140 mg/L and averaged 110 mg/L expressed as calcium carbonate, placing the water in the moderately hard to hard (61 to 180 mg/L) classification (Hem, 1970, p. 225). The volume-weighted average concentrations of dissolved solids ranged from 139 to 292 mg/L and averaged about 220 mg/L. Volume-weighted average concentrations of dissolved chloride ranged from 20 to 68 mg/L and averaged 43 mg/L. Volume-weighted average concentrations of dissolved sulfate ranged from 30 to 130 mg/L and averaged 63 mg/L.

The volume-weighted average concentrations of these constituents changed little throughout the period of record. The lowest concentrations were found on June 19, 1979, after a period of large inflow, when the elevation reached a record of 246.09 feet, and the lake held 270,000 acre-feet of water.

The variations in concentrations of dissolved solids differed only slightly during summer and winter surveys (figure 20). Data show that the average concentrations of dissolved solids in water at the surface differ by less than 10 mg/L from water at the bottom. There was an increase of only about 20 mg/L in the average dissolved solids concentrations from site A_C (at the dam) to site F_C (the headwater) during the summer and only about a 30-mg/L increase during the winter. Data show that significant stratification of the principle dissolved constituents within the lake does not occur, and the lake water is well mixed most of the time. The concentrations of the principal constituents are low enough that Somerville Lake is considered an excellent source of water for municipal, industrial, and agricultural use. In fact, they are lower than public drinking water standards for Texas: Chloride - 300 mg/L, sulfate - 300 mg/L, and total dissolved solids - 1,000 mg/L (Texas Department of Health Drinking Water Standards, revised November 30, 1977).

Water Transparency

Aquatic plants require light for photosynthesis. The principal factors that affect the depth of light penetration in a lake include color and turbid-

ACRE FEET OF WATER RIVER CONTENTS, IN 300,000 100,000 200,000 Contents 977 1978 CALENDAR YEAR Total dissolved solids ¬ ß HARDNESS AS CALCIUM CARBON- DISSOLVED-SULFATE CONCENTRA- DISSOLVED-CHLORIDE CONCENTRA- DISSOLVED-SOLIDS CONCENTRA-ATE, IN MILLIGRAMS PER LITER TION, IN MILLIGRAMS PER LITER TION, IN MILLIGRAMS PER LITER TION, IN MILLIGRAMS PER VOLUME-WEIGHTED AVERAGE VOLUME-WEIGHTED AVERAGE VOLUME-WEIGHTED AVERAGE VOLUME-WEIGHTED AVERAGE

Figure 19.-Variations in volume-weighted average concentrations of dissolved solids, dissolved chloride, dissolved sulfate, and hardness and in contents for Somerville Lake, August 1975-August 1980


ity of the water. Turbidity is dependent upon both the concentration and size of suspended particles. The suspended materials may consist of suspended sediment from inflowing streams and living or dead microscopic plants and animals or their detritus.

Water transparency was measured in Somerville Lake by lowering a Secchi disc into the water and averaging the greatest depth at which it could be visually detected on lowering and raising it. The Secchi disc readings on the more turbid section of the headwaters, at site F_C , averaged 0.30 m, increased to 0.63 m at site D_C , and were greatest near the dam at site A_C , where the average was 0.75 m. An average reading of 0.59 m for the tributary site C_C was comparable to the central site.

The increase in transparency toward the dam indicates that some suspended material is desposited in the upstream part of the lake. Some of the material desposited may again be placed in suspension either by wave action on the shallow lake or by currents during large inflows or discharges.

Phytoplankton

Phytoplankton data were collected at sites $A_{\rm C}$ and $F_{\rm C}$ on two surveys during 1980. No interpretation can be made until much more phytoplankton data are collected.

SUMMARY

Somerville Lake is a shallow lake, with a mean depth of 14 feet. The depth of the submerged channel of Yegua Creek usually is less than 35 feet, and in most areas of the lake outside the submerged channel, the depth is less than 10 feet.

During winter the water near the surface cools, increases in density, and replaces the warmer and lighter water below the surface. Due to the rather shallow depth, this circulation pattern keeps the lake almost isothermal and well mixed during the winter. Throughout the year, wind action and density currents caused by daily heating and cooling of the surface water, and the large volume of inflow and discharge ratio to lake volume all contribute to keep Somerville Lake well mixed. Unlike deep lakes, the typical pattern of thermal stratification exists only for short periods. During the 16 lake surveys made, the classical three-layered stratification pattern of deeper lakes was not observed.

Like most lakes in the temperate zone, the concentration of dissolved oxygen varied seasonally and areally. The lake also followed the common pattern of high oxygen saturation during the winter. During the summer the dissolved oxygen concentrations continued to be unseasonably high at greater depths of the lake. Most dissolved oxygen concentrations near the bottom were in excess of 50-percent saturation.

The depth-averaged concentration of dissolved oxygen at the deepest site $A_{\rm C}$ near the dam, averaged 5.7 mg/L during the summer and about 10.6 mg/L during

the winter. The dissolved oxygen concentrations at the headwaters site F_{C} averaged about 5.8 mg/L during the summer and 10.0 mg/L during the winter.

The occurrence and distribution of dissolved iron and dissolved manganese in Somerville Lake are inversely related to the dissolved-oxygen concentrations of the water. With the year-round high dissolved oxygen saturation near the surface and near the bottom, dissolved iron concentrations were less than 50 μ g/L and dissolved manganese concentrations were less than 40 μ g/L. However during short periods of stagnation, the concentration of both constituents near the bottom increase in the upstream direction in response to decreases in dissolved oxygen. At site F_C, the concentrations of dissolved iron near the bottom ranged from 0 to 1,100 μ g/L and averaged about 250 μ g/L. The dissolved manganese concentration near the bottom ranged from 0 to 820 μ g/L and averaged about 180 μ g/L.

The average summer concentrations of total inorganic nitrogen varied little throughout the reservoir. The average surface concentration was 0.01 mg/L and the average bottom concentration was 0.02 mg/L, except for a slight increase at the central site D_C , to 0.03 mg/L at the surface and 0.04 mg/L at the bottom. During the winter the average total inorganic nitrogen concentration was 0.11 mg/L for surface samples and 0.10 mg/L for bottom samples at site A_C near the dam. The average concentrations were about the same throughout the lake except at site F_C where the average concentrations were 0.21 mg/L at the surface and 0.25 mg/L at the bottom.

There was little seasonal variation in the average concentration of total phosphorus. Surface and bottom concentrations, during both summer and winter, averaged about the same, 0.04 and 0.06 mg/L near the dam, in the central body of the lake, and in the lower tributary arms. At site F_C , the summer average total phosphorus concentration was 0.09 mg/L at the surface and 0.11 mg/L at the bottom, while the winter concentrations were 0.12 mg/L at the surface and 0.13 mg/L at the bottom.

Total inorganic nitrogen concentrations fluctuated seasonally, with the highest concentrations during the spring and the lowest concentrations during late summer or early fall. Total phosphorus concentrations usually exhibited no major changes from one season to the next.

There were little seasonal, areal, or depth variations in the concentration of dissolved solids, dissolved chloride, dissolved sulfate, or total hardness. The concentrations of these constituents increase during sustained periods of low inflows and decrease during periods of large inflow.

The volume-weighted average concentration of dissolved solids ranged from 139 to 292 mg/L and averaged about 220 mg/L. Volume-weighted average concentrations of dissolved chloride ranged from 20 to 68 mg/L and averaged 43 mg/L. Volume-weighted concentrations of dissolved sulfate ranged from 30 to 130 mg/L and averaged 63 mg/L. Total hardness of the water ranged from 75 to 140 mg/L, expressed as calcium carbonate, placing the water in the moderately hard to hard (61 to 180 mg/L) classification. The concentrations of principal dissolved constituents indicate that Somerville Lake is an excellent source of water for municipal, industrial, or agricultural use.

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Table 1.--Chemical and physical characteristics of water from Yegua Creek near Somerville (station 08110000), October 1968-September 1980

25° Celsius;	
per centimeter at	liter]
os = micromhos	nilligrams per
s; micromho	mg/L = n
es Celsius	
[°C = degree	

	Number			Dave	ntada of t	ime values	TANG AN	0+ [c
Constituent	of of camples	Range in concentration	Average	05	or less	than those	shown	
	Saliipi CS		concellel a ci oli	00	2	2	23	
Temperature, °C	103	4.0 - 32.0	20.5	30.0	27.5	21 .5	15.0	7.5
Specific conductance, micromhos	105	214 - 1,920	613	1,270	756	508	364	259
pH, units	83	6.5 - 8.2	7.2	8.0	7.5	7.1	6.9	6.6
Bicarbonate (HC03), mg/L	105	37 - 142	66	103	76	61	54	44
Carbonate (CO3), mg/L	105	0 - 0	0	0	0	0	0	0
Nitrogen, nitrate, total inorganic (N), mg/L	36	.0070	.28	.70	.40	.20	.20	.02
Hardness (CaCO3), mg/L	105	63 - 560	176	367	215	150	103	76
Hardness, noncarbonate (CaCO ₃), mg/L	105	22 - 480	122	317	165	82	58	31
Calcium (Ca), mg/L	105	19 - 180	53	110	64	43	30	22
Magnesium (Mg), mg/L	105	3.8 - 30	11	21	13	8.8	7.2	4.3
Sodium (Na), mg/L	66	13 - 140	42	66	54	34	24	16
Potassium (K), mg/L	58	3.3 - 10	6.6	9.8	7.4	6.4	5.7	4.7
Chloride (Cl), mg/L	105	16 - 350	88	240	110	64	41	24
Sulfate (S04), mg/L	105	26 - 360	101	240	130	61	56	37
Fluoride (F), mg/L	67	.0070	.23	.40	.30	.20	.20	60.
Silica (SiO ₂), mg/L	105	2.7 - 19	11	16	12	11	8.8	6.1
Dissolved solids, mg/L	105	121 - 1,160	350	750	432	285	202	143

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

			SPE- CIFIC			TRANS-		OXYGEN, DIS-	
DATE	TIME	SAMP- LING DEPTH (FT)	CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
AUG 29 29 29 29 29 29	1120 1122 1124 1126 1128 1130	1.0 5.0 10 15 20 28	322 322 322 322 322 322 322	7.5 7.2 7.2 7.1 7.1 7.1	30.0 29.0 29.0 28.5 28.5 28.5	1.10	5.8 5.8 4.8 4.7 4.4 4.2	76 74 62 60 56 54	93
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MC/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
AUG 29 29 29 29 29 29	45 44	26 26	6.8 6.6	22 22	1.0 1.0	5.3 5.3	58 59	46 46	35 36

301908096313101 SOMERVILLE LAKE SITE AC

			SOLIDS,					
	FLUO-	SILICA,	SUM OF	NITRO~	NITRO-			MANGA-
	RIDE,	DIS-	CONSTI-	GEN,	GEN,	PHOS-	IRON,	NESE,
	DIS-	SOLVED	TUENTS,	NO2+NO3	AMMONIA	PHORUS,	DIS-	DIS-
	SOLVED	(MG/L	DIS-	TOTAL	TOTAL	TOTAL	SOLVED	SOLVED
	(MG/L	AS	SOLVED	(MG/L	(MG/L	(MG/L	(UG/L	(UG/L
DATE	AS F)	SIO2)	(MG/L)	AS N)	AS N)	AS P)	AS FE)	AS MN)
AUG								
29	.2	9.0	179	.01	.000	.010	10	10
29								
29				.00	.000	.030	30	0
29								
29								
29	.2	9.0	180	.01	.000	.030	230	110

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
29	1145	1.0	322	7.6	29.5	5.4	70
29	1147	5.0	322	7.3	29.0	5.3	68
29	1149	10	322	7.2	28.5	4.7	60
29	1151	15	322	7.1	28.5	4.4	56
29	1153	24	322	6.9	28.5	3.6	46

302026096341501 SOMERVILLE LAKE SITE BC

I	DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PI FIEJ (UNI)	TI H A LD V (I S) (I	EMPER- ATURE, JATER DEG C)	OXYGEN DIS- SOLVE (MG/L	OXY E SC , (P C D SA) AT	GEN, DIS- DIVED I DER- I DENT D TUR- TON) (HARD- NESS (MG/L AS CACO3)
AL	JG 29 29 29 29	1200 1202 1204 1206	1.0 5.0 10 15	322 322 322 322		3.5 3.1 7.4 7.1	31.5 30.0 29.5 29.5	8. 7. 6. 4.	4 5 0 7	114 99 78 61	93 93
DATE	HARD- NESS, NONCAR BONATE (MC/L CACO3	CALCI - DIS- SOLV (MG/) AS (MAG IUM SI - DI VED SOL VL (MG CA) AS	NE- UM, SOI S- DI VED SOI /L (MG) AS	DIUM, IS- LVED IG/L S NA)	SODIUN AD- SORP- TION RATIO	1 POT SI DI SOL (MG AS	AS- UM.BI S-BC VED (/L K) H	CAR- NATE MG/L AS CO3)	SULFATH DIS- SOLVEI (MG/L AS SO4)	CHLO- E RIDE, DIS- D SOLVED (MG/L) AS CL)
AUC 29 29 29 29	4 - - 4	5 26 - 5 26		6.7 6.7	22 22	1.(1.() - -)	5.3 5.4	58 59	46 46	36 36
		FLUO- RIDE, DIS- SOLVED	SILICA, DIS- SOLVED (MG/L	SOLIDS SUM OF CONSTI- TUENTS DIS-	NITI GEN NO2+N TOTA	RO- 1 N, NO3 AM AL 7	NITRO- GEN, MONIA FOTAL	PHOS- PHORUS TOTAL	IR , D SO	ON, N IS- LVED S	MANGA- NESE, DIS- SOLVED

DATE	(MG/L AS F)	AS SIO2)	SOLVED (MG/L)	(MG/L AS N)	(MC/L AS N)	(MG/L AS P)	(UG/L AS FE)	(UG/L AS MN)
AUG								
29	.2	9.0	180	.01	.000	.020	10	0
29								
29				.00	.000	.040	10	20
29	.2	9.2	181	.00	.000	.040	200	100

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
AUG 29 29 29	1240 1242 1245	1.0 5.0 9.0	322 322 322	8.5 7.9 7.3	30.5 29.0 28.5	.80	8.8 7.2 5.7	116 92 73	93 91
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
AUG 29	44	26	6.9	22	1.0	5.3	60	46	35
29	40	26	6.4	22	1.0	5.3	62	46	35

301805096332501 SOMERVILLE LAKE SITE CC--Continued

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
AUG 29	.2	9.3	181	.00	.000	.060	30	0
29 29		9.6	181	.00	.000	.070	340	0

301904096335601 SOMERVILLE LAKE SITE DC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG 29 29 29 29 29	1300 1302 1304 1307 1310	1.0 5.0 10 15 24	322 322 322 322 322 322	8.7 8.4 7.5 7.3 7.0	30.5 29.5 29.0 29.0 29.0	9.2 8.1 5.8 5.1 3.6	121 105 74 65 46

	TIME	SAMP- LING DEPTH	SPE- CIFIC CON- DUCT- ANCE (MICRO-	PH FIELD	TEMPER- ATURE, WATER	TRANS- PAR- ENCY (SECCHI DISK)	OXYGEN, DIS- SOLVED	OXYGEN, DIS- SOLVED (PER- CENT SATUR-	HARD- NESS (MG/L AS
DATE		(FT)	MHOS)	(UNITS)	(DEG C)	(M)	(MG/L)	ATION)	CACO3)
AUG 29 29 29 29	1 325 1 327 1 329 1 333	1.0 5.0 10 15	365 399 399 399	9.0 7.4 7.1 6.9	30.5 29.0 28.5 28.5	.50	12.0 5.4 2.8 1.7	158 69 36 22	100
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
AUG 29 29	56	29	7.4	26	1.1	5.5	57	55	42
29 29	63	31	8.3	29	1.2	5.8	 59	63	47

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MC/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UC/L AS MN)
AUG								
29	.2	11	204	.01	.000	.070	10	10
29								
29				.01	.000	.080	40	360
29	.2	11	226	.00	.000	.140	790	820

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UC/L = micrograms per liter

TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
1430 1432 1434 1436	1.0 10 20 27	369 369 369 369	7.9 7.9 7.9 7.9	12.5 12.5 12.5 12.5	.52	10.3 10.1 10.1 10.0	96 94 94 93	110 110
HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
58	31	7.2	24	1.0	5.5	60	54	41
	TIME 1430 1432 1434 1436 HARD- NONCAR- BONATE (MG/L CACO3) 58 	SAMP- LINGTIMEDEPTH (FT)14301.0143210143420143627HARD- NONCAR- BONATE MONCAR- (MG/L CACO3)CALCIUM DIS- SOLVED (MG/L CACO3)5831 6132	SPE- CIFIC CON- DUCT- LING DEPTH SAMP- MACE TIME DEPTH DEPTH (MICRO- MHOS) 1430 1.0 369 1432 10 369 1432 10 369 1434 20 369 1436 27 369 HARD- NESS, NONCAR- DIS- BONATE MAGNE- SILW, SOLVED SILM, SUVED (MG/L (MG/L CACO3) (MG/L AS CA) (MG/L AS MG) 58 31 7.2 61 32 7.5	SPE- CIFIC CON- CON- DUCT- LING SAMP- DUCT- ANCE PH TIME DEPTH (FT) MICRO- MHOS) FIELD (UNITS) 1430 1.0 369 7.9 1432 10 369 7.9 1436 27 369 7.9 1436 27 369 7.9 HARD- NESS, SOLVED MAGNE- SILS- DIS- DIS- DIS- DIS- DIS- SOLVED DIS- DIS- SOLVED DIS- SOLVED (MG/L (MG/L CACO3) AS CA) AS MG) AS NA) 58 31 7.2 24 61 32 7 5 25	SPE- CIFIC CON- SAMP- DUCT- TEMPER- TIME DEPTH DEPTH (FT) (MCRO- MHOS) FIELD (UNITS) WATER (DEG C) 1430 1.0 369 7.9 12.5 1432 10 369 7.9 12.5 1434 20 369 7.9 12.5 1436 27 369 7.9 12.5 HARD- NONCAR- BONATE MAGNE- DIS- DIS- DIS- DIS- SOLVED SODIUM, AD- SOLVED AD- SOLVED (MG/L (MC/L) (MG/L) RATIO (MG/L) (MC/L) (MG/L) RATIO 58 31 7.2 24 1.0 58 31 7.2 24 1.0 61 32 7 5 25 1.0	$\begin{array}{c} & SPE-\\ CIFIC & TRANS-\\ CON-\\ CON-\\ DAR-\\ CON-\\ CON-\\ TIME & DEPTH & DUCT-\\ LINC & ANCE & PH & TURE, & (SECCHI \\ DEPTH & (MICRO- FIELD & WATER & DISK) \\ (FT) & MHOS) & (UNITS) & (DEG C) & (M) \\ \hline 1430 & 1.0 & 369 & 7.9 & 12.5 &1 \\ 1432 & 10 & 369 & 7.9 & 12.5 &1 \\ 1434 & 20 & 369 & 7.9 & 12.5 &1 \\ 1436 & 27 & 369 & 7.9 & 12.5 &1 \\ 1436 & 27 & 369 & 7.9 & 12.5 &1 \\ 1436 & 27 & 369 & 7.9 & 12.5 &1 \\ HARD- & MAGNE- & SODIUM & AD- \\ NESS, & CALCIUM & SIUM, & SODIUM, & AD- \\ NONCAR- & DIS- & DIS- & DIS- \\ BONATE & SOLVED & SOLVED & SOLVED \\ (MG/L & (MG/L & (MG/L & (MG/L & RATIO & (MG/L & CACO3) & AS CA) & AS MG) & AS NA) & AS K \\ \hline 58 & 31 & 7.2 & 24 & 1.0 & 5.5 \\ & & & & \\ & & -$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{ccccccc} & & & & & & & & & & & & & & & &$

301908096313101 SOMERVILLE LAKE SITE AC

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NC3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB								
03	.2	9.9	203	.00	.010	.040	170	140
03				.00	.010	.030	60	60
03								
03	. 2	9.9	204	.00	.000	.040	0	0

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB 03 03 03	1450 1452 1454	1.0 10 24	369 369 369	7.8 7.8 7.9	12.5 12.0 12.0	10.4 10.3 10.2	97 95 94

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB 03 03	1500 1502	1.0 13	369 369	7.9 7.9	12.0 12.0	10.3 10.1	95 94

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB 03 03	1700 1702	1.0 12	369 369	8.0 8.1	12.5 12.5	10.4 10.0	97 93

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB 03 03 03	1540 1542 1544	1.0 10 22	369 369 369	7.7 7.7 7.8	12.0 12.0 12.0	10.2 10.1 10.0	94 94 93

FEB 03 1520 1.0 369 7.8 12.0 .61 10.3 95 11 03 1524 20 369 7.7 12.0 10.3 95 - 03 1524 20 369 7.7 12.0 10.2 94 - 03 1526 24 369 7.7 12.0 9.8 91 11 HARD- MAGNE- SODIUM POTAS- CHLO- BULAR	DAT	Έ	TIM	Ē	SAMP- LING DEPTH (FT)	SPE CIF CON DUC ANC (MIC MHO	IC T- E RO- S)	P FIE (UNI	H LD TS)	TEM P ATU WAT (DEG	ER- RE, ER C)	TRA PA EN (SEC DIS (M	NS- R- CY CHI K)	OXYG DI SOL (MG	EN, S- VED /L)	OXYG DI SOL (PE CE SAT ATI	EN, S- VED R- NT UR- ON)	HARD- NESS (MG/L AS CACO3)
HARD- NESS, BONATE MAGNE- DIS- DIS- BONATE SODIUM, DIS- DIS- DIS- BONATE SODIUM, DIS- DIS- DIS- BONATE AD- DIS- DIS- BONATE SULFATE DIS- BONATE CHLO- DIS- DIS- DIS- BONATE DATE SOLVED SOLVED SOLVED TION SOLVED MG/L MANGA- MANGA	FEB 03. 03. 03. 03.	 	1520 1522 1524 1520) 2 4 5	1.0 10 20 24		369 369 369 369 369		7.8 7.7 7.7 7.7	1 1 1 1	2.0 2.0 2.0 2.0		.61	1	0.3 0.3 0.2 9.8		95 95 94 91	110 110
FEB 58 31 7.3 24 1.0 5.5 60 52 41 03 10 10 0 0 0 0 0 0 0 0 0 0 0 0 0 </td <td>DAT</td> <td>Έ</td> <td>HARD NESS NONCAI BONATI (MG/J CACO)</td> <td>- C. R- E 3) .</td> <td>ALCIUM DIS- SOLVED (MG/L AS CA)</td> <td>MAG SI DI SOL (MG AS</td> <td>NE- UM, S- VED /L MG)</td> <td>SODI DIS SOLV (MG AS</td> <td>UM, - ED /L NA)</td> <td>SOD A SOR TI RAT</td> <td>IUM D- P- ON IO</td> <td>POT SI DI SOL (MG AS</td> <td>AS- UM, S- VED /L K)</td> <td>BICA BONA (MG A HCO</td> <td>R- TE /L S 3)</td> <td>SULF DIS SOL (MG AS S</td> <td>ATE - VED /L 04)</td> <td>CHLO- RIDE, DIS- SOLVED (MG/L AS CL)</td>	DAT	Έ	HARD NESS NONCAI BONATI (MG/J CACO)	- C. R- E 3) .	ALCIUM DIS- SOLVED (MG/L AS CA)	MAG SI DI SOL (MG AS	NE- UM, S- VED /L MG)	SODI DIS SOLV (MG AS	UM, - ED /L NA)	SOD A SOR TI RAT	IUM D- P- ON IO	POT SI DI SOL (MG AS	AS- UM, S- VED /L K)	BICA BONA (MG A HCO	R- TE /L S 3)	SULF DIS SOL (MG AS S	ATE - VED /L 04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
SOLIDS, MANGA- RIDE, DIS- CONSTI- GEN, GEN, PHOS- IRON, NESE, DIS- SOLVED TUENTS, NO2+NO3 AMMONIA PHORUS, DIS- DIS- SOLVED MG/L DIS- TOTAL TOTAL SOLVED SOLVED MG/L AS SOLVED (MG/L) AS NO AS NO DATE AS SIO2) (MG/L) AS NO AS NO FEB 03 .2 10 201 .00 .010 .030 20 0 03 03	FEB 03. 03. 03. 03.	 	-	58 56	31 31		7.3 7.0	2 24	4 4		1.0		5.5 5.5		60 61	5	2 4	41 42
FEB 03 .2 10 201 .00 .010 .030 20 0 03 .00 .010 .040 0 0 03 <		D.	ATE	FLUO RIDE DIS SOLVI (MG/I AS F	- SIL , DI - SO ED (M L A) SI	ICA, S- LVED G/L S O2)	SOLI SUM CONS TUEN DI SOL (MG	DS, OF TI- TS, S- VED (/L)	NI GI NO2- TO (MC AS	FRO- EN, +NO3 FAL G/L N)	NI GI AMMO TOT (MO AS	TRO- EN, DNIA TAL G/L N)	PHO PHO TO (M AS	OS- RUS, TAL G/L P)	IR D SO (U AS	ON, IS- LVED G/L FE)	MAN NES DI SOL (UG AS	GA- E, S- VED /L MN)
		FE 0 0 0	B 3 3 3 3		.2	10 9.7		201		.00		.010		.030 .040 .040		20 0 0		0 0 0

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIT	ΜE	SAMF LIN DEPT (FT	SP CI CO CO IG AN CH (MI CH (MI	E- FIC N- CT- CE CRO- OS)	FIE (UNI	ΫΗ LLD TS)	TEMF ATU WAT (DEC	YER- IRE, YER	TRA PA EN (SEC DIS (M	NS- R- ICY ICHI ICHI I)	OXYGI DIS SOLV (MG)	EN, 5- /ED /L)	OXYG DI SOL (PE CE SAT ATI	EN, S- VED R- NT UR- ON)	HARD- NESS (MG/L AS CACO3)
FEB 03 03 03	. 160 . 160	00 02 04	1 10 19	.0	370 370 370		7.7 7.7 7.7	1 1 1	2.0 2.0 2.0		.61	10 10 10).3).3).3		95 95 95	110
DATE	HARI NES NONCA BONA (MG, CACC	D- S, AR- IE /L O3)	CALCI DIS- SOLV (MG/ AS C	MA UM S ED SO L (M CA) AS	GNE- LUM, LS- LVED G/L MG)	SODI DIS SOLV (MG AS	UM, - ED (/L NA)	SOE A SOF TI RAT	1 UM D- P- ON 10	POT SI DI SOI (MC AS	CAS- UM, S- VED (/L K)	BICAN BONAT (MC) AS HCOS	R- TE /L S S)	SULF DIS SOL (MG AS S	ATE - VED /L 04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
FEB 03 03 03	•	58 59	31 31		7.3 7.4	2 2	5 		1.1 1.0		5.5 5.5		60 60	5 5	4 4 4	42 41
	DATE	FL RI D SO (M AS	UO- DE, IS- LVED G/L F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOL SUM CON TUE D SO (M	IDS, OF STI- NTS, IS- LVED G/L)	NIT GI NO2- TOT (MC AS	TRO- EN, +NO3 TAL G/L N)	NI GI AMMO TO (MO AS	FRO- EN, DNIA FAL G/L N)	PH PHO TO (M AS	OS- RUS, TAL G/L P)	IR D SO (U AS	ON, IS- LVED G/L FE)	MAN NES DI SOI (UC AS	NGA- SE, IS- LVED G/L MN)
	FEB 03 03 03		.2	10 10		205		.01 .00 .01		.020 .000 .020		.050 .050 .050		10 60 0		0 50 20

301754096380801 SOMERVILLE LAKE SITE FC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MC/L AS CACO3)
FEB 03 03	1630 1632	1.0 14	545 536	7.7 7.6	12.5 12.5	.43	10.3 10.2	96 95	160 150
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MC)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
FEB 03 03	110 98	45 42	11 11	40 37	1.4 1.3	6.5 6.5	64 64	94 93	68 66
	FI R I S(0 DATE AS	LUO- SI IDE, D DIS- S DLVED (1G/L S F) S	SO LICA, SUR IS- CO OLVED TU MG/L I AS SO IO2) (1	LIDS, 1 OF N NSTI- (ENTS, NO DIS- T(DLVED (1 1G/L) AS	ITRO- NI GEN, C 2+NO3 AMM DTAL TC 4G/L (M 5 N) AS	TRO- GEN, PI IONIA PHO DTAL TO IG/L (1 G N) AS	HOS- IF DRUS, E DTAL SC HG/L (U S P) AS	MA RON, NE DIS- D DLVED SO IG/L (U S FE) AS	NGA- SE, IS- LVED G/L MN)

FEB 03... 03...

.3 .2

10 11

304 298

.00

.020 .020

.060 .090

20 30

0 0

FT = fcet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MC/L = milligrams per liter; UC/L = micrograms per liter

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
APR 29 29 29 29	1525 1528 1532 1535	1.0 10 20 32	409 409 409 417	7.5 7.5 7.5 7.3	21.5 21.5 21.5 21.5 21.5	.88 	7.8 7.8 7.8 6.1	88 88 88 69	120 120
DATF	HARD- NESS, NONCAR- BONATF (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
APR 29 29 29	68	33	8.5	29	1.2	6.0	60	65 	49
29	66	32	8.5	30	1.2	6.0	60	67	49

301908096313101 SOMERVILLE LAKE SITE AC

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
APR 29	• 4	6.9	227	.07	.100	.010	0	0
29								
29				.07	.080	.020	30	10
29	.3	7.1	230	.08	.140	.020	10	50

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH	SPE- CIFIC CON- DUCT- ANCE (MICRO-	PH FIELD	TEMPER- ATURE, WATER	OXYGEN, DIS- SOLVED	OXYGEN, DIS- SOLVED (PER- CENT SATUR-
DATE APR 29 29 29	1520 1522 1523	(FT) 1.0 10 18	MHOS) 409 409 409	(UNITS) 7.7 7.7 7.8	(DEG C) 22.0 22.0 21.5	(MG/L) 8.6 8.6 9.0	ATION) 98 98 101

302026096341501 SOMERVILLE LAKE SITE BC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
APR 29 29 29	1500 1505 1507	1.0 10 15	404 404 404	7.7 7.7 7.7	22.5 22.5 22.0	.67	8.3 8.3 8.4

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302026096341501 SOMERVILLE LAKE SITE BC--Continued

	OXYGEN, DIS-	NITRO-	NITRO-	PUOS	TRON	MANGA-
	(PER- CENT	NO2+NO3	AMMONIA TOTAL	PHORUS,	DIS-	DIS-
DATE	SATUR- ATION)	(MG/L AS N)	(MG/L AS N)	(MG/L AS P)	(UG/L AS FE)	(UG/L AS MN)
APR						
29	94	.04	.080.	.010	30	0
29	94					
29	95	.04	.060	.020	0	0

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
APR 29 29 29	1605 1610 1612	1.0 10 15	415 415 415	7.6 7.6 7.6	21.5 21.5 21.5	.82	8.0 8.0 8.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
APR 29 29 29	90 90 90	.08	.080	.020	20 0	0 0

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
APR 29 29 29	1630 1633 1635	1.0 10 24	419 419 419	7.7 7.7 7.7	22.0 22.0 21.5	8.1 8.1 8.6	92 92 97

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
APR 29 29 29 29	1640 1643 1646 1649	1.0 10 20 27	419 419 419 419	7.7 7.7 7.7 7.7 7.7	22.0 22.0 22.0 22.0	.73	8.0 8.0 8.0 8.0	91 91 91 91	120 120

Table 4--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE APRIL 29, 1976--Continued

301904096335601 SOMERVILLE LAKE DC--Continued

DATE	HARI NESS NONCA BONA (MG) CACO	D- S, AR- TE /L D3)	CALCIU DIS- SOLVE (MG/I AS CA	MAG M SI DI SD SOL L (MG A) AS	NE- UM, SOD S- DI VED SOL /L (M MG) AS	IUM, S- VED G/L NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR BONAT (MG/ AS HCO3	- SULF E DIS L SOL (MG	ATE VED /L O4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
APR 29 29		67	32		8.7	30	1.2	6.0		60 6 	7	50
29 29		67	33	-	8.1	29	1.2	6.0		 60 6	9	50
D	DATE	FLU RID DI SOL (MG AS	0- S S- VED (/L F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITR GEN NO2+NO TOTAI (MG/I AS N))- NII GE 03 AMMC 2 TOT 2 (MC 4 AS	TRO- TRO- DNIA PH TAL T G/L (N) A	HOS- ORUS, OTAL MG/L S P)	IRON, DIS- SOLVED (UG/L AS FE)	MANG, NESE DIS- SOLVI (UG/I AS MI	A- 3D 2)
AP 2	PR 9		.3	7.1	231	.()6.	090	.020	10		10
2 2 2	9 9 9		 .2	 7.1	232	. ()6 .)6 .	070 080	.020	20 30		0

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
APR 29 29 29	1715 1717 1720	1.0 10 21	395 390 386	7.4 7.3 7.3	22.0 22.0 22.0	.52	7.2 7.2 7.0	82 82 80	110 100
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
APR 29 29 29	61 60	29 28	8.3 8.1	27 26	$\frac{1.1}{1.1}$	6.5	56 53	59 60	47 47
			SOL	TDS					

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS. TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
APR 29 29 29	.4	10 10	215	.10 .09 .09	.110 .170 .110	.050 .050 .050	80 90 80	0 10 0

Table 4--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE APRIL 29, 1976--Continued

301754096380801 SOMERVILLE LAKE SITE FC

DATE	TIM	Е	SAM LI DEP (F	P- NG TH T)	SPE CIF CON DUC ANC (MIC MHC	:- TC :T- E :RO- S)	FIE (UNI	PH LLD TS)	TEMF ATU WAT (DEC	PER- IRE, PER C)	TRA PA EN (SEC DIS (M	NS- IR- ICY ICHI IK)	OXYG DI SOL (MG	EN, S- VED /L)	OXYC DI SOI (PE CE SAI ATI	GEN, S- LVED CR- CNT CUR- CON)	HARD- NESS (MG/L AS CACO3)
APR 29 29 29	174 174 174	0 5 7	1 1	1.0 0 7		343 346 346		7.2 7.2 7.2	2 2 2	2.0		.27		6.8 6.8 7.2		77 77 82	93 94
DATE	HARD NESS NONCA BONAT (MG/ CACO	- R- F L 3)	CALC DIS SOL (MG AS	IUM - VED /L CA)	MAG SI DI SOL (MG AS	NE- UM, S- VED /L MG)	SODI DIS SOLV (MG AS	UM, - YED /L NA)	SOE A SOF TI RAT	DIUM D- P- ON 10	POT SI DI SOL (MG AS	AS- UM, S- VED (/L K)	BICA BONA (MG A HCO	R- TE /L S 3)	SULE DIS SOI (MC AS S	FATE S- LVED G/L SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
APR 29		50	2	5		7.3	2	:4		1.1		6.5		52	5	51	42
29		51	2	5		7.7	2	4		1.1		6.5		52	5	53	42
I	DATE	FLI RII DI SOI (MC AS	UO- DF, IS- LVED G/L F)	SILI DIS SOL (MC AS SIC	CA, .VED /L 2)	SOL SUM CON TUE D SO (M	IDS, OF STI- NTS, IS- LVED G/L)	NI GI NO2- TO (M AS	FRO- EN, +NO3 FAL G/L N)	NI GI AMMO TO (MO AS	TRO- EN, DNIA TAL G/L N)	PH PHO TO (M AS	OS- RUS, TAL G/L P)	IR D SO (U AS	ON, IS- LVED G/L FE)	MAI NE D SO (U	NGA- SE, IS- LVED G/L MN)
AF 2 2 2	29 29 29		.4 .3	1	2 1		194 195		.05 .05 .06		.130 .140 .150		.000 .070 .090		90 130 90		10 0 0

1

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

			SPE- CIFIC CON-			TRANS- PAR-		OXYGEN, DIS- SOLVED	HARD-
DATE	TIME	SAMP- LING DEPTH (FT)	DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	ENCY (SECCHI DISK) (M)	OXYCEN, DIS- SOLVED (MG/L)	(PER- CENT SATUR- ATION)	NESS (MG/L AS CACO3)
AUG 20 20 20 20	0900 0904 0908 0910	1.0 10 20 27	375 375 375 375 375	7.3 7.3 7.2 7.2	28.0 28.0 28.0 28.0	•58 	4.8 4.6 4.4 4.4	62 59 56 56	98 100
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MACNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
AUG 20 20 20	46 	27	7.4	26	1.1	5.8	63	52	44
20	52	29	7.3	26	1.1	5.8	62	51	44
			COT	TDC					

301908096313101 SOMERVILLE LAKE SITE AC

	FLUO- RIDE, DIS- SOLVED	SILICA, DIS- SOLVED (MG/L	SOLIDS, SUM OF CONSTI- TUENTS, DIS-	NITRO- GEN, NO2+NO3 TOTAL	NITRO- CEN, AMMONIA TOTAL	PHOS- PHORUS, TOTAL	IRON, DIS- SOLVED	MANGA- NESE, DIS- SOLVED
DATE	AS F)	SI02)	(MG/L)	AS N)	AS N)	AS P)	AS FE)	AS MN)
AUG								
20	.2	12	205	.01	.010	.020	10	10
20			~-	.01	.010	.050	60	20
20								
20	.3	12	206	.01	.030	.030	20	30

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG 20 20 20 20	0920 0924 0928 0930	1.0 10 20 26	375 375 375 375	7.5 7.4 7.4 7.4	28.5 28.5 28.5 28.0	5.2 4.9 4.8 4.8	68 64 62 62

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
AUG 20 20	0940 0945	1.0 11	375 375	7.9 7.2	29.5 29.0	6.5 2.4	86 32	.00	.000	.050 .040	60 30	40 160

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAN LI DEH (1	SP CI CO 1P- DU ING AN TH (MI TH (MI	E- FIC N- CT- CE CRO- 1 OS) (I	PH FIELD JNITS)	TEMPE ATUR WATE (DEG	TRA PA R- EN E, (SEC R DIS C) (M	NS- R- CY O CHI K)	XYGEN, DIS- SOLVED (MG/L)
AUC 20 20	1115 1120	5) 1	1.0 0	375 375	8.1 7.6	29 29	.5 .0	.43	7.2 5.4
DA	C TE	DXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO GEN, AMMONI TOTAI (MG/I AS N))- FA PHO - TO - (M - AS	OS- RUS, TAL G/L P)	IRON, DIS- SOLVED (UG/L AS FE)	MANG NESE DIS SOLVI (UG/I AS MI	A- - ED L N)
AUG 20 20	•••	95 71	.01 .00	.00	00	.030 .040	50 10		0 5

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
20	1017	1.0	380	8.2	29.0	7.4	97
20	1020	10	380	7.9	29.0	6.6	87
20	1025	21	380	7.5	29.0	5.4	71

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG 20 20 20	1010 1012 1014	1.0 10 21	378 378 378	7.9 7.6 7.5	29.0 28.5 28.5	6.6 5.8 4.4	87 75 57

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
AUG									
20	1000	1.0	378	7.7	29.0	.52	6.2	82	100
20	1002	10	378	7.5	28.5		5.4	70	
20	1004	22	378	7.4	28.5		4.7	61	100

Table 5--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE AUGUST 20, 1976--Continued

301904096335601 SOMERVILLE LAKE SITE DC--Continued

DATE	HARD- NESS, NONCAR BONATE (MG/L CACO3	CALC CALC SOL SOL (MG	MAG IUM S - D VED SO /L (M CA) AS	SNE- IUM, SOD IS- DI LVED SOL G/L (M MG) AS	SOLUM, SOL S- SOL VED T G/L RA NA)	DIUM PO' AD- S RP- D ION SO ION SO IIO (M AS	TAS- IUM, BICA IS- BONA LVED (MC G/L A K) HCC	AR- SULI ATE DIS 2/L SOI AS (MO 03) AS S	CHL FATE RIE S- DIS LVED SOL G/L (MG SO4) AS	.0-)E, :- .VED :/L CL)
AUG 20 20 20	4-	8 2 - 8 2	8 8	7.5	26	1.1 1.1	5.8	64 64	52 4 51 4	+3 +4
D	ATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MC/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- CEN, AMMONIA TOTAL (MC/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	
AU 2 2 2	G 0 0 0	.2 .2	12 12	206 206	.01	.010	.020	30 20	5 90	

301754096380801 SOMERVILLE LAKE SITE FC

DATE	TIM	E	SAMP- LING DEPTH (FT)	SPE CIF CON DUC ANC (MIC MHC	- T- E RO- S)	P FIE (UNI	H LD TS)	TEMP ATU WAT (DEG	ER- RE, ER C)	TRA PA EN (SEC DIS (M	NS- R- CY CHI K)	OXYGE DIS SOLV (MG)	N, - ZED L)	OXYGH DIS SOLV (PEH CEN SATU ATIC	EN, 5- 7ED 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	HARD- NESS (MG/L AS CACO3)
AUG 20 20	103 104	5	1. 13	0	408 418		8.3 7.6	2 2	9.0 8.5		• 34		.3		96 70	110 110
DATE	HARD NESS NONCAI BONATI (MG/1 CACO)	- R- E L 3)	CALCIU DIS- SOLVE (MG/L AS CA	MAG M SI DI D SOL (MG) AS	NE- UM, S- VED /L MG)	SODI DIS SOLV (MG AS	UM, ED VL NA)	SOD A SOR TI RAT	IUM D- P- ON IO	POT SI DI SOL (MG AS	AS- UM, S- VED /L K)	BICAH BONAT (MG/ AS HCO3	(- TE ()	SULFA DIS- SOLV (MG/ AS SC	ATE /ED /L)4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
AUC 20 20	-	55 59	30 31		8.0 8.4	2 3	8 0		1.2 1.2		5.8 6.0		64 65	57 59	7)	49 50
	DATE	FLU RID DI SOL (MG AS	O- S E, S- VED /L F)	ILICA, DIS- SOLVED (MC/L AS SIO2)	SOL SUM CON TUE D SO (M	IDS, OF STI- NTS, IS- LVED G/L)	NI G NO2 TO (M AS	TRO- EN, +NO3 TAL G/L N)	NI GI AMMO TO (MO AS	FRO- EN, DNIA FAL G/L N)	PHO PHO TO (M AS	DS- RUS, TAL G/L P)	IR D SO (U AS	ON, IS~ LVED G/L FE)	MAN NES DI SOI (UC AS	NGA- BE, IS- LVED G/L MN)

AUG 20... .3 13 223 .01 20... .3 13 230 .01

.010 .020 .060 .070 20 5 30 50

Table 6--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE FEBRUARY 16, 1977

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UC/L = micrograms per liter

301908096313101 SOMERVILLE LAKE SITE AC

DATE	TIME	SAMP- LINC DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
FEB 16 16 16	1535 1537 1540 1545	1.0 10 20 32	336 335 335 336	7.7 7.7 7.7 7.6	12.0 12.0 12.0 12.0	.43	12.0 12.0 12.0 12.0	115 115 115 115	93 92
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
FEB 16 16 16	55	26	6.7	24	1.1	5.8	46	54	38

DATE	FLUO- RIDE. DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB 16 16 16	.1 .1	10 10	187 184	.13 .13	.080 .050	.050	40 1 00	0 60

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB 16 16 16 16	1355 1357 1359 1402	1.0 10 20 29	335 335 335 335 335	7.6 7.6 7.5	12.0 12.0 12.0 12.0	12.0 11.9 11.6 11.6	115 114 112 112

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
FEB 16 16	1610 1615	1.0 15	295 295	7.4 7.4	11.0 11.0	.40	11.2 11.2

302026096341501 SOMERVILLE LAKE SITE BC--Continued

	OXYGEN,					
	DIS-	NITRO-	NITRO-	PUOS-	TRON	MANGA-
	(PER-	NO2+NO3	AMMONIA	PHORUS.	DIS-	DIS-
	CENT	TOTAL	TOTAL	TOTAL	SOLVED	SOLVED
DATE	SATUR-	(MG/L	(MG/L	(MG/L	(UG/L	(UG/L
DATE	AITON)	AS N)	AS N)	AS P)	AS FE)	AS MN)
FEB						
16	105	.14	.100	.040	30	0
16	105	.14	.110	.040	30	10

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
FEB 16 16	1640 1644	1.0 13	350 350	7.6 7.6	12.0 12.0	.43	11.4 11.2

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MC/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB 16 16	110 108	.13	.080 .070	.050	40 40	10 0

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB	1650	1.0	363	7.4	11.5	11.0	104
16	1652	10	363	7.4	11.5	11.0	104
16	1655	20	363	7.3	11.5	11.0	104
16	1658	28	320	7.3	10.5	10.9	101

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB								
16	1625	1.0	363	7.3	12.0	.49	10.8	104
16	1627	10	345	7.3	11.0		10.9	102
16	1630	20	320	7.5	10.5		11.1	103
16	1633	28	320	7.5	10.5		11.0	102

301904096335601 SOMERVILLE LAKE SITE DC--Continued

DATE	HARD- NESS (MG/L AS CACO3)	HARE NESS NONCA BONAT (MG/ CACC)- S, CALC AR- DIS CE SOL (L (MC 03) AS	MAC CIUM SI - DI VED SOI C/L (MC CA) AS	GNE- LUM. S LS- LVED S G/L MG) .	DDIUM, DIS- OLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
FEB 16 16	100	I	64 2 		7.4	26	1.1	5.6	44	61
16	86		49 2	4	6.4	23	1.1	6.2	46	50
DA	C R D S (TE A	HLO- IDE, IS- OLVED MG/L S CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITR GEN NO2+N TOTA (MG/ AS N	D- NIT , GE D3 AMMO L TOT L (MG) AS	CRO- CN, PH ONIA PHO CAL TO C/L (N N) AS	HOS- IR DRUS, C DTAL SC IG/L (U S P) AS	MA ON, NE DIS- I DLVED SC IG/L (L FE) AS	NGA- SE, DIS- DLVED IG/L MN)
FEB 16 16 16 16	· · · ·	42 36	10 10	202 178	•	11 . 13 .	100 120	.050	40 40	10 0

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB 16 16 16	1705 1707 1710	1.0 10 23	354 354 342	7.1 7.1 7.2	12.0 12.0 10.5	10.0 10.0 10.4	96 96 96

			SPE-					OXYGEN,	
			CIFIC			TRANS-		DIS-	
			CON-			PAR-			
		SAMP-	DUCT-		TEMPER-	ENCY	OXYGEN,	(PER-	
		LING	ANCE	PH	ATURE,	(SECCHI	DIS-	CENT	
	TIME	DEPTH	(MICRO-	FIELD	WATER	DISK)	SOLVED	SATUR-	
DATE		(FT)	MHOS)	(UNITS)	(DEG C)	(M)	(MG/L)	ATION)	
FEB									
16	1720	1.0	313	6.8	13.0	.15	8.5	83	
16	1725	14	313	6.8	13.0		8.5	83	

Table 6--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE FEBRUARY 16, 1977--Continued

301754096380801 SOMERVILLE LAKE SITE FC--Continued

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGN SIU DIS SOLV (MG/ AS M	E- M, SODI - DIS ED SOLV L (MG G) AS	SOI UM, A - SOF ED TI /L RAT NA)	DIUM PO AD- SI AD- DI AD- DI AD- DI CIO SOI CIO (MC AS	TAS- LUM, BIC LS- BON LVED (M G/L K) HC	AR- ATE G/L AS O3)	SULFATE DIS- SOLVED (MG/L AS SO4)
FEB 16 16	86 86	57 57	23 23	7 7	.0 2 .0 2	3 4	1.1 1.1	5.4 5.4	36 36	54 55
DÆ	CH RI DI SC (M ATE AS	HLO- SIL (DE, DI (S- SC DLVED (M 1G/L A (S CL) SI	SOL ICA, SUM S- CON OLVED TUE IG/L E NS SC O2) (M	LIDS, OF STI- NTS, D SS- OLVED G/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MAN NES DI SOL (UG AS	GA- E, S- VED /L MN)
FEF 16 16	3 	36 36	9.0 9.2	175 175	.09 .09	.080 .090	.090 .090	80 70		10 10

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
MAY 27 27 27 27	1025 1028 1030 1035	1.0 10 20 31	312 312 312 312 312	8.5 8.2 7.6 7.3	27.0 26.5 25.5 24.5	.70	7.8 7.6 6.4 4.6	99 96 80 56	89 87
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
MAY 27 27 27 27	54 51	26 25	5.9 5.9	21 21	1.0	4.9 4.9	43 43	53 51	32 36

301908096313101 SOMERVILLE LAKE SITE AC

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAY								
27	.1	3.3	168	.16	.010	.040	110	20
27								
27								
27	.1	4.0	169	.13	.090	.110	170	200

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAY 27 27 27 27	1012 1014 1016 1018	1.0 10 20 27	312 312 312 312 312	8.5 8.0 7.6 7.2	27.0 26.0 25.0 24.5	7.7 7.5 6.4 5.1	97 94 79 62

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
MAY 27	1055	1.0	308	8.6	28.5	.64	7.6
27	1059	17	308	7.1	25.0		4.8

302026096341501 SOMERVILLE LAKE SITE BC--Continued

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAY 27 27 27	99 70 59	.06	.010	.040	70 70	20 170

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
MAY 27 27	1350 1355	1.0 12	302 302	8.5 7.5	27.5 25.5	.40	9.4 3.5

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- CEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAY 27 27	121 44	.07 .14	.010 .140	.040 .070	30 20	10 170

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAY							
27	1200	1.0	309	8.3	27.5	7.6	97
27	1204	20	309	8.1	26.5	1.2	50
27	1210	25	309	7.0	24.5	2.0	24
27	1210	25	309	7.0	24.5	2.0	24

			SPE-					OXYGEN,
			CIFIC			TRANS-		DIS-
			CON-			PAR-		SOLVED
		SAM P-	DUCT-		TEMPER-	ENCY	OXYGEN,	(PER-
		LING	ANCE	рн	ATURE,	(SECCHI	DIS-	CENT
	TIME	DEPTH	(MICRO-	FIELD	WATER	DISK)	SOLVED	SATUR-
DATE		(FT)	MHOS)	(UNITS)	(DEG C)	(M)	(MG/L)	ATION)
MAY								
27	1125	1.0	309	8.3	28.0	.64	7.2	92
27	1128	10	309	7.4	26.5		6.2	78
27	1132	20	309	7.3	25.0		5.5	68
27	1134	25	309	7.1	25.0		3.7	46
27	1136	30	309	7.0	24.5		.8	10

Table 7--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE MAY 27, 1977--Continued

301904096335601 SOMERVILLE LAKE DC--Continued

		HARD-		MAGNE -		SODIUM	POTAS-		
	HARD-	NESS.	CALCIUM	SIUM.	SODIUM,	AD-	SIUM,	BICAR-	SULFATE
	NESS	NONCAR-	DIS-	DIS-	DIS-	SORP-	DIS-	BONATE	DIS-
	(MG/L	BONATE	SOLVED	SOLVED	SOLVED	TION	SOLVED	(MG/L	SOLVED
	AS	(MG/L	(MG/L	(MG/L	(MG/L	RATIO	(MG/L	AS	(MG/L
DATE	CACO3)	CACO3)	AS CA)	AS MG)	AS NA)		AS K)	HCO3)	AS S04)
MAY									
27	89	53	26	5.9	22	1.0	4.9	44	53
27									
27						~-			
27	87	51	25	5.9	21	1.0	4.9	44	52
27									
			SOL	IDS,					

	CHLO-	SILICA,	SUM OF	NITRO-	NITRO-			MANGA-
	RIDE.	DIS-	CONSTI-	GEN.	GEN.	PHOS-	IRON,	NESE.
	DIS-	SOLVED	TUENTS.	NO2+NO3	AMMONIA	PHORUS .	DIS-	DIS-
	SOLVED	(MG/L	DIS-	TOTAL	TOTAL	TOTAL	SOLVED	SOLVED
	(MG/L	AS	SOLVED	(MG/L	(MG/L	(MG/L	(UG/L	(UG/L
DATE	AS CL)	SI02)	(MG/L)	AS N)	AS N)	AS P)	AS FE)	AS MN)
MAY								
27	33	3.7	170	.08	.010	.040	50	10
27								
27								
27	33	4.4	168	.18	.110	.100	130	200
27								

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAY 27 27 27	1220 1223 1226	1.0 10 23	309 309 309	8.8 7.5 7.2	28.0 25.5 25.0	7.8 5.2 3.1	100 65 38

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
MAY 27 27	1240 1245	1.0 15	399 375	8.1 7.2	28.5 26.0	6.8 1.5	88 19	120 110	67 60	33 31	8.0 7.5	27 26

Table 7--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE MAY 27, 1977--Continued

301754096380801 SOMERVILLE LAKE SITE FC--Continued

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MC/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAY 27 27	1.1 1.1	5.3 5.3	59 59	66 62	43 41	6.2 7.1	218 209	.01 .03	.010 .250	.070 .090	30 70	30 430
		DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)		
		SEP 30 30	1250 1255	1.0 10	398 398	8.3 8.2	28.0 28.0	.43	7.7 7.0	99 90		

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

			SPE- CIFIC			TRANS-		OXYGEN, DIS-	
DATE	TIME	SAMP- LING DEPTH (FT)	CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEC C)	PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
SEP 30 30 30 30	1045 1050 1055 1059	1.0 10 20 27	377 377 377 377 377	8.2 8.1 8.1 7.9	28.5 28.5 28.5 28.5	.79	7.5 7.3 7.2 6.6	97 95 94 86	110 110
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
SEP 30 30	59 	30	7.6	26	1.1	5.9	57	63	43
30	59	30	7.5	27	1.1	4.0	57	58	44

301908096313101 SOMERVILLE LAKE SITE AC

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- CEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
SEP	2	11	215	00	010	050	20	0
50	• 2	1.1	212	.00	.010	.050	20	0
30								
30				.00	.010	.050	20	40
30	.3	8.0	207	.00	.010	.060	20	40

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LINC DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
SEP 30 30 30	1105 1110 1115	1.0 10 20	377 377 377	8.2 8.2 8.1	28.5 28.5 28.5	7.5 7.4 7.3	97 96 95

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MC/L)
SEP 30 30	1120 1125	1.0 13	377 377	8.3 8.2	28.5 28.5	.73	7.4 7.2

,

302026096341501 SOMERVILLE LAKE SITE BC--Continued

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
SEP 30 30	96 94	.00	.000 .010	.050 .080	20 0	20 20

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
SEP 30 30	1315 1320	1.0 12	377 377	8.2 7.9	28.0 28.0	.58	7.5 6.9

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
SEP 30 30	96 88	.01	.010 .010	.050 .080	10 10	0 0

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
SEP							
30	1205	1.0	382	8.0	28.0	7.2	92
30	1210	10	382	8.0	28.0	7.0	90
30	1215	20	382	7.7	28.0	6.1	78

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
SEP												
30	1150	1.0	382	8.3	28.0	7.7	99	110	59	30	7.8	27
30	1153	10	382	8.1	28.0	7.4	95					
30	1157	20	382	8.1	28.0	7.2	92					
30	1159	25	382	8.1	28.5	7.0	91	110	61	31	7.6	25

Table 8--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE SEPTEMBER 30, 1977--Continued

301904096335601 SOMERVILLE LAKE SITE DC--Continued

							SOLIDS,					
	SODIUM	POTAS-			CHLO-	SILICA.	SUM OF	NTTRO-	NITRO-			MANGA-
	AD-	SIUM,	BICAR-	SULFATE	RIDE,	DIS-	CONSTI-	GEN,	GEN,	PHOS-	IRON,	NESE,
	SORP-	DIS-	BONATE	DIS-	DIS-	SOLVED	TUENTS,	NO2+NO3	AMMONIA	PHORUS,	DIS-	DIS-
	TION	SOLVED	(MG/L	SOLVED	SOLVED	(MG/L	DIS-	TOTAL	TOTAL	TOTAL	SOLVED	SOLVED
	RATIO	(MG/L	AS	(MG/L	(MG/L	AS	SOLVED	(MG/L	(MG/L	(MG/L	(UG/L	(UG/L
DATE		AS K)	HCO3)	AS 504)	AS CL)	SI02)	(MG/L)	ÀS N)	ÀS N)	AS P)	ÀS FE)	AS MN)
SEP												
30	1.1	5.7	58	65	45	11	220	.03	.040	.070	20	0
30												
30												
30	1.0	5.9	58	54	45	11	208	.01	.010	.060	10	0

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
SEP							
30	1230	1.0	382	7.9	28.0	7.2	92
30	1235	10	382	7.8	28.0	6.9	88
30	1240	21	382	/.6	28.0	6.3	81

DATE	2	T IME	SA L DE (MP- ING PTH FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	- (PH FIELI (UNITS	т) ;) (;	EMPER- ATURE, WATER DEG C)	-	TRANS PAR- ENCY (SECCH DISK) (M)	3- 7 11	OXY D SO (M	GEN, IS- LVED G/L)	OXY SC (P C SA AT	GEN, DIS- DEVED DER- CENT TUR- TION)
SEP 30. 30.		1250 1251) 5	1.0 10	398 398		8.3 8.2	5	28.0 28.0		•43 			7.7 7.0		99 90
DATE	HARI NESS (MG) AS CACC)- 5 7L 03)	HARD- NESS, NONCAR BONATE (MG/L CACO3	CAI - DI - SC - (N	LCIUM IS- DLVED IG/L S CA)	MAC SI DI SOI (MC AS	GNE- LUM, IS- LVED G/L MG)	SODI DIS SOLV (MC AS	UM, ED /L NA)	SOI A SOF TI RAT	DIUM ND- RP- CON CIO	POTA SIU DIS SOLV (MG/ AS K	S- M, ED L	BICA BONA (MG) AS HCO	R- FE /L 5 3)	SULFATE DIS- SOLVED (MG/L AS SO4)
SEP 30 30	1	10	6 6	4 1	32 31		8.2 8.0	2 2	8 9		1.1 1.2	5 5	.9 .9		60 60	67 61
DÆ	ATE	CHLO RID DIS SOL (MG AS	D- S E, VED /L CL)	ILICA DIS- SOLVEI (MG/L AS SIO2)	SOLII SUM (CONS TUEN DI SOL (MG)	DS, OF TI- TS, S- VED /L)	NIT GH NO2- TOT (MC AS	RO- NO3 CAL S/L N)	NITH GEN AMMON TOTA (MG, AS N	RO- 1, 1IA AL (L 1)	PHOS PHORU TOTA (MG) AS F	S- JS, AL (L 2)	IR D SO (U AS	ON, IS- LVED G/L FE)	MA NE SC (U AS	NGA- SE, DIS- DLVED IG/L S MN)
SEI 30 30)	4	5	10 11		227 221		.01	.(010	.1	00		30 20		0

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
MAR 13 13 13 13	1330 1333 1336 1339	1.0 10.0 20.0 28.0	401 401 401 401	8.2 7.7 7.6 7.5	15.0 13.0 12.5 12.0	.80 	9.9 9.0 8.6 7.5	101 88 83 72	120
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
MAR 13 13 13 13	74 -7 74	36 36	8.0 8.1	²⁸ 28	1.1	5.5 5.5	60 60	0 0	68 69
DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR 13	48	.2	7.8	231	.07	.030	.110	10	10
13 13	50	- <u>-</u> .2	7.9	234	. 08	.050	.100	10	0

301908096313101 SOMERVILLE LAKE SITE AC

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR							
13	1350	1.0	401	8.2	15.5	9.9	102
13	1353	10.0	401	7.9	13.0	9.4	92
13	1356	20.0	401	7.7	12.5	8.6	83
13	1358	27.0	401	7.5	12.5	8.4	82

DATE	T IME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR												
13	1405	1.0	398	8.3	14.5	9.7	98	.02	.000	.100	10	10
12	1406	13.0	298	7.9	13.5	8.9	88	.06	.010	.100	10	0

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIN	SAN LI 1E DEI (I	SP CI CO MP- DU ING AN PTH (MI FT) MH	E- FIC N- CT- CE CRO- OS) (PH FIELD UNITS)	TEMPEI ATURI WATEI (DEG (TRAI PAI R- ENG E, (SECG R DISI C) (M	NS- R- CY OXY CHI I K) S() (1	YGEN, DIS- DLVED 1G/L)
MAR 13 13	. 155	50 55 1	1.0 4.0	401 401	8.3 7.7	13. 12.	. 5 . 0	.70	9.6 7.9
	DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITR GEN AMMON TOTA (MG/ AS N	0- IA PHC L TC L (M) AS	IOS- DRUS, DTAL IG/L S P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVEN (UG/L AS MN)	- D
٢	1AR 13 13	95 76	.03 .07	.0 .0	00 50	.110	20 10	10 20))

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR							
13	1450	1.0	401	8.5	14.5	10.1	102
13	1452	10.0	401	7.9	12.5	9.1	88
13	1455	23.0	401	7.7	12.0	7.9	76

			SPE- CIFIC CON-			TRANS- PAR-		OXYGEN, DIS- SOLVED	HARD-
DATE	TIME	SAMP- LING DEPTH (FT)	DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	(PER- CENT SATUR- ATION)	NESS (MG/L AS CACO3)
MAR									
13	1430	1.0	401	8.3	14.5	.80	10.1	102	120
13	1433	10.0	401	8.0	12.5		9.4	91	
12	1430	20.0	401	7.0	12.5		9.1	00 97	130
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
MAR									
13	71	35	8.0	28	1.1	5.9	60	0	69
13								~-	
13									
13	77	37	8.3	28	1.1	5.7	60	0	69

301904096335601 SOMERVILLE LAKE SITE DC--Continued

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR 13 13 13 13	48 48	7.8	231	.04	.010	.110	10 20	10

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYCEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR 13 13 13 13	1505 1507 1509 1510	1.0 10.0 20.0 25.0	411 411 411 411	8.4 7.9 7.8 7.8	14.0 12.5 12.5 12.5	10.1 9.0 8.6 8.5	101 87 83 83

DATE	TI	IME	SAMI LIN DEP: (F:	S C C C D G A C H (M C) M	PE- IFIC ON- UCT- NCE ICRO- HOS)	P FIE (UNI	H LD TS)	TEM P ATU WAI (DEG	ER- RE, ER C)	TRA PA EN (SEC DIS (M	NS- IR- ICY ICHI IK)	OXYGE DIS SOLV (MG/	N, ED L)	OXYGE DIS SOLV (PER CEN SATU ATIO	N, ED T R- N)	HARD- NESS (MG/L AS CACO3)
MAR 13 13	. 15	25 29	13	1.0	568 575		8.1 7.5	1 1	5.0 4.0		.40	9 7	. 4 . 9		96 79	180 180
DATE	HAH NES NONO BONA (MC CAC	RD- SS, CAR- ATE G/L CO3)	CALC DIS- SOLV (MG, AS (M - VED S (L (CA) A	AGNE- SIUM, DIS- OLVED MG/L S MG)	SODI DIS SOLV (MG AS	UM, - ED /L NA)	SOD A SOR TI RAT	IUM D- P- ON IO	POT SI DI SOL (MC AS	AS- UM, S- VED K)	BICAR BONATI (MG/I AS HCO3)	-	CAR- BONATI (MG/) AS CO	E L 3)	SULFATE DIS- SOLVED (MG/L AS SO4)
MAR 13 13	•	140 150	49 53) }	13 12	3 3	9 9		1.3 1.3		5.8 5.9		40 40		0 0	130 130
	DATE	CH RI DI SO (M AS	LO- DE, S- LVED G/L CL)	SILICA DIS- SOLVE (MG/L AS SIO2)	SOL , SUM CON D TUE D SO (M	IDS, OF STI- NTS, IS- LVED G/L)	NIT GE NO2 4 TOT (MC AS	CRO- CN, NO3 CAL G/L N)	NI GI AMMO TO (MO AS	TRO- CN, DNIA TAL G/L N)	PHO PHO TO (M AS	OS- RUS, TAL C/L P)	I RC DI SOI (UC AS	DN, ES- LVED G/L FE)	MA NE D SO (U AS	NCA- SE, IS- LVED G/L MN)
1	1AR 13 13		64 66	9. 9.	1 2	330 335		.07 .05		.050 .080		.140 .150		20 20		20 130

Table 10--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE JULY 14, 1978

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UC/L = micrograms per liter

301908096313101 SOMERVILLE LAKE SITE AC

DATE	TIME	SAMP- LINC DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
JUL 14 14 14 14	0922 0924 0927 0930	1.0 10.0 20.0 27.0	465 465 465 467	8.2 7.5 7.1 7.1	30.5 30.0 30.0 30.0	.61 	6.7 5.1 3.5 3.3	91 69 47 45	140 140
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
JUL									
14	85	39	9.4	35	1.3	6.2	62		82
14 14	84	39	9.4	33	1.2	6.2	63	0	81
DATE	CHLO- RIDE, DIS- SOLVED (MC/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JUL	5.0		o /				0.5.0		
14	58	• 1	9.4	270	.00	.000	.050	20	10
14	 58	.1	9.8	268	.01	.010	.060	20	 140

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JUL 14 14 14	0945 0947 0950	1.0 10.0 20.0	465 465 465	8.5 7.1 7.0	31.0 30.0 30.0	7.8 3.6 2.6	107 49 35

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
JUL 14 14	1000 1003	1.0 10.0	475 475	8.4 8.4	32.0 31.5	.55	6.4 6.3

302026096341501 SOMERVILLE LAKE SITE BC--Continued

	OXYGEN,					
	DIS-	NITRO-	NITRO-			MANGA-
	SOLVED	GEN.	GEN.	PHOS-	IRON,	NESE.
	(PER-	NO2+NÓ3	AMMONÍA	PHORUS,	DIS-	DIS-
	CENT	TOTAL	TOTAL	TOTAL	SOLVED	SOLVED
	SATUR-	(MG/L	(MG/L	(MG/L	(UG/L	(UG/L
DATE	ATION)	AS N)	AS N)	AS P)	AS FE)	AS MN)
JUL						
14	89	.01	.000	.040	20	0
14	86	.01	.000	.040	30	0

301805096332501 SOMERVILLE LAKE SITE CC

DATE	T IME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
JUL 14 14	1140 1142	1.0 12.0	467 467	7.8 6.9	31.5 29.5	.46	6.1 1.9
	OXY D SO (P	GEN, IS- NI LVED G ER- NO2 ENT TO	TRO- NI EN, (+NO3 AM TAL T(LTRO- GEN, PI 10NIA PHO DTAL TO	HOS- IF DRUS, I DTAL SC	MA RON, NE DIS- D DIVED SO	NGA- SE, IS- LVED

DATE	SATUR-	(MG/L	(MG/L	(MG/L	(UG/L	(UG/L
	ATION)	AS N)	AS N)	AS P)	AS FE)	AS MN)
JUL 14 14	84 25	.01 .01	.000	.050 .070	10 10	30 320

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JUL 14 14 14	1035 1037 1040	1.0 10.0 20.0	465 465 465	8.4 7.8 7.1	31.0 30.5 30.0	6.8 5.2 2.9	93 70 39

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYCEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MC/L AS CACO3)
JUL									
14	1015	1.0	465	8.5	31.5	.67	7.0	96	140
14	1017	10.0	465	7.8	31.0		4.9	67	
14	1018	20.0	465	7.0	30.0		2.1	28	
14	1020	25.0	470	6.9	30.0		.3	4	140

Table 10--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE JULY 14, 1978--Continued

301904096335601 SOMERVILLE LAKE SITE DC--Continued

DATE	HARI NESS NONCA BONAT (MG) CACC	D- 5, AR- TE /L D3)	CALCI DIS- SOLV (MG/ AS C	MAG UM SI DI ED SOL L (MG A) AS	NE- UM, SC S- I VED SC /L (MG) A	DIUM, DIS- DLVED (MG/L AS NA)	SOD A SOR TI RAT	IUM PC D- S P- I ON SC IO (M AS	DTAS- SIUM, DIS- DLVED G/L S K)	BICAR- BONATE (MG/L AS HCO3)	CAR BONA (MG AS C	- TE /L 03)	SULFATE DIS- SOLVED (MG/L AS SO4)
JUL 14 14		86 	39		9.5	33		1.2	6.2	5 -	4	4	83
14		83	40		9.4	34		1.3	6.2	6	8	0	80
D	ATE	CHI RII DIS SOI (MC AS	LO- DE, S- LVED G/L CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS SUM OF CONSTI TUENTS DIS- SOLVE (MG/L	- GI - GI 5. NO2- TO CD (MC 2.) AS	TRO- EN, FNO3 TAL C/L N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHO PHO TO (M AS	OS- RUS, TAL G/L P)	IRON, DIS- SOLVED (UG/L AS FE)	MA NE D SO (U AS	NGA- SE, IS- LVED G/L MN)
JU 1 1 1 1	L 4 4 4 4		56 59	9.6 10	26 - 27		.00	.000		.050	30 110		10 660

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JUL 14 14 14	1050 1052 1055	1.0 10.0 21.0	465 465 465	7.9 7.8 7.3	30.5 30.0 30.0	6.0 5.7 4.2	81 77 57

301754096380801 SOMERVILLE LAKE SITE FC

		SAMP- LING	SPE- CIFIC CON- DUCT- ANCE	РН	TEMPER- ATURE,	TRANS- PAR- ENCY (SECCHI	OXYGEN, DIS-	OXYGEN, DIS- SOLVED (PER- CENT	HARD- NESS (MG/L
DATE	TIME	DEPTH (FT)	(MICRO- MHOS)	FIELD (UNITS)	WATER (DEG C)	DISK) (M)	SOLVED (MG/L)	SATUR- ATION)	AS CACO3)
JUL 14 14	1111 1114	1.0 8.0	478 480	7.3 7.1	31.0 31.0	.24	4.8 2.8	66 38	140 140
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
JUL 14 14	87 91	40 41	9.7 9.9	34 34	1.3 1.2	6.8 6.5	64 64	0 0	84 84
D	CI R D S(ATE AS	HLO- SIL IDE, DI IS- SO DLVED (M IG/L A S CL) SI	SOL ICA, SUM S- CON LVED TUE G/L D S SO 02) (M	IDS, OF NI STI- G NTS, NO2 IS- TO LVED (M G/L) AS	TRO- NI EN, G +NO3 AMM TAL TO G/L (M N) AS	IRO- EN, PH ONIA PHO IAL TO G/L (M N) AS	OS- IR RUS, D TAL SO G/L (U P) AS	MA ON, NE IS- D LVED SO G/L (U FE) AS	NGA- SE, IS- LVED G/L MN)

-66-

.01 .010 .120 840 410 .01 .010 .120 1100 520

JUL 14... 61 10 278 14... 57 11 277
FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UC/L = micrograms per liter

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
OCT 11 11 11	1115 1120 1125	1.0 10.0 23.0	479 479 479	7.8 7.7 7.4	24.0 23.5 23.5	.70	7.6 7.3 6.5	93 89 78	140 140
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 11 11 11	82 81	40 40	8.8 8.6	34 34	1.3	6.6 6.6	66 66	0 	90 87
DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MC/L)	NITRO- CEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 11 11 11	57 57	.2	11 11	280	.00 .01 .00	.010 .010 .010	.060 .060 .070	10 <10 20	0 1 40

301908096313101 SOMERVILLE LAKE SITE AC

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 11 11 11	1126 1128 1130	1.0 10.0 23.0	479 479 479	7.7 7.7 7.7	24.0 23.5 23.5	.40 	7.2 7.2 7.2	89 87 87

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
OCT 11 11	1304 1307	1.0 9.0	479 479	8.4 8.3	24.0 24.0	.40	8.1 7.8

302026096341501 SOMERVILLE LAKE SITE BC--Continued

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UC/L AS MN)
OCT 11 11	100 96	.00	.000	.070 .070	<10 <10	<1 <1

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
ОСТ 11	1232	1.0	479	7.8	23.5	.60	7.2
11	1235	10.0	479	7.7	23.5		7.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IKON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 11 11	88 84	.01 .00	.010 .010	.070 .070	<10 <10	3 1

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATEk (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 11 11	1238 1240	1.0 10.0	479 479	8.0 7.9	23.5 23.5	7.6 7.4	93 89
11	1242	18.0	479	7.6	23.5	6.5	78

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
ОСТ									
11	1248	1.0	479	8.0	24.0	.60	7.5	93	140
11	1251	10.0	479	7.9	24.0		7.3	89	
11	1254	20.0	479	7.6	23.5		6.6	81	140

Table 11--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE OCTOBER 11, 1978--Continued

301904096335601 SOMERVILLE LAKE SITE DC--Continued

DATE	HAR NES NONC BONA (MC CAC	D- S, AR- TE (/L 03)	CALC DIS SOL (MG AS	IUM - VED S /L (CA) A	AGNE- SIUM, DIS- OLVED MG/L S MG)	SODI DIS SOLV (MC AS	UM, - VED S/L NA)	SOD Al SOR TIC RAT	LUM D- P- DN LO	POT SI DI SOL (MC AS	AS- UM, S- VED /L K)	BICA BONA (MG A HCO	R- TE /L S 3)	CAR BONA (MG AS C	- TE /L 03)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 11 11 11		83 82	41	0	8.6	3	34 34		1.3		6.5		64 65		0 0	89 85
D	DATE	CH RI DI SO (M AS	LO- DE, S- LVED G/L CL)	SILICA DIS- SOLVE (MG/L AS SIO2)	SOL , SUM CON D TUE SC (M	LIDS, OF STI- NTS, DIS- DLVED G/L)	NITE GEN NO2+M TOTA (MG/ AS N	80- 1, 103 1L 1)	NITH GEN AMMON TOTA (MG) AS N	RO~ N, NIA AL /L N)	PHO PHOI TOT (MC AS	DS- RUS, TAL G/L P)	IRO D: SOI (UC AS	DN, IS- LVED C/L FE)	MAI NE SOI (UC AS	NGA- SE, IS- LVED G/L MN)
OC 1 1	T 1 1 1		56 56	11 - 11	-	277		01	.(010		.070		20 10		- <mark>-</mark> 0

301817096364101 SOMERVILLE LAKE SITE EC

DATE	T IME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 11 11 11	1212 1214 1216	1.0 10.0 17.0	479 479 479	7.8 7.7 7.6	24.0 23.5 23.5	7.2 6.9 6.5	88 83 79

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
OCT 11 11	1153 1202	1.0 8.0	474 474	8.1 7.8	23.5 23.5	7.6 6.6	92 80	140 140
HA NE NON BON (M DATE CA	RD- SS, CALC CAR- DIS ATE SOL G/L (MG CO3) AS	MAGN FIUM SIU - DIS VED SOLV S/L (MG/ CA) AS M	E- M, SODIU - DIS- ED SOLVU L (MG, G) AS 1	SOD UM, A - SOR ED TI /L RAT VA)	IUM POT D- SI P- DI DN SOL IO (MG AS	AS- UM, BICAF S- BONAJ VED (MG/ /L AS K) HCO3	R- TE CAR- /L BONAT S (MG, 3) AS CO	SULFATE DIS- E SOLVED (L (MG/L 03) AS SO4)
OCT 11 11	84 4 80 4	1 8 0 8	.8 33 .6 33	3	1.2 1.2	6.8 6.9	67 67	0 89 0 89
DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UC/L AS MN)
OCT 11 11	54 56	10 10	276 277	.00 .00 -69-	.010 .020	.140 .160	40 20	0 0

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

301908096313101 SOMERVILLE LAKE SITE AC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
JAN 09 09 09 09	1205 1210 1215 1225	1.0 10.0 20.0 28.0	445 445 445 445	7.6 7.6 7.6 7.6	5.5 5.5 5.5 5.5	.70 	12.2 12.2 12.2 12.1	99 99 99 98	130 120
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MC/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
JAN 09 09 09 09	77 74	37 	8.5 8.2	31 31	1.2	6.3 6.2	61 61	0 0	78 71
DATE	CHLO- RIDE, DIS- SOLVED (MC/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- CEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- CEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN 09 09 09	53	.2	8.6	253	.05	.060	.040	10	3
09	51		8.6	242	.05	.060	.040	0	6

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN 09 09 09 09	1227 1229 1231 1233	1.0 10.0 20.0 29.0	445 445 445 445	7.6 7.6 7.6 7.6	5.5 5.5 5.5 5.5	12.0 11.9 11.8 11.8	98 97 96 96

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
JAN 09 09	1246 1255	1.0 13.0	424 424	7.6 7.6	5.0 5.0	.60	12.4 12.6

302026096341501 SOMERVILLE LAKE SITE BC--Continued

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MC/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN 09 09	99 101	.05	.080 .100	.050 .060	10 10	20 20

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
JAN 09 09	1342 1350	1.0 10.0	445 445	7.6 7.6	5.5 5.0	.70	12.2 12.0

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN 09 09	99 96	.05	.100 .040	.040	0 0	20 20

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN 09 09 09	1325 1327 1329	1.0 10.0 23.0	415 415 415	7.5 7.5 7.5	5.0 5.0 5.0	12.2 12.2 12.2	98 98 98

	TIME	SAMP- LING DEPTH	SPE- CIFIC CON- DUGT- ANCE (MICRO-	PH FIELD	TEMPER- ATURE, WATER	TRANS- PAR- ENGY (SECCHI DISK)	OXYGEN, DIS- SOLVED	OXYCEN, DIS- SOLVED (PER- CENT SATUR-	HARD- NESS (MG/L AS
DATE		(FT)	MHOS)	(UNITS)	(DEG C)	(M)	(MG/L)	ATION)	CACO3)
JAN									
09	1303	1.0	415	7.5	5.0	.50	12.2	98	110
09	1308	10.0	415	7.5	5.0		12.1	97	
09	1311	20.0	415	7.5	5.0		12.1	97	
09	1317	28.0	415	7.5	5.0		11.9	95	110

301904096335601 SOMERVILLE LAKE SITE DC--Continued

DATE	HARD- NESS, NONCAR BONATE (MC/L CACO3)	CALC DIS SOL (MC AS	MAG IUM SI - DI VED SOL /L (MG CA) AS	NE- UM, SOD S- DI VED SOL VED SOL MG) AS	SOI IUM, A S- SOI VED TI G/L RAT NA)	DIUM PO AD- S AP- D CON SO CIO (MO AS	TAS- LUM, BICA LS- BONA LVED (MC G/L A K) HCC	AR- ATE CAF G/L BONA AS (MC D3) AS C	R- ATE S/L 203)	SULFATE DIS- SOLVED (MG/L AS SO4)
JAN 09 09	6	5 3	2	7.5	28	1.2	6.0	56	0	68
09 09	6	5 3:	2	7.5	28	1.2	5.9	56	0	69
ח	ATF	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- CEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MAN NES DI SOI (UC AS	NGA- SE, IS- LVED G/L MN)
AL 0 0 0 0	N 9 9 9 9	46 49	8.2 8.3	223 227	.08 .08	.060	.060	10 10		10 7

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN 09 09 09	1401 1403 1405	1.0 10.0 22.0	395 395 395	7.5 7.5 7.5	5.0 5.0 5.0	12.1 11.9 11.5	97 95 92

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

301908096313101 SOMERVILLE LAKE SITE AC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
JUN										
19	1225	1.0	299	7.5	27.5	.60	7.4	92	81	44
19	1227	10.0	299	7.4	27.5		7.3	91		
19	1229	20.0	299	7.2	27.0		6.9	87		
19	1231	30.0	310	7.2	27.0		6.5	82		
19	1233	37.0	331	6.4	25.0		.4	5	96	53

				SODIUM+					
		MAGNE-		POTAS-	SODIUM	POTAS-			
	CALCIUM	SIUM,	SODIUM,	SIUM	AD-	SIUM,	BICAR-		SULFATE
	DIS-	DIS-	DIS-	DIS-	SORP-	DIS-	BONATE	CAR-	DIS-
	SOLVED	SOLVED	SOLVED	SOLVED	TION	SOLVED	(MG/L	BONATE	SOLVED
	(MG/L	(MG/L	(MG/L	(MG/L	RATIO	(MG/L	AS	(MG/L	(MG/L
DATE	AS CA)	AS MG)	AS NA)	AS NA)		ÁS K)	HCO3)	AS CO3)	AS S04)
JUN									
19	23	5.8	21	26	1.0	5.1	46	0	50
19									
19									
19									
19	27	6.9	25	30	1.1	5.2	52	0	55

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JUN 19 19 19	30	.2	6.9	165	.16	.010	.030	100 	5
19 19	32		9.6	 187	.23	.070	.050	 110	 440

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JUN 19 19 19 19	1310 1312 1314 1316	1.0 10.0 20.0 31.0	299 299 299 299	7.4 7.4 7.3 7.4	27.5 27.5 27.0 27.0	7.2 7.1 7.1 7.1	91 90 89 89

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
JUN 19 19 19	1335 1337 1339	1.0 10.0 19.0	299 299 299	7.7 7.7 7.6	28.5 28.5 28.5	.60	7.6 7.5 7.4

302026096341501 SOMERVILLE LAKE SITE BC--Continued

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- CEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JUN 19	98 97	.06	.030	.030	60	10
19	95	.08	.040	.030	70	0

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEC C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)
JUN 19 19 19	1540 1542 1544	1.0 10.0 20.0	308 308 308	7.1 7.1 6.8	27.0 27.0 26.5	.60	6.6 6.5 4.4

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- CEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UC/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JUN 19 19 19	84 82 55	. 21	.020	.020	80 150	20 80

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JUN 19 19 19 19	1415 1417 1419 1421	1.0 10.0 20.0 32.0	258 268 268 308	7.3 7.2 7.1 6.6	27.5 27.5 27.0 26.0	7.0 6.9 6.3 2.1	89 87 79 26

			SPE-			OXYGEN.				
			CIFIC			TRANS-		DIS-		
			CON-			PAR-		SOLVED	HARD-	
DATE	TIME	SAMP- LING DEPTH (FT)	DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	(PER- CENT SATUR- ATION)	NESS (MG/L AS CACO3)	
JUN										
19	1350	1.0	258	7.5	28.0	.50	7.5	96	74	
19	1352	10.0	268	7.3	27.5		6.9	87		
19	1354	20.0	268	7.3	27.5		6.9	87		
19	1356	34.0	314	6.6	26.0		1.4	17	88	

Table 13--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE JUNE 19, 1979--Continued

301904096335601 SOMERVILLE LAKE SITE DC--Continued

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM+ POTAS- SIUM DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
JUN								10	
19	39	21	5.2	18	23	.9	5.2	42	0
19									
19	47	25	6.3	22	27	1.0	5.2	51	0
DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JUN	10	26	7 1	1/6	10	010	020	160	10
19	43	20	/.	140	.10	.010	.030		10
19									
19	50	32	8.6	175	.17	.180	.020	80	480

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JUN							
19	1435	1.0	266	7.0	27.0	6.3	79
19	1437	10.0	266	7.0	27.0	6.2	78
19	1439	20.0	278	6.9	27.0	5.9	74
19	1441	30.0	290	6.8	26.5	5.2	65

	SPE- CIFIC CON-					OXYGEN, TRANS- DIS- PAR- SOLVED HAR				
DATE	TIME	SAMP- LING DEPTH (FT)	DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG_C)	ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	(PER- CENT SATUR- ATION)	MARD- NESS (MG/L AS CACO3)	
JUN		()	,	(,	(222 2)		(,,			
19	1505	1.0	205	6.8	28.0	.30	5.6	71	59	
19	1507	10.0	205	6.8	27.5		5.3	67		
19	1509	20.0	238	6.6	26.5		3.4	42	67	

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM+ POTAS- SIUM DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
JUN 19 19 19	22 31	17 19	3.9 4.8	12 16	16 21	.7	4.4 4.6	44 44	0 0

Table 13--CHEMICAL-QUALITY SURVEYS OF SOMERVILLE LAKE JUNE 19, 1979--Continued

301754096380801 SOMERVILLE LAKE SITE FC--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JUN 19	30	20	8.8	118	.11	.020	.060	320	130
19	37	23	8.6	135	.23	.070	.050	170	220

$\label{eq:FT} FT = fcet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MC/L = milligrams per liter; UG/L = micrograms per liter$

DATF	TIME	SAMP- LINC DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEC C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
AUG										
03	1310	1.0	279	8.4	31.0	1.10	8.7	116	85	42
03	1314	10.0	279	8.4	31.0		8.6	115		
03	1318	20.0	279	8.2	30.5		8.1	107		
03	1322	29.0	279	7.7	30.5		6.4	84	85	42

301908096313101 SOMERVILLE LAKE SITE AC

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM+ POTAS- SIUM DIS- SOLVED (MC/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
AUG 03 03 03 03	25 25	5.5 5.4	18 19	23 24	.9 .9	5.2	52 52	0 0	43 44
DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
AUG 03 03 03	29 29	.2	7.7 8.2	159 162	.00	.000 .010 .010	.040 .040 .040	0 0 0	10 10 180

301940096315801 SOMERVILLE LAKE SITE AL

DATE	FIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG 03 03	1340 1344	1.0 14.0	279 279	8.5 8.4	31.5 31.0	8.6 8.5	116 113

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- NOCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
AUG												
03 03	1535 1539	1.0 14.0	279 279	8.1 7.5	31.0 30.0	7.9 6.0	105 79	.00 .04	.010	.040	0 10	10 10

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
AUG 03 03	1555 1559	1.0 11.0	279 279	7.9 7.3	30.5 29.5	7.7 5.9	101 78	.00 .00	.010 .010	.040 .040	0 0	0 0

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYCEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG	1430	1.0	283	8.3	31.0	8.2	109
03	1434	10.0	283	8.0	30.0	7.6	100
03	1438	20.0	283	7.0	29.5	4.5	59
03	1442	24.0	283	6.7	29.0	.6	8

DATE	T IM E	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
AUG									
03	1410	1.0	283	8.5	31.0	8.8	117	85	41
03	1414	10.0	283	7.9	30.0	7.1	93		
03	1418	20.0	283	7.2	29.5	5.6	74		
03	1422	28.0	283	6.9	29.5	2.8	37	78	34

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM+ POTAS- SIUM DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
AUG									
03	25	5.6	20	20	.9	5.3	54	0	44
03									
03									
03	22	5.7	18	23	.9	5.2	54	0	43

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- CEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
AUG 03 03 03	30	8.1	165	.02	.000	.050	0	10

301817096364101 SOMERVILLE LAKE SITE EC

DATE	T IME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG_C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG 03 03 03	1520 1524 1528	1.0 10.0 24.0	284 284 284	8.2 7.4 6.9	30.5 29.5 29.5	8.7 6.5 3.9	115 85 51

DATE	TIM	1E	SAMP- LING DEPTH (FT)	SPE CIE CON DUC ANC (MIC MHC	2- FIC I- CT- CE CRO- I OS) (1	PH FIELD JNITS)	TEMI ATU WAT	PER- IRE, TER 3 C)	OXYO DI SOL (MO	SEN, S- VED S/L)	OXYGE DIS SOLV (PER CEN SATU ATIO	N, ED T R- N)	HARD NESS (MG/ AS CACO	- L 3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
AUG 03 03	150 150)0)4	1. 13.)	322 307	8.1 6.9		31.5 29.5		8.7 3.2	1	18 42		99 92	52 46
DATE	CALCI DIS- SOLV (MG/ AS C	UM VED (L CA)	MAGNE SIUM DIS- SOLVEI (MG/L AS MG)	- SODI DIS SOLV (MC) AS	SC UM, ED S Z/L O NA) A	DIUM+ POTAS- SIUM DIS- SOLVED (MG/L AS NA)	SOE A SOF TI RAT	010M ND- NP- ON 10	POI SI DI SOL (MG AS	AS- UM, S- VED (/L K)	BICAR BONAT (MG/ AS HCO3	- E L	CAR- BONAT (MG/ AS CO	E L 3)	SULFATE DIS- SOLVED (MG/L AS SO4)
AUG 03 03	29 27)	6.4 6.0	4 2) 2	2 1	28 26		1.0 1.0		5.5 5.3		57 56		0 0	50 47
1	DATE	CHLC RIDE DIS- SOLV (MG/ AS C)- S ; I ;ED [L ;L] S	ILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS SUM OF CONSTI TUENTS DIS- SOLVE (MG/I	5, NO 5, NO 5, T 5, A	GEN, 2+NO3 OTAL MG/L S N)	NI GI AMMO TO (MO AS	FRO- EN, DNIA FAL G/L N)	PHO PHO TO (M AS	OS- RUS, TAL G/L P)	LRC DI SOI (UC AS	DN, ES- LVED G/L FE)	MA NE SO (U AS	NGA- SE, IS- LVED G/L MN)
A) (UG 03 03	35 32		10	18	6 '5	.00		.000		.070		10 0		20 180

FT = feet, MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

301908096313101 SOMERVILLE LAKE SITE AC

DATF	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
J AN										
30	1320	1.0	318	7.6	11.0	1.00	10.0	91	90	44
30	1321	1.7								
30	1322	10.0	318	7.6	11.0		10.0	91		
30	1324	20.0	318	7.6	11.0		9.9	90		
30	1326	31.0	318	7.5	11.0		9.8	89	89	42

				SODIUM+					
		MACNE-		POTAS-	SODIUM	POTAS-			
	CALCIUM	SIUM,	SODIUM,	SIUM	AD-	SIUM,	BICAR-		SULFATE
	DIS-	DIS-	DIS-	DIS-	SORP-	DIS-	BONATE	CAR-	DIS-
	SOLVED	SOLVED	SOLVED	SOLVED	TION	SOLVED	(MG/L	BONATE	SOLVED
	(MG/L	(MG/L	(MG/L	(MG/L	RATIO	(MG/L	AS	(MG/L	(MG/L
DATE	AS CA)	AS MG)	AS NA)	AS NA)		AS K)	HC03)	AS CO3)	AS S04)
JAN									
30	26	6.2	23	28	1.1	5.4	57	0	52
30									
30									
30									
30	26	5.9	22	27	1.0	5.4	57	0	53

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANCA- NESE, DIS- SOLVED (UG/L AS MN)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML)
JAN 30	33	1	9.6	183	00	. 030	<10	<1	
30				.05		.050			380000
30					.01	.040	20	10	
30									
30	33		9.5	183	.01	.040	<10	5	

		CAMP	SPE- CIFIC CON-			OWNCEN	OXYGEN, DIS- SOLVED
		LING	ANCE	PH	ATURE,	DIS-	CENT
	ΓIME	DEPTH	(MICRO-	FIELD	WATER	SOLVED	SATUR-
DATE		(F'1')	MHOS)	(UNITS)	(DEG C)	(MG/L)	ATION)
JAN							
30	1340	1.0	318	7.6	11.0	9.8	89
30	1342	10.0	318	7.6	11.0	9.7	88
30	1344	20.0	318	7.6	11.0	9.7	88
30	1346	29.0	318	7.5	11.0	9.6	87

302026096341501 SOMERVILLE LAKE SITE BC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN 30 30 30	1400 1402 1404	1.0 10.0 15.0	306 306 306	7.6 7.6 7.5	10.5 10.5 10.5	9.9 9.9 9.7	89 89 87

301805096332501 SOMERVILLE LAKE SITE CC

		SAM P-	SPE- CIFIC CON- DUCT-		TEMPER-	OXYGEN	OXYGEN, DIS- SOLVED (PER-
DATE	TIME	LING DEPTH (FT)	ANCE (MICRO- MHOS)	PH FIELD (UNITS)	ATURE, WATER (DEG C)	DIS- SOLVED (MG/L)	CENT SATUR- ATION)
JAN 30 30	1520 1522	1.0 12.0	320 320	7.7 7.7	10.5 10.5	10.2 10.2	92 92

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LINC DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURC, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN 30 30 30	1420 1422 1424	1.0 10.0 24.0	321 321 321	7.6 7.5 7.5	11.0 11.0 11.0	9.6 9.5 9.5	87 86 86

			SPE-		OXYCLN,					
			CIFIC			TRANS- DIS				
			CON-			PAR-		SOLVED	HARD-	
		SAM P-	DUCT-		TEMPER-	ENCY	OXYGŁN,	(PER-	NESS	
		LING	ANCE	PH	ATURE,	(SECCHI	DIS-	CENT	(MG/L	
	TIME	DFPTH	(MICRO-	FIELD	WATER	DISK)	SOLVED	SATUR-	AS	
DATE		(FT)	MHOS)	(UNITS)	(DEG C)	(M)	(MG/L)	ATION)	CACO3)	
JAN										
30	1410	1.0	328	7.6	11.0	.70	9.7	88	93	
30	1412	10.0	328	7.5	11.0		9.6	87		
30	1414	20.0	328	7.5	11.0		9.6	87		
30	1416	25.0	328	7.5	11.0		9.5	86	93	

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM+ POTAS- SIUM DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
JAN 30 30 30 30	49 49	27 27	6.3	25 25	30 	1.1 1.1	5.4 5.3	54 54	0 0

301904096335601 SOMERVILLE LAKE SITE DC--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
30	57	35	9.8	192	.00	.050	20	1
30					.01	.050	40	10
30								
30	55	35	9.8	190	.01	.070	20	10

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
30	1440	1.0	323	7.4	10.5	9.4	85
30	1442	10.0	323	7.4	10.5	9.4	85
30	1444	17.0	323	7.3	10.5	9.3	84

			SPE-					OXYGEN,	
			CIFIC			TRANS-		DIS-	
DATE	TIME	SAMP- LING DEPTH (FT)	CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
JAN									
30	1455	1.0	283	7.0	10.0	.20	8.6	77	78
30	1456	.3							
30	1457	14.0	317	6.9	9.5		8.5	75	85
	HARD- NESS.	CALCIUM	MAGNE- SIUM.	SODIUM.	SODIUM+ POTAS- SIUM	SODIUM AD-	POTAS-	BICAR-	

DATE	NONCAR- BONATE (MG/L CACO3)	DIS- SOLVED (MG/L AS CA)	DIS- SOLVED (MG/L AS MC)	DIS- SOLVED (MG/L AS NA)	DIS- SOLVED (MG/L AS NA)	SORP- TION RATIO	DIS- SOLVED (MG/L AS K)	BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
JAN 30	48	22	5.5	21	27	1.0	5.8	36	0
30									
30	57	23	6.7	24	31	1.1	6.6	34	0

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML)
JAN 30 30 30	57 66	33 33	11 13	173 190	.11	.120	180 350	40 80	9700

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
MAY 21 21 21 21 21	1122 1123 1124 1126 1128	1.0 1.5 10.0 20.0 30.0	364 364 364 362	7.9 7.4 7.0 6.8	24.0 23.0 23.0 22.5	.91	8.2 7.7 6.4 3.8	98 90 74 44	110 110
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
MAY 21 21 21 21 21	62 62	30 30	7.3	25 26	1.1 1.1	5.7	52 52	0 0	64 62
DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML)
MAY 21 21 21 21 21	38 38	.1 	7.1	203 203	.03	.030 .040 .040	<10 40 <10	4 20 140	52000

301940096315801 SOMERVILLE LAKE SITE AL

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73 55

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAY 21 21 21	1204 1206 1208	1.0 10.0 15.0	347 357 340	8.3 8.1 6.8	26.0 24.5 23.5	9.6 9.0 5.1	119 107 60

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAY							
21	1341	1.0	363	8.4	26.0	10.1	125
21	1343	14.0	363	7.0	23.5	6.2	73

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAY							
21	1234	1.0	368	8.4	26.0	9.9	122
21	1236	10.0	368	7.3	23.5	7.3	86
21	1238	20.0	368	6.8	22.5	5.2	60
21	1240	26.0	368	6.7	22.5	3.5	41

D	ATE	S TIME I	GAMP- LING DEPTH ((FT)	SPE- CIFIC CON- DUCT- ANCE MICRO- MHOS) (PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	DXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MA 2 2 2 2	Y 1 1 1	1217 1219 1221 1223	1.0 10.0 20.0 28.0	354 368 368 368	8.4 7.2 6.8 6.7	26.5 23.5 23.0 22.5	.82	9.7 7.0 4.6 2.9	121 82 53 34
DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIU DIS- SOLVE (MG/L AS CA	MAGNE M SIUM DIS- D SOLVE (MG/I) AS MC	L- DIS DD SOLVI (MG G) AS I	SOD UM, A - SOR ED TIC /L RAT NA)	IUM POT D- SI P- DI DN SOL IO (MG AS	AS- UM, BICAR S- BONAT VED (MG/I /L AS K) HCO3	E CAR- BONATE (MG/L) AS CO3)
MAY 21 21 21 21	99 110	58 61	³ ²⁸ - 30	7. 7.	0 2! 	5	1.1 1.1	5.6	50 0

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAY 21	61	37	71	195	01	030	110	30
21	01	57	/• (175	•01	•050	110	20
21						010	100	
21					.02	.040	190	50
21	63	39	9.2	208	.03	.070	360	260

301817096364101 SOMERVILLE LAKE SITE EC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAY							
21	1325	1.0	377	8.8	26.5	11.6	145
21	1327	10.0	377	8.5	24.5	10.0	119
21	1329	21.0	422	6.6	23.0	2.8	33

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
MAY 21 21 21 21	1259 1300 1301 1303	1.0 .4 10.0 14.0	319 293 293	7.9 6.6 6.6	27.5 25.0 24.5	.24 	9.4 5.0 4.8	119 60 57	87 84
DATE	HARD- NESS, NONCAR- BONATE (MC/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
MAY 21 21 21 21	51 46	24 23	6.6 6.4	23 21	1.1 1.0	6.2	44 46	0 0	53 49
	СН	U.O STI	SOL	IDS, OF NI	TRO-		ма	NGA- PH	VTO-

	RIDE,	DIS-	CONSTI-	GEN,	PHOS-	IRON,	NESE,	PLANK-
	DIS-	SOLVED	TUENTS,	NO2+NO3	PHORUS,	DIS-	DIS-	TON,
	SOLVED	(MG/L	DIS-	TOTAL	TOTAL	SOLVED	SOLVED	TOTAL
	(MG/L	AS	SOLVED	(MG/L	(MG/L	(UG/L	(UG/L	(CELLS
DATF	AS CL)	SIO2)	(MG/L)	AS N)	AS P)	AS FE)	AS MN)	PER ML)
ΜΔΥ								
21	35	11	181	.02	.170	410	50	
21								36000
21								
21	31	15	176	.05	.110	1100	220	

FT = feet; MICROMHOS = micromhos per centimeter at 25° Celsius; °C - degrees Celsius; MG/L = milligrams per liter; UG/L = micrograms per liter

DATE	T IME	SAMP- LING DEPTH	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD	TEMPER- ATURE, WATER	TRANS- PAR- ENCY (SECCHI DISK)	OXYGEN, DIS- SOLVED	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS
DATE		(11)	11103)	(UNITS)	(DEG C)	(1))		ALIONY	CACODY
AUG 29 29 29 29	0920 0922 0924 0926	1.0 10.0 20.0 25.0	428 428 428 428	7.1 6.9 6.9 6.9	28.5 28.5 28.5 28.5 28.5	.61	5.5 4.6 4.6 4.6	70 58 58 58	110 110
DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
AUG 29 29	63	32	8.1	32	1.3	7.1	61	0	71
29 29	64	32	8.2	 34	1.4	7.1	61	 0	70

301908096313101 SOMERVILLE LAKE SITE AC

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
AUG 29 29 29 29	54 54	.2	11 11	245 246	.00 .00 	.070 .080 070	<10 10 <10	1 10 30

301940096315801 SOMERVILLE LAKE SITE AL

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG 29 29 29	0945 0947 0949	1.0 10.0 13.0	428 428 428	7.4 7.1 7.1	29.0 28.5 28.5	6.8 5.6 5.6	87 71 71

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG 29 29	1005 1007	1.0 8.0	432 432	7.9 7.5	30.0 30.0	6.8 5.9	88 77

301805096332501 SOMERVILLE LAKE SITE CC

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG 29 29	1215 1217	1.0 8.0	432 432	7.5 6.8	29.5 28.5	6.6 3.2	85 41

301847096334601 SOMERVILLE LAKE SITE DR

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG 29 29 29	1045 1047 1049	1.0 10.0 19.0	432 432 432	7.7 6.9 6.8	29.5 29.0 29.0	6.9 4.0 2.6	88 51 33

D	ATE	TIME I	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AU	G								
2	9	1020	1.0	432	7.8	29.5	.61	6.8	87
2	9	1022	5.0	432	7.4	29.0		5.8	74
2	9	1024	10.0	432	7.2	29.0		5.3	68
2	9	1026	20.0	432	7.0	29.0		4.6	59
2	9	1028	25.0	432	7.0	29.0		4.6	59
-		1020	2310	132	,	2710			
		HARD-		MAGN	IE-	SOD	IUM POT	AS-	
	HARD-	NESS,	CALCI	UM SIL	IM, SODII	UM, A	D- SI	UM, BICAL	<-
	NESS	NONCAR-	- DIS-	DIS	S- DIS-	- SOR	P- DI	S- BONAT	TE CAR-
	(MG/L	BONATE	SOLV	ED SOLV	ED SOLVI	ED TI	ON SOL	VED (MG)	L BONATE
	AS	(MG/L	(MG/	L (MG/	'L (MG,	/L RAT	10 (MG	/L AS	G (MG/L
DATE	CACO3)	CACO3) ÀS C	A) AS M	IG) AS I	(AV	ÀS .	к) нсоз	AS CO3
DATE	AS CACO3)	(MG/L CACO3)	(MG/) AS C	L (MG/ A) AS M	'L (MG) IG) AS I	/L RAT NA)	10 (MG AS	/L AS K) HCO3	6 (MC/L 3) AS CO3)

AUC									
29	120	72	35	8.6	33	1.3	7.1	62	0
29									
29									
29									
29	120	65	33	8.2	33	1.3	7.1	62	0

				SOLIDS,				
		CHLO-	SILICA,	SUM OF	NITRO-			MANGA-
	SULFATE	RIDE,	DIS-	CONSTI-	GEN,	PHOS-	IRON,	NESE,
	DIS-	DIS-	SOLVED	TUENTS,	NO2+NO3	PHORUS,	DIS-	DIS-
	SOLVED	SOLVED	(MG/L	DIS-	TOTAL	TOTAL	SOLVED	SOLVED
	(MG/L	(MG/L	AS	SOLVED	(MG/L	(MG/L	(UG/L	(UG/L
DATE	AS SO4)	AS CL)	SI02)	(MG/L)	AS N)	AS P)	AS FE)	AS MN)
AUG								
29	73	57	11	255	.00	.070	<10	3
29								
29					.00	.080	10	10
29								
29	70	54	11	247	.00	.090	<10	80

301817096364101 SOMERVILLE LAKE SITE EC

	TIME	SAMP- LING DEPTH	SPE- CIFIC CON- DUCT- ANCE (MICRO-	PH FIELD	TEMPER- ATURE, WATER	OXYGEN, DIS- SOLVED	OXYGEN, DIS- SOLVED (PER- CENT SATUR-
DATE		(FT)	MHOS)	(UNITS)	(DEG C)	(MG/L)	ATION)
AUG							
29	1100	1.0	432	7.8	29.5	6.9	90
29	1102	5.0	432	7.4	29.5	6.0	77
29	1104	10.0	432	7.1	29.5	4.6	59
29	1106	15.0	432	7.0	29.5	4.5	58
29	1108	19.0	432	7.0	29.5	4.5	58

T TE	SIME I	SAMP- LING DEPTH (FT)	CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPI ATUI WATI (DEG	T ER- RE, (S ER D C)	RANS- PAR- ENCY O ECCHI ISK) (M)	XYGEN, DIS- SOLVED (MG/L)	DIS- SOLVED (PER- CENT SATUR- ATION)
1 1 1	130 132 134	1.0 5.0 9.0	452 452 452	7.5 7.0 7.0	30 29 29	0.0 9.5 9.5	.24	6.0 3.8 3.5	78 49 45
HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIU DIS- SOLVE (MG/I AS CA	MAG M SI DI CD SOL (MG A) AS	NE- UM, SOI S- DI VED SOI /L (M MG) AS	IUM, S- WED G/L NA)	SODIUM AD- SORP- TION RATIO	POTAS SIUM DIS- SOLVE (MG/L AS K)	, BICAR BONATI D (MG/I AS HCO3)	- C CAR- BONATE (MG/L) AS CO3)
120	68	3 34		8.6	35	1.4	7.	4	54 0
	TE 1 HARD- NESS (MC/L AS CACO3) 120 	TIME I TIME I TIME I TE TI 1130 TI 1132 TI 1134 HARD- NESS NONCAR- (MC/L BONATE AS (MG/L CACO3) CACO3) T20 68	SAMP- LING TIME DEPTH (FT) 1130 1.0 1132 5.0 1134 9.0 HARD- NESS, CALCIU NESS NONCAR DIS- (MC/L BONATE SOLVE AS (MG/L (MC/I CACO3) CACO3) AS CA 120 68 34	CON- SAMP- LING CON- DUCT- LING TIME DEPTH MHOS) (HICRO- (FT) MHOS) (FT) MHOS) (HICRO- (FT) MHOS) (HICRO- (FT) MHOS) (HICRO- (FT) MHARD- 452 MARD- MAG HARD- MAG MARD- NESS MARD- DI MESS CALCIUM MS (MG/L AS (MG/L AS (MG/L AS (ACO3) AS CACO3	CON- SAMP- LING CON- DUCT- LING CON- SAMP- ANCE PH TIME DEPTII (MICRO-FIELD (MICRO-FIELD YE (FT) MHOS) (UNITS) YE (FT) MHOS) (UNITS) YE (FT) MHOS) (UNITS) YE (HARD- 452 7.6 HARD- NESS CALCIUM SIUM, SOE HARD- NESS, CALCIUM SIUM, SOE DIS- MAGNE- DIS- DI SOLVED SOLVED AS (MG/L (MG/L (MG/L (MG/L (MG/L AS (MG/L (MG/L MAGNE- AS AS AS 120 68 34 8.6 - - -	CON- SAMP- LING ANCE DUCT- PH TEMP. ATU TIME DEPTH (MICRO-FIELD WAT TE (FT) MHOS) (UNITS) (DEG 1130 1.0 452 7.5 30 1132 5.0 452 7.0 2 1134 9.0 452 7.0 2 HARD- MAGNE- DIS- DIS- 0 MESS NONCAR- DIS- DIS- DIS- AS<(MG/L	CON- SAMP- DUCT- TEMPER- LING ANCE PH ATURE, (S TIME DEPTH (MICRO- FIELD WATER D YE (FT) MHOS) (UNITS) (DEG C) 1130 1.0 452 7.5 30.0 1132 5.0 452 7.0 29.5 1134 9.0 452 7.0 29.5 1134 9.0 452 7.0 29.5 HARD- MESS. CALCIUM SIUM, SODIUM, AD- NESS NONCAR- DIS- DIS- SORP- (MC/L BONATE SOLVED SOLVED TION AS (MG/L (MG/L (MG/L RATIO CAC03) CAC03) AS CA) AS MG) AS NA)	CON- PAR- SAMP- DUCT- TEMPER- ENCY O LING ANCE PH ATURE, (SECCHI TIME DEPTH (MICRO-FIELD WATER DISK) YE (FT) MHOS) (UNITS) (DEG C) (M) 1130 1.0 452 7.5 30.0 .24 1132 5.0 452 7.0 29.5 1134 9.0 452 7.0 29.5 HARD- MAGNE- SODIUM AD- SIUM NESS NONCAR- DIS- DIS- SORP- DIS- (MG/L BONATE SOLVED SOLVED TIO MG/L AS (MG/L (MG/L (MG/L RATIO MAS AS (MG/L (MG/L (MG/L RATIO MS AS (MG/L (MG/L (MG/L RATIO MS AS (MG/L (MG/L <td>CON- PAR- SAMP- DUCT- TEMPER- ENCY OXYGEN, LING ANCE PH ATURE, (SECCHI DIS- TIME DEPTH (MICRO- FIELD WATER DISK) SOLVED YE (FT) MHOS) (UNITS) (DEG C) (M) (MG/L) 1130 1.0 452 7.5 30.0 .24 6.0 1132 5.0 452 7.0 29.5 3.8 1134 9.0 452 7.0 29.5 3.5 HARD- MESS, CALCIUM SIUM, SODIUM, AD- SIUM, BICAR, NESS NONCAR- DIS- DIS- SORP- DIS- BONATH (MC/L BONATE SOLVED SOLVED TON SOLVED (MG/L AS (MC/L (MC/L (MC/L (MC/L (MC/L AS AS K) <t< td=""></t<></td>	CON- PAR- SAMP- DUCT- TEMPER- ENCY OXYGEN, LING ANCE PH ATURE, (SECCHI DIS- TIME DEPTH (MICRO- FIELD WATER DISK) SOLVED YE (FT) MHOS) (UNITS) (DEG C) (M) (MG/L) 1130 1.0 452 7.5 30.0 .24 6.0 1132 5.0 452 7.0 29.5 3.8 1134 9.0 452 7.0 29.5 3.5 HARD- MESS, CALCIUM SIUM, SODIUM, AD- SIUM, BICAR, NESS NONCAR- DIS- DIS- SORP- DIS- BONATH (MC/L BONATE SOLVED SOLVED TON SOLVED (MG/L AS (MC/L (MC/L (MC/L (MC/L (MC/L AS AS K) <t< td=""></t<>

SULFATE RIDF, DIS- CONSTI- GEN, DIS- DIS- SOLVED TUENTS, NO2+NO SOLVED SOLVED (MG/L DIS- TOTAL (MG/L (MG/L AS SOLVED (MG/L	PHOS- IRON, NESE, 3 PHORUS, DIS- DIS- TOTAL SOLVED SOLVED (MG/L (UG/L (UG/L))
DATE AS SO4) AS CL) SIO2) (MG/L) AS N)	ASP) ASFE) ASMN)
AUG	
29 76 58 10 261 .0	0.140 20 10
290	0.140 10 20
29 75 57 10 258 .0	0.150 10 200