LIMNOLOGICAL DATA FOR 12 RESERVOIRS IN VALLEY COUNTY, MONTANA

U.S. GEOLOGICAL SURVEY

Open-File Report 80-339

Prepared in cooperation with the

U.S. Bureau of Land Management

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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By Rodger F. Ferreira

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Helena, Montana

March 1980

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METRIC UNITS AND INCH-POUND EQUIVALENTS

The following factors can be used to convert from the International System (SI) of metric units in this report to the equivalent inch-pound units.

Multiply metric unit	By	To obtain inch-pound unit
hectare (ha)	2.471	acre
kilometer (km)	0.6214	mile (mi)
meter (m)	3.281	foot (ft)
millimeter (mm)	0.0394	inch (in.)

temperature, degrees Fahrenheit (^{o}F) = 1.8 ^{o}C + 32

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ABSTRACT

Water samples were collected from 12 reservoirs in northeastern Montana during the late winter, spring, summer, and early fall of 1978. The resulting physical and chemical water-quality data will be useful in managing the reservoirs for use of stock watering, waterfowl propagation, fish production, and recreation.

The surface areas of the reservoirs range from 0.4 to 28.1 hectares with water depths ranging from 0.25 to 6.9 meters. The chemical composition of water varied among reservoirs and with season. Specific conductance ranged from 446 to 4,020 micromhos per centimeter during the winter sampling period and from 62 to 999 micromhos per centimeter during the spring sampling period. Although a pH of 6.9 was measured at one reservoir during the winter, pH values generally ranged from 7.7 to 9.8. Under ice cover, which averaged 1.0 meter thick in late February, three reservoirs attained dissolved oxygen concentrations above saturation. Each reservoir can be classified as having one of the following three water types: sodium bicarbonate, sodium sulfate, or calcium sodium bicarbonate.

INTRODUCTION

Valley County, Montana, includes the North Valley Recreation Area, which is composed primarily of federally administered lands. Several small reservoirs have been constructed in Valley County by the U.S. Bureau of Land Management for the purpose of sediment control and livestock watering. The reservoirs

trap sediment carried from upstream tributaries and decrease downstream sediment transport by diminishing flow. The reservoirs also provide water for livestock during the dry grazing season. In grazing areas, livestock have unrestricted access to most of the reservoirs.

The reservoirs are located on small intermittent streams that flow mostly during spring snowmelt and summer rainstorms. Earth-filled dams, some of which are lined with rock, form the reservoir impoundments; the only water outlets are over the dam or over earthen spillways. Dam overflow rarely occurs because reservoir capacities are sufficient to contain runoff, which is generally low throughout the year. Water inflow to the reservoirs is offset by water losses such as seepage through and around each dam, evaporation from the water surface of each reservoir, and transpiration by aquatic plants and riparian vegetation.

Purpose and scope

A study was initiated in 1978 by the U.S. Geological Survey, in cooperation with the U.S. Bureau of Land Management, in which water-quality data were collected from reservoirs in Valley County to determine the potential for uses other than stock watering and sediment control. Specific interest was expressed by the Bureau of Land Management in data that could aid in determining the feasibility of managing the reservoirs for waterfowl habitat, fish propagation, and recreation. The purpose of this report is to present the physical and chemical data collected during the study.

Water samples were collected from 12 reservoirs having a wide range in limnological conditions. Each reservoir was visited during late winter, spring, summer, and early fall of 1978. Methods of field data collection and analyses are described in this report along with a brief description of each site.

Study area

The study area is in northeastern Montana in northern Valley County (fig. 1). The 12 reservoirs sampled are listed in table 1. The majority of reservoirs are in the Rock Creek drainage, which transects three major geologic units: Claggett Shale, Judith River Formation, and Bearpaw Shale (Ross and others, 1955).

The lower reaches of Rock Creek are in the Claggett Shale of Late Cretaceous age. This unit is chiefly a dark-gray shale, which forms gumbo soil when wet and contains iron-stained concretions and sandstone in some areas. The base of the formation contains numerous bentonite beds.

The Judith River Formation of Late Cretaceous age overlies the Claggett Shale. The Judith River Formation is a light-colored sandstone near the top and a sombre-gray siltstone and sandy shale near the bottom.

The upper reaches of Rock Creek, Willow Creek, Canyon Creek, and West Fork Porcupine Creek are in the Bearpaw Shale of Late Cretaceous age. The Bearpaw Shale is a dark-gray and brown clay shale, which forms gumbo soil when wet.

The upper reaches of Cherry Creek flow through a small area of Flaxville Formation of late Tertiary age (Ross and others, 1955). This unit is a brown, yellow, and gray deposit of gravel, sand, and silt with local areas of marl and volcanic ash.

The landscape is generally flat except for breaks along the large streams. Willow and cottonwood trees grow in localized areas where water is abundant. Grasses such as Blue Grama (*Boutelous gracilis*), Western Wheatgrass (*Agropyron Smithii*), and Green Needlegrass (*Stipa viridula*) are ground cover for most of the area, with grasses such as Kentucky Bluegrass (*Poa pratensis*) growing

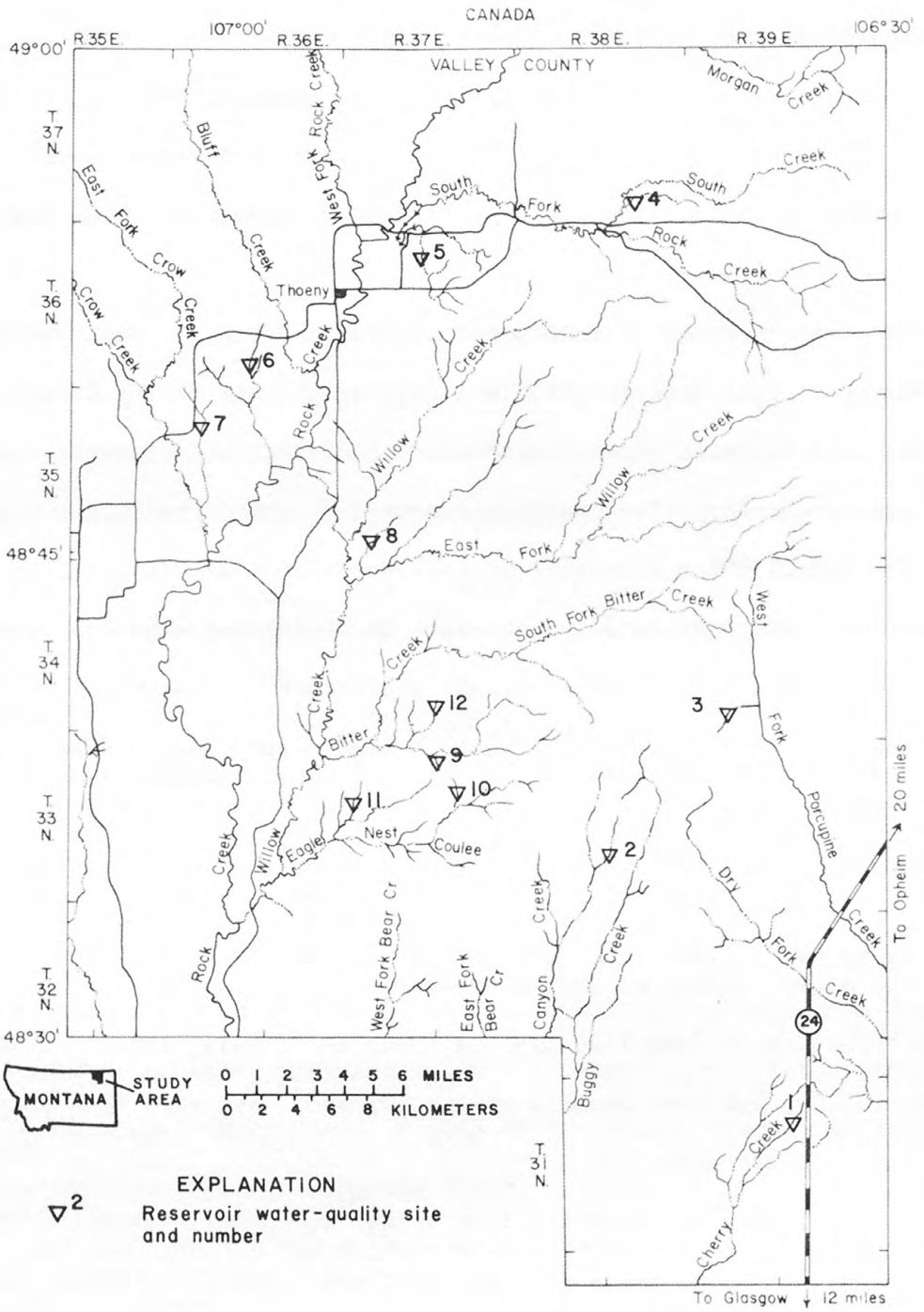


Figure 1.--Locations of study area and reservoir water-quality sites.

Table 1.--Reservoirs sampled

Reservoir			
Number	Name	Latitude	Longitude
1	Air Base Pond	48° 26'40"	106° 35'30"
2	Vadar Reservoir	48° 35'40"	106° 43'10"
3	VR-82	48° 40'00"	106° 37'40"
4	VR-77	48° 55'20"	106° 41'40"
5	Thoenys Reservoir	48° 53'50"	106° 51'20"
6	Ich Pair Reservoir	48° 50'50"	106° 59'20"
7	Near John Arnold Ranch	48° 48'30"	107° 02'40"
8	Near East Fork Willow Creek	48° 44'50"	106° 53'40"
9	Gay Reservoir	48° 38'30"	106° 51'10"
10	VR-64	48° 37'30"	106° 50'00"
11	Hose Reservoir	48° 37'00"	106° 54'20"
12	Near Hinsdale Livestock Company	48° 39'50"	106° 50'40"

in the more moist areas.

Climate

Eastern Montana's climate is described as continental with hot summers and cold winters. The summer months are typified by frequent rain showers and numerous windy periods (Cordell, 1971). Six to 12 cold waves generally move through the study area each winter. These cold waves are often accompanied by strong winds and blowing snow.

Mean annual precipitation at weather stations within the study area ranges from 289 to 340 mm. Generally half of this amount falls during May, June, and July. Snowfall generally occurs between November and March.

Mean annual air temperatures at weather stations in the study area range from 2.4 to 5.2°C. The warmest month is usually July with a mean monthly temperature ranging from 18.1 to 21.3°C. January, which is generally the coldest month, has mean monthly temperatures that range from -15.2 to -13.3°C (U.S. Department of Commerce, 1965).

METHODS OF DATA COLLECTION

Each reservoir was visited four times during 1978. The first sampling period was in late February and early March, when ice covered the lakes. The second sampling period was in May when no ice cover was present and the reservoirs were presumably at their maximum stage. The third sampling period was in August when air temperatures were high and the greatest possibility of thermal stratification existed. The last sampling period was in October. Water temperatures at this time would tend to be homogeneous and mixing should occur.

Vertical profiles of temperature, specific conductance, pH, and dissolved oxygen were made using a multiparameter water-quality instrument. One sampling point was measured in each reservoir near the dam in what was estimated to be the deepest part of the original stream channel.

At the same location as the profiles, water samples were collected with a Kemmerer water sampler. When the reservoirs were deeper than 2 m, water samples were collected near the water surface and near the bottom. When the reservoirs were less than 2 m deep, water samples were collected at middepth. All samples were pretreated in the field following methods of the U.S. Geological Survey (Friedman, 1978). Chemical constituents in water samples were analyzed at the U.S. Geological Survey Central Laboratory in Denver, Colo., using methods described by Brown, Skougstad, and Fishman (1970).

Depth of light penetration was estimated with a Secchi disk as the average depth of disappearance and reappearance of a black and white disk, 200 mm in diameter (Hutchinson, 1957).

RESULTS

A brief description of each reservoir during sampling is accompanied by a small index map outlining the reservoir surface configuration and indicating the sampling site by means of a dot. Results from the vertical profiles are listed by reservoir number, date, time, and depth (table 2). Analytical results for the major dissolved chemical constituents, selected plant nutrients, and trace elements are listed, respectively, in tables 3, 4, and 5. These tables are located near the back of this report.

Reservoir 1, Air Base Pond

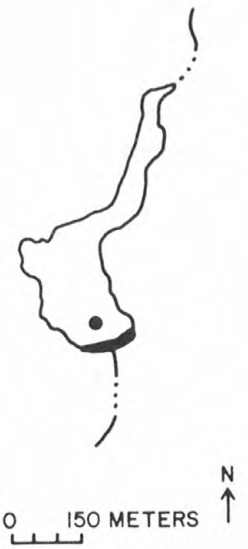
Reservoir 1 is located about 0.8 km west of State Route 24. This reservoir has a surface area of about 2.7 ha and was formed when fill was excavated for Glasgow Air Force Base. The proximity of reservoir 1 to a principal highway has precipitated its development as a recreational site; a grassed area with several picnic tables and toilet facilities is provided along the north shore of the reservoir.

Willow trees line the south and west shores of the reservoir, whereas aquatic plants such as cattail (Typha spp.), horsetail (Equisetum spp.), and water weed (Elodea spp.) are abundant in the shallows of the north shore.

The reservoir sediment was black in color and inhabited by midge (Chironomidae) larvae. Small frogs and a variety of benthic invertebrates were present along the north shore of the reservoir. Numerous mayflies (Ephemeroptera) were emerging during the August sampling period.

During each sampling period the reservoir water was slightly turbid. Secchi disk depths measured in May, August, and October were 1.4, 0.5, and 1.8 m, respectively. In August the water was dark green in color with noticeable amounts of suspended algal filaments. Numerous microcrustaceans could be seen in water samples collected during the February sampling period.

Reservoir 2, Vadar Reservoir

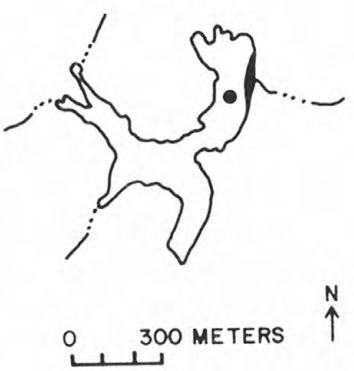


Vadar Reservoir is one of the more remote reservoirs sampled in Valley County. Access roads are present but not conspicuous, making this reservoir difficult to find. The reservoir has a surface area of about 5.6 ha.

Willow trees line the dam and about 12 m of the west shore. Grasses cover the rest of the shoreline. Cattail and other aquatic plants were growing in the shallow areas at the north end of the reservoir. The reservoir sediment was a black color, indicative of organic richness.

The water was generally turbid and during the August sampling period the water was green in color. Secchi disk depths measured in May and August were 0.4 and 0.8 m, respectively. Brown foam and large clumps of algae were observed on the leeward side of the reservoir in October. Scuds (Amphipoda, shrimp-like organisms) could be seen moving among the aquatic plants and detritus along shore.

Reservoir 3, VR-82



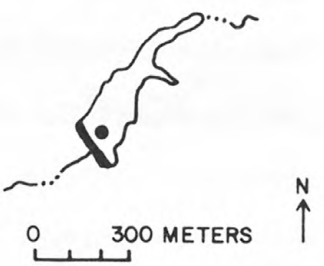
Reservoir 3 is the most irregularly shaped reservoir of those sampled and has a surface area of about 13.6 ha. About 75 percent of the shoreline is heavily vegetated with willow trees and aquatic plants. Most of this vegetation grows along the southeastern shore where major tributaries enter the reservoir.

The sediment was organically rich and black in color and had a slight hydrogen sulfide odor. Numerous valves (shells) from fresh water clams and large aquatic snails could be seen along the shore close to the dam.

The water was a turbid brown color during the May sampling period; however, it was green during the August sampling period. Secchi disk depths measured in May and August were 0.3 and 1.0 m, respectively.

Reservoir 4, VR-77

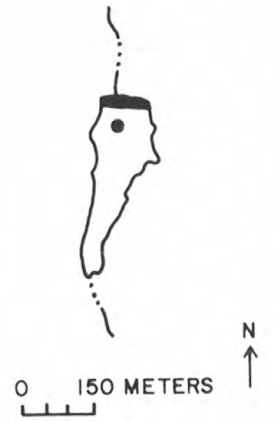
Reservoir 4 is the most northern reservoir sampled in Valley County. The surface area of the reservoir is about 4.9 ha.



Vegetation surrounding the reservoir consisted mostly of grasses. The north shore has a gradual slope, which enables cattle to wade in the water. The aquatic plants in this area had been trampled and the water was a dark humic-brown color. Sediment from the middle of the reservoir was black.

Reservoir 4 was turbid during each sampling period. Secchi disk depths measured in August and October were both 1.5 m. The reservoir water was light brown during the May sampling period; however, it was green during the August sampling period.

Reservoir 5, Thoenys Reservoir

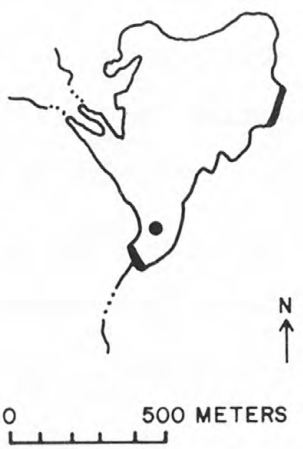


Reservoir 5 has a 2.5 ha surface area and is one of the shallower reservoirs sampled in the study area. This reservoir was completely frozen during the February sampling period. Of the reservoirs sampled, this was the only one enclosed by a fence.

Willow trees surround the reservoir; cattails and other aquatic plants are common in the shallows and bays. Bottom sediments were light gray, similar to the color of the water. No organisms were observed in the bottom samples collected during the study.

During the open-water sampling periods, the water was turbid and gray in color. Reservoir 5 was the most turbid reservoir sampled in Valley County. Secchi disk depths measured in May, August, and October were 0.2, 0.3, and 0.1 m, respectively.

Reservoir 6, Ich Pair Reservoir



With a surface area of about 28.1 ha, reservoir 6 had the largest surface area of the reservoirs sampled in Valley County. However, because of its shallow depth, the reservoir was completely frozen during the winter sampling period.

The shoreline was devoid of large trees but aquatic plants were dense along the shore. Leeches (Hirudinea) inhabited this area and were so numerous that they could be seen clinging to the boat as it was being pulled from the water. Sediment from the bottom of the reservoir was black and fine grained.

The water was clear and brown in color, possibly resulting from the dissolved organic matter in the water. Secchi disk depths measured in May and October were both 1.3 m. Watermilfoil (Myriophyllum spp.), an aquatic plant, densely populated most of the lakebed, and large clumps of algae were floating near the water surface.

Reservoir 7, Near John Arnold Ranch

Reservoir 7 is close to a maintained road, although the road leading to the reservoir is not well marked. This reservoir has a surface area of about 4.8 ha.

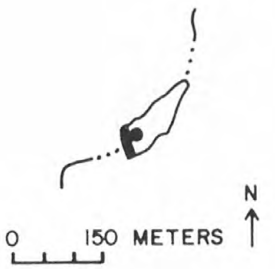
Among the aquatic plants, Elodea was prominent along shore. The most noticeable invertebrate organisms in the area were water mites (Acari) and water boatmen (Corixidae). The perimeter of the reservoir was devoid of trees.

During the May sampling period, ducks and geese were swimming in the upstream area of the reservoir. Cattle were grazing around the reservoir during the May and August sampling periods.

The water of reservoir 7 was generally brown in color but had a greenish tint during the August sampling period. Secchi disk depths measured in May, August, and October were 1.6, 2.0, and 1.0 m, respectively. Many micro-crustaceans could be seen in the water collected for chemical analysis.

Reservoir 8, Near East Fork Willow Creek

Reservoir 8 was one of the deeper reservoirs sampled in the study area; however, with a surface area of 0.4 ha, it was the smallest reservoir.



Grasses line the perimeter of the reservoir and a few cattails and other aquatic plants grow in the shallow inflow areas. Water boatmen were observed swimming near the shore. Sediment on the bottom of the reservoir was black.

The water in reservoir 8 was clear during the February and October sampling periods; however, during the May sampling period it was slightly turbid with foam along the shore. Secchi disk depths measured in May and August were 0.5 and 2.5 m, respectively. Numerous algal filaments were suspended in the water during the August sampling period, giving the water a green color. Algae was also prevalent during the August and October sampling periods, growing as clumps among the aquatic plants along the shore.

Reservoir 9, Gay Reservoir

Reservoir 9 was one of the deeper reservoirs sampled in Valley County. The surface area of reservoir 9 is about 1.3 ha. Steep-sided hills surround most of the reservoir, the shore of which is covered with grasses.

Aquatic plants, composed mostly of watermilfoil, were growing along the bottom of the reservoir. Numerous frogs and water boatmen were observed among the aquatic plants along the shore. Sediment in the reservoir was brown in color.

The water was slightly turbid during the May sampling period and was green during the August sampling period. Secchi disk depths measured in May, August, and October were 1.0, 2.0, and 1.5 m, respectively. In August algae clumps were growing along the shore.

Reservoir 10, VR-64

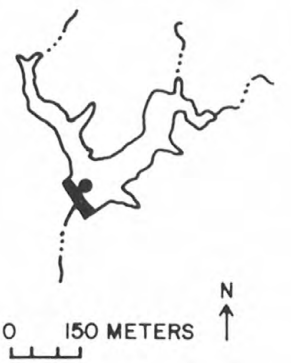
Reservoir 10 is a shallow reservoir and was completely frozen during the February sampling period. The surface area of the reservoir is about 3.5 ha.

Willow trees line the dam and grasses grow along the shore. Numerous cattails grow in the shallow regions of tributary inflow.

Waterfowl were on the reservoir during the August sampling period and a few frogs were observed along the shore. Cattle were grazing in the area during the August and October sampling periods and a few of them were standing in water along the shore. Reservoir sediment was a black color.

The reservoir water was turbid and a brown color during each sampling period. Secchi disk depths measured in May, August, and October were 0.2, 0.5, and 0.1 m, respectively.

Reservoir 11, Hose Reservoir



Reservoir 11 was the deepest reservoir sampled in the study area. Grasses line the shore of this reservoir. The surface area is about 3.9 ha.

In the shallow areas algae and aquatic plants were growing in greater numbers during the August sampling period than during the other sampling periods. Of the reservoirs sampled, reservoir 11 was the only one in which fish were observed. Reservoir sediment was brownish black.

The water was generally a clear green during each sampling period. Secchi disk depths measured in May, August, and October were 2.3, 1.3, and 1.3 m, respectively.

Reservoir 12, Near Hinsdale Livestock Company

Reservoir 12 is one of the more remote reservoirs sampled. The reservoir has a surface area of about 2.1 ha.

A few willow trees grow along the perimeter of the reservoir which is otherwise covered with grasses. Aquatic plants grow in the shallow shore areas. Sediment at the bottom of the reservoir was black.

The water was slightly turbid during each sampling period and had a green tint during the August sampling period. Secchi disk depths measured in May, August, and October were 0.2, 1.8, and 1.5 m, respectively. Microcrustaceans were observed in the water collected during March.

SUMMARY OF DATA

The 12 reservoirs sampled in the late winter, spring, summer, and early fall represented a wide variety of physical and chemical conditions. The surface areas range from 0.4 ha at reservoir 8 to 28.1 ha at reservoir 6. Reservoirs having large surface areas were generally shallower than reservoirs having small surface areas. Water depths at sampling sites during the early fall sampling period ranged from 0.25 m at reservoir 5 to 6.9 m at reservoir 11. During the winter sampling period the reservoirs had an average ice cover 1 m thick and reservoirs 5, 6, and 10 were completely frozen. Light penetration varied with season in each reservoir, with reservoir 5 being the most turbid.

Specific conductance was variable among reservoirs and with season. Maximum specific conductances occurred beneath the ice surface and ranged from 446 µmho/cm (micromhos per centimeter) at reservoir 11 to 4,020 µmho/cm at reservoir 9. Minimum specific conductances occurred during the spring sampling period with values near the surface ranging from 62 µmho/cm at reservoir 3 to 999 µmho/cm at reservoir 9.

The largest differences in pH within most of the reservoirs occurred between the winter sampling period and the summer and fall sampling periods. The pH was relatively lower when the reservoirs were under ice cover than when they were not. The lowest pH (6.9) was measured at reservoir 4 during the winter sampling period. During the August and October sampling periods, surface pH ranged from 7.7 at reservoir 5 to 9.8 at reservoirs 10 and 12. The pH generally decreased with depth in all the reservoirs during each sampling period.

Unusually high dissolved-oxygen concentrations were measured at a few of

the reservoirs during the winter sampling period. Reservoirs 2, 8, and 12 had dissolved-oxygen concentrations above saturation when ice cover was present. Dissolved-oxygen concentration and percent saturation generally decreased with depth at these reservoirs and at the other reservoirs during each sampling period. The percent saturation of dissolved oxygen near the surface of all the reservoirs was generally higher in August than in May; however, October values were higher than August values at four reservoirs and lower than May values at five reservoirs.

Based on relative amounts of the major dissolved chemical constituents, the reservoirs can be classified into three water types. Reservoir 1 contains sodium bicarbonate water and reservoirs 5, 9, 10, and 12 contain sodium sulfate water. The remaining reservoirs have more than one relatively abundant cation and can be classified as calcium sodium bicarbonate water. Cations and anions in water are summed to give the dissolved-solids concentration, which was variable among reservoirs and with season. The dissolved-solids concentration was the lowest at all reservoirs, except number 11, during the spring sampling period. In May dissolved-solids concentrations ranged from 42 mg/L at reservoir 3 to 698 mg/L at reservoir 9. During the winter sampling period surface dissolved-solids concentrations ranged from 259 mg/L at reservoir 11 to 3,190 mg/L at reservoir 9.

Reservoirs 6 and 7 generally contained the highest nutrient concentrations during the May, August, and October sampling periods. High nutrient concentrations were evidenced by the high values for total nitrogen, total phosphorus, and dissolved organic carbon.

Trace-element concentrations were variable among the reservoirs. For all the reservoirs, trace-element concentrations were generally highest during the winter sampling period and lowest during the spring.

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TABLE 2.--Vertical profiles

[All values are field determinations. Asterisk denotes depth of ice/water interface]

Reservoir 1--Air Base Pond

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
FEB , 1978							
27...	1500	.00	--	--	--	--	--
27...	1501	1.2*	--	--	--	--	--
27...	1502	1.5	.7	1180	7.8	9.2	72
27...	1503	2.5	1.6	1140	7.7	1.1	9
27...	1504	3.5	2.6	1140	7.7	.5	4
27...	1505	4.5	3.0	1150	7.6	.2	2
27...	1506	5.5	3.4	1150	7.6	.1	1
27...	1507	6.5	3.5	1180	7.7	.1	1
MAY							
09...	1000	.00	11.2	630	8.4	8.4	85
09...	1001	1.0	11.1	632	8.4	8.0	81
09...	1002	2.0	11.0	633	8.3	7.6	77
09...	1003	3.0	10.8	637	8.4	6.9	70
09...	1004	3.5	10.6	635	8.4	6.3	63
AUG							
20...	0915	.00	17.6	658	8.9	8.6	100
20...	0916	1.0	17.4	668	8.9	8.5	99
20...	0917	2.0	17.3	669	9.0	8.2	95
20...	0918	3.0	16.9	671	8.6	3.3	38
20...	0919	4.0	16.5	675	8.5	2.0	23
20...	0920	4.5	16.5	671	8.5	1.5	17
OCT							
02...	1330	.00	12.0	720	8.4	10.2	106
02...	1331	.50	12.0	720	8.4	10.0	104
02...	1332	1.0	12.0	720	8.4	10.0	104
02...	1333	1.5	12.0	722	8.4	9.9	102
02...	1334	2.0	12.0	722	8.4	10.0	104
02...	1335	2.5	12.0	721	8.4	9.9	102
02...	1336	3.0	12.0	721	8.4	9.8	101
02...	1337	3.5	12.0	721	8.4	9.9	102
02...	1338	4.0	12.0	721	8.4	9.8	101
02...	1339	4.5	12.0	722	8.4	9.9	102
02...	1340	4.8	12.0	721	8.1	9.6	99

TABLE 2.--Vertical profiles--Continued

Reservoir 2--Vadar Reservoir

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
FEB , 1978							
28...	1100	.00	--	--	--	--	--
28...	1101	1.0*	--	--	--	--	--
28...	1102	1.3	2.8	558	7.8	15.0	124
28...	1103	1.5	3.3	548	7.7	10.6	89
28...	1104	2.0	3.3	548	7.7	9.0	75
28...	1105	2.5	3.5	516	7.6	8.3	70
28...	1106	3.0	3.6	522	7.6	7.7	65
28...	1107	3.5	3.7	530	7.5	7.4	63
MAY							
09...	1540	.00	11.1	168	7.7	7.8	79
09...	1541	1.0	11.1	167	7.7	7.6	77
09...	1542	2.0	11.0	167	--	7.5	76
09...	1543	3.0	10.8	167	7.8	7.4	75
09...	1544	4.0	10.5	168	--	7.1	71
09...	1545	5.0	10.1	170	7.5	6.8	67
09...	1546	5.5	9.8	168	7.5	6.3	62
AUG							
20...	1330	.00	19.6	221	9.3	9.3	113
20...	1331	.50	18.0	223	9.4	9.4	111
20...	1332	1.0	17.1	226	9.3	9.0	104
20...	1333	1.5	16.8	222	9.1	8.1	93
20...	1334	2.0	16.8	221	9.0	7.9	91
20...	1335	2.5	16.8	219	8.9	7.7	88
20...	1336	3.0	16.8	219	8.9	7.5	86
20...	1337	3.5	16.7	218	8.8	7.2	82
20...	1338	4.0	16.6	219	8.2	5.1	58
20...	1339	4.5	16.3	219	8.0	3.9	44
20...	1340	4.8	16.2	221	7.7	1.9	22
OCT							
02...	1100	.00	11.2	228	7.8	10.0	102
02...	1101	.50	11.3	227	7.8	10.0	102
02...	1102	1.0	11.3	228	7.8	10.0	102
02...	1103	1.5	11.3	228	7.8	10.0	102
02...	1104	2.0	11.3	228	7.8	9.9	101
02...	1105	2.5	11.3	228	7.8	10.0	102
02...	1106	3.0	11.3	227	7.9	9.9	101
02...	1107	3.5	11.3	228	7.9	9.9	101
02...	1108	4.0	11.3	228	7.9	9.9	101
02...	1109	4.5	11.3	228	7.9	9.9	101
02...	1110	5.0	11.3	230	7.7	9.6	98
02...	1111	5.5	11.3	228	7.4	1.2	12

TABLE 2.--Vertical profiles--Continued

Reservoir 3--VR-82

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
FEB , 1978							
28...	1000	.00	--	--	--	--	--
28...	1001	1.0*	--	--	--	--	--
28...	1002	2.0	.4	480	7.5	.1	1
MAY							
10...	0815	.00	11.5	62	7.4	8.2	84
10...	0816	1.0	11.5	62	7.4	8.0	82
10...	0817	2.0	11.5	62	7.4	8.0	82
10...	0818	3.0	11.4	62	7.4	7.9	81
AUG							
21...	0945	.00	16.2	121	8.1	8.4	95
21...	0946	1.0	16.2	122	8.1	8.3	94
21...	0947	2.0	16.1	122	7.8	8.2	93
21...	0948	2.5	15.8	121	7.5	6.4	72
OCT							
04...	1500	.00	9.0	138	8.3	10.2	99
04...	1501	.50	9.0	138	8.3	10.2	99
04...	1502	1.0	9.0	138	8.2	10.2	99
04...	1503	1.5	9.0	139	8.2	10.2	99
04...	1504	2.0	9.0	139	8.2	10.1	98
04...	1505	2.5	9.0	139	7.6	10.0	97

TABLE 2.--Vertical profiles--Continued

Reservoir 4--VR-77

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
FEB , 1978							
27...	1030	.00	--	--	--	--	--
27...	1031	1.0*	--	--	--	--	--
27...	1032	1.2	.0	845	6.9	.6	5
MAY							
10...	1425	.00	12.1	105	8.2	9.5	99
10...	1426	1.0	12.1	105	8.2	9.4	98
10...	1427	2.0	12.1	105	--	9.2	95
AUG							
21...	1330	.00	17.3	174	8.5	8.8	102
21...	1331	1.0	17.0	176	8.5	8.6	99
21...	1332	2.0	16.0	180	8.2	7.8	88
21...	1333	2.8	15.8	181	7.9	7.3	82
OCT							
04...	1130	.00	9.0	187	9.0	9.0	87
04...	1131	.50	9.1	187	9.0	9.0	87
04...	1132	1.0	9.1	187	9.0	9.1	88
04...	1133	1.5	9.1	188	8.9	9.1	88
04...	1134	2.0	9.1	187	8.9	9.1	88
04...	1135	2.5	9.1	187	8.8	9.0	87
04...	1136	3.0	9.1	187	8.7	9.0	87

TABLE 2.--Vertical profiles--Continued

Reservoir 5--Thoenys Reservoir

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
MAY , 1978							
11...	1330	.00	13.8	182	--	8.6	93
11...	1331	.50	13.7	183	7.5	8.5	91
11...	1332	1.0	13.6	183	7.5	8.5	91
11...	1333	1.2	12.8	186	--	7.4	78
AUG							
22...	1330	.00	17.5	341	7.7	8.0	93
22...	1331	.50	17.5	341	7.7	7.9	92
22...	1332	.75	17.5	341	7.7	7.9	92
OCT							
03...	1330	.00	8.5	397	7.9	10.4	99
03...	1331	.25	8.5	397	7.9	10.2	97

TABLE 2.--Vertical profiles--Continued

Reservoir 6--Ich Pair Reservoir

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
MAY , 1978							
11...	1700	.00	13.6	146	7.9	9.2	99
11...	1701	1.0	13.6	146	7.9	9.1	98
11...	1702	1.2	13.6	146	--	9.0	97
AUG							
22...	1530	.00	18.2	217	9.3	9.5	112
22...	1531	.50	17.6	218	9.0	8.9	104
22...	1532	.75	16.9	218	8.6	5.1	59
OCT							
03...	1200	.00	9.0	225	8.9	10.0	97
03...	1201	.50	9.0	225	8.8	9.6	93
03...	1202	1.0	8.8	224	8.8	8.9	86

TABLE 2.--Vertical profiles--Continued

Reservoir 7--Near John Arnold Ranch

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
FEB , 1978							
28...	1240	.00	--	--	--	--	--
28...	1241	1.0*	--	--	--	--	--
28...	1242	1.5	2.2	756	7.4	1.4	11
MAY							
11...	1000	.00	12.4	169	--	8.7	97
11...	1001	1.0	12.4	169	7.7	8.6	90
11...	1002	2.0	12.4	169	7.8	8.6	90
11...	1003	3.3	12.3	169	7.8	8.5	89
AUG							
22...	0930	.00	17.6	248	9.4	7.6	89
22...	0931	.50	17.6	248	9.4	7.6	89
22...	0932	1.0	17.6	248	9.4	7.6	89
22...	0933	1.5	17.6	248	9.4	7.6	89
22...	0934	2.0	16.1	257	9.1	5.2	59
22...	0935	2.5	16.0	255	9.1	4.3	49
22...	0936	2.7	15.9	252	9.0	3.6	41
OCT							
03...	1000	.00	9.8	291	8.9	8.5	84
03...	1001	.50	9.8	291	8.9	8.5	84
03...	1002	1.0	9.8	291	8.9	8.5	84
03...	1003	1.5	9.7	290	9.0	8.4	79
03...	1004	2.0	9.6	291	9.0	8.0	78
03...	1005	2.5	9.5	291	9.0	7.7	75

TABLE 2.--Vertical profiles--Continued

Reservoir 8--Near East Fork Willow Creek

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
FEB , 1978							
28...	1330	.00	--	--	--	--	--
28...	1331	1.0*	--	--	--	--	--
28...	1332	1.5	.5	700	8.3	18.5	143
28...	1333	2.0	1.9	685	8.2	19.6	158
28...	1334	2.5	2.3	681	8.1	19.3	157
28...	1335	3.0	2.7	676	8.0	17.5	144
28...	1336	3.5	3.0	675	7.8	16.4	136
28...	1337	4.0	3.4	678	7.6	15.4	129
MAY							
12...	0630	.00	12.2	201	--	8.7	90
12...	0631	1.0	12.2	201	8.0	8.7	90
12...	0632	2.0	12.2	201	8.0	8.7	90
12...	0633	3.0	12.3	201	--	8.7	91
12...	0634	4.0	12.0	202	8.0	7.3	76
12...	0635	4.2	11.8	203	--	6.3	65
AUG							
24...	0945	.00	17.3	272	8.8	8.2	95
24...	0946	.50	17.3	271	8.8	8.2	95
24...	0947	1.0	17.2	272	8.8	8.2	95
24...	0948	1.5	17.2	272	8.8	8.2	95
24...	0949	2.0	17.2	272	8.7	8.2	95
24...	0950	2.5	17.2	271	8.7	8.2	95
24...	0951	3.0	17.1	273	8.6	7.7	89
24...	0952	3.5	17.0	272	7.5	7.6	88
OCT							
03...	1530	.00	10.8	286	9.7	10.0	101
03...	1531	.50	10.8	286	9.7	10.0	101
03...	1532	1.0	10.9	286	9.7	9.9	100
03...	1533	1.5	10.9	286	9.6	9.8	99
03...	1534	2.0	10.9	286	9.6	9.7	98
03...	1535	2.5	10.8	287	9.6	9.6	97
03...	1536	3.0	10.7	287	9.5	9.4	95
03...	1537	3.5	10.7	287	9.5	9.4	95
03...	1538	3.8	10.6	288	9.3	9.2	92

TABLE 2.--Vertical profiles--Continued

Reservoir 9--Gay Reservoir

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
MAR , 1978							
02...	1145	.00	--	--	--	--	--
02...	1146	1.0*	--	--	--	--	--
02...	1147	1.5	1.0	4020	7.9	6.2	49
02...	1148	2.0	1.4	4040	7.8	5.8	46
02...	1149	2.5	1.7	4000	7.8	5.7	46
MAY							
13...	0900	.00	12.5	999	7.9	9.7	102
13...	0901	1.0	12.5	1000	7.8	9.7	102
13...	0902	2.0	12.4	999	7.8	9.6	100
13...	0903	3.0	11.6	1010	--	9.0	92
13...	0904	4.0	11.2	1020	7.7	7.7	78
13...	0905	4.7	10.4	1220	--	3.5	35
AUG							
23...	1430	.00	18.6	1520	9.5	8.9	106
23...	1431	.50	18.6	1520	9.5	8.7	104
23...	1432	1.0	18.6	1520	9.5	8.7	104
23...	1433	1.5	18.6	1520	9.5	8.6	102
23...	1434	2.0	18.6	1520	9.4	8.6	102
23...	1435	2.5	18.2	1530	9.5	8.5	100
23...	1436	3.0	17.9	1520	9.4	8.3	97
23...	1437	3.5	17.8	1520	9.4	7.9	93
23...	1438	4.0	17.7	1520	9.3	7.9	92
23...	1439	4.5	17.6	1520	9.3	7.3	85
OCT							
05...	1200	.00	9.4	1620	8.2	9.4	92
05...	1201	.50	9.4	1620	8.2	9.3	91
05...	1202	1.0	9.4	1620	8.2	9.2	90
05...	1203	1.5	9.3	1620	8.2	9.2	90
05...	1204	2.0	9.3	1620	8.2	9.1	89
05...	1205	2.5	9.3	1620	8.2	9.1	89
05...	1206	3.0	9.1	1630	8.1	8.9	86
05...	1207	3.5	9.0	1630	8.1	8.6	83
05...	1208	4.0	8.9	1630	8.1	8.6	83

TABLE 2.--Vertical profiles--Continued

Reservoir 10--VR-64

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
MAY , 1978							
13...	1130	.00	12.8	226	7.6	8.6	91
13...	1131	.50	12.7	227	--	8.6	90
13...	1132	1.0	12.4	229	7.6	8.4	88
13...	1133	1.2	11.9	231	--	8.2	85
AUG							
23...	0915	.00	16.0	300	9.8	7.6	86
23...	0916	.50	16.0	299	9.7	7.3	82
23...	0917	1.0	15.7	299	9.7	7.3	82
23...	0918	1.2	15.2	300	7.4	7.0	78
OCT							
05...	1300	.00	6.9	403	8.4	9.8	90
05...	1301	.50	6.9	398	8.3	9.8	90
05...	1302	1.8	6.9	398	7.9	9.6	88

TABLE 2.--Vertical profiles--Continued

Reservoir 11--Hose Reservoir

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
MAR , 1978							
02...	1030	.00	--	--	--	--	--
02...	1031	1.0*	--	--	--	--	--
02...	1032	1.2	.6	446	7.9	6.0	47
02...	1033	1.5	1.4	433	7.8	5.1	41
02...	1034	2.0	2.4	421	7.7	4.5	37
02...	1035	2.5	2.8	425	7.7	4.5	37
02...	1036	3.0	3.0	424	7.8	4.5	37
02...	1037	3.5	3.1	425	7.9	4.4	37
02...	1038	4.0	3.2	424	7.8	4.2	35
02...	1039	4.5	3.2	427	7.8	3.4	28
02...	1040	5.0	3.3	428	7.8	3.2	27
02...	1041	5.5	3.4	432	7.7	3.1	21
MAY							
13...	1430	.00	13.3	205	--	9.3	99
13...	1431	1.0	13.2	204	8.0	9.2	98
13...	1432	2.0	12.8	207	--	8.9	94
13...	1433	3.0	12.6	205	8.0	8.8	92
13...	1434	4.0	12.2	208	--	8.4	87
13...	1435	5.0	11.9	207	--	7.8	81
13...	1436	6.0	11.6	208	7.7	6.7	69
13...	1437	6.5	11.4	210	--	4.9	50
AUG							
24...	1315	.00	20.3	207	9.3	8.8	108
24...	1316	.50	19.3	211	9.3	8.3	100
24...	1317	1.0	18.5	213	9.2	7.8	93
24...	1318	1.5	18.0	212	9.2	7.9	93
24...	1319	2.0	17.8	210	9.1	7.5	88
24...	1320	2.5	17.8	209	9.0	7.3	86
24...	1321	3.0	17.7	208	9.0	7.1	83
24...	1322	3.5	17.6	208	8.9	6.3	73
24...	1323	4.0	17.5	206	8.9	5.9	69
24...	1324	4.5	17.5	207	8.9	5.9	69
OCT							
05...	1400	.00	10.2	239	8.6	9.1	90
05...	1401	.50	10.2	238	8.6	9.2	91
05...	1402	1.0	10.2	238	8.6	9.1	90
05...	1403	1.5	10.2	238	8.6	9.1	90
05...	1404	2.0	10.2	238	8.5	9.1	90
05...	1405	2.5	10.1	239	8.4	9.0	89
05...	1406	3.0	10.0	239	8.4	8.9	88
05...	1407	3.5	10.0	240	8.4	8.9	88
05...	1408	4.0	10.0	240	8.4	8.8	87

TABLE 2.--Vertical profiles--Continued

Reservoir 11--Hose Reservoir--Continued

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
OCT , 1978							
05...	1409	4.5	10.0	240	8.4	8.8	87
05...	1410	5.0	9.9	240	8.4	8.5	84
05...	1411	5.5	9.9	240	8.4	8.5	84
05...	1412	6.0	9.8	241	8.3	8.1	80
05...	1413	6.5	9.6	241	8.3	7.9	77
05...	1414	6.9	9.6	241	8.3	7.7	76

TABLE 2.--Vertical profiles--Continued

Reservoir 12--Near Hinsdale Livestock Company

DATE	TIME	SAMPLING DEPTH (M)	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
MAR , 1978							
02...	1255	.00	--	--	--	--	--
02...	1256	1.0*	--	--	--	--	--
02...	1257	1.5	2.3	955	7.9	12.8	104
02...	1258	2.0	3.1	935	7.8	12.6	105
02...	1259	2.5	3.2	942	7.8	12.4	104
02...	1300	3.0	3.2	935	7.6	12.2	102
MAY							
12...	1145	.00	12.0	291	7.6	8.5	88
12...	1146	.50	12.0	291	7.6	8.5	88
12...	1147	1.0	12.0	291	--	8.4	87
12...	1148	1.5	12.0	290	7.6	8.5	88
12...	1149	2.0	12.0	290	--	8.5	88
12...	1150	2.5	11.7	293	7.6	8.2	84
12...	1151	2.9	11.6	293	7.6	8.2	84
AUG							
23...	1230	.00	17.7	427	9.8	9.4	110
23...	1231	.50	17.7	427	9.7	8.9	104
23...	1232	1.0	17.7	427	9.7	8.7	102
23...	1233	1.5	17.6	427	9.6	8.7	101
23...	1234	2.0	17.7	427	9.6	8.6	101
23...	1235	2.5	17.7	427	9.6	8.6	101
23...	1236	3.0	17.7	426	7.6	8.4	98
OCT							
05...	1030	.00	8.2	464	8.9	9.6	91
05...	1031	.50	8.2	463	8.9	9.6	91
05...	1032	1.0	8.2	463	8.9	9.6	91
05...	1033	1.5	8.2	465	8.8	9.6	91
05...	1034	2.0	8.2	465	8.8	9.6	91
05...	1035	2.5	8.2	465	8.8	9.6	91
05...	1036	2.7	8.2	465	7.7	9.5	90

TABLE 3.--Major dissolved chemical constituents

Reservoir 1--Air Base Pond

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
FEB , 1978									
27...	2.5	310	0	48	45	170	54	4.2	6.7
27...	6.5	310	0	50	46	170	53	4.2	6.6
MAY									
09...	1.0	170	0	30	23	81	50	2.7	5.2
09...	3.0	170	0	30	23	82	50	2.7	5.2
AUG									
20...	1.0	150	0	19	25	92	56	3.3	4.8
20...	3.0	150	0	21	24	92	56	3.3	4.7
OCT									
02...	.50	170	--	25	25	97	55	3.3	4.9
02...	4.5	170	--	26	26	98	54	3.3	4.9

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
FEB , 1978								
27...	510	0	420	200	25	.5	13	760
27...	510	0	420	200	26	.5	12	765
MAY								
09...	270	0	220	110	12	.2	6.1	401
09...	270	1	220	100	11	.2	6.1	392
AUG								
20...	290	11	260	110	10	.3	3.5	419
20...	260	17	240	110	11	.3	3.8	412
OCT								
02...	--	--	260	110	14	.3	5.2	437
02...	--	--	260	120	12	.3	5.2	448

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 2--Vadar Reservoir

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
FEB , 1978									
28...	1.5	170	31	32	22	49	37	1.6	6.6
28...	3.5	170	31	32	22	48	37	1.6	6.5
MAY									
09...	1.0	50	11	8.8	6.8	13	34	.8	3.3
09...	5.0	51	13	9.2	6.9	13	34	.8	3.4
AUG									
20...	.50	61	2	11	8.1	18	37	1.0	4.0
20...	4.0	63	6	11	8.6	20	39	1.1	4.0
OCT									
02...	.50	65	--	11	9.2	22	40	1.2	4.0
02...	5.0	68	--	12	9.2	20	37	1.1	3.9

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
FEB , 1978								
28...	170	0	140	120	4.3	.3	4.3	323
28...	170	0	140	120	4.3	.3	4.7	323
MAY								
09...	48	0	39	40	1.2	.1	1.4	98
09...	47	0	39	41	1.4	.1	1.6	100
AUG								
20...	70	1	59	46	1.3	.1	3.3	127
20...	69	0	57	46	1.2	.1	3.9	129
OCT								
02...	--	--	57	52	1.4	.1	4.8	139
02...	--	--	57	52	1.4	.1	4.7	138

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 3--VR-82

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
FEB , 1978									
28...	2.0	170	0	43	14	35	30	1.2	9.8
MAY									
10...	1.0	21	0	5.1	2.1	4.8	30	.5	2.3
10...	3.0	22	0	5.2	2.2	4.7	29	.4	2.6
AUG									
21...	1.0	44	0	11	3.9	8.0	27	.5	2.8
OCT									
04...	1.5	59	--	14	5.8	8.9	24	.5	3.2

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
FEB , 1978								
28...	280	0	230	12	12	.3	8.2	276
MAY								
10...	33	0	27	6.4	1.5	.0	3.3	42
10...	34	0	28	6.7	1.6	.0	3.3	43
AUG								
21...	65	0	53	5.5	1.0	.1	2.5	67
OCT								
04...	--	--	63	8.9	1.7	.1	3.7	84

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 4--VR--77

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
FEB , 1978									
27...	1.2	280	0	71	26	77	35	2.0	21
MAY									
10...	1.0	37	1	9.9	3.1	6.9	26	.5	3.6
AUG									
21...	1.0	59	0	15	5.2	12	29	.7	5.0
OCT									
04...	1.5	62	--	15	6.0	14	31	.8	4.9

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
FEB , 1978								
27...	450	0	370	82	9.5	.4	18	535
MAY								
10...	44	0	36	16	1.2	.1	2.0	65
AUG								
21...	83	0	68	15	.8	.1	5.3	100
OCT								
04...	--	--	66	28	1.2	.1	1.0	110

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 5--Thoenys Reservoir

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
MAY , 1978									
11...	1.0	35	9	8.1	3.5	20	52	1.5	3.8
AUG									
22...	.50	58	17	13	6.3	41	58	2.3	4.7
OCT									
03...	.25	74	--	17	7.7	49	57	2.5	5.2

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
MAY , 1978								
11...	31	0	25	53	1.4	.1	7.6	113
AUG								
22...	51	0	42	110	.7	.3	15	217
OCT								
03...	--	--	44	140	1.6	.4	14	260

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 6--Ich Pair Reservoir

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
MAY , 1978									
11...	1.0	43	0	9.9	4.5	10	29	.7	7.5
AUG									
22...	.50	60	0	12	7.2	19	36	1.1	10
OCT									
03...	.50	72	--	17	7.2	25	39	1.3	11

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
MAY , 1978								
11...	55	0	45	20	4.3	.0	5.2	89
AUG								
22...	110	0	90	12	4.8	.1	.4	123
OCT								
03...	--	--	100	27	5.3	.1	.4	153

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 7--Near John Arnold Ranch

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
FEB , 1978									
28...	1.5	240	0	42	32	80	39	2.3	27
MAY									
11...	1.0	51	0	11	5.8	13	31	.8	8.0
11...	3.3	51	0	11	5.8	13	31	.8	8.1
AUG									
22...	.50	76	0	16	8.8	23	36	1.1	8.9
22...	2.5	75	0	16	8.6	23	37	1.2	8.8
OCT									
03...	.50	93	--	19	11	27	36	1.2	11
03...	2.0	93	--	19	11	27	36	1.2	11

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
FEB , 1978								
28...	480	0	390	19	14	.2	5.8	468
MAY								
11...	78	0	64	17	3.0	.0	4.4	101
11...	78	0	64	16	2.9	.0	4.4	100
AUG								
22...	110	14	110	12	3.3	.1	1.3	144
22...	110	9	110	15	3.6	.1	1.4	142
OCT								
03...	--	--	130	27	4.5	.1	.5	177
03...	--	--	130	25	4.2	.1	.4	176

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 8--Near East Fork Willow Creek

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
FEB , 1978									
28...	2.0	170	76	42	17	78	48	2.6	8.2
28...	4.0	170	61	39	17	77	49	2.6	7.9
MAY									
12...	1.0	61	0	16	5.2	17	36	.9	4.1
12...	4.0	61	0	16	5.1	17	36	.9	4.1
AUG									
24...	1.0	85	0	21	7.9	24	36	1.1	5.9
24...	3.0	85	0	21	8.0	24	36	1.1	5.9
OCT									
03...	.50	93	--	23	8.6	28	38	1.3	4.8
03...	3.0	95	--	24	8.5	27	37	1.2	4.8

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
FEB , 1978								
28...	120	0	98	230	5.0	.5	27	467
28...	130	0	110	210	5.2	.4	26	447
MAY								
12...	80	0	66	36	1.7	.1	4.9	125
12...	81	0	66	36	1.6	.1	4.8	125
AUG								
24...	140	0	110	25	2.1	.2	.6	158
24...	140	0	110	25	2.0	.2	.6	157
OCT								
03...	--	--	120	32	2.0	.3	.5	171
03...	--	--	120	31	2.1	.3	.4	170

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 9--Gay Reservoir

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
MAR , 1978									
02...	2.0	940	800	180	120	670	60	9.5	21
MAY									
13...	1.0	230	190	42	30	120	53	3.5	6.3
13...	4.0	230	190	43	30	130	54	3.7	6.3
AUG									
23...	1.0	340	320	60	47	220	58	5.2	7.9
23...	4.0	340	290	60	47	230	59	5.4	7.9
OCT									
05...	.50	350	--	65	46	230	58	5.3	8.4
05...	3.0	350	--	59	50	230	58	5.3	8.5

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
MAR , 1978								
02...	180	0	150	2100	8.6	.9	.2	3190
MAY								
13...	43	0	35	440	1.8	.2	4.6	666
13...	44	0	36	460	1.8	.2	4.6	698
AUG								
23...	5	11	22	720	2.4	.4	.2	1070
23...	51	8	55	730	2.4	.4	.2	1110
OCT								
05...	--	--	65	780	2.7	.5	.0	1170
05...	--	--	65	780	2.7	.5	.0	1170

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 10--VR-64

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
MAY , 1978									
13...	1.0	47	0	11	4.8	26	52	1.6	3.5
AUG									
23...	.50	41	0	11	3.3	44	69	3.0	2.3
OCT									
05...	.50	83	--	20	8.1	55	57	2.6	4.4

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
MAY , 1978								
13...	59	0	48	57	1.7	.1	14	148
AUG								
23...	57	14	70	63	1.5	.2	5.6	174
OCT								
05...	--	--	96	98	4.6	.3	6.9	255

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 11--Hose Reservoir

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
MAR , 1978									
02...	1.5	160	0	41	15	32	29	1.1	5.4
02...	5.0	160	0	41	15	32	29	1.1	5.4
MAY									
13...	1.0	73	0	19	6.1	14	28	.7	4.0
13...	6.0	73	0	19	6.1	14	28	.7	3.8
AUG									
24...	1.0	68	0	15	7.3	16	32	.8	4.4
24...	4.0	72	0	16	7.7	15	30	.8	4.4
OCT									
05...	.50	82	--	20	7.9	19	32	.9	4.1
05...	6.0	82	--	20	7.9	19	32	.9	4.0

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
MAR , 1978								
02...	210	0	170	56	3.8	.2	1.3	259
02...	210	0	170	58	3.8	.2	1.5	261
MAY								
13...	94	0	77	27	2.1	.1	.5	119
13...	94	0	77	27	2.2	.1	.7	120
AUG								
24...	99	0	81	20	2.3	.1	3.0	117
24...	98	0	80	21	2.2	.1	3.1	118
OCT								
05...	--	--	96	21	2.6	.1	1.3	134
05...	--	--	96	21	2.8	.1	1.3	134

TABLE 3.--Major dissolved chemical constituents--Continued

Reservoir 12--Near Hinsdale Livestock Company

DATE	SAMPLING DEPTH (M)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
MAR , 1978									
02...	1.5	270	150	65	26	100	43	2.7	11
02...	3.0	270	150	66	26	99	43	2.6	12
MAY									
12...	.50	71	36	17	7.0	28	44	1.4	4.3
12...	2.5	69	35	16	7.1	28	45	1.5	4.2
AUG									
23...	1.0	99	49	23	10	47	49	2.1	5.5
23...	2.5	94	44	22	9.4	40	46	1.8	5.6
OCT									
05...	1.5	110	--	26	11	48	47	2.0	5.0

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
MAR , 1978								
02...	150	0	120	340	5.0	.5	2.5	624
02...	150	0	120	350	5.1	.5	2.5	635
MAY								
12...	43	0	35	96	1.7	.1	4.7	180
12...	42	0	34	97	1.5	.1	4.8	180
AUG								
23...	42	9	49	150	1.5	.3	.9	268
23...	40	10	49	130	1.4	.3	.8	239
OCT								
05...	--	--	64	140	1.7	.5	.0	271

TABLE 4.--Selected plant nutrients

Reservoir 1--Air Base Pond

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
FEB , 1978								
27...	2.5	1.5	.01	.01	.01	1.5	--	.04
27...	6.5	1.1	.02	.01	.02	1.1	--	.26
MAY								
09...	1.0	.81	.00	.00	.00	.81	--	.01
09...	3.0	1.0	.00	.00	.00	1.0	--	.01
AUG								
20...	1.0	1.5	.00	.01	.02	1.5	--	.02
20...	3.0	--	.00	.01	--	--	--	.01
OCT								
02...	.50	1.1	.00	.01	.00	1.1	.00	.01
02...	4.5	1.0	.00	.01	.00	1.0	.00	.01

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
FEB , 1978							
27...	--	--	.11	--	.00	13	2.2
27...	--	--	.18	--	.02	13	1.0
MAY							
09...	--	--	.07	--	.01	6.8	1.8
09...	--	--	.06	--	.01	7.6	1.1
AUG							
20...	--	--	.15	--	.05	11	1.2
20...	--	--	.26	--	.08	10	2.1
OCT							
02...	1.1	.87	.09	.04	.01	23	.4
02...	1.0	.90	.07	.04	.01	13	.4

Table 4.--Selected plant nutrients--Continued

Reservoir 2--Vadar Reservoir

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
FEB , 1978								
28...	1.5	2.5	.01	.01	.01	2.5	--	.06
28...	3.5	1.7	.02	.01	.01	1.7	--	.14
MAY								
09...	1.0	.97	.00	.00	.01	.96	--	.01
09...	5.0	1.1	.01	.00	.01	1.1	--	.01
AUG								
20...	.50	1.3	.00	.00	.01	1.3	--	.02
20...	4.0	1.3	.01	.00	.01	1.3	--	.01
OCT								
02...	.50	1.2	.02	.01	.02	1.2	.01	.04
02...	5.0	1.2	.03	.01	.02	1.2	.04	.04

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
FEB , 1978							
28...	--	--	.11	--	.00	17	3.9
28...	--	--	.10	--	.01	16	1.7
MAY							
09...	--	--	.09	--	.01	5.9	1.4
09...	--	--	.10	--	.02	7.6	1.4
AUG							
20...	--	--	.08	--	.01	8.9	--
20...	--	--	.09	--	.01	7.2	3.1
OCT							
02...	1.2	.71	.10	.02	.01	9.1	--
02...	1.2	.72	.12	.02	.01	11	1.0

Table 4.--Selected plant nutrients--Continued

Reservoir 3--VR-82

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
FEB , 1978								
28...	2.0	6.7	.00	.01	.00	6.7	--	1.8
MAY								
10...	1.0	1.5	.02	.01	.00	1.5	--	.01
10...	3.0	1.6	.00	.01	.00	1.6	--	.01
AUG								
21...	1.0	2.1	.03	.00	.01	2.1	--	.02
OCT								
04...	1.5	1.9	.02	.01	.01	1.9	.02	.02

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
FEB , 1978							
28...	--	--	.35	--	.01	33	2.0
MAY							
10...	--	--	.13	--	.01	7.4	2.8
10...	--	--	.12	--	.01	9.8	2.6
AUG							
21...	--	--	.08	--	.01	12	2.1
OCT							
04...	1.9	1.4	.15	.03	.01	12	5.5

Table 4.--Selected plant nutrients--Continued

Reservoir 4--VR-77

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
FEB , 1978								
27...	1.2	12	.08	.00	.02	12	--	4.4
MAY								
10...	1.0	1.0	.01	.00	.00	1.0	--	.01
AUG								
21...	1.0	1.1	.04	.01	.02	1.1	--	.07
OCT								
04...	1.5	1.1	.00	.01	.01	1.1	.09	.02

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
FEB , 1978							
27...	--	--	.76	--	.01	38	>10
MAY							
10...	--	--	.13	--	.03	7.2	2.0
AUG							
21...	--	--	.10	--	.01	9.1	1.1
OCT							
04...	1.0	.91	.07	.04	.01	10	1.1

Table 4.--Selected plant nutrients--Continued

Reservoir 5--Thoenys Reservoir

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
MAY , 1978								
11...	1.0	.76	.01	.00	.01	.75	--	.01
AUG								
22...	.50	1.3	.02	.00	.03	1.3	--	.01
OCT								
03...	.25	1.6	.00	.01	.01	1.6	.21	.02

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
MAY , 1978							
11...	--	--	.14	--	.02	5.1	1.9
AUG							
22...	--	--	.28	--	.03	5.2	4.3
OCT							
03...	1.4	.54	.28	.03	.01	11	1.9

Table 4.--Selected plant nutrients--Continued

Reservoir 6--Ich Pair Reservoir

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
MAY , 1978								
11...	1.0	1.1	.01	.00	.01	1.1	--	.01
AUG								
22...	.50	3.0	.01	.01	.02	3.0	--	.02
OCT								
03...	.50	2.3	.00	.01	.01	2.3	.03	.02

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
MAY , 1978							
11...	--	--	.23	--	.14	15	1.0
AUG							
22...	--	--	.81	--	.51	20	1.9
OCT							
03...	2.3	2.1	.74	.63	.55	28	.4

Table 4.--Selected plant nutrients--Continued

Reservoir 7--Near John Arnold Ranch

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
FEB , 1978								
28...	1.5	6.6	.01	.01	.01	6.6	--	2.3
MAY								
11...	1.0	1.5	.01	.00	.01	1.5	--	.00
11...	3.3	1.1	.01	.00	.00	1.1	--	.01
AUG								
22...	.50	2.0	.06	.02	.05	1.9	--	.04
22...	2.5	2.0	.10	.03	.09	1.9	--	.05
OCT								
03...	.50	2.3	.02	.01	.00	2.3	.12	.01
03...	2.0	2.8	.00	.01	.00	2.8	.22	.00

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
FEB , 1978							
28...	--	--	1.4	--	1.2	38	--
MAY							
11...	--	--	.18	--	.11	13	1.1
11...	--	--	.20	--	.13	14	.9
AUG							
22...	--	--	.53	--	.47	11	.9
22...	--	--	.55	--	.47	19	1.0
OCT							
03...	2.2	1.9	.30	.22	.17	21	.8
03...	2.6	1.7	.29	.22	.17	18	.7

Table 4.--Selected plant nutrients--Continued

Reservoir 8--Near East Fork Willow Creek

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
FEB , 1978								
28...	2.0	.66	.00	.01	.00	.66	--	.01
28...	4.0	.64	.01	.00	.07	.57	--	.01
MAY								
12...	1.0	.75	.01	.00	.01	.74	--	.00
12...	4.0	1.1	.01	.00	.01	1.1	--	.00
AUG								
24...	1.0	1.5	.21	.01	.08	1.4	--	.15
24...	3.0	1.2	.02	.01	.02	1.2	--	.09
OCT								
03...	.50	1.2	.02	.01	.04	1.2	.06	.01
03...	3.0	1.1	.04	.01	.01	1.1	.05	.01

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
FEB , 1978							
28...	--	--	.11	--	.04	9.8	2.1
28...	--	--	.14	--	.01	9.6	1.8
MAY							
12...	--	--	.15	--	.07	14	1.8
12...	--	--	.14	--	.06	9.3	1.4
AUG							
24...	--	--	.23	--	.15	17	.9
24...	--	--	.23	--	.14	11	.9
OCT							
03...	1.1	1.1	.16	.12	.01	14	.4
03...	1.1	1.1	.16	.13	.06	14	.4

Table 4.--Selected plant nutrients--Continued

Reservoir 9--Gay Reservoir

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
MAR , 1978								
02...	2.0	.95	.01	.00	.00	.95	--	.03
MAY								
13...	1.0	.53	.01	.00	.00	.53	--	.00
13...	4.0	.58	.01	.00	.00	.58	--	.00
AUG								
23...	1.0	.48	.15	.00	.00	.48	--	.01
23...	4.0	.53	.01	.00	.01	.52	--	.02
OCT								
05...	.50	.66	.00	.01	.00	.66	.00	.00
05...	3.0	.75	.00	.01	.00	.75	.02	.00

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
MAR , 1978							
02...	--	--	.04	--	.00	14	1.4
MAY							
13...	--	--	.04	--	.01	4.5	.8
13...	--	--	.03	--	.00	4.6	.7
AUG							
23...	--	--	.04	--	.00	5.5	.8
23...	--	--	.04	--	.01	4.8	.8
OCT							
05...	.66	.59	.04	.02	.01	6.5	--
05...	.73	.61	.03	.02	.01	5.5	.4

Table 4.--Selected plant nutrients--Continued

Reservoir 10--VR-64

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
MAY , 1978								
13...	1.0	.76	.07	.00	.05	.71	--	.01
AUG								
23...	.50	1.3	.01	.01	.02	1.3	--	.02
OCT								
05...	.50	1.9	.00	.04	.03	1.9	.17	.05

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
MAY , 1978							
13...	--	--	.14	--	.01	11	2.1
AUG							
23...	--	--	.43	--	.32	12	2.1
OCT							
05...	1.7	1.8	.32	.26	.24	8.8	2.9

Table 4.--Selected plant nutrients--Continued

Reservoir 11--Hose Reservoir

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
MAR , 1978								
02...	1.5	1.3	.04	.01	.01	1.3	--	.10
02...	5.0	1.1	.02	.01	.01	1.1	--	.14
MAY								
13...	1.0	.86	.01	.00	.01	.85	--	.01
13...	6.0	1.3	.01	.01	.02	1.3	--	.00
AUG								
24...	1.0	1.1	.03	.00	.00	1.1	--	.02
24...	4.0	1.9	.03	.00	.08	1.8	--	.00
OCT								
05...	.50	1.3	.01	.00	.03	1.3	.12	.01
05...	6.0	1.5	.28	.00	.01	1.5	.07	.01

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
MAR , 1978							
02...	--	--	.07	--	.00	15	1.1
02...	--	--	.05	--	.00	14	1.2
MAY							
13...	--	--	.03	--	.00	12	.5
13...	--	--	.04	--	.01	9.9	.4
AUG							
24...	--	--	.07	--	.01	11	2.0
24...	--	--	.07	--	.01	12	2.1
OCT							
05...	1.2	.86	.06	.03	.01	9.7	1.6
05...	1.4	1.1	.07	.03	.01	12	1.3

Table 4.--Selected plant nutrients--Continued

Reservoir 12--Near Hinsdale Livestock Company

DATE	SAMPLING DEPTH (M)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
MAR , 1978								
02...	1.5	.77	.01	.01	.01	.76	--	.03
02...	3.0	.75	.01	.00	.00	.75	--	.02
MAY								
12...	.50	1.8	.01	.00	.01	1.8	--	.01
12...	2.5	.83	.01	.00	.02	.81	--	.00
AUG								
23...	1.0	.86	.03	.01	.01	.85	--	.02
23...	2.5	1.0	.02	.00	.01	1.0	--	.01
OCT								
05...	1.5	.94	.01	.01	.01	.93	.01	.00

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
MAR , 1978							
02...	--	--	.06	--	.00	12	1.5
02...	--	--	.06	--	.00	12	1.5
MAY							
12...	--	--	.13	--	.01	4.7	2.4
12...	--	--	.13	--	.01	15	2.4
AUG							
23...	--	--	.05	--	.01	4.6	.9
23...	--	--	.05	--	.01	6.1	1.4
OCT							
05...	.92	.93	.06	.04	.02	7.0	.8

TABLE 5.--Trace elements

Reservoir 1--Air Base Pond

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
FEB , 1978											
27...	2.5	--	--	210	--	--	--	4	--	--	30
27...	6.5	--	--	220	--	--	--	0	--	--	280
MAY											
09...	1.0	--	--	130	--	--	--	3	--	--	30
09...	3.0	--	--	130	--	--	--	3	--	--	30
AUG											
20...	1.0	14	300	170	2	0	0	2	7	50	<10
20...	3.0	13	200	160	5	10	3	0	4	50	<10
OCT											
02...	.50	--	--	160	--	--	--	1	--	--	20
02...	4.5	--	--	170	--	--	--	3	--	--	30

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
FEB , 1978											
27...	--	4	--	280	--	--	--	--	--	10	--
27...	--	6	--	1300	--	--	--	--	--	10	--
MAY											
09...	--	11	--	10	--	--	--	--	--	10	--
09...	--	9	--	10	--	--	--	--	--	20	--
AUG											
20...	18	18	120	1	.0	0	1	0	.0	<3	10
20...	91	44	150	<1	.0	0	0	0	.0	<3	0
OCT											
02...	--	0	--	20	--	--	--	--	--	10	--
02...	--	0	--	20	--	--	--	--	--	10	--

TABLE 5.--Trace elements--Continued

Reservoir 2--Vadar Reservoir

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
FEB , 1978											
28...	1.5	--	--	130	--	--	--	2	--	--	30
28...	3.5	--	--	130	--	--	--	4	--	--	40
MAY											
09...	1.0	--	--	50	--	--	--	0	--	--	90
09...	5.0	--	--	60	--	--	--	1	--	--	40
AUG											
20...	.50	6	200	70	2	10	2	0	6	90	20
20...	4.0	6	200	70	2	0	2	2	6	190	80
OCT											
02...	.50	--	--	140	--	--	--	5	--	--	30
02...	5.0	--	--	90	--	--	--	7	--	--	30

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
FEB , 1978											
28...	--	60	--	410	--	--	--	--	--	30	--
28...	--	33	--	640	--	--	--	--	--	20	--
MAY											
09...	--	4	--	0	--	--	--	--	--	10	--
09...	--	13	--	10	--	--	--	--	--	10	--
AUG											
20...	31	20	160	<1	.0	0	0	0	.0	<3	20
20...	38	63	220	0	.0	0	0	0	.0	0	10
OCT											
02...	--	4	--	20	--	--	--	--	--	10	--
02...	--	3	--	20	--	--	--	--	--	10	--

TABLE 5.--Trace elements--Continued

Reservoir 3--VR-82

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
FEB , 1978											
28...	2.0	--	--	290	--	--	--	0	--	--	400
MAY											
10...	1.0	--	--	60	--	--	--	2	--	--	70
10...	3.0	--	--	60	--	--	--	0	--	--	120
AUG											
21...	1.0	3	200	80	1	0	0	3	6	320	60
OCT											
04...	1.5	--	--	80	--	--	--	1	--	--	50

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
FEB , 1978											
28...	--	5	--	1000	--	--	--	--	--	30	--
MAY											
10...	--	11	--	10	--	--	--	--	--	10	--
10...	--	3	--	0	--	--	--	--	--	10	--
AUG											
21...	21	5	40	2	.0	0	0	0	.0	10	0
OCT											
04...	--	0	--	0	--	--	--	--	--	10	--

TABLE 5.--Trace elements--Continued

Reservoir 4--VR-77

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
FEB , 1978											
27...	1.2	--	--	340	--	--	--	1	--	--	1100
MAY											
10...	1.0	--	--	50	--	--	--	0	--	--	150
AUG											
21...	1.0	6	300	80	3	0	0	4	8	1200	10
OCT											
04...	1.5	--	--	80	--	--	--	5	--	--	130

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
FEB , 1978											
27...	--	0	--	190	--	--	--	--	--	90	--
MAY											
10...	--	3	--	10	--	--	--	--	--	10	--
AUG											
21...	32	18	30	20	.1	0	0	0	.0	10	10
OCT											
04...	--	0	--	0	--	--	--	--	--	10	--

TABLE 5.--Trace elements--Continued

Reservoir 5--Thoenys Reservoir

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
MAY , 1978											
11...	1.0	--	--	50	--	--	--	3	--	--	20
AUG											
22...	.50	5	400	120	6	20	0	4	19	10000	20
OCT											
03...	.25	--	--	130	--	--	--	5	--	--	110

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
MAY , 1978											
11...	--	4	--	0	--	--	--	--	--	10	--
AUG											
22...	54	14	40	3	.1	0	1	0	.0	10	90
OCT											
03...	--	0	--	0	--	--	--	--	--	20	--

TABLE 5.--Trace elements--Continued

Reservoir 6--Ich Pair Reservoir

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
MAY , 1978											
11...	1.0	--	--	60	--	--	--	2	--	--	70
AUG											
22...	.50	8	300	130	4	0	0	2	10	1800	930
OCT											
03...	.50	--	--	70	--	--	--	1	--	--	810

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
MAY , 1978											
11...	--	3	--	0	--	--	--	--	--	10	--
AUG											
22...	39	20	130	50	.0	0	0	0	.0	3	20
OCT											
03...	--	0	--	40	--	--	--	--	--	0	--

TABLE 5.--Trace elements--Continued

Reservoir 7--Near John Arnold Ranch

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
FEB , 1978											
28...	1.5	--	--	270	--	--	--	0	--	--	640
MAY											
11...	1.0	--	--	70	--	--	--	1	--	--	60
11...	3.3	--	--	60	--	--	--	1	--	--	60
AUG											
22...	.50	8	200	120	2	0	0	2	14	440	190
22...	2.5	8	300	120	6	10	0	2	9	360	200
OCT											
03...	.50	--	--	90	--	--	--	1	--	--	50
03...	2.0	--	--	80	--	--	--	2	--	--	440

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
FEB , 1978											
28...	--	6	--	3600	--	--	--	--	--	40	--
MAY											
11...	--	5	--	0	--	--	--	--	--	10	--
11...	--	5	--	0	--	--	--	--	--	10	--
AUG											
22...	35	37	70	40	.0	0	0	0	.0	<3	20
22...	52	8	80	40	.0	0	0	1	.0	<3	20
OCT											
03...	--	0	--	10	--	--	--	--	--	10	--
03...	--	0	--	10	--	--	--	--	--	10	--

TABLE 5.--Trace elements--Continued

Reservoir 8--Near East Fork Willow Creek

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
FEB , 1978											
28...	2.0	--	--	220	--	--	--	4	--	--	50
28...	4.0	--	--	220	--	--	--	4	--	--	40
MAY											
12...	1.0	--	--	60	--	--	--	2	--	--	20
12...	4.0	--	--	60	--	--	--	1	--	--	20
AUG											
24...	1.0	12	300	100	0	0	0	3	12	520	50
24...	3.0	12	300	100	3	20	0	2	10	440	210
OCT											
03...	.50	--	--	90	--	--	--	1	--	--	50
03...	3.0	--	--	90	--	--	--	1	--	--	80

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
FEB , 1978											
28...	--	10	--	10	--	--	--	--	--	20	--
28...	--	4	--	20	--	--	--	--	--	20	--
MAY											
12...	--	5	--	0	--	--	--	--	--	10	--
12...	--	3	--	0	--	--	--	--	--	10	--
AUG											
24...	6	2	60	20	.2	0	0	0	.0	20	20
24...	8	0	60	40	.1	0	0	0	.0	20	20
OCT											
03...	--	0	--	0	--	--	--	--	--	10	--
03...	--	0	--	0	--	--	--	--	--	10	--

TABLE 5.--Trace elements--Continued

Reservoir 9--Gay Reservoir

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
MAR , 1978											
02...	2.0	--	--	900	--	--	--	2	--	--	20
MAY											
13...	1.0	--	--	220	--	--	--	3	--	--	0
13...	4.0	--	--	220	--	--	--	1	--	--	0
AUG											
23...	1.0	3	300	370	1	10	0	2	9	160	<10
23...	4.0	3	200	370	1	0	0	2	9	180	<10
OCT											
05...	.50	--	--	390	--	--	--	5	--	--	20
05...	3.0	--	--	560	--	--	--	2	--	--	190

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
MAR , 1978											
02...	--	28	--	90	--	--	--	--	--	20	--
MAY											
13...	--	3	--	20	--	--	--	--	--	20	--
13...	--	7	--	20	--	--	--	--	--	20	--
AUG											
23...	4	0	20	6	.1	0	0	0	.0	6	10
23...	5	0	20	10	.1	0	0	0	.0	20	10
OCT											
05...	--	0	--	10	--	--	--	--	--	10	--
05...	--	0	--	0	--	--	--	--	--	10	--

TABLE 5.--Trace elements--Continued

Reservoir 10--VR-64

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
MAY , 1978											
13...	1.0	--	--	90	--	--	--	3	--	--	120
AUG											
23...	.50	20	300	170	1	10	0	4	13	2200	<10
OCT											
05...	.50	--	--	200	--	--	--	8	--	--	--

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
MAY , 1978											
13...	--	11	--	20	--	--	--	--	--	10	--
AUG											
23...	11	3	70	2	.1	0	0	0	2.3	10	20
OCT											
05...	--	6	--	140	--	--	--	--	--	20	--

TABLE 5.--Trace elements--Continued

Reservoir 11--Hose Reservoir

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
MAR , 1978											
02...	1.5	--	--	120	--	--	--	1	--	--	20
02...	5.0	--	--	130	--	--	--	1	--	--	0
MAY											
13...	1.0	--	--	50	--	--	--	1	--	--	80
13...	6.0	--	--	50	--	--	--	2	--	--	100
AUG											
24...	1.0	7	300	80	2	0	0	3	10	160	20
24...	4.0	7	200	80	3	0	0	2	8	230	50
OCT											
05...	.50	--	--	50	--	--	--	3	--	--	140
05...	6.0	--	--	50	--	--	--	1	--	--	30

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
MAR , 1978											
02...	--	41	--	20	--	--	--	--	--	20	--
02...	--	5	--	50	--	--	--	--	--	10	--
MAY											
13...	--	9	--	10	--	--	--	--	--	10	--
13...	--	6	--	20	--	--	--	--	--	10	--
AUG											
24...	6	0	70	0	.2	0	0	0	.0	10	10
24...	6	0	110	0	.1	0	0	0	.0	10	20
OCT											
05...	--	3	--	0	--	--	--	--	--	10	--
05...	--	0	--	0	--	--	--	--	--	10	--

TABLE 5.--Trace elements--Continued

Reservoir 12--Near Hinsdale Livestock Company

DATE	SAMPLING DEPTH (M)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BORON, DISSOLVED (UG/L AS B)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)
MAR , 1978											
02...	1.5	--	--	260	--	--	--	2	--	--	10
02...	3.0	--	--	260	--	--	--	2	--	--	0
MAY											
12...	.50	--	--	80	--	--	--	6	--	--	30
12...	2.5	--	--	70	--	--	--	3	--	--	50
AUG											
23...	1.0	9	300	130	1	0	0	3	11	290	<10
23...	2.5	9	300	120	1	0	0	3	9	310	<10
OCT											
05...	1.5	--	--	130	--	--	--	2	--	--	20

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
MAR , 1978											
02...	--	10	--	40	--	--	--	--	--	30	--
02...	--	7	--	60	--	--	--	--	--	20	--
MAY											
12...	--	13	--	0	--	--	--	--	--	20	--
12...	--	7	--	0	--	--	--	--	--	10	--
AUG											
23...	5	2	10	5	.1	0	0	0	.0	4	20
23...	5	0	10	4	.1	0	0	0	.0	<3	20
OCT											
05...	--	0	--	0	--	--	--	--	--	10	--